

80 Bloor Street West: A New Identity

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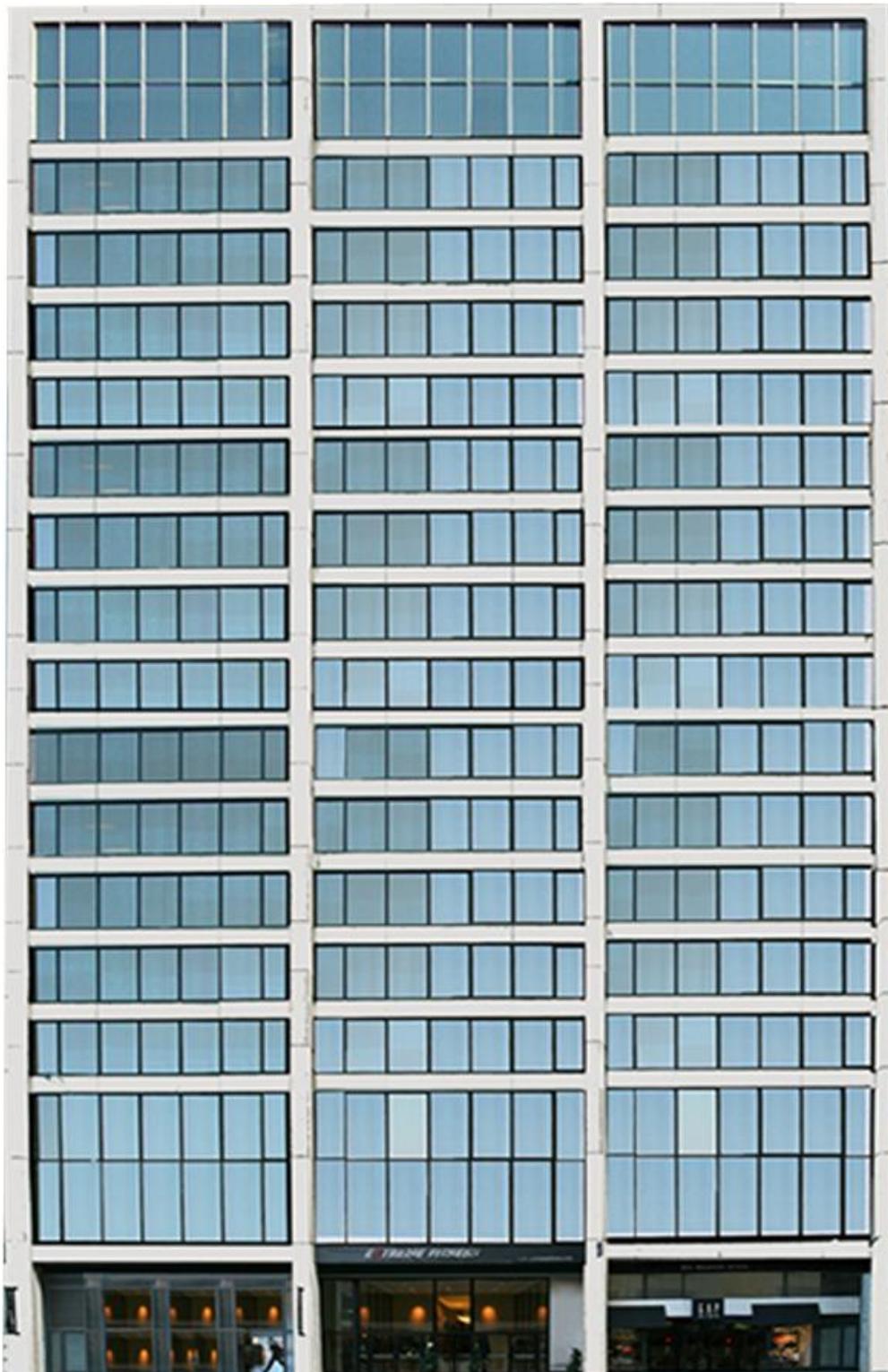
ARCH 384: Competition Elective

Research Essay

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INTRODUCTION



¹ Original facade of 80 Bloor Street West



¹ Original facade of 80 Bloor Street West

Embracing “Miesian” architecture, the 19-storey office tower on 80 Bloor Street stands as a building in need of rejuvenation, in particular, the South facade¹. The competition therefore calls for submissions which illustrate new design ideas that can be imposed on the facade, which is addressed as the competition site.

Sponsored and directed by the Krugarand Corporation, the competition is interested in proposals that are innovative and can possibly be constructed. Other characteristics that the jury is interested in are: technical feasibility, sustainability, creativity, and cost-efficiency. Furthermore, the jury seeks designs which enhance the identity and overall standard of the building, which would ultimately allow for it to play a significant role in attracting high-calibre businesses and tenants¹.

80 Bloor Street West was designed by Peter Carter, an architect from the firm Bregman and Hamman in 1973. Carter, who had previously worked and studied with Mies van der Rohe, incorporated significant aspects of his architecture within the design of the building. One example would be the use of marble within the lobby of the building¹.

Currently, the building’s facade is covered with rationally configured windows and concrete columns which run up the facade and slightly step backwards. It houses 15 floors of office space, 3 lower floors of retail space, and a mechanical top floor. One can access the TTC Bay station from the Lower Concourse of the building, which also houses WORKshop, an “imaginative design centre”¹.

The proposed design of the building facade places emphasis on sustainability, street presence, and technical performance.

¹ "80 Bloor Street West." *80 Bloor Street West - Student Ideas Competition*. Web. 20 Nov. 2010. <<http://www.80bloorstreetwest.com/>>.

PRECEDENTS OVERVIEW

A set of precedents were found based on specific questions asked during the design phase of the facade.

QUESTION- The facade is predominantly southern facing, how can this be utilized to the building's benefit?

ANSWER- A glazing system that allows for heat gain as well as heat avoidance can be beneficial in improving technical performance

PRECEDENT RESEARCHED IN RESPONSE: Commerzbank, double-skin facade



² Commerzbank at night

² "Home/Online Galerie Von Stefan Bock/Architektur Bei Nacht/Commerzbank Frankfurt." *Willkommen Bei Stefan Bock - Homepage Und Online Foto-Galerie*. Web. 21 Nov. 2010. <[http://www.stefanbock.de/Galerie/Architektur bei Nacht/slides/Commerzbank Frankfurt.html](http://www.stefanbock.de/Galerie/Architektur%20bei%20Nacht/slides/Commerzbank%20Frankfurt.html)>.

QUESTION- How can the southern sunlight be used additionally?

ANSWER- PV panels can be utilized on the southern facade

PRECEDENT RESEARCHED IN RESPONSE: CIS Solar Tower, PV panels



³ CIS Solar Tower PV facade

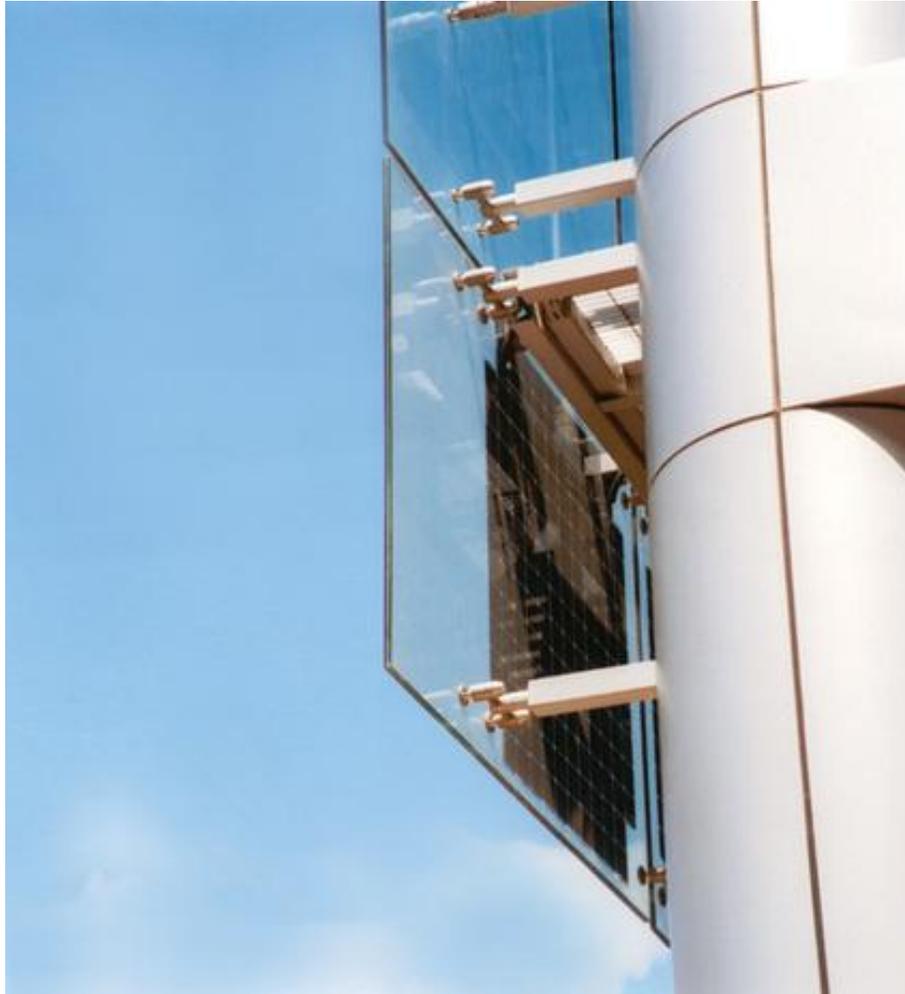
³ "CIS "Solar Tower"" *Internet Archive: Wayback Machine*. Web. 20 Nov. 2010.

<http://web.archive.org/web/20070905124144/http://www.solarcentury.com/projects/commercial/cis_solar_tower>.

QUESTION- How can the PV panels be utilized with the double-skin facade?

ANSWER- PV panels can be integrated with the external glazing system of the double-skin facade

PRECEDENT RESEARCHED IN RESPONSE: Hong Kong Science Park, campus building facade



⁴ Hong Kong Science Park campus building PV panels integrated in double-skin facade

⁴ *Solar Power Authority*. Web. 21 Nov. 2010. <<http://solarpowerauthority.com/2008/03/07/built-in-photo-voltaic-panel-thumb-425x465.jpg>>.

QUESTION- How can the PV panels create a better street presence and enhance the overall appeal of the building?

ANSWER- The PV panels can be installed in such a way that they create a design or pattern themselves

PRECEDENT RESEARCHED IN RESPONSE: BMW Welt Munchen, roof PV system



⁵ PV roof system on BMW Welt Munchen

⁵ *Travel Guides - Online Tourist Information - Photos4Travel*. Web. 21 Nov. 2010.

<<http://www.photos4travel.com/europe/germany/photos/bmw-welt.jpg>>.

PRECEDENTS

PRECEDENT 1- COMMERZBANK, FOSTER AND PARTNERS



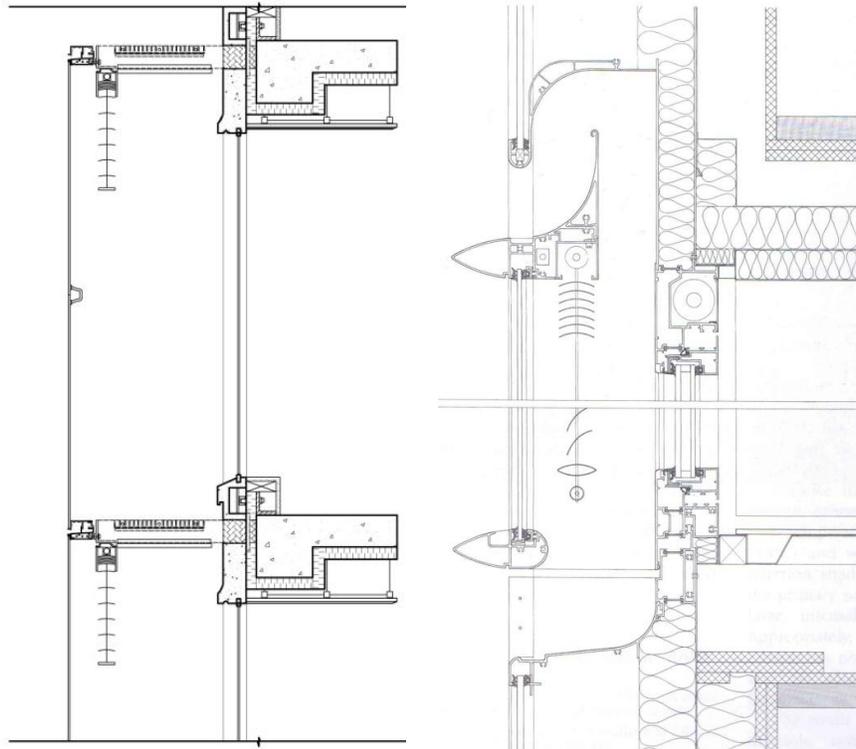
⁶ Commerzbank Headquarters

⁶ Andrew, Blum. "High-Rise Avatar." *Bloomberg Business Week*. Web. 19 Nov. 2010.

<http://www.google.ca/imgres?imgurl=http://images.businessweek.com/ss/06/01/greenscrapers/image/4_commerzbank-ian-lambot.jpg&imgrefurl=http://images.businessweek.com/ss/06/01/greenscrapers/source/5.htm&usg=__CH5h-ZdNsGRZn4gUgYFAgUZ8u40=&h=702&w=440&sz=122&hl=en&start=1&zoom=1&um=1&itbs=1&tbnid=xzies0GBpQa8DM:&tbnh=140&tbnw=88&prev=/images%3Fq%3Dcommerzbank%2Bheadquarters%26um%3D1%26hl%3Den%26gbv%3D2%26tbs%3Disch:1>.

As mentioned above, one key element that the competition seeks is technical performance and long-term sustainability- something which is found in the design of Commerzbank. Located in Frankfurt, Germany, the headquarters building has a climate facade which comprises the external windows of the structure. Ventilation and sunlight are both controlled with the double-skin facade, as well as rain and high-speed winds⁷.

In terms of composition, the double-skin facade utilized for this competition is very similar to the one designed for this particular precedent. The climate facade of Commerzbank has an outer pane of glass followed by an 18cm airspace, and then a mobile sash which has a low-e coating. Ventilation is achieved via vents located above and below the outer pane of glass⁷. Similarly, the double-skin facade proposed for 80 Bloor Street has an external glass facade which is composed of PV and glazed panels, followed by an airspace with Venetian blinds and a grated walkway which allows for airflow through the cavity.

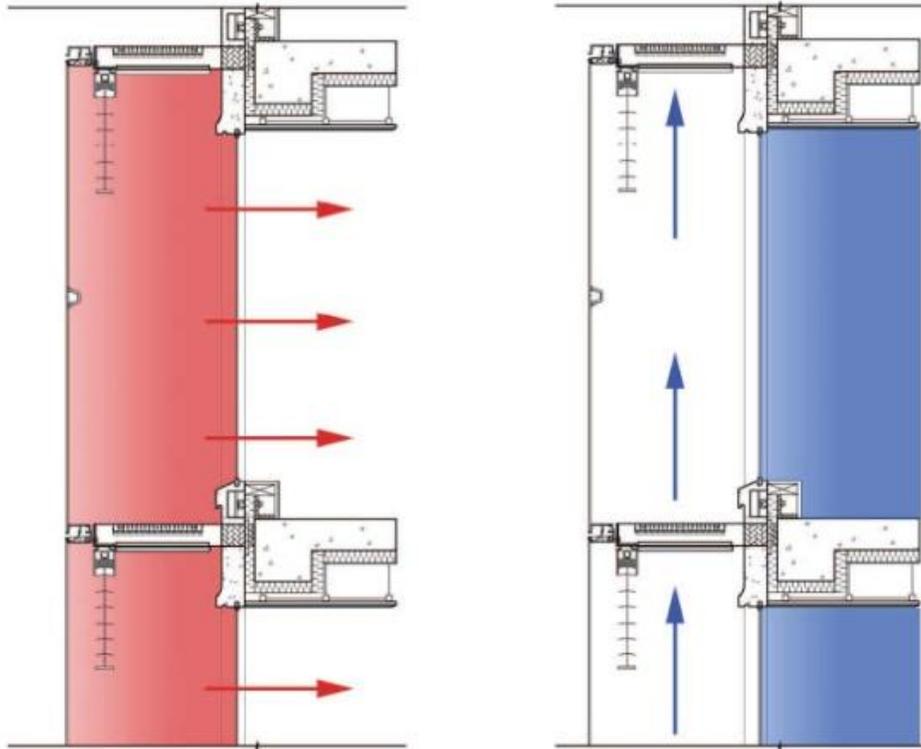


⁷ Comparison of proposed double-skin facade and Commerbank's facade

⁷ Lechner, Norbert. "Case Studies." *Heating, Cooling, Lighting: Sustainable Design Methods for Architects*. Hoboken, NJ: John Wiley & Sons, 2009. 578-81. Print.

As seen above, the climate facades of both buildings are similar in composition and operation. On the left is the proposed double-facade detail for 80 Bloor Street West and on the right is a detail of Commerzbank's climate facade.

In Commerzbank, heating is achieved through hot water convectors situated under the windows. Cooling, on the other hand, is possible by metal coils, above the ceiling panels, which carry chilled water⁷. Heating and cooling are obtained in a different manner at 80 Bloor Street. During the summer, the PV panels utilize the summer sun to produce energy but they overheat. During this time, all the vents and grates are open, allowing the PV panels to cool down as well as the mass of the structure. When the vents within the facade system are closed during the winter, the warmth from the PV panels is stored within the air cavity, allowing for heat retention within the mass of the concrete.



Comparison of proposed facade operation in summer and winter

The diagram on the left depicts how the proposed double-facade functions during the winter, whereas the diagram on the right depicts how it functions during the summer.

PRECEDENT 2- CIS SOLAR TOWER, GORDON TAIT & G.S. HAY



³ CIS Solar Tower

The CIS Tower in Manchester is a perfect and simple example of building-integrated photovoltaic panels. More than 7000 photovoltaic panels clad the entire service tower of the building, allowing for significant energy cost reductions and optimizing the electrical generation of the system. The system generates enough electricity for about 61 medium-sized homes a year and enables over 100 tonnes of carbon dioxide emissions to be reduced³.

Building-integrated photovoltaics are an essential part of the new facade design for 80 Bloor Street. They play a role in its sustainable performance, for they save approximately 250MWh of electricity consumption annually.

PRECEDENT 3- HONG KONG SCIENCE PARK, SIMON KWAN & ASSOCIATES LTD.



⁸ Double-skin facade of campus building

The Hong Kong Science Park campus building illustrates another example of building-integrated photovoltaic panels, but on a double-skin facade. Designed to reduce noise pollution and generate clean energy, the double-skin facade is composed of alternating glazed and PV panels⁸. This combination enables the PV panels to become a significant feature of the building while allowing the interior of the building to show through the clear glass panels. This concept is carried out in the design of the new facade for 80 Bloor Street West, for it embraces numerous building-integrated PV panels, yet enables the original facade to show through, creating a juxtaposition of new and old.

⁸ Thomas, Justin. "Solar Glass at Hong Ong Science Park." *Tree Hugger*. 28 Sept. 2006. Web. 20 Nov. 2010.

<http://www.google.ca/imgres?imgurl=http://i.treehugger.com/files/th_images/hong_kong_BIPV_3.jpg&imgrefurl=http://www.treehugger.com/files/2006/09/solar_glass_at.php&usg=__9yxw4RYXU6X1Jdm4oLZb-EmDgiM=&h=382&w=468&sz=98&hl=en&start=4&zoom=1&um=1&itbs=1&tbnid=QbScD8TLx_nfiM:&tbnh=104&tbnw=128&prev=/images?q=hong+kong+science+park&um=1&hl=en&sa=N&tbs=isch:1>.

PRECEDENT 4- BMW WELT MUNCHEN, WOLF PRIX



⁹ Roof of BMW Welt Munchen

Solar power is an essential element in the design of the BMW Welt in Munchen. Sculpturally crafted, this structure embraces a steel and glass facade which swirls into a conical shape. On the "cloud roof", which is constructed as a floating feature, is a flat-roof integrated PV system which spans 16,500 square metres. The PV system, which was manufactured by Solarwatt and installed by SunStrom, is composed of 3,660 solar modules. The system generates a minimum of 824kWp which is enhanced by the solar gain captured by steel panels between the PV modules. It is said that the PV system of the building works as a "fifth facade"¹⁰.

⁹ Welcome to Sissolarventures.com. Web. 20 Nov. 2010.

<http://sissolarventures.com/images/BMW_Center_Welt_Munchen_824_kw_in_Germany.jpg>.

¹⁰ Kriscenski, Ali. "BMW Solar-Powered Masterpiece." *Green Design Will save the World* | *Inhabitat*. 14 Nov. 2007. Web. 20 Nov. 2010.

<<http://inhabitat.com/2007/11/14/bmw-welt-solar-powered-masterpiece-in-munch/>>.

The facade also plays a role in obtaining solar energy for the building. It allows for natural ventilation and the moderation of conditioned air. Furthermore, thermal comfort is optimized through the presence of thermally efficient surfaces within the structure, which also reduce temperature fluctuations. Incoming air is cooled via plants situated near the ventilation features of the building¹⁰.

Once again looking at the roof, it is easy to note an apparent pattern in the placement of the PV panels. The panels are installed in clusters, some of which are rectangular and some of which have jagged edges. There is great contrast between the silver of the steel panels and the deep blue of the PV panels, making the pattern visible from a far distance.

The same idea can be applied to the facade of 80 Bloor Street which utilizes single PV panels to create a pattern which almost looks like a dissolving "80". This number becomes a prominent feature of the building which is intended to be visible from afar.

CONCLUSION



Proposed facade design for 80 Bloor Street West

"The works of the past always influence us, whether or not we care to admit it, or to structure an understanding of how that influence occurs. The past is not just that which we know, it is that which we use, in a variety of ways, in the making of new work.... The typology argument today asserts that despite the diversity of our culture there are still roots of this kind which allow us to speak of the idea of a library, a museum, a city hall or a house. The continuity of these ideas of type, such as they are, and the esteemed examples which have established their identity and assured their continued cultural resonance, constitute an established line of inquiry in which new work may be effectively grounded."

The Harvard Architectural Review. Volume 5. Precedent and Invention. Between History and Tradition: Notes Toward a Theory of Precedent. John E. Hancock.

There is no doubt that works of the past are have a great influence on works to come. The four precedents studied serve as "roots" to the invented facade, each lending different sets of ideas by which the design has been completed as a whole.

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