

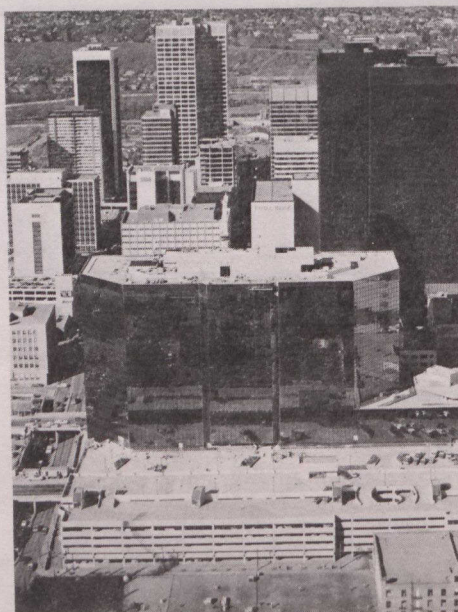
area *per* square foot of floor space. The exterior finish is dark-brown cedar siding. Darker colours absorb heat from the sun, enabling the house to act as a giant solar collector. The landscaping is also designed to increase thermal efficiency. Deciduous trees on the south side provide shade in summer and allow heat to enter the windows in winter.

The house is sealed in an airtight polyethylene vapour barrier. Special installation techniques were used to assure a near-perfect seal, with particular care around electrical outlets, plumbing stacks, window and door openings, and joints between floors. Super-insulation levels in the ceiling, walls and floor are more than double the present Canadian standard and triple the amount in most homes. An experimental waste-water heat exchanger, developed by the University of Saskatchewan, recovers heat from laundry and bath water, thereby reducing hot water requirements by 30 per cent.

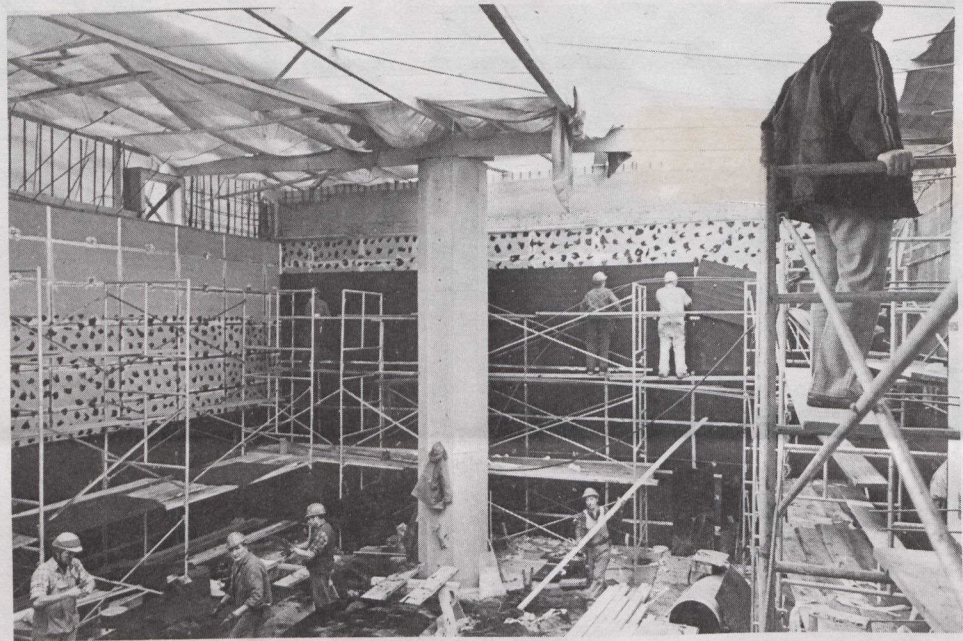
The energy-saving features added about \$3,500 to the building cost, and result in an annual fuel bill of \$60. That's in Regina — a city that experiences considerably more cold weather (average January temperature is -17.3°C) than the majority of North America.

#### Kitsilano Co-operative Townhouses

The Kitsilano Housing Society in Vancouver, British Columbia, is a non-profit organization devoted to providing affordable housing for low and medium income families. Because of rising fuel costs in 1977 they initiated the construction of



Gulf Canada Square will open July 1.



Workers inside one of Gulf Canada Square's 250,000 gallon storage tanks.

an eight-unit co-operatively owned townhouse complex, the first large-scale Canadian application of passive principles, and one of the few in a medium-density urban area.

About 95 per cent of space heating and cooling requirements will be met by passive solar systems, including south facing skylights with an automatic insulated shutter system operated purely on solar energy.

Trombe walls are a major component of the energy system and also provide an acoustic barrier to outside traffic noise. A Trombe wall is a vertical mass of concrete, mounted a few inches behind an exterior wall of double-pane glass. Sunlight is intercepted by the south-facing wall. Some of the heat is absorbed into the dark concrete, to radiate into the house at night, the rest is whisked up, over the top of the wall and into the house. This is accomplished by a natural convective current of air that is drawn off the cool floors, vented through slots to the base of the vertical slab of concrete, and warmed by the face of the wall as it rises. The openings to the wall can be closed to control the entry of heat into the house and the glass covering is insulated at night by shutters on the outside.

A Saskatoon contracting company, Concept Construction, has created an innovative method of building and installing the wall, allowing it to be poured on the site and hoisted into place. The company uses Trombe walls in their reasonably priced (\$40,000 to \$60,000)

ranch-style homes which can be heated with less than \$100 of electricity a year.

#### Gulf Canada Square

The Encon Corporation of Toronto built Hydro Place in Toronto. Its energy requirement is less than a third of any building of comparable size and vintage in the world.

Encon's newest project, Gulf Canada Square in Calgary will require 30 percent less energy. This seven-storey complex with twin 20-storey towers and retail mall combines a variety of energy-saving devices into an integrated energy conservation system. Without furnaces, the system gathers heat from lighting, people and office equipment and stores it in underground water reservoirs for use when needed. Heat is gathered up through the coffered ceilings, then conveyed through an intricate system of ductwork into the storage tanks.

Double-glazed panels of silver-treated glass, known as curtainwall, reflect 85 per cent of the sun's heat, insulate the building, and give it its mirror-like appearance. Air vents built into the panels continually wash the glass with streams of conditioned air, eliminating drafts. Designed for high-quality lighting with minimum consumption of electricity, the lighting system provides most of the building's heat. If the buildings were unoccupied for a long time in winter, comfortable temperatures could be maintained just by switching on the lights. A pollution-free inciner-

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