



RENDERINGS COURTESY CITY OF VANCOUVER

Queen Elizabeth Theatre Renewal

by Tiffany Sloan

“From the day you make the commitment to the day it opens, it takes 20 years on average to build a theatre from scratch,” says Rae Ackerman, director of theatres for the City of Vancouver. But for such a high-use facility like the Queen Elizabeth Theatre, starting anew wasn’t an option. “So we decided to fix it instead.”

Not that fixing it was any faster, but it was one-quarter the cost. The project began in 1992 with a wish list of upgrades from users. This became the framework of what Ackerman calls the “Lego-block plan” – the team would pick tasks as funding came available, and as they started a project, they built infrastructure for future ones.

After hearing from other Canadian theatres that closing for renovations had drastically hurt user groups, Ackerman and Thom Weeks, principal architect with Proscenium Architecture + Interiors Inc., developed a compromise: Minor upgrades would be completed during the three-month off-season, and for the major upgrades from 2006 to 2009, the operating season was reduced from nine months to six.

The first major project was to acoustically isolate the Queen Elizabeth from the Vancouver Playhouse next door, cutting a gap several inches wide between the buildings. New expansion joints, shear walls and support elements were added to the Playhouse to prevent vibration travel. “It was built when acoustics weren’t well understood, and they made several errors,” says Weeks. “But to be fair to the original architects, the sound systems in 1956 were tiny, so the level of sound now generated could not have been anticipated.”

Once the sound was isolated, the next step was to improve its quality, which included raising the ceiling. But

when crews opened it up they saw red: “It was common to prime steel with lead primer in the ‘50s,” says Michael Knight, president of general contractor Heatherbrae Builders. “But the nature of it and the amount of it no one anticipated.”

Removal of the lead paint required extensive precautions and removal specialists – as well as a significant amount of time and money. Knight estimates it would have pushed the opening by two or three months – an unacceptable delay as the theatre had already committed to various productions. “We had crews working from six in the morning to midnight to gain back the time that was lost.”

Ackerman and company studied the dispersion patterns of sounds from the speakers (suspended from the ceiling) and live voices (generally originating about five feet above the stage). Acoustics from live performances are best when echoing off hard surfaces, and sound reflectors were mounted strategically throughout the chamber to accommodate the echo patterns. Meanwhile, five hideaway curtains function as the absorptive surfaces needed to accommodate amplified events.

“Yes, it has better acoustics, but it’s also a better technical facility for the productions,” says Douglas Welch, principal of theatre consultant Douglas Welch Design, referencing extensive technical infrastructure improvements. While the original theatre had few theatrical lighting positions, raising the ceiling allowed for new catwalks. Fibre-optic LED lights are suspended from the ceiling, creating the illusion of a starry night sky and hiding the ceiling infrastructure from view.

This is especially true of the HVAC upgrades, notes Ken Junck, principal of mechanical consultant Stantec Consulting. From re-plumbing and re-ventilating the washrooms and expanding the sprinkler system to installing supplementary cooling in the lobby and adding mechanical for the new control booths and projection room, the 50-year-old building required extensive mechanical upgrades. The most significant change to the HVAC systems was the replacement of all of the supply and return ducts with much larger ducts enabling larger volumes of air to be moved at slower speeds eliminating one whole strata of noise.

The theatre’s lighting capacities were significantly increased. “Theatre systems are described in terms of the number of dimmers, or the number of circuits, they provide to shows for operating stage lights,” explains Wolf Schenke of electrical consultant Schenke Bawol Engineering. With the replacement and addition of new dimmer racks, the theatre nearly doubled capacity from 570 circuits to almost 1,100. But dimmer racks are heavy power users and the increased power draw meant adding a new service transformer, by carving a new room for it out of a boiler room. A challenging task, says Schenke, but necessary. “This is how a modern theatre operates. With the increased number of circuits, the Queen Elizabeth has stepped into the modern world in terms of technical capabilities.”

Bringing the theatre up to seismic safety standards was integral. “It was built in the 1950s and I don’t think there was much understanding of earthquakes or of Vancouver as a seismic region,” says Colin Macmillan, design engineer with structural consultant Read Jones Christoffersen Ltd. “We added soil anchors that go about 50 feet into the ground to support the foundations for some walls. We did a lot of horizontal drilling within walls, which was challenging work because of the precision involved.”

Macmillan notes that while most of the structural work is hidden, removing a

portion of the second floor in the lobby to create a three-storey atrium makes a noticeable difference. “It was challenging to remove a portion of the slab while ensuring everything else was still supported properly, but the visual impact is quite dramatic.”

Unlike renovations done in the ‘80s that aimed to modernize the theatre, the goal now was to restore it to its former glory – albeit in a more functional, technically proficient manner. “We actually brought the building back to its original design in some ways, and I think the interventions we’ve made have been respectful of the original intent of the building and of the original mid-century architecture,” says Weeks. ■

LOCATION

649 Cambie Street
Vancouver, B.C.

OWNER/DEVELOPER

City of Vancouver

ARCHITECT

Proscenium Architecture + Interiors Inc.

GENERAL CONTRACTOR

Heatherbrae Builders

STRUCTURAL CONSULTANT

Read Jones Christoffersen Ltd.

MECHANICAL CONSULTANT

Stantec Consulting Ltd.

ELECTRICAL CONSULTANT

Schenke Bawol Engineering Ltd.

THEATRE CONSULTANT

Douglas Welch Design Associates Ltd.

ACOUSTICAL CONSULTANT

Aercoustics Engineering Ltd.

TOTAL AREA

95,000 square feet

TOTAL PROJECT COST

\$54.5 million