



LOCATION
1012 Nelson Street, Vancouver, B.C.

OWNER/DEVELOPER
St. Andrew's-Wesley United Church

ARCHITECT
Ryder Architecture

GENERAL CONTRACTOR
Heatherbrae Builders Co. Ltd.

**PRIME/STRUCTURAL/
BUILDING ENCLOSURE CONSULTANT**
RJC Engineers

MECHANICAL CONSULTANT
AME Group

ELECTRICAL CONSULTANT
AES Engineering

TOTAL COST
Undisclosed

ST. ANDREW'S-WESLEY UNITED CHURCH RESTORATION

by ROBIN BRUNET

Renovation projects are usually helped along if a building has good bones, but unfortunately this was not quite the case with St. Andrew's-Wesley United Church in Vancouver. However, thanks to a team of architects, engineers, and builders working at the top of their game, the church now represents what its original designers had envisioned generations ago.

With its soaring vaulted timber roof, French and Italian stained glass windows, and angel reliefs, St. Andrew's-Wesley was designed and constructed between 1930 and 1933 by architects George and Robert Twizell. "Due to the Great Depression it wasn't built precisely to the original standards," says Diane Mitchell, executive director, operations, for St. Andrew's-Wesley. "One consequence was roof leakage that, over the decades, ruined the interior plaster elements."

Mitchell adds, "It wasn't until 2013 that we could seriously consider a renovation, and at first we confined ourselves to replacing the roof. However, the damage to the plaster necessitated its replacement, which meant stripping all the interior surfaces of the church. This created an opportunity to achieve a seismic upgrade before putting back all the finishes through a concerted heritage conservation process. While the logic was sound, demolition work confirmed a serious lack of proper concrete reinforcement throughout the building."

Heatherbrae Builders Co. Ltd. provided temporary weather protection over the building in March of 2019, while the roof was stripped and an extensive masonry conservation program was carried out on the exterior walls. A new copper roof reinforced with plywood and steel to resist

seismic forces was installed, leaving crews free to rehabilitate the church.

Adam James, principal, Ryder Architecture, says, "Understanding the existing building was crucial to a successful project. We verified the original building drawings with a 3D laser scan of the interior to produce a digital model to inform the seismic upgrade."

In many instances, the plaster was de-bonding to a degree it couldn't be simply re-affixed to surface areas. "So after lots of testing, we made moulds of the original components where required and cast new sections of plaster with fiberglass backing," says James. This was the core of the interior heritage conservation process.

In some cases, moulds of the church's arches were made to replace arch sections that had to be removed to accommodate new reinforced concrete shear walls. "About three quarters of some of the ornamental arches had to be cut out," says Richard Parker, site superintendent for Heatherbrae.

Michael MacLean, associate at RJC Engineers and prime consultant and building enclosure engineer for the project, says, "The biggest surprise was the lack of reinforcement throughout the building. Very minimal steel was used." Structural reinforced concrete walls of various thicknesses were overlaid against the existing walls, taking up space that was previously filled with terracotta tile used to support the plaster. This followed months of preparing the existing walls (a process that required the installation of over 27,000 dowels).

While the goal was to hide all the interior structural elements behind finishes and back of house spaces, one major decision was to enclose two public spaces with new concrete shear walls. This made the structural design

more efficient while improving functionality of the space for the church. Fiber Reinforced Polymer (FRP) was used to enhance the strength of concrete columns and structural arches beneath the plaster shells.

To compensate for the old, sloping floor, tiles were removed, new services were installed, and one to two inches of topping was poured to create a level surface.

The church's stand-alone bell tower also required extensive renovation, beginning with a hole excavated eight-feet deep and 35-feet wide to accommodate the new tower footing. "Six workers with jackhammers had to methodically chip down the sandstone and remove the rock," says Jason Gartshore, project manager at Heatherbrae. To fortify the upper portion of the tower, a portion of the roof was removed so that a structural steel frame could be dropped inside via crane.

Other work included the repointing and restraining of granite facades, the removal of the church's fir pews – which were intended as temporary back in the 1930s – and the addition of a second organ. "We replaced the pews with chairs for flexibility," says Mitchell. "Plus, we revamped the bathrooms, performed back-of-house renovation work, and installed mobility lifts."

As of February 2021 the bell tower upgrade was nearing completion, "and most of the scaffolding has been removed," according to James. "We also thoroughly cleaned the stained glass windows, and the light it casts throughout the interior is truly impressive."

James, who like George and Robert Twizell came to Canada from Newcastle upon Tyne, England, says the project was a unique chance to honour the two architects. For her part, Mitchell credits Ryder Architecture, RJC Engineers,

Heatherbrae, and a long list of trades for bringing St. Andrew's-Wesley United Church to life. "The care and skill they imparted was amazing, and they even brought this complicated project in under budget," she says. "Hopefully, their work will last for another 100 years." **A**

