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British Columbia

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IN THE CLASSROOM

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BRITISH COLUMBIA SMACNA CHAPTER

Official Journal of
Record for SMACNA-BC

BRITISH COLUMBIA SMACNA CHAPTER

PROMOTING GROWTH AND STABILITY IN OUR INDUSTRY

Formed in 1969, the British Columbia Sheet Metal Association (SMACNA-BC) was the first international chapter of the Sheet Metal & Air-conditioning Contractors National Association (SMACNA). Founded in 1934, SMACNA traces its history to the National Association of Sheet Metal Contractors established in 1910, and has 2,300 members worldwide.

SMACNA-BC is a member-driven association representing unionized sheet metal contractors in the Mainland of BC, and suppliers to our industry. It promotes the growth and stability of the members and industry.

OUR MANDATE

- To improve the financial stability and business conditions of the sheet metal industry, and to develop and promote methods to improve managerial proficiency
- To improve quality, efficiency and productivity of this industry, and to implement high standards of work
- To establish and maintain high ethical standards of conduct between members of the Association, and between members and owners, architects, engineers, other contractors, and the public
- To study and help in the development and enforcement of governmental codes and regulations, and such legislation as may be necessary for the best interest of the public and the sheet metal industry
- To promote harmony in labour relations
- To exchange technical, professional, and educational information with other contractor associations in the sheet metal industry and its allied trades in Canada and other countries
- To affiliate as a Chapter with the Sheet Metal & Air-conditioning Contractors National Association, Inc.

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GROWTH IN 2017

by / Jessica Kirby, Editor

The Conference Board of Canada's latest outlook for the construction industry reports residential construction activity in Canada is poised to see a modest decrease in 2017 as the number of housing starts is expected to decline. Non-residential, however, is expected to return to growth in 2017, thanks to government infrastructure spending.

"Not only is the residential construction industry seeing a downturn in housing starts, spending on home renovations is now showing signs of weakness, too," said Michael Burt, Director, Industrial Trends, The Conference Board of Canada. "In all, we expect price-adjusted spending growth in the residential construction industry to average less than one per cent per year through 2020.

"Meanwhile, non-residential construction is positioned for a turnaround this year, led by growth in the institutional segment and increased investment in warehouses and hotels."

A slowdown in apartment and row house construction will lead the 0.2 per cent decline in residential construction output in 2017. According to a news report from Conference Board of Canada, pre-tax profits are forecast to grow this year to reach $4.2 billion, despite the residential slow down.

"Non-residential construction output is forecast to expand by 3.7 per cent this year, led by growth in the institutional segment," says the report. "The institutional segment was the only area of growth for the industry in 2016, and government stimulus spending will help the institutional segment grow by 6.8 per cent this year.

"Beyond 2017, however, the institutional segment will provide a smaller boost to the industry, as government stimulus spending is projected to unwind."

The Conference Board of Canada says trends in online shopping are shaping the commercial horizon and prompting the demand for warehouse-style construction projects.

"Ontario has seen an average annual rise in investment in transportation and warehousing of around 11 per cent in 2015 and 2016, and investment intentions point to another strong year in 2017, with growth of 20 per cent expected," says the report. As an industry, construction is expected to boost profits by a small margin over the next half-decade; pre-tax profits should reach $2.2 billion in 2017 and increase by about four per cent between 2018 and 2021.

In sheet metal, earlier discussions suggested a steady, level year and so far so good. The Sheet Metal Workers' Training Centre is working toward an ambitious goal to build on the heavy instructional load in 2016, running its afternoon shifts to accommodate triple classes, a full slate of Continuing Education, and contest and promotional programs.

Moving forward the SMWTC will be offering an instructor training class June 17 and 24, comprising 16 hours of basic instruction about what it takes to be an instructor. According to the SMWTC, the course is for members actively interested in becoming an instructor, or simply curious to see what the job entails.

The growing demands of the industry coupled with generational retirements are sure to provide opportunities for advancement in the future, and SMWTC wants to be ahead of the game. For more information, visit SMWTC at http://www.smwtcs.ca and in the meantime, check out page 10 to see what the Centre's apprentices have been up to. ▪

BLAST FROM THE PAST

This gem was taken on an Apollo fishing trip, Samson Fishing Lodge, Naden Harbour, Haida Gwaii in 1991. These lucky folks enjoyed salmon, halibut, and brews, not to mention a wild weekend of memories.

Photo couresty of Bruce Sychuk, SMACNA-BC.

SPRING IS AROUND THE CORNER

by / Bruce Sychuk

Today's submission to the *Sheet Metal Journal*, SMACNA-BC edition, is being written on March 30, 2017, which on the "wet" coast of British Columbia is a very significant day—it stopped raining! For those who reside here in British Columbia and the Pacific Northwest (because as we are all aware the weather doesn't stop at the border even though the local TV weather report maps do seem to say it does) we are all waiting to embrace our share of vitamin D and get on with it.

Enough of the weather forecast—on with the task at hand.

At the request of a SMACNA-BC Contractor Member, I have been asked to re-publish an article that ran in a 1994 SMACNA-BC newsletter. I'm sure you will concur, it is still relevant in 2017.

BUSINESS 101:
It's a Dog – Eat – Dog World

But remember:
He who lies down with the dogs
will rise up with the fleas.

From an article in the Edmonton Association of Sheet Metal & Air Conditioning Contractors' newsletter, May, 1994

You must be in business to make a profit. If you're thinking there's some reason other than profit, get out of the business without further ado. Go into social work, become a missionary, or go to work for someone who is in the business to make a profit.

Profits are good, even obscene profits, if honestly made. You can do more good deeds in this world with profits than with losses.

People in the contracting business who are content with day labour wages, or less, are the scum of the contracting business. They should be put out of their business misery if they refuse to learn and change.

What's more, wholesalers who provide a life support system (stupidly extending credit terms) for Bozo contractors who are operating at a subsistence level are compounding the problem.

There's a fine line in wholesaling between supporting a struggling new business that deserves the wholesaler's credit and encouragement, and supporting a tinker jackleg who wouldn't know good work or proper pricing if it kicked him in the posterior.

Some subsidized, subsistence level contractors have managed to become quite sizeable. There are situations where the failure of such a Mega Bozo has ruined a wholesaler.

Of course, it's absolutely against the law for business-minded contractors to come together to take group action of any kind that will harm someone's business. Don't do it now or ever. However, it's not illegal for you to stop doing business with the wholesalers whose actions you believe harm your business.

The granting of undeserved, excessive credit to Mega Bozos is harmful. The only way to put these poor business people out of their misery is to let them get their low bids.

A bid-shopping general who gives you a peek at the low bid does so because he figures the low bidder won't survive the job. He's trying to suck in a more stable contractor, like you, to meet the stupid price. Do you really have that little self-respect?

Make copies of this article and post one on your office wall and one on your mirror. Send a copy to your favourite wholesaler,

UPCOMING SMACNA-BC EVENTS

Thursday, May 11–Sunday, May 14, 2017
SMACNA-BC 48th Annual Convention
Westin Resort & Spa Whistler, Whistler, BC

Friday, September 15, 2017
SMACNA-BC Golf Classic
Northview GC, Surrey, BC

Sunday, October 22–Wednesday, October 25, 2017
SMACNA National Convention, Maui, HI

November 24, 2017
SMACNA-BC Annual Christmas Party
Pan Pacific Hotel
Vancouver, BC

BRITISH COLUMBIA SMACNA CHAPTER

British Columbia Sheet Metal Association (SMACNA-BC)

Providing products and information related to the Sheet Metal Industry, including technical manuals and guidelines.

The unmatched technical and managerial expertise of SMACNA-BC Contractors is enhanced by the talent and skills of the workforce they employ. SMACNA-BC Contractors employ only Red Seal Certified Sheet Metal Journeymen and Registered Apprentices.

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and give one to every general who wants to give you a peek at the price of your competitor who is "in the chute".

For those of you who have never worked around a slaughterhouse, the chute is the last structure the animal passes through before its awful final surprise.

Become Profit-Minded

In your spare time, hang out with people who are profit-minded, and hope their talent is contagious. If you're not in a trade association, join one, and insist that the programs be quality and profit oriented. ▪

Who Wants to Get into the Sheet Metal Trade?

Do you know of anyone who is good with their hands, mechanically inclined, and would like to be paid while learning a trade? SMACNA-BC Contractors and Sheet Metal Workers Local Union No. 280 are always open to candidates interested in an apprenticeship and becoming a Red Seal Sheet Metal Journeyman.

Not sure if the sheet metal trade is for you? You can always apply for a pre-apprentice position. This position provides real-life work experience without the commitment of signing up to be an apprentice. In other words, if you like the trade you can invest in your future and become an apprentice; if you find out this trade is not your cup of tea, you can opt out at anytime.

Current pre-apprentice wages are $15.18 per hour, plus eight per cent holiday pay and BC Medical.

For more information on apprenticeship or pre-apprenticeship, visit the Sheet Metal Workers Training Centre Society website at http://www.smwtcs.ca/, phone 604-882-7680, or email SMWTCS's Training Co-ordinator Jud Martell at judmartell@smwtcs.ca.

Why pay to learn when you can be paid while learning a lifelong career? ▪

Paquette Named as New GVP

On the recommendation of General President Joseph Sellers, Jr., the General Executive Committee has confirmed the appointment of James Paquette, Business Manager / Financial Secretary Treasurer of Sheet Metal Workers Local Union No. 280 in Vancouver, British Columbia, as the 11th General Vice-President. Paquette is taking over for former 3rd General Vice-President Mark Curtis of Sheet Metal Workers Local Union No. 276 in Victoria, British Columbia, who became International Representative of both BC Locals in July 2016.

SMACNA-BC offers its sincere congratulations on this very prestigious appointment. ▪

STILL TIME: SIGN UP FOR FINANCIAL BOOT CAMP, MAY 21-24

At SMACNA's Financial Boot Camp, May 21-24, in Tempe, Ariz., owners, future owners, and managers will learn real-world financial management techniques from one of the industry's finest financial minds.

This program is also for individuals who are considered "non-financial personnel" to increase their knowledge, skills, and abilities to have the best understanding of the firm's financial situations to make better decisions.

When you "enlist" in this Financial Boot Camp, you will march through the paces and participate in drills based on real-world exercises. You will have the option to evaluate your organization's financial conditions using your own financial statements.

You will learn how to interpret financial statements, work with credit, develop cash flow projections, understand equipment acquisition, and use financial information for strategic planning and risk assessment.

One of the industry's most popular speakers, financial expert John Murdough, CPA, MBA, and Partner at Henry & Horne LLP, presents an easy-to-understand approach to accounting and financial issues for contracting and construction firms. He is a nationally recognized instructor and workshop leader who combines in-depth construction industry experience with a rare gift for teaching. In Mr. Murdough's consulting and accounting practice, he is a key element in the success of many contractors of all types and sizes, using his insight and experience in a variety of business and financial areas.

Register for Financial Boot Camp on SMACNA's National Education webpage.

Additional participants from the same company will receive a discount for the registration fee. For more information, contact Bridgette Bienacker, SMACNA's director of business management and membership, bbienacker@smacna.org. ▪

2017 SMACNA NATIONAL CONVENTION REGISTRATION NOW OPEN

The 2017 Annual Convention will be held October 22-25, 2017 at the Grand Wailea in Maui, Hawaii. Join contractors from around North America to network and engage in an exciting program covering HVAC, Architectural, Business Management, Industrial, Technology, and more. Visit SMACNA online at https://www.smacna.org/annualconvention/ for more information. ▪

NATIONAL YOUTH EMPLOYMENT CONFERENCE YOUTH + JOBS = BETTER FUTURE

Building on regional workshops held earlier in the year, CAF-FCA is inviting youth from across Canada to participate in a discussion about youth unemployment and learn about the excellent opportunities in the skilled trades. We will host a National Conference on Youth Employment on November 9, 2017 in Ottawa.

Youth are invited to share their ideas and strategies for overcoming youth unemployment and/or engaging young people in the skilled trades. Twenty youth from across the country will be invited to the National Capital (travel and accommodation provided) to participate in the conference.

Learn more at caf-fca.org/. ▪

NEW RESEARCH: GREEN BUILDINGS CONTRIBUTE TO A MORE PRODUCTIVE WORKFORCE

New ground-breaking research reveals that green buildings do more than reduce energy and increase real-estate value; they also have positive impacts on the employees working in them. The findings are the result of collaboration between the National Research Council of Canada (NRC) and the Royal Bank of Canada (RBC).

RBC and the NRC determined the human resources benefits of building green by analyzing anonymous data on more than 40,000 RBC employees against information on more than 70 RBC office buildings. The results show that overall, green buildings have statistically higher employee job satisfaction, higher employee engagement and organizational commitment, and higher management-assessed performance.

"Organizations inhabiting or owning buildings that are looking to meet green certification standards, such as LEED (Leadership in Energy and Environmental Design), usually use the environmental impact and energy cost savings benefits

to make the case for certification," said Richard Tremblay, general manager of the NRC's Construction portfolio. "Now, the NRC and RBC have developed objective methods to support the case that green buildings enhance job satisfaction and enhance indicators related to productivity as well."

This project is one of many ways the NRC is working towards a cleaner, greener future for Canadians through innovation. The NRC was uniquely placed for this collaboration not only because of its technical knowledge of high performance buildings, but also because it provided impartial analysis of more than 120 million records from RBC.

"We are delighted to have partnered with the NRC on this ground-breaking study," said Robert Carlyle, RBC's senior director of strategic workforce management. "We look forward to uncovering new insights with the NRC to assist in developing physical spaces that help keep employees engaged." ▪

CAMOSUN COLLEGE RECEIVES $1M DONATION FOR WOMEN IN TRADES

The Gwyn Morgan and Patricia Trottier Foundation donated $1 million to Camosun College to support women in trades, marking the institution's largest private donation in history.

Camonsun's Empowering Women in Trades Program has raised $7.5 million in total and will support women seeking to complete Red Seal certifications in a number of trades including sheet metal, mechanics, welding, and other construction sectors.

Donors hope the program will be life-changing for recipients who may otherwise struggle with financial burdens, transportation, childcare, and daily living expenses.

The details of the program are still under wraps but applications will open over the summer and classes will launch in September.

During the 2015-16 school year, nine per cent of Camosun's trades students were women—a five per cent increase over five years prior.

For more information please visit Camosun College at www.camosun.ca. ▪

SPECIALTY TRADES DRIVE US CONSTRUCTION JOB GROWTH

36,400 New Jobs in Specialty Construction in February

The Bureau of Labor Statistics released its February jobs report, posting another month of growth in construction

employment. Of the 235,000 jobs created in February, 25 per cent were in the construction industry. The specialty construction trades drove the increase in construction employment, accounting for over 62 per cent of the job growth in the construction industry.

Over the past twelve months, construction employment overall has grown by 3.3 per cent, putting 219,000 construction employees to work. Construction employment nationally now accounts for some 6.88 million jobs, some 4.4 million of which are in specialty trade construction. Specialty trade contractors have added 165,600 jobs in the past 12 months (seasonally adjusted), a healthy growth rate given the low level of unemployment nationally.

CEA's seven employer associations include FCA International, International Council of Employers of Bricklayers and Allied Craftworkers, Mechanical Contractors Association of America, National Electrical Contractors Association, Sheet Metal & Air Conditioning Contractors National Association, Signatory Wall and Ceiling Contractors Alliance, and The Association of Union Constructors.

More information about CEA and our issues can be found online at www.constructionemployersofamerica.com.▪

RUSKIN® EXTENDS LIMITED WARRANTY TO FIVE YEARS ON ALL PRODUCTS

Ruskin announces the extension of its limited warranty program from one year to five years from the date of delivery. Effective February 1, 2017, the new warranty terms apply to all Ruskin products and are intended to inspire confidence in the Ruskin brand.

"We are excited to offer this improved level of coverage to our customers," said Mark Saunders, director of sales and marketing at Ruskin. "The move from one to five years demonstrates our commitment to quality and should reinforce and bolster the confidence our customers already have in the performance of our products. Additionally, engineers will find it easier to specify Ruskin products, especially when they are able to offer their customers this extended coverage."

For additional information about the Ruskin sales policy and warranty program, please visit http://www.ruskin.com/WebsiteNavigation/FooterNav/SalesPolicy.

For more information about Ruskin, visit www.ruskin.com. ▪

Continued on page 23

Sound Testing in Classrooms for Special Needs Children

By / Vincent E. Alejandre, BSME, TBE & Vincent A. Alejandre, BSME Los Angeles Air Balance Company, Inc.

In the fall of 2015, Los Angeles Air Balance Company, Inc. was involved with the air/water testing and balancing and commissioning of a middle school located in Pasadena, California. The mechanical contractor hired the company as the test and balance contractor. After the plans and TAB specification Section 230593 were analyzed, it was determined that the school needed air balance, water balance, and required commissioning, but no sound test specs were applicable—or so it seemed.

Air and water TAB work commenced on the middle school's new HVAC systems and specialty classrooms. The work was to be done according to TAB specification Section 230593 and/or in accordance with AABC Standards. Work was almost finished with the air and water balance for this project when there was a verbal request to provide sound testing before commissioning was performed.

As indicated before, the spec 230593 did not contain an acoustics section or any other instructions. There were no standards specified at all. It was assumed that the AABC standard for sound testing would be considered an acceptable testing method/procedure. It was assumed the sound tests would be complete in one extra trip to this jobsite using a standard sound meter/instrument and the change order was priced accordingly. After standard AABC sound testing was completed, the TAB report was finished, submitted, and immediately returned with sound comments.

The general contractor / commissioning agent asked for re-testing of sound performance of the equipment and renovated rooms according to another specification, Section 019113.00, which was not initially provided or reviewed for this middle school. This came as a surprise, not because of the type of tests that were requested, but because there had been no review of any specs concerning sound testing for this job.

The new specs were promptly requested for the special sound testing for the review. The testing required was taken very seriously due to recent studies made by engineers and researchers that have found more information about how sound waves influence the learning environment. Studies show that all students (but primarily special needs students) will benefit and learn better given less impedances when the exterior noise intrusion and reverberation times within the classroom are controlled.

The required standards were based on the California High Performance Schools, (CHPS), Best Practice Manual 2009, Section EQ3.0. Where these CHPS standards differ from the specs used for typical TAB sound performance in the industry today involves exterior noise intrusion and reverberation time. This special testing was legally required for the client based on location and since one of the classrooms being renovated was a Special Day Classroom (SDC), meant to facilitate learning for children with special needs, autism in particular. The background noise was not to exceed 45 dBA LAeq or the room would be automatically deemed unfit regardless of HVAC equipment noise. See box: LAeq Energy Averaging.

The dBA LAeq limit is based on the type of room and the dimensions of the room, i.e. area or volume. The exterior noise intrusion level was to be measured twice—once with the HVAC system off, then again with the HVAC system on.

If the difference between the two measurements was less than 5 dB, the equipment sound impact could be deemed "not significant". If this difference was more than 5 dB, then the exterior noise extrusion was deemed "significant". These rankings or categories were used to see what type of test the room would further require in order to pass CHPS standards. If considered "not significant," then a simple 15-second testing sample was acceptable; if deemed "significant," a more stringent 30-minute test sample would be necessary.

All this background noise testing is conducted on classrooms that have been assessed to represent the worst case exposure to exterior noise intrusion, which is very subjective. This was important because students, especially autistic students, focus and learn better with less background noise to distract.

Next, there was part two in the CHPS standard, regarding reverberation time. In regards to reverberation time testing, the classrooms were to be unoccupied and "finished" during reverberation testing. According to spec, measurements would be made in general accordance with ANSI S12.60-2002 annex E4. The arithmetic average of the reverberation time would be

SOUND BYTES

Reverberation

The time it takes for reflected sound to die down by 60 decibels from the cessation of the original sound signal (measured in seconds).

- Reflected sound tends to "build up" to a level louder than direct sound. Reflected sounds mask direct sound.
- Late arriving reflections tend to smear the direct sound signal.

Noise Terms

Energy Averaging (LAeq): When dealing with a new or proposed noise, LAeq is often used (also written dBA Leq). This term is the Equivalent Continuous Level. The formal definition is, "when a noise varies over time, the Leq is the equivalent continuous sound which would contain the same sound energy as the time varying sound." However, you can think of it as a type of average where noisy events have a significant influence. LAeq is the main unit used for assessing occupational noise.

© Can Stock Photo / geargodz

compared in the 500, 1000, 2000 Hz octave band frequencies for each room against the CHPS Best Practice Manual 2009, EQ3.0 Acoustical Prerequisite.

The two rooms included in the sampling for testing were the SDC and the science classroom. The way the test was to be conducted in the furnished, unoccupied rooms was to measure the reverberation time within the room from a balloon popped in the center of the room. The maximum reverberation time for core learning spaces with internal volumes greater than 10,000 cubic feet should not exceed 0.6 seconds, or else the room is deemed unfit for a learning space. Although some reverberation within the classroom is good and can aid in speech distribution, too long of a reverberation can cause speech intelligibility degradation due to the noise build up.

In most cases the room construction plays a larger role in allowing more background noise and longer reverberation times.

After reading all of these new specs and understanding the CHPS standards, it seemed easy enough to test reverberation time. It was then realized that there was a specialized sound meter required to perform the "pop" reverberation time test. While features of the sound testing equipment and instruments on hand were reviewed, it was discovered that there was nothing that could measure reverberation time.

Searching online is usually a relatively easy way to find any instruments but it was more difficult to find the instrument necessary for this type of unique reverberation sound testing. There were only two companies found that sold this kind of meter, so one was obtained. They were the only meters found that measured reverberation time in the small increments necessary, in the frequencies mandated, and were portable and battery powered.

Using the reverberation time meter, the reverberation times could be measured for each of the classrooms to determine whether the rooms truly met the standard put forth by CHPS Best Practice Manual. It is anticipated this CHPS standard

will soon be more prevalent since autism diagnosis has been increasing at a surprising rate over the past couple of decades. A rising population means there are more children, which in turn means more students with special needs. Although sound testing and lowering the amount of noise created by the HVAC system is very helpful, in most cases the room construction plays a larger role in allowing more background noise and longer reverberation times.

Could it soon be part of the TAB agency's job to find weaknesses in the room construction that would allow too much exterior noise intrusion and point these imperfections out to the general contractor or owner? This standard along with the use of the specialized sound instruments previously mentioned helps to promote proper learning spaces for our schools and will provide a better, more productive classroom setting for the increasing number of children with special needs. ▪

SOUND BYTES

Optimize Acoustics

Over the past few decades, a variety of studies have shown that learning is improved in quieter classrooms. These studies have also shown classroom noise causes a particular learning barrier for children with hearing impairments or learning disabilities, or students who speak English as a second language.

Since as many as 1/3 of students in a typical classroom fall into these categories of extra sensitivity to poor acoustics, meeting the acoustic standard can make a significant difference in learning levels.

Standard S12.60

To address these issues, the American National Standards Institute (ANSI) and the Acoustical Society of America (ASA) developed a 2002 voluntary standard for acoustics—a standard similar to those already in use by the World Health Organization and other countries.

S12.60 is a national standard that details acoustical performance criteria, setting maximum limits for several categories of learning spaces. Some of the criteria outlined in the standards include (for the typical California classroom of 960 square feet with a 10-foot ceiling):

- Noise levels – 35 dBA (A-weighted decibels)
- Reverberation – 0.6 seconds
- Noise Isolation – Sound transmission class (STC) 50–60 materials for wall, floor-ceiling, and roof-ceiling assemblies (depending on the kind of space) adjacent to classrooms.

BC Apprentices Turn Heads at Competitions

By Jud Martell & Jessica Kirby
Photos courtesy of SMWTC

Last fall, 22 apprentices of the SMWIA Local 280 and SMACNA-BC contractors gathered at the Sheet Metal Workers' (SMWTC) Training Centre to compete in the SMWTC's Annual Apprentice Contest.

Building on years of being one of the largest sheet metal competitions in North America, 2016 continued the legacy. Apprentices competing for 13 different contractors in four levels of shop (project and welding), theory, and drafting over eight hours made for a remarkable day in sheet metal.

From an assembly of a simple run of duct in Level 1, which maxed out its capacity of 10 competitors, to fabricating a copper bucket in Level 4, the shop portions of the contest drew most of the spectators, but all four portions of the contest counted equally. This made for some close races depending on different individual strengths.

The theory portions were done through an online test with Larry Lawrence of the iTi present to continue developing theory exams for upcoming regional contests. Daryl Garrison and Dan McCallum of the iTi were also on hand to proctor and hand out the prizes from over 20 sponsors totalling over $7,000.

Noteworthy prizes from Steetz (a tool package worth $800) and Crosstown (a pair of hockey tickets in the $500 range) made the lottery style draw for participants a highlight ending to a successful day. From the staff and trustees of the sheet metal industry board: congratulations to all who competed and thanks to the many sponsors.

The Level winners were:

Level 1: Michael Hamm, Fraser Valley Refrigeration Ltd.
Level 2: Roy Jones, Airtek Pneumatics Ltd.
Level 3: Matt McHardy, Austin Metal Fabricators LP.
Level 4: Matt Hamm, Fraser Valley Refrigeration Ltd.

All participants competed well. Of note, Matt McCarty the SMWTC Level 3 winner went on to the BC Skills competition

where he won silver. Congratulations to the BC Skills team and those who will go on to compete in the Skills Canada competition in Winnipeg in late May – early June.

Matt Hamm, Level 4 SMWTC competition winner will be heading to Ottawa at the end of June – early July to represent SMACNA-BC contractors and Local 280 at the Canadian Conference Competition. We wish Matt all the best in Ottawa.

Thanks to all the apprentices for participating in 2016 SMWTC annual apprentice contest:

Level 1

Derek Chaplin (Fraser Valley Refrigeration Ltd.), Matthew Cleary (Austin Metal Fabricators LP), Michael Hamm (Fraser Valley Refrigeration Ltd.), Daniel Jopling (Apollo Sheet Metal Ltd.), Marcus Ribi (City Sheet Metal Limited), Nikolas Smith (Allied Blower & Sheet Metal Ltd.), Dean Tassopoulos (Piedmont Sheet Metal (1997) Ltd.), Aphiwat Tiparos (Ridge Sheet Metal Co.), Devin Warren (Allied Blower & Sheet Metal Ltd.), Patrick Welch (Viaduct Sheet Metal Works Ltd.).

Level 2

Nico Franciosi (Austin Metal Fabricators LP), John Gordon (Austin Metal Fabricators LP), Roy Jones (Airtek Pneumatics Ltd.), Nicholas McGregor (Austin Metal Fabricators LP), Neil Romanowski (Allied Blower & Sheet Metal Ltd.), Kyle Wellman (Ames Metal Fabricators 82 Ltd.).

Level 3

Josh Deeming (Apollo Sheet Metal Ltd.), Matthew McHardy (Austin Metal Fabricators LP).

Level 4

Daniel Beere (Summit Sheet Metal Ltd.), Matthew Brown (Northwest Sheet Metal Ltd.), Matthew Hamm (Fraser Valley Refrigeration Ltd.), James Stroud (Crosstown Metal Industries Ltd.). ▪

Fiberglass Health & Safety:
Understanding the Research

By / Johns Manville Editors

Fiberglass is one of the most studied human-made substances on the planet, and there are dozens of studies specifically designed to determine whether fiberglass poses any health hazard to humans. These third-party studies have produced a robust body of scientific evidence supporting the safety of fiberglass in air handling applications. However, despite the evidence supporting both its safety and performance, there are still some lingering fears about the safety of fiberglass. Primarily:

1. A belief that insulation glass fibers are potentially carcinogenic.

2. Whether or not fiberglass products can withstand prolonged exposure to an airstream without eroding.

These perceptions come from the initial fiberglass research that exposed test animals to glass fibers through surgical implantation into the abdomen rather than through inhalation. Clearly this is a route of exposure that would never be encountered in the real world, and it bypasses all the natural defence mechanisms inherent to the human body. The results of these tests indicated that fiberglass could pose a potential health hazard.

These test methods were the sole source of fiberglass safety research for many years. In the absence of well-designed animal inhalation studies, the World Health Organization's International Agency for Research on Cancer (IARC) determined that these artificial implantation studies provided sufficient evidence to list fiberglass as a "possible carcinogen" in 1987.

Since these studies did not accurately replicate typical fiberglass exposure, Johns Manville voluntarily took responsibility to study the potential health effects of respirable glass fibers. It helped pioneer the efforts and was soon joined by the rest of the biggest names in the fiberglass industry in the endeavour to scientifically determine whether or not fiberglass presented any health hazard to humans. These studies required scientists to create innovative exposure methods that could accurately replicate actual inhalation exposure environments all in order to fully understand the interactions between fiberglass and live animal lung tissue.

The findings confirmed that insulation glass fibers dissolve in the lungs relatively quickly, removing any potential for the chronic inflammation that could lead to ill effects on the lungs.

The collaborative effort between the industry's biggest fiberglass producers

to test the safety of fiberglass ultimately led to a partnership between OSHA, the Occupational Safety and Health Administration, and NAIMA, the North American Insulation Manufacturers Association. They partnered to create the Health and Safety Partnership Program (HSPP) in 1995. As a public-private partnership, the HSPP was able to draw upon the wealth of expertise in the insulation industry under the watchful eye of OSHA, providing unbiased information about the health and safety of fiberglass.

The study of fiberglass didn't just stop at inhalation studies. There were a series of additional studies that explored a variety of different facets of fiberglass exposure:

Human epidemiology studies: The human epidemiology studies explored the mortality rates in fiberglass manufacturing plant workers. Researchers studied the death records of deceased plant workers to determine the cause of death and compared that to the general population. These data account for nearly one million person-years of exposure to fiberglass.[1]

Findings: Individuals who worked in early fiberglass manufacturing plants (1945-1995) and who were exposed to much higher levels of fiberglass fibers showed no statistically significant increase in respiratory system cancer or non-cancer respiratory disease.

Exposure to inhalable glass fiber in indoor manufacturing and commercial settings: This study was performed to determine the concentration of organic and inorganic (such as fiber lass) airborne fibers in both commercial and residential indoor environments. [2]

Findings: The results of these tests revealed extremely low airborne fiber concentrations in commercial and residential environments, averaging less than 0.008 fibers per cubic centimeter. More importantly, 97 per cent of the fibers found actually came from organic sources, like drapes or curtains, not from fiberglass. Thus the concentration of glass fibers in commercial and residential settings was less than 0.0001 fibers per cubic centimetre.

Resistance to erosion under extreme air velocities: Johns Manville tests its primary commercial and residential duct products to extremes to meet stringent UL-181 requirements. This means they must be able to withstand air velocities up to 12,000 feet per minute or more. These products are exposed to hurricane-force winds and air velocities that are three times faster than what would typically be found in any duct system.[3]

Findings: Even in such extreme environments, JM's fiberglass insulation does not show any signs of cracking, breaking, peeling, flaking, erosion, or delamination.

The findings in each of these studies further confirm that the fiberglass used in these air handling products does not pose any respiratory health hazard to humans, and that there is a relative absence of fiberglass fibers in non-occupational settings. ▪

Sources:

1. *"Historical Cohort Study of US Man-Made Vitreous Fiber Production Workers: 1." Marsh, et al. Journal of Occupational and Environmental Medicine. Volume 43, Number 9 (September 2001)*

2. *"A Synthetic Vitreous Fiber (SVF) Occupational Exposure Databse: Implementing the SVF Health and Safety Partnership Program." Gary E. Marchant, et al. http://insulationinstitute.org/wp-content/uploads/2016/02/RP062.pdf*

3. *SuperDuct RC Data Sheet: http://www.jm.com/content/dam/jm/global/en/hvac-insulation/HVAC-document.*

COMPANY-WIDE BENEFITS OF FastEST ESTIMATING SOFTWARE

Thousands of contractors across North America are already using the reliable suite of estimating software programs by FastEST, Inc. to streamline and improve their estimating process. Yet, the advantages of FastEST's programs reach far beyond the realm of bidding.

Save time and money by avoiding printing plans

Printing entire sets of drawings just to perform takeoffs on prospective projects incurs costly expenses. With all three of FastEST's estimating programs – FastPIPE®, FastDUCT®, and FastWRAP™ – the On-Screen Digitizer feature comes standard. With this feature, users are able to directly import PDFs and several other digital plan formats into their estimates, eliminating the need to print out a plan set—at least prior to being awarded the job. Numerous FastEST customers have observed that the monthly cost of their software is actually less than what they previously spent per month on plan printing.

Improve field productivity with colour-coded plans

Materials taken off in FastPIPE®, FastDUCT®, and FastWRAP™ can be colour-coded for ease of identification,

especially on more intricate or in-depth plans. For example, in the FastDUCT® program, many contractors will highlight their supply ductwork with one colour, their return ductwork with another, and so on. When an entire job is completely taken off, the estimator has a neat, easy-to-read, and colour-coded set of plans that can be exported and printed with the coloured mark-ups included.

Make it easier to track materials and labour

Upon award of a new construction job, project managers can utilize the programs for referencing the original estimate takeoff, calculating quick and easy change orders, and even tracking productivity. Takeoffs can easily be selected from the plan pages, and tagged with a label—for example, "Installed March 2017." A report calculates all tagged items and the information is compared to material purchase orders and labour hours logged during that month. It's an accurate and beneficial way to compare an original estimate to current job performance.

Stay flexible for quick budgets, design-build projects, value engineering, and more

Countless customers both small and large (some FastEST customers own one system, while others own upwards of 60 seats) use the estimating programs for things like quick budgetary calculations, on-the-fly change orders, design-build projects, and value engineering. If an HVAC estimator using FastDUCT® has taken off some ductwork as lined, and it actually needed to be wrapped with insulation, it's as simple as a couple of clicks, and recalculating a report, and the numbers are revised. The same applies to the FastPIPE® and FastWRAP™ programs.

With FastDUCT® for HVAC ductwork and industrial sheet metal, FastPIPE® for plumbing, mechanical and site utilities, and FastWRAP™ for piping and ductwork insulation, FastEST has an estimating solution for all types of mechanical, plumbing, and insulation contractors, with numerous corollary benefits as mentioned above.

Find out more about FastEST, Inc. and its user-friendly estimating programs by visiting https://fastest-inc.com. ▪

LOUVER INSTALLATION

by / Norm Grusnick, P. Eng.
commercial products manager, ECCO Supply
photos courtesy of Ruskin

In many cases, installation is just as important to louver function as is design. Specifying the correct frame style and options can substantially improve installation. In many cases, louver manufacturers have specific models and accessories to make installations faster and easier.

Louvers generally connect to surrounding structures through their perimeter frames. The most common types of frames are flange and channel (Fig. 1).

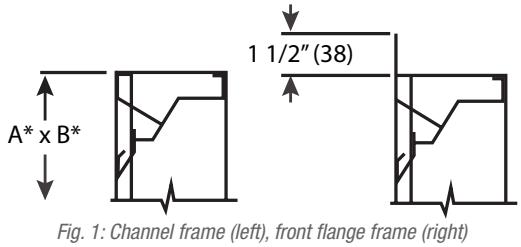

Fig. 1: Channel frame (left), front flange frame (right)

Channel frames provide a consistent outside dimension around a louver's perimeter. They do not extend beyond the overall width and height of the louver. For installation flexibility, they are the most versatile. They can be installed flush with the face of a wall, inset from the face, or slid inside a sleeve.

Flange frames are channel frames with one leg longer than the other. Flange lengths usually are 1 to 1½ inches. Front flanges are the most common style; however, rear flanges are also available. The installation of flange frames is limited to flush mounts outside of a wall. Front flange frames help hide inconsistent gaps between louvers and the openings caused by uneven sizes or out-of-square conditions. The most common louver-installation method uses fasteners in surrounding walls or structures. In masonry walls, concrete screw anchors often are used. For metal structures, self-drilling metal screws are common. Lag bolts are used for wood frame installations. While manufacturers' specific installation instructions should always be followed, a common fastener location pattern is 6 inches from the corners and 12 inches centre-to-centre on all sides.

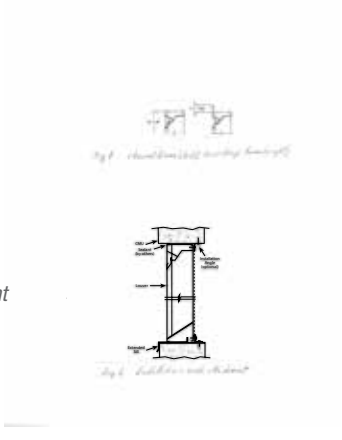

Fig. 2:
Installation - angle attachment

If a louver is small and the blade spacing wide enough, fasteners can be installed directly through the web of a jamb frame into a wall. However, if blade spacing is too narrow or a frame has downspouts that channel rain water, the installation of fasteners directly through a jamb should be avoided. This is the case with most wind-driven louvers. In such cases, installation angles can be utilized to connect the rear of a frame to an opening (Fig.2). For louvers with blade supports, angles should connect the tops and bottoms of the supports to a structure. Angles typically are provided as clip angles, which are 2 to 4 in. in length. They also can be supplied in full lengths for each side of a louver. These are known as

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HVAC BID SPECIFICATION REFERENCE MANUAL

Designed to help contractors interested in preparing accurate and competitive bids while guiding owners and designers in the preparation of a complete bid package, the 2016 edition of the *HVAC Bid Specifications Reference Manual* is organized around the 2016 revisions to the Construction Specifications Institute's MasterFormat™. The book consists of 19 sections and is divided into two parts. Part One covers administrative requirements associated with bidding and contracting for the installation of HVAC systems for commercial and institutional facilities. Part Two covers the technical requirements associated with specifying materials and equipment for HVAC systems—the basis for HVAC system procurement and installation. For further information, contact SMACNA-BC at smacnabc@smacna-bc.org. ▪

SMACNA'S *HVAC SYSTEMS: UNDERSTANDING THE BASICS*— UPDATED 2016

SMACNA's new manual *HVAC Systems: Understanding the Basics*, 2nd edition, 2016, is a non-technical overview of HVAC systems used in residential, commercial, and institutional buildings. It covers system operation and components, and presents helpful diagrams and figures illustrating the systems.

Topics in the new manual include:

- HVAC system basics
- Central heating and central cooling equipment
- Hydronic and air distribution systems
- Central HVAC systems
- HVAC system controls and the components that comprise these systems

The 2016 update covers:

- Humidifiers
- Mini-split systems
- Geothermal systems
- Hydronic radiant cooling
- Other new technology and equipment

This unique resource is perfect for self-study, group training, or reference. Review questions at the end of each chapter make the guide more helpful as a learning tool and test the user's understanding of the concepts discussed in each chapter.

Members may download SMACNA's *HVAC Systems: Understanding the Basics* free of charge. The discounted price of $95 is available to architectural and engineering firms and their employees (provided they are not in the contracting business, as well); educational institutions, government agencies, government departments, and code officials. For further information, contact SMACNA-BC at smacnabc@smacna-bc.org. ▪

NEW RESIDENTIAL / LIGHT COMMERCIAL MANAGEMENT PROGRAM AVAILABLE

The *Residential Retrofit and Service Operations Management Program* contains the latest information and methodologies to start up and run a profitable and successful residential and light commercial HVAC service and replacement department. Prepared under the direction of the Residential Contractors Council Steering Committee, this manual begins with an in-depth look at the financial considerations involved in this special type of work and moves into areas such as sales and operations, marketing methods, and personnel requirements. The appendices include a wealth of sample job descriptions for typical residential/light commercial personnel and very interesting "blog style" case studies offering valuable firsthand contractor advice.

This document is available free to members through the SMACNA online store. For further information, contact SMACNA-BC at smacnabc@smacna-bc.org. ▪

2017 UPDATE FOR ARCHITECTURAL FASCIA AND COPING WIND TESTS REPORT

SMACNA's Technical Resources Committee has completed wind uplift testing on custom-fabricated fascia and coping architectural elements constructed in accordance with the SMACNA Architectural Sheet Metal Manual. See the results in this free report found at www.smaca.org under Technical Resources. ▪

ENERGY SYSTEMS ANALYSIS AND MANAGEMENT

This timely document provides an overview of a variety of energy-related business opportunities for commercial, residential, and institutional buildings. It presents contractors, building owners, and operators, facility managers, and system designers with the tools needed to evaluate an existing facility for energy savings potential, and addresses both new construction and retrofits. The document includes energy conservation management, the energy audit, and energy estimating procedures. HVAC system maintenance and indoor air quality, energy management maintenance and monitoring, energy recovery systems, and energy recovery system investment analysis are also included. For further information, contact SMACNA-BC at smacnabc@smacna-bc.org. ▪

TRY THESE TWO NEW AWARDS FOR YOUR ORGANIZATION

by / Mark Breslin
Breslin Strategies, Inc.

Everyone in the workplace likes recognition. Recognition is a powerful way to show employees what an organization values. It visibly displays the values and priorities. I would like to share with you two ideas to create powerful award programs that will make a real difference.

New Award 1: Mentor of the Year

Honestly, I have never seen this given by any of my hundreds of clients. Seems to me that it's kind of a no-brainer. People development is a huge part of our business and there is often a time barrier for leaders to engage in it. Why not raise it up the flagpole? Why not give accolades to those who are not only working for the company and their check, but for the success of their co-workers? If you do this, remember it does not only have to be the senior people mentoring the juniors. I have seen some great technology mentoring being done out there from the younger bucks to the old dogs.

New Award 2: Innovator of the Year

How do you gain input from your field operations personnel? The day of the suggestion box has long passed. The best way possible is to provide a visible set of rewards for those willing to participate in improving performance or operations. Now, the biggest barrier to this is often middle managers or even field leaders. The problems that exist include, not wanting others to get credit, not taking the time to listen, and no compelling reasons to do so. Innovator of the Year is not the person who has the best idea. Instead, it is given to the leader or manager who got the most ideas and innovations out of their people. Recognition is two-fold here—it goes to the leader and to those who he or she has elevated by pushing their ideas up the chain of command.

In pushing innovation though you must be willing to follow up on the ideas and innovations. You can't put them in some file to "get around to eventually" or you'll lose buy-in and credibility.

Remember, when people see their ideas in action their loyalty and extra effort are all yours. ▪

GIMME SHELTER: STAYING BEHIND THE CORPORATE VEIL

by / Andrew Delmonico and John Wiebe

Incorporating your construction business has many clear advantages, one of which is personal liability protection under the "corporate veil". The so-called corporate veil refers to the shelter one receives in their personal capacity when their company is being sued; essentially, they are shielded from personal liability. There are exceptions to the corporate veil, and certain requirements that need to be followed to take advantage of this legal protection. One of these requirements is the need for businesspersons to identify the name of the company with which they are associated, and its status as a corporation. In the Saskatchewan case of *Hill v. Kronberg*, a court ruled that a contractor (the "Contractor") was personally liable for deficient workmanship because he did not inform a homeowner (the "Homeowner") that his business, Common Sense Renovations Inc. ("Common Sense Inc.") was incorporated.

The Facts

The Homeowner required restoration and renovation work to be done in her home. Upon the recommendation of a third party, the Homeowner hired the Contractor for this work. In all of her dealings with the Contractor, the Homeowner claimed that she was unaware that the Contractor was operating as an incorporated business. Dissatisfied with his work, the Homeowner sued the Contractor in his personal capacity for deficient workmanship. At trial, the Contractor argued that he should not be held personally liable because it should have been clear to the Homeowner that he was operating under a corporate entity (i.e. Common Sense Inc.).

The Decision

Ultimately, the Court found the work of the Contractor to be deficient, and disagreed with him regarding personal liability. While the Contractor used his trade name, "Common Sense Renovations," in emails and invoices to the Homeowner, the trade name and style did not contain an "Incorporated" or "Inc." indicator. The Court ruled that the Homeowner should not be presumed, in the absence of evidence to the contrary, to know that she was dealing with a distinct corporate entity.

There is a clear legislative requirement in British Columbia, under the *Business Corporations Act*, for a corporation to use its full name in all contracts, invoices, and orders for goods or services made on behalf of the corporation. The inclusion of "Inc." or "Ltd." is important, and while its absence will not automatically create personally liability, in some circumstances it can. The court in this case ruled that the Contractor did not provide the Homeowner with a clear indication that she was dealing with a corporate entity, and he was subsequently unable to seek the protection of the corporate veil. The Contractor was found personally liable for the deficient workmanship.

Lessons Learned

1. When operating an incorporated business, always include in your business name the words "incorporated" or "limited" or the interchangeable abbreviations "Inc." or "Ltd.," whichever matches your business designation.

2. Include your full company name on business correspondence and invoices. Even if you use a different trade name, be sure to let clients, businesses, and other entities know that you are incorporated.

3. If your business is not incorporated and you would like to know more about the benefits of incorporation and the corporate veil, ask your lawyer for more information. ▪

This article was written by Andrew D. Delmonico, a lawyer, and John Wiebe, an articled student, who practise in construction law with the law firm of Kuhn LLP. This article is only intended as a guide and cannot cover every situation. It is important to get legal advice for specific situations. If you have any questions or comments about this case or other construction law matters, please contact us at 604.864.8877.

INDUSTRY NEWS

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THE HISTORY OF ESTIMATION

History is rich with ambitious, successful, and innovative construction projects and they didn't get that way by accident. Discover how the first project estimators developed and honed their crafts with this interesting historical series from On Centre software. This is where the History channel meets every day construction. Check out Episode one at http://on.center/ae-episode1 ▪

ENGINEER'S DESK

Continued from page 19

continuous angles. Continuous angles cost more because of the material, but are faster to install. Installation angles can be used with channel or flange frames.

Some louver installation methods do not require the use of fasteners in walls. These methods often are time savers for contractors. One example is a sleeve with a retaining angle. This installation style utilizes front flange frames, perimeter sleeves, and continuous angles for the rear. The sleeved louver is slid into the opening from the front. Then, angles are installed to the rear of the sleeve with one leg against the wall. The other leg is fastened to the sleeve with screws. The flange and angle secure the louver tightly to the wall without the need for anchors, saving substantial installation time.

A louver-installation method is responsible for more than just holding a louver's dead weight in a surrounding structure. It also must secure a louver during high wind conditions in severe storms. In applications with extreme wind loads, it is a good idea to specify the submittal of structural calculations from a registered structural professional engineer. Another way is to select louvres that bear a third party certification such as Underwriters Laboratories. Listings/approvals are for both louver and installation method.

No matter how effective a louver is in preventing rain penetration, water will find its way into ma building if the installation is not properly caulked. First, the joint between the perimeter frame and opening must be sealed with backer rod and caulk. In flange frame applications, apply caulk around the flange perimeter and the wall. In addition to perimeter joints all other joints should be caulked.

By incorporating the louver features and proper installation practises, designers and installers can benefit from easier installation and better performance of their louvers. ▪

SUBMIT YOUR NEWS OR PROJECT IDEA

SMJ is on the lookout for interesting HVAC, architectural sheet metal, testing & balancing, or industrial / specialty projects to feature in its 2017 issues. If you have a cool project and 15 minutes of time to spare, you are a sure fire fit for the most meaningful, free-of-charge business investment you'll make all year.

Questions about how else to get involved in *Sheet Metal Journal*? Reach out to jessica.kirby@pointonemedia.com or 250.816.3671 and get the scoop.

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