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FOCUS

Wilson School of Design

WILSON SCHOOL OF DESIGN

LEED Gold project advances creativity and urban development

COPPER SPIRIT DISTILLERY

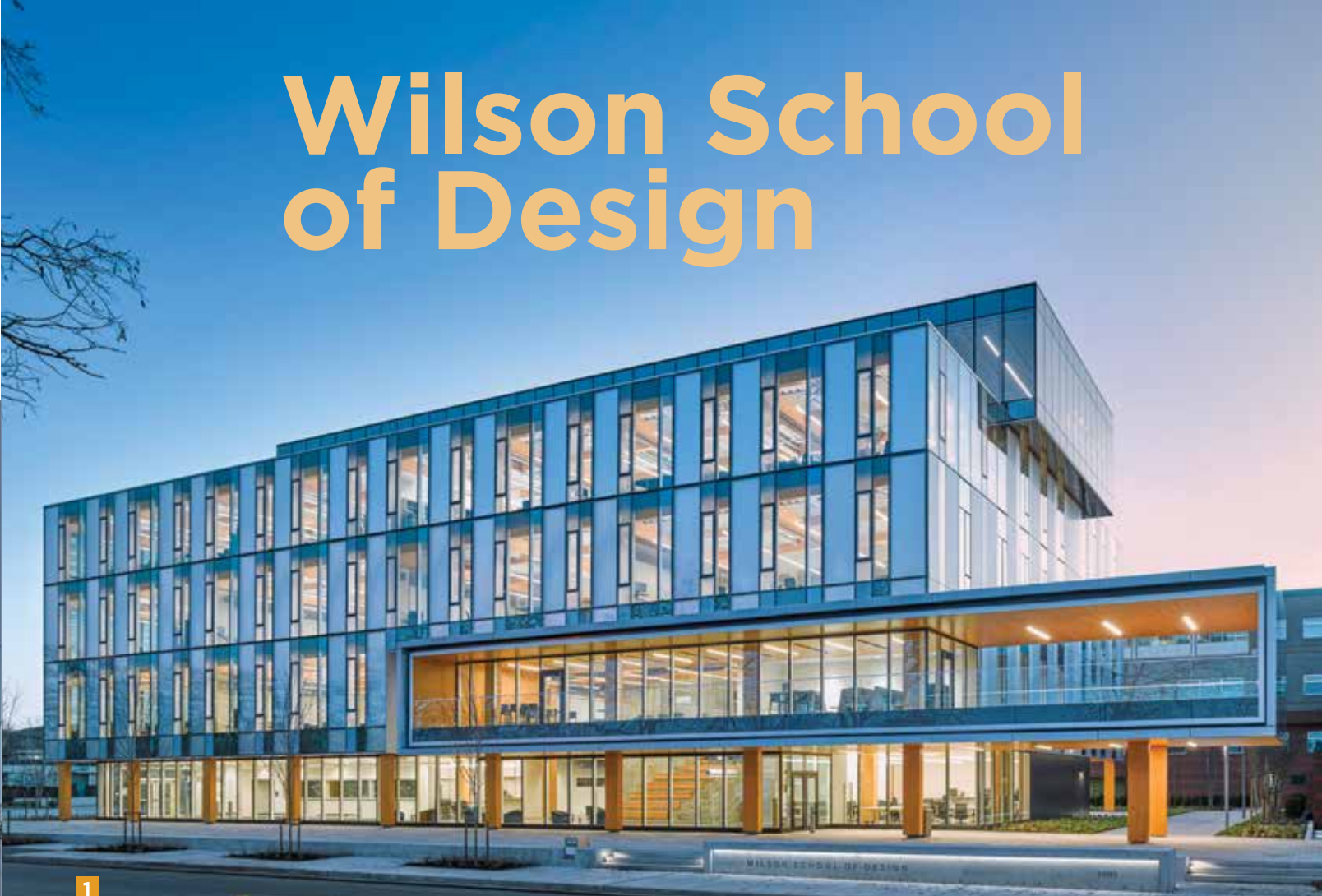
A boutique merging of residential and industrial

UVIC DISTRICT ENERGY PLANT

Compact building employs passive strategies

TAKING ACTION

Why we need to design and build with carbon in mind



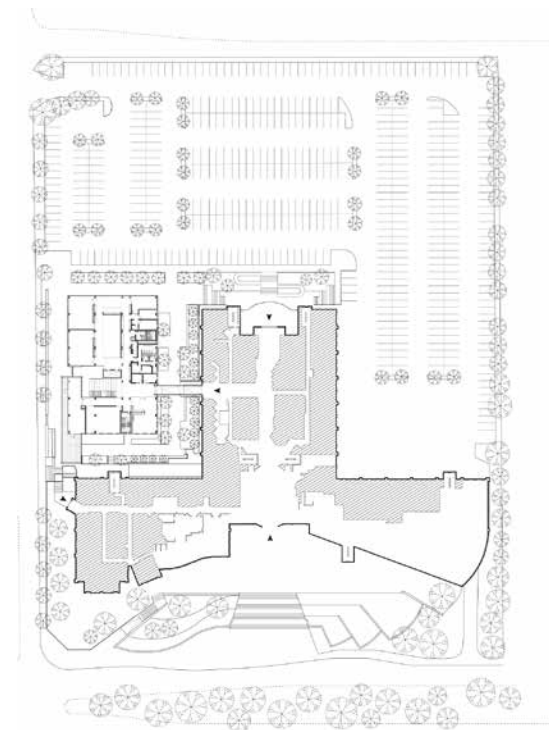
1

1. The west elevation creates a new front door for KPU on Kwantlen Street to help animate the surrounding mixed-use neighbourhood, and to establish the Wilson School of Design as a hub for technical fashion design education.

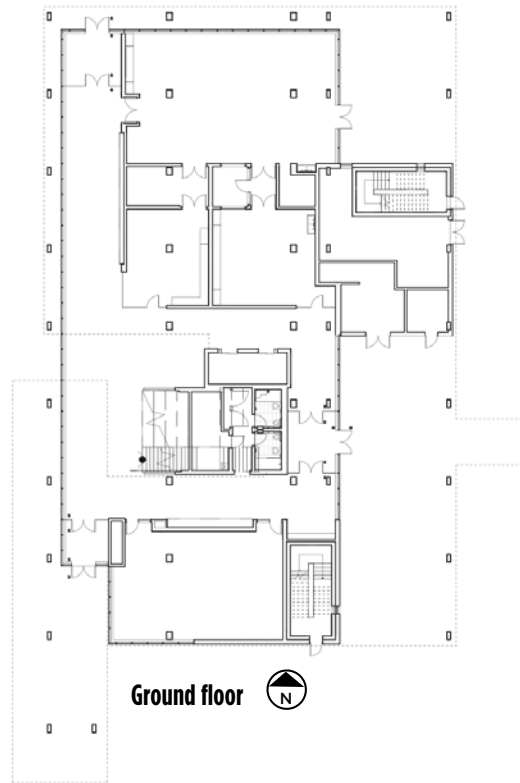
LEED Gold project advances creativity and urban development

By Geoffrey Turnbull

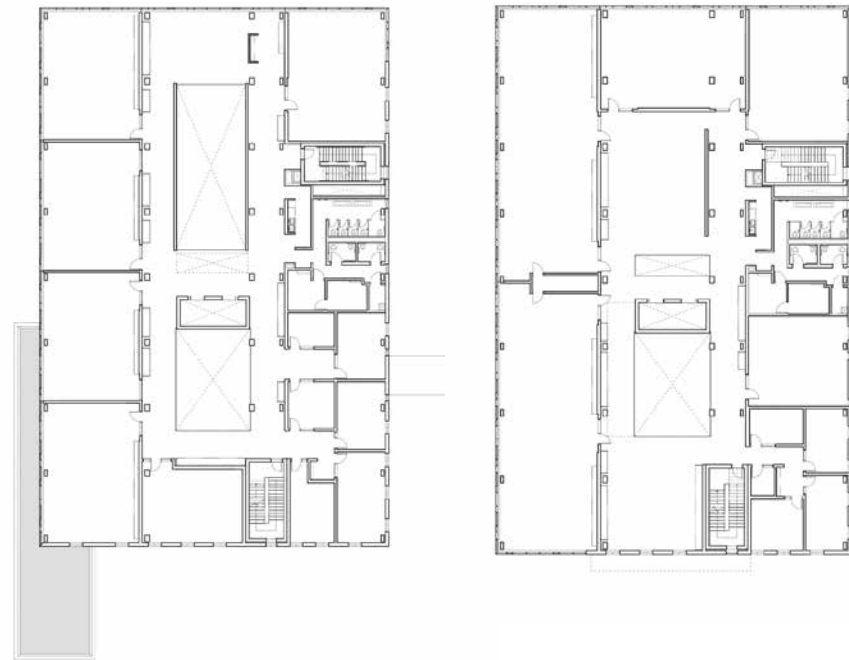
With over 300 apparel companies, BC's lower mainland is a centre of excellence for technical fashion design. The vision for the new Wilson School of Design at Kwantlen Polytechnic University (KPU) in Richmond is to be the preeminent school for this industry on the West Coast. The broader purpose of the University is to fuel the local economy by generating a steady pool of talent and expertise in the fields of graphic design, interior design, fashion marketing, and fashion technology.



Site plan

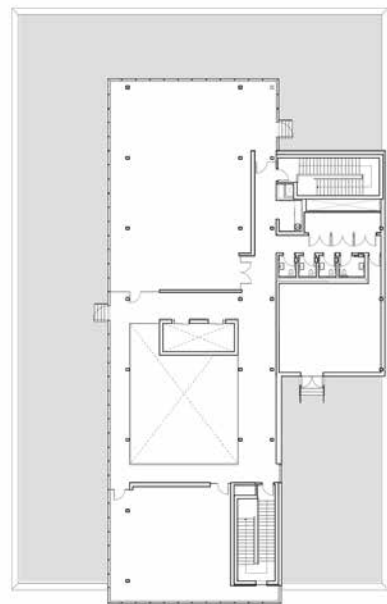


Ground floor



Second floor

Third floor



Fourth floor



2



3



4

The Wilson School of Design acts as a catalyst transforming the campus into a network of educational and social spaces. The building was conceived as an exemplar for the development of KPU, and as a participant in larger plans for the urbanization and intensification of the city of Richmond as a whole.

The building visually links the School of Design to Lansdowne Station which provides easy access to the other KPU campuses, the city of Vancouver and the international airport beyond. As a “gateway” to KPU’s Richmond campus and producer of a sophisticated industrial workforce, the new Wilson School of Design represents a significant contribution to the urban development of the Metro Vancouver region.

A series of flexible design studios, labs, open offices and shared collaboration and amenity spaces are strategically organized on five interconnected levels into three main zones of programming activity - a total building area of 64,129 sq.ft. Zone 1 on the ground floor includes testing labs and an incubator for BC Technical Fashion; Zone 2 includes levels two to four for teaching/studios; and Zone 3 on the upper level includes multi-purpose event/ conference space for donor events and industry functions. The areas between all program elements creates continuous ‘collision space’ for circulation and breakout.

Through an integrated design process, the attributes that have made the warehouse loft typology so attractive to creative activities were identified as ideal for the new building: open, flexible, filled with natural light, and enduring. The site conditions and seismic considerations also necessitated a structure that would be light but stiff. In essence, the structure had to perform like a ship. (Continued on page 20.)

2. The new building actively encourages collaboration with a large central atrium for lounging and project exhibitions. Linea Ceiling & Wall Systems provided its LINEA Grille, LINEA Plank and LINEA Veneer Flat Panels in Douglas Fir for the acoustic wood ceilings throughout.

3. and 4. Glulam columns and beams support a composite concrete floor slab allowing for seamless integration of in-slab heating/cooling for controlled thermal performance. The central atrium is integral to the passive ventilation and daylighting strategies. Olympic International in North Vancouver supplied a range of HVAC products including Jaga fan coils, ERV/HRV from Scott Springfield and Valent, and Aermec air-source heat pump and chiller.



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5. The North elevation. The high-performance unitized curtain wall system, customized at each elevation to respond to its orientation and solar exposure, balances a maximum of daylighting and natural ventilation with thermal and solar protection.
 6. Studios have high ceilings, ample natural light, and an occupant notification system to notify occupants when conditions are suitable to open windows. Operable windows are equipped with contacts to monitor the position (open/closed) of each window.

Energy Intensity 121 KWhr/m²/year
Energy Intensity, base building 96 KWhr/m²/year
Energy Intensity, process energy: 25 KWhr/m²/year
Predicted % regional energy reduction per Energy Star Target Finder: To meet the Architecture 2030 Challenge, a project must be 25% below the ASHRAE 90.1-2007 standard. The Wilson School of Design is 43% below ASHRAE 90.1-2007 standard, exceeding the Architecture 2030 Challenge by 18%.
Recycled materials content 22% by value
Water consumption from municipal source 2,710litres/occupant/year
Reduction in water consumption 26%
Construction materials diverted from landfill 97%
Regional materials by value 36%

ARCHITECT KPMB Architects in joint venture with Public Architecture + Communication
STRUCTURAL ENGINEER Fast+Epp
ELECTRICAL ENGINEER AES
MECHANICAL ENGINEER AME Consulting Group Ltd.
CIVIL ENGINEER Core Group
CONSTRUCTION D.G.S.Construction Company Ltd.
LANDSCAPE ARCHITECT PFS
BUILDING ENVELOPE Morrison Hershfield
SUSTAINABILITY Recollective
COMMISSIONING AGENT MDT Systems
PHOTOS Adrien Williams



Sustainability diagram



6

The same rational, robust plan grid that affords traditional warehouses their exceptional versatility is inherent in the CNC milled post-and-beam timber frame of the new building. The timber structure and plan layout are coordinated to provide 100% fresh air through operable windows, access to the outdoors, and abundant views.

Balancing campus-wide serviceability with energy efficiency, the design approach drew upon tried-and-true natural and mechanical climate control systems, updating them beyond contemporary building standards. The design integrates a high-performance glazing and spandrel curtain wall system to achieve overall glazing U-Values between 0.306-0.315 while maximizing daylighting.

Customized at each elevation to respond to its orientation and solar exposure, the curtain wall system provides varying degrees of reflectivity and transparency to allow natural light into the majority of spaces while mitigating glare and solar heat gain. Careful selection of efficient luminaires and ballasts has reduced installed lighting power density by 32% compared to code baseline. The lighting control system includes both occupancy and daylight sensors beyond code (ASHRAE 90.1-2007) in several spaces.

Heating and cooling for the building is supplied by a radiant slab system which is zoned to provide individual control of slab temperature in areas such as studios, open offices and meeting rooms.

Heat pump technology is utilized to maximize energy performance with high-efficiency boilers deployed during peak heating. The heat pumps are configured in a heat recovery arrangement to more efficiently provide simultaneous heating and chilled water when required for the radiant slab system.

Natural ventilation is achieved through the stack-effect in which operable windows bring fresh air in while the central atrium acts as an exhaust plenum. Mechanically-ventilated air is supplied via two 100% outdoor air handling units equipped with air-to-air energy recovery, variable speed supply and exhaust fans, changeover heating/cooling coils, and air flow measuring stations. Air valves are used for demand-controlled ventilation to reduce ventilation air volume during periods of low occupancy and/or during natural ventilation mode.

The design also anticipates a future vegetated roof and access to outdoor terraces as funding is made available. Water-efficient landscaping strategies by the landscaping designer, PFS, include local plant species requiring minimal irrigation and maintenance. Porous hard landscaping surfaces redirect storm water toward planters and dry beds, and promote reabsorption of run-off back into the water table.

The design objective was to deliver a healthy learning environment that would foster interdisciplinary collaboration and to exemplify KPU's burgeoning position as a sustainability leader in the education sector. The design team worked closely with the School's leadership, user representatives and climate engineers to establish guiding principles for energy efficient performance and to achieve LEED Gold.

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7. The connecting bridge extending from the east elevation.

