Arch 384 Competition Entry Essay
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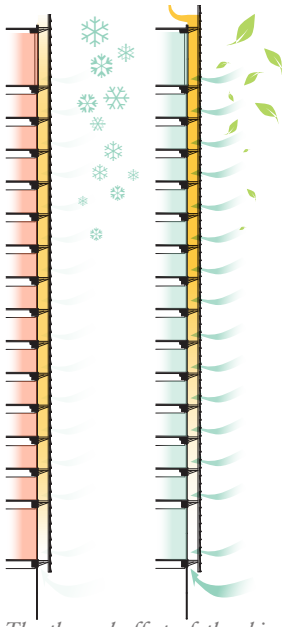
The process begins with the problem statement from the competition. We are briefed to provide a new appearance for 80 Bloor Street West, while protecting its current identity: its address, by incorporating it into the design somehow. Although the environmental impact of the design was not a top priority in the brief of the competition, it was decided as an important design aspect since the entry's inception.

A 'Canada Day' render from the final proposal of the competition.

It was decided by both Aidan Mitchelmore and I that a double skin façade was the approach to make for this competition from the beginning. However, aside from having a double skin façade, creativity and ingenuity would be needed to make a simple double skin stand out from the other entries. Going through various tectonic design variations, the idea of implementing lights was beginning to surface. At first, the lights for the skin was one colour; providing a night time presence on Bloor Street[1]; coloured LED lights were added to the design to provide versatility and playfulness to the proposal. However, we quickly realised that the LED lighting would simply dissipate on clear glass. In order for the second skin to catch the coloured light, the decision to frit the glass seemed to be a logical conclusion. Not only would it serve the purpose of illumination at night, it would shade the exposed concrete from the direct sun; controlling excessive heat gain. The glass would be fritted heavier near the top of the building and less near the bottom.



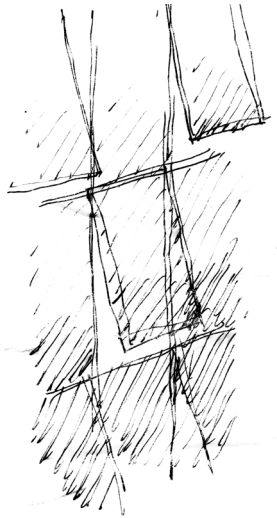
The thermal effect of the skins between the winter and summer seasons

Despite the finish of the glass was to be fritted, the tectonics of the skin was still to be finalised. The construction and its design are very important, since that is the most permanent part of the design. The challenge in this was to create a stylish and current yet timeless second skin; one that could last as long as possible. What's more, upon studying the styles, designs, and operations of second skins, the design came to be a hybrid, a mixture of the Un-segmented Double-Skinned Façade[2] and the Controllable Double-Skinned Façade[3]. It has no divisions in any direction, with openings only at the top and bottom of the façade. Placed independently and in front of existing façades, the skin can manipulate the heating and cooling demands of a building, especially for cooling at night[4]. However, it can be an issue for overheating in the summer, hence the hybrid portion of this design. When closed, this design is great for sound pollution reduction[5], but views out can be obstructed

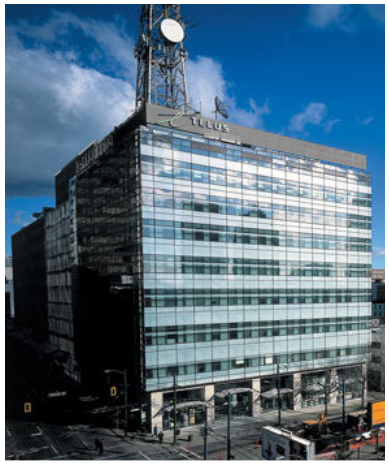
The ordained shading devices proved to be a useful precedent in designing the façade [1]

depending on the distance the façade is placed[6]. On the upside, the façade can be replaced easily, as it has a very light footprint on the building it is mounted on. But, it has high set up and maintenance costs, and is a fire hazard. Also, with the high amount of moveable parts in the façade, mechanical upkeep and maintenance of the skin could become an issue[7]. Next, the size of the panels was determined: optimal size, quantity per floor and distance of openings for effect and safety. It was decided at an early stage that each floor should not have many panels, as the building reached a total eighteen floors. Too many panels would result in the appearance looking too busy; viewers from the street would become overwhelmed at the sight of the double skin, and especially at night. With a framed operable design, the mullions of each panel would add to the 'busyness'. Ultimately, panels set at an entire floor's height was decided for simplicity and to mirror the original design of the architecture that was present at the time, which was a Mies van der Rohe inspired modernist building from the 1970s.

The ordaining of the movement in these panels was the next task. Much like what Mies van der Rohe did with the curtains at the Seagram Building in New York City, we made sure that each panel would only open at a specific increment[8]. We wanted to make sure that the skin would read uniformly at all times of the day, and so a 'checker board style' operation was designed. Every other panel on the skin would open, while the others would close and vice versa when the time needed them to switch. The skin would then have a dynamic element to it, and when it came time to switch the panels, it would generate a spectacle in Bloor Street West. Finally, to continue the identity that is 80 Bloor Street West, a heavily fritted '80' was place at the lower right hand corner of the skin. We were not as worried about the number '80' obstructing views to the outside, as lowest part of the second skin – spanning floors three and four – were mezzanine levels currently occupied by a gym. Since the lower half of the skin is less fritted (if not at all), the '80' in the design would stand out and emit a glow at night due to the LEDs. The first round of submissions was made and the design was short listed for Phase II.



A diagrammatic sketch of the 'checker board pattern' for the initial submission of the competition

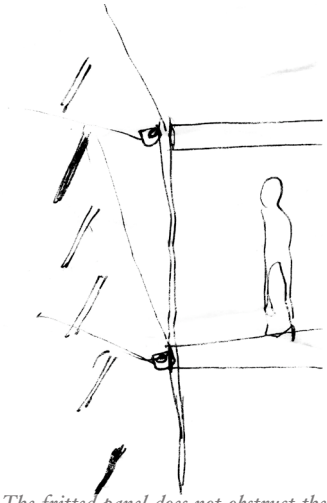


The Telus William Farrell Building, 2000 [2]

Amongst the prizes of becoming a short listed design, a consultation session with industry professionals was scheduled. One of the experts, structural engineer and associate professor at the University of Toronto, Dr. Ted Kesik expressed that a closed-cell second skin is a fire hazard[9]. If closed, the second skin would become somewhat of a chimney, and increase the chances of fire being spread throughout the building. Naturally, the panel suggested that the skin stay open for safety in a fish

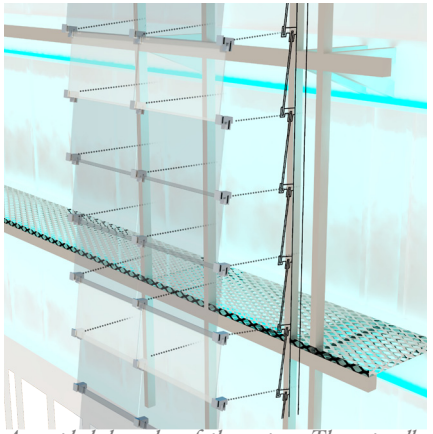
scale style design. What's more, the size of the panels and the framing of such would significantly increase the cost, as Phase II of the competition required a complete cost estimate of the design. The Telus William Farrell building in Vancouver designed by Perkins + Will proved to be a valuable precedent, as it represented ideas of revitalization and attainable green building practices[10]. This second iteration is another hybrid; the design is a mixture between the Corridor Façade and the Perforated Façade. Separated by floor, the façade complies with fire safety laws dictated by the province. Much like the old design, the façade has the ability to manipulate heating and cooling loads, and can help cool the building at night[11]. Also like the original design, views from the interior of the building is somewhat obstructed by the façade placed in front of it. With the skin being perforated, the skin will not overheat during the summer as cross ventilation will constantly cool the building[12]. However, because of its perforations, it loses efficiency during the winter as it cannot fully take advantage of the greenhouse effect that can be offered with an Un-segmented Double-Skinned Façade. What's more, the reduction of sound pollution is not as favourable compared with the old façade[13]. The cost of this skin is high, but since there is not an element of moveable parts, the maintenance cost comes down as there is no longer a mechanical aspect to the skin.[14]

The views from the inside would be obstructed minimally.



The fritted panel does not obstruct the occupant from viewing the outside, as shown in this diagram.

Luckily, the judges were impressed with the original design of a fritted second skin illuminated by coloured LEDs, and so the idea was further edited instead of a new design being created. Because the glass panels are now frameless, it brought up a number of questions revolving around practicality, safety in severe weather, sizing of members and the effect of the fritting on lighting. Fortunately, the overall appearance would not be obstructed by horizontal mullions as there were none. A fish scale skin made of glass would cause 80 Bloor Street West to glimmer in the daylight; the angled panels would reflect light at different times of day.



An exploded render of the system. The catwalks allow staff to clean the panels of the glass safely.

Due to the Ontario Building Code and needs to maintain the skin, an opening of less than 100mm was placed between panels. That way, it is large enough for staff to clean the skin while keeping a safety factor for these workers. As for the fritting, it was decided that it would be the

The design was the most favoured by the judges; but the price of the proposal cost us the competition.

heaviest at every forth panel, acting as a sun shade for the floor plates to not obstruct views; every floor will have four panels in height. A light fritting will still be present throughout all the glass panels to catch the illuminations from the LEDs, as well as further provide shading from the sun.

Along with the revised design a cost estimate was required by the final submission. Due to the fact that there is no similar system in the province, most of the products will have to be custom made. Things like LED systems, computer programming and cost of labour was calculated into the estimate. These costs would be offset, however, by the lessened load on energy consumption, and heightened real estate status the design would bring. Unfortunately, the pricing was the highest of the three shortlisted submissions. We placed second overall, and it was claimed by the judges that the submission excelled in all other aspects in exception to the cost.

Overall this has been an extremely enriching and encouraging experience. The cost estimate, in particular, was an eye opening experience. Materials, labour, and maintenance are all costs that sometimes do not get considered, and with this experience, I begin to incorporate these points into my design approach. This experience has also been an extremely encouraging. As Aidan and I were the youngest competitors, being rewarded with second place only leaves us wanting to work harder and better for future submissions to come. The finalists' entries have been recently published in an art book titled *80*, featuring the past, present, and future of 80 Bloor Street West.

Footnotes:

1) *80 Bloor Street West – Competition Brief http://80bloorstreetwest.com/competition/competition-brief.html*
2) *Hausladen, de Saldanha, Liedl, page 110-113*
3) *Hausladen, de Saldanha, Liedl, page 110-113*
4) *Hausladen, de Saldanha, Liedl, page 110-113*
5) *Oesterle, Lieb, Green, page 46*
6) *Hausladen, de Saldanha, Liedl, page 110-113*
7) *Hausladen, de Saldanha, Liedl, page 110-113*
8) *Architecture and Development of New York City with Andrew S. Dolkart, page 19 http://ci.columbia.edu/0240s/0242_3/0242_3_fulltext.pdf*
9) *Oesterle, Lieb, Green, page 83*
10) *Telus: Revitalization of an Office Building, http://oikos.com/library/showcase/telus/*
11) *Hausladen, de Saldanha, Liedl, page 98-99, 108-109*
12) *Oesterle, Lieb, Green, page 102*
13) *Oesterle, Lieb, Green, page 47*
14) *Hausladen, de Saldanha, Liedl, page 98-99, 108-109*

Cited Images:

1) *Seagram Building, New York City. Photo by Dennis Tang, October 2009*
2) *Green Play Book, http://greenplaybook.org/buildings/act/policy/regulatory.htm*

Works Cited

Columbia University. “6) Architecture and Development of New York City with Andrew S. Dolkart.” Columbia University Digital Knowledge Ventures. http://ci.columbia.edu/0240s/0242_3/0242_3_fulltext.pdf (accessed July 12, 2011).

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“Building Revitalization - Oikos Green Building Library.” Green Building - Oikos. http://oikos.com/library/showcase/telus/ (accessed June 14, 2011).

Hausladen, Gerhard, Michael de Saldanha, and Petra Liedl. Climateskin: building-skin concepts that can do more with less energy. Basel: BirkhaÌˆuser, 2008.

Oesterle, Eberhard, Rolf Lieb, and Peter Green. Double-skin facades. Munich: Prestel, 2001.