

THE ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOLOGISTS OF BRITISH COLUMBIA

BURNABY, BC

Project Description

The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) wanted a new headquarters building that would show off its commitment to principles of energy management, display advanced engineering through its architecture, and provide a comfortable work environment for its employees.

Busby + Associates Architects responded to these needs with a building that recognized an integrated design approach was fundamental; each engineering discipline was encouraged to innovate an aspect of their design. The structural system includes a suspended roof assembly eliminating the need for typical open-web steel joists. The mechanical design utilizes a low energy system of ground source heat pumps. The electrical design included sophisticated day-lighting calculations, resulting in a series of fritted glass louvers on the East and South faces of the building which significantly reduces heat gain, and work with precisely shaped "sails" suspended in the exposed structure, to distribute natural and artificial light evenly into the interior spaces.



Client	APEGBC Headquarters
Architect	Busby + Associates Architects
Mechanical Engineer	Keen Engineering Co. Ltd.
Structural Engineer	Read Jones Christoffersen
Electrical Engineer	Reid Crowther and Partners Ltd.
Landscape Architects	Reeve MacDougall
Fire Code Equivalencies	Protection Engineering

BUSBY + ASSOCIATES ARCHITECTS

Sustainable Sites

Careful consideration was directed toward preserving a large portion of the site for landscaping. Significant planting of native shade trees in the parking areas reduces the effect of heat islands by effectively shading the parking surface. The building was positioned in such a way that light pollution reduction is less than IESNA standards with combination low level bollard lighting and low pole overhead lighting.

Energy and Atmosphere

The building was designed to exceed energy reduction over ASHRAE 90.1, with a 10% reduction of energy compared to a conventional office building. There are no CFC's used in HVAC or cooling equipment. The building was modeled to inform the orientation of the building, the extent of glazing and the appropriateness of low impact mechanical sys-

Material and Resources

During construction a cut and cover method of excavation required no soil to be removed from the site. Although not specified, the building incorporated a minimum of 20% of recycled materials, such as rebar and aluminum, and approximately 35% to 50% of the material specified was supplied locally. An office recycling program is in place.

Indoor Environmental Quality

The design was based on a number of innovative engineering disciplines. The mechanical design utilizes a low energy ground source heat pump system. A separate exhaust system exists for all copy areas and entry vestibules in order to minimize dust and toxic compounds migrating into the open office areas. The electrical design included sophisticated daylighting calculations, resulting in a series of fritted glass louvres and on the east and south faces of the building which, provides for 70% shading and 30% daylight penetration. Work surfaces have task lighting with lower ambient lighting. The building is organized so that all areas have access to daylight. Operable windows were considered but as the building was located near a major highway the dust would have significantly reduced air quality.