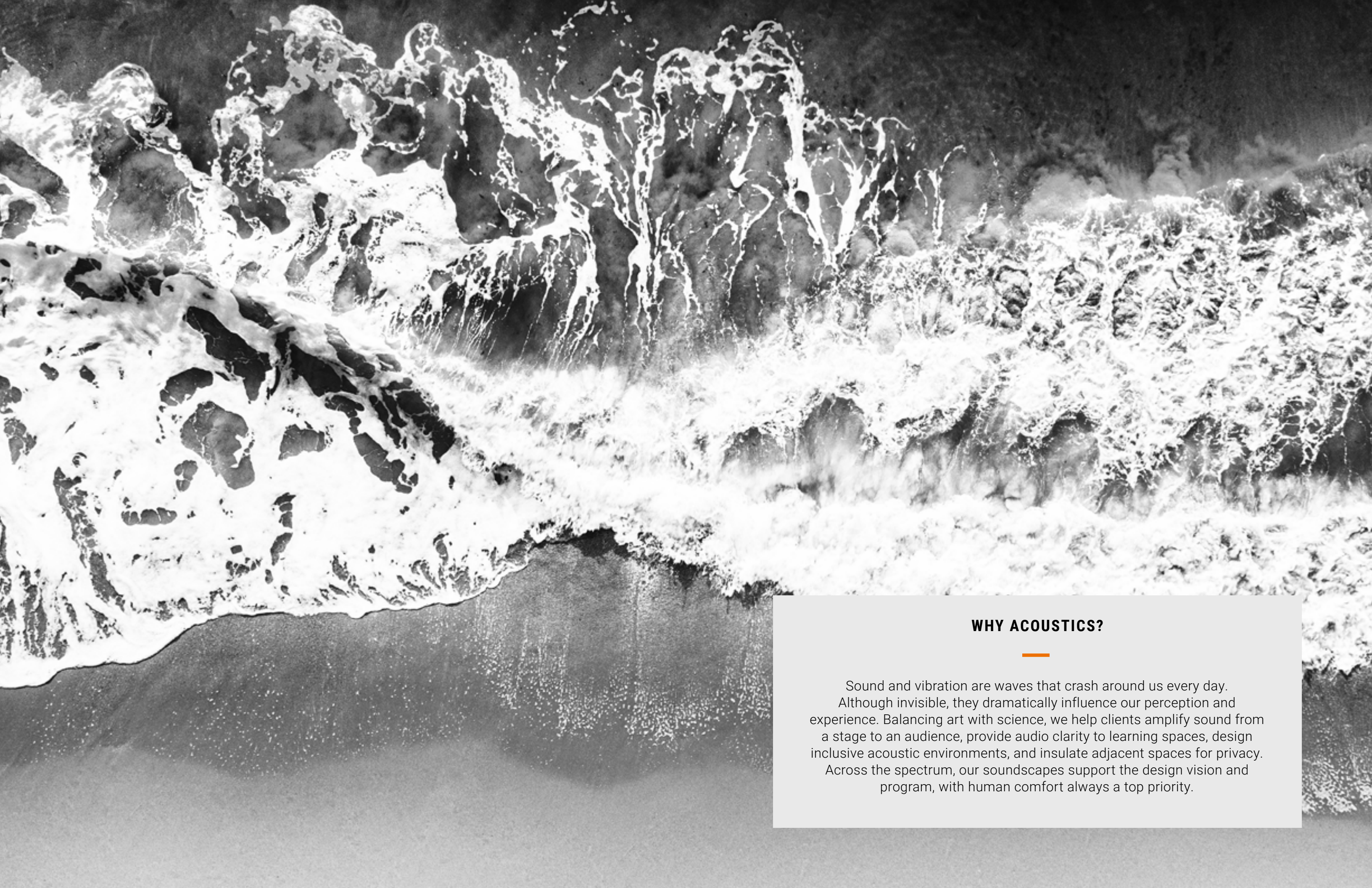




 Stantec

# Acoustics & Vibration





## WHY ACOUSTICS?



Sound and vibration are waves that crash around us every day. Although invisible, they dramatically influence our perception and experience. Balancing art with science, we help clients amplify sound from a stage to an audience, provide audio clarity to learning spaces, design inclusive acoustic environments, and insulate adjacent spaces for privacy. Across the spectrum, our soundscapes support the design vision and program, with human comfort always a top priority.



**EXPLORING THE  
WORLD OF SOUND.**

Sound travels, but you don't have to. Our team of experts spans North America, Europe, and Australasia—  
**we've got you covered.**

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# Innovative Approaches to Acoustics

Advancing the art and science of sound through innovation and technology

## INNOVATION IS AT THE HEART OF WHAT WE DO.

We've invested heavily in technologies and software development that enhance our client's understanding of the designed environment—helping them to make smart and informed decisions for their projects.

One key innovation is the development of software that allows project stakeholders to hear the effect of a variety of material choices on noise transferring from outside to inside, or from one room to another room. The key innovation in this software is that we can calibrate the sound level to any environment, such as a client meeting room. Stakeholders can use the system to test the potential external façade and glazing types protecting the occupants of a board room or office space from a external noise or internal noise source. This is critical at the concept stage as it allows for a robust, yet cost-effective feasibility study to be undertaken. This knowledge helps clients make informed decisions on façade design and aids in budget allocation.

As the façade and partitions are one of the most significant cost components of a development, engaging all stakeholders in the process in making decisions on façade types, internal partition types, and floor constructions can provide some significant cost savings. Indeed, the decision is not the acoustic engineers' but agreed upon by the entire project team.

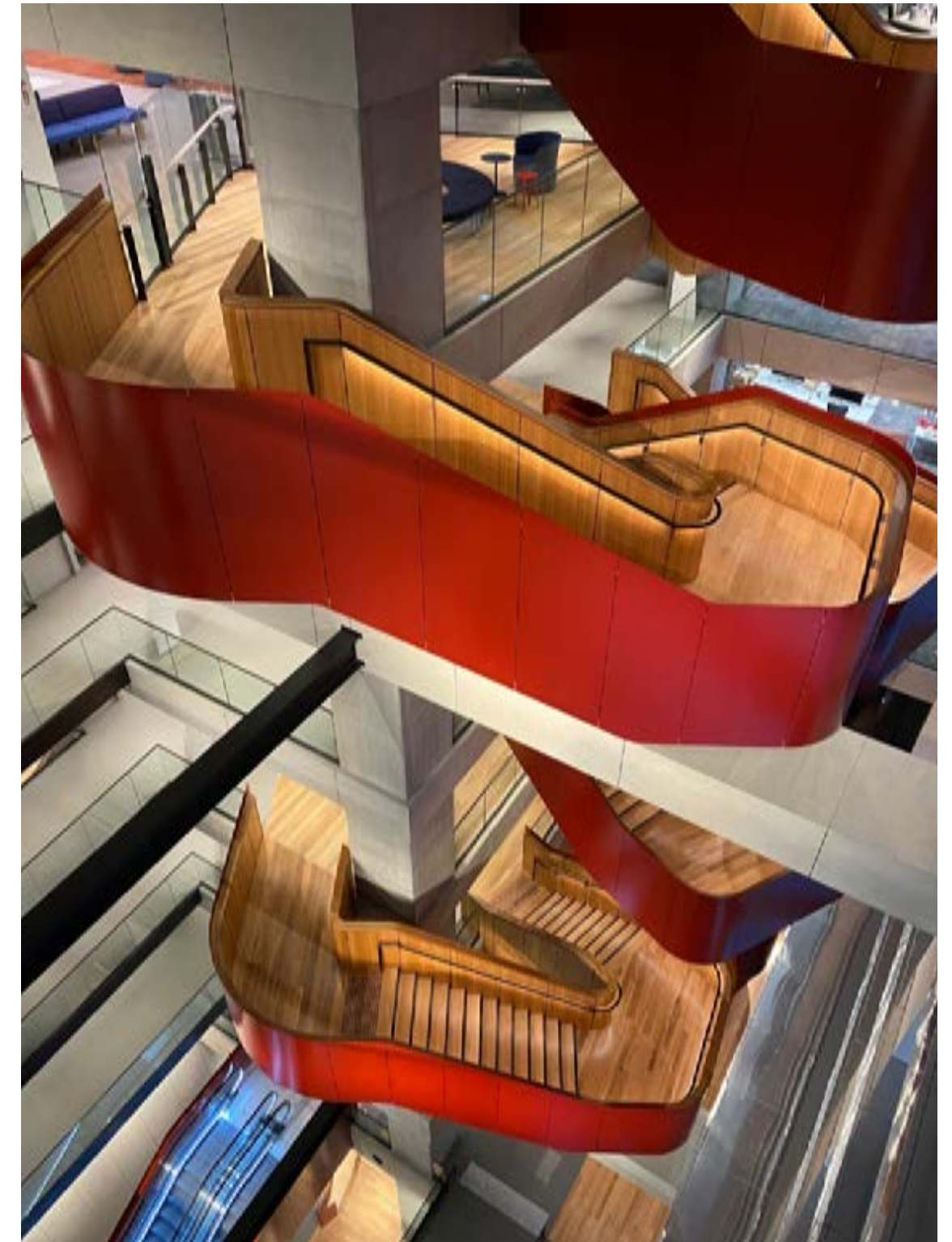
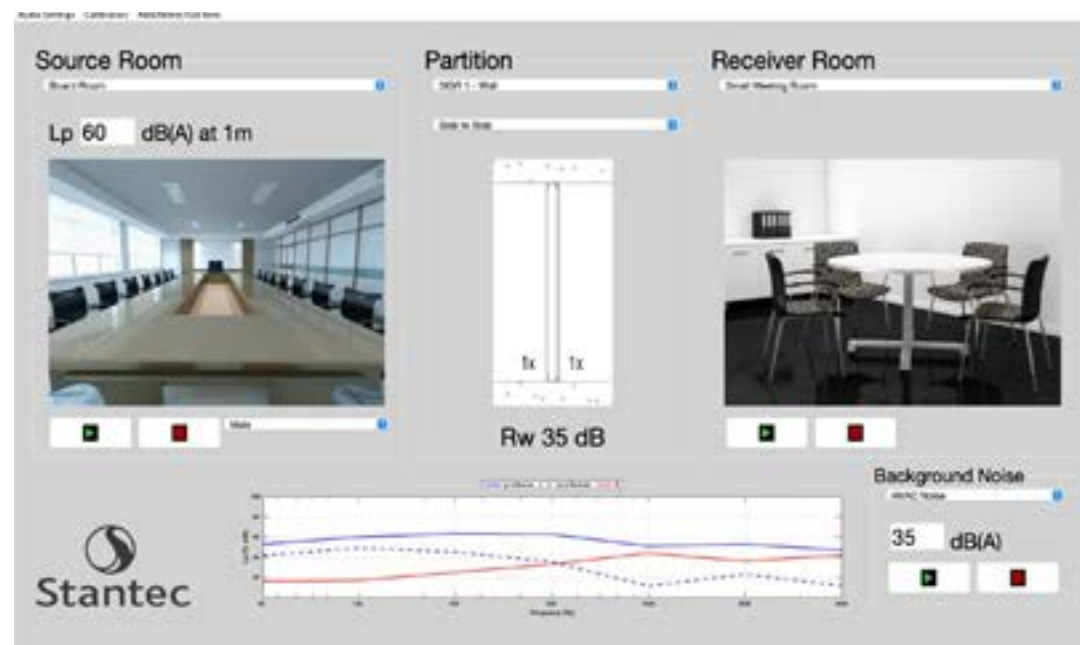
The software operates on a portable platform which means that it can be used anywhere, for instance before a regular project meeting.

## AURALISATION TOOL

This proprietary in-house developed software allows stakeholders to listen to the performance of a partition whether solid or glazed.

The software allows the engineer to select a type of noise source in one room, select a type of partition, set the adjacent room usage types and then listen to the difference between the two spaces. The key innovation is that the software provides a calibrated sound level within the receiver room, which means that the users can listen to the exact sound which will occur on-site.

When explaining the implication of partitions, doors and finishes with the design team and end client, both the auralisation and VR software provide all stakeholders with a better understanding of the level of privacy and intelligibility to expect from the design options. This knowledge helps make informed budgetary decisions and aids in product selection. Ultimately, this provides certainty that end users will be happy with the finished space.



**NAB Brookfield Place**  
Sydney, Australia (AoR: Woods Bagot)

NAB Head Office in Sydney is a Premium Grade Office which achieved a 5 Star Green star "as-built", extending over 32,000m<sup>2</sup>

## **VIRTUAL REALITY (VR) IS AN INCREASINGLY CRITICAL DESIGN TOOL FOR ARCHITECTS AND ENGINEERS**

**When most people think of virtual reality in the design world, they think about visualization of space—but the potential is so much more.**

Virtual Reality (VR) is an increasingly critical design tool for architects and engineers. At Stantec, we have developed a technology that allows a user to freely move in a VR scenario while also listening to the real acoustics of the space being created. So much of our perception of interior spaces relies on how we feel within a space and a key contributor to our comfort is auditory.

Virtual sound simulations within a VR model are incredibly powerful in helping clients understand how it will feel to be in the space. The software can be used to dynamically change the acoustic properties of interior materials. This visually demonstrates design but also allows understanding of the varied sound transmission implications and their impact on the experience of the user – before the building is ever built.

[Learn more](#)



### **Immersive experience**

The level of comfort within a space relies on visual and aural input—a fully immersive VR experience can provide both.



## ACOUSTIC MODELLING

In highly specialized spaces like theatres, concert halls and lecture halls; acoustic quality defines project success.

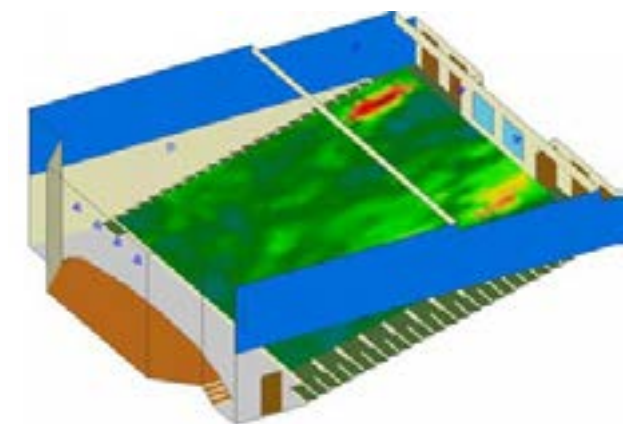
By way of extensive 3D acoustics modelling, we can extrapolate details of the sound propagation to simulate and understand how it will sound in-situ, meaning design modifications can easily and cost effectively be made.

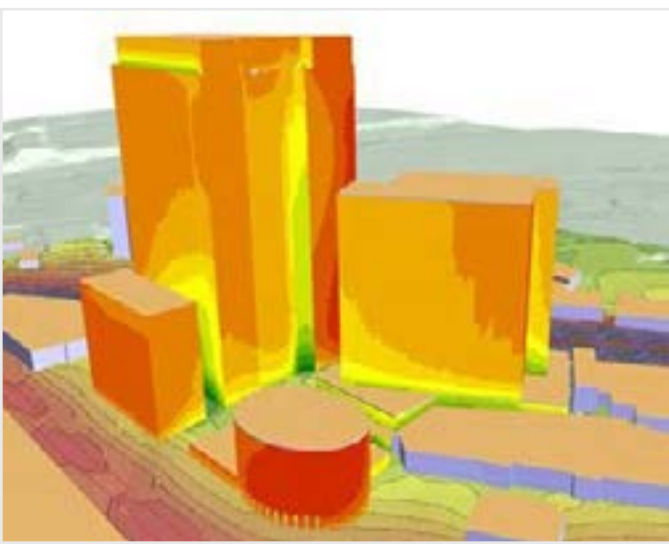
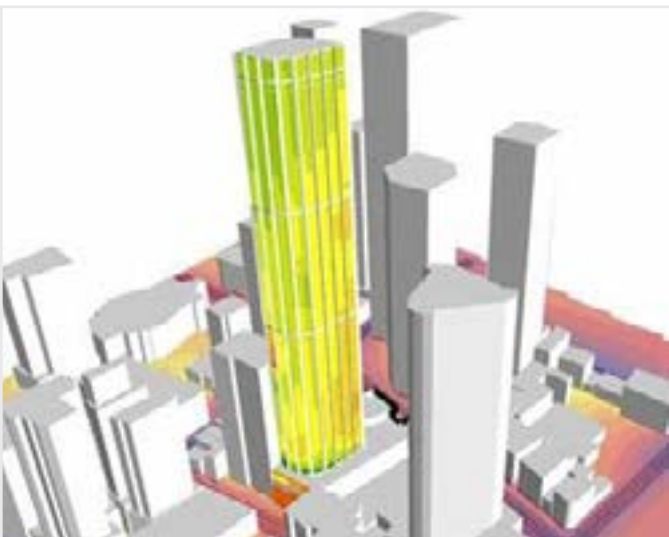
Via the model, clients can click individual seats within the auditorium to hear what someone speaking over the audio system, or a performance on stage sounds like, from that point location.



**Above:**  
**Olympic College Instruction Center**  
Bremerton, Washington  
(AoR: Schacht Aslani Architects)

**Left:**  
**Reed College Performing Arts Center**  
Portland, Oregon  
(AoR: Opsi Architecture)





## FAÇADE NOISE MAPPING

**Each building we design adds to the built environment. None operate independently. Each building operates as part of a larger construct, whether located in a downtown urban core or more suburban community.**

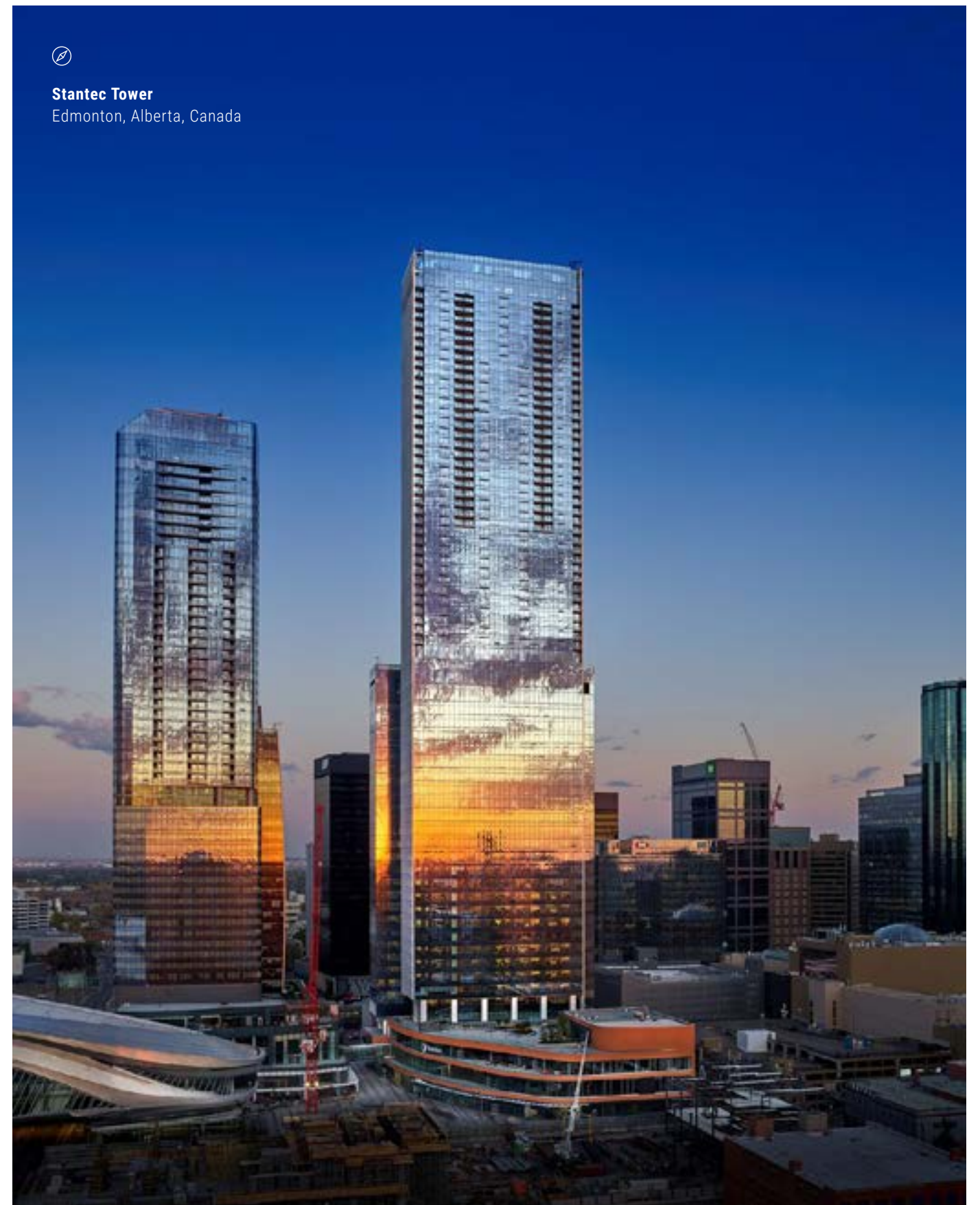
Understanding how the noise generated by vehicle movements on adjacent streetscapes and/or how rooftop patios and bars might impact not only the new development but also the surrounding buildings is a critical element to consider as part of the design process. This analysis is a complicated feat without the expertise of 3D modelling.

Stantec's acoustic engineers are experts in the 3D visualisation and simulation of acoustics and noise propagation. Our noise modelling software directly interfaces the software to allow us to calculate the noise level impact on the façade of a bedroom, living room, or any space within the proposed development.



### Mapping sound

The figures to the left show some of the façade noise mapping we have prepared for recent projects which have assisted in refining the façade design (glazing/curtain wall design), internal noise design and the services design.





## CUSTOM ACOUSTIC TOOLS

Stantec developed and uses two design systems related to acoustics that are innovative and have given proven cost savings and design management benefits for workplace projects.

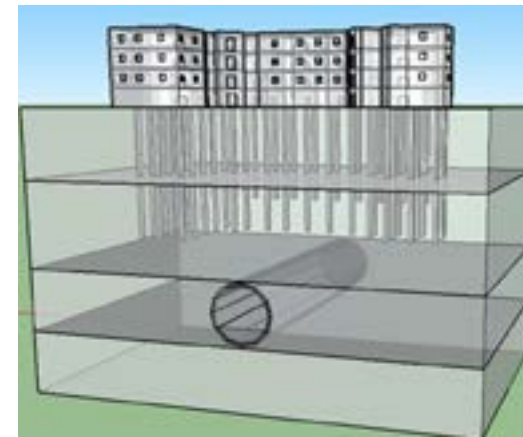
### Sound Isolation Grade Rating System (SIGRS)

Using this system our engineers rate the acoustic performance of internal patrons with a single integer ranging from 1 to 5 where one is the lowest performance and 5 is the highest. This system is derived from Australian Standard AS2822 which relates to acoustic privacy.

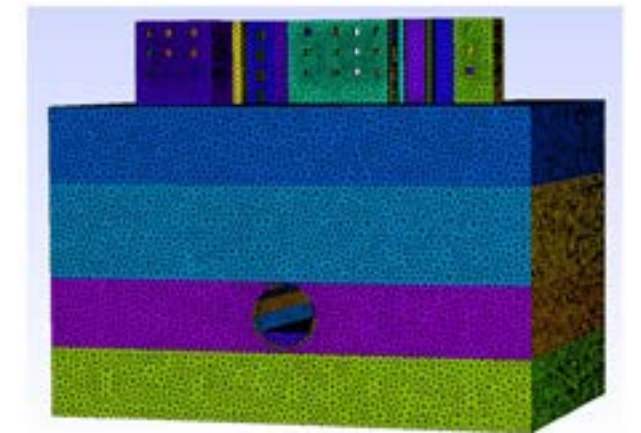
The system consists of rating every element of a partition such as door, glazing, services, penetrations, etc. with a single number and associated details, which simplify the documentation and avoid coordination issue once construction starts. In using such a system, it becomes easy to pick up defects on site, especially when the project is of a very large scale.



SIGR applied to a large-scale fitout project



3D Modelling of regenerated noise and vibrations from train and metro pass-by in tunnels into buildings



Stantec have developed a number of innovative custom acoustic tools that provide proven cost savings and design management benefits for projects.

### Re-radiated Noise Prediction System

Our re-radiated noise and vibration prediction system calculates the likely re-radiated noise levels from nearby vibration sources such as underground rail networks, overground rail, and tram lines.

The system allows early identification of potential problems with re-radiated noise and vibration allowing design teams to plan for the inclusion of building isolation systems where appropriate.

### Ventilation Noise Prediction System

Stantec have developed a noise prediction system to calculate noise transfer through building service(s) ducts. The system allows accurate prediction of noise levels in receive (receiving?) rooms from an air moving plant located in other areas of the development. This allows potential noise issues to be identified at an early stage in the project and acoustic mitigation to be tested and specified.

## ENVIRONMENTAL ACOUSTIC MODELLING

Environmental acoustic computer modelling is a method of accurately predicting sound propagation from a variety of sound sources including road, rail, aircraft, industrial processes and commercial activities in an environmental setting.

Stantec utilizes the latest industry standards software including Soundplan and CadnaA to predict both the impact of existing noise sources on proposed noise sensitive developments, and model how noise generating developments may impact surrounding receptors. We also use the software to calculate future changes in sound levels due to changes in the transportation network.

The high degree of accuracy of the models allows mitigation measures to be assessed for effectiveness at an early stage in the design process and provides stakeholders with the information needed to make decisions regarding the use of acoustic mitigation.

The software can also be used to model noise sources within buildings and predict the level of noise breakout from different façade elements. When used in conjunction with Stantec's other acoustic tools we are able to make sure that the acoustic treatment is applied at the most effective location.

Acoustic modelling at Stantec has been successfully employed on a wide variety of projects ranging from residential developments and large scale mixed use masterplanning to industrial processes and power stations.



**Right:**  
**Assessing road noise**  
*Calgary, Alberta*

# Noise and Vibration Monitoring

Imagine being able to monitor your project's noise and vibration impacts in real-time. We can make that a reality, thanks to our automated monitoring technology. Automated monitoring of noise and vibration occurs almost systematically during the construction phase but also can be required at post completion stage of a project. Clients and stakeholders are able to access real-time data via a cloud database to access historical records, with audio

recordings also available to ascertain the cause of any exceedances noise.

**Noise impacts can always be a challenge, especially when developments are in close proximity to the community**

However, the biggest benefit to clients and stakeholders is the ability to access real-time data via a cloud database to retrieve historical records, with audio recordings also available to ascertain the cause where limits are exceeded.

By being proactive in managing noise and vibration from construction and demolition on sites, we can help clients mitigate any potential issues with stakeholders, such as neighbors, governments, and local authorities.

## Our acoustics team can help you:

- Assess noise and vibration impacts due to construction and demolition activities
- Assist in establishing suitable criteria for projects based on local regulations or typical activities within a workspace
- Develop mitigation measures for activities that generate excessive noise and vibration
- Assess vibration impacts due to construction on heritage structures and critical infrastructure surrounding sites
- Co-ordinate with relevant stakeholders to develop noise and vibration management plans
- Predict construction noise and vibration levels and assessment against targets
- Conduct noise and vibration monitoring, including blast monitoring (where required), both attended and unattended





# Physical Acoustic Testing

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**Stantec offers a range of services when it comes to physical acoustic testing which includes the following:**

- Testing of walls and floor systems (Airborne and Impact)
- Testing of facade
- Measurements of internal background noise levels and acoustic parameters such as reverberation time, sound transmission index (STI), early decay time (EDT), clarity indexes, etc.
- External noise surveys including attended and unattended monitoring
- Measurements of vibrations for a range of industries
- Noise and Vibration monitoring for construction activities (long term and short term monitoring)
- Compliance testing for buildings, environmental and infrastructure projects

# Buildings Acoustics

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Recent studies have shown that on average **humans spend almost 90% of their time indoors**. Never has the quality of the interior environment mattered more.

Acoustic design creates an auditory signature that marries architecture with function. It invokes a sensory experience and emotional response that helps to connect people to place. In short, acoustics can contribute to, enhance, and support human health and well-being inside and out. Executed well, acoustic design balances budget with function, architectural intent with program use, all while complying with the jurisdictional codes and standards.

## KEY MARKETS

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We provide a range of acoustic and vibration consulting to clients in the following markets:

- Commercial / Office Development
- Corporate Workplace / Office
- Healthcare
- Education
- Science & Technology and Research
- Cultural / performance spaces
- Industrial / Manufacturing
- Sports & Recreation

### Our key focus areas are:

- Achieving adequate speech privacy and sound insulation
- Control of all types of internal noise
- Delivery of comfortable reverberation and speech intelligibility for rooms of all types and usage
- Control of noise emissions generated by building services or by activities associated to the building
- Control external noise intrusion into the building
- Design for optimal interior building acoustics via control of the acoustic properties of building elements and finishes

## KEY SERVICES

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- Reverberation and speech intelligibility control. We liaise with architects and designers, suggesting and specifying products and finishes that will suit their design intent or further enhance their creativity.
- Airborne and impact sound insulation. Design and recommendations for partitions, glazing, ceilings, roofs, doors, and other building elements to control noise transmission. This applies both to speech privacy control in indoor environments, and to outdoor-to-indoor noise control.
- Building services noise control. Design to mitigate noise control due to HVAC or other heavy machinery within a building to provide the ideal acoustic environment for occupants or research activities.
- Acoustic Testing: Assessment of noise levels, airborne sound insulation, impact noise insulation, reverberation, vibration and speech intelligibility.
- Code compliance assessments for sound insulation.
- Design integration of audio-visual (AV) equipment into spaces, such as video conferencing, telepresence, public address (PA) systems, AV meetings rooms, broadcast or similar.



**Microsoft Building 83**  
Redmond, Washington  
AoR: BORA

## KEY SERVICES

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Acoustic design of specialist spaces related to sound and speech, such as auditoriums, theatres, amphitheatres, learning spaces, recording and broadcast studios, concert halls and meeting rooms. Design includes modelling speech intelligibility, reverberation, sound clarity and other acoustical properties

- Acoustic design or refurbished spaces to improve acoustic privacy and ambient quality
- Planning application assessment (DA) against planning policies, including road, rail and traffic noise assessments
- Building footprint position and shape optimisation with a view to reduce spend on noise containment measures
- Design of acoustic barriers, silencers, plant treatment and other noise control measures
- Noise management plans for commercial, industrial or mixed use developments near residential areas
- Construction noise and vibration assessments and management plans

Our acoustical engineering and design services provide solutions for a variety of building acoustical concerns, including:

- Architectural acoustics design
- HVAC systems noise evaluation and solutions
- Sound transmission testing through walls, ceilings, and floors
- Speech privacy in buildings
- Room acoustical design
- Electrical systems noise control
- Piping systems noise control
- Vibration assessment and control
- Building code acoustical studies
- Noise surveys
- Sound measurement, testing, and analysis





## FEATURED PROJECTS

Through the clarity of sound, we're enhancing the connection between people and the built environment.



**SICEP**  
Sydney, Australia  
AoR: FJMT



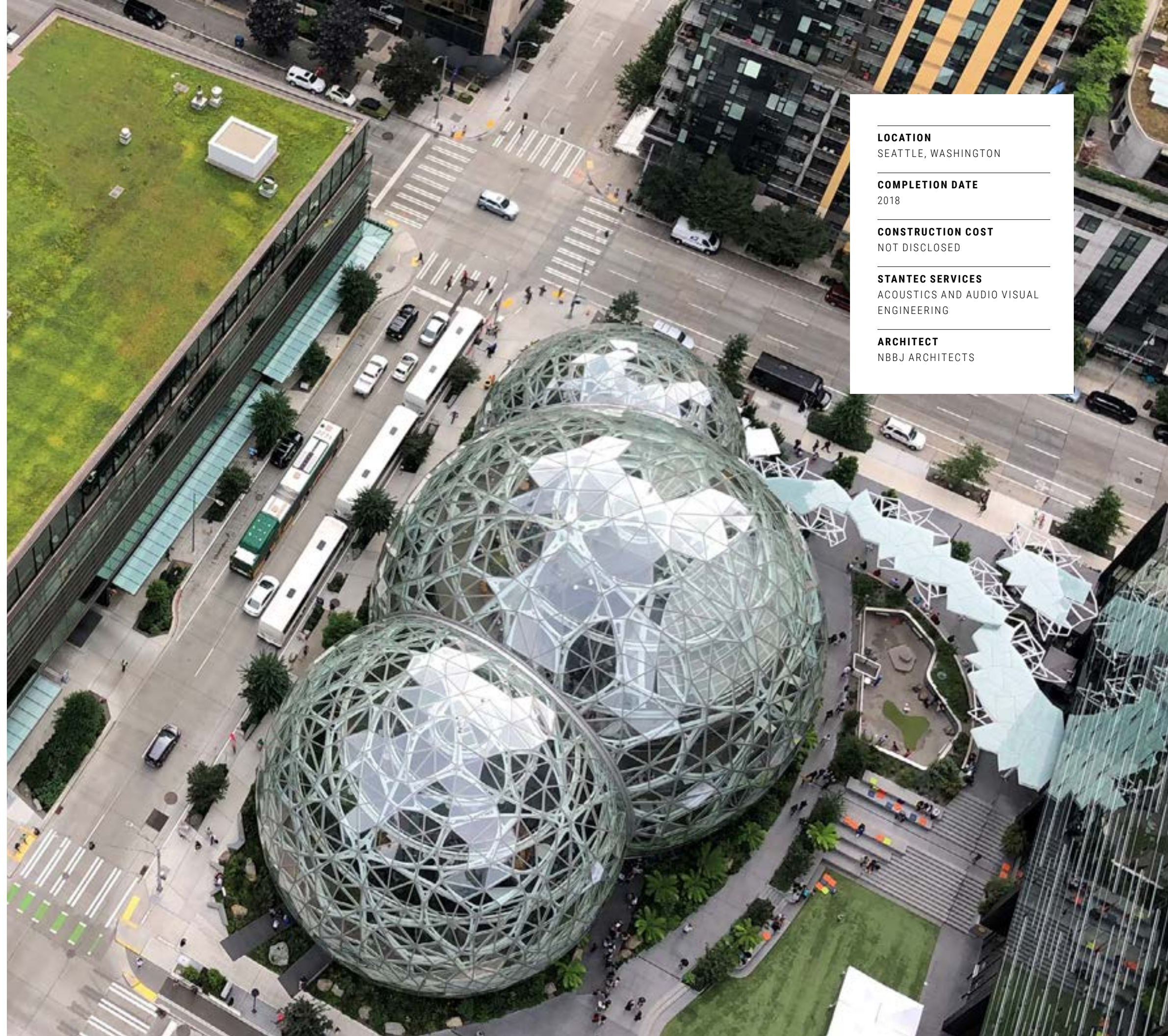
FEATURED PROJECT

# Amazon South Lake Union Campus

Stantec and Amazon have a long history of collaboration, particularly on the South Lake Union campus where Amazon is currently based, the tech giant has relied on Stantec teams many times for electrical, audiovisual, acoustical, and lighting services. We have been involved in more than 4,000,000 SF of new development within multiple commercial development towers, primarily providing services to support workspace, meeting, and presentation spaces.

One of the most unique, and technically challenging, buildings on the campus is the four storey low-rise building which occupies a portion of the Block 19, known as the Amazon Spheres. Adjacent to a 37-storey 1 million square foot tower, the form of the building is three overlapping spheres of glass and steel, inspired by the domed greenhouses of the Victorian era and later 20th Century biomes. The building is an integral part of Amazon's central campus workplace environment, hosting a variety of unique employee amenity spaces. The interior of the Spheres offers employees a plant-rich environment reminiscent of a traditional conservatory but designed with human occupant comfort as the foremost consideration. Estimated usable area of the combined Spheres is approximately 47,100 sf, and includes 4 story open assembly spaces, indoor streams/waterfalls, fully matured indoor trees and planting areas, and a canopy level suspension walkway.

For the audio design, we developed an audio only system for the large meeting/event space on the top floor of the large center sphere. This audio system provides presentation audio and sound masking such as simulated water sounds. Our work with the architect includes coordination of location for audiovisual presentation displays and audio systems including interface with lighting and room controls.



**LOCATION**

SEATTLE, WASHINGTON

**COMPLETION DATE**

2018

**CONSTRUCTION COST**

NOT DISCLOSED

**STANTEC SERVICES**

ACOUSTICS AND AUDIO VISUAL  
ENGINEERING

**ARCHITECT**

NBBJ ARCHITECTS

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**LOCATION**

CORVALLIS, OREGON

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**COMPLETION DATE**

2015

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**CONSTRUCTION COST**

USD\$ 65,000,000

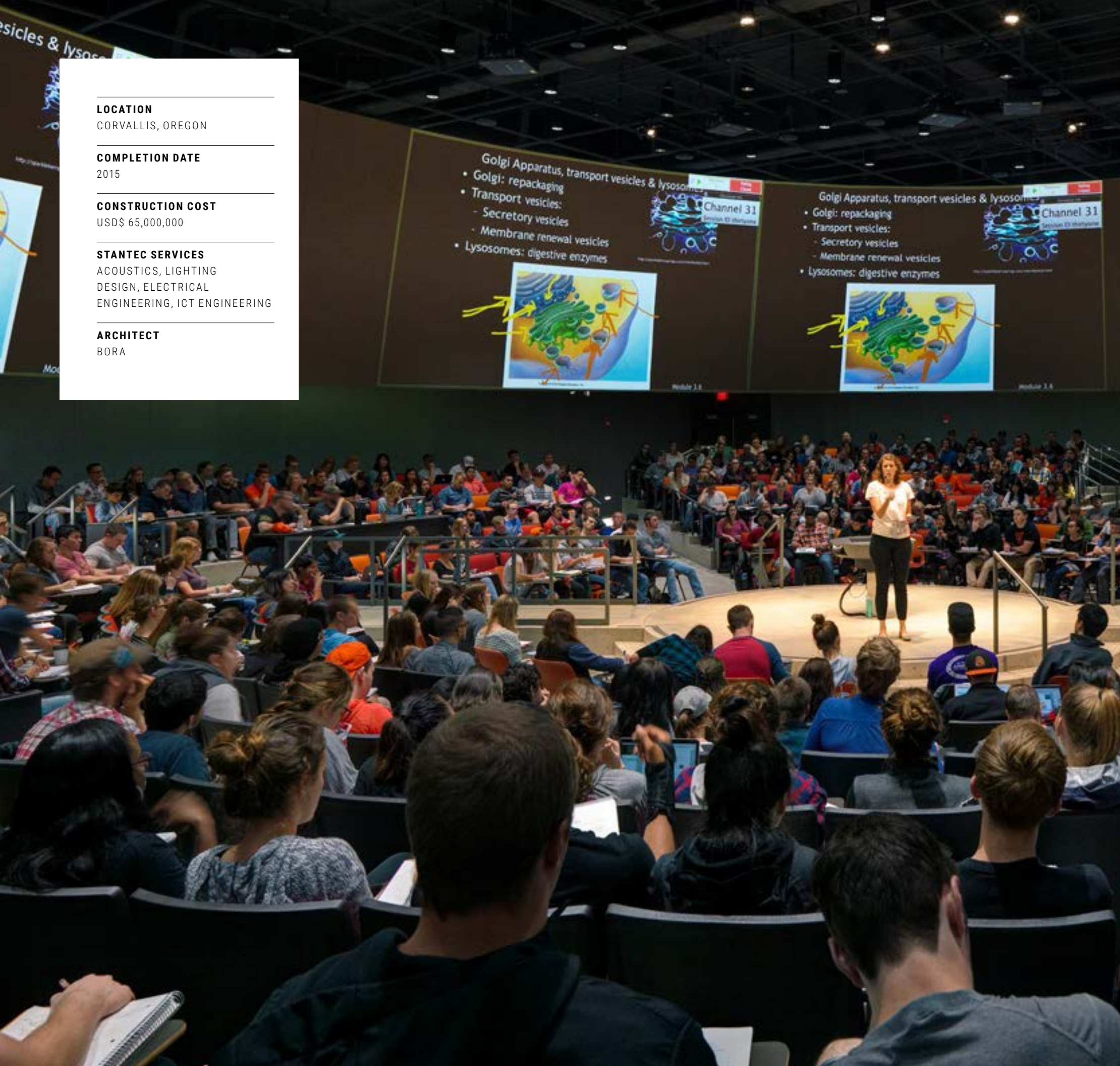
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**STANTEC SERVICES**ACOUSTICS, LIGHTING  
DESIGN, ELECTRICAL  
ENGINEERING, ICT ENGINEERING

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**ARCHITECT**

BORA

**FEATURED PROJECT**

## Oregon State University Learning Innovation Center

Stantec was the audiovisual, acoustic, technology, lighting and electrical design partner for this new 130,000 sf Learning Innovation Center. This Classroom Building introduces new styles of learning spaces that support collaboration and student participation, such as Parliament, and Arena or "Teaching-In-The-Round" classroom designs along with flexible classrooms and lecture halls. The large classrooms are supported by a centralized control room for technician assistance as well as classroom capture and streaming. A green screen room is provided to allow faculty to create classroom content with two editing suites and an isolation booth for audio recording. This facility created 16 classrooms with over 2,900 classroom seats throughout as well as spaces for collaboration and study for more than 600 students outside of the classrooms. It is anticipated that this building will accommodate Oregon State University's expected growth over the next ten to fifteen years.

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**LOCATION**

LOMA LINDA, CALIFORNIA

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**COMPLETION DATE**

JANUARY 2020

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**CONSTRUCTION COST**

USD 1,200,000,000

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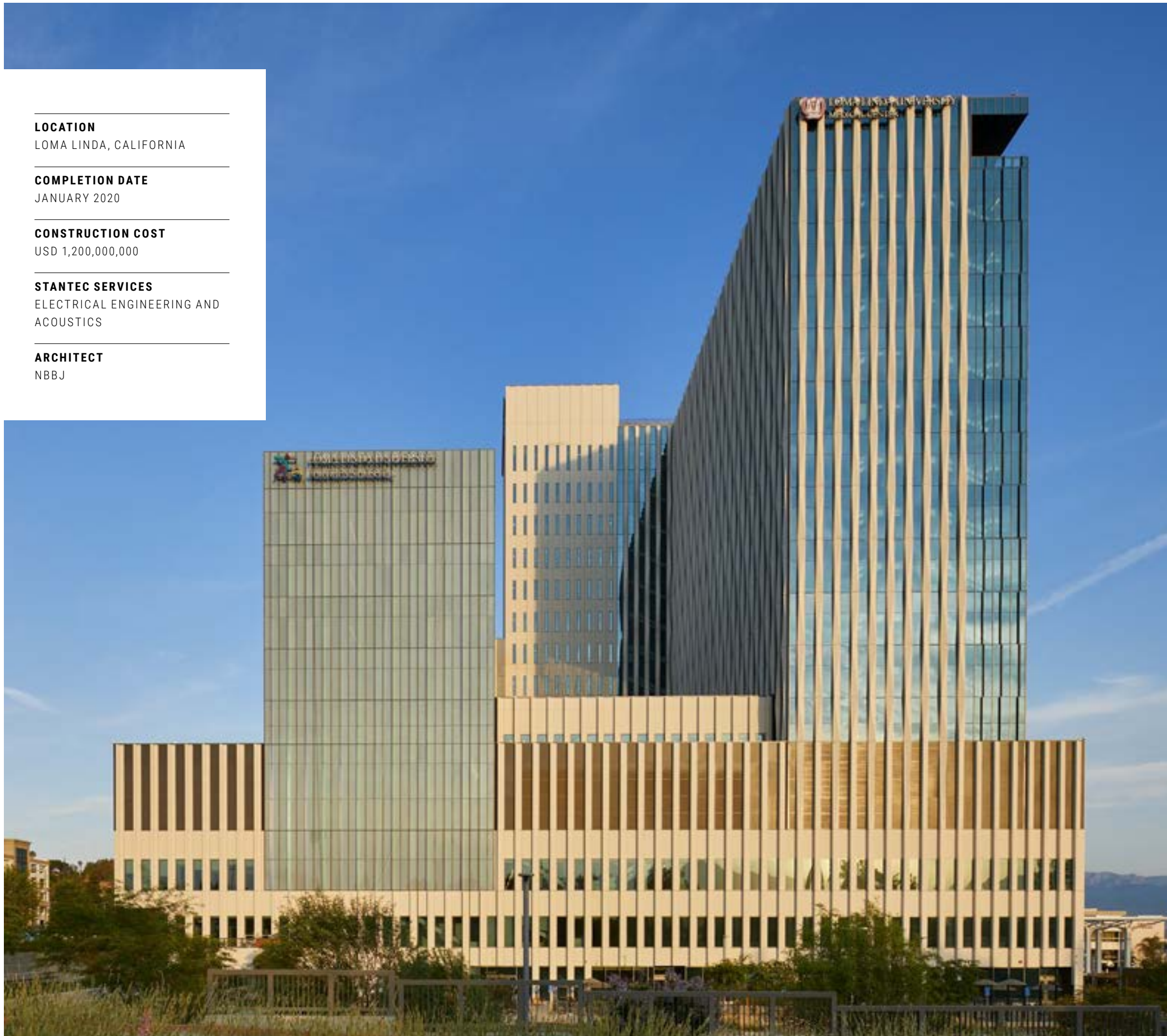
**STANTEC SERVICES**

ELECTRICAL ENGINEERING AND  
ACOUSTICS

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**ARCHITECT**

NBBJ

**FEATURED PROJECT**

## Dennis and Carol Troesh Medical Campus, Loma Linda Medical Center

Loma Linda's medical campus transformation includes a new university hospital, adult patient care tower, new children's hospital, diagnostics and treatment, administrative, conferencing center, chapel, a new 10MW emergency generator plant, expansion of the campus central energy plant, and support services and new cafeteria.

Stantec provided technology visioning and systems operational programming and design for all the Information & Communication Technology systems to be deployed in the new facility.

Within the design assist model, Stantec helped guide the technology strategic decisions. With multiple contractors and integrators being brought to the project early in the process, we helped our partners make sound implementation and constructability decisions which ultimately reduced cost and improved operational performance—all to increase patient and user satisfaction.

An example of Stantec's ingenuity is our seismic transition design for the communication backbone cable systems. We engineered a cable support system that transits a code required "seismic moat" that provides for three-dimension movement of all fiber optic and copper cables systems to allow for up to 48 inches of movement during a seismic event.



FEATURED PROJECT

## Microsoft Building 83

Microsoft Building 83 pushes the standard for innovation and provides some of the best brains in the business with the work-space they need to not only succeed—but thrive. Our team would step in to supply acoustical, lighting, and mechanical design services for the facility. At almost 300,000 square feet and housing over 1,000 occupants, we were happy to help with the challenge. Our work would include the lobby and reception area, staff work-spaces, mixed-use meeting rooms, atrium, and conference rooms. The game plan? Simple. To enhance the experience for anyone who enters the building. Building 83's HVAC system includes a raised floor system at all work areas. With an espresso vendor on the ground level of the lively atrium space, noise played a factor—which meant we really had to manage the amount of sound that would reach the office work-spaces. Microsoft Building 83 set a new standard of design that continues to help build a collaborative culture for staff in Redmond, Washington.

**LOCATION**  
REDMOND, WASHINGTON

**COMPLETION DATE**  
2014

**CONSTRUCTION COST**  
UNDISCLOSED

**STANTEC SERVICES**  
MECHANICAL ENGINEERING,  
ACOUSTICS, LIGHTING DESIGN

**ARCHITECT**  
BORA ARCHITECTS

FEATURED PROJECT

## UC Davis Green at West Village Student Housing

Faced with a rapidly growing student body, UC Davis partnered with our public-private partnership team to deliver the largest student housing development in the US. The Green at West Village includes nine four-story residential buildings, a 10,000-square-foot community center, and a maintenance center.

The design intent and constructability of the facilities is being completed in a fast track fashion between two phases with Phase 1 (1000 beds) complete in 2020 and Phase Two—another 2,300 beds and community center—complete in August of 2021. The project aims to be the largest net-zero community in North America, designed to generate as much energy as it uses within a year.

Acoustical services include sound isolation, room acoustics, mechanical noise and vibration control, and a detailed Environmental Noise Study, including a SoundPLAN modeling study, to design the exterior façade to meet the minimum requirements of the California Building Code.

**LOCATION**  
DAVIS, CALIFORNIA

**COMPLETION DATE**  
2020/2021

**CONSTRUCTION COST**  
USD\$ 575,000,000

**STANTEC SERVICES**  
ARCHITECTURE, INTERIOR  
DESIGN, LANDSCAPE  
ARCHITECTURE, ACOUSTICS,  
MECHANICAL, ELECTRICAL AND  
ICT ENGINEERING

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**LOCATION**

PERTH, WESTERN AUSTRALIA

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**COMPLETION DATE**

2018

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**CONSTRUCTION COST**

USD\$ 700,000,000

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**STANTEC SERVICES**

MECHANICAL AND ELECTRICAL  
ENGINEERING, ACOUSTICS,  
SUSTAINABILITY

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**ARCHITECT**

HASSELL, COX, HKS

**FEATURED PROJECT**

## Optus Stadium

The multi purpose 60,000 seat Optus Stadium is considered a world-class venue.

Key design and fans-first features included future-proofed stadium technology (such as full 4G Wi-Fi coverage) and more than 70 food and beverage outlets that you can enjoy without missing a thing. The stadium includes the widest range of seating and hospitality options of any stadium in Australia, and the lightweight fabric roof covers 85% of seats and responds to Perth's climate conditions. At night, it presents a spectacular glowing halo effect.

The design acknowledges Western Australia's unique sporting, cultural and Aboriginal heritage and the Sports Precinct landscape provides a spectacular vista across the Swan River to the City.

Among its numerous accolades since opening in 2018, Optus Stadium holds the Prix Versailles 2019 World Architecture Design Award and has also been named 2018 Project of the Year at The Stadium Business Awards in London.

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**LOCATION**

PERTH, WESTERN AUSTRALIA

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**COMPLETION DATE**

2016

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**CONSTRUCTION COST**

AUD\$ 209,000,000

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**STANTEC SERVICES**ACOUSTICS, AUDIO VISUAL,  
ELECTRICAL, FIRE ENGINEERING,  
FIRE PROTECTION, HYDRAULICS,  
INTEGRATION (SCADA AND ICT),  
SUSTAINABILITY, VERTICAL  
TRANSPORTATION

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**ARCHITECT**

GHD

**FEATURED PROJECT**

## Perth Busport

The new underground Perth Busport replaces the aging Wellington Street Bus Station. This project is the first bus station in Australia to include the latest technology in airport-style dynamic stand allocation to unlock space and passenger efficiency enabling up to 200 buses per hour by 2031. Stantec were engaged by the City Busport Alliance (Public Transport Authority, Brookfield Multiplex and BG&E) to deliver the complex building services for this major infrastructure project.

Given the highly complex nature of the Perth Busport, services integration was defined as a separate discipline to engineer the interfaces between specialist engineering services. This resulted in reduced capital costs through the 'sharing' of infrastructure across the project.

The project was awarded the 2017 MBA WA Excellence in Construction Awards – Best Civil Engineering Works project and the 2017 Bankwest Best Project finalist.

**FEATURED PROJECT**

## San Ysidro Land Port of Entry

Supporting long-term expansion efforts for the busiest international border crossing in the western hemisphere, Stantec and contractor Hensel Phelps are undertaking a complete reconstruction of the pedestrian and bus inspection facilities on behalf of the U.S. General Services Administration and their tenant, The Department of Homeland Security, Customs and Border Protection.

Initial project efforts focused on the new Virginia Avenue Transit Center and a temporary office complex allowing for the relocation of the majority of GSA and CBP staff. The VATC provides transportation options for the daily influx of 20,000 pedestrian travelers, including bus, taxi, pedicab, and general-purpose pick-up/drop-off. This effort was designed, permitted, and constructed in just nine months. Virtual Reality (VR) was used extensively to share design progress with all the stakeholders. Given the nature of the project, security requirements were stringent. The use of VR enabled the users to experience their future home in a virtual environment and to work with the designers to make spatial changes that would enable them to carry out their critical mission more effectively; ensuring a well-coordinated and compliant design before construction.

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**LOCATION**

SAN DIEGO, CALIFORNIA

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**COMPLETION DATE**

2019

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**CONSTRUCTION COST**

USD 134,555,000

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**STANTEC SERVICES**ARCHITECTURE, INTERIOR  
DESIGN, ELECTRICAL  
ENGINEERING, ACOUSTICS,  
LIGHTING DESIGN,  
SUSTAINABILITY

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**JOINT VENTURE**

HENSEL PHELPS

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**LOCATION**SEATTLE, WASHINGTON

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**COMPLETION DATE**2012

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**CONSTRUCTION COST**USD\$ 209,000,000

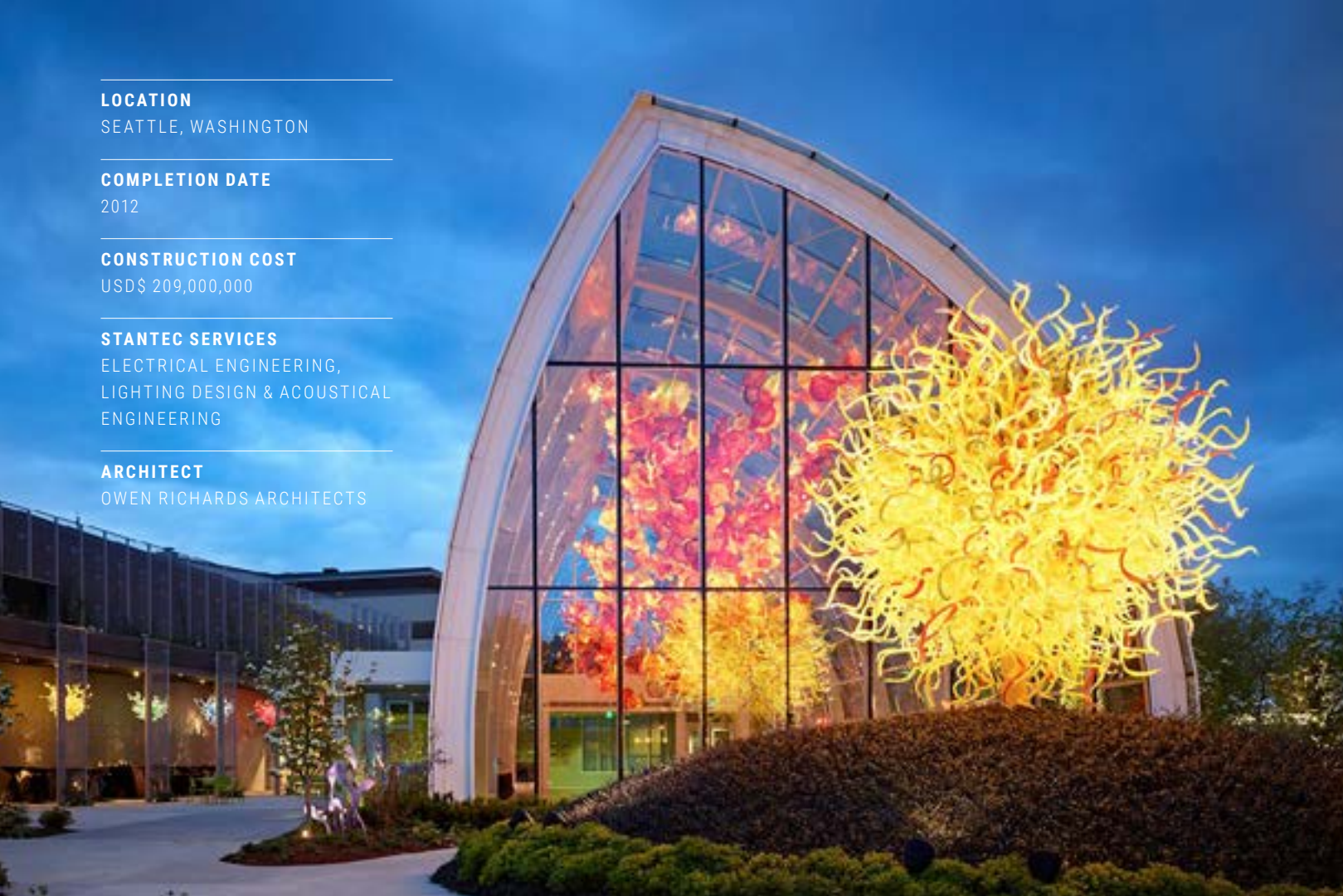
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**STANTEC SERVICES**ELECTRICAL ENGINEERING,  
LIGHTING DESIGN & ACOUSTICAL  
ENGINEERING

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**ARCHITECT**OWEN RICHARDS ARCHITECTS

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**FEATURED PROJECT**

## Chihuly Garden and Glass

Located steps away from Seattle's iconic Space Needle, Chihuly Garden and Glass has become another jewel on the Seattle Center campus. Designed by Owen Richards Architects, the stunningly unique museum features three primary components: the garden, the glasshouse, and the interior exhibits, with significant secondary spaces including a 90-seat café with additional outdoor dining, a 50 seat multi-use theater and lecture space, retail and lobby spaces, and extensive public site enhancements beyond the Garden.

The museum's structure, a vast concave glass surfaces and a polished concrete floor, posed a serious acoustic issue because of its highly reverberant space. Our challenge was to create a comfortable interior space, one that reduced reverberation to allow the space to be used for social events. With severe constraints within the museum environment (we could not block the glass or alter the concrete with acoustical treatments) our team had to get creative. We filled the structural I-beams that held up the glass with sound absorptive material and added perforated plates as fascia. With this approach we were able to reduce the room's liveliness and associated mid-frequency reverberations from 11 seconds to 2.7 seconds, making the space usable for large groups of people requiring good speech intelligibility.

**FEATURED PROJECT**

## New Museum

The New Museum for Western Australia provides a modern and significantly larger home for exhibition content—much of which has remained in storage for many years. In addition to permanent galleries, it contains spaces for temporary and touring exhibitions, offices, restaurants, and function spaces.

The project includes the refurbishment and revitalisation of the existing heritage-listed buildings as well as a contemporary new building. Site planning is formed around a large undercover outdoor space that is the central entry point of the museum. The new buildings include a 1000 sm temporary exhibition gallery for special exhibitions, as well as nearly a range of flexible and dynamic gallery and public spaces.

Stantec's role involves the technically challenging design of all engineering services, with specialist input and assistance from international practice Atelier Ten. The museum creates a modern civic and learning environment that shares the stories of the State's people and place, acting as a gateway to explore Western Australia.

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**LOCATION**PERTH, WESTERN AUSTRALIA

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**COMPLETION DATE**2020

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**CONSTRUCTION COST**USD\$ 378,500,000

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**STANTEC SERVICES**ACOUSTICS, AUDIO-VISUAL,  
ELECTRICAL, FIRE ENGINEERING,  
FIRE PROTECTION, HYDRAULICS,  
ICT, MECHANICAL, SPECIALIST  
LIGHTING, VERTICAL  
TRANSPORTATION

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**ARCHITECT**HASSELL + OMA

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**FEATURED PROJECT**

# Gold Coast Aquatic Centre

In anticipation of the Pan-Pacific games in 2014 and the Commonwealth Games in 2018, New South Wales needed a new stadium—one that could accommodate and impress spectators. The Gold Coast Aquatic Centre project involved the creation of a new swimming complex with a capacity of 10,000 seated spectators. From an acoustic design perspective there were two main goals: minimal environmental noise impacts during events on nearby residences, and delivering a robust enough design to account for two completely different scenarios—legacy mode and Games mode. Our solution? We worked with the architect to develop noise control solutions for the crowds, and we worked with the mechanical and swimming pool specialist to deliver custom solutions, including a tailor-made acoustic wall.

Designed for life beyond the Games, the complex is now an integral part of the community and enjoyed by local residents year-round.

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**LOCATION**  
SOUTHPORT, QUEENSLAND

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**COMPLETION DATE**  
2014

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**CONSTRUCTION COST**  
AUD\$ 41,000,000

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**STANTEC SERVICES**  
ACOUSTICS, FIRE PROTECTION  
(WET) ENGINEERING

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**ARCHITECT**  
COX RAYNER ARCHITECTS



**FEATURED PROJECT**

# Swanston Central

Located in the middle of the Melbourne CBD, this mixed-use development consists of a residential complex with 1,040 apartments and 2,254 sm of retail space.

The retail component is primarily located within an existing heritage building that is over 70 storeys high.

Swanston Central has become one of the tallest residential buildings in Victoria, as well as becoming a rich and vibrant landmark.

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**LOCATION**  
MELBOURNE, AUSTRALIA

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**COMPLETION DATE**  
2019

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**CONSTRUCTION COST**  
AUD\$ 340,000,000

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**STANTEC SERVICES**  
ACOUSTICS, ELECTRICAL,  
FIRE ENGINEERING, FIRE  
PROTECTION, HYDRAULICS,  
MECHANICAL, SUSTAINABILITY

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**ARCHITECT**  
ELENBERG FRASER





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**LOCATION**

SYDNEY, AUSTRALIA

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**COMPLETION DATE**

2018

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**CONSTRUCTION COST**

AUD\$ 120,000,000

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**STANTEC SERVICES**

ACOUSTICS

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**ARCHITECT**

FJMT

**FEATURED PROJECT**

## SICEEP

SICEEP is located within Darling Harbour, a 60ha waterfront precinct on the south-western edge of Sydney's CBD that provides a vibrant mix of functional uses including recreational, tourist, business, and entertainment.

This new mixed use residential complex is located within the South West development plot of the "The Haymarket" neighbourhood at Darling Harbour.

The development comprises a new mixed use residential complex, including a podium building with components of retail and car park together with three towers (SW1, SW2 and SW 3) erected thereon.

The project has been recognized with a Master Builders Australia's NSW Excellence in Construction Awards with: Outstanding Construction Award, Best Use of Glass Award, Best Use of Concrete, Excellence in Energy Efficiency and Best Public Buildings over \$35 million.



**FEATURED PROJECT**

## 13-17 Cordelia Street

A new 30 storey residential tower, with a land size of 1800 sm. The residential tower houses 250 apartments and provides approximately 260-300 car parking spaces.

The development required a very sensitive acoustic and vibration design approach, with constraints found on three sides of the development site. On one side there was a heritage listed vibration sensitive building, an apartment building and on the other, an occupied commercial building.

A noise impact assessment for the project was completed assessing the impact of road traffic noise on the façade and the determination of acoustic treatments to mechanical plant. Assessment of vibration created during construction was also assessed for the heritage building.

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**LOCATION**

SOUTH BRISBANE, QUEENSLAND

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**COMPLETION DATE**

2017

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**CONSTRUCTION COST**

AUD\$ 60,000,000

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**STANTEC SERVICES**

ACOUSTICS, MECHANICAL,  
ELECTRICAL, HYDRAULICS,  
FIRE PROTECTION, VERTICAL  
TRANSPORTATION ENGINEERING

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**ARCHITECT**

MAKE ARCHITECTS



**FEATURED PROJECT**

## Greenland Centre

Greenland Centre is the highest high-rise residential building in Sydney. The project was approved by the city of Sydney, allowing the developer to go over the maximum height in Sydney based on a voluntary planning agreement for community space located within the first six floors of the building called "Creative Hub".

This luxury, 66-storey, mixed-use residential tower is comprised of 498 apartments and extensive community space. It also includes dance, theatre and visual arts facilities within the state heritage-listed Sydney Water Board site at 115 Bathurst Street, Sydney. Our team was involved in the design of all services for this project, including mechanical and electrical engineering, fire protection and acoustics. The building features an innovative floor-plate layout that allows all apartments to have access to direct northern sun and expansive views, high performance recording studios and performing spaces, and integrated modular balcony design.

Upon completion, this building will be Australia's most slender tower. The community will not only have a brand new place to live, but also an extensive creative space to explore and grow in.

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**LOCATION**

SYDNEY, AUSTRALIA

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**COMPLETION DATE**

2019

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**CONSTRUCTION COST**

AUD\$ 350,000,000

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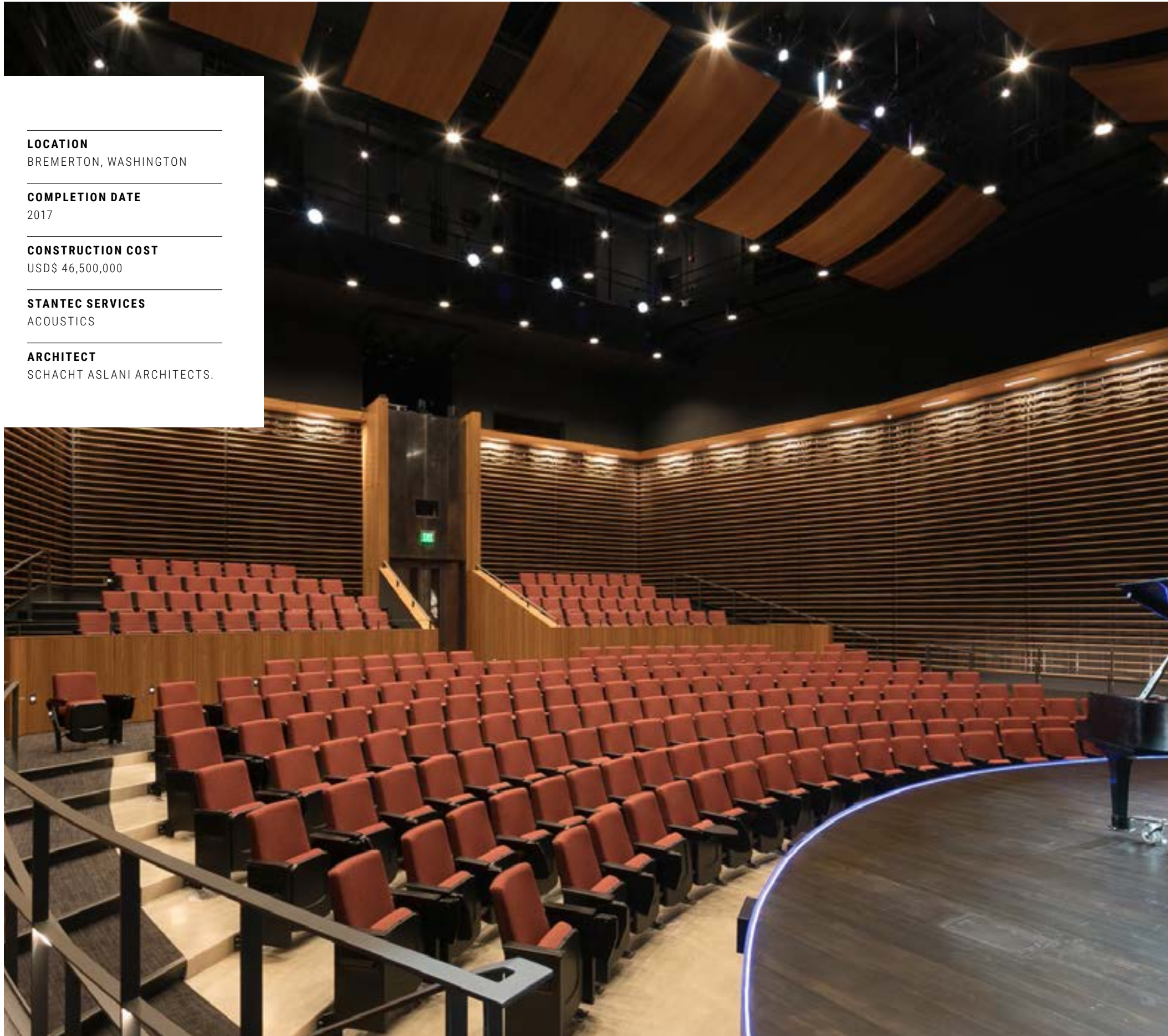
**STANTEC SERVICES**

ACOUSTICS, ELECTRICAL, FIRE  
PROTECTION, HYDRAULICS,  
MECHANICAL ENGINEERING

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**ARCHITECT**

BUN  
WOODS BAGOT



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**LOCATION**

BREMERTON, WASHINGTON

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**COMPLETION DATE**

2017

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**CONSTRUCTION COST**

USD\$ 46,500,000

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**STANTEC SERVICES**

ACOUSTICS

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**ARCHITECT**

SCHACHT ASLANI ARCHITECTS.

**FEATURED PROJECT**

## Olympic College Instruction Center

Olympic College is committed to providing excellent academic opportunities for its students, as well as unique cultural experiences for its community. That's why the College Instruction Center (CIC) was proposed – a building that combines health occupation and fine, performing, and digital arts programs into one learning environment, and also serves as a performance space for the community to enjoy.

A multipurpose space like the CIC is bound to have a diverse set of needs, particularly in the realm of sound masking and acoustics. That's why Olympic College called in Stantec for the acoustical design. Our design provides identity for specialty spaces and connectivity between different functions within the building. We provided sound masking curtains in the performance space so it can be a lecture hall during the day and a concert venue at night. We also tuned the acoustics of each classroom to serve their individual purposes and provide the ideal learning environment for every student.

Today, the CIC is living up to Olympic College's two main goals: to provide the highest quality education to every student, and to be a gathering place for the community. Its state of the art classrooms provide students new opportunities and ways to learn. Its performance hall invites the community to attend plays and concerts throughout the year. The College Instruction Center is more than just a classroom. It is a unifying space for the whole community.



FEATURED PROJECT

## Sandstone Buildings

When Pontiac Land Group was redeveloping two heritage buildings in Sydney CBD's Sandstone Precinct to become a grand hotel with pool, spa, restaurants, rooftop bar, ballroom and guest accommodation, they called on Stantec to help. Our team met the complex hotel requirements while minimising impact on the architecture and facade of the two structures—which extend over two blocks-linked by an underground tunnel.

The acoustic treatment of services was tailored around the architecture to achieve performance and comfort targets and our lighting scheme celebrates the beautiful features in circulation areas.

Stantec's integrated and sympathetic approach to design facilitated the transformation from offices to hotel, revitalizing these beautiful heritage buildings in central Sydney.

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**LOCATION**  
SYDNEY, AUSTRALIA

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**COMPLETION DATE**  
2018

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**CONSTRUCTION COST**  
AUD\$ 300,000,000

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**STANTEC SERVICES**  
ACOUSTICS, ELECTRICAL,  
HYDRAULICS, MECHANICAL,  
SUSTAINABILITY

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**ARCHITECT**  
MAKE ARCHITECTS AND RIDLEY  
ARCHITECTS

FEATURED PROJECT

## Presbyterian Ladies College

The College's new Performing Arts Centre (PAC) consists of 560-plus seat auditorium and main stage supported by a number of rehearsal, instrumental and classrooms.

Conceived as a place to perform, rehearse, discuss, teach and learn, the centre is a vital element of the cultural life and identity of PLC. Specialist music rehearsal spaces with 8-metre-high ceilings together with smaller studio spaces and classrooms will inspire state of the art teaching and purpose-built learning environments for a new generation of musicians and actors at PLC.

The design was developed in close coordination with the Architect (Cox Architecture), acoustics and theatre consultants, and required extensive modeling and detailing of all structure and building services.

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**LOCATION**  
BRISBANE AUSTRALIA

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**COMPLETION DATE**  
2017

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**CONSTRUCTION COST**  
AUD\$ 400,000,000

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**STANTEC SERVICES**  
ACOUSTICS, MECHANICAL,  
ELECTRICAL AND STRUCTURAL  
ENGINEERING, LIGHTING DESIGN

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**ARCHITECT**  
COX ARCHITECTURE



FEATURED PROJECT

## Raine Square Redevelopment

The renovation of Raine Square is underway, with buildings dating back to the 1800s being reimagined for modern needs. The precinct consists of six heritage buildings ranging from 1890 to 1984. We provided noise and vibration monitoring at the Raine Square redevelopment site during construction. As the development was in close proximity to the neighbouring Bankwest building, continuous noise and vibration monitoring was required to minimize disruption. If during construction noise or vibration levels were exceeded, the clients, construction team and stakeholders were alerted in real-time to ensure quick action to rectify via our customized monitoring software.

Our responsibilities include implementing a fully automated and continuous noise and vibration noise monitoring system of construction works. We conducted weekly offsite noise and vibration analysis and reporting, based on criteria levels set by the client. And, we assisted the landlord and tenant in establishing suitable criteria for noise and vibration, so they did not adversely impact both the construction and tenant's operations.

**LOCATION**  
PERTH AUSTRALIA

**COMPLETION DATE**  
2018

**CONSTRUCTION COST**  
AUD\$ 75,000,000

**STANTEC SERVICES**  
ACOUSTICS

**ARCHITECT**  
TAYLOR ROBINSON CHANEY  
BRODERICK

FEATURED PROJECT

## Jackalope Hotel

A heritage site and functioning winery, the Willow Creek Winery has some of the oldest vines on the Mornington Peninsula. When we were brought in to consult on the construction of a luxury hotel and swimming pool—as well as restaurant and event centre—the design was a challenge.

Sensitive construction practices were required to ensure that there was no damage to the vines and that all heritage requirements were met. Plus, with limited existing infrastructure, the design had to be very detailed and efficient to make sure operational requirements were met for all services. In particular, extra attention was given to the water reuse systems.

With the addition of the boutique hotel, swimming pool, restaurant, and event centre, Willow Creek Winery has reset the benchmark for glamour in the Shire of Mornington Peninsula.

**LOCATION**  
MELBOURNE AUSTRALIA

**COMPLETION DATE**  
2017

**CONSTRUCTION COST**  
AUD\$ 30,000,000

**STANTEC SERVICES**  
ACOUSTICS, AUDIO-VISUAL,  
CIVIL, ELECTRICAL, FIRE  
ENGINEERING, HYDRAULICS,  
MECHANICAL, SPECIALIST  
LIGHTING, STRUCTURAL,  
SUSTAINABILITY,  
VERTICAL TRANSPORT

**ARCHITECT**  
CARR

**FEATURED PROJECT**

## Plumstead Library

Plumstead Library is a renovation and extension of the existing library building, originally constructed in 1903. The redevelopment creates an extension onto the existing listed building which will be refurbished allowing the whole space to be used as a mixed use, community space. Added to the library will be amenities such as a gym, sports hall and cafe. The library is owned and operated by London Borough of Greenwich, who appointed Hawkins Brown as the project architect and Stantec as the civil, structural & mechanical, electrical and plumbing (MEP) and noise and vibration engineering teams.

The acoustic team were responsible for developing the scheme from RIBA Stage 1 through to Stage 3B, providing effective initial design advice to be taken forward as part of the detailed design.

The scheme faced several challenges during the design development. The primary issue was developing a strategy which allowed improvements to be made to the acoustic separation between spaces, whilst constrained by the existing building fabric.

The acoustic team undertook a series of baseline sound insulation tests to determine the acoustic performance of the existing structure. Advice was then provided to the design team as to the most effective method of improving the acoustic performance where necessary.



**LOCATION**  
LONDON, UK

**COMPLETION DATE**  
2018

**CONSTRUCTION COST**  
UNDISCLOSED

**STANTEC SERVICES**  
STRUCTURAL ENGINEERING,  
NOISE & VIBRATION,  
BUILDINGS ENGINEERING

**ARCHITECT**  
HAWKINS BROWN

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**LOCATION**

BRISBANE, AUSTRALIA

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**COMPLETION DATE**

IN PROGRESS

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**ACOUSTICS, CIVIL, STRUCTURAL,  
MECHANICAL, ELECTRICAL,  
HYDRAULIC ENGINEERING

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**ARCHITECT**

COTTEE PARKER

**FEATURED PROJECT**

## Queen's Wharf Brisbane

The iconic Queens Wharf redevelopment is a major project in the heart of Brisbane's CBD, covering more than 26 hectares. The development is expected to include world-class hotels, restaurants, bars, gaming, outdoor public spaces and foreshore area including a new pedestrian link to South Bank. Stantec are the civil, structural, mechanical, electrical, hydraulic and acoustic engineering technical advisors to the Department of State.

Stantec have worked on the project since 2013 and look forward to being involved through to completion in 2022. The development area

contains numerous buildings of Heritage significance and the Riverside Expressway, the State's most heavily trafficked road. The project will include significant bulk earthworks and rock excavation for a nine-storey basement, as well as a new reclaimed river foreshore area immediately adjacent to the development.

The engineering challenges and technical issues required to be managed are extremely unique, requiring an innovative and bespoke design approach.



# Acoustics in the Environment

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One of the key environmental challenges to communities is noise, as it directly affects the quality of life with serious potential for causing harmful physiological health effects. The traditional approach to acoustics is to seek to identify and mitigate sources of noise. At Stantec however we recognise that noise is only one part of sound, that is, the unwanted part. Value can be derived from a positive acoustic environment, rather than one in which noise is simply reduced or absent.

This appreciation of the positive aspects of acoustics informs our assessments in that we seek to not only appropriately control sources of noise so that impacts on the surrounding community are minimised but also to identify areas where the acoustic environment can be improved.

With this in mind, the acoustics team at Stantec provides noise and vibration advice for clients to support community engagement, enable environmental compliance and help minimise restrictions on production.

## KEY MARKETS

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We provide a range of acoustic and vibration consulting to clients in the following markets:

### Community Development

- Demolition and construction
- Strategic land and residential development including master planning, urban regeneration and public sector
- Regulated water including sewage treatment facilities
- Tourism and leisure including sports facilities and stadia

### Commercial, Industrial and Major Infrastructure

- Oil & Gas
- Mining (including quarries and landfill)
- Manufacturing
- Powerstations, power generations and emergency power plants
- Logistical facilities
- Process plants
- Major infrastructure including road, rail and port facilities

### Our key focus areas are:

- Environmental noise and vibration impact assessment
- Road and rail noise modelling
- Assessment of acoustic mitigation including effective acoustic barrier design
- Construction noise and vibration management plans



## KEY SERVICES

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From environmental and transportation noise, to monitoring and vibration, our professionals are dedicated to the consistent delivery of quality noise and vibration solutions through innovative problem-solving and smart application of technology. We understand the challenges related to regulatory compliance and public concern over noise and vibration issues. Our acoustic specialists provide noise and vibration solutions to meet your project needs.

### WE PROVIDE A RANGE OF ENVIRONMENTAL ACOUSTIC SERVICES INCLUDING:

- Environmental noise impact assessments
- Blast overpressure and vibration impact assessments and monitoring
- Road and rail noise modelling assessments
- Noise mitigation measures, including effective barrier design to minimise costs
- Engineering noise control design
- Construction noise and vibration management plans
- Remote noise and vibration monitoring and data acquisition (web-based for greater accessibility)
- OHS noise and vibration measurements
- Sound power measurements of fixed and mobile plant
- Noise compliance monitoring and reporting

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**LOCATION**

ALCONBURY, ENGLAND, UK

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**COMPLETION DATE**

ONGOING

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**

FLOODING, GEOTECHNICAL  
ENGINEERING,  
NOISE & VIBRATION,  
ENVIRONMENTAL SERVICES

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**CLIENT**

URBAN CIVIC

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**FEATURED PROJECT**

## Alconbury Weald

In 2009, Stantec were appointed by Urban & Civic (owner of the for Alconbury Airfield), to prepare a new mixed-use vision and master plan for this major 575-hectare strategic site and develop the site from outline planning consent to the overall completion of the project.

We delivered an imaginative and exciting new future for the former airfield, to excellent standards which accommodated multi-purpose uses in an employment led extensive project. The vision encompassed safe environmental factors ensuring a resilient low carbon output for the surrounding community.

Working in collaboration with other disciplines across the practice, the acoustics team undertook the environmental impact assessment of the site.

This involved undertaking detailed environmental sound surveys of the existing baseline conditions and using the results of the surveys to inform the development of a comprehensive acoustic model.

The results of the acoustic model were used to inform the development of the masterplan ensuring that noise sensitive uses were appropriately located. Less noise sensitive uses were located closer to the dominant noise sources with this development further screening noise sensitive uses in other areas of the site.

As the masterplan developed the model was also used to assess the potential impact of the development and associated transportation infrastructure on the existing sensitive receptors.



**FEATURED PROJECT**

## The Rookery Energy Park

Stantec has had a long-standing role in the development of an energy park at the Rookery clay pit in Marston Vale, Bedfordshire.

Stantec has supported the clients on their respective planning applications to restore the 90 hectare Rookery south brick pit and for the 585,000 (average) tpa Resource Recovery Facility (RRF) within it.

Stantec has provided a number of different services including acoustics for the RRF and low level restoration scheme (LLRS) works. We've also advised on the Construction Environmental Management Plan.

Working in collaboration with other disciplines across the practice, the acoustics team undertook the environmental impact assessment of the site.

This involved undertaking detailed environmental sound surveys of the existing baseline conditions and using the results of the surveys to inform the development of a comprehensive acoustic model.

The results of the acoustic model were used to inform the development of the development proposals and assessment of the potential impact of the development and associated transportation infrastructure on the existing sensitive receptors.

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**LOCATION**

MARSTON VALE,  
BEDFORDSHIRE, UK

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**COMPLETION DATE**

ONGOING

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**

FLOODING, GEOTECHNICAL  
ENGINEERING,  
NOISE & VIBRATION,  
ENVIRONMENTAL SERVICES

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**CLIENT**

COVANTA ENERGY

**FEATURED PROJECT**

## Blythe Valley Park

Stantec have supported planning applications for the development at Blythe Valley Park for over 10 years. In November 2016, Stantec helped IM Properties secure permission for new housing, alongside new and existing commercial properties providing more employment opportunities for the area.

Stantec prepared the transport assessment, as well as noise, air quality, and transport input for the environmental statement, both of which supported the overall planning application. Stantec worked closely with Solihull Metropolitan Borough Council to prepare the transport assessment, reaching an agreement on the transport strategy, public transport access and off-site highway improvements.

In addition, the acoustic team provided acoustic design advice to the contractor with respect to the part of the residential and commercial aspect of the development.

This required careful liaison and review of proposals to ensure that the proposed constructions would meet the requirements of Building Regulations with respect to noise transfer.

Following construction, the development was acoustically tested with all partitions found to have achieved the required performance standards.

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**LOCATION**

SOLIHULL, UK

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**COMPLETION DATE**

2020

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**

TRANSPORTATION  
INFRASTRUCTURE ENGINEERING,  
NOISE & VIBRATION

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**CLIENT**

IM PROPERTIES

FEATURED PROJECT

# Amherst Island Wind Energy Vibration Monitoring Program

Stantec's Noise, Vibration and Acoustics (NVA) group provided construction vibration monitoring services for the Amherst Island Wind Energy Project. This project includes 26 wind turbine generators, a 34.5 kilovolt (kV) underground and/or overhead electrical power transmission line collector system, fibre optic data lines from each turbine and/or wireless technology for the communication of data, a submarine cable, an operations and maintenance building, an island substation, a mainland switching station and meteorological towers.

Vibration monitoring was provided as per the methodology and protocols identified in the construction vibration monitoring program for the Amherst Island Wind Energy Project submitted to the Ministry of the Environment, Conservation and Parks (MECP). A vibration monitoring plan was developed for the turbine installations and transport of turbine components by trucks on area roads, as well as road reconstruction vibration effects on heritage attributes (e.g., old churches, barns, stone walls, and cemeteries). The NVA group installed the monitors, conducted scheduled equipment maintenance and data download visits from approximately 2017-2019. A remote monitoring system was used to automate vibration data download, allow for notifications of exceedances to the team and the client, as well as historical record keeping of the vibration data. The program included monthly reporting as well as protocols for reporting logged exceedances. Exceedances were reviewed and verified by Stantec senior acoustic engineers.

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**LOCATION**

AMHERST ISLAND, ONTARIO, CANADA

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**COMPLETION DATE**

2019

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**

NOISE & VIBRATION,  
ENVIRONMENTAL SERVICES

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**CLIENT**

ALGONQUIN POWER &  
UTILITIES CORP



FEATURED PROJECT

# Ontario Line

Metrolinx is constructing the Ontario Line that will include fifteen stations between Ontario Place and Ontario Science Centre and potential links to GO Transit and TTC Lines 1 and 2. Stantec was retained with HDR to provide technical advisory services for the project. This includes the development of the Reference Concept Design and associated contract documents for tender, as well as preparing the environmental impact assessment. Noise and vibration services under this project involves technical review, analysis, and mitigation for the alignment. This includes the at-grade, elevated and underground sections of the project for both construction and operational impacts. A noise and vibration impact assessment is prepared for the project. Further, the mitigation and contractual noise and vibration requirements are to be incorporated into the reference concept design. In preparation for the noise impact analysis, Stantec prepared a 3D survey of all of the buildings along the alignment (with hundreds of individual buildings), including a ground-truthing of all potential sensitive receptors. This survey was prepared through ARCGIS and our noise modelling software CADNA/A to allow Stantec to prepare a complete noise model of the entire project through the Downtown Toronto and surrounding residential neighbourhoods. The NVA team will be preparing the environmental noise and vibration impact assessment for construction and operations along the alignment. This involves various segments of the project, including Downtown Corridor, Thorncliffe and Pape Corridors. This also involves assessment of at-grade, elevated and underground trackwork. Support is also being provided to RCD design with respect to noise and vibration on the project.

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**LOCATION**

TORONTO, ONTARIO, CANADA

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**COMPLETION DATE**

ONGOING

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**

NOISE & VIBRATION

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**CLIENT**

METROLINX



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**LOCATION**  
AYLESBURY, UK

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**COMPLETION DATE**  
ONGOING

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**CONSTRUCTION COST**  
UNDISCLOSED

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**STANTEC SERVICES**  
TRANSPORT, FLOODING, WASTE,  
SUSTAINABILITY, AIR QUALITY,  
NOISE & VIBRATION, ECONOMICS,  
PLANNING

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**CLIENT**  
BUCKINGHAM ADVANTAGE

**FEATURED PROJECT**

## Aylesbury Woodlands

The 220-hectare Aylesbury Woodlands site is a key part of the Aylesbury growth strategy, with a high quality sustainable scheme designed to achieve exemplary standards of design within an extensive green infrastructure framework, including parkland, community facilities and sporting facilities.

Aylesbury Woodlands will provide jobs through developing employment land for a range of offices, industrial and commercial uses supported by retail, leisure facilities and housing set in an extensive green environment.

Other benefits to the area will include creating substantial green infrastructure for open space; providing sports and recreational facilities; supporting biodiversity and supporting infrastructure delivery.

Working in collaboration with other disciplines across the practice, the acoustics team undertook the environmental impact assessment of the site.

The involved undertaking detailed environmental sound surveys of the existing baseline conditions and using the results of the surveys to inform the development of a comprehensive acoustic model.

The results of the acoustic model were used to inform the development of the masterplan ensuring that noise sensitive uses were appropriately located. Less noise sensitive uses were located closer to the dominant noise sources with this development further screening noise sensitive uses in other areas of the site.

As the masterplan developed the model was also used to assess the potential impact of the development and associated transportation infrastructure on the existing sensitive receptors, including the key location of the Grand Union Canal.

As a result of the work undertaken by the acoustic team, a mitigation strategy was devised which protected existing noise sensitive receptors where appropriate, whilst minimising the potential impact on the design of the scheme.

**LOCATION**

GUILDFORD, UK

**COMPLETION DATE**

ONGOING

**CONSTRUCTION COST**

UNDISCLOSED

**STANTEC SERVICES**

TRANSPORT, FLOODING, WASTE, SUSTAINABILITY, AIR QUALITY, NOISE &amp; VIBRATION, ECONOMICS, PLANNING

**CLIENT**

GUILDFORD BOROUGH COUNCIL

**LOCATION**

ENGLAND, UK

**COMPLETION DATE**

ONGOING

**CONSTRUCTION COST**

UNDISCLOSED

**STANTEC SERVICES**

TRANSPORT, AIR QUALITY, NOISE &amp; VIBRATION, PLANNING

**ARCHITECT**

THIS IS GRAVITY LIMITED

**CLIENT**

SALAMANCA GROUP

**FEATURED PROJECT**

## Weyside Urban Village

Weyside Urban Village is a major land development scheme which forms part of a wider strategic site allocated in Guildford Borough Council's (GBC) Local Plan. The 41-hectare development will provide up to 1,550 residential units, employment space, a new local centre, flexible community facilities and the relocation of a GBC depot. The application will also include the demolition of an existing community waste and recycling centre (CRC and WRC) and an existing Sewage Treatment Works (STW), which will be re-provided elsewhere in the site allocation under separate planning applications.

Stantec have been advising on the project since 2017 but were appointed in January 2020 under the ESPO 664-17 Framework (Consultancy Services) for Environmental Impact Assessment (EIA) services which include the coordination of a large multi-disciplinary environmental services team; Biodiversity; Flood risk; Landscape and townscape; Air quality and odour; Acoustics; Lighting; Heritage & archaeology; Ground conditions; Climate change and carbon; Health; Socio-economics; Sustainability; and Waste.

Previous applications prior to Stantec's involvement had not progressed due to risks associated with the relocation of the STW and waste facilities. The client's aspiration was to obtain planning permission for the new development so they could provide the much-needed housing for all ages, new employment opportunities and community space for its local residents.

The acoustic team assisted in the development of the scheme through the EIA stage with assessment work including detailed environmental sound surveys and acoustic modelling. Due to the constrained nature of the scheme, it was necessary to balance acoustic objectives with the wider objectives of the scheme. This meant adopting a holistic approach and using the EIA process to enable these risks to be identified. Suitable mitigation was incorporated into the design of the scheme, or delivered through the demolition and construction process.

**FEATURED PROJECT**

## Gravity Smart Campus

Stantec were originally appointed by BAE Systems in 2007, as part of their framework, to deliver environmental (including Environmental Impact Assessment), economic and transport planning services of the proposed Huntspill Energy Park near Bridgewater, Somerset which has now become Gravity.

Stantec engaged with Gravity in 2017. The Stantec project team had collaborated well previously, therefore, it was a natural step to retain Stantec as lead engineering consultant and support Gravity in their pursuit of the site, for delivery to meet modern demands, supporting due diligence and minimising risks.

Gravity has an ambition to create a smart campus generating more than 4000 green collar jobs, providing both a strategic economic stimulus to drive economic renewal, shaping and connecting to a green supply chain across the UK. The site is positioned as a hub for international business, start-ups and SMEs. Gravity will be a home for 'Clean Growth' and green industries, creating the space to innovate and provide green solutions from energy to smart mobility.

Working in collaboration with other disciplines across the practice, the acoustics team undertook the environmental impact assessment of the site.

This involved undertaking detailed environmental sound surveys of the existing baseline conditions and using the results of the surveys to inform the development of a comprehensive acoustic model.

The results of the acoustic model were used to inform the development of the masterplan ensuring that noise sensitive uses were appropriately located. Less noise sensitive uses were located closer to the dominant noise sources with this development further screening noise sensitive uses in other areas of the site.

As the masterplan developed the model was also used to assess the potential impact of the development and associated transportation infrastructure on the existing sensitive receptors.

**FEATURED PROJECT**

## Beam Park

On 28 September 2018, Countryside and L&Q secured planning approval for their proposals for Beam Park, creating 3,000 new homes (50% allocated to affordable housing), on a derelict former factory site in the London Boroughs of Barking and Dagenham and Havering.

The proposals also include a new railway station on the C2C line, framed by a high-quality public square, as well as a medical centre, two schools, retail spaces, a gym, nursery, community facilities, a multi-faith space. A new park will be provided at the centre of the site along the route of the River Beam, as well as a network of open space throughout the site, and on-site energy centres.

Working on behalf of Countryside and L&Q, our team were appointed to provide both the environmental and transport advice for the hybrid planning application of the major redevelopment of Beam Park, to bring these proposals forward and deliver the much needed new homes for Londoners.

The site has various challenges to overcome in its delivery, including the need to remediate contamination on the site, manage flood risks, respond to railway noise from the train line to the south of the site and the extensive utilities infrastructure under the site.

**LOCATION**  
LONDON, UK

**COMPLETION DATE**  
ONGOING

**CONSTRUCTION COST**  
UNDISCLOSED

**STANTEC SERVICES**  
TRANSPORT, AIR QUALITY,  
NOISE & VIBRATION, PLANNING

**CLIENT**  
COUNTRYSIDE PROPERTIES



**THE TEAM PROVIDED US WITH ENVIRONMENTAL AND TRANSPORT ADVICE TO BEAM PARK FROM THE OUTSET. THEY COMBINE STRATEGIC THINKING AND PRACTICAL DELIVERY, AND HAVE BEEN INSTRUMENTAL IN HELPING US PICK THROUGH THE CHALLENGES ASSOCIATED WITH A DEVELOPMENT THAT WILL DELIVER 3,000 HOMES, TWO SCHOOLS, A NEW RAILWAY STATION, MEDICAL CENTRE, TWO ENERGY CENTRES AND SUPPORTING COMMERCIAL/COMMUNITY FACILITIES"**

**ANDREAS VASSILIOU**  
ASSOCIATE DIRECTOR, COUNTRYSIDE PROPERTIES

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**LOCATION**

SWINDON, UK

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**COMPLETION DATE**

ONGOING

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**CONSTRUCTION COST**

UNDISCLOSED

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**STANTEC SERVICES**GEOTECHNICAL ENGINEERING,  
NOISE & VIBRATION,  
ENVIRONMENTAL SERVICES

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**CLIENT**

SWINDON BOROUGH COUNCIL

**FEATURED PROJECT**

## Wichelstowe

The development is a mixed urban extension to the southwest of the town up to the M4, includes 4,300 dwellings, 100,000 sqm of commercial development, four education facilities, a 1,000 space park-and-ride site, a new superstore and district centre and a major package of infrastructure works including M4 Junction 16 improvements, a new southern relief road and a networks of canals within the site.

The acoustic team supported the development of the scheme by undertaking a Noise and Vibration Environmental Impact Assessment of the proposals. This included undertaking a series of environmental sound measurements in order to establish the baseline acoustic conditions and then developing an acoustic model of the site in order to develop and test potential site wide mitigation measures.

Due to the proximity to the local road network, the acoustic model was used to establish the most effective method of reducing noise across the site, whilst allowing future developers as much flexibility as possible to design the future individual phases of the scheme.

Following the granting of planning permission, the acoustic team were involved in discharging the acoustic related planning conditions for a number of the phases across the development.





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**LOCATION**VARIOUS LOCATIONS, UK

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**COMPLETION DATE**2018

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**CONSTRUCTION COST**UNDISCLOSED

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**STANTEC SERVICES**PLANNING, ACOUSTICS

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**CLIENT**

HB VILLAGES

**FEATURED PROJECT**

## HB Villages

A number of noise impact assessments have been provided for HB Villages, a specialist developer of supported living apartments.

As part of the planning application a detailed noise impact assessment is often required by local authorities to demonstrate the appropriateness of the selected site for the proposed scheme.

Working in collaboration with other disciplines, the acoustics team conducted a detailed environmental sound survey of the site and assessment of its suitability for the proposed development. The impact associated with each acoustic constraint was identified and practicable mitigation measures proposed where appropriate.

Acoustic modelling mapped noise levels across the site and inform the assessment and design of the site.

Sensitive discussions were undertaken with the local authority in order to determine their requirements with respect to noise to ensure that the development met their aspirations. Early liaison with the local authority was essential as it allowed the design to take account of their concerns and helped ensure the smooth progress of the proposals through the planning process.

# Leadership Team

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**OLIVIER GAUSSEN**  
GLOBAL ACOUSTICS LEAD, DIRECTOR



**BASEL JURDY**  
ACOUSTICS DISCIPLINE LEAD,  
PRINCIPAL, NORTH AMERICA



**FRANK BABIC**  
ACOUSTICS PRACTICE AREA LEAD



**ALEXANDRE BRIOT**  
ACOUSTIC TEAM LEAD, QUEBEC



**MATTHEW BARLOW**  
ACOUSTIC TEAM LEAD, UK



**JONATHAN CHUI**  
SENIOR NOISE SPECIALIST



## Olivier Gaussen

GLOBAL ACOUSTICS LEAD,  
DIRECTOR  
Olivier.Gaussen@stantec.com



Olivier joined Stantec in 2009 as the acoustic section manager in the Sydney office. Since 2012, he's served as our national acoustics coordinator.

His experience and understanding of other disciplines relating to acoustics—such as mechanical, electrical, hydraulics, architectural, and structure—allows him to provide an integrated approach to acoustic design. He can ensure that a project's acoustic performance requirements are met without compromising the design intent.

Outside work, Olivier enjoys spending time with his family: Georgina and their two boys Noah and Leo. Olivier also likes to play beach volleyball which reminds him of the years when he used to play in the national league in France. Other than that, he enjoys skiing, playing the drums, and catching up with friends around a glass of Pinot Noir.



## Basel Jurdy

ACOUSTICS DISCIPLINE LEAD,  
PRINCIPAL, NORTH AMERICA  
Basel.Jurdy@stantec.com



Basel believes that listening to a client's desired acoustical end results without preconceived solutions in mind is crucial to achieving a design that enhances a space. Asking questions invites the client to reveal more. Listening to answers and finding the best solutions for that unique project brings the client's vision to life.

With more than 27 years of experience, Basel is a dynamic project leader and a natural mentor. His advice to young acousticians is to listen first. Then, educate the team on the art and science behind acoustics, so it becomes apparent why standard acoustical treatments are not the right solution for every project.

An engineer by schooling, Basel pursued a career in acoustics where he discovered the artist in himself. His activities away from the office reflect his strategic side as an avid tennis player and his artistic side through ballroom dancing. He taps both attributes to create environments that delight project owners and users alike.



## Frank Babic

ACOUSTICS PRACTICE AREA LEAD,  
ONTARIO

Frank.Babic@stantec.com



Frank has a deep passion for integrating acoustics, noise, and vibration solutions into the variety and depth of projects offered by Stantec. This stems from combining his passion for music (has a solo project called High Park Society) with his civil engineering education—leading to unique, high-quality engineering approaches for his clients.

As a licensed professional engineer, Frank has over 20 years of engineering consulting experience. Areas of technical expertise include engineering consultation in environmental noise, transportation noise, building acoustics, vibration, and monitoring (noise and vibration). Frank is a recognized subject matter expert in his field, and he's presented at numerous technical conferences in Canada and the US.

As Stantec's Acoustic practice lead, Frank leads a core team of specialists and experts in the field of acoustics, noise, and vibration. This group of highly-specialized individuals offer quality engineering services and client-orientated focus to ensure that we deliver our solutions to the quality expected by Stantec and its clients.



## Alexandre Briot

ACOUSTIC TEAM LEAD,  
QUEBEC

Alexandre.Briot@stantec.com



Alexandre is the team leader for the acoustics and vibration services within the province of Quebec (Canada). With more than 21 years of design experience in acoustics, his expertise includes, in particular, acoustic impact studies which, utilize computer modeling, studies concerning architectural acoustics or studies related to rail transportation.

In addition, over the years, Mr. Briot has acquired great expertise in the field of soundproofing of buildings and ventilation. To this end, he is responsible for the acoustic part of the projects inside the Fixed Equipment Project Office of the Metro [partnership Stantec and Société de transport de Montréal (STM)] which aims to renew the fixed equipment of the metro in Montreal, including the repair of ventilation stations, the installation of large-capacity generators or even the construction of the new STM control center. In addition, he participated in the project to extend the metro line to Laval and Blue line with regard to the soundproofing of new ventilation stations, jet fans and ventilation of generator sets. Outside the office, you may come across Alexandre on his motorbike. He likes to discover new landscapes by traversing winding paths like the Alps. In terms of his other hobbies, soccer or kickboxing takes up some of his time.



## Matthew Barlow

SENIOR ASSOCIATE,  
ACOUSTIC TEAM LEAD, UK  
Matthew.Barlow2@stantec.com



Matt is an acoustic consultant with a broad range of experience in the assessment of noise and vibration for a diverse range of private and public sector clients in the UK and overseas. He has particular expertise in environmental acoustics and building acoustics demonstrated by his work on residential and mixed use projects, infrastructure projects, industrial facilities, schools, healthcare as well as commercial, education, and energy generating facilities.

He has performed numerous environmental noise impact assessments to support planning applications and is familiar with a wide range of policy, standards and guidance including NPPF, NPSE, ProPG, BS8233, BS5228 and BS4142. In addition to more traditional methods of assessment he is an expert in the use of computer models. His involvement in buildings acoustics projects has provided valuable experience and knowledge in creating acoustically appropriate environments through the control of building services noise and vibration, noise and vibration intrusion and sound transmission between spaces.

Design work has been verified by on-site commissioning including pre-completion sound insulation tests, noise intrusion tests on shell constructions and acoustic measurements of building services noise.



## Jonathan Chui

SENIOR NOISE SPECIALIST,  
ALBERTA  
Jonathan.Chui@stantec.com



Jonathan is a professional engineer with over 19 years of consulting experience in the acoustic industry. He specializes in noise impact assessment, regulatory policy, engineering noise control, source measurement, complaint investigation, baseline noise monitoring, and vibration measurements. He has completed numerous noise assessments for Canadian and international projects in North America, Central American, South America, and Africa.

Over the last decade, Jonathan has lead the Stantec western Canada noise team to serve different industrial and commercial clients in the three western and central provinces of British Columbia, Alberta, and Saskatchewan. The noise assessment projects cover different sectors such as renewable energy, conventional power generation, oil and gas, mining, military, manufacturing, and transportation.

Jonathan's passion includes photography and intrepid travel to far away countries. While at home in Calgary, he enjoys hiking, skiing, and cycling in the Canadian Rockies.

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always design with community in mind.

We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise; to appreciate nuances and envision what's never been considered; to bring together diverse perspectives so we can collaborate toward a shared success.

We're designers, engineers, scientists, and project managers innovating together at the intersection of community, creativity, and collaboration. Balancing these priorities results in projects that advance the quality of life in communities across the globe. Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at [stantec.com](http://stantec.com) or find us on social media.

