

NOV/DEC 2020

SMAC NEWS

Mitigating COVID-19 in School HVAC Systems Comes with Learning Curve



CONTENTS

Vol 54 No. 6

Features

10

Mitigating COVID-19 in School HVAC Systems Comes with Learning Curve

14

Canadian Contractors Prevail Amid COVID

Sectors

02 Architectural

'And They're Off!'

04 HVAC

Laboratory Expertise Yields Positive Results for Boston-Area Contractor

06 Industrial

Prescription-Strength Contracting

08 Residential

For HVAC Techs, Attitude, Appearance as Important as Aptitude

Columns

18 Leadership

The Hard Work: Start with Culture

19 Financial Stewardship

Cash Flow Forecasting: A Powerful Tool in Your COVID-19 Recovery

20 Technology

Construction Tech Trends: 2020 Year in Review and Predictions for 2021



CAPITOL HILL UPDATE

Composite Plans and Pension Relief Negotiations Falter

Action Must Wait for 117th Congress

Despite intense Congressional negotiations in the final days of the 116th Congress coupled with lobbying and grassroots efforts by SMACNA and multiemployer pension plan stakeholders, bipartisan agreement on pension relief, along with authorization of Composite Plans, could not be reached in time to be included in the final bills of this session of Congress.

A joint statement issued by Sen. Grassley (R-IA), Chair of the Senate Finance Committee, and Sen. Alexander (R-TN), Chair of the Senate Health, Education, Labor, and Pensions (HELP) Committee, signaled the end of pension negotiations. While each side made serious concessions, the two chairs announced "we have yet to find an agreement that satisfies our respective principles and objectives for resolving this situation. We have reached the point where we are out of time to strike an agreement that can be scored by the Congressional Budget Office and reviewed by our Senate and House colleagues to include in an end-of-year package."

The situation remains dire for approximately 130 plans and for the Pension Benefit Guaranty Corporation (PBGC). Co-chairs Grassley and Alexander stressed that the Republican Senate remains "committed to finding a solution and will continue looking for a balanced, sensible approach to resolve this increasingly critical problem."

Sen. Grassley will remain the key Senate player in pension reform in 2021, while Sen. Alexander is retiring. Senator Crapo (R-WY), will be the new Chair of Senate Finance, assuming Republicans retain control of the Senate after the Georgia special elections.

Sen. Grassley gave an indication he will remain a champion of pension relief and reform, when he introduced a Senate pension bill that included Composite Plans. The bill, which was not enacted this session, is based on the Grassley-Alexander White paper from last year.

The negotiations between Republicans and Democrats faltered trying to resolve how much federal funding would be available for failing plans and the PBGC, and how much would be carried by stakeholders in all multiemployer plans. The next step will focus on including pension legislation in a potential new COVID relief package in the first quarter of 2021.

SMACNA will be calling on members and chapters in 2021 to help push Composite Plans over the finish line once the 117th Congress convenes.

Major SMACNA Endorsed Provisions in End of Session Spending – COVID Package

Congress passed a sweeping year-end \$2.3 trillion package that includes \$1.4 trillion to fund the government and \$900 billion in coronavirus relief.

Contained in the major legislative package included long-endorsed SMACNA

priorities over many years of contractor advocacy, including:

- **Energy efficient commercial buildings deduction.** The provision makes permanent the deduction for energy efficiency improvements to building envelope, lighting, heating, cooling, ventilation, and hot water systems of commercial buildings.
- **PPP Reforms.** The COVID bill clarifies that businesses can deduct expenses associated with their forgiven PPP loans, in addition to expanding the employee retention credit intended to prevent layoffs and allowing 501C6 groups to secure PPP loan funds.
- **\$325 billion small business loans assistance.** Small businesses (those with under 300 employees) would see a total of \$325 billion, including \$284 billion in loans through the Paycheck Protection Program.
- **School construction funding.** Included in the \$82 billion total for colleges and universities is more than \$4 billion for a governors' relief fund, more than \$54 billion for public K-12 schools and nearly \$23 billion for a higher education fund.
- **Federal contractor relief.** The package continues a CARES Act program that allows contractors to keep employees on the payroll even if federal facilities close.

The bill also contains comprehensive federal, state building energy efficiency package and extends a payroll tax subsidy for employers offering workers paid sick leave. ▼



FROM THE PRESIDENT

Angie Simon

Understanding What Matters

At this time of year, the normal tradition is for a SMACNA President to bid farewell in this column, but as we all know, 2020 has not been normal and I am only at the midway point of an extended tenure due to the COVID-19 pandemic. I therefore think it is best to share some valuable lessons I have learned from my leadership role in SMACNA during the past 12 months, and from running a company during a global pandemic.

COMMUNICATIONS MATTER

First, I cannot stress enough the importance of communication, but even more so during a pandemic. Evaluating and gathering information from employees, health professionals, local government, customers, suppliers and SMACNA of course, to assess the local and national landscape, was the first step, then processing all this information and putting it into an actionable, yet flexible plan was an entirely different process. Finally, it is critical to share and communicate that plan with staff so everyone is on the same page and moving in the same direction. I have found that there can not be too much communication – but you should choose the right channels for different types of communications; email, videos, zooms etc.

The information flow from SMACNA has also been extremely valuable. The thought leadership, timeliness of content sharing and the relevancy of the information shared by SMACNA helped us all navigate this pandemic in a relatively structured process.

CARING MATTERS

I say it all the time...what makes my business successful is my people, and they are like my family. Showing empathy by taking the time to interact, listen and respond thoughtfully are critical in times of crisis. Really caring for your team is critical. I am certain my employees know that I care, and I have learned over time that leadership by caring is a skill that pays for itself repeatedly.

PRODUCTIVITY AND EFFICIENCY MATTERS

If the pandemic has taught contractors anything, it is to focus on productivity because you can lose any margin if a job's process slows down. I think this is one positive aspect of the pandemic. We all had to look at the entire fabrication and installation process under new and challenging circumstances, and we found a way to respond safely and effectively. While there were some bumps and hiccups in the very beginning, our staffs have developed new routines in the office, in the shop and on the jobsite. SMACNA and New Horizons Foundation really helped by quickly developing a productivity study based on member's feedback and extensive interviews.

LOCAL GOVERNMENT MATTERS

Usually when I think about the government, I tend to think about our federal government, like the President and Congress. And they have still been vitally important during this time, especially in getting our businesses protected and covered financially.

But one of the many things this pandemic has reminded me is just how much of an impact our local government – state, county and even city or municipal – can have on the construction industry. Local governments have been the ones setting rules on whether businesses can operate or not, and they have been the ones opening and closing construction sites, group gatherings and much more.

I know I tend to think more about my representatives in Washington D.C., but this pandemic has demonstrated that knowing my local representatives has never been more important. I know both your local chapter and SMACNA's Capitol Hill team would be happy to introduce you to your local representatives and help you foster stronger connections.

PREFABRICATION MATTERS

This pandemic has also taught many of us that prefabrication is a valuable tool that increases productivity while improving safety on the job site. Less time on the job site can be a big benefit to maintaining the health and safety of staff during a pandemic, while also achieving the dual goal of providing optimized productivity.

SMACNA MATTERS

Lastly, I would like to point out how valuable it is to be a member of SMACNA, and to receive critical information that helps us improve the competitiveness of our businesses. Critical information is shared consistently whether it is through emails, publications, phone calls and/or events on topics that impact our cost structure, operations, safety, finances, and technologies.

Hopefully in 2021 all these lessons learned in 2020 have made us more resilient and more competitive, positioning our businesses for future growth in 2021 whatever it may bring. ▼

Sincerely,

Angie Simon, SMACNA President



'And They're Off!'

SMACNA member Poynter Sheet Metal 'raced' to complete its work at Churchill Downs so the legendary track could be ready for the world-renowned Kentucky Derby. Would the company complete the projects before the deadline? There was no contest.

With 20 3-year-old thoroughbreds racing around the track at almost 40 mph, the Kentucky Derby only takes about two minutes to run. But fabricating and installing metalwork for two architectural sheet metal projects at Churchill Downs, the site of the annual horse race, takes a lot more than two minutes, even if the company is working at full speed.

Just ask workers at Poynter Sheet Metal. The Greenwood, Ind., custom metal crafter was hired to make 40 large, decorative metal gates for the Louisville, Ky., track's paddock gate entrance area. The section is where spectators can catch glimpses of the horses and jockeys as they prepare for the day's events.

Poynter was also awarded a separate architectural contract for another high-profile part of Churchill Downs: the Starting Gate Suites tower, a structure with more than 77,000 square feet of private event space and outdoor track viewing areas.

That \$1 million project called for Poynter to fabricate and install wire mesh and decorative metal balconies along the stairs that provide access to the suites on each level. Both projects had a hard deadline to be completed before the running of the Kentucky Derby.

Poynter is no stranger to the legendary racetrack, having completed several assignments for Churchill

Downs, Inc., the 145-year-old facility's owner. Previous work included stainless steel railings at Millionaires Row, an exclusive area with private dining rooms and excellent race sightlines.

But those prior projects contained "nothing to this level of detail," said Reed Corbin, a sales and project manage-





FAR LEFT: Poynter Sheet Metal fashioned and installed custom 'CD' medallions at each of the main Paddock gates.

CENTER AND LEFT: Poynter fabricated and installed decorative metal for the balconies along the tower stairs that provide access to the exclusive three-story Starting Gate Suites, which includes private event space and outdoor seating.

“THEY WANTED EVERYTHING POWDER-COATED ... SO EVERYTHING WAS TWO DIFFERENT COLORS ON THE LOGO. THAT'S WHY THE LETTERS WERE MECHANICALLY FASTENED. BECAUSE THEY WANTED IT AS A SEPARATE COLOR FROM (THE REST OF) THE GATE.”

“So everything was two different colors on the logo. That’s why the letters were mechanically fastened. Because they wanted it as a separate color from (the rest of) the gate.”

While the gate project was underway, Poynter was simultaneously working on the Starting Gate Suites. Corbin said the project called for 1,458 lineal feet of ornamental metal railings, plus 5,000 square feet of wire mesh panels, plus another 400 feet or so of single-line guardrails.

“All the material on this project was milled steel,” he added. “A lot of it got galvanized.”

Juggling both projects meant logistics was a challenge, Corbin said. The gates and mesh were being fabricated two hours away at Poynter’s Greenwood sheet metal shop, and making material deliveries required securing wide-load transportation permits due to the size of some of the items. Poynter took over a portion of one of Churchill Downs’ parking lots and turned it into a staging area. About five employees handled the on-site installation.

“You’ve got to work through stuff as best you can,” Corbin said. “We were restricted as far as the size of the material for handling and for transporting. Once we had that figured out, everything was released to the shop for fabrication. They’d make sure everything fit together.”

Employees at the shop in Greenwood really enjoyed the projects, he added. With the Kentucky Derby scheduled to take place May 5, they worked to ensure everything would be in place before the spectators, with their fancy hats and mint juleps, started filling the stands.

“The work was great for the shop,” Corbin said. “It was a lot of typical items, so we could set up, we could build fixtures. It was good work, and everybody was interested in the projects. That always helps. They had a little emotional involvement in the job, so a little extra pride goes into things like that.

“And in true fashion for Poynter, we knocked it out of the park,” he added. ▼

ment executive at Poynter.

The \$340,000 contract for the gates’ framing and installation called for extensive use of roll-formed tubing, along with specially designed locks and hinges. The gate material was 3 inches by 2 inches, with a quarter-inch wall thickness. Many of the gates that surround the paddock area were to have a medallion emblazoned with a stylized “CD” — the abbreviation for Churchill Downs — in the middle of them.

“So (all) that was tricky to work through,” Corbin said, adding that Poynter employees laser cut the 3.8-inch medallion plate and logo at the company’s shop in Greenwood before sending it to a machine shop in Bedford, Ind., for milling.

“It had to have a groove machined around the edge,” Corbin added. Everything had to be powder-coated.

The gates’ appearance was important to officials with the historic racetrack, who wanted the metal gates to present a striking contrast with the off-white brick columns that make up much of the paddock entrance area.

“They wanted everything powder-coated,” Cobin said.



POYNTER SHEET METAL
poyntersheetmetal.com



Laboratory Expertise Yields Positive Results for Boston-Area Contractor

Sean O’Keeffe and his colleagues at JEC Service Company, Inc. have done a lot of laboratory HVAC projects over the years. Hospitals, universities, biotechnology companies, and many pharmaceutical clients highlight this Waltham, Mass.-based SMACNA firm’s construction portfolio.

Understanding the complexities of these highly specialized lab HVAC systems meant O’Keeffe, a project manager with JEC, wasn’t worried about an HVAC fit out of a new pharmaceutical laboratory in Cambridge. It was a facility where he’d done HVAC work before, so he expected there would be some challenges that typically come with retrofit construction.

Then came the unexpected.

COVID-19 cases exploded across the U.S., causing the City of Cambridge issued a construction moratorium on March 21, 2020.

“We had only completed the demo prior to the shut-down,” O’Keeffe recalled. As most successful business do, JEC adapted. They also benefitted from a little luck.

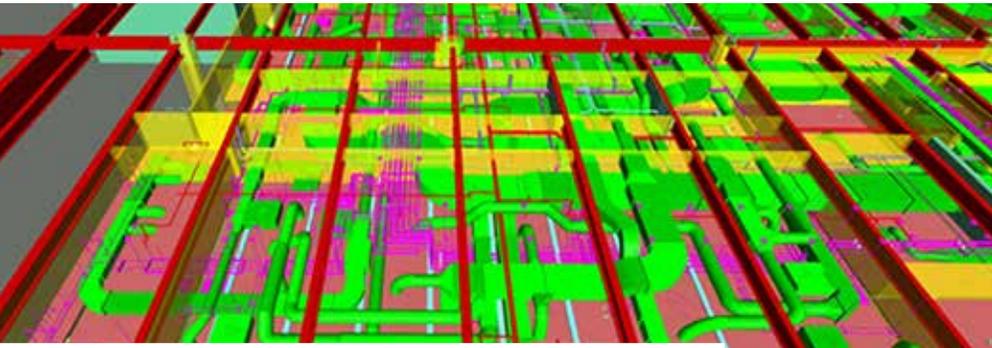


After just a couple weeks delay, the Binney Street project was exempted from the moratorium. The lab fit out was determined to be essential construction work, since the client/tenant would be working to develop new techniques for targeting infectious diseases.

“I had two jobs in Boston that were shut down and did not open back up until the city ended the construction moratorium,” O’Keeffe said. “Another pharmaceutical job in Framingham (Mass.) also got an exemption status.”

The scope of work for the 42,000 square foot Binney Street project was to install new medium and low-pressure supply distribution ductwork for two existing 20,000 CFM air handling units and a couple 100% outside air handling units. Exhaust ductwork included new risers





FAR LEFT: New roof ductwork was installed before being connected to the fans.

FAR LOWER LEFT: New risers being installed at the facility.

LEFT: Newly installed ductwork on the roof connects two of eight new fans.

BELOW LEFT: Images of JEC's coordination drawings illustrate where lab work is extra congested.



said. "It was just everywhere, and it wasn't documented."

"A lot of times we weren't able to coordinate around it, so we ended up getting a 3D scan of the floor," he said. "I think they used a Trimble 3D scanner machine to give all the coordinators a 3D model of all the existing things that were there. The 3D scan became very important in that month that it was shut down."

With visual data from the 3D scan, JEC was able to install every part of the custom designed HVAC system. O'Keefe said the medium pressure supply mains were 66x30 and the new risers were 50x30. Here are some project highlights:

- 2 air cooled condensing units
- 2 Mitsubishi air conditioning units
- 63 variable air volume (VAV) supply air boxes
- 40 variable volume exhaust (VVE) boxes
- 8 variable frequency drives
- 4 tubular inline high plume upblast biosafety exhaust fans
- 2 general exhaust fans
- 2 relief fans
- 4 Strobic roof mounted exhaust fans
- 63 hot water coils, and some refrigeration piping

Ultimately, JEC was able to finish the \$2.35 million job on schedule in November. O'Keefe attributes JEC's success to the team, and the company's presence in a wide variety of markets.

"Our diverse construction portfolio was a huge help in surviving this year," he said. "Everyone in the company really did their part to keep things moving in an efficient way. It hasn't been easy for anybody, but understanding that we are all getting through the ever-changing restrictions and guidelines as a team makes it a lot more manageable."

O'Keefe did find another unexpected effect of the COVID-19 pandemic, but this promises to be good news. New and existing clients have been contacting JEC about improving indoor air quality, to help mitigate infection concerns.

"I have been pricing a lot of jobs to change out rooftop equipment to increase the amount of fresh air in the buildings," he said. "On the service side, we have been working with some of our customers on guidelines that were issued by ASHRAE." ▼



for various fans, including dedicated biosafety fans and specialized rooftop fans.

JEC was able to be productive during the shutdown, as they had recently begun doing more prefab work in their shop. They expanded that practice for the Binney Street project, fabricating 15-foot sections of duct that could be delivered to the job site later.

"Once COVID (restrictions were lifted and job sites) opened back up, we went on site and all the trades started flying again. We were able to keep pace because we had done all this work ahead of time," O'Keefe said. "Just like everyone, we were anxious about going back out to the field, but also eager to get out there to do what we felt was our part to help out."

Back on the job site, O'Keefe was able to enjoy the 'normal' challenges of customizing advanced HVAC systems that enable precise control of temperature, humidity, filtration, and pressurization. O'Keefe said he likes doing that work a lot, even when they encounter preexisting lab waste, which is not unusual. At the Binney Street project, the ceilings above the laboratory were congested with piping and duct from an upstairs tenant.

"It's a much slower process than a typical job," O'Keefe



Prescription-Strength Contracting

The Brandt Companies' expertise was just what this pharmaceutical factory project needed

When the Kansas City, Mo., engineering, procurement and construction firm IPS needed help navigating construction protocols in Texas, they reached out to The Brandt Companies.

IPS had been awarded a contract to design and construct a 90,000-square-foot, two-story pharmaceutical manufacturing facility in Houston. But as an out-of-state contractor, IPS felt they needed to partner with a firm more familiar with the ins and outs of working in the region.

That's where Brandt comes in. The SMACNA member is a Carrollton, Texas-based full-service mechanical, electrical and plumbing (MEP) contractor with deep experience in health care, light industrial, food and beverage, and data center projects. The company has more than 2,200 employees, six in-state locations, and over 65 years in the industry. Its sheet metal shop fabricates around 5 million pounds of ductwork per year.

It was just the kind of expertise that IPS was looking for, said Curtis Harbour, an executive vice president and general manager with Brandt, who works out of its Houston office.

"Not being from Texas or the Houston area, IPS didn't really have local relationships," Harbour said. "They felt like they needed to pick one company to work with, and work with closely. And so they leaned on us to assist in pulling in a general contractor for the architectural pieces, an elevator supplier, a cleanroom builder, and then ourselves. We worked with them in a really open-book fashion — very transparent in our cost estimating, and really just negotiated the project."

IPS awarded Brandt an \$18 million contract to handle fabricating and installing all of the medical manufacturing facility's ductwork, process piping, HVAC, plumbing and electrical systems.

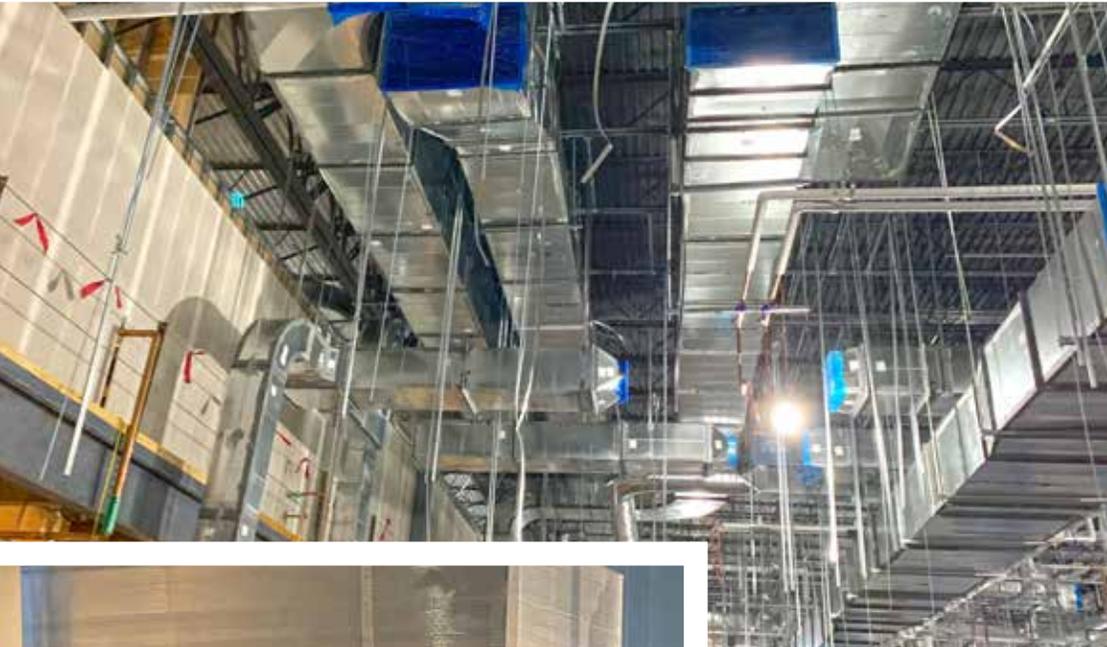
The scope of the project, which is currently underway, includes fabricating 257,000 pounds of rectangular and spiral ductwork — mostly 18 gauge, but some 20-, 22- and 24-gauge duct as well. The duct will connect to five air-handling units, designed to provide the plant with 150,000 cfm of airflow.

Brandt's work started in July 2020. About 80 employees are now working on-site.



THE BRANDT
COMPANIES
brandt.us

IPS
ips-kc.com



LEFT: The Brandt Companies is currently working on an \$18 million project to fabricate and install all of the ductwork, process piping, HVAC, plumbing and electrical systems at a medical manufacturing facility in Houston.

CENTER LEFT: The pharmaceutical plant project requires five air-handling units to supply the facility with 150,000 cfm of air.

TOP LEFT: The pharmaceutical factory uses 57,000 pounds of rectangular and spiral ductwork, ranging in size from 24 to 18 gauge.



“WE’RE REALLY TRYING TO AVOID CLOSE CONTACT BETWEEN OUR WORKERS, BECAUSE WITH THE PEAK MANPOWER OUT THERE, IF WE HAVE AN OUTBREAK, IT’S DEFINITELY GOING TO SERIOUSLY IMPACT OUR SCHEDULE.”

ened the amount of people (available to work). We see that on almost every large equipment purchase.”

Despite such roadblocks, the project is progressing. About 50% to 60% of the ductwork required has been made and put in place, Cochran said.

“And about 20% is being fabbed as we speak,” he added. “And then we’ve still got a little more that’s going to need to be fabricated and finished up.”

With so many trades and intricate systems involved, coordination is especially important, the officials said.

The cleanroom has a walkable ceiling and a roof deck at 30 feet, which meant that duct had to be stacked in multiple layers to preserve employee access.

“There’s probably four to six different layers of ductwork installed above those clean rooms,” Cochran said. “Coordination was very difficult.”

It meant determining what was the best way to install the duct along with the piping and everything else that the space required. It wasn’t easy, especially at that elevation.

“In the high trusses, we had the electrical and fire sprinkler get up there inside the trusses first,” Cochran said. “Then we’d go in with a layer of duct, and then we’d let piping go in, and then we’d go in with another layer of duct.”

The project is scheduled for completion in spring 2021, and Harbour said they expect to meet that deadline.

Brandt officials have learned a lot from the project, according to Harbour, who said preplanning and communicating to the client were of utmost importance.

“If you have a lot of stuff going on in a small building in a short period of time, you really have to have a significant amount of effort in pre-planning and coordination,” he said. “Make every effort to get the client to understand that the earlier you begin your preplanning, the better the outcome.” ▼

“We have a tremendous amount of BIM (building information modeling) capabilities, so we were able to jump right in and get the building coordinated, in fabrication and get construction started,” Harbour said.

Like any project in the last nine months, the coronavirus pandemic has had an impact on the pharmaceutical building’s construction. Masks and other precautions are a regular topic at daily safety meetings, said Hayden Wisdom, an assistant project manager at Brandt.

“We have to be socially distanced while we are inside working in the facility,” he said. “It’s definitely a little tougher on install. We’re really trying to avoid close contact between our workers, because with the peak manpower out there, if we have an outbreak, it’s going to seriously impact our schedule.”

COVID-19 has also affected the delivery of HVAC equipment for the project, according to Larry Cochran, a senior plumbing and mechanical project manager with Brandt. “That’s where we’re running into most of the problems,” Cochran said. “Every vendor or supplier likes to say that due to COVID, the manufacturers have shut down or less-



For HVAC Techs, Attitude, Appearance as Important as Aptitude

The sheet metal industry provides a great opportunity for career development and job stability, but not everyone is suited to every job. Service technicians require certain skills to really excel in their roles.

Bill Eustace, president and CEO of Colorado's Heating & Plumbing Engineers, Inc., believes the foundation for a good service tech is mechanical skill and good troubleshooting ability. Hector Vargas, president of ACH Mechanical in California, notes that a technician needs not only to be qualified, but also must "have experience and knowledge of the industry or the tasks that he's contracted or employed to do."

Meanwhile, Tony Costa, president of Par Sheet Metal in New Jersey, notes that the best technicians are "always striving to gain more knowledge, because the equipment and the technology are ever-evolving." Peter Jordan, executive vice president of Corval Group in St. Paul, Minn., agrees. "They've got to understand mechanical systems and equipment. That's just the aptitude side of it."

ATTITUDE IS IMPORTANT

However, Jordan believes that "attitude trumps aptitude." "They've got to have the team ability, knowing that they're just one member on a squad, and no member is bigger than another member.

You've got to work as a unit." He also emphasizes the importance of integrity, which can be determined by his litmus test, "What are you doing when nobody's watching you?"

Jim Frees, HVAC superintendent at Holmberg Mechanical in Washington State, also believes that attitude plays a large role. He reminds his employees, "You're in charge of your attitude. Attitude's going to determine whether you want to stay employed here and part of this team."

APPEARANCE IS IMPORTANT

Costa also emphasizes the importance of pride in your work and ensuring your work is ship-shape. "When you come to a job site, you have to be very neat. You can't leave a mess because that leaves a very bad impression on the customer."



LEFT: Contractors agree: A technician's truck, tools, clothing and personal appearance should be neat, clean and professional at all times.

LEFT: An ACH Mechanical technician performs quarterly routine maintenance and check-out of water-cooled chillers at a computer technology facility.

LEFT: A technician makes service repairs to a roof top Air Handling Unit on a residential building (AHU).

BELOW: Holmberg Mechanical employees gather for an onsite safety meeting prior to beginning work. Employees install and maintain a wide variety of climate control systems.



He believes it's possible to tell how organized a technician is by the appearance of their work vehicle. "If you keep a neat, organized work van, you generally are that (organized) type of a person. I've never seen anybody who has a van that looks like it was turned

upside down and yet is neat and organized on the job. Both go hand in hand."

Frees has noticed that organized service technicians seem to "have everything in a basket. They methodically think through things, which helps them to be better problem solvers."

Eustace notes that neatness and organization extend to paperwork. "Service is a business, and the paperwork is an essential part of keeping track of the job, and the billing and getting paid. So, no paperwork means no making money, ultimately. And it adds work for other people because they're trying to chase the person down and get them to do the job that they should have been doing already."

Vargas believes that neatness in appearance counts as

well. "You want to make sure that when your technician shows up, they're presentable, they're dressed properly, they're clean, their hair is combed, and they don't look like they just woke up. It's image. I look at it as an extension of me and my company and my values. I want to make sure the techs represent the same appearance and values that we do in the front office."

Good service techs also have strong customer service skills. Costa points out, "A bad tech can do a lot of damage to your business and a good tech can really increase sales and help your business." Vargas notes that it's not just about the first call. "It's repeat business. And if you maintain that customer — happy and informed — and communicate effectively with him, not only is he going to call you back for future business, but he may refer you to other friends and colleagues."

Part of customer service is communication, but not just talking. Jordan tells his team, "Listen first. You can ask a question for sure, but then listen — truly listen — to the answer that they're giving you, because they're giving you a lot of signs in that answer of what they know, what they don't know, and what they're looking for." ▼



HEATING & PLUMBING
ENGINEERS, INC
hpeinc.com

ACH MECHANICAL
achmechanical.com

NASCO, INC. / PAR SHEET METAL
nascopar.com

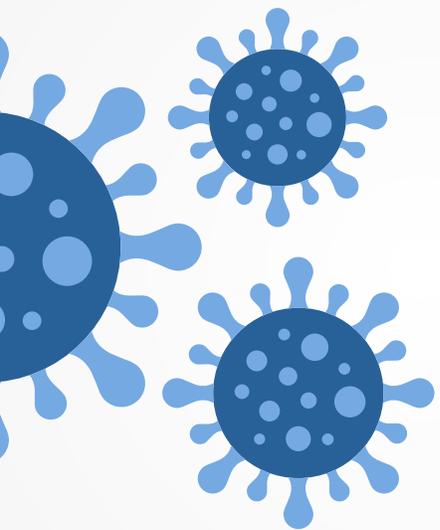
CORVAL GROUP
corvalgroup.com

HOLMBERG MECHANICAL
holmbergco.com



COVER STORY

MITIGATING COVID-19 IN SCHOOL HVAC SYSTEMS COMES WITH LEARNING CURVE



With an air-borne virus threatening lives around the world, indoor air quality in schools is under closer scrutiny than ever before. There are no mitigation codes to follow because the CDC and ASHRAE engineers are still actively developing safety standards as they study the ways the virus spreads. In this time of uncertainty, SMACNA contractors are finding ways to help schools meet rapidly evolving recommendations and build parent confidence.

“I don’t think that any one thing we do will resolve the pandemic,” cautions Christopher Yacu, senior vice president of International Test and Balance (ITB) in Northbrook, Ill. “But each of us can address our own areas of expertise. TAB services improve air flow, mechanical contractors add ionization treatments, and management enforces masking and social distancing measures. Together we complete the whole picture and improve safety.”



Norpac Sheet Metal of Billings, Mont. was selected as the exclusive HVAC and sheet metal contractor for the construction a brand-new, state-of-the-art secondary school in Bozeman, Mont., Gallatin High School.



Zakara Photography

Most Montana schools use older technologies. School districts are purchasing air scrubbers and UV light units to supplement existing HVAC equipment. “You can install UV lights wherever there’s a coil,” Brown says. “On the remodel projects we’ve seen so far, schools are asking contractors to add UV lights to their air handlers.”

NEW CONSTRUCTION IN MONTANA

Population density across Montana is generally low. Many rural school districts are fully open while population centers like Helena and Billings follow hybrid schedules.

Norpac Sheet Metal in Billings, Mont., recently completed a new \$93 million high school in Bozeman, Montana, which will serve 1,500 students. “We bid the contract for Gallatin High School in May 2018, and construction duration was about eighteen months,” said Brooke Logan, project manager and estimator.

COVID-19 hit just as Norpac was finishing up the 304,000 square foot facility, but the school’s modern HVAC design

already meets CDC and ASHRAE recommendations for ventilation. “Large heat-recovery air handlers provide ventilation air to the building,” said Stewart Brown, vice president of estimating. “They bring in cold air through the heat-recovery wheel, and the warm inside air passes through the wheel on its way to exhaust outside. The air streams in the heat recovery units don’t cross, so the supply air is virus-free.”

Gallatin High stands on 57 acres of land, so a VRF system with a well field was a natural choice for the school. Norpac handled the project downstream from the heat pumps, installing 191,700 pounds of metal. Piping runs from the mechanical rooms

out to the branch provider box, which uses hard copper piping and R-410A refrigerant. Fan coil units are hung for every zone, and ductwork and diffusers come off the fan coil units.

At 80 by 54 inches, the biggest ducts are in the mechanical rooms. “The air handling units in the mechanical rooms are the size of a Volkswagen,” Logan says. Norpac fabricated the ductwork at their inhouse shop in Billings, Mont., and shipped it 144 miles to Bozeman every week.

AIR TESTING AND BALANCING IN ILLINOIS

Public schools in and around Chicago, Ill.,

planned to start in-person classes in the fall of 2020, but switched to distance-learning due to rising COVID-19 cases. Many schools are continuing remote education, while other districts allow some students on campus.

Since Chicago-area school facilities tend to be older, they generally avoid capital outlays by keeping their current equipment. Even a change in air filters can pile on costs. “When schools upgrade to MERV 13, they experience a static pressure drop because the bigger filters restrict air flow,” Yacu explained.



Portable air units installed by Albers Mechanical in schools, lecture halls and libraries in Minneapolis-St. Paul not equipped for MERV 13 filtration help provide the cleanest air possible in those buildings.



rebalance for the auditorium at Victor J Andrew High School in Tinley Park, Ill. For just \$3,600, ITB increased the auditorium’s outside air intake to 30 percent.

PORTABLE AIR PURIFICATION UNITS IN MINNESOTA

Public schools in St. Paul, Minn., opened early this fall, but closed in mid-November as local COVID-19 cases rose. Area schools are currently hybrid or fully remote.

ASHRAE’s “Reopening Schools and Universities” publication suggests that schools introduce “terminal or portable, all electric HEPA/UV Machines in each classroom.”

Albers Mechanical Contractors in St. Paul, Minn., has already designed medical-grade air purification units for a respected area health care provider and finds that schools want to adopt the same technology.

The core of the ISO-Aire purifier is a medical-grade HEPA filter with bipolar ionization and optional UV features to destroy viral DNA. Air enters the units at the bottom and exits from the top.

“The air does not flow



across the student’s faces. We don’t want to spread air from someone who’s sick to the next person, but to quickly move particles out of the breathing zone,” says Kevin Albers, manager of marketing and sales. “These units push high and pull low to create proper circulation.”

“Their existing rooftop units cannot handle filtration higher than MERV 11, and adding UVC to the roof is difficult because you have to slow the air down to give the light time to destroy the virus,” said Chuck Albers. “The problem is where the people are,

so the school district decided on an in-room solution. An engineer advised them to place purifiers in critical areas, such as the cafeteria.” So far, Anoka-Hennepin has invested more than \$2 million in updates, including air purification.

AN ALTERNATE VIEW OF COVID MITIGATION IN CALIFORNIA

Schools in Alameda, Calif., are currently restricted to distance learning. Elementary school students may return to the classroom in early 2021.

“To compensate, they must increase fan size and speed, which can be prohibitively expensive.”

Testing and balancing helps schools maximize performance with careful adjustments, like ensuring that air flows through the entire filter. “We don’t want 90% of the air flowing through a small part of the filter,” said Yaku.

One cost-control strategy is to break large projects down into manageable steps by updating one section of the system at a time. ITB recently did a test and

Beyond the Public School Market

In the United States, about 90 percent of preK-12 students attend public schools. Private schools tend to be smaller than public schools and cannot draw on government funds to capitalize remodeling projects. But

despite the smaller number of facilities and the lack of public financing, SMACNA contractors are finding significant work in the private school market. This is a natural result of education laws. Public schools are controlled by governments, expenditures are subject to complex budgetary processes.

Over summer vacation, International Test and Balance did HVAC mitigation and repair for Timothy Christian Schools, a private preK-12 system in Elmhurst, Illinois. ITB certifiers spent about 100 manhours fine-tuning Timothy Christian's 72,000 square foot facility to maximize outside air intake and improve air changes per hour. "Modulating dampers regulate air intake according to outside temperatures, which can drop below zero degrees in midwinter," says Christopher Yacu, senior vice president at ITB. "Some dampers were stuck in a closed position, which is a common problem." The project cost about \$18,000, including replacements and repairs, and was a crucial part of the school's plan to reopen for fall semester.

Preventive maintenance on HVAC systems is always a challenge. "HVAC systems need monthly and quarterly care, but when we come in, we often find louvers jammed open or motors that have rusted and failed," says Yacu.

"A janitor is not an operating engineer, but employers

frequently expect them to do highly specialized work. Even in expensive commercial buildings, we find overworked and underpaid cleaning staff trying to regulate air flow." Yacu encourages schools to protect their assets by scheduling regular maintenance from qualified, certified professionals.

Legacy Christian Academy is a private preK-12 in Andover, Minn., that serves about 600 students. A TAB contractor referred Legacy Christian Academy to Albers Mechanical Contractors for air purification. "Working with the other contractor, we provided additional ionization for their rooftop units. They also added six portable air units in hallways and cafeterias to put the cleanest possible air in their facility," says Chuck Albers, president of Albers Mechanical.

Universities are also responding to current trends. "The shutdowns showed university students that they can study online from home and save the expense of living on campus," says Yacu. "Now institutions are trying to attract students back. Parents are extremely concerned about re-circulated air, so institutions want to be able to advertise that they have fresh air or 'hospital sanitized' air."

The University of Chicago, a private university with research institutions and a major medical school, brought International Test and Balance in to revamp their facilities. "The project includes about 6.2 million conditioned square feet," Yacu says. "We are bringing the campus up to code and to the latest CDC recommendations for fresh air. It will take thousands of man-hours and 12 to 18 months to complete, but the school sees this as an investment in the future." ▼

Steve Taylor of Taylor Engineering in Alameda, Calif., agrees on the value of air purification. "In some cases, existing buildings may not have mechanical ventilation systems because building codes used to allow operable windows to be the sole source of ventilation," he said. "Schools are a good example. In that case, portable air cleaners may be the only practical way to provide effective ventilation."

However, Taylor's preferred approach is different from many contractors. Taylor believes that MERV 13 gives the best value for the operating cost. He is also cautious about ionization, citing the ASHRAE Building Readiness Guide.

"Relative to many other air cleaning or disinfection technologies, needlepoint bipolar ionization has a less-documented track record in regard to cleaning/disinfecting large and fast volumes of moving air within heating, ventilation, and air conditioning systems. This is not to imply that the technology doesn't work as advertised, only that in the absence of an established body of evidence reflecting proven efficacy under as-used conditions, the technology is still considered by many to be an 'emerging technology.'"

Given the current state of knowledge, Taylor advises clients to use purifiers with MERV 13 filters without ionization or UV. Whatever filtration system

clients choose, he stresses that "the first and most important mitigation is source control.

If portable air cleaners are employed, then reminders should be posted in the vicinity warning that their use does not mean any other safety protocols, such as social distancing and wearing masks, may be relaxed."

THE BOTTOM LINE

Whatever HVAC upgrades they request, clients must continue to follow good hygiene. "Infection from aerosols is not the predominant transmission, and it's the only path that HVAC systems can mitigate," Taylor emphasizes. "We do need to address HVAC mitigation measures and aerosol transmission, but HVAC measures can never be the only mitigation. They do literally nothing to reduce the risk of short-range (large- and medium-sized) droplet transmission that the CDC and WHO say are the dominant paths." ▼

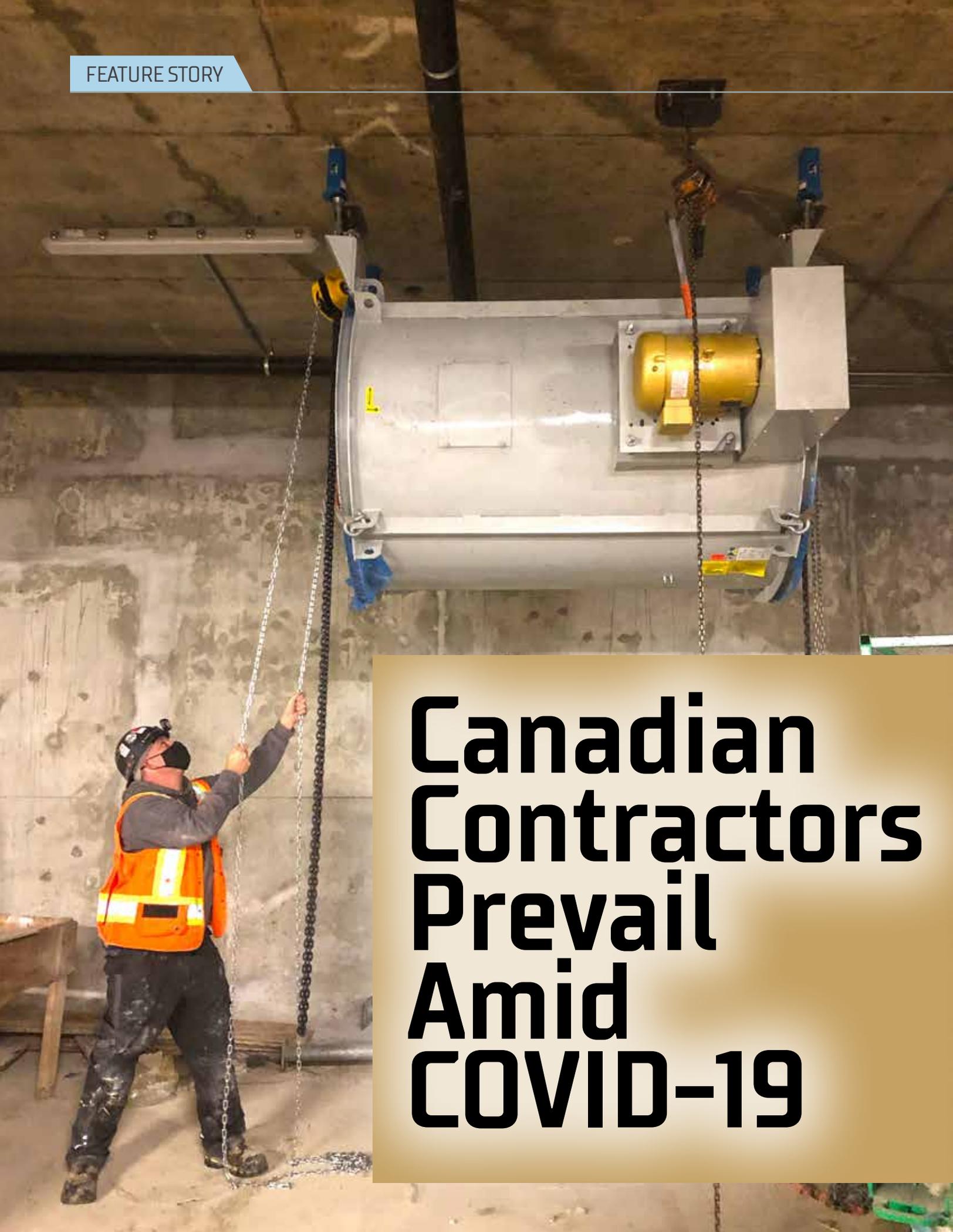


INTERNATIONAL TEST AND BALANCE
inttb.com

NORPAC SHEET METAL
norpacsheetmetal.com

ALBERS MECHANICAL
albersmechanicalcontractors.com

TAYLOR ENGINEERS
taylorengineers.com/taylor-engineering-covid-19-whitepaper



Canadian Contractors Prevail Amid COVID-19



Summit Sheet Metal workers install ductwork onsite. Demand for ventilation systems has increased for the contractor in the wake of COVID-19.

Just as the global pandemic has caused massive disruptions in daily life and the economy of the United States, COVID-19 hasn't spared our neighbors to the north, either.

As of the middle of December, official government statistics put the total number of coronavirus cases in 2020 at nearly 470,000 across Canada. The total number of deaths attributed to the virus was approaching 14,000 as the year drew to a close. The economic turbulence included an 11 percent decline in the country's real gross domestic product for the month of April, the early days of the crisis.

How are Canadian sheet metal and HVAC contractors handling the COVID-19 fallout? We checked in with SMACNA members from across the country to talk about some of the key issues that have emerged in the industry this year. We also discussed what they will be monitoring in the months ahead.

EARLY DAYS

The World Health Organization on March 11 declared COVID-19 a global pandemic. The Canadian government reacted quickly by implementing mitigating measures across the country. Not surprisingly, some contractors report that the market for their services dried up almost immediately in the short run.

Danny Dillon, president and CEO of Ottawa-based sheet metal and HVAC company DILFO Mechanical, notes that contractors in his company's area had no choice but to put a halt to their operations at the time.

"When COVID first hit in March, everyone slowed down or stopped at most sites due to either federal or provincial government requests," Dillon says. "The city was actually shut down."

The Canadian government enacted relief programs for workers affected by the pandemic that were generally more robust and simpler to access than what was available in the U.S. Contractors say the government benefits helped their workforces get through the early stages. Importantly, the Canadian Economic Recovery Benefit (CERB) program allowed citizens to apply for a \$2,000 payment to cover a four-week period. The payments were deposited directly in the bank accounts of workers within a matter of days after submitting their applications.

The CERB was available to workers as young as 15 years old who saw their employment status impacted by COVID-19. Phil McDonald, a project manager at Summit Sheet Metal Ltd., notes that the CERB enabled his company to maintain payments to employees while temporarily dropping the number of its on-site employees from 60 to 24.

Other measures included expanding employment insurance, providing rent subsidies and offering income support for workers who became sick or forced to self-isolate due to COVID-19. In a move to avoid layoffs and encourage rehiring, Canadian businesses could apply for wage subsidies.

BACK IN BUSINESS

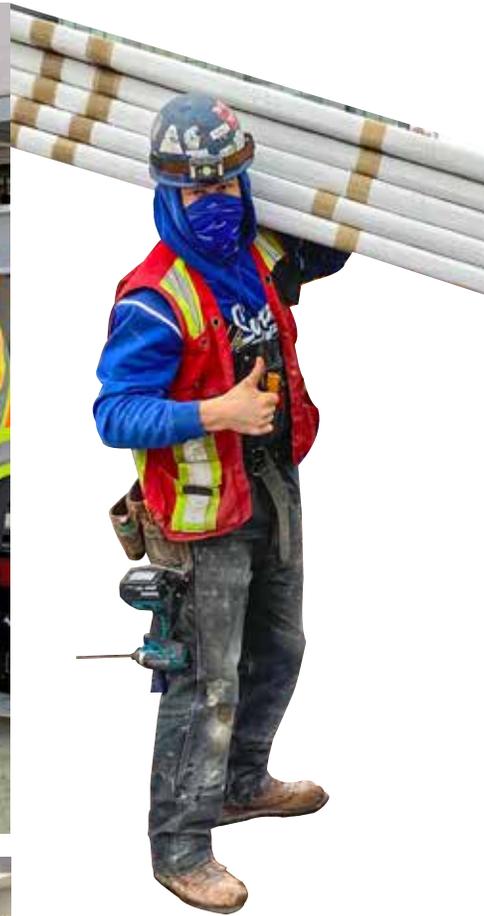
The idle work sites around the country didn't last for long. Within weeks, the Canadian government issued guidance on services "considered essential to preserving life, health and basic societal functioning" in the country. Once construction was deemed essential, business picked up in the contracting sector just as quickly as it slowed down.

In fact, overall demand this year for Summit's services has been "absolutely insane," said McDonald. Operating out of British Columbia, Summit specializes in installing ventilation systems in residential towers.

"We were expecting a lot of customers to drop out, but that was not the case," McDonald says. "It is busier now for us than it was before COVID hit."

Ryan Warner of Duncan's Limited, a mechanical contracting and custom metal company operating in the Yukon Territory, speculates that customers' extra time around the house in isolation from the virus actually gave the company a boost. He says Duncan's has experienced a dramatic spike in demand for fabrication orders from homeowners. These include custom build projects such as backyard fire pits or artistic metal cutouts.

"The uptick in people starting home renovations while they were at home or on lockdown increased that side of our business," Warner observes.



DILFO sheet metal workers install a medium pressure duct main for the office headquarters of a new high-tech company in Ottawa, Ont.

SAFETY MEASURES IN EFFECT

Of course, Canadian contractors have found themselves operating in a vastly different environment this year.

Concerns for keeping workers safe popped up immediately across Canada once contractors got back to work. “We spent a lot of our time trying to do as much research as possible and come out with some company-wide protocols,” McDonald says.

At Alberta-based Crosstown Heating & Ventilating (Calgary) Ltd., for instance, safety advisor Tarah McLean began developing rigorous standards and policies for both job sites and the company’s in-house sheet metal fabrication facility. “From the beginning, we have taken a very aggressive approach with regard to Crosstown’s day-to-day operations,” she notes.



Duncan Limited in Canada’s Yukon Territory installed plexiglass safety shields throughout its facilities to help combat the spread of COVID-19.

When possible, some contractors are dividing their workers into multiple crews. That creates more space on job sites. Moreover, it allows for some redundancy in case members of one team are exposed to the virus.

“We split shifts with our crew so that we were open seven days a week, instead of five, but only at half capacity in the shop,” Warner says.

Some of the common issues that emerged for all contractors included screening for COVID-19 symptoms, ensuring adequate distancing for workers and handling exposures to the virus on job sites. Contractors also began snapping up personal protective equipment to be used in the field.

McLean worked in consultation with local labor leaders

and healthcare experts to come up with in-depth checklists and guidance to ensure that the company maintained COVID-free job sites. Laborers undergo temperature checks when they show up for work, for instance. “We’re on a really strict hygienic protocol in our shop and office, and everybody’s on board with it,” McLean says.

At DILFO, workers have to complete questionnaires about their health status before they can access some job sites. Additionally, Dillon says they are required to wear face masks throughout the entire day and maintain a distance of two meters, or roughly six feet, from one another. Work sites have set up guidelines for foot traffic, too, to prevent people from becoming bottled up together in areas such as stairwells and elevators.



ON THE HORIZON

Despite the challenges created by COVID-19, sheet metal and HVAC contractors in Canada generally seem optimistic about what is to come in 2021. For starters, Canada appears to be bouncing back from the effects of the pandemic more quickly than the United States. Economic activity in the second half of 2020 has come back stronger north of the border, bolstered in part by better containment of the spread of the coronavirus.

Additionally, governments at all levels in Canada are emphasizing infrastructure investment to help bolster the economy. One federal initiative that was already in place prior to COVID-19 is the Investing in Canada Infrastructure Program, a \$33 billion program focused on areas such as public transit and developing infrastructure in rural communities.

Dillon believes the changes forced by COVID-19 will have some lasting impacts on the sector in areas such as workplace safety. "I really think that some positives are coming out of this pandemic," he says. For example, best practices for hygiene on job sites will likely tighten, according to Dillon. He also points out that communication and coordination have improved and shifted more focus to prefabrication: "Unorganized work doesn't work very well when you're in a pandemic."

Bernie Antchak, principal with Northwest Sheet Metal Ltd., describes his outlook for the upcoming year as a "mixed bag." He points out that the ongoing rollout of a vaccine for COVID-19 is lifting some spirits around the sector. Northwest Sheet Metal specializes in healthcare facilities, so Antchak feels confident work will remain steady for the company in the year to come.

"From a business perspective, you just got to hold fast and steer the ship," says Antchak says.

But as the world starts to emerge from COVID-19's shadow, Warner says Duncan's plans to focus on the mental health of its employees. Recently, the company entered into an agreement with a counseling service to provide mental health assistance to employees and their immediate family members.

"We're going to need support for all of our workers and all of their families because this is something nobody's ever experienced," Warner says. "Everyone can feel the financial burden and the burden of just dealing with such a high-stress situation." ▼



DILFO MECHANICAL [ON]
dilfo.com

SUMMIT SHEET METAL [BC]
summitsheetmetal.ca

DUNCAN'S LIMITED [YK]
duncansltd.ca

CROSTOWN HEATING & VENTILATING [CALGARY] LTD [AB]
crosstown-heating.com

NORTHWEST SHEET METAL LTD [BC]
northwestsheetmetal.ca

Air Quality's Effect on Spreading COVID-19



Jeffrey Siegel is an engineering professor at the University of Toronto who studies ventilation and indoor air quality in commercial and residential buildings. He spoke with SMACNA about how focusing on air quality can help tamp down the spread of COVID-19.

SMACNA: Is there a link between indoor air quality and COVID-19?

Jeffrey Siegel: In many cases, we're breathing in the SARS-CoV-2 virus, or otherwise coming in contact with it in the indoor environment. But it's not like other things that we're exposed to, in that a lot of what we worry about with indoor air are chronic health impacts.

SMACNA: What does that mean for fighting the spread of the SARS-CoV-2?

JS: There is a hierarchy of strategies we use to improve indoor air. We start with source control taking the virus out of the indoor space. Masks are a good example of how we use source control with SARS-CoV-2.

Once you've done everything you can with source control, usually you move next to ventilation. Based on everything we know from similar respiratory diseases, poor ventilation is an important risk factor.

Adding ventilation is always helpful, but adequate ventilation isn't a solution by itself.

SMACNA: What are the next steps in mitigating risks?

JS: Next, we move to air cleaning and filtration, which is very building specific. Maybe there's an air system of some kind, so we can install better filters. If not, we might look at something like portable filtration.

Filtration is very much like ventilation because it has to be done well. We have to make sure that that the air filter is installed

properly. There has to be enough air going through it to make a difference. You also need to keep up with the filter maintenance; otherwise, it can actually be counterproductive. Every building, every context, is going to have a different set of factors that determine how well the filter works.

Lastly, there's ultraviolet light, which has been shown to work on related microorganisms. Most people aren't willing to invest what it takes to do UV well, so it's usually not at the forefront of solutions that I recommend. But it should be in the mix, certainly.

It's through this kind of layered approach of many solutions that we actually reduce the risk of spreading SARS-CoV-2

SMACNA: Are there longer-term benefits to making these investments now?

JS: Indoor air was important before this pandemic, and it will be important after this is gone. So why not invest in indoor air? The best thing that could happen is you reduce your transmission risk. The worst is that you improve indoor air. At the end of the day, you're going to be left with a better building with better indoor air and all the benefits that accrue from that. ▼

Editor's Note: COVID-19 is a contagious respiratory illness caused by infection with a new coronavirus (called SARS-CoV-2), the virus that causes COVID-19. Source: CDC



LEADERSHIP

Ron Magnus

The Hard Work: Start with Culture

In our last column, we talked about the harder work of leadership. All aspects of leading a team or organization are tough. Particularly during this difficult time, our full attention might be drawn to the urgent and immediate. We have seen that many leaders in our industry are strong at the tactical side of leading and have a great nose for finding opportunity. That's one side of the leadership coin.

For many of us, the flip side of that same coin may not come as easily: leading from a genuine strategy, for example, or increasing employee engagement. That's what is meant by the harder work.



We identified four cornerstones of enterprise-level leadership that, if not intentionally addressed by the senior leaders, will likely not happen on their own: creating culture, managing talented people, relentlessly focusing on vision, and stewarding the reputation of the organization.

Let's delve a little deeper into each one over the next several issues, starting with culture. As we said last time, the most basic definition of culture is "the way we do things around here." It is about the formal and informal and spoken and unspoken rules of work at your company.

A senior leader, particularly an owner, cannot discern culture single-handedly. You're the boss, people behave differently around you. It's just a fact of life. You'll need people throughout the organization who will give you honest feedback, without fear of consequence.

Culture tends to calcify. Rules that once made sense, may now get in the way. So cultural change is not an event; rather it requires constant attention. Your organiza-

tion is unique. While you may admire aspects of another company's culture, that may not fit with what yours is right now. Think of how many companies thought ping pong tables and free pizza were the key to unlocking the millennial workforce, just because that was what we heard coming out of Silicon Valley.

In his book *Great Mondays*, Josh Levine identifies the building blocks of workplace culture.

- 1. Purpose:** The motivating force that both inspires and guides (also called vision)
 - 2. Values:** Guardrails that establish behavioral expectations for everyone in the organization
 - 3. Behaviors:** The culturally aligned actions in the work culture
 - 4. Recognition:** How the organization supports and incentivizes values-aligned behaviors
 - 5. Rituals:** The activities that create and strengthen relational connections
 - 6. Cues:** Built-in reminders that keep everyone connected to the organization's future
- Let me illustrate just one of these building blocks: recognition.

While consulting with hundreds of companies in our industry, we often ask people in our initial interviews, "What does it take to get promoted around here?" and "What does it take to get fired around here?" It's interesting to note how much emotional energy those two simple questions can generate.

Stories emerge, often ones that reveal hurt and resentment. When problem employees are allowed to continue in their bad behavior, when family members receive preferential treatment, or when compensation seems to be inequitable — all of these are factors combine to make up a company's culture. People might not always quit over them, the over impact on employee engagement is ultimately negative. Your culture determines who wants to work for you, who wants to stay, and who needs to leave.

This is why creating and maintaining a healthy culture is a primary responsibility of leaders. Creating the environment where your people can thrive, where people want to go the extra mile, where underperformers self-select out — that's something worth paying attention to. ▼

Ron Magnus, managing director of FMI's Center for Strategic Leadership, with Ed Rowell, CSL consultant.



FINANCIAL STEWARDSHIP

Ronald J. Eagar

Cash Flow Forecasting: A Powerful Tool in Your COVID-19 Recovery

The COVID-19 pandemic brought with it a wave of changes to the construction industry — some temporary, some permanent. The 2020 job site shutdowns had wide-ranging effects on construction contractors' financial positions.

While the long-term outlook is uncertain, there were some interesting immediate observations.

Some contractors found themselves unexpectedly in a stronger-than-usual cash position, as requisitions for pre-shutdown months — and even some lingering from 2019 — were collected in the normal course of operations. Since there was little to no work in place on shuttered jobs, the normal cash outflow of building costs was temporarily slowed. Add the influx of cash from Paycheck Protection Program (PPP) loans, and some contractors felt like they escaped the crisis relatively unscathed.

As wonderful as this scenario sounds, it was temporary. The next wave of cash collections started to stall as there were very few requisitions submitted during the COVID shutdown period when little was being done outside of essential construction. Everyday overhead costs (rent, utilities, office salaries, etc.) continued, including the drain of seemingly never-ending increases in insurance costs and normal debt service payments.

When job sites remobilized, there were increased cash outlays; in addition to the normal costs of running a construction project (labor, related benefits, materials, and other job costs), there were also heavy investments in expanded hygiene training, PPE, and enhanced cleanliness and virus screening protocols. Compounded by reduced productivity on jobs due to social distancing and staggered or reduced shifts, these changes inevitably constrained cash flow and impacted financial results.

Given that the pandemic has impacted every construction company differently, and each job has its own unique ecosystem, profit and loss and cash flow cycle, a one-size-fits-all approach to cash management is unrealistic. However, there are financial management tools every construction company can use to customize their financial plans in 2021 and beyond.

One of the most important tools for a construction company to employ, regardless of the times, is a cash flow forecast. Done properly, and both on a job-by-job and company-wide basis, this forecast will aid the construction company's finan-

cial professionals in identifying where there could be cash shortfalls (and surpluses) throughout the lifecycle of each project, as well as in the company as a whole. This proactive tool also allows for adequate time to remediate issues and mitigate negative effects before it is too late and the contractor finds themselves in the cash flow downward spiral of no return. The savvy construction financial professional can see the power of cash flow forecasting in times like these.

But the cash flow forecast will be only as good as the amount of teamwork that goes into it. This must be a coordinated effort with the project teams on each job, which knows the timeframes within which various aspects of a project will be performed. The project team can also provide much-needed insights into anticipated cash outflows throughout the timeline, estimated costs of activities yet to be performed, and an expectation of when the remaining progress billings will be submitted and trigger cash inflows.

Armed with that intelligence, the financial team, including your CPA, can rely on actual project data and the company's historical performance to develop cash flow projections and make recommendations based on possible deterioration of available work, reduced growth, reduced overhead, and/or the potential need for additional capital infusion.

While this can be a large initiative to undertake at any time, especially during a pandemic, cash flow forecasting is a critical task. The results yield key financial information that management needs to make confident decisions about the future of the business and maneuver around potentially devastating pitfalls.

Best practices recommend cash flow forecasts that take a six- to 18-month rolling lookout. In light of ongoing volatility, consider a rolling eight- to 24-week model that is constantly monitored and updated. Remember, this is a forecast based on assumptions and information available to you at a specific point in time. A forecast should be regularly updated as information and assumptions change.

By all indications, at the initial onset of reopening and changing job sites, there seemed to be little immediate negative impact to the construction industry. But as backlogs are burned off and the future of capital programs across agencies remains uncertain, financial positions

continued on page 21



TECHNOLOGY

Eric Tucker

Construction Tech Trends: 2020 Year in Review and Predictions for 2021

Here is a short look at the most important tech trends that came out of this volatile year and will continue to impact SMACNA contractors.

CLOUD IS NOW STANDARD

In the past, solutions necessary for managing the complexity involved in the sheet metal and AC business simply did not exist in a modern tech stack. Most of you grew up on desktop or server-based ERP systems, Nextel phones, and Excel spreadsheets — because that was all that was available.

Two factors have driven cloud adoption this year. The first is necessity. In March and April of 2020, we were forced to leave our job sites and offices overnight, and work needed to come with us. Installed software, just like whiteboards and file cabinets, does not travel well. Cloud solutions won.

The second factor, and necessary for wide-scale cloud adoption, was volume and availability of cloud-based solutions. Every operation can now be optimized with cloud solutions and mobile apps — from bid to fabrication to maintenance — is impressive.

Here are just a few:

- **Document storage:** Egnyte and Dropbox
- **Labor resource planning:** LaborChart
- **Service and maintenance:** ServiceTrade, BuildOps
- **Tool tracking:** Milwaukee One-Key and ToolWatch
- **Estimating and takeoff:** Esticom, Stack, Accubid Anywhere
- **HR:** Arcoro
- **ERP:** Sage Intacct, Acumatica

FABRICATION MANAGEMENT SOFTWARE

Running an effective shop operation is an effort that involves logistics, skilled teams, and pure innovation. Firms that get it right are doing better for their customers, their employees, and their margins. As of 2020, modern software solutions are here to stay to enable this critical function.

MSuite, GTP Stratus, and Manufacton have been first to market and are gaining popularity among fabricating contractors. They are solving for spooling, labor tracking,

delivery coordination, and even change management. With the growth of prefab, these solutions should be expected to expand their feature sets and more tightly integrate to serve other components of the operation, like project management and estimation.

UNPRECEDENTED DATA AND INSIGHTS

At the contractor level, the use of cloud solutions has allowed leaders to look across productivity data, project management information, and financial info at the click of a button. This has been particularly critical with distributed teams to keep entire organizations aware of the realities of the field.

The New Horizons Foundation and ELECTRI also launched their productivity research project this year by deploying a mobile application to participating contractors. The resulting data taught us about true impacts of COVID restrictions and how to mitigate against them. On the software side, Smartvid.io, Procore, and other software companies also publish aggregated data to the industry on safety and headcount fluctuations. As an industry, we saw the power of collaboration drive meaningful discussions during stressful periods of lockdown orders.

ENTER 2021

For most of 2021, we will still be in a COVID world. Your people will need every edge they can get to keep you profitable. Here are a few areas where you can expect innovation in the new year.

ALTERNATIVE USER INTERFACES

When we think of software applications, we typically think of screens. In the pursuit of keeping teams focused on what they do best, navigating an app is often too slow.

Take Nyfty.ai, which allows users to run complex functions by giving voice commands. It also allows field teams to take health surveys via text message. This means project leaders can enable COVID-compliant crews without requiring apps installed on worker devices.

Smartbarrel has developed a sophisticated labor management solution. However, the interface they built for the field is a simple grey box that sits on site with a small light

and a camera. On the back end, the system verifies a worker's identity, confirms if they had proper PPE, and punches their timecard all in a matter of seconds.

SOFTWARE ENABLED PROCUREMENT

Procurement involves communication between the field, supplier, accounts payable and purchasing, and PMs. Meanwhile, project management systems, ERPs and supplier tech stacks all have to be maintained with consistent order statuses, invoices, and proper PO tracking. This is still widely accomplished in excel and manual entry. Several technology solutions are poised to revolutionize this process, from spec through delivery — opening up new areas for savings and efficiency in your supply chain.

ALL DEPARTMENTS CONNECTED THROUGH SOFTWARE

Many of the 2020 cloud solutions mentioned above already integrate with one another. The number of connections and depth of integrations are increasing across the construction cloud ecosystem. This means different departments will be able to have the same information, allowing for trust, agility, and performance across operations.

Meanwhile, leaders will be able to enjoy insights from data aggregated across their systems. To capture this value, firms must continue to make technology a key pillar of their strategy in 2021. ▼

Eric Tucker leads technology partnerships for specialty contractors at Procore. He can be reached at eric.tucker@procore.com.

FINANCIAL STEWARDSHIP

continued from page 19

could change quickly and drastically. Arm yourself with the knowledge of potential company-wide effects and the confidence of long-term planning, and you will be prepared to face whatever the immediate and long-term future holds.

Ronald J. Eagar, CPA, CCIFF is a construction partner and COO at Grassi. Ron can be reached at reagar@grassicpas.com.

Carl Oliveri, CPA, CCIFF, CFE, M.B.A., is the construction practice leader at Grassi. Carl can be reached at coliveri@grassicpas.com.

SMACNA 2020 Associate Members

PLATINUM



GOLD

SMACNA welcomes new Gold Associate Member
Hilti of Plano, Texas



SILVER



SMACNA's Associate Member program provides an opportunity for industry suppliers to build long-lasting relationships with SMACNA members, the industry's premier contractors.
To learn more about becoming an Associate Member, visit smacna.org or contact Scott Groves at smacna@naylor.com.



PRESORTED
STANDARD
U.S. POSTAGE
PAID
PERMIT NO. 356
YORK, PA

SMACNA National Headquarters

P.O. Box 221230, Chantilly, VA 20153-1230
703.803.2980 | Fax 703.803.3732

Capitol Hill Office

305 4th Street, NE, Washington, DC 20002
202.547.8202 | Fax 202.547.8810



SMACNA CALENDAR

FEBRUARY 2021

Feb 21-25
Business Management University
Tempe, AZ

Feb 26-27
College of Fellows Meeting
Tampa, FL

MARCH 2021

Mar 11-12
Association Leadership Meeting
Las Colinas, TX

Mar 30-31
Collective Bargaining Orientation
Dallas, TX

APRIL 2021

Apr 18-20
Planning Your Exit and Business
Valuation Program
San Diego, CA

Apr 25-28
Project Managers Institute
Raleigh, NC

MAY 2021

May 16-19
Financial Boot Camp
Tempe, AZ

OCTOBER 2021

Oct 24-27
2021 SMACNA Annual Convention
Maui, HI

DECEMBER 2021

Dec 05-07
Council of Chapter Representatives
Dana Point, CA

FUTURE SMACNA CONVENTIONS

Sep 11-14, 2022
2022 SMACNA Annual Convention
Colorado Springs, CO

Oct 15-18, 2023
2023 SMACNA Annual Convention
Phoenix, AZ

Events and dates subject to change.

Welcome New SMACNA Members

Air Balance Co., Inc.	Corvina, Calif.
Best Clima Engenharia e Instalacoes Ltda	Sao Paulo, Brazil
Eastern Syntech Co., Ltd.	Samut Prakarn, Thailand
Harder Mechanical	Portland, Ore.
Newset Tecnologia em Climatizacao Ltda	Sao Paulo, Brazil
Thermal Air Conditioning, Inc.	Pasadena, Calif.

SMAC^{NEWS} is published bimonthly by the Sheet Metal and Air Conditioning Contractors' National Association for its national, international and associate members.

Executive Editor: Jeff Henriksen
Managing Editor: Mary Barnes
Creative Specialist: Denise J. Ladd

www.smacna.org

2020 Premier Partners

