

oriented east-west. Earth moved from the surface, the pool and tank excavations is used to create the berms. Areas along the south face of the house, the conservatory deck, vegetable garden and around the pool are protected from the wind. The pool berm, garage and glass house serve as barriers against noise from Highway 401.

The prevailing summer breeze and part of the winter wind coincide with the west-southwest view. The wind generator is located to one side of this area.

Mechanical Considerations and Energy-saving Equipment

The water tank (approximately 60,300 gallons) is insulated, and located under the house for economic and heat-transfer considerations. The solar collectors are held by the roof and provide extra insulation for the house. Heat for the house is from warm air, provided by a water-to-air heat exchange in a fan-coil unit. The design temperature of the

interior is 72°F on thermostatic control. An air-to-air heat exchanger allows exhaust air heats incoming air. The solar energy system is based on a computer program using weather and insolation data for the past 10 years. The solar collectors are used to supplement the domestic hot water supply. The wind generator will provide partial heating of the conservatory by resistance cable.

Materials

Basement, tank and retaining walls are concrete. The tank is foamed polyurethane and the waterproofing

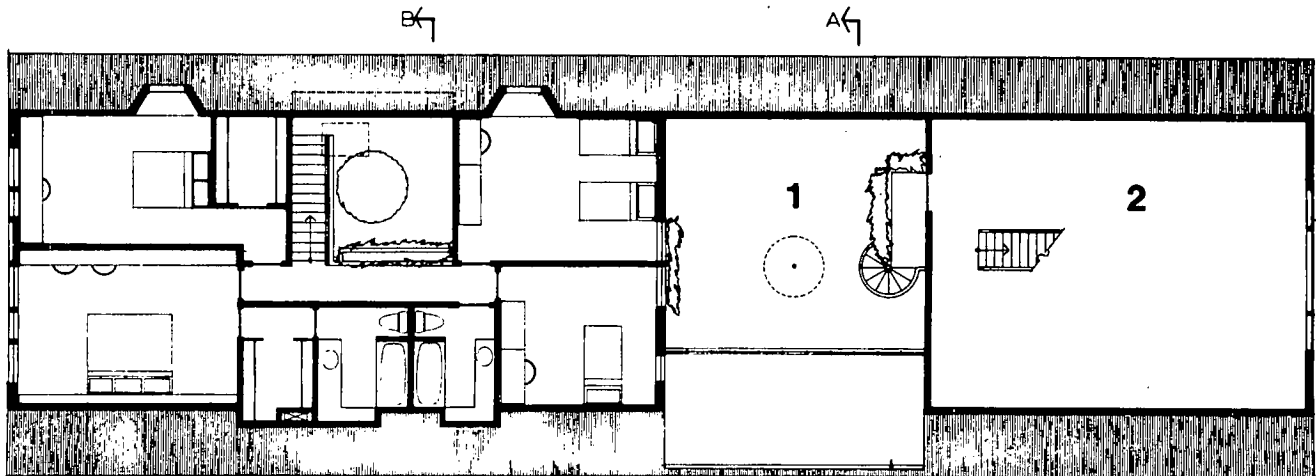
is also polyurethane. The construction is timber frame, with cedar siding; insulation is batt-type. Sheathing is special extruded polystyrene. Windows are casement style, in wood. The roof has metal shingles. Interior walls are drywall with pine trim, floors are hardwood or carpet. The glass house frame is aluminum.

Credits

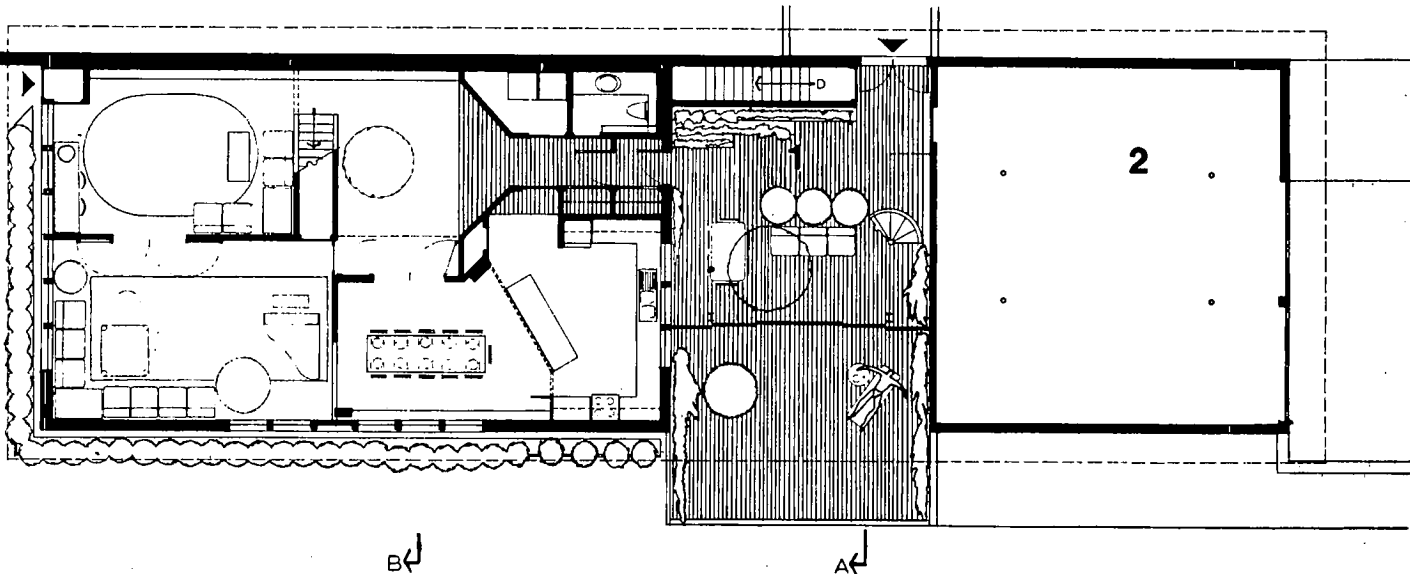
John Hix is the architect of Provident House and Frank Hooper the mechanical engineer; engineering services were by Envirogetics Ltd. McClintock Homes was the builder. The solar energy components were sponsored by the Province of Ontario Energy Management Program and the Ontario Housing Corporation. The design was supported by the Ministry of State for Urban Affairs. K & R Engineering were structural engineers. The quantity surveyor was Tom Brown and mechanical quantity surveying was done by Clare, Randall Smith.

House Size (Interior)

House (heated space)	2,792.4 sq. ft.
Attic (heated space)	689.76 sq. ft.
Basement and mechanical room (heated)	580.4 sq. ft.
Conservatory	430.68 sq. ft.
Loft (unheated; future storage or apartment)	743.66 sq. ft.
Garage	870.0 sq. ft.
Deck	359.33 sq. ft.
Glass (heated space)	223.0 sq. ft.
Effective solar collector area	717.0 sq. ft.
Storage tank	60,300 imp. gal.



BEDROOM FLOOR PLAN



GROUND FLOOR PLAN