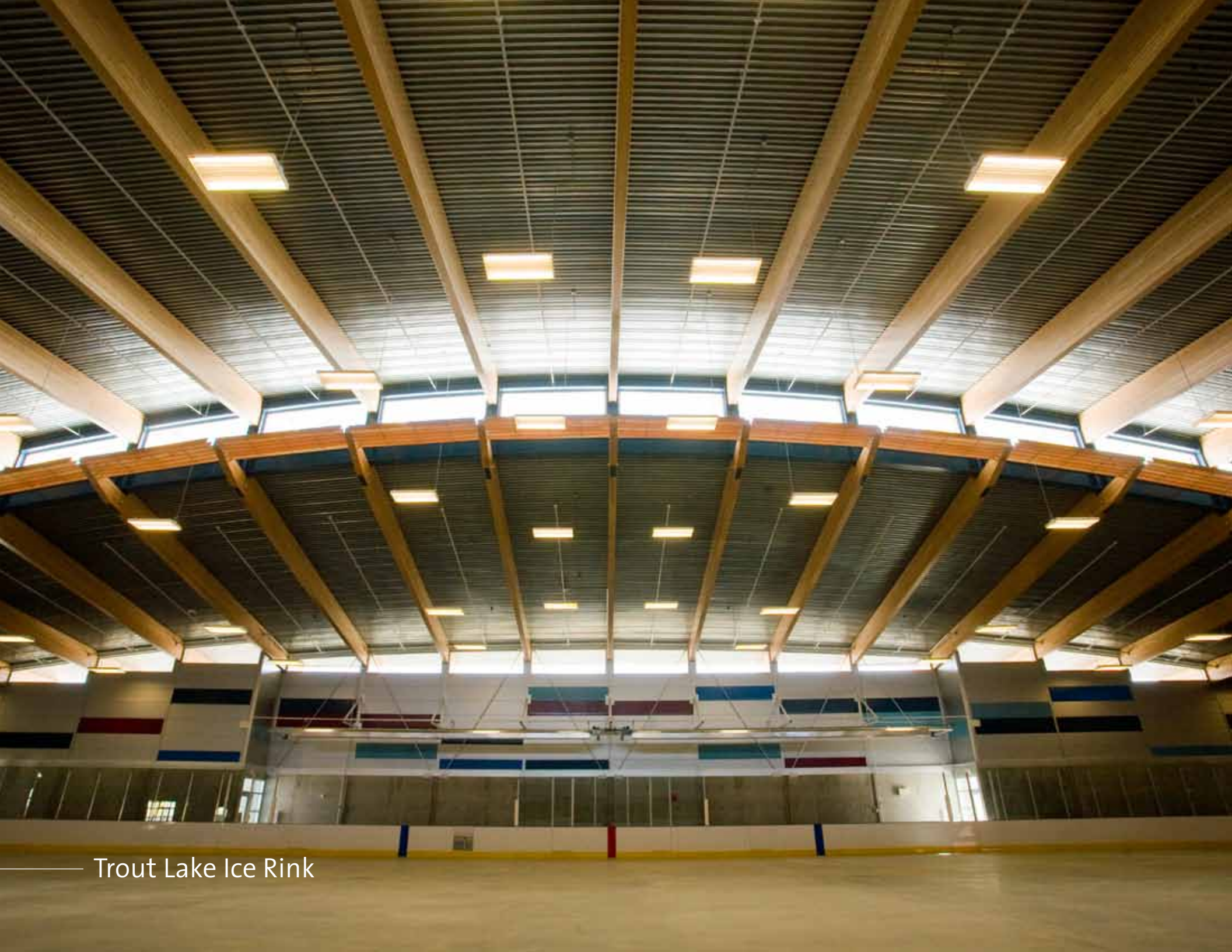
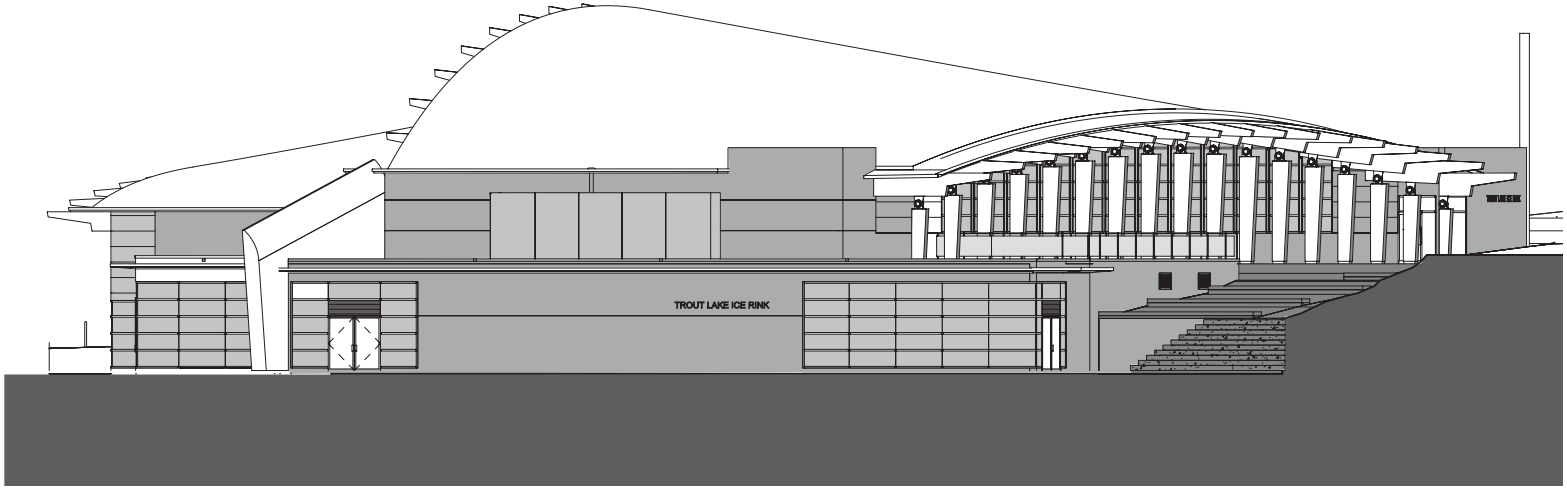
WOOD AND ICE, ENERGY EFFICIENCY
FOR A DYNAMIC COMMUNITY CENTRE

TROUT LAKE ICE RINK



Trout Lake Ice Rink



ARCHITECTURE

LOCATED IN JOHN HENDRY PARK in east Vancouver, this new ice rink is the first phase in the replacement of an aging community centre facility. The rink served as a practice facility for competitors who participated in the 2010 Olympic and Paralympic Winter Games, and opened for public use after the Games.

The building is sited at the foot of an east-facing slope, between the park edge and Trout Lake. This siting together with the roof profile —a shallow vault springing from low perimeter walls— minimizes the impact of the ice rink's large volume and establishes a scale in keeping with the surrounding single-family neighbourhood. The west elevation is articulated by a colonnaded exterior gallery that provides views down to the ice surface.

"We chose the glulam beams to provide a contemporary west coast look and reflect current local construction practices."

WALTER FRANCL, PRINCIPAL – WALTER FRANCL ARCHITECTURE INC.

The roof structure consists of an arched steel truss spanning the length of the rink, north to south. This primary arch reduces the east–west span which in turn allows the secondary structure of curved glulam ribs to be reduced, resulting in a simple, appealing, and efficient structure. The public space (skaters' lounge), located at the north end of the building, has good visual and physical connection to the future community centre and entrance plaza.

FACTS

- Trout Lake Ice Rink is the first phase in the replacement of an aging community centre facility in Vancouver’s John Hendry Park
- After serving as a practice rink for competitors who participated in the 2010 Olympic and Paralympic Winter Games the facility opened for public use
- British Columbia Douglas-fir glulam beams span laterally from the side walls of the main rink space to bear on a central steel truss that creates a clerestory running the length of the building
- The skaters' lounge and lobby area feature wood panelling made from trees blown down in Vancouver's Stanley Park during a severe winter storm

WOOD AND SUSTAINABILITY

THE ENTIRE RINK IS PROVIDED with ample daylight and natural ventilation through clerestory windows along the arched truss and the top of the east wall, as well as through glazing along the viewing gallery on the west façade.

Energy consumption is reduced by the resulting lower demand for mechanical ventilation. Roof overhangs prevent heat buildup inside the rink, and the underground ancillary spaces covered by landscaping minimize heat loss. Wood is part of a palette of durable materials that includes architectural concrete, insulated metal panels, and aluminum glazing systems. The building is targeted to achieve a Leadership in Energy and Environmental Design (LEED®) Silver rating.

As the design of the ice rink was in progress at the time of a severe winter storm which blew down a significant number of trees in Stanley Park, the owner and design team made all efforts to use the wood from the fallen trees in the construction of this community building. Suspended wood ceilings made entirely from storm felled Stanley Park Douglas-fir are a prominent feature in the skaters' lounge and hallway.

Wood has low thermal conductivity and good insulating properties, and light wood-frame technology lends itself readily to the construction of buildings with low operating energy.

As a renewable material with low toxicity and low embodied energy, wood contributes to improved indoor environmental quality and lower life cycle energy costs. The wood members also contribute to a reduction in global warming by retaining the carbon that, through forest fires or natural forest decay, would otherwise be released into the atmosphere as greenhouse gases.

STRUCTURE

THE ROOF STRUCTURE CONSISTS of a single central longitudinal steel arch 210 ft (64 m) in length that is connected by pin joints to buttress walls at the north and south ends of the ice rink. The arch is constructed as a curved, wedge-shaped, Vierendeel-type truss using wide-flange steel members with welded joints. The truss divides the roof longitudinally with one half of the roof structure bearing on the lower chord, and the other half on the upper chord, creating a clerestory that allows natural light to penetrate into the space.

The arch supports British Columbia Douglas-fir glulam beams that span across the arena from concrete columns at the exterior wall locations. The beams are spaced at 12 ft (3.6m) centres and are all 7¾-in (196-mm) wide, but depending on load and span are either 30-in or 36-in (750-mm or 914-mm) deep. The glulam beams support structural steel decking. All other structural elements—including the north- , south- , and west-side low roofs, gable end walls, retaining walls, and interior partitions—are constructed of exposed, cast-in-place, reinforced concrete.

PROJECT CREDITS

CLIENT
Vancouver Board of Parks and Recreation

ARCHITECT
Walter Francl Architecture Inc.

STRUCTURAL ENGINEER
Fast+Epp Structural Engineers

MECHANICAL ENGINEER
JM Bean & Co. Ltd.

ELECTRICAL ENGINEER
Acumen Engineering

GENERAL CONTRACTOR
Bird Construction Company

GLULAM FABRICATOR
Structurlam Products Ltd.

PHOTOGRAPHERS
Stefan Aepli, KK Law

FOR TECHNICAL INQUIRIES
www.wood-works.ca
1-877-929-9663

naturallywood.com
British Columbia Wood. Sustainable by Nature. Innovative by Design.

Consider the environment — use paper from responsibly managed forests.

Published October 2010