



# A WINDOW TO THE CITY

TRUPTI SONAVANE

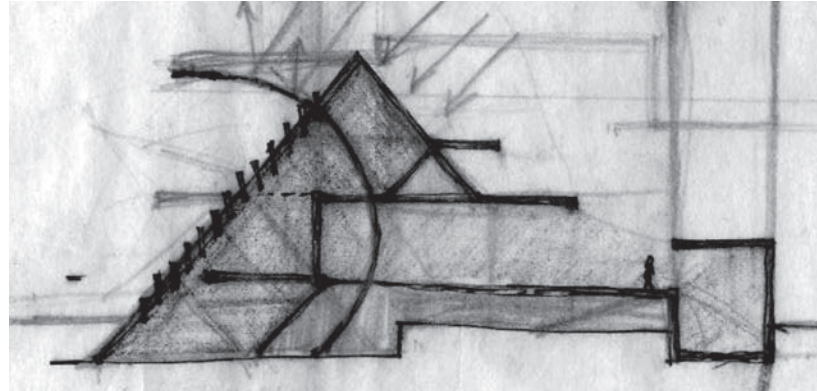
*Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of Master of Architecture. Thesis defense took place on 17th of May/2006 at the city of Blacksburg in the state of Virginia.*

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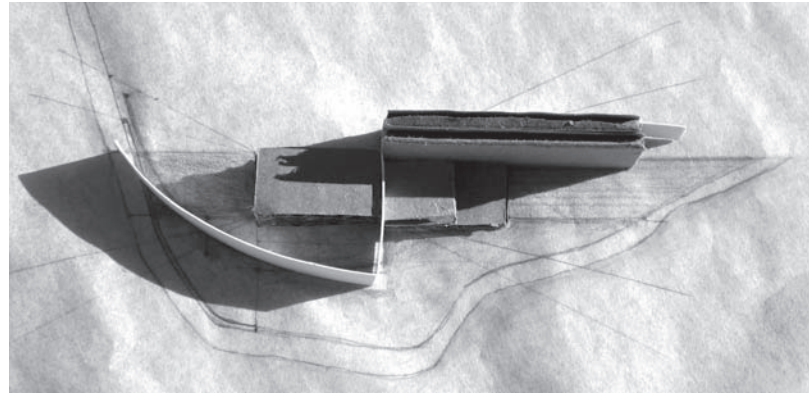
To My Parents & Rahul,  
Thank you for your support and motivation.



# A WINDOW TO THE CITY

TRUPTI SONAVANE

## ABSTRACT



An architectural component can change an urban environment. A great window to the city, typologically bound in the form of an ice rink is proposed in the post-industrial city of Baltimore. This proposal should be seen as part of a city undergoing a transition from an industrial to a commercial base.

An ice rink is proposed on one of the vacant industrial sites along the waterfront, a site of historical importance. Its location in relation to the city offers a strong visual as well as the necessary physical connection to the city and surrounding existing recreational spaces.

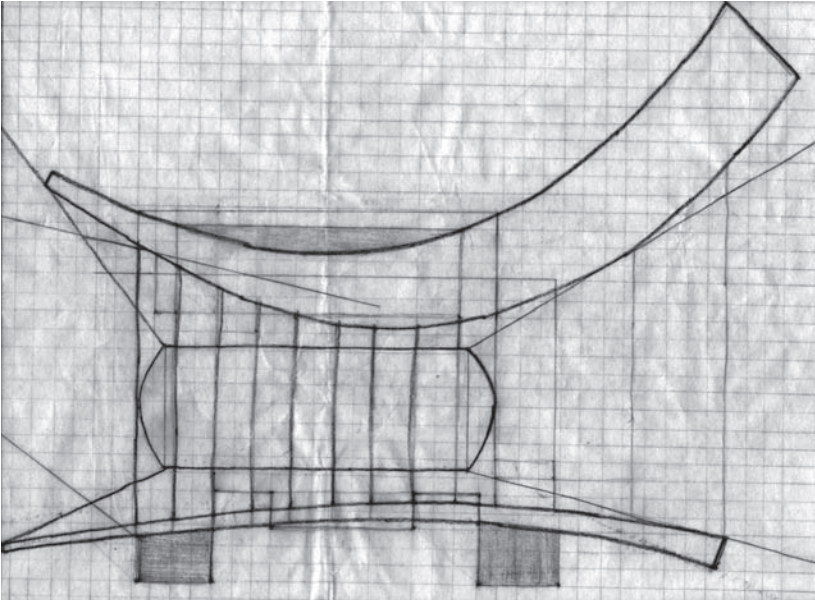
The panoramic view of the city, a compelling element of the site became the driving force for the type, organization and orientation of the building. The view of the city is constructed as an architectural element supported by the movement through the building.

A wall, which complements the visual event, is introduced as a backdrop for the building against the existing city skyline.

An urban corridor is proposed to extend the existing fabric of the city. This corridor continues inside the building and culminates in the offering of the city as an architecturally framed panorama, a window to the city.



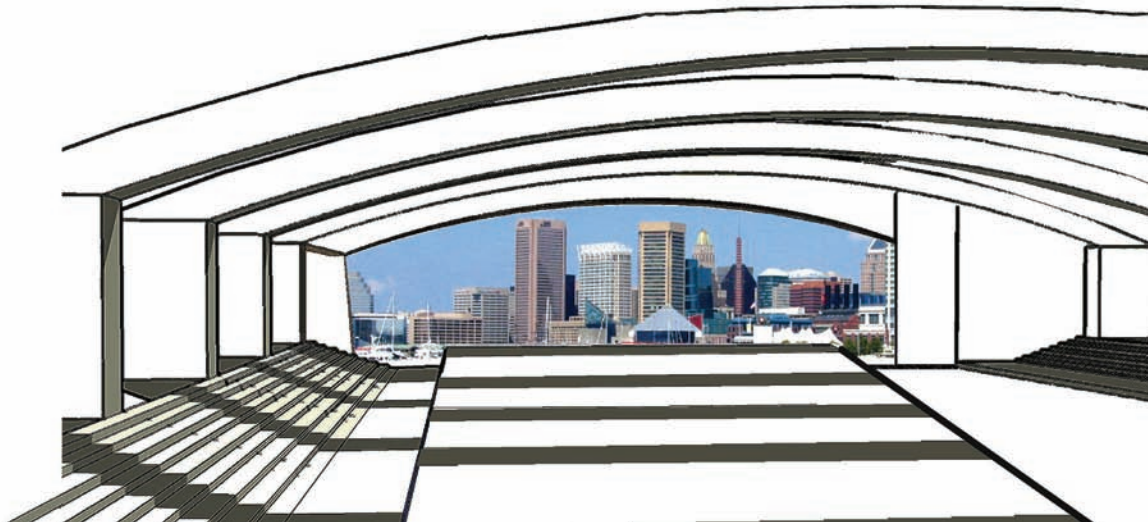
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## INTRODUCTION AND OVERVIEW



A window to the city

Architecture can change a post-industrial urban environment. The success of an architectural component can be achieved through its careful physical location in relation to the city.

At the moment, the post-industrial city of Baltimore is undergoing a transition from industrial to commercial base. This transition can be assisted by improving the quality of the existing urban environment, particularly with new urban spaces. The abandoned waterfronts of the city play an important role in the development of such urban spaces.

The former industrial waterfront of Baltimore contains many degraded places, but it is located in a highly desirable location with great accessibility. The visibility of these sites makes the waterfront a stage upon which the architectural component can be placed.

Based on the situation in Baltimore, a preliminary structure for intervention should address:

1. The view to enjoy the city panorama;
2. The presence of the building from across the water as a member the of urban fabric;
3. A mix of functions referring to the different sectors of the principal urban activities; commercial, cultural and leisure to promote interaction between different activities;
4. Public access for enjoyment of the water.

**THE TRANSITION .....INDUSTRIAL TO COMMERCIAL**

Urban waterfronts in the post-industrial city of Baltimore have established the potential for other successful future redevelopment. They have introduced new uses in place of the abandoned property that once held the city's industrial heart.

This renewal of urban waterfronts is often a keystone of an economic upswing because many of such abandoned industrial sites are close to the heart of the city.



View of site from water



View of site from the downtown with industrial area in background



Existing industrial area



View of the downtown inner harbor area



View of existing sugar factory, across the water from the site



View of site from water



## THE TRANSITION.....INDUSTRIAL TO RECREATIONAL

The presence of a sizable body of water in the city of Baltimore offers an opportunity for commercial, recreational, entertainment and cultural activities. These in turn become a foundation for tourism and leisure activities and create a new image of the city.

This addition to the waterfront can act as a focal point and an invitation for the people to once again enjoy the pleasure of coming to the water's edge.



View of the site before remediation



View of one of the industrial site, developed into performing theater.

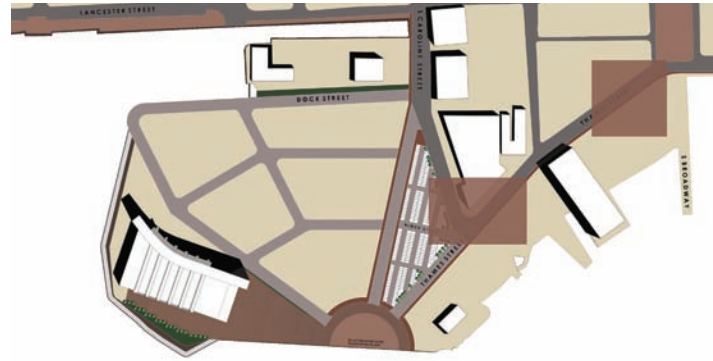


Bird's eye view of the site and the textile factory



## THE TRANSITION ..... WALKWAYS TO STREETS

The old city streets are transformed into a paved pedestrian street as they meet the waterfront. The old patterns of the streets are preserved and are re-used as vehicular streets. While driving, the rough texture of these streets signal the close proximity to the water front.



Proposed streets and paved area



Existing paved streets in Harbor Point area



Existing paved streets in Fells P-oint area



**THE VIEW OF THE CITY.....A COMPELLING ELEMENT**

The site is located along the Inner Harbor in Baltimore with-  
in walk able distance from the downtown. This former in-  
dustrial site is of historical importance.  
A part of the 27-acre site projects out into the water, per-  
mitting a panoramic view of the city.



Bird's eye view of the site and the city

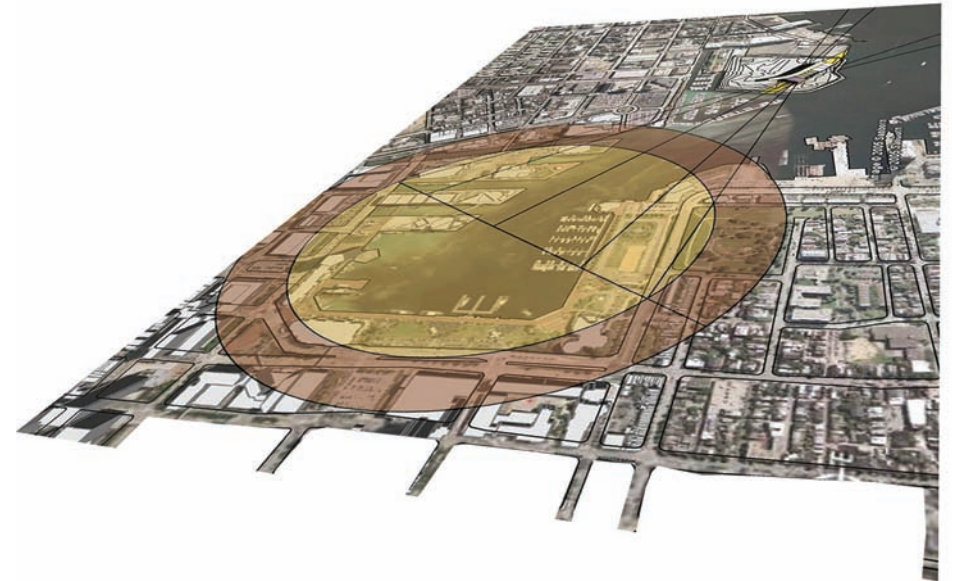


Diagram showing the orientation of the building in relation to the city



## **THE VIEW OF THE CITY.....A COMPELLING ELEMENT**

The location of the site in relation to the city offers a strong visual connection. The panoramic view of the city, with water in the foreground as the most compelling element of the site, provided the motivation for the type, organization and orientation of the building.



View of the city skyline from the site



## THE SITE AND THE SURROUNDING RECREATIONAL SPACES ..... RELATIONSHIP

The location of the site in relation to the city offers an opportunity to physically connect the site with the surrounding recreational spaces.  
The visibility of this site makes the waterfront a stage.



Site and adjoining existing recreational areas



Water front elevation



## EXISTING FABRIC OF THE CITY

There are no existing roads on the site. On the east side, South Carolina Street abuts the site, providing the only connection between the site and the city. Part of the existing site serves as a parking lot for the surrounding offices and residential units.



Model showing the orientation of the building



Exiting roads of the city



## EXTENDED FABRIC OF THE CITY

The existing fabric of the city is extended to meet at a point on the site. The building is placed in a radiating manner from that point towards the city. A triangular plot is formed that will serve as a parking lot for the proposed facility.



Extended fabric of the city



Extended fabric of the city

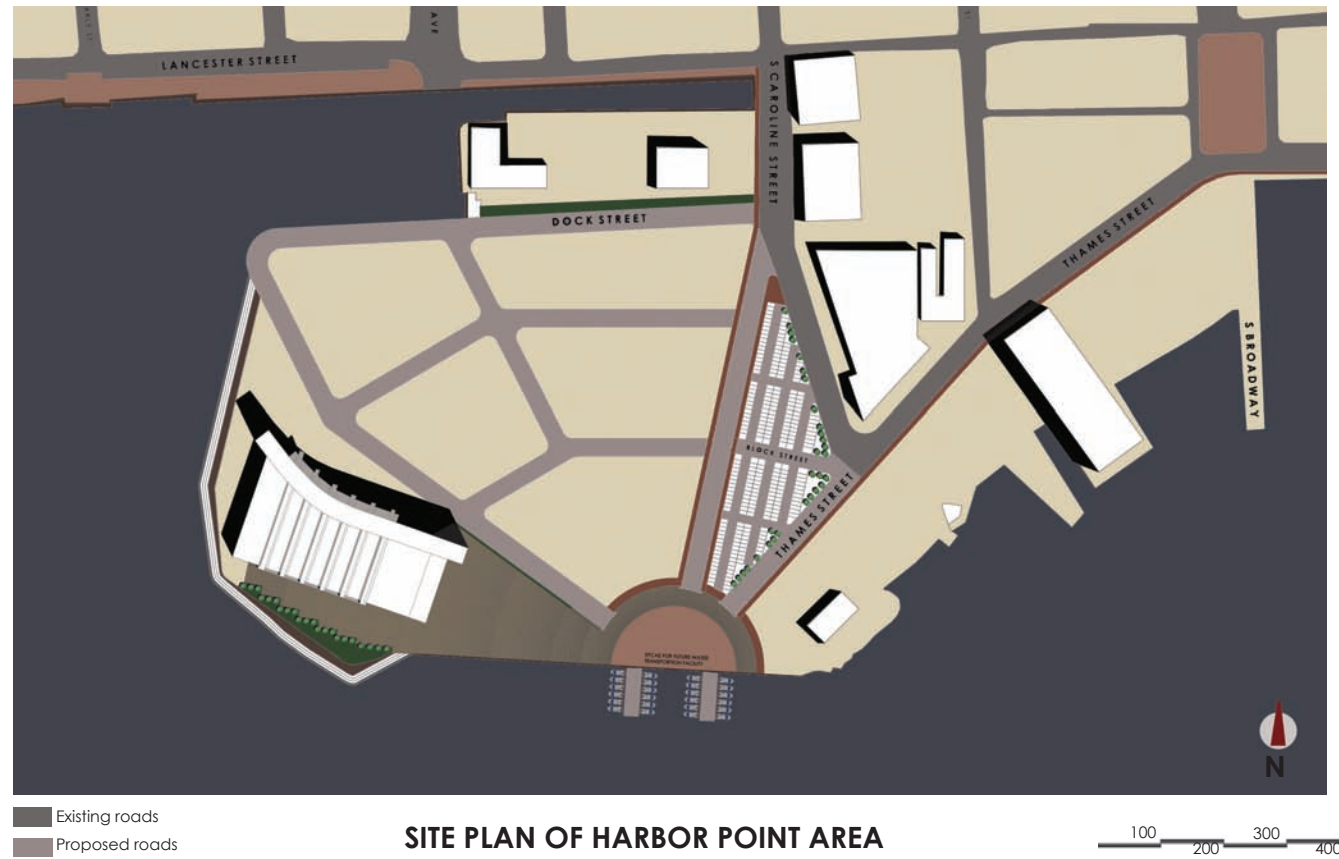


**TOWARDS THE CITY.....A WALK**

The proposed paved streets encourage pedestrians to interact with the adjacent urban environment. These paths meet at a central plaza where a possibility for a small marina exists. From here, the entrance sequence to the skating rink begins.



Model showing the building and the city relationship

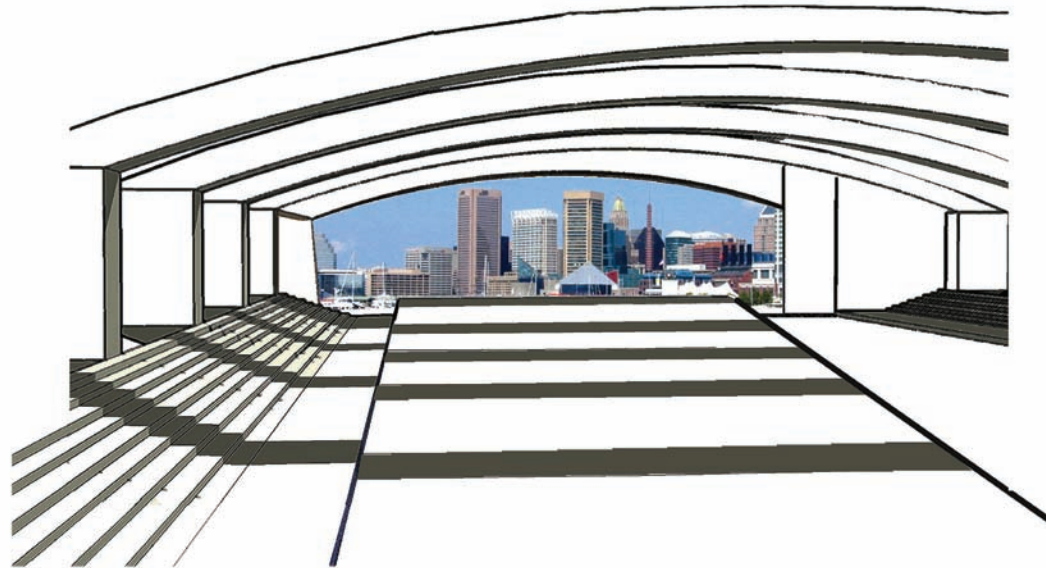




## A WINDOW TO THE CITY

### A WINDOW TO THE CITY.....A THOUGHT

The great window to the city takes the form of an ice rink that is raised above ground.  
The surface and the edge of the ice rink define the horizon for an architecturally framed view of the city. This will give the feeling that the ice rink surface is extending in to the water.



A window to the city

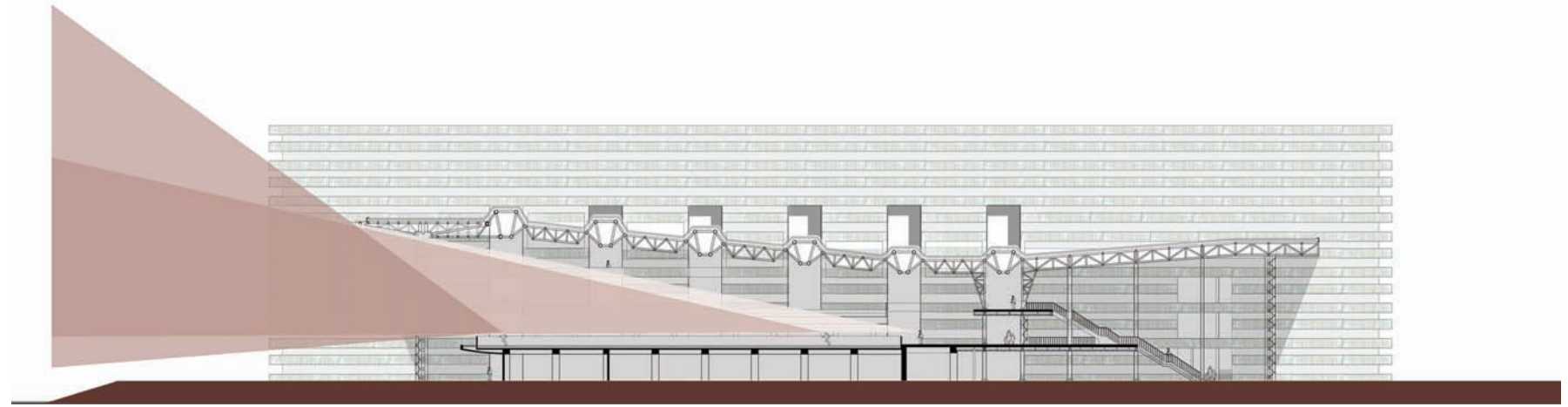


An idea of window



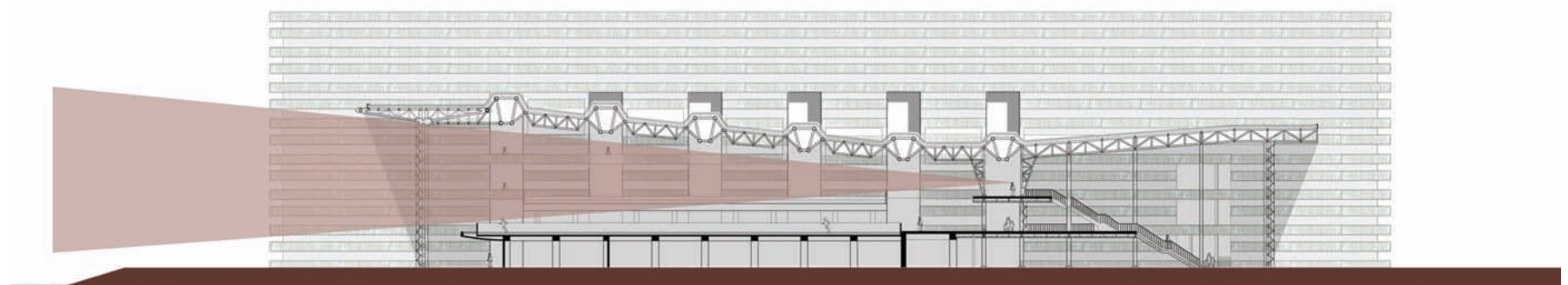
**A WINDOW TO THE CITY.....VISUAL EVENT**

The view of the water and the city beyond opens up as the skaters move on the ice rink towards the window



View of the city from the ice rink

The bridge acts as a viewing gallery for the spectators. They get the view of the water and the city, with the ice rink in the foreground.



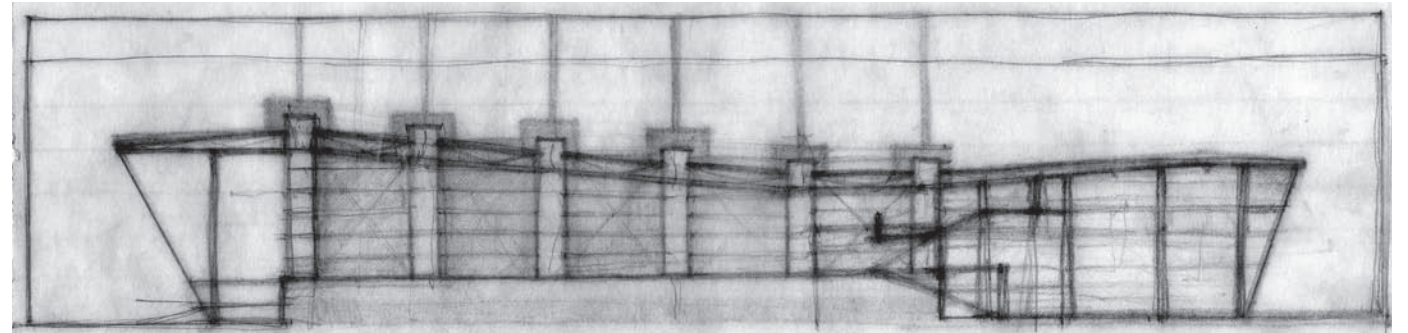
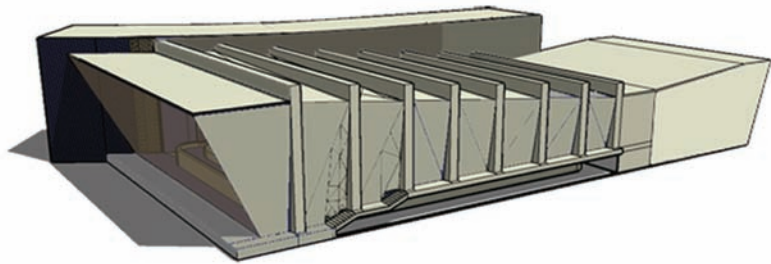
View of the city from the bridge



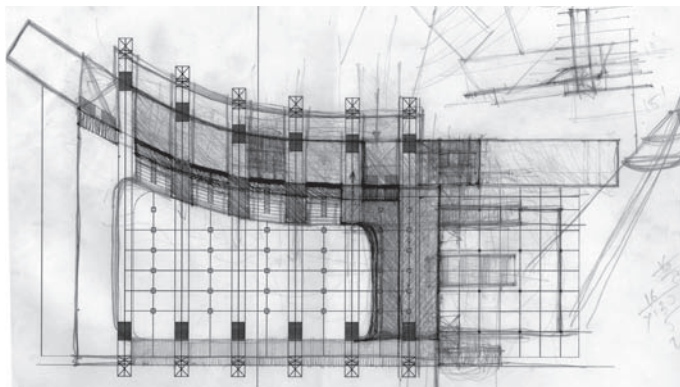


## A WINDOW TO THE CITY.....ORIENTATION

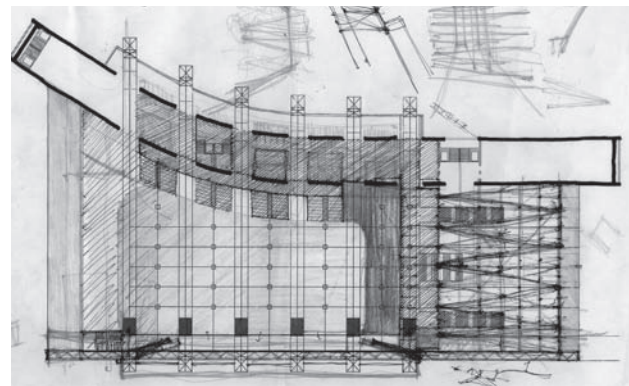
The linear form of the building strongly defines the orientation. It also gives a dynamic appearance to the building and indicates the direction of the movement of the skaters inside the building.



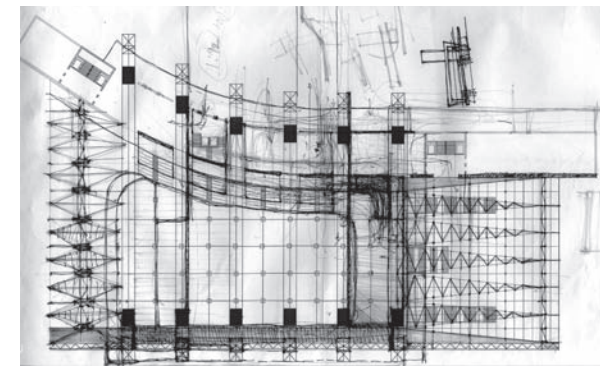
Sketch showing the roof profile



Sketch showing the development of connecting bridge



Sketch showing the development of structural systems

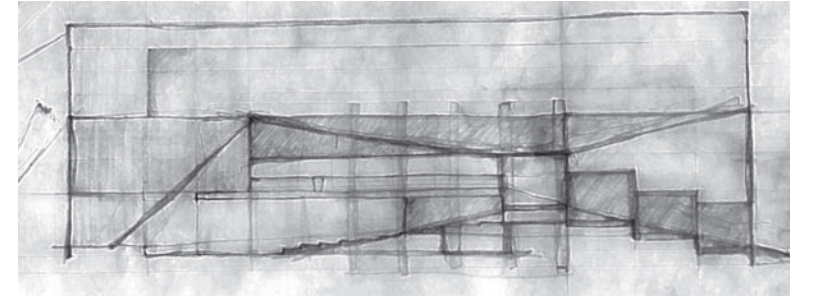


Sketch showing the three different structural systems

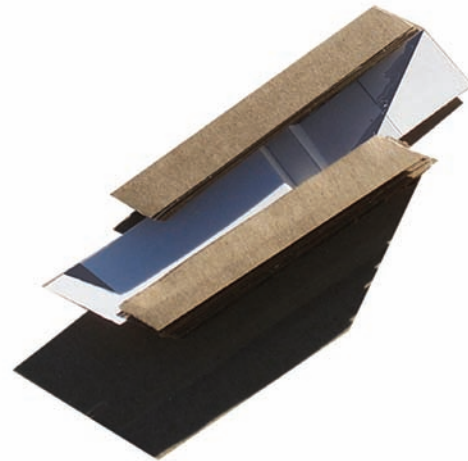


### A WINDOW TO THE CITY.....ORIENTATION

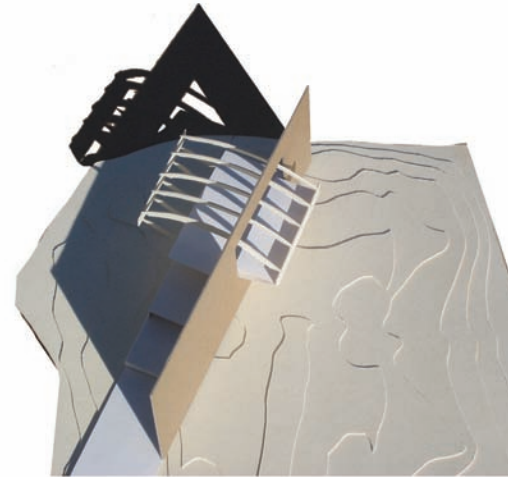
The initial design assumed one building to house the ice rink. From this, in process, evolved another building, introduced to accommodate the supporting facilities.



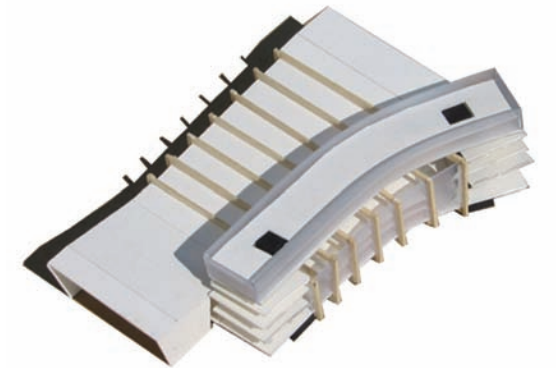
Single building mass



Combination of multiple building masses



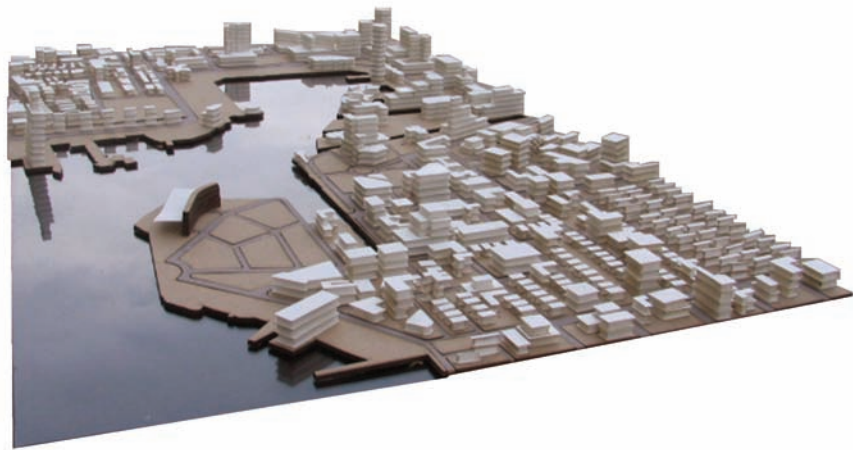
Two building masses



Development of two building masses



**A WINDOW TO THE CITY.....ORIENTATION**



Model showing view of the city from the site



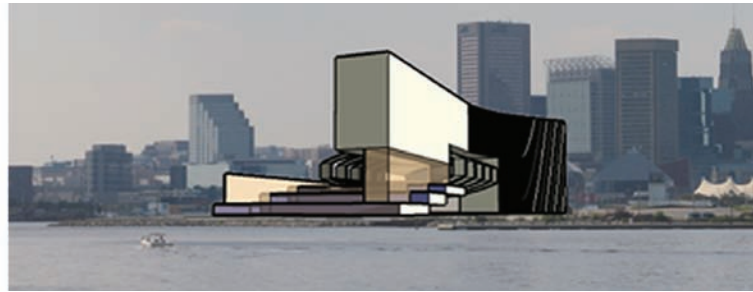
View of the building from the down town inner harbor area



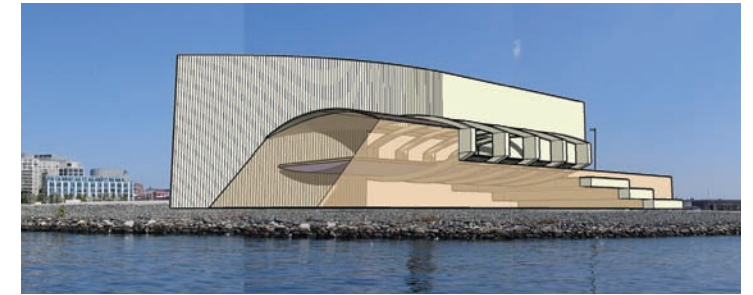
Bird's eye view of the site and the building



**A WINDOW TO THE CITY.....ORIENTATION**



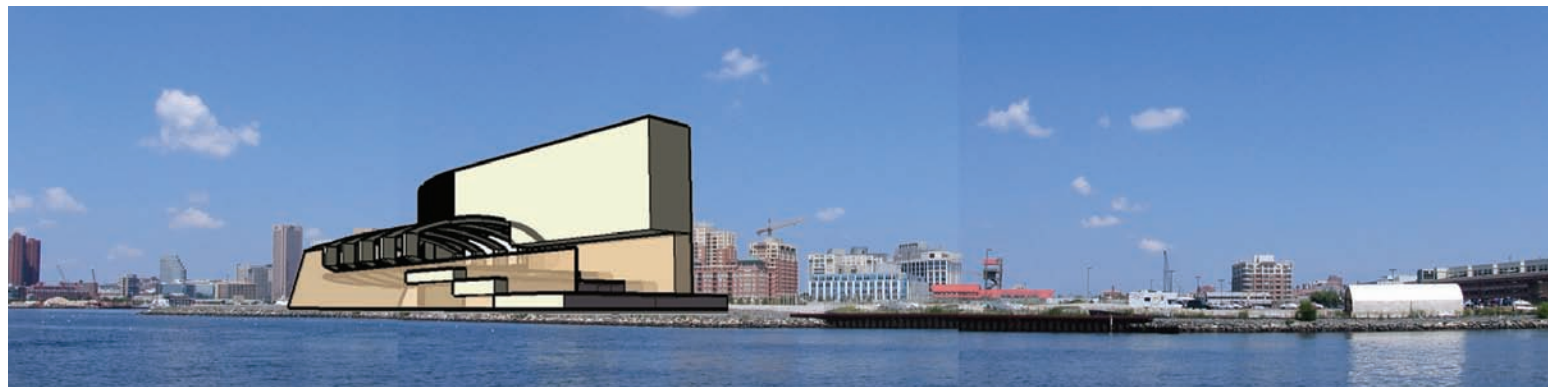
Building orientaed towards the city



View of the building from the water



View of the building from the city

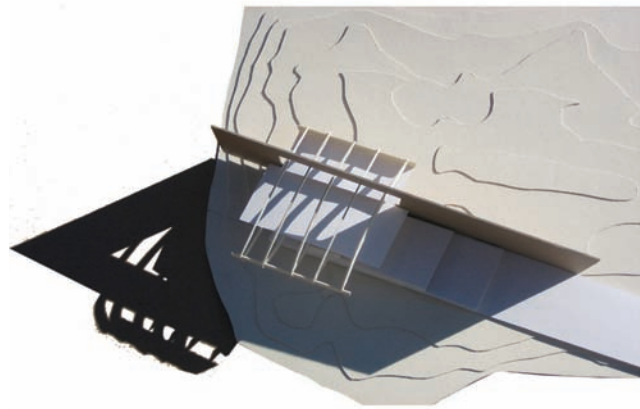


View of the building towards the city, from across the water



### A WINDOW TO THE CITY.....DEVELOPMENT OF FORM

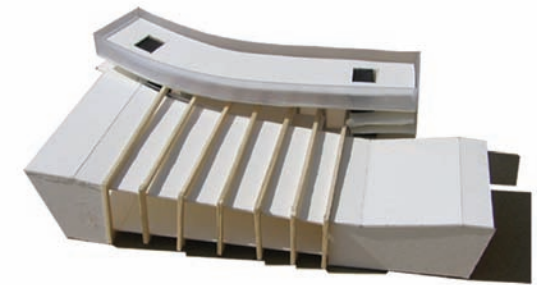
Different stages of development show how the shape of the frames, which span across the ice rink, evolved to generate the visual event. At the same time, the backdrop wall also evolved to compliment the visual event.



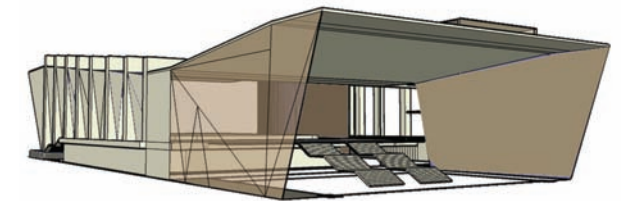
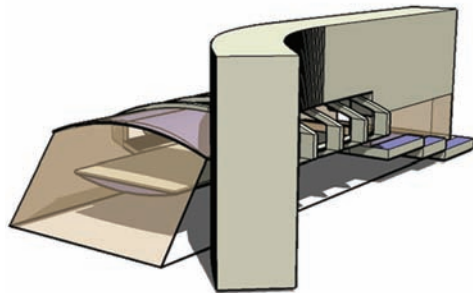
Elliptical frames with straight backdrop wall



Rectangular frames with curved backdrop wall

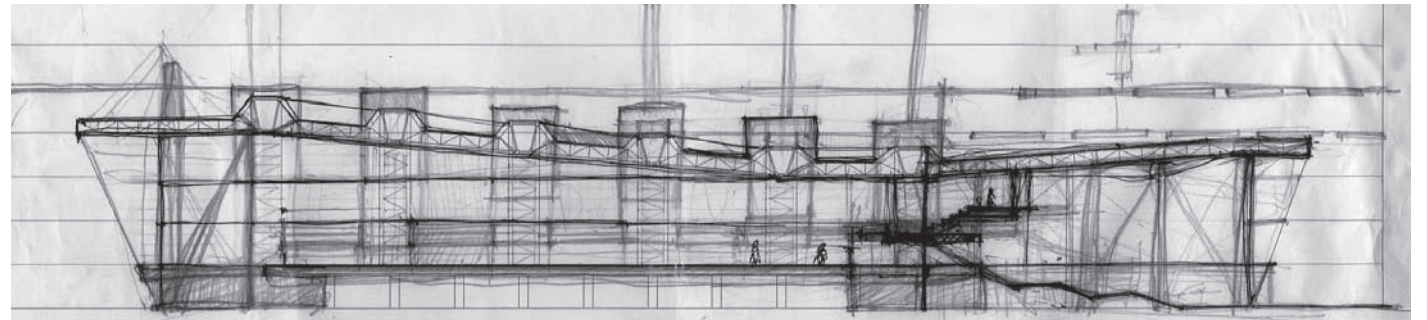
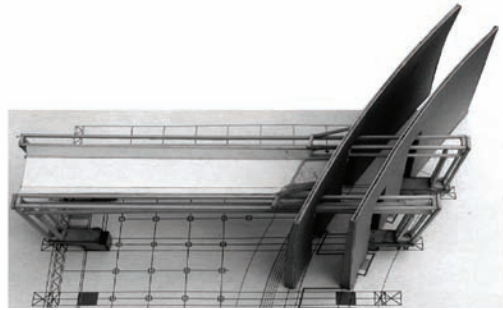


Height variation in the rectangular frames

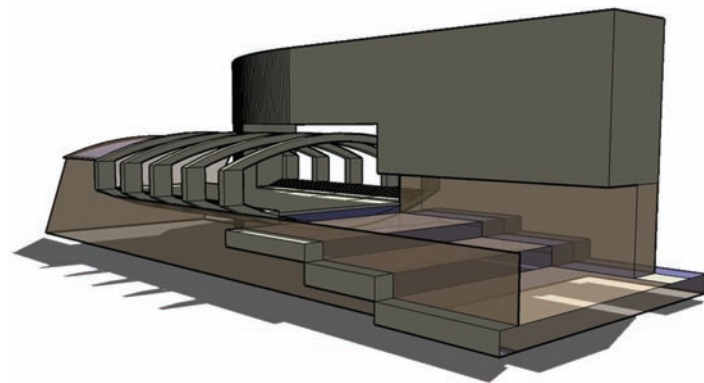




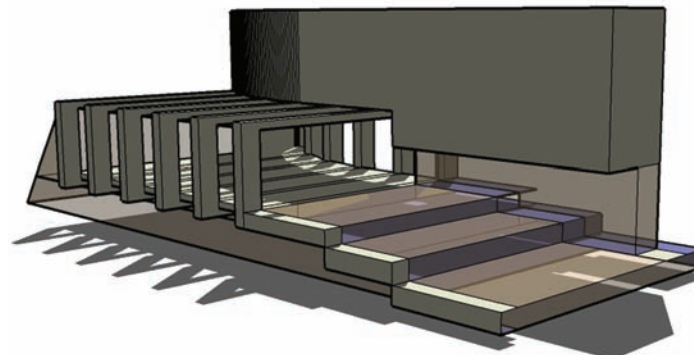
**A WINDOW TO THE CITY.....DEVELOPMENT OF FORM**



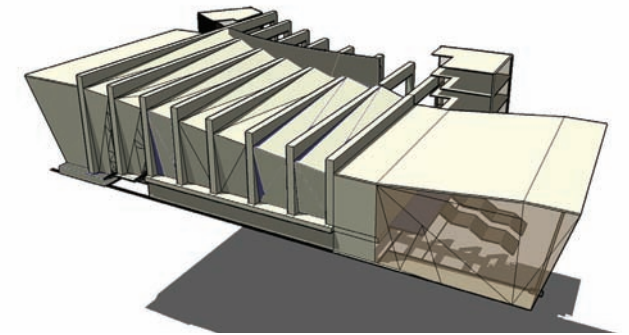
Sketch showing the introduction of the bridge as viewing gallery for spectators



Elliptical frames



Rectangular frames

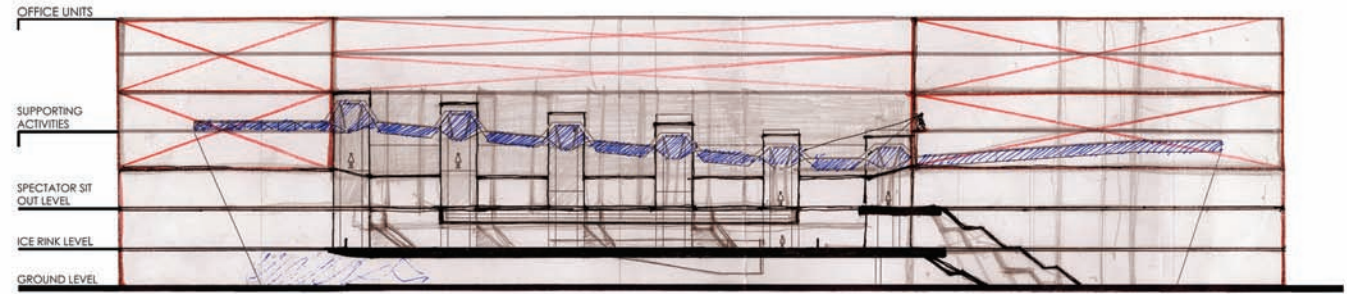


Rectangular frames increased in height



## MULTIPLE FUNCTIONS

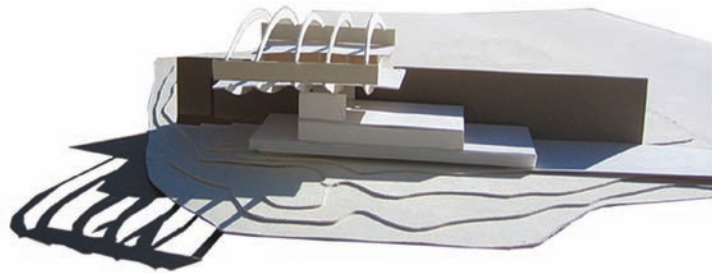
The backdrop wall will accommodate multiple functions. The first four floors of the wall offers ice rink-related facilities, including skating stores and restaurants and, on the upper three floors professional office units are proposed.



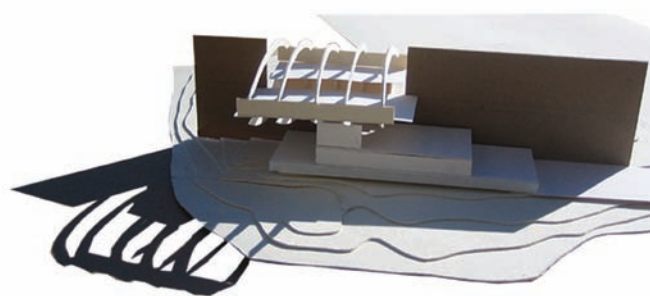
Functional layering of the building

## THE PROPORTION.....HEIGHT

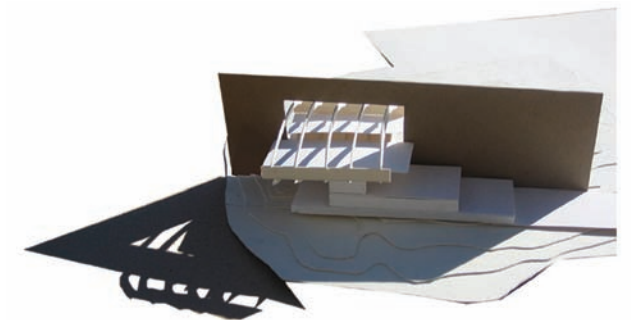
The backdrop wall was introduced to house the supporting activities of the ice rink. Different heights of the backdrop wall were studied against the skyline of the city. Initially just an idea as backdrop to certain activities, the wall evolved and took form of a backdrop for the complete ice rink structure.



Backdrop wall up to ice rink platform



Backdrop wall up to the roof



Backdrop wall spanning above the roof



## THE PROPORTION.....OPENINGS

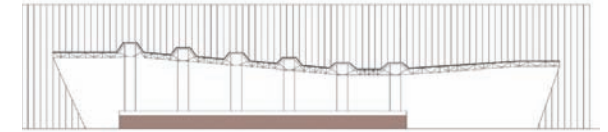
Different opening patterns for the backdrop wall have been studied. Among all the alternatives, the combination of long horizontal series of bands is chosen to maintain the horizontality of the wall and to give a strong sense of direction.

These bands consist of hollow and solid strips of concrete to give a solid appearance, in contrast with the light steel structure of the ice rink.

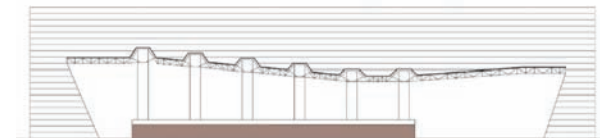
Horizontal bands of windows are placed in between the solid and hollow bands of concrete, which are sunken behind the building face to hide in the deep shadows cast by the concrete bands, giving a more solid appearance to the wall.



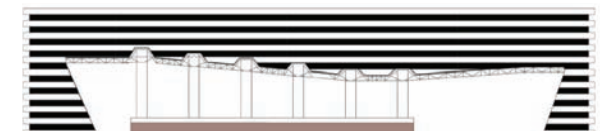
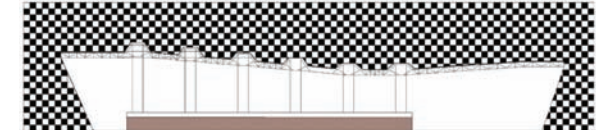
Elevation of building from the water



Vertical opening pattern



Horizontal opening pattern



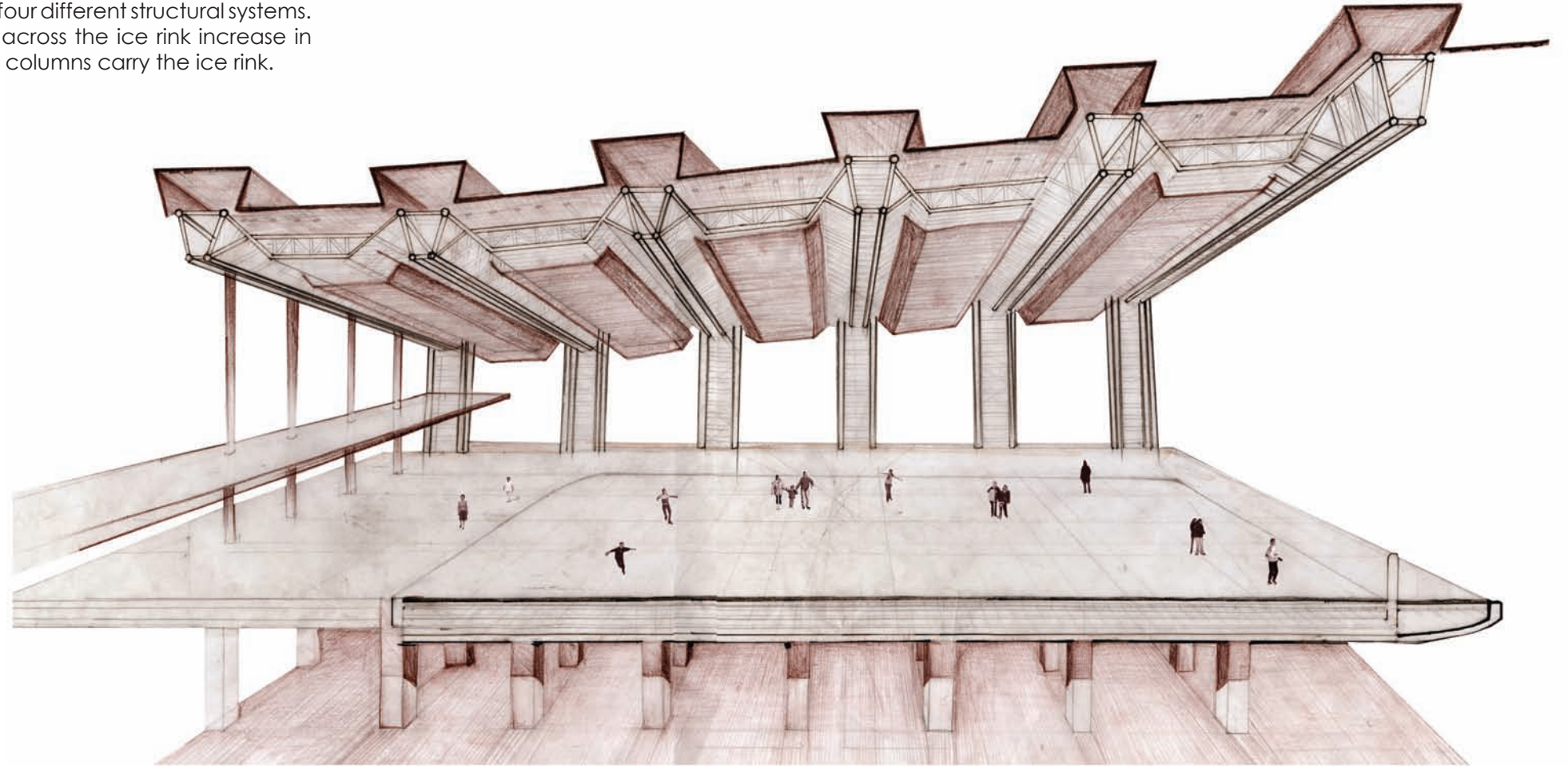
Horizontal bands of concrete and window



## VISUAL EVENT

Four different primary structural systems are developed for the ice rink structure. Three are for the roof, and one is for the ice rink platform.

The sketch shows two of the four different structural systems. The steel frames that span across the ice rink increase in height. A series of concrete columns carry the ice rink.



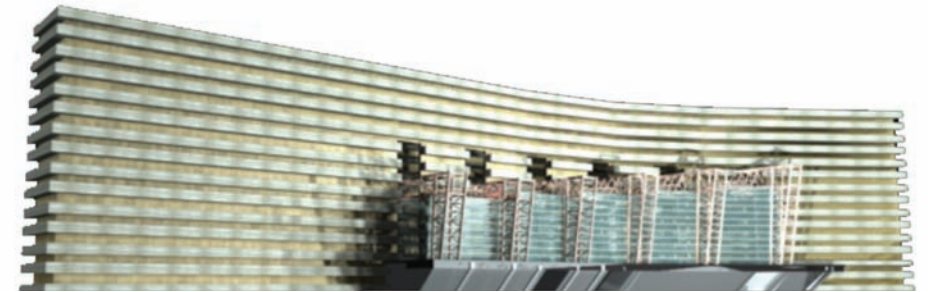
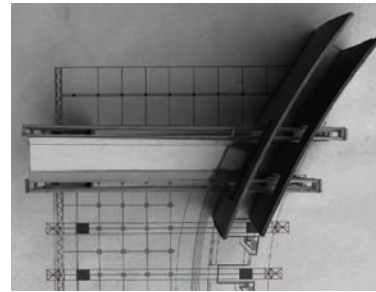
Steel frames spanning across the ice rink and concrete columns carrying the ice rink



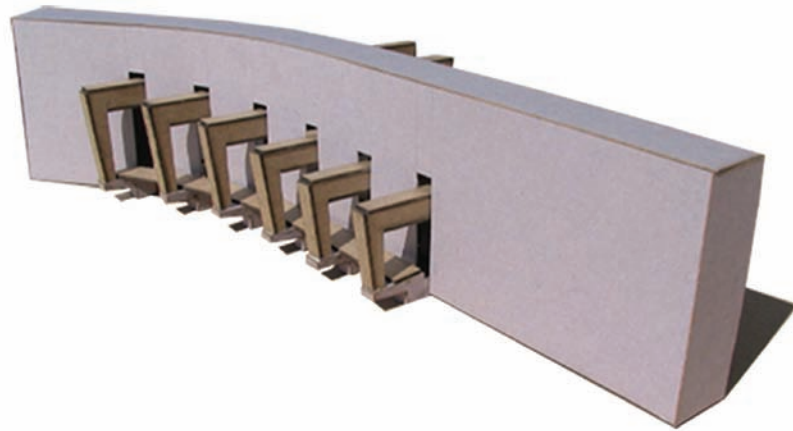
## INDEPENDENT AND INTERACTING

The large steel frames, spanning across the ice rink, cut through the backdrop wall and appear on the other side, allowing the spectators get a view of the other side of the city.

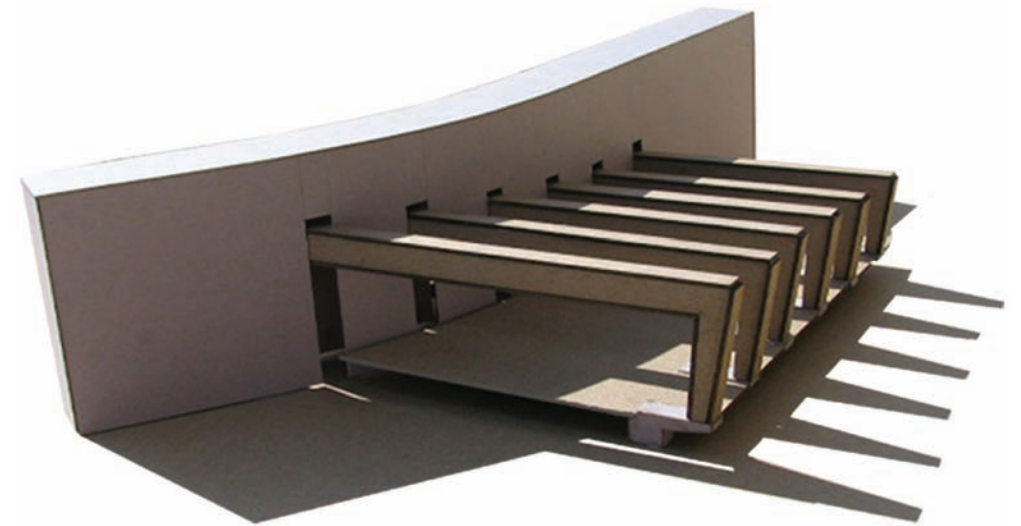
Even though these two buildings are interacting, they are structurally independent. This independence is expressed in terms of the opening in the wall for the steel frames of the ice rink. The openings are of equal size, and they do not follow the profile of the roof of the ice rink.



North Elevation



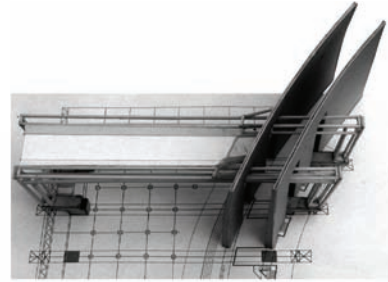
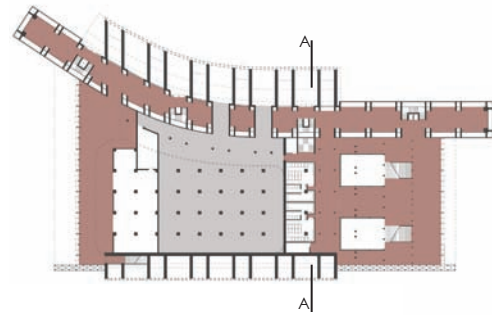
Steel frames cutting through the wall



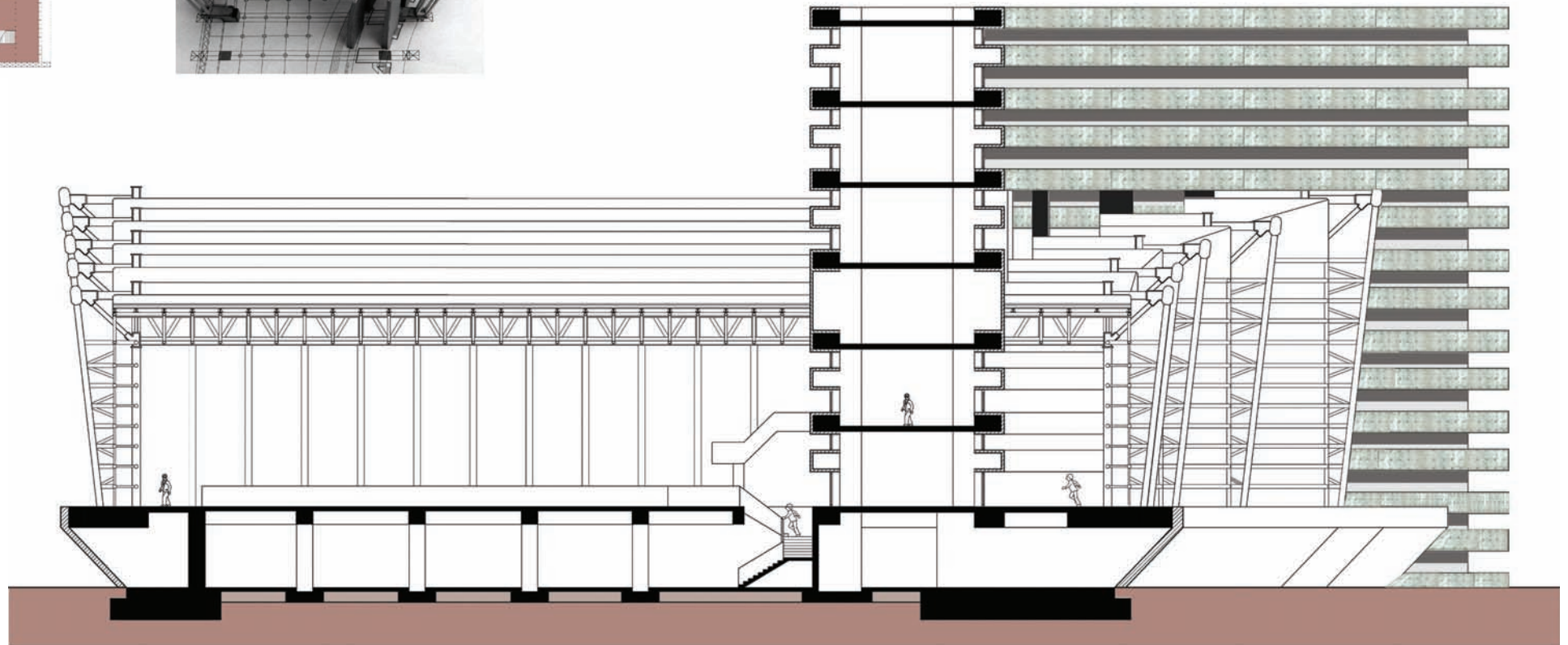
Steel frames increase in height



**INDEPENDENT AND INTERACTING**



Section showing the independent and interacting structures of the ice rink and the backdrop wall.



**SECTION AA**

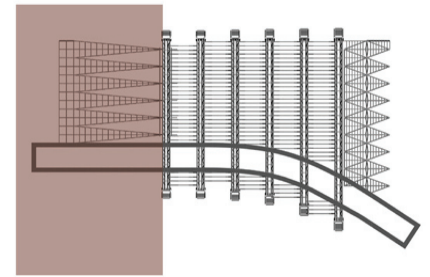




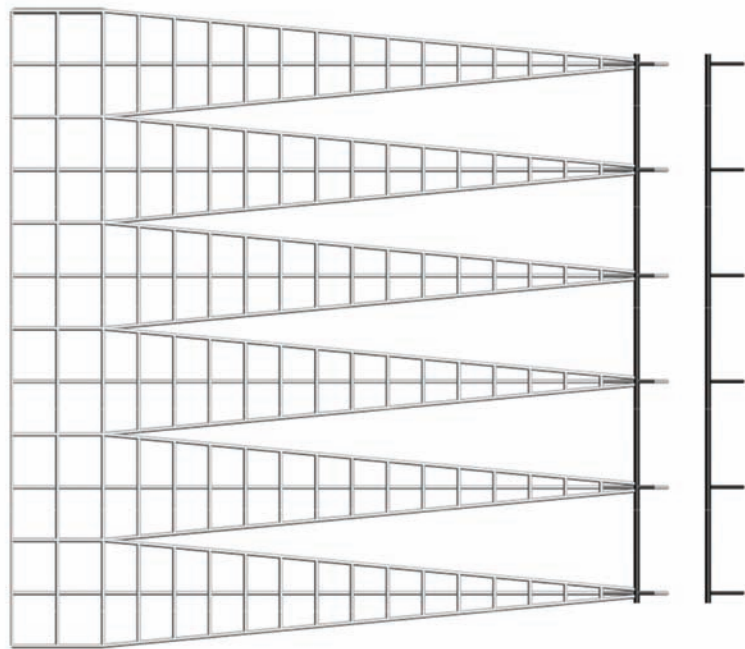
## FIRST STRUCTURAL SYSTEM

The first system exists at the entrance of the ice rink, which consists of a dense series of tubular columns carrying triangular trusses that taper in plan towards the second structural system.

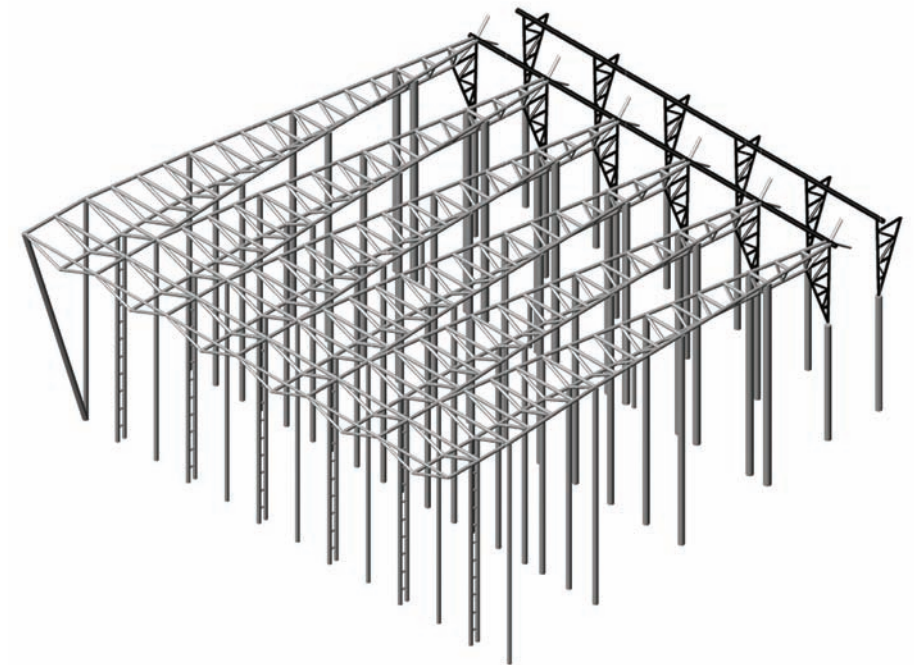
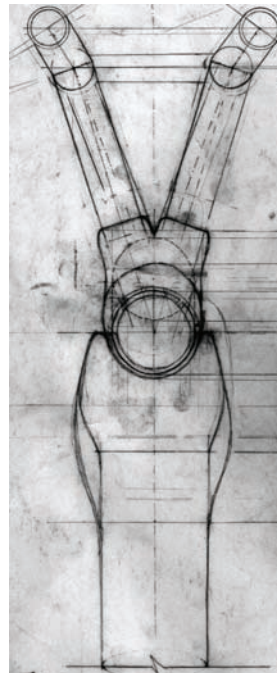
The density of the columns is reduced towards the second structural system, merging into it.



Location diagram



Plan of the first structural system located at the entrance

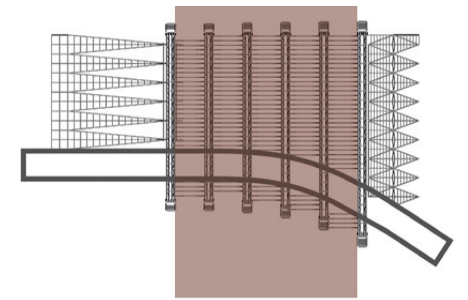


View showing the dense tubular columns at the entrance

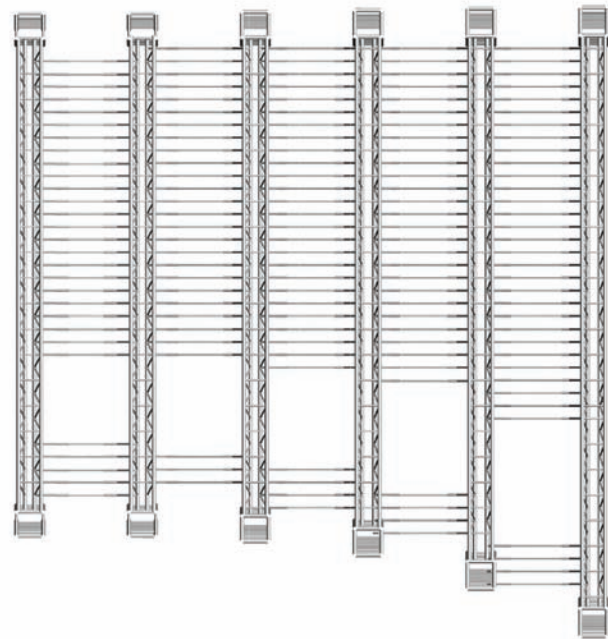


## SECOND STRUCTURAL SYSTEM

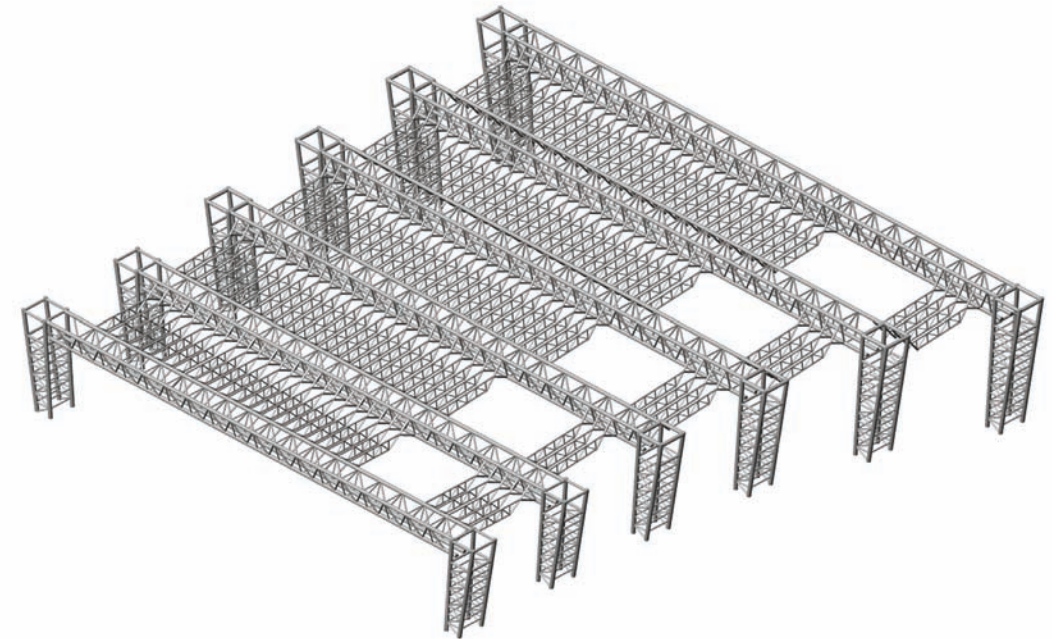
The second structural system consists of steel frames that span across the ice rink. This enables open, obstruction free space for the ice rink surface. The frames increase in height toward the third structural system.



Location diagram



Plan of the second structural system spanning across the ice rink



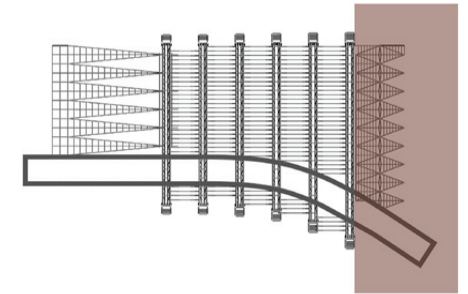
View showing the increase span and height of the frames



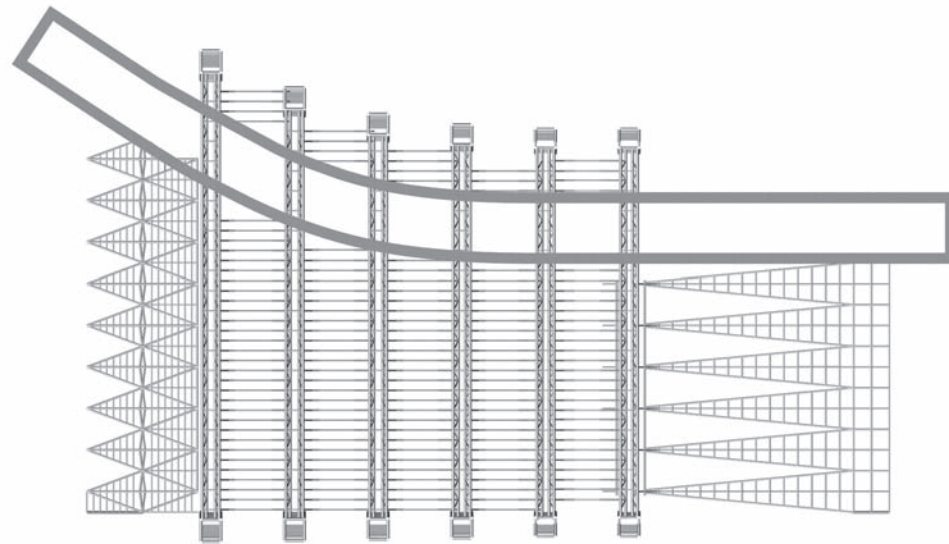
### THIRD STRUCTURAL SYSTEM

The third structural system consists of a row of thin tubular columns that carry a series of trusses at the center. This thin row of columns also plays the role of mullions of the window to the city.

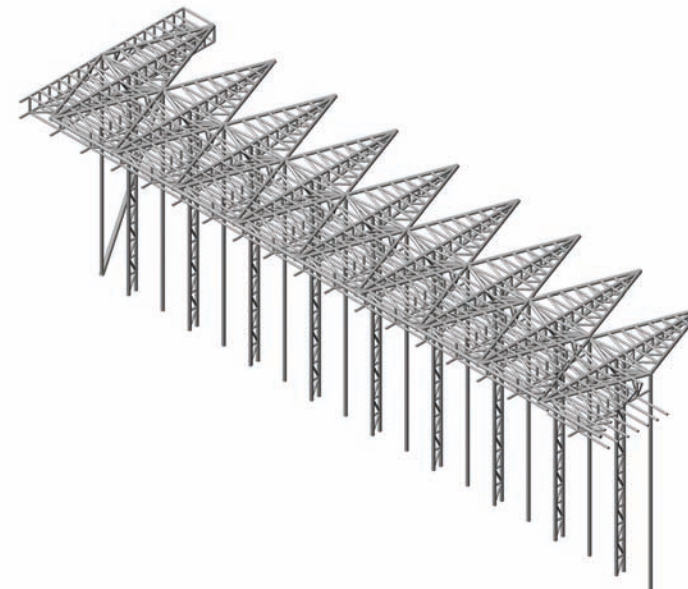
These three primary structural systems are connected to each other by means of secondary structural members, giving rise to a continuous structural skeleton for the roof.



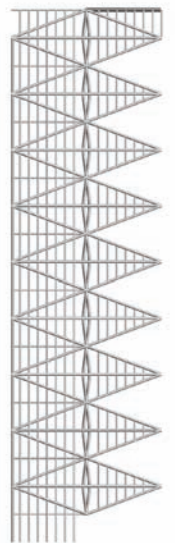
Location diagram



Plan of the three different primary structural systems connected together with secondary structural system

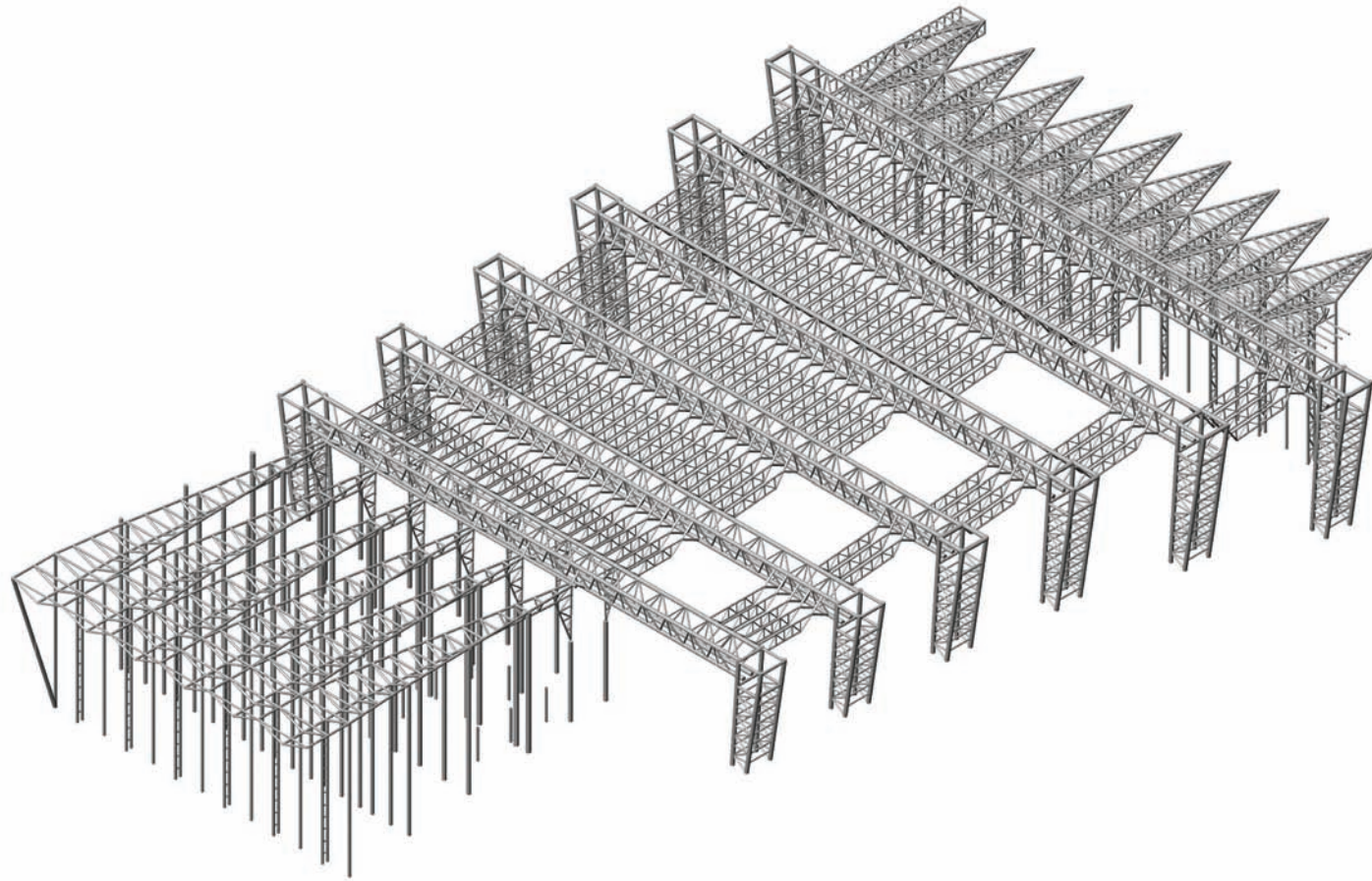


Third structural system

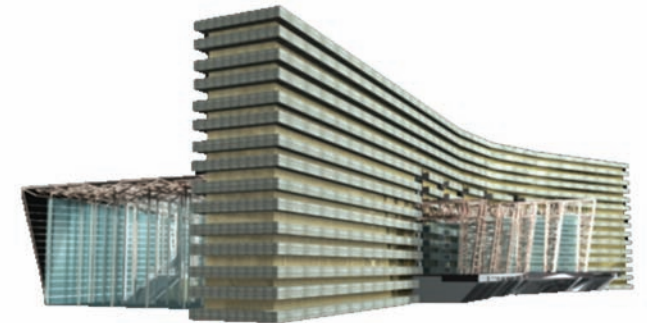




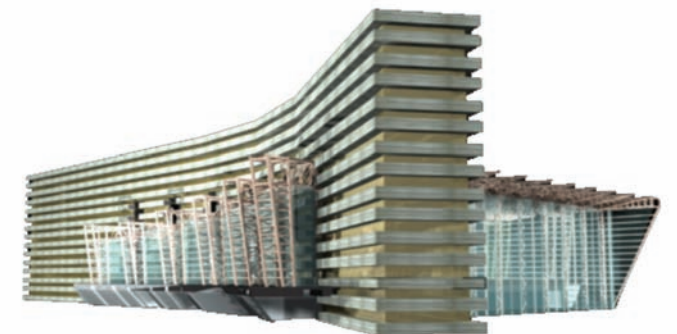
## COMPLETE STRUCTURE OF ICE RINK



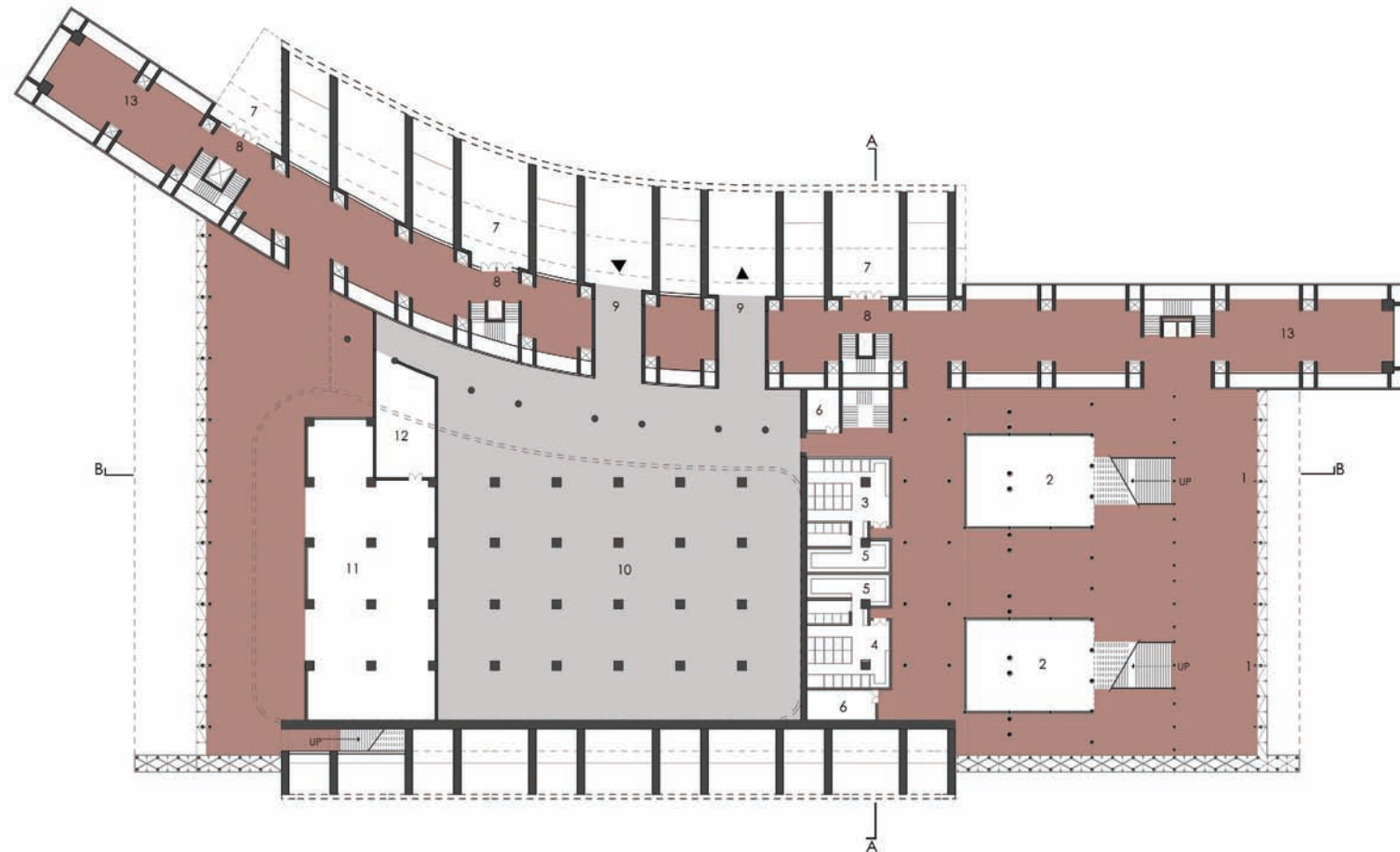
Three different primary structural systems connected together with secondary structural system



South-East Elevation

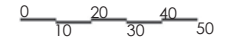


North-East Elevation

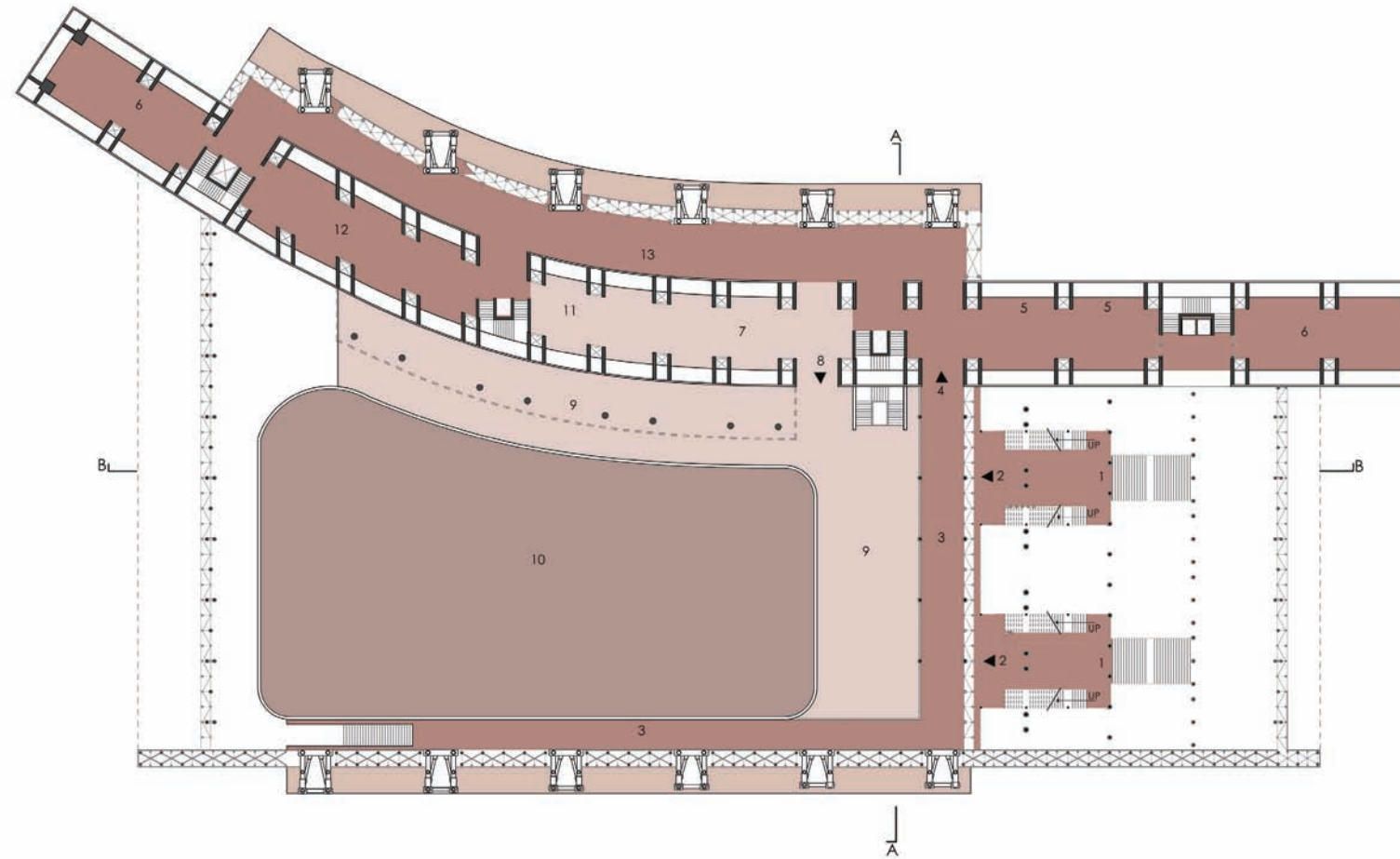


- 1. ENTRANCE TO THE ICE RINK
- 2. ICE RINK INFORMATION CENTER & GALLERY
- 3. GENTS RESTROOM
- 4. LADIES RESTROOM
- 5. LOCKER & SHOWER AREA
- 6. SERVICE ROOM
- 7. OFFICE ENTRANCE
- 8. LOBBY AREA
- 9. SERVICE ENTRANCE & EXIT
- 10. STAFF PARKING & BUILDING SVICES AREA
- 11. RESTAURANT
- 12. KITCHEN
- 13. SHOPS

FIRST FLOOR PLAN

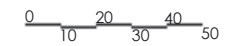


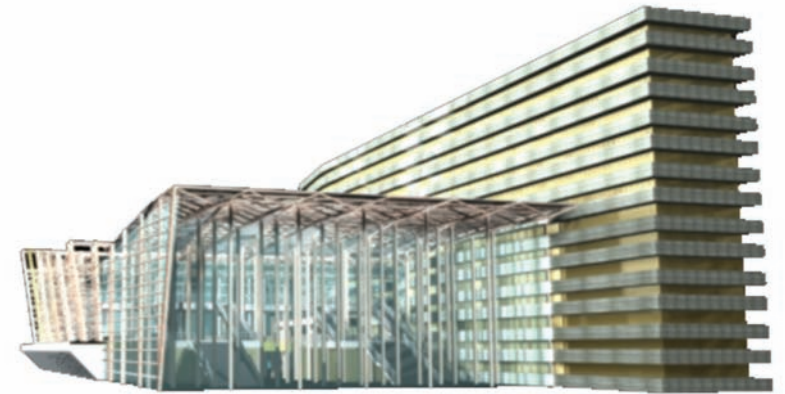




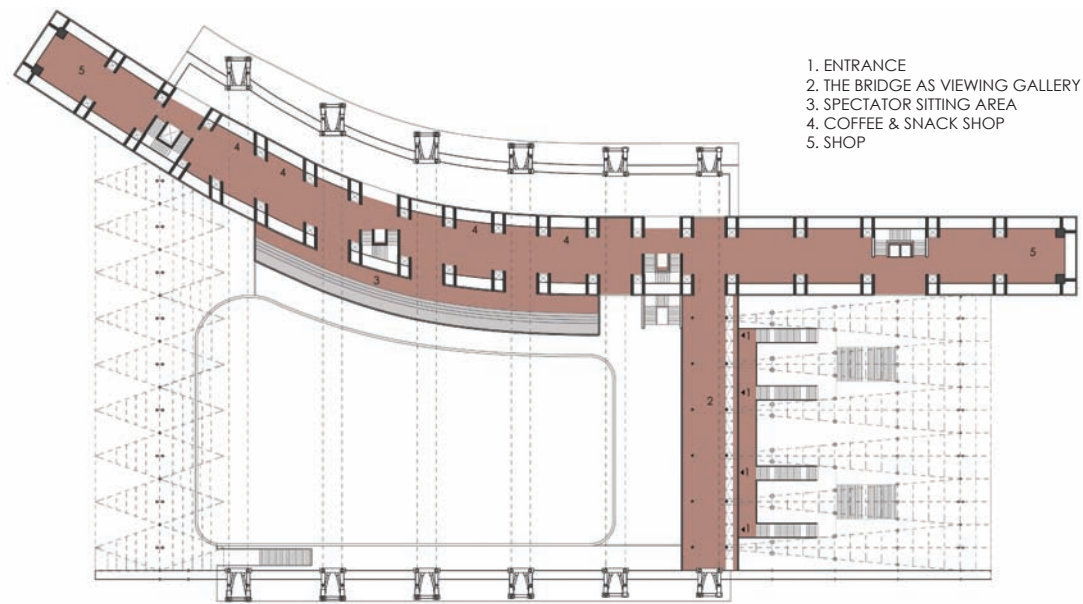
- 1. LOBBY AREA
- 2. ENTRANCE
- 3. SPECTATOR AREA
- 4. ENTRANCE TO BACKDROP WALL
- 5. COFFEE & SNACK SHOP
- 6. SKATE STORE & SHOPS
- 7. SKATE RENT & REPAIR STORE
- 8. ENTRANCE FOR SKATERS
- 9. ICE RINK SPILL OUT AREA
- 10. ICE RINK PLAT FORM
- 11. ICE RINK MAINTENANCE ROOM
- 12. RESTAURANT
- 13. VIEWING CORRIDOR & SIT OUT AREA

**SECOND FLOOR PLAN**

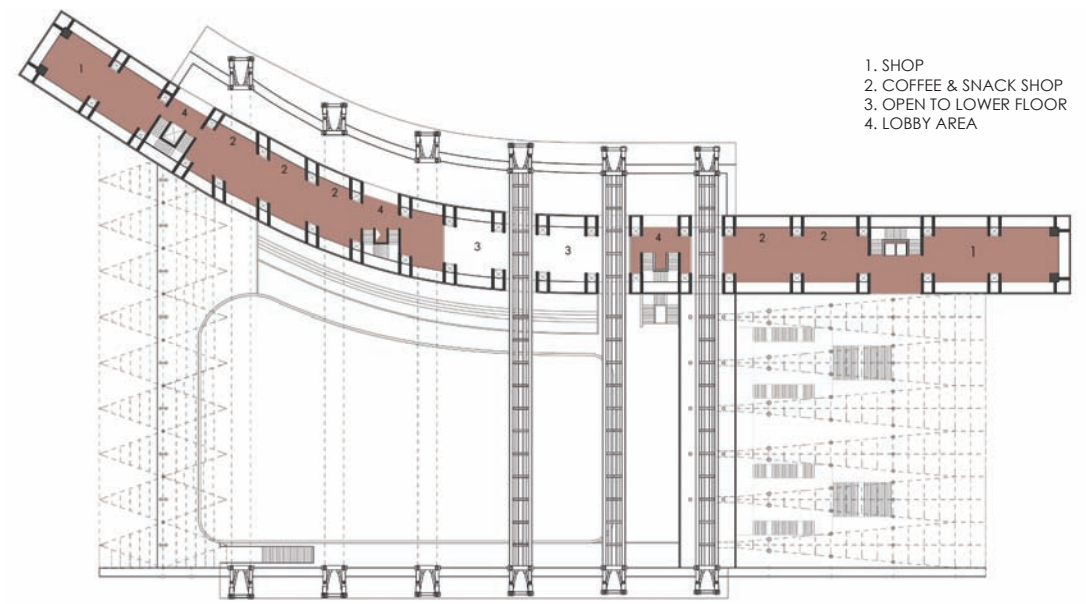
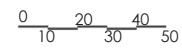




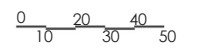
South-West Elevation

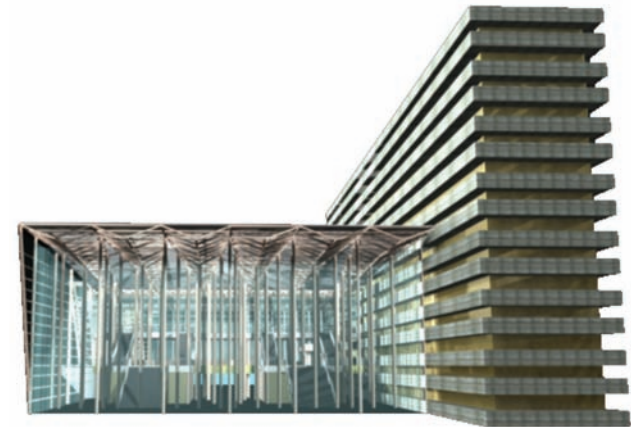


THIRD FLOOR PLAN

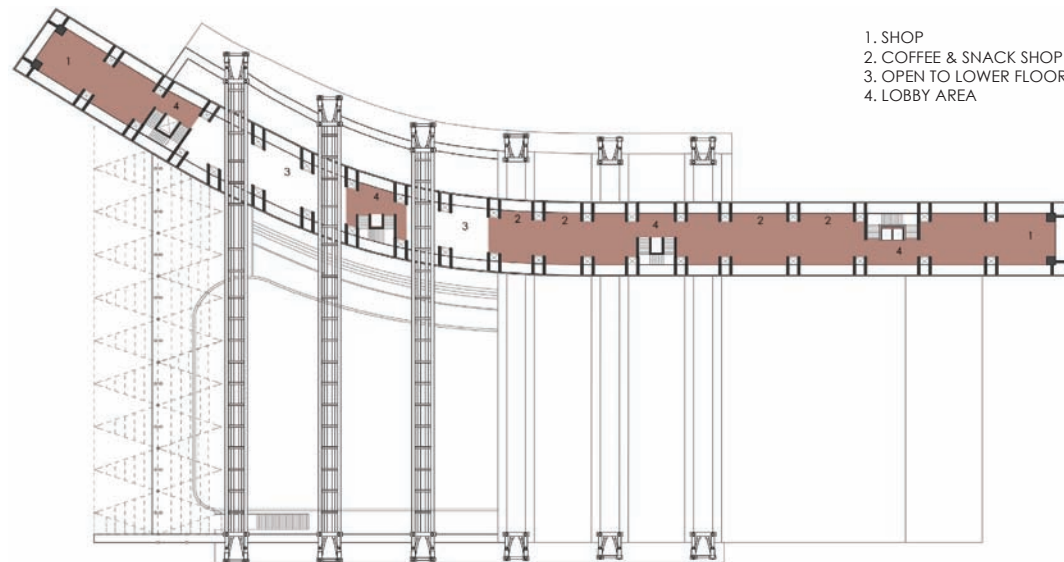


FOURTH FLOOR PLAN



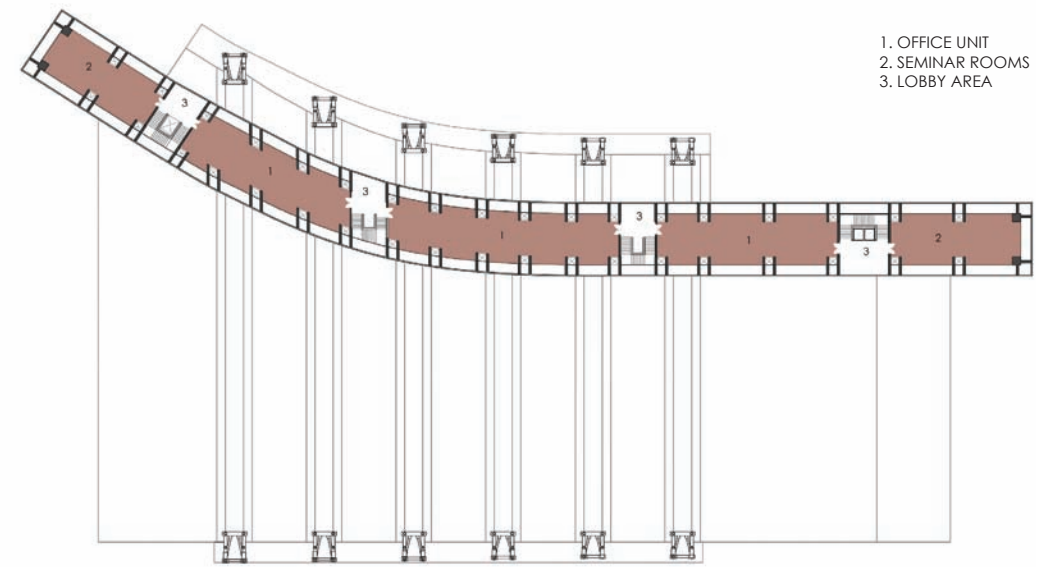


Entrance to the ice rink



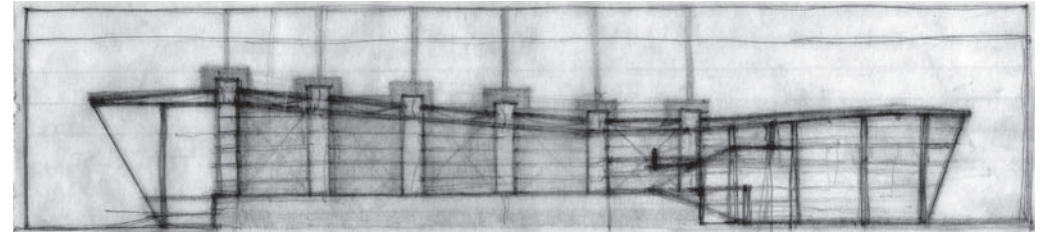
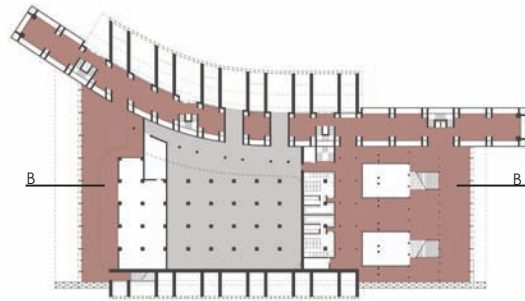
FIFTH FLOOR PLAN

0 10 20 30 40 50

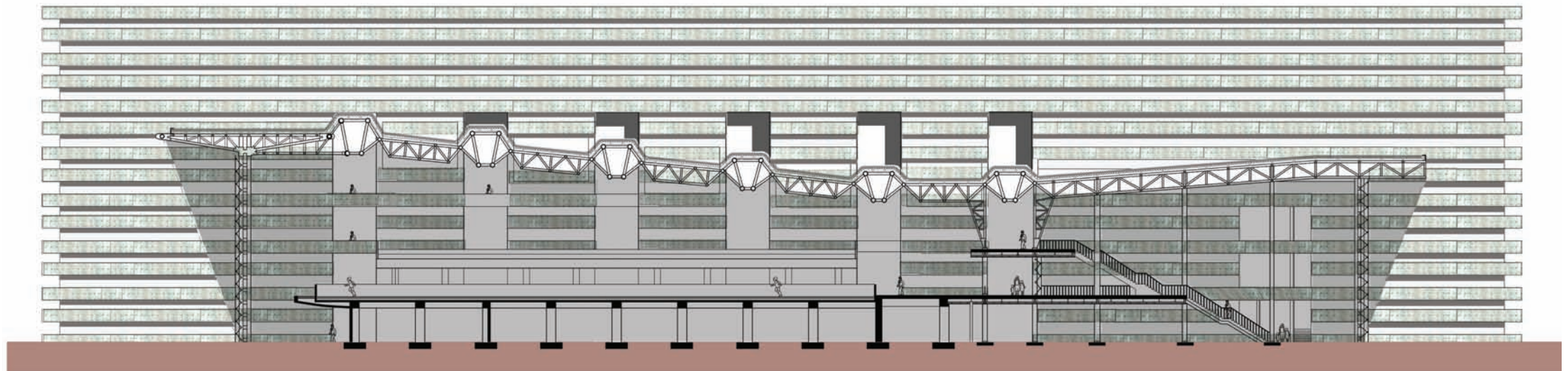


SIXTH FLOOR PLAN

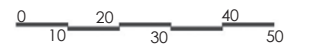
0 10 20 30 40 50



Sketch showing the preliminary idea of the building



SECTION BB





Photomontage of the proposed building from the water



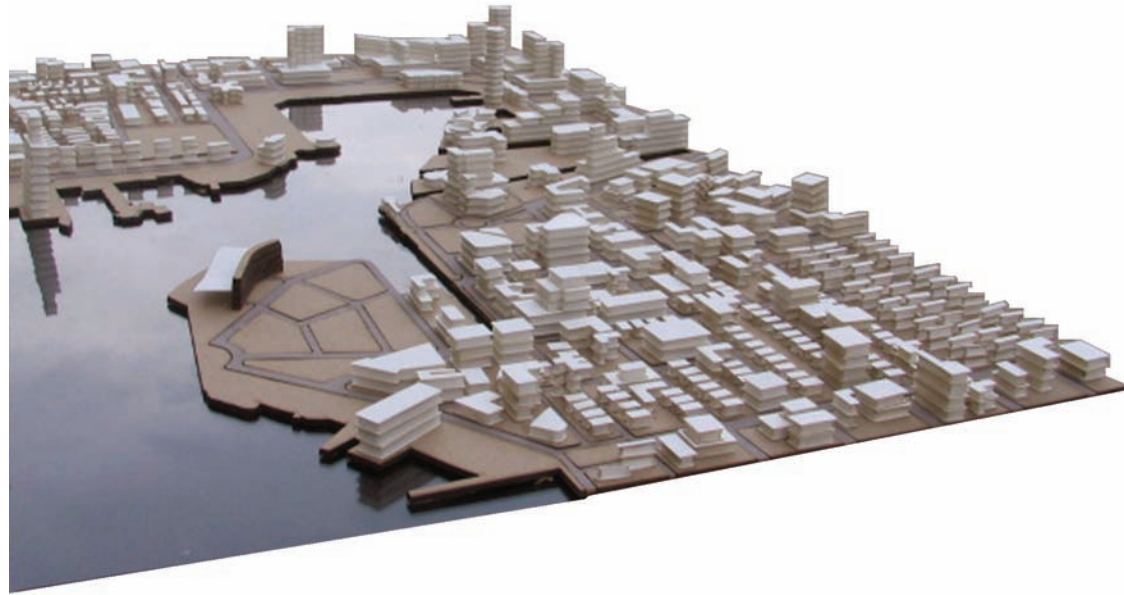
Photomontage of the proposed building from across the water



A window to the city



## SUMMARY OF THOUGHTS



In this thesis, I have explored an architecturally constructed window to the city, combined with a wall as a backdrop. This window develops in the form of an ice rink, and the backdrop wall contains supporting activities.

A window, in architecture connects carefully the inside with the outside. From the inside, the frame of the window defines the boundary of the opening and the content of the outside world.

Instead of an opaque enclosure, this window to the city provides a spectacular perspective of the nearby downtown buildings. The spatial sequence that leads to the window begins with high-density structure at the entrance and gradually decreases in density towards the window.

A wall, which complements this sequence, is introduced as backdrop for the building against the existing city skyline. It consists of hollow and solid bands of concrete to give a solid appearance, in contrast with the light steel structure of the ice rink.

The ice rink and the backdrop wall are structurally independent. This independence is expressed in terms of the opening in the wall for the steel frames of the ice rink. The openings are equal in size and do not follow the profile of the roof of the ice rink.

Through this project, the relationships between different architectural elements, a window and a backdrop in form of an urban wall are used to reenergize a former industrial waterfront.

I look forward to continue this process of learning as I enter the profession of architecture, and start a long and joyous journey.





## ACKNOWLEDGEMENTS

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I thank my friend, Veena and every one in the studio for their support. I enjoyed the experiences that I have shared with you all in the past two years.



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