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# Post-COVID Airports

Adapting Terminals to a New Normal P. 6

Destination	Flight #	Time	Status
VANCOUVER	AC 817	12:25	AL'HEURE
CALGARY	AC 819		AL'HEURE
EDMONTON	AC 821		AL'HEURE
MONTRÉAL	AC 823		AL'HEURE
OTTAWA	AC 825		AL'HEURE
WINNIPEG	AC 827		AL'HEURE
ST-JOVIN	AC 829		AL'HEURE
THUNDER BAY	AC 831		AL'HEURE
MONTRÉAL	AC 833		AL'HEURE
OTTAWA	AC 835		AL'HEURE
LONDON ON	AC 837		AL'HEURE
MONTRÉAL	AC 839		AL'HEURE
SASKATOON	AC 841		AL'HEURE
VANCOUVER	AC 843		AL'HEURE
REGINA	AC 845		AL'HEURE
OTTAWA	AC 847		AL'HEURE
WINNIPEG	AC 849		AL'HEURE
EDMONTON	AC 851		AL'HEURE
THUNDER BAY	AC 853		AL'HEURE
MONTRÉAL	AC 855		AL'HEURE
SUBURY	AC 857		AL'HEURE
WINNIPEG	AC 859		AL'HEURE
LONDON ON	AC 861		AL'HEURE
MONTRÉAL	AC 863		AL'HEURE
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**FOR THE PRO**



# CONTENTS

November/December 2021

Volume 62 | ISSUE 6

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## COLUMNS

### 04 | Comment

How consulting engineers can contribute to reconciliation with Indigenous communities.

### 20 | Legal

When environmental consultants' reports trigger litigation time limits.

### 22 | Conversation

Methods and tools for soundproofing today's buildings.

## FEATURES

### 6 COVER STORY

#### Post-COVID Airports

As travel is making a comeback and there seems to be a light at the end of the tunnel, airports will need to embrace a new normal while also reassuring passengers they are in safe environments.

### 10 The Future of Acoustical Provisions in the NBCC

The progression of the National Building Code of Canada (NBCC) shows an evolution of acoustical requirements. Further additions and refinements may soon be added.

### 14 Managing Stormwater for Candiac Square

One of the keys to turning an

industrial park into a residential development was the stormwater system, designed by S.M. Group International (now FNX-INNOV) and installed by A. & J.L. Bourgeois, using HDPE pipe.

### 16 Ainley Group Turns 60

This year, Ainley Group celebrates 60 years in Collingwood, Ont. Over time, the firm has advocated for small communities and addressed concerns over public health and environmental impacts from wastewater contamination and unreliable clean water supplies.

**ON THE COVER** In the wake of a global pandemic, travellers are experiencing a heightened need to feel safe and confident when navigating through spaces like Toronto Pearson International Airport. See story on p. 6.

PHOTO COURTESY STANTEC.



## Comment

by Peter Saunders

# Opportunities to assist in reconciliation

On Sept. 30, RJC Engineers helped mark Canada's first National Day for Truth and Reconciliation with a conference that outlined some of the ways consulting engineers can contribute to Indigenous communities and inclusion.

'Building a Foundation for Reconciliation: The Role of Architecture, Engineering and Construction in Indigenous Protected and Conserved Areas' was organized by the Conservation through Reconciliation Partnership (CRP), was MCed by RJC managing principal Terry Bergen and featured talks by Eli Enns, co-founder and CEO of the ISAAK OLAM Foundation; Eric Wilson, design engineer with RJC and civil engineering PhD candidate at the University of Victoria (UVic); and Kear Porttris, director of Indigenous relations for QM Environmental. It drew approximately 500 preregistered attendees.

***"We need to work with engineers and planners to reach our targets. It's an all-hands-on-deck moment!" - Kear Porttris, QM Environmental***

"I see great opportunity for reconciliation through engagement with engineering," said Enns, whose foundation helps establish Indigenous Protected and Conserved Areas (IPCAs) and educates Canadians in general about their value. "We need to integrate natural and human infrastructure in a more balanced way. If we work with Mother Nature, through examples like micro-hydroelectric generation, we can become more resilient."

Wilson emphasized the need to enhance traditional engineering design approaches with greater empathy for users.

"IPCAs offer the opportunity to benefit from Two-Eyed Seeing," he said, referring

to Mi'kmaw Elder Albert Marshall's concept of combining Indigenous and Western ways of knowing. "At the heart of engineering, we're designing infrastructure to make people's lives better, which is empathetic; but issues can arise when a project, such as a social housing complex, is being paid for by someone other than the end user."

He cited the example of a UVic course, CIVE 412 – Infrastructure Engineering for Indigenous Communities, as helping pave the way for improvements to how engineers are educated to address Canada's challenges, but suggested such changes won't be taken seriously until the profession enforces them.

Kear echoed the importance of this trend.

"We'll see totally different educational requirements in the next five years and the students won't bat an eye, but change is needed from the top down," he said. "As a consultant, I see engineers all the time who don't care about the communities in which they're working on contaminated sites. You need to involve the communities at the design level. They are the ones who will be involved in those sites—many of which are being given back to them by people who don't want them—well into the future."

He also spoke of Canada's significant U.N. Convention commitments to conserve lands and fresh water.

"We need to work with engineers and planners to reach our targets," he said. "It's an all-hands-on-deck moment!"

As such, all of the speakers encouraged the engineering community to reach out to and support Indigenous-led conservation efforts.

"This is a national effort," said Enns. **CCE**

**Peter Saunders • psaunders@ccemag.com**



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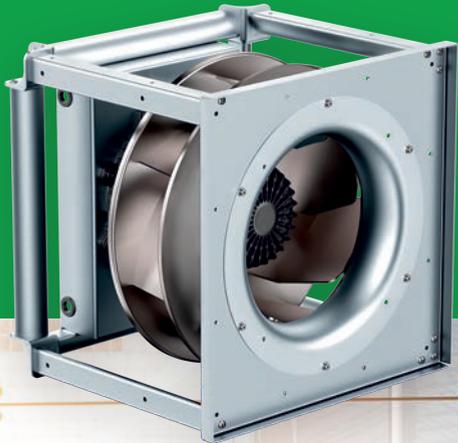
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# Post-COVID Airports

Can the aviation industry soar again?

By Alvaro Fernandez de Mesa

**T**he aviation industry certainly felt the hit of COVID-19, quickly turning the green numbers into red early on in the global pandemic. Daily passenger numbers dropped by 96%.

As travel is now making a comeback and there seems to be a light at the end of the tunnel, airports will need to embrace the new normal while also reassuring passengers they are safe environments ... but how?

It's important to start simple. With regard to health and wellness, COVID-19 has made it clear the keys include social distancing, personal hygiene and a heightened awareness of our personal impact on those around us.

As travel returns, then, how will airport terminals themselves respond and adapt to the new protocols? The following are a few possibilities.

## **Which way do I go?**

More than ever, airport users will need to feel comfortable and safe while navigating through terminals. They want to have confidence in where they are going and to avoid simply wandering through airports for their own sake.

Wayfinding signage with a clear view of what's ahead and additional information—such as estimated walking times and updated departures—is a great way to help passengers feel more confident and to reduce their travel-related stress.

## **Can't touch this!**

Touchless technology already existed before COVID-19. Post-pandemic, it will see greater use to enhance the passenger experience, with typical airport areas need-



Bringing nature indoors can help reduce travellers' stress.

**The technology already exists for a seamless and touchless experience.**

ing some rethinking as they move back into normal operations.

Beyond making key processes like check-in and boarding touchless, technology can also update how passengers order their food and buy duty-free items before hopping on a plane. In this way, they can enjoy a seamless and touchless experience from curbside to seat.

## **No more 'hurry up and wait'**

Among the most frustrating parts of travelling are some of the biggest logistical problems to solve: wait times and crowding.

Technology could play a major role in reducing

PHOTOS COURTESY STANTEC



***Airports can benefit from the same infection control strategies implemented at health-care facilities.***

queues and preventing crowds from gathering at check-in and boarding zones. These changes likely start with faster document processing equipment, but will also need to add passenger notifications and other ways to reduce crowding.

Queues can be reduced substantially if the integration of new technology can increase processing capacity. Biometrics, for example, have already helped accelerate processing in various airport ter-

minals. Indeed, new scanning equipment can be equivalent to doubling the number of staff at security screening points.

Knowing where passengers are and providing this real-time information to agencies and airlines can also help improve the efficiency of staffing of processing areas. So too can encouraging travellers to undertake simple functions like checking in and printing their boarding passes and baggage tags before they even arrive at the air-

port. Even self-service kiosks, a relatively older technology, have helped to 'scatter' passengers and reduce the burden on check-in agents and immigration staff.

***Hygiene and infection control***

In a post-pandemic world, travellers will need to embrace hygiene more than they typically did in the past. Open washing stations that are more visible and accessible will raise awareness of and reinforce safety practices.



Automating airport processes can help make them touchless and more efficient.



Even after mask mandates are eventually dropped, it will be important to maintain safe space between passengers, to mitigate transmission of airborne diseases.

There are also lessons to be learned from infection control strategies at health-care facilities, including the use of natural and durable materials for interior finishes, a more stringent cleaning regimen (e.g. adding UV light-based disinfection) and more dynamic indoor air quality (IAQ) and flow technology, among others.

Also like the health-care industry, personal protection equipment (PPE)—such as masks, face shields



and gloves—should continue to become a normal part of our lives in airports.

### **Where do I sit?**

Waiting areas at gates will also need some adjustments as airports move back into normal operations. Even before COVID-19, people would leave empty seats between each other until it was too crowded to do so.

To prevent these areas from becoming too crowded in the first place, amenities should be actively offered and promoted throughout airports, so as to encourage travellers to enjoy other parts of the terminal before boarding. Technology can also help assure them they can move freely until their plane is ready to leave.

### **Feeling warm?**

Many of us can remember how security and baggage screening was boosted to unprecedented levels after the terrorist attacks of Sept. 11, 2001, forever affecting the way we travel. We can expect a similar focus on health in a post-COVID world, with the aviation industry potentially mandating health checks with vaccine passports, temperature monitoring and more.

The importance of the industry promoting health has been recognized by airport and airline consultancy Skytrax with the creation of the COVID-19 Airport Excellence Award. It honours airports selected by their customers for providing the top health, hygiene and safety protocols during the global pandemic. (In 2021, by way of example, Vancouver International Airport was among the award's global winners.)

### **Travel well**

As airports reinvent their offerings for travellers, wellness has become a popular method for reducing the stress of travelling with new experiences. Airport customers can ride stationary bikes to charge their phones, for example, or enjoy a massage. Some airports add nature with interior green spaces and light, while others bring in therapy dogs to interact with waiting passengers. COVID-19 has highlighted the importance of physical, mental and emotional well-being.

### **Rethinking the experience**

While aviation was one of the hardest-hit industries during the global pandemic, there is an opportunity now to rethink how it can support a healthier travel experience for those passengers who now feel ready to get back up into the friendly skies. **CCE**

Alvaro Fernandez de Mesa is an associate at Stantec who plans and designs airport terminals. He has been a key member on project teams for major expansions of international airports in Vancouver, New York, NY, and Santiago, Chile, bringing broad global experience to the transformation of each space from concept to reality. For more information, contact him at [alvaro.fernandezdemesa@stantec.com](mailto:alvaro.fernandezdemesa@stantec.com).

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# The Future of Acoustical Provisions in the NBCC

By Todd Busch, P.Eng.

**T**he progression of the National Building Code of Canada (NBCC) from 1941 through to the most recently adopted version in 2015 shows a steady evolution of the acoustical requirements for residential dwellings. From the earliest point, a minimum of sound transmission loss performance was stipulated as a means to limit intrusive noise between dwellings. Further investigation is underway today, through the Canadian Commission on Building and Fire Codes (CCBFC), to determine if and when further additions to and refinements of the NBCC are favoured, which could occur with the next expected publication in 2025. Given the deliberative nature of the process, some or none of the contemplated changes could be incorporated at that time.

As the CCBFC reviews potential further changes to the NBCC, there are a number of topics of interest with regard to acoustics. For one, changes are being considered for impact insulation class (IIC), in terms of making performance testing mandatory. Another topic that has been considered involves controls over the construction of exterior façades that would reduce the intrusion of noise from outside. And a further area of interest involves low-frequency (LF) sources typically found within mechanical rooms.

One topic that has been deferred to the future involves the extension of the sound transmission class (STC) provisions to both educational and health-care facilities nationwide. This change would greatly expand the scope of application of the NBCC's acoustical provisions to a wider range of building types. More com-



As a director of Soft dB's acoustic and vibration consultancy, Anthony Gérard, ing, specializes in studying noise sources with aerodynamic origin.

*Increased scrutiny during the design phase can result in improved outcomes.*

prehensive additions throughout the NBCC document would be required to make such a change possible.

## **NBCC 2015**

Where do things stand now, in 2021? The NBCC was not updated in 2020, but the 2015 version added the option of demonstrating either an apparent STC (ASTC) performance of 47 or laboratory-tested STC of 50 for dwellings (or greater when flanking is also considered).

As that edition noted, “an ASTC measurement or calculation will always yield a value equal to or lower than the STC for the same configuration, as the ASTC includes flanking transmission.”

PHOTOS COURTESY SOFT DB.



Vertical Sound Transmission Paths.” Further, limitations on sound ratings of fans in terms of “sones” was incorporated through reference to CAN/CSA-C260-M, *Rating the Performance of Residential Mechanical Ventilating Equipment*, and Home Ventilation Institute (HVI) publication 915, *Loudness Rating and Testing Procedure*.

### **International Building Code**

A possible framework for a path forward for the NBCC has arisen through consultation with the International Code Council (ICC), which issued ICC G2-2010, *Guideline for Acoustics*. The ICC is the parent organization that developed the International Building Code (IBC) as a model. It has been adopted for use as a base code standard by most jurisdictions in the U.S.

The ICC guideline established two levels of acoustical performance: (1) acceptable Grade B design performance, defined as STC 55 and IIC 55; and (2) preferred Grade A design performance, defined as STC 60 and IIC 60. The design and post-construction validation requirements are stipulated using the laboratory STC, IIC, field STC (FSTC) and field IIC (FIIC).

Airborne noise performance is measured per normalized noise isolation class (NNIC). Impact noise performance is measured in accordance with normalized impact sound rating (NISR). Table 1 and Table 2, on page 12, show the lab and field ratings, respectively.

### **Impact insulation**

Future changes are being considered for IIC in terms of making it a core design requirement and/or requiring post-construction validation testing be conducted, perhaps in accord with ICC G2-2010.

The performance thresholds outlined in the ICC documentation provide a solid basis for possible adoption within Canada, which would support more uniform outcomes for new multi-family dwellings. As it stands now, homeowners’ associations are often left to adopt their own performance standards, which may or may not provide adequate protection of public health and welfare in typical day-to-day circumstances.

Further, even in situations where a neighbour exhibits problematic behaviours, the introduction of rigorous design and performance standards to the NBCC could provide some relief for those residents who might otherwise be afflicted with chronic and problematic noise exposures in their place of dwelling.

### **Exterior noise**

At this time, there are no uniform standards for reducing noise from exterior sources, such as transportation and industrial facilities, in terms of allowable interior noise levels.

Some jurisdictions have implemented their own measures, however. In Ontario, for example, the ministry of the environment and climate change (MOECC) published the *Environmental Noise Guideline - Stationary*

The 2015 NBCC referenced the National Research Council of Canada’s (NRC’s) SoundPATHS software as an acceptable tool for analyzing future performance when flanking is considered as required. Additional reference was made to International Organization for Standardization (ISO) standards in regard to flanking paths, including ISO 15712-1, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 1: Airborne sound insulation between rooms*, and ISO 10848, *Acoustics*, which comprises five separate standards.

Supplemental tabulations were incorporated to provide “Options for Design and Construction of Junctions and Flanking Surfaces to Address Horizontal and/or

**The scope of the provisions may be expanded to a wider range of building types.**



Above: Sound masking systems can prove useful for commercial, residential and industrial applications.

Left: A technician can scan walls for sound leaks.

With *Builder’s Bulletin 19-R*, Tarion identified a number of risk areas for acoustics, such as heating, ventilating and air-conditioning (HVAC), plumbing supply and drainage, waste disposal, fire stopping, emergency power and electrical distribution systems. Additional risk areas of relevance are associated with suite-to-suite sound transmission, suite-to-interior-area sound transmission and elevator equipment.

**MEPP systems**

Currently, there are no nationwide regulations for acoustics relating to mechanical, electrical, plumbing and piping (MEPP) systems in multi-family dwellings.

Within Ontario, the Tarion program often supports analysis of risk areas for acoustics associated with mechanical and electrical (M&E) systems through reference to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Handbook’s chapter on sound and vibration.

Increased scrutiny during the design phase can result in improved outcomes with regard to noise and vibration in buildings. Coupled with building code provisions applied to service rooms and elevators, an early approach can help ensure some relief for occupants.

That said, there are no regulatory limits on the allowable noise from MEPP systems within dwellings, aside from ASHRAE’s prescribed limitations on noise due to plumbing and piping that have been adopted as best practices. A dwelling in proximity to a mechanical room or other rooftop source may well be subject to excessive interior noise levels, due to the operation of the building’s M&E systems.

Indeed, complaints of such equipment noise are fairly common nationwide—and there is a lack of clarity in the engineering community as to the proper assignment of responsibility for rectify-

and Transportation Sources - Approval and Planning (NPC-300), which places limits on interior noise coming from roadways, railways and aviation sources.

**Builder’s bulletin**

Also in Ontario, the provincial new home warranty program, Tarion, covers acoustics as a risk area to be

considered during the design phase of multi-family residential buildings and subject, at least in part, to post-construction validation. The financial and economic incentives of participation in the Tarion warranty program help mandate increased scrutiny of acoustics, noise and vibration issues within multi-family dwellings.

**Table 1: Grades of Laboratory Acoustical Performance**

Field Sound Rating	Acceptable Grade B Performance	Preferred Grade A Performance
Airborne Noise (STC per ASTM E90)	55	60
Impact Noise (IIC per ASTM E492)	55	60

**Table 2: Grades of Field Acoustical Performance**

Field Sound Rating	Acceptable Grade B Performance	Preferred Grade A Performance
Airborne Noise (NNIC per ASTM E336)	52	57
Impact Noise (NISR per ASTM E1007)	52	57

ing such a problem where there are challenging technical impediments and financial implications.

### Other buildings

The NBCC defines “dwelling unit” as “a suite operated as a housekeeping unit, used or intended to be used by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.”

Aside from residential dwellings, this definition encompasses individual guest rooms in motels, hotels, boarding houses, rooming houses and dormitories and other forms of business and personal services occupancies. It does not necessarily extend to hospitals, K-12 schools and other facilities where acoustics are also relevant to occupants.

One possibility for the evolution of the NBCC involves the extension of STC provisions beyond residential dwellings to both educational and health-care facilities nationwide. In the case of health care, one existing reference of interest is the Facility Guidelines Institute’s (FGI’s) *Guidelines for Design and Construction of Hospitals*, which address an array of acoustical issues.

Similarly, for K-12 education, American National Standards Institute (ANSI) S12.60-2010/Part 1 (R2015), *Acoustical Performance Criteria, Design Requirements, And Guidelines For Schools, Part 1: Permanent Schools*, is a reference of interest that could prove relevant for future investigation by the sound and vibration task force working on the NBCC.

### A collective effort

As a living document subject to periodic changes and improvements, the NBCC is currently in a code development cycle that is set to conclude in 2025. The collective effort to update it requires contributions from disparate design professionals in a voluntary capacity, to allow for reasoned contributions to be considered and given appropriate weight as proposals are made to change the NBCC in fundamental ways.

This article has provided an outline of some of the most pressing issues under consideration today. The author thanks Morched Zeghal, technical advisor with Codes Canada, for sharing historical in-

formation about past versions of the model NBCC that this article references, as well as for ongoing co-ordination of CCBFC activity pertaining to the NBCC 2025 code cycle. **CCF**

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# Managing Stormwater for Candiac Square

A 'forward-thinking' community in Quebec benefits from a modern sewer system. **By Steve Cooper**

One of the key components for turning part of a former industrial park into Candiac Square, a 2,000-unit residential pedestrian-oriented development (POD) in Quebec, was the stormwater system.

## Revitalizing the area

Totalling 165,367 m<sup>2</sup> (1,780,000 sf), Candiac Square is located on the southern portion of the Montcalm Industrial Park, close to one of the main entrances of the city of Candiac, Que. Developers and the municipal government wanted to revitalize the area using sustainable practices, with a focus on the benefits of nearby public transportation, as the site is a 20-minute trip away from downtown Montreal.

The \$600-million project occupies the former site of the Consumers Glass factory, built in 1966. The residential community, nicknamed Nature at the Square, combines a 'green housing' project with more than 17,000 trees across a 10,000 m<sup>2</sup> (107,639-sf) central park with its own rainwater recovery system.



Candiac Square was built on previously industrial lands.

This system was designed by consulting engineers at S.M. Group International (now FNX-INNOV) and installed in two phases, starting in 2017 and finishing in 2019, by A. & J.L. Bourgeois. It included two sections: a network of pipes and a pair of underground stormwater retention units. Both used high-density polyethylene (HDPE) pipe, meeting municipal and provincial government requirements for stormwater management.

For the first part of the storm sewer network, Bourgeois installed more than 630 m of 1,200-mm (48-in.) diameter HDPE pipe, as well as 15 chimney-type 900-mm (36-in.) diameter manholes, which

were welded directly to the pipes. Other pipes were also used in diameters ranging from 450 to 1,500 mm (18 to 60 in.).

## Specifying products

The engineers specified corrugated HDPE pipe from Soleno, based in Quebec City. This met the requirements of ASTM F405, *Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings*, and F667, *Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings*; Canadian Standards Association (CSA) B182.8, *PVC Sewer Pipe and Fittings*; and American Association of State Highway and Transportation

Officials (AASHTO) M 294, *Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter*.

To treat the retained water, an AS-10 Aqua-Swirl hydrodynamic separator was added at the end of the pipeline before it connects to the city storm sewer. More than 1,290 m (4,232 ft) of HDPE pipe formed this storm sewer network.

For each of the two 16-row retention systems, nearly 480 HydroStor HS180 chambers were installed on a stabilization geogrid, then surrounded by clean stone covered with TX-90 geotextiles. The first retention basin is designed for

heavy rain events and can store up to 2,505 m<sup>3</sup> (88,463 cf) of water, while the second can store up to 2,475 m<sup>3</sup> (87,403.8 cf). A waterproof geomembrane and two protective geotextiles were installed on the two excavated areas, measuring 35 m (115.7 ft) wide and more than 66 m (216.5 ft) long.

### **The resin's advantages**

The Plastics Pipe Institute (PPI), a trade association, reports the polyethylene (PE) resin produced for the pipe provides a favourable strength-to-weight ratio, ease of handling and freedom from degradation by soils, chemicals, ambient water and moisture, such that it will not corrode or rust. Since HDPE is a non-conductor of electricity, it is immune to the electrochemical-based corrosion process induced by electrolytes, such as salts, acids and bases.

Further, HDPE pipe is not vulnerable to biological attack or tuberculation, resists bio-clogging and maintains high, consistent flow capacities throughout the service life of each system.

“Resistant to corrosion, abrasion, de-icing salts and vibrations, HDPE ensures the resiliency of the infrastructure,” says Daniel Currence, P.E., director of engineering for PPI’s drainage division. “This storm sewer system for Candiac Square provides longevity.”

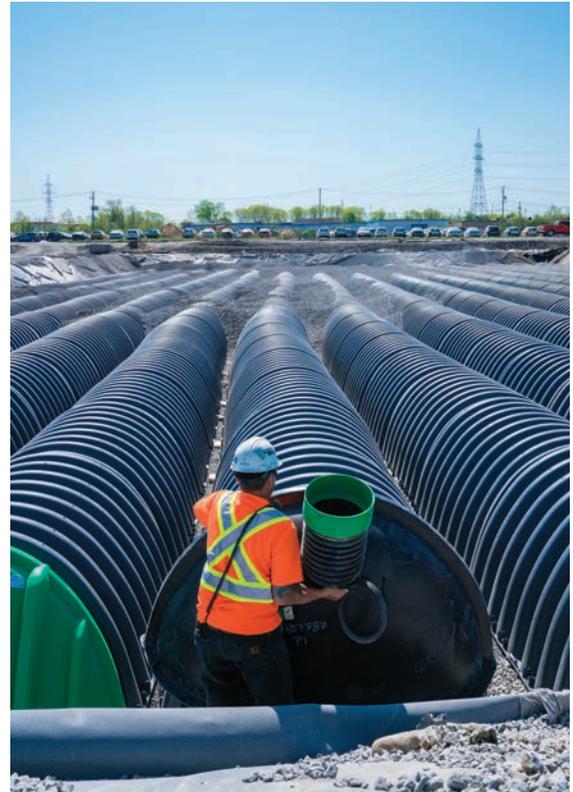
The material also facilitated ease of installation.

“Lightweight and easy to handle, HDPE products do not require the use of specialized equipment, such as a crane, making the installation easier and quicker,” says Currence. “The length of the Solflo Max pipes reduced installation time, as well as the number of joints between pipe sections, compared to traditional concrete pipes.”

As Candiac Square’s HDPE manholes did not need to be oversized, they provided substantial savings in terms of purchase, excavation and installation costs. Their welded design made it possible to assemble the inlets and outlets at the factory, so connecting on the jobsite was efficient. Another feature of the manholes is their smooth exterior wall, which prevents vertical movement during freeze-thaw cycles.

With watertight bells to provide powerful joints and with either O-ring or integrated gaskets, Soleno’s slightly oversized pipes were fitted together quickly and easily with clips to validate the quality of the installation, as well as the depth of the nesting, for the storm sewer network.

The HydroStor HS180 retention system, made of polypropylene (PP) and HDPE, was also easy to install, due to the lightweight chambers. Designed for heavy volume or restricted space projects, each chamber can store 5.1 m<sup>3</sup> (180.1 cf) of stormwater, making them more cost-efficient than alternatives by greatly reducing the



Both a network of pipes and a pair of underground stormwater retention units used HDPE pipe.

**The site is a 20-minute trip from downtown Montreal.**

area of the burial pit.

The installation of a geogrid helped to ensure a solid and stable foundation at the base of the chambers by distributing linear workloads over a larger surface area. The Aqua-Swirl treatment unit, installed at the outlet of the storm sewer, retrieves suspended solids, oil and grease. Direct access to the unit from the surface facilitates periodic maintenance and eliminates the need to work in a confined space.

“Today, there is a growing expectation by communities for sustainable and resilient products,” says David M. Fink, president of PPI. “As an association, we and our members believe HDPE pipe can meet and even exceed those expectations. This practical, long-life stormwater network, made entirely with HDPE products, won over the city of Candiac. The residents of Candiac Square will benefit for many years to come.” **CCE**

**Steve Cooper** is managing director of SCA Communications, which provides public relations (PR) for PPI. For more information, visit [www.plasticpipe.org](http://www.plasticpipe.org).

Ease of installation was key to the project.



# Ainley Group Turns 60

One of Central Ontario's first engineering firms continues to thrive.

By Christine Shilson

This year, Ainley Group celebrated 60 years since its founder, P. William (Bill) Ainley, established the firm in Collingwood, Ont. Back then, in 1961, it was one of the first engineering companies in Central Ontario. Initially providing engineering services for local municipal governments, it grew from a small, family-run operation to a multidisciplinary, employee-owned firm, with 130 staff members across six offices throughout Ontario.

"In the 60 years since Bill founded the company, many things have changed in our industry," says Joe Mullan, current president and CEO. "However, we still rely upon the core principles Bill used to guide the formation of the firm in the early year: hire and develop the best staff, be respectful of and attentive to your clients' needs, complete every project like it is the most important you have ever had and be willing to learn and adapt with new technologies."

With the dedication of its staff and leadership team, the firm has been able to survive, grow, flourish and develop through major recessions, shifting municipal boundaries and the recent pandemic. Looking to the future, the team

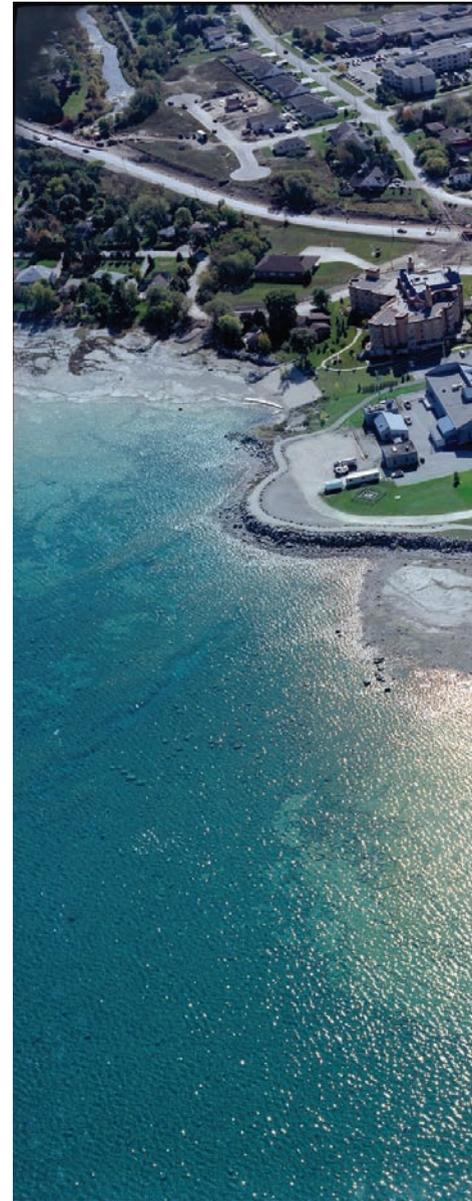
plans to adapt further, with a focus on continuous improvement and innovative thinking, while maintaining the human side of the business, to ensure the new infrastructure being designed today will help to provide a clean and sustainable future for generations to come.

## **Advocating for small communities**

In 1961, recognizing there was a critical shortage of engineers outside Ontario's primary urban centres, Ainley plied his trade in an area where he believed his services could make the most difference. His approach involved advocating for public health and safety through the implementation of high-quality infrastructure for rural and small municipalities, focusing on the areas of municipal water, sewers, transportation and structural works, as well as environmental engineering. He incorporated the firm as Ainley and Associates in 1967.

As Ainley Group grew with the addition of offices in Barrie and Belleville, Ont., in 1974 and 1979, respectively, it became one of the largest consulting engineering and planning firms north of Toronto and extended its services to include urban and regional planning. The firm would also go on to add geo-

Ainley Group is now heavily involved in designing the expansion of Collingwood's Raymond A. Barker Water Treatment Plant.



The firm's current president and CEO is Joe Mullan.

PHOTOS COURTESY AINLEY GROUP



RENDERING COURTESY AECOM.



A conceptual design option for the Raymond A. Barker Water Treatment Plant adds a modern-looking building among the existing walking paths. The design may also add educational boards, fountains and rest areas.

technical engineering, environmental sciences and geomatics through the acquisition in 1988 of A.J. Graham Engineering Consultants, an established firm in Ottawa. With a mission to develop cost-effective, sustainable engineering services to support community growth and development, Ainley Group fostered a collaborative approach to problem solving.

In 2003, Ainley received the Association of Consulting Engineering Companies – Canada’s (ACEC-Canada’s) Beaubien Award, which honours lifetime contributions to the advancement of the consulting engineering profession.

“Bill spent countless hours walking project sites with municipal

councillors and staff and attending evening council meetings to respond to questions and to explain the significance of engineering standards or regulations, all to garner a personal understanding of and empathy with his clients’ engineering needs, as well as to instill a spirit of partnership in addressing those needs,” said the late Terry Hardy, P.Eng., the firm’s former president and CEO, at the time.

Ainley Group’s commitment and contributions to high-quality infrastructure in small communities led Bill and his wife, Trudy, to embark on a larger mission to make a difference: responding to Ethiopian famines in partnership with Hope International Development Agency. They participated in several projects, beginning in 1987 with the drilling of 30 new wells over eight months in remote villages across Ethiopia, which provided clean water for more than 40,000 people. Over the next 15 years, they also went on to provide clean water to those in need in Pakistan, Lebanon, Indonesia and Cambodia.

**Environmental stewardship and innovation**

Over the years, Ainley Group has celebrated many accomplishments, awards and memorable milestones while adapting rural communities to urban technologies, introducing innovative and environmentally friendly services and achieving recognition for merit and ingenuity. The firm has grown and adapted

with evolving technologies, local climates, development pressures and environmental regulations to help its clients build for the future.

Some of the firm’s most notable achievements include the introduction of technologies to address rising concerns over public health, safety and environmental impacts from wastewater contamination and unreliable clean water supplies. Such projects have included the first full-scale application in the province of ultraviolet (UV) irradiation of sewage treatment plant effluent for disinfection, in Craighleith within the Town of Blue Mountains; the first municipal application of ultra-filtration process and membrane technology at the Raymond A. Barker water treatment plant in Collingwood; and the first use in the province of a “DynaSand” deep-bed filter for phosphorous removal, at the village of Elmvale’s wastewater treatment plant (WWTP).

The firm received awards for delivering the first steady-flow system in Ontario, at Carlsbad Springs; the city of Barrie’s first major horizontal directional drilling project, i.e. the Lakeshore Drive transmission main and distribution watermain; and both project management and technological efforts to minimize active construction and traffic disruptions during the Gorham Street watermain project for the town of Newmarket. Ainley Group was also involved in the first use in North America of

**1967**

The firm is incorporated as Ainley and Associates.

**1974**

The firm adds an office in Barrie, Ont.

**1979**

The firm adds an office in Belleville, Ont.

**1988**

The firm acquires A.J. Graham Engineering Consultants.



integral hot-melt asphalt (HMA) paving (also known as ‘compact asphalt’), for a section of Ontario’s Highway 12, which improved road quality, offered environmental benefits and significantly reduced closure times during construction.

**Community-driven solutions**

Engaging communities before completing municipal infrastructure projects has always been a critical component of the firm’s service delivery. Working with its municipal partners, Ainley Group has completed hundreds of consultations and public workshops for master plans, class environmental assessments and high-profile projects, engaging key stakeholders, regulatory agencies and

Top: The firm introduced Ontario’s first full-scale application of UV irradiation of sewage treatment plant (STP) effluent at the Town of Blue Mountains’ plant in Craileith.

Bottom: In 1987, founder Bill Ainley embarked on an eight-month mission to Ethiopia, where he organized the construction of 30 new wells in remote villages, ultimately providing clean water for more than 40,000 people.

the general public.

As the recent pandemic has limited the means of community outreach, the firm has had to adapt to less traditional means of engagement. This was vital, in particular, when the firm had to engage the community for the town of Collingwood’s water plant expansion, a monumental project in the progressive growth of the municipality amid a significant increase in development applications. Restrictions on gatherings, imposed during the pandemic, cancelled plans for a traditional, venue-based public information centre.

So, instead, the project team used the town’s Engage Collingwood web platform as the primary method to present information and

gather input from the community. The site drew hundreds of visitors and even enabled the project team to analyze the level of engagement for each visitor.

This project marked a return for Ainley Group, as it involved the aforementioned Raymond A. Barker Water Treatment Plant, which the firm had designed with Ontario’s first municipal application of ultra-filtration process and membrane technology. Built in 1998, the plant is now undergoing an expansion to meet the needs of the growing community. Interim upgrades are scheduled for 2022 to alleviate Collingwood’s imminent water capacity constraints.

Once the project had become the town council’s top priority, Ainley Group was selected in July, in partnership with AECOM, to design an expansion of the existing plant and to retrofit it with UV disinfection, all to increase capacity pending completion of a new plant.

“Having Ainley Group, a local engineering firm with 60 years of experience, working on this project is a huge benefit to our community,” says Brian Saunderson, Collingwood’s mayor. “Its importance cannot be overstated.”

Ainley Group and AECOM had previously partnered to deliver a 2020 environmental study report, leading into the subsequent design of the project, which is still ongoing. Throughout both phases, public engagement and input have been integral to conceptualizing a preferred solution. Workshops with stakeholders, including those focused on architecture, have continued throughout the detailed design phase, to ensure all ideas are considered to meet the needs of the community. **CCE**

Christine Shilson is vice-president (VP) of marketing and proposals for Ainley Group. For more information, contact her at [shilson@ainleygroup.com](mailto:shilson@ainleygroup.com) and visit [www.ainleygroup.com/60-years](http://www.ainleygroup.com/60-years).



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# When Environmental Consultants' Reports Trigger Litigation Time Limits

**A report's legal implications can go far beyond the scope for which it was commissioned.**

**T**he intersection of legal and engineering issues is quite evident in the context of environmental site investigation reports--most commonly in the form of Phase I and Phase II reports. These are often generated for legal reasons, such as due diligence prior to a land purchase, financing of real property or to obtain a regulatory authorization (such as Ontario's record of site condition) that may be required by law before allowing a development to proceed.

One area that has not perhaps received the attention it deserves is how the choice of wording in an opinion or recommendation offered in a report may affect the legal rights of the client when it comes to the time available to commence litigation. This timing is determined by 'statute of limitation' laws, which exist in every Canadian province to establish limits on when a person may start a claim.

In Ontario, for instance, a plaintiff generally has two years to commence a claim from the time they 'discovered' it. In the case of contaminated land, such 'discovery' quite commonly takes the form of a consultant's report in which an opinion is given as to the presence of contamination and perhaps also the source of that contamination. In effect, this raises the possibility that facts and opinions delivered by the consultant to the client may start the 'ticking' of a two-year clock for the client to commence litigation.

A claim cannot be started outside that two-year period. A recent decision of the Ontario Superior Court of Justice is a good illustration of the issue.



PHOTO: © BY BEEBOYS / ADOBE STOCK

In *Soleimani v. Rolland Levesque*, the court in question found that the plaintiff, Soleimani, in the course of a refinancing, received a report from their environmental consultant indicating that groundwater on their property was contaminated and "impacts identified have likely migrated from the adjacent automotive repair facility to the north of the site."

***The 'statute of limitations' laws in each Canadian province establish limits on when a person may start a claim.***

For various reasons, the plaintiff did not commence litigation against the neighbouring owner until almost four years after receiving the report. When they did, the defendant asked the court to dismiss the action on account of the expiry of the two-year limitation period before the action was started.

The court stated the plaintiff had "discovered their claim" at the time when "they had received an environmental site

assessment identifying the groundwater contamination and offering the opinion that the source of the contamination was likely the defendants' property." Accordingly, the plaintiff's claim was dismissed. In effect, the delivery of the consultant's opinion had triggered the start of the client's two-year limitation period.

The case provides an important lesson and raises a number of questions about the legal implications of findings and opinions offered by consultants. The main lesson is to remind consultants and those reading reports of this nature that the legal implications of a report may well extend far beyond the purpose for which the report was originally commissioned.

Keep in mind the report in this case was prepared for the purpose of financing. It is unlikely either the client or the consultant prepared the report with the intent of starting the limitation period; yet that is exactly what happened.

Would the strength of the opinion offered be relevant to the limitation period question? For instance, would it have mattered if the initial investigation only allowed the consultant to opine that the

source of the contamination “was possibly” or “might be” from the defendant’s property and that further investigation was required?

In such a case, could the plaintiff be said to have “discovered” the claim or might they have had to undertake more investigation before their two-year clock started to run? Words such as “probably,” “possibly” and “certainly” can have quite different legal implications when reviewed by the courts and, as such, need to be chosen with care when writing reports—and reviewed with equal care by the readers.

This question has not been fully explored by the courts to date. Until we receive more definitive guidance, great care should be exercised in the choice of such words when used in an opinion, to ensure they truly reflect the fair inferences that can be drawn from the data available.

Also uncertain in the current state of the law is whether or not the manner of delivery of the information would have mattered. The court in the above case used the date of the report itself as the date when the plaintiff was said to have discovered the claim. This appears to have been the date of the ‘final’

and signed report.

In many instances, however, the content of such a report is delivered in draft form to the client first. There might even have been an email or phone call ahead of the draft report, offering the same opinion as to the likely source of the contamination. If evidence of such earlier communication were provided to a court, the date of that communication may well become the date when the limitation period starts to run.

While it is usually common for clients to pass on such reports to their legal advisors, it is by no means a legal requirement, nor is it done

in every instance. There is a risk, therefore, that neither the client nor the consultant may be aware of the legal implications of a report that go beyond the scope for which it was commissioned.

One practical implication of the above decision is that consultants may wish to consider reviewing their disclaimer and limitation conditions and ask themselves whether they should routinely advise their clients (a) there may be legal implications to the report beyond its original scope and (b) the client should consider seeking legal advice to properly understand those implications. **CCE**



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An environmental site assessment may identify groundwater contamination.



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# Soundproofing Today's Buildings

**C**ristian Wallace, the territory manager at AcoustiTech who covers Ontario, considers a variety of insulation methods and tools when soundproofing today's buildings, based both on complementing the specific materials already used in their construction and on supporting the ways those buildings will be used by their tenants.

## **Why are acoustics so important today?**

People have expectations of comfort when moving into high-end residential condo buildings. Soundproofing is a sign of quality and luxury. And these buildings aren't just residential anymore—they're mixed with commercial spaces, gyms, pools, theatres and spinning rooms. These bigger and bigger buildings become like tiny cities.

High-end hoteliers don't think twice about investing in acoustics, because it will be noticed right away, whenever somebody comes into their building. It's better for developers to think about it from the beginning, rather than pay big bucks later to correct mistakes and start all over again.

## **What are your recommendations for concrete?**

Acoustics is already taken care of to some extent, as the mass controls airborne noise, but it's not true for impact noise. And most of the complaints coming to acoustical engineers are about impact noises.

The biggest enemy for concrete buildings is high-frequency noises, like when someone drops their keys on the floor. Nothing beats full carpeting, but the closest would-be textile underlayments. There are

also foam, cork and rubbers that can be used.

## **How about steel?**

It's all about decoupling steel and concrete efficiently, since together they provide an easy environment for vibrational energy to travel. Decoupling involves separating them with good underlayments beneath floors, insulation in the steel's cavities, layers of drywall and acoustic hangers.

## **We're seeing increased use of wood in large buildings. What measures need to be taken there?**

The challenge is low-frequency (LF) noise. When you walk on wood, you get these hollow booms, with a lot more energy than high-frequency noises in concrete. Wood is lighter and we need to add mass. That's why concrete toppings are often used.

Even mass-timber construction is very light compared to concrete, so we need to add more mass and decouple materials to control low-frequency noises. If an exposed ceiling is the goal, then the only place we can work is on top of the cross-laminated timber (CLT), where a more complex system will be needed, potentially two to three inches thick. That is significant and needs to be planned prior to construction.

## **What are the challenges for commercial spaces?**

Sometimes, developers don't know what types of tenants they'll have. Offices for a law firm, for instance, need not just peace and comfort, but more importantly confidentiality. If they're talking about sensitive information with clients, they can't have their upstairs or downstairs



***"It's better to think about acoustics from the beginning, rather than pay to correct mistakes and start all over again."***

neighbours hearing it.

I recommend shooting at least for a sound transmission class (STC) in the mid-40s. That's compared to normal residential spaces, where you're shooting for mid-50s, and high-end hotels, which are getting to the mid-60s.

## **What else is important for consulting engineers to understand about acoustics?**

Ratings don't come from an underlayment, an acoustical clip, a resilient channel or any single product. They come from the whole assembly.

Also, every structure has specific needs. How thick is the concrete slab? Is there a suspended ceiling? Will the floor joints crack with a compressible underlayment? Each building needs to be treated differently. **CCE**

This article is based on an interview for The Better Buildings Podcast. To listen to the entire episode, visit [www.ccemag.com/podcasts/the-better-buildings-podcast-the-importance-of-acoustics](http://www.ccemag.com/podcasts/the-better-buildings-podcast-the-importance-of-acoustics).

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