

MAPLEWOOD FIRE HALL & TRAINING FACILITY

by ROBIN BRUNET

verything spec'd to the nines: that was the overall approach to the design and development of the Maplewood Fire Hall and Training Facility in North Vancouver, which replaces a fire hall in Lynn Creek and a training centre elsewhere in the neighbourhood.

When the project was first announced in 2019, the District of North Vancouver referenced a report from its fire chief that the existing facilities were 40 years old, outdated, in poor condition, plus used twice as much energy and emitted far more greenhouse gas emissions than what was the standard.

As designed by S2 Architecture, the new fire hall is also the department headquarters and includes offices and workspaces for administrative staff. An indoor/outdoor training facility is an integral part of the design and includes a training tower, cell tower, and two fire simulation buildings, among many other components.

Early on in the development process, S2 Architecture and the owners decided the building would be constructed with heavy timber and locally sourced stone; it would also embrace LEED, passive house, and passive solar design principles.

S2 Architecture's design was further driven by the facility's need to serve as a post-disaster hub. Hence, backup systems and emergency protocols were developed to provide continual emergency

Maplewood Fire Hall & Training Facility

services. "It exceeds both federal and B.C. standards in terms of seismic preparedness, post-disaster response, energy efficiency, and greenhouse gas performance," according to the architects.

A 28kw solar photovoltaic array on the roof would provide an added level of resilience, and electrical/mechanical consultants Introba (which provided mechanical, electrical, fire protection, and energy modelling services for the project) calculated a five percent annual energy offset through on-site renewable generation.

A mechanical plant system was developed consisting of air-source heat pumps supplemented with electric boilers, to assist in meeting the District's goals of reducing greenhouse gas emissions. High-efficiency heat recovery ventilators also helped the District achieve a goal of 30 percent energy savings compared to code.

More design efficiencies included a lighting system of LEDs coupled with occupancy and daylight sensors to further reduce energy consumption. Eight level 2 electric vehicle charging stations and one level 3 super-fast charging station were included in the electrical design.

The land upon which the new fire hall would sit was originally an underutilized parcel from a contaminated landfill, overgrown with invasive flora species. "Remediation was required prior to us breaking ground in February of 2022, but the advantage



LOCATION

ARCHITECT S2 Architecture

Introba

PFS Studic

TOTAL SIZE 46,500 square feet **TOTAL COST** \$43 million

OWNER/DEVELOPER District of North Vancouver

GENERAL CONTRACTOR Chandos Construction

LANDSCAPE ARCHITECT

GEOTECHNICAL CONSULTANT Kontur Geotechnical Consultants Inc.

STRUCTURAL CONSULTANT Equilibrium Consulting Inc.

900 St. Denis Avenue, North Vancouver, B.C.

MECHANICAL/ELECTRICAL CONSULTANT

of this site was we had plenty of space, none of the usual restrictions associated with urban construction," says Michael Masinovsky, project manager at Chandos Construction. The Chandos team removed contaminated soils from the gravel aquifer, reducing potential threats to the quality of the local water and nearby bird sanctuary wetlands downgradient.

While the project earned media attention for its mass timber elements, Masinovsky says, "It's really a steel building: concrete foundations, steel substructure, and the mass timber on level three where the offices are located."

Essentially, the fire hall uses a glulam column and beam structure supporting CLT floors; Kalesnikoff Lumber Co. Ltd. of Castlegar provided custom beam connectors for pre-cut glulam beams and columns, custom panel sizing, and daps cut for spline connections. Masinovsky says of the post-disaster design requirements, "Actual construction is basically the same, but everything is a super-heavy gauge: steel beams, columns, plates, seismic tie-downs, even wall tape.

"In terms of challenges we were coming out of COVID, so there were still supply issues. We had to procure roofing, windows, and some finishes a year in advance to avoid delays and price hikes. Fortunately our construction site was surrounded by forest, so it was safe to store. About the only interruption was a bear walking through the property and deer eating the landscaping."

Masinovsky adds, "We've worked on fire halls elsewhere in Canada, but this is the most intricate one of its kind in the Vancouver region. It's built like a fortress – but at the same time it's an attractive building that will serve the community for decades to come."