

**Student Work:
The Office Tower of the
3rd Millenium, Phase II**

Eyal Nir



view of computer model

This project won first prize in the Office Tower of the Third Millennium architecture competition held by SITQ Immobilier in Québec in 1997-98.

The competition was open to 3rd and 4th year architecture and environmental design students from McGill University, Université de Montréal, Université Laval and Université du Québec à Montréal. The projects had to be multi-functional, ecological and energy-efficient in ways that address the needs of year 2000 clients for quality, user-friendliness, safety, health and respect for the environment. An exhibition of the winning projects travelled to all SITQ Immobilier office buildings in Montreal and Quebec City in 1998.

The following description consists of excerpts from the submission for phase II of the competition.

Site and Program

THIS OFFICE TOWER and hotel is planned for a site on the southwest corner of Peel and St. Antoine in downtown Montreal. It is in a district that has seen a number of major building projects recently: the Molson Centre, the IBM Marathon tower and the 1000 LaGauchetière tower.

The project's architecture is based on the idea of a "smart building": incorporating the technology and material commonly used in this building type, while creating building details based on solar energy use and bio-climatic considerations.

The program is multi-functional (hotel and office), creating the potential for 24-hour-a-day, seven-day-a-week activity. The structural concept of the tower allows it to be built in phases. The building can be used before all phases are done. The truss core, together with the office space, could be built in a first phase. Construction of the second phase, the hotel, would not disrupt activity in the offices.

Structural concept

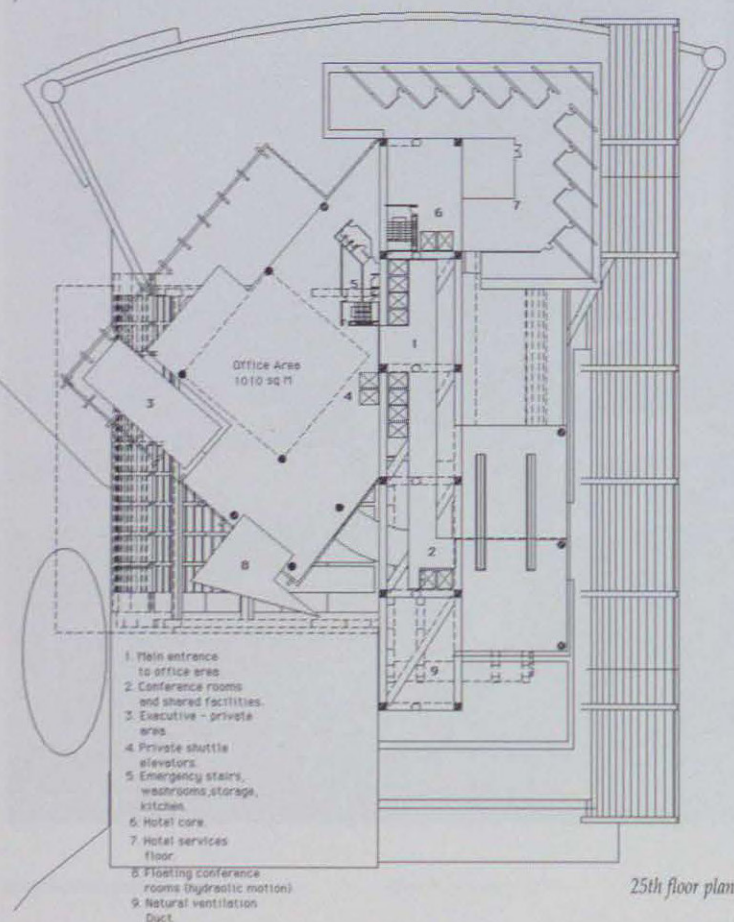
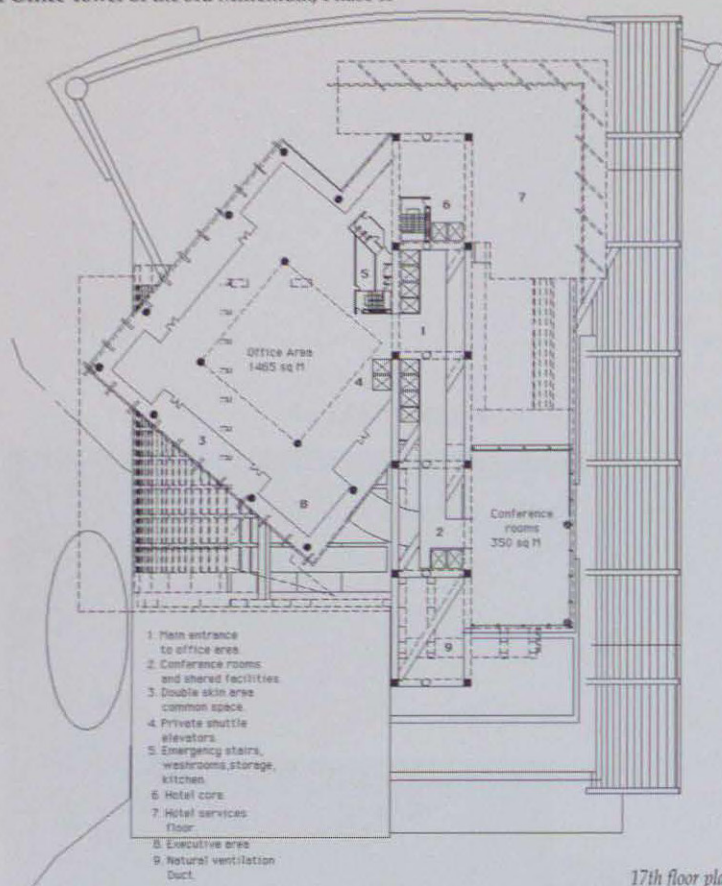
The structural concept of the tower was derived from the image of a flower. The three-dimensional steel truss creates a core that not only contains vertical circulation and service ducts, but acts simultaneously as a support for the cantilevered floors. The core connects all parts of the building together to resist wind forces and bending. Prestressed reinforced concrete slabs span up to 15m between columns. Suspended ceilings and floating floors contain electrical services, the air-conditioning system and a communication network.



Eyal Nir, © 1998

a proposition for SITQ Immobilier architecture contest

computer site model



Regular floors are 4m apart. Sky lobbies, which are placed every six floors, are 6m in height; they contain a 2m technical floor. The structural module of 15m works with these floor divisions: $4 + 4 + 4 + 6 + 4 + 4 + 4 = 30 = 15 \times 2$. Every two groups of three floors uses the sky lobby that separates them, and thus sits between two truss modules. This division helps improve vertical circulation (sky lobbies are transfer points from express to shuttle elevators), and allows natural ventilation for the tower. Thanks to this ventilation and sophisticated climate control, plants and trees can grow in the sky lobby floors. The transparent steel and glass core structure helps orient visitors, who can see the whole tower on exiting the elevator.

Building Technology

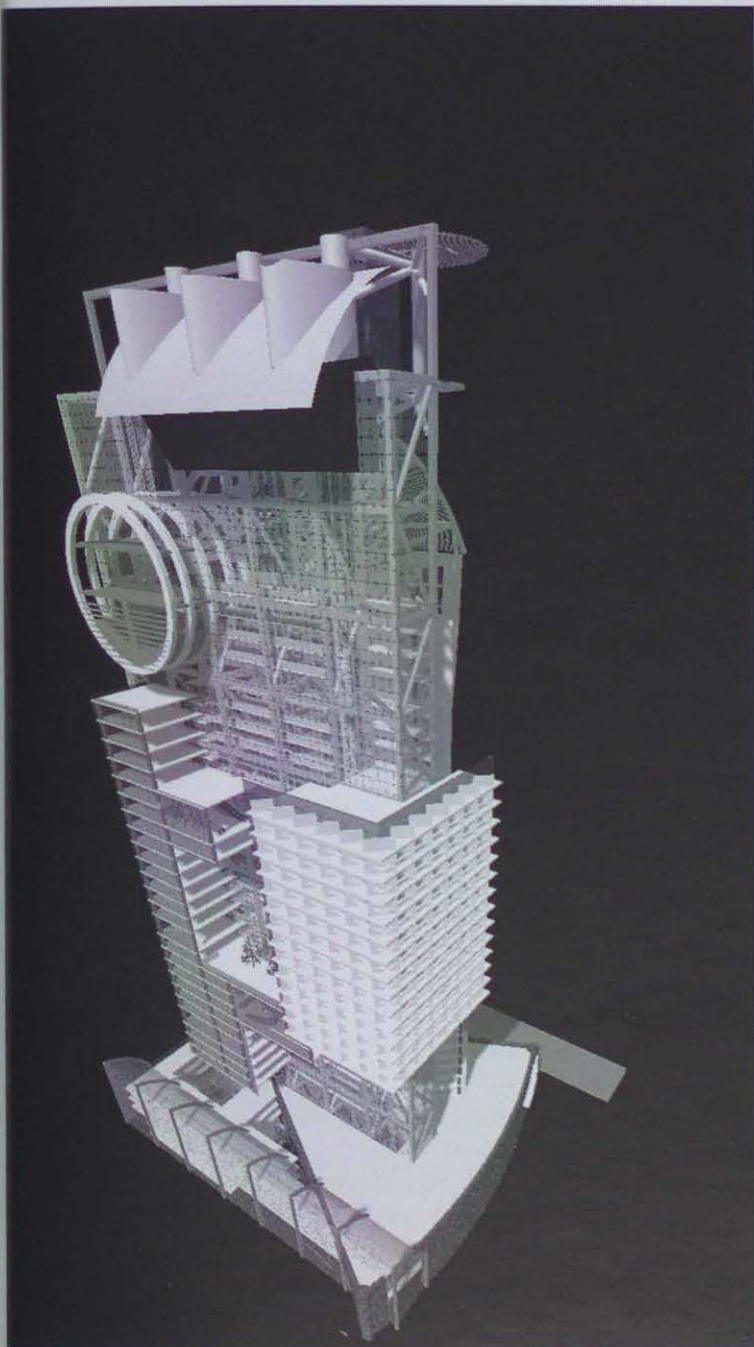
The building envelope is a 2m deep "double skin." Bioclimatically controlled, the double skin area is a common social meeting space serving all employees, and can be used for activities like lunch and smoking breaks. It provides shade to the main working area in the summer, but allows the low winter sun to heat the double skin strip. The strip is transparent, giving views for rooms attached to the inner skin and allowing doors and windows in the strip itself.

The project is oriented so that the glazed core truss is a wind barrier for the main office area. The office section is shifted toward the south in order to use the double skin area to promote energy savings.

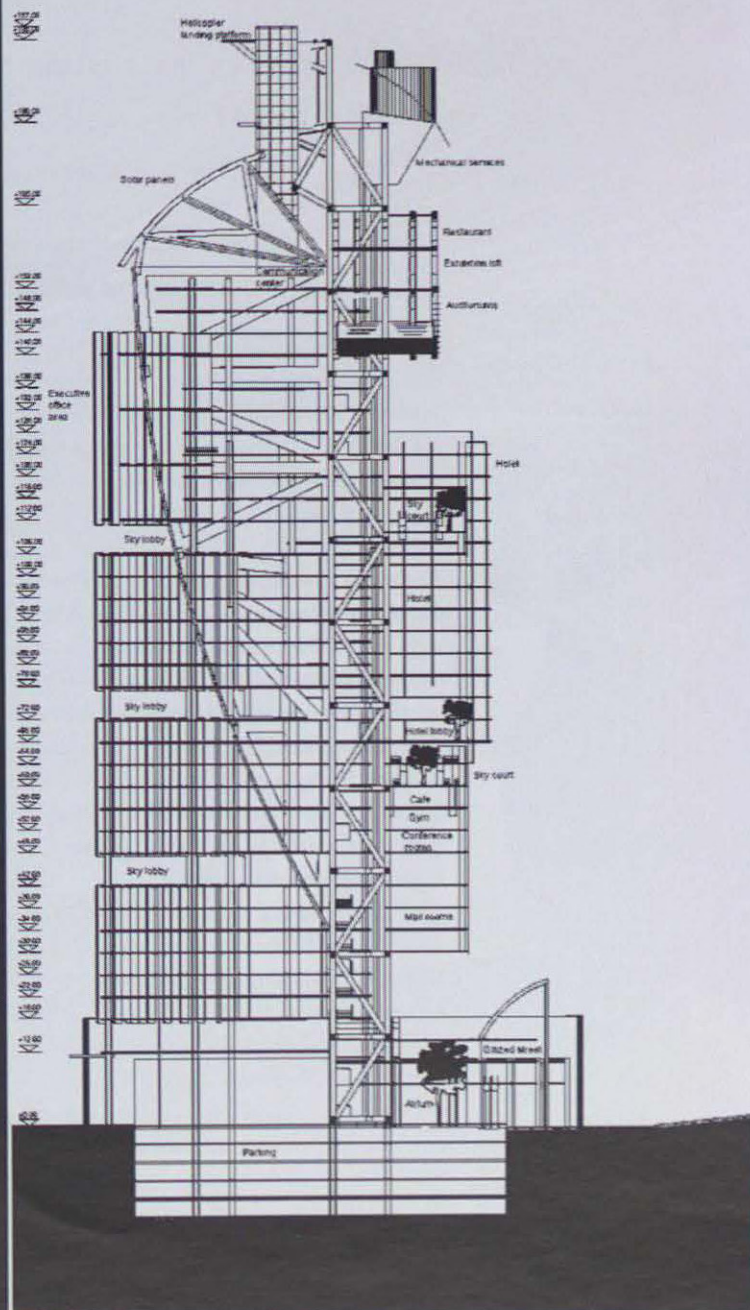
The geometry of the project is designed to take extreme weather situations into consideration, preventing the accumulation of heavy loads of ice and snow. Controlling the drainage is very important. Curved building elements direct rain and snow towards the interior of the project rather than towards the street.

In addition, the project incorporates a new technology to deal with ice buildup, namely, the provision of a system of spray-on antifreeze liquids normally used to de-ice aircraft wings. This system can be installed in potential problem areas, especially roofs and skylights, as a backup for situations where the geometry of the project itself is not capable of shedding snow and ice loads.

Eyal Nir, a former exchange student at the McGill School of Architecture, is presently finishing his degree at the Faculty of Architecture and Town Planning of the Technion, Israel.



view of computer model



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