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Rockfon ceiling panels create distinctive space in aquatic center

Guildford Aquatic Centre, Surrey, British Columbia

Located 40 minutes from Vancouver, British Columbia, the City of Surrey's Guildford Recreation Centre features a new 37,000-square-foot aquatic center. Helping create an attractive, functional and sustainable facility, Rockfon Sonar® acoustic stone wool ceiling systems were installed throughout the new space.

Products in use

- Rockfon Sonar® Activity
- Rockfon Sonar®

Regenerative catalyst

In the next 30 years, one in five metro Vancouver residents are predicted to live in Surrey. Serving its growing community, the Guildford Recreation Centre's multi-purpose facility is open seven days a week. It is conveniently attached to the library and is next to the Guildford Town Centre mall.

"Investing in our City's recreational facilities is a vital component of our ability to build healthy communities and maintain a high quality of life for our citizens," said Surrey Mayor Linda Hepner. "We are committed to delivering outstanding recreation services that meet both the diverse range of activity levels and needs of our growing population."

Expanding the existing recreation facility by 75,000 square feet, the $38.6 million project includes a larger fitness center and lobby, more office space, a bridge and 300 seats for spectators, plus the 37,000-square-foot aquatic center.

The design and construction team included Bing Thom Architects (BTA), SHAPE Architecture, general contractor Heatherbrae Builders, specialty contractor StructureCraft Builders and acousticians at BKL Consultants Ltd. BTA led the aquatic center's overall design as it previously had for Surrey's iconic Central City complex and City Centre Library. Adding to BTA's experience, SHAPE provided specialization in designing the facility's pools.

"The theme for the new Guildford Aquatic Centre is water in all of its forms as a regenerative catalyst for the community," stated SHAPE.

Constructed while the existing recreation center and parking remained fully operational, the aquatic center addition was completed in Feb. 2015.

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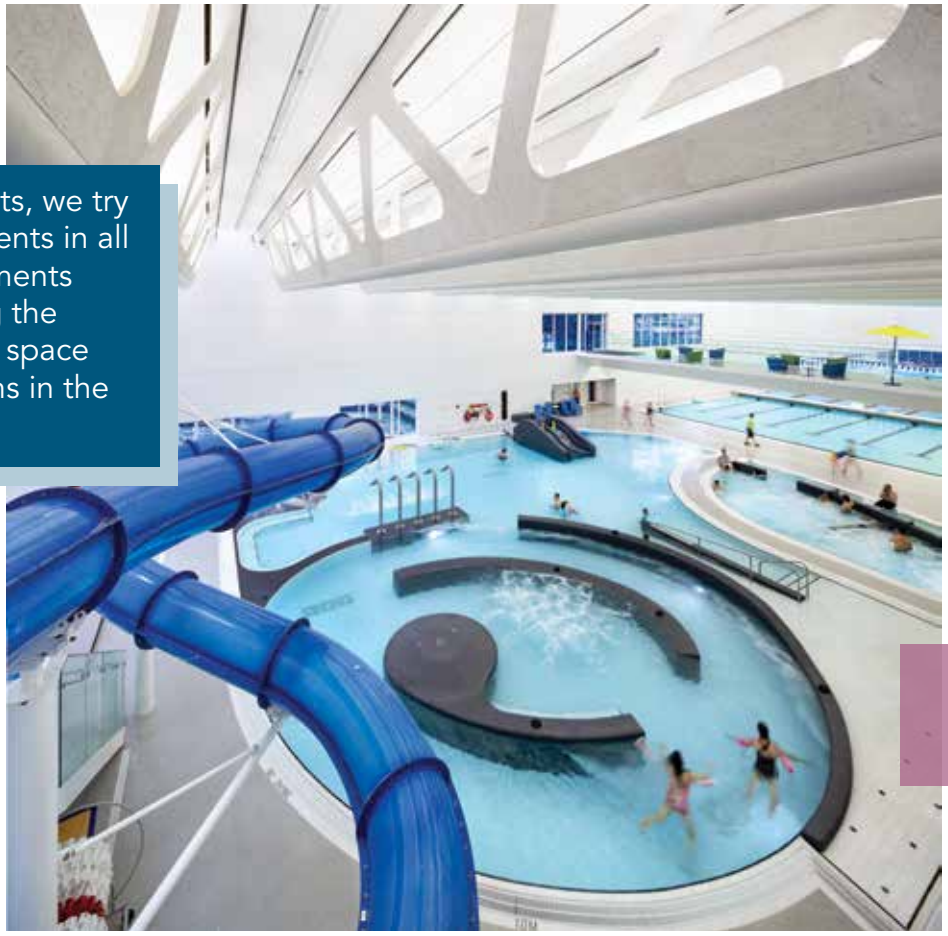


Specified for performance

BTA's project manager, Lisa Potopsingh, described, "At Bing Thom Architects, we try to provide unique elements in all our projects. These elements contribute to enhancing the user's experience of the space and creating iconic forms in the physical landscape. With the Guildford Aquatic Centre, these unique elements are the integrated wood trusses and the use of natural light within the natatorium and the pixelated pre-cast panels of the façade."

She elaborated, "Some of the challenges of this project were: the fast-track schedule; the existing Recreational Centre needed to remain operational during construction; and encountering poor soil conditions. Having a long-standing relationship with StructureCraft, who we have collaborated with on a number of projects, allowed us to create the unique feature of the integrated trusses and facilitate the fast-paced schedule."

Known for its experience with architecturally exposed timber structures and trusses, StructureCraft was involved at the earliest stages in the design process to meet the project's numerous performance goals: sustainability, aesthetics, timeline and budget.

Potopsingh continued, "We spent a lot of time together considering the best way to integrate the structural, mechanical, electrical and acoustical elements, so services were not exposed and it was aesthetically pleasing. We wanted to keep things clean, white and modern in the natatorium. The integrated trusses helped in this way and also created some texture to the space."

"We considered the space, its function and its construction. We saw the challenge in front of us, first, as a performance specification," explained StructureCraft's business development engineer, Brian Woudstra. "Structurally, we needed to engineer it in the most efficient way to take the loads. Acoustically, we needed to manage the noise and echoes. All of the lighting in the pool was to be indirect, so we needed a highly reflective material to direct available light throughout the space. Atmospherically, we would be dealing with humidity and chlorine from the pool. On site, we knew we would have no storage space and no time to build in the field."

With the clarity of the challenges before them, StructureCraft carefully considered its options. Woudstra continued, "We proposed a system of 22 trusses, 100-feet-long each, that would be stored and completed off-site, then craned into place. Each truss would be prefabricated with everything from the roof membrane to the mechanical ducts, sprinklers, light fixtures, insulation and ceiling panels."

Ceiling panel selection was a critical part in meeting the overall performance specification and the building team's approval. "We must have looked at 10 different ceiling manufacturers before Rockfon was chosen. Not only did we find there was a broad range of performance attributes; there was a really wide range of costs," remembered Woudstra. "Although Rockfon's products were new to us in North America, we reviewed its demonstrated history and precedents on other pool projects in Europe. Rockfon's ceiling panels met the project's acoustic, light reflectance and atmospheric requirements, and the budget target."

Based on all the advantages of stone wool ceiling panels, Rockfon Sonar Activity direct mount and Sonar CDX concealed panels were approved.

Acoustic comfort

"Pools and gyms are notorious for their noise," observed Woudstra. Imagining the Surrey natatorium filled with participants and spectators for a competitive event, the volume and echoes potentially could reach painful levels. Mitigating this, Rockfon Sonar ceiling panels are made from stone wool, an inherently high-performing, sound-absorptive material.

"High sound absorption helps control the occupant noise levels and prevents excessive reverberance. This also increases speech intelligibility of the audio systems," said Scott Debenham, Western Canada district manager for Rockfon.

Noise Reduction Coefficient (NRC) is a measure of a surface's ability to reduce noise by absorbing sound. A higher number is better. A ceiling with an NRC of 1.00 absorbs a lot of sound. A ceiling with an NRC of 0.00 absorbs very little sound. A high NRC is important in areas where people converse in groups and high levels of noise are present. Rockfon Sonar ceiling panels achieve an NRC of 0.90.

"The sound absorption seems to be working well. We don't get a lot of reverberation in the pool area," said Potopsingh.

Light and humidity

"Early in the design process, it was determined that lighting would be used as one of the principle elements of the natatorium," explained Potopsingh. "The desire was to maximize the impact of sunlight, while acknowledging the heavy energy consumption notorious with this building type – notably the challenge of managing heat gain and loss from expansive glazing. To address this, the design team chose to limit the amount of glazing and to be very deliberate in its placement in order to maximize daylight impact and minimize glare at the water level (glare being an issue with life guarding). Windows are located at pool deck level allowing selectively framed views to the surrounding terraced gardens and stormwater retention pond."

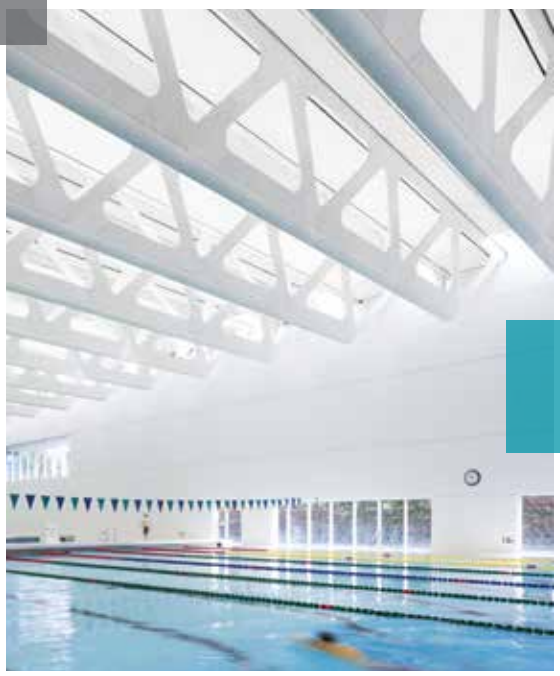
Linear LED high-output luminaires on its trusses also were directed upward and tucked away from sightlines. The smooth white surface of Rockfon Sonar ceiling panels reflects up to 85 percent of all available light. Potopsingh continued, "Lighting reflected off the acoustic panels and the interior wall finish with carefully selected specific tint and gloss levels created a soothing environment, while achieving ASHRAE/IES 90.1-2007 and Fédération Internationale de Natation (FINA) illumination requirements."

The smooth white surface of Rockfon Sonar ceiling panels reflects up to 85 percent of all available light. This helps create a soothing environment, while achieving energy and illumination requirements.

Low-emitting products also support green building goals. The extensive portfolio of Rockfon acoustic stone wool ceiling solutions has earned UL® Environment's GREENGUARD Gold Certification for low chemical emissions into indoor air during product usage.

Given the humid environment of the pool, water-resistant and mold-resistant products were specified. Rockfon stone wool ceiling panels are water-repellent and dimensionally stable at up to 100 percent relative humidity. Stone wool also has no nutritional value and therefore it provides no sustenance to harmful microorganisms.

Further contributing to the project's sustainability goals, Rockfon Sonar Activity direct mount and Sonar CDX concealed stone wool ceiling panels primarily are made from abundant basalt rock and contain up to 42 percent recycled material. Rockfon products supplied in North America are produced in ISO9001/ISO14001 certified factories.



Innovative installation

Constructability was another key challenge for the aquatic center's design-build team. "Traditionally, we would need scaffolding to install the roof structure and this would involve both time and money. The prefabricated integrated trusses were delivered to site and craned into place over two weeks allowing us to save on time and costs," noted Potopsingh.

"Looking back, it's difficult to think of working 30 feet above a pool to install these trusses," remarked Woudstra. "Factor in that the recreation center remained open for business throughout construction. The reality was that with no storage space and no time to build on site, everything had to be done in our shop a few miles down the road."

Offsite, StructureCraft fabricated each truss with Laminated Strand Lumber (LSL) panels. LSL panels are made by shredding wood from fast-growing, low-value hardwood logs, such as aspen, birch and poplar into thin strands. The trusses are comprised structurally of glulam top and bottom chords, LSL webbing and pressure-treated plywood decking. Each of the 22 trusses is 100 feet long, 10 feet high and 14 feet wide.

"The modularity of our trusses is a beautiful part of the solution," Woudstra elaborated. "Rockfon worked with us to assist where they could: They cut the stone wool panels in custom sizes. This made it easy to install the panels. They also rewrapped and finished the edges to give it a nice, clean look."

He continued, "The middle section of each truss is about 8 feet wide with a big fat metal HVAC duct in place. This leaves 3 feet to the right and left. Rockfon Sonar Activity ceiling panels were directly adhered to the underside of the HVAC ducts. StructureCraft and Rockfon worked together to develop the glue adhesive that could withstand the pool area's performance requirements. On the right and left wings of the truss, the panels were mechanically fastened to the underside of the plywood decking via a lumber furring system.

Once completed, the prefabricated trusses were loaded onto a truck at night to minimize disruption to Surrey's traffic.

"We could get two trusses loaded and trucked to the site each night. During the day, the entire truss then was erected into place using a crane. We really had to watch our layout to achieve the necessary gaps, reveals and precise fit. Once they were all in place, the whole thing was roofed and weather-tight," said Woudstra. "Overall, it worked well."

In addition to the truss system application, Rockfon Sonar concealed panels also were used above the spectator seating and mezzanine lobby area where lots of noise is generated. "The panels provided proper noise absorption in these areas and an aesthetically pleasing smooth surface finish for the ceilings," said Potopsingh.

With no storage space and no time to build on site, Rockfon ceiling panels were cut in custom sizes and mounted to the modular trusses in an off-site location. These pre-fabricated units were then were trucked to the site and installed at night to minimize disruption. The recreation center remained open for business throughout construction.

Growth potential

Celebrating its first anniversary in 2016, Surrey's new aquatic center continues to offer its members and guests a recreation and therapeutic destination. It includes a 50-meter FINA-certified lap pool and leisure pool complete with a therapeutic area, walking lanes, lazy river and children's area. The facility also provides training opportunities for swimming, water polo and other aquatic sports, as well as for hosting competitive swimming events.

"The caliber of recreational facilities throughout the City of Surrey plays an important role in our ability to attract valuable sport tourism opportunities – an area that continues to offer significant economic growth potential in the coming years," said Surrey City Council member, Bruce Hayne, who chairs the Parks, Recreation and Sport Tourism Committee. "We are thrilled to open this state-of-the-art facility in our growing community."

Upgrades to Guildford Recreation Centre also included a 2,600-square-foot expanded fitness center, a redesigned lobby space, a two-level parkade addition, a youth park and "Splash," a new piece of public art by Michael Krondl. When public art coordinator for the City of Surrey, Anita Green, visited the facility, she remarked, "What a beautiful and serene space. The sun was shining in the east windows adding to the luminosity of the space."

In addition to praise from the community, the project earned industry recognition by the Vancouver Regional Construction Association (VRCA). The aquatic center and StructureCraft earned the 2015 VRCA Gold President's Trade Award for the $1 to $3 million category.

Facts

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Find out more by visiting **www.Rockfon.com**