



Directing Space

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MASTER OF ARCHITECTURE

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Contents

Abstract	9
Directing Space	11
Spatial Continuity	13
Two Different Conditions	17
Directing The Site	23
Continuity Of The Ribbon	27
Water As An Element Of Continuity	33
The Exhibition Space	39
Two Planes Defining Space	51
Finding A Structure	55
Conclusion	71
Bibliography	75

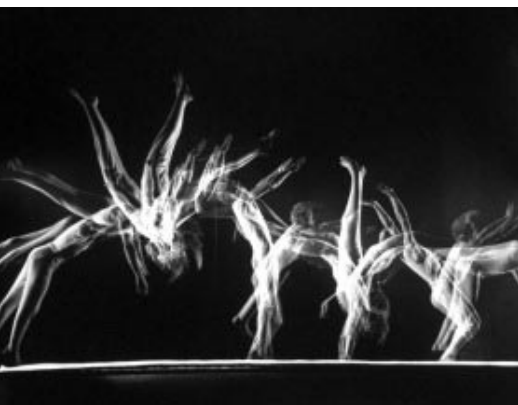


Farnsworth House isn't an object that lives up to the commonplace notions of the citizen or the architect. What's missing are the "nonessentials." The essentials for living are floor and roof. Everything else is proportion and nature. Whether the house pleases or not is inconsequential. What's important is that it remains an archetype, a carrier of inspiration, with high standards for the building volume.

Mies van der Rohe on the Farnsworth House

Directing Space

Spatial Continuity In Architecture



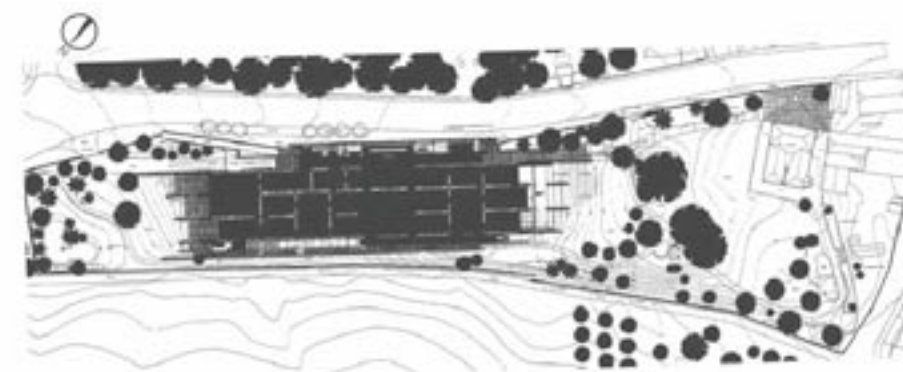
The following presents an investigation into questions of spatial direction and continuity. This includes the directing of people via a choreographed sequence of architectural spaces through a site and a building. It further investigates a concept of continuity at various scales. A proposal for an art gallery in downtown Washington DC becomes the vehicle

of exploration. The urban scale of this proposal seeks a continuity of relevant existing conditions while also creating opportunities to experience the city as well as the gallery. A serpentine-like continuous band or ribbon becomes the physical element responsible for direction and continuity for the building itself.

Directing Space



Foundation Beyeler
by Renzo Piano, Switzerland

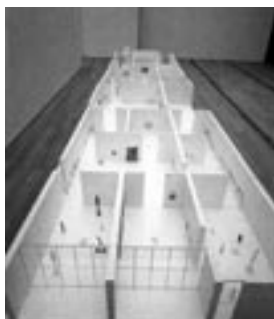


directing to the site
directing "through" the site
directing through the building
directing through the exhibition

The control of shape and proportion is one approach which can be employed to direct the architectural character of a space. Both shape and proportion have a major influence on the interior and exterior rooms.

The Beyeler Foundation by Renzo Piano for example is an elongated

building placed parallel to the street. This position guides visitors along the street facade towards the entrance on the other end of the building. From there one can walk in a reverse direction through the exhibition. The backside of the building offers a wide view that frames a field with trees.



Spatial Continuity

Continuity:

*uninterrupted connection, succession or union
uninterrupted duration or continuation especially
without essential change*

Translation into Architecture:

continuing urban conditions onto the site
continuous exterior room
continuous interior space
continuous experience of the exhibition

Location

An art gallery is proposed on a site located on Pennsylvania Avenue. Three blocks away, the White House and the George Washington University campus are important landmarks.



views of the site under
construction
September 2003



lower buildings of GW University
and small businesses

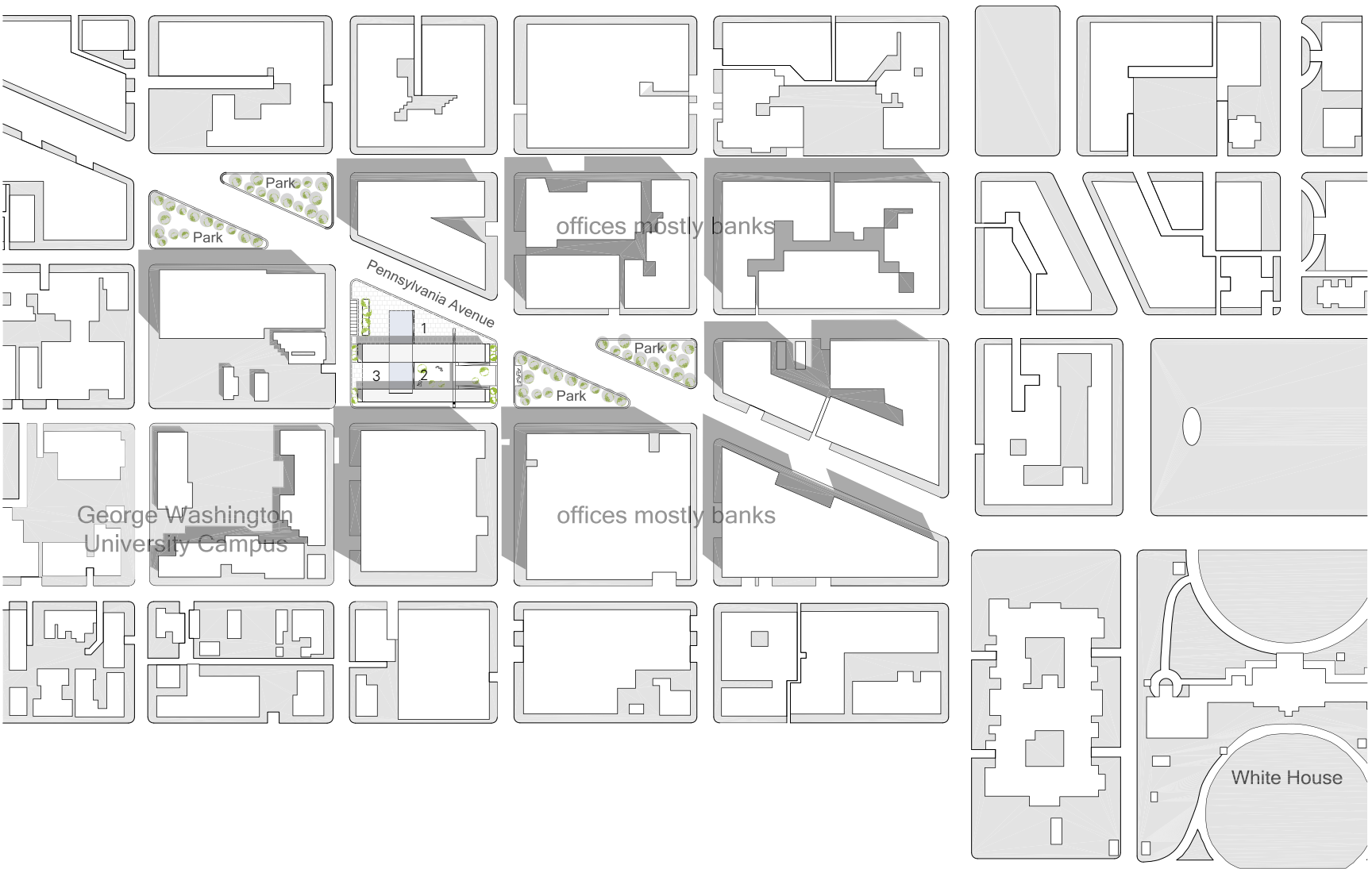


office buildings,
10-12 stories high

Two Different Conditions

Two different urban conditions are bordering the site. The blocks to the east comprise mainly ten story buildings which occupy their entire sites and are relatively closed to the street. Most of these buildings are offices with some commercial use on the ground floor.

On the west side, the blocks are more open, offering green spaces or court yards, with the buildings reduced in scale. The facilities of George Washington University and retail stores occupy a large part of this area. The challenge for the presented site is to mediate these two different conditions by offering open green spaces on the one hand but also preserving the long closed facades towards Pennsylvania Avenue.



The Site



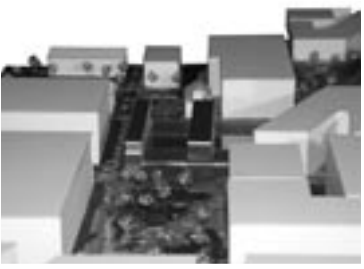
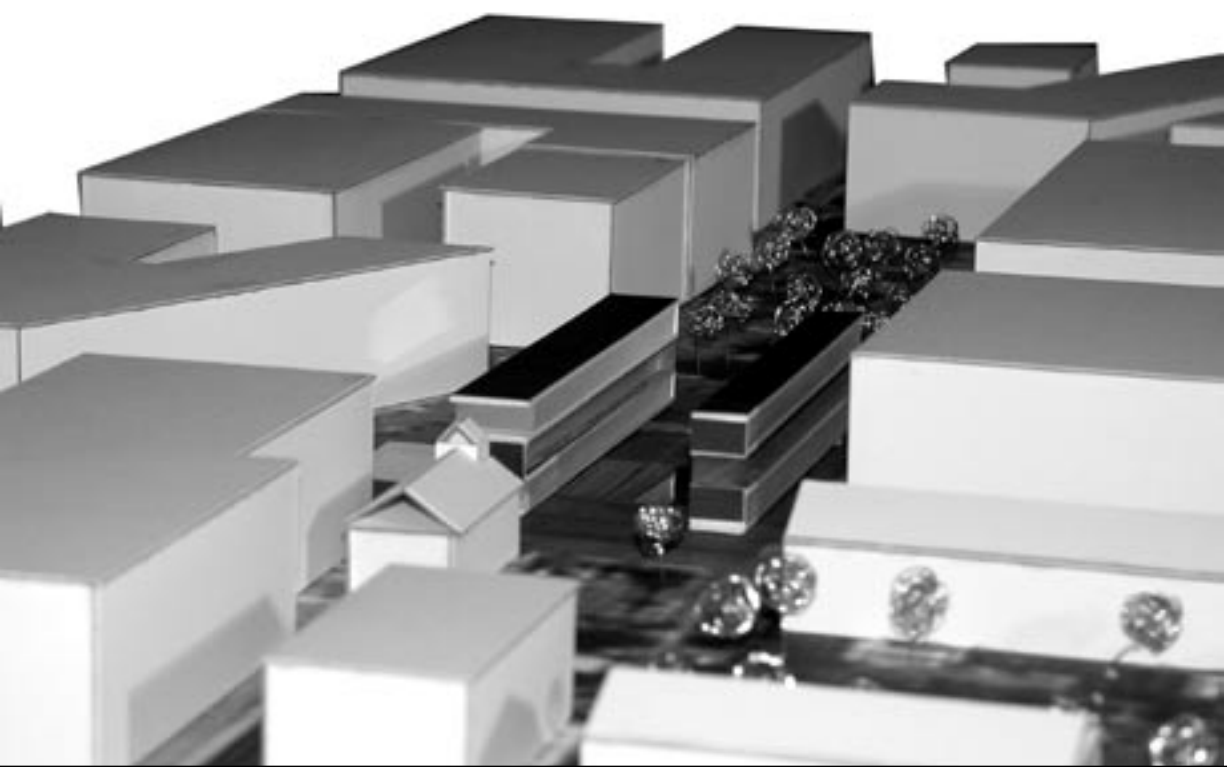
Two elongated volumes define two major spaces on the site: one, a triangular plaza in front of the main building on Pennsylvania Avenue and two, a courtyard-like situation between the two building volumes.

The main building, the gallery is aligned with the rectilinear grid of the city, so the street can open up and provide an exterior space, the plaza. This open room is an area for people to meet similar to two small parks adjacent

to the site. It also serves as a layer between the street and the building to approach and enter the gallery.(1)

The interior courtyard includes an open green space, the sculpture garden in which to rest while also offering a connection between this part of the block and the small park to the east.(2)

A restaurant, which is part of the courtyard and also open to non-visitors, helps to attract people to the area in the evening hours as well.(3)

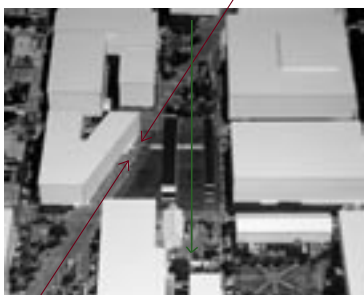
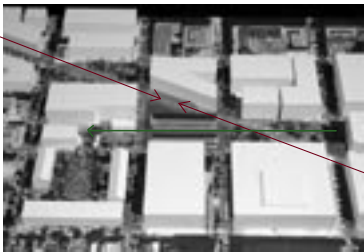


Architectural space will be defined by ideas as much as by real walls. Architecture will be the tension between concepts of space and experience of space.

Bernard Tschumi in Architectural Manifestos, Manifesto 2

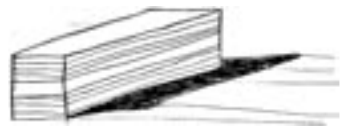


Gallery Goetz
by Herzog & de Meuron, Munich



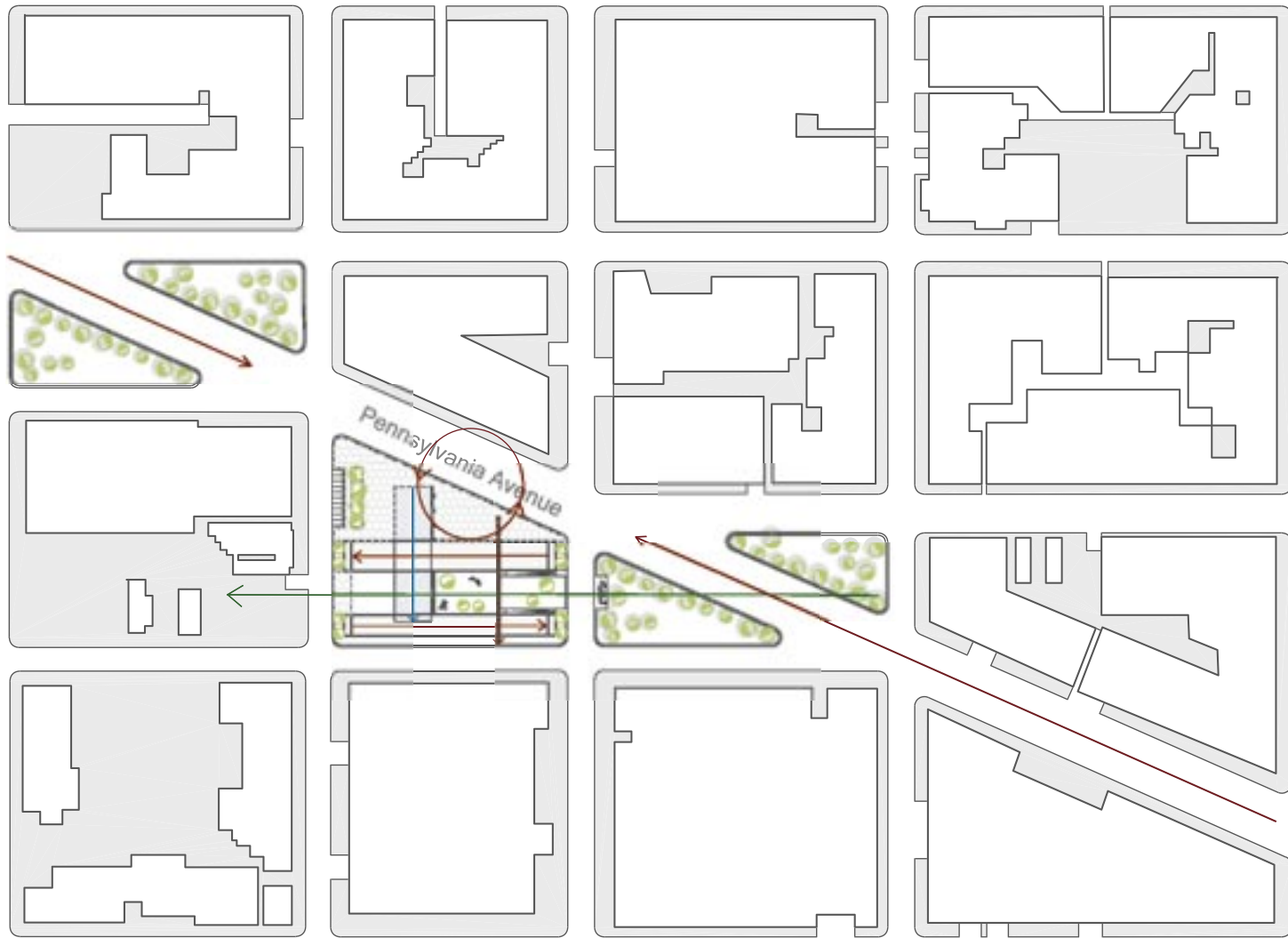
The two building volumes within their context

Directing The Site With Two Strong Geometric Volumes



A strong geometric volume is defined by a clear, simple form with plain surfaces. It stands out as an independent and self-confident object. It differentiates itself from the ground and defines a clear space around it. The interaction of two such volumes requires careful consideration with regards to their relative placement. In this project, the placement of the building volumes resulted in two exterior rooms with different qualities: a public plaza along Pennsylvania Avenue and a more private courtyard in-between the two building volumes with a sculpture garden and terrace.

Directing The Site



The open space that is created by the plaza on the long and narrow street calls one's attention and directs people towards the site. The gallery itself is only visible from the surrounding blocks; further along the street only a long water basin and the plaza can be seen.

The plaza itself serves as a layer between the street and the building to approach and enter the gallery.

The two long buildings direct the site from east to west, with different spatial layers developing from north to south.

It forms a logical sequence from public to private, from plaza, to exhibition, to sculpture garden and terrace, to offices and shops.

A pool of water and a connecting hallway placed perpendicular to the main building volumes divide this sequence in the east-west direction into smaller scale spaces.

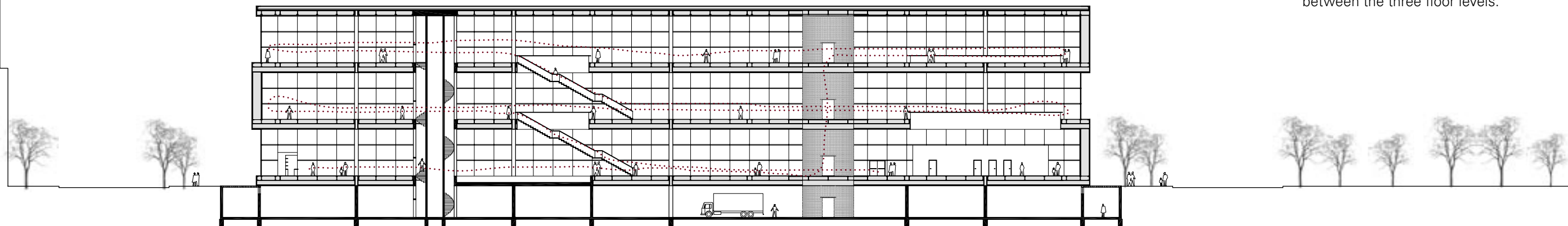
The courtyard continues the green space of the two small parks next to the site "into" the building.

The opening between the two buildings visually connects the adjacent sites.

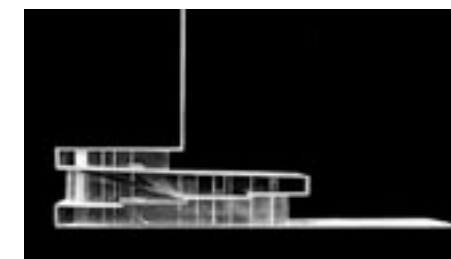
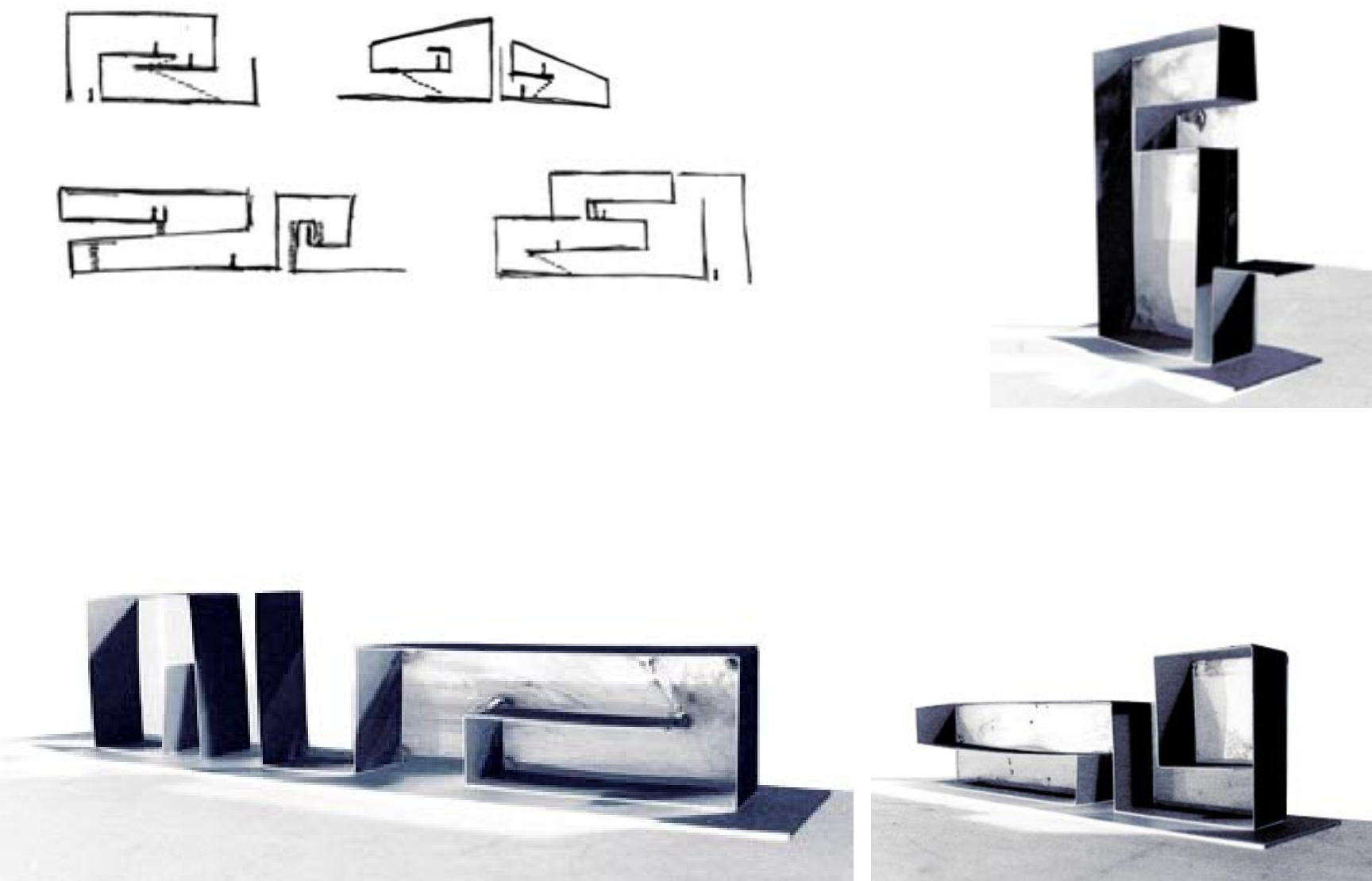
Directing Through The Building

The Ribbon As Exhibition Space

A ribbon, forming both structure and space literally guides visitors through the sequence of exhibition rooms. The vertical and horizontal nature of the ribbon amplifies the spatial continuity between the three floor levels.



Continuity Of The Ribbon

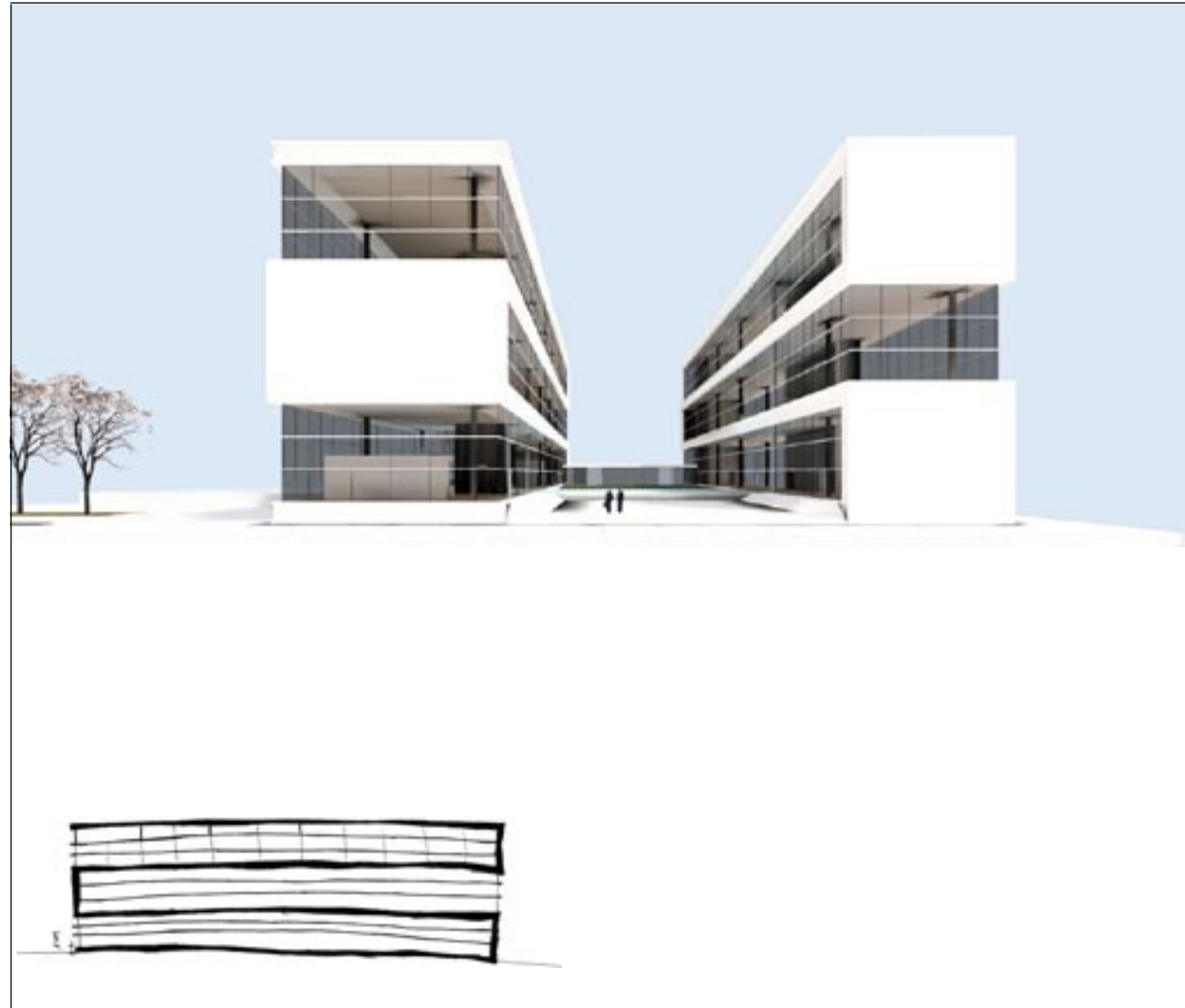


MVRDV design for
department store

Generally we understand a ribbon as an element with a continuous motion through varying direction changes. On the scale of a building these directional changes can raise an awareness of one's position relative to the entire

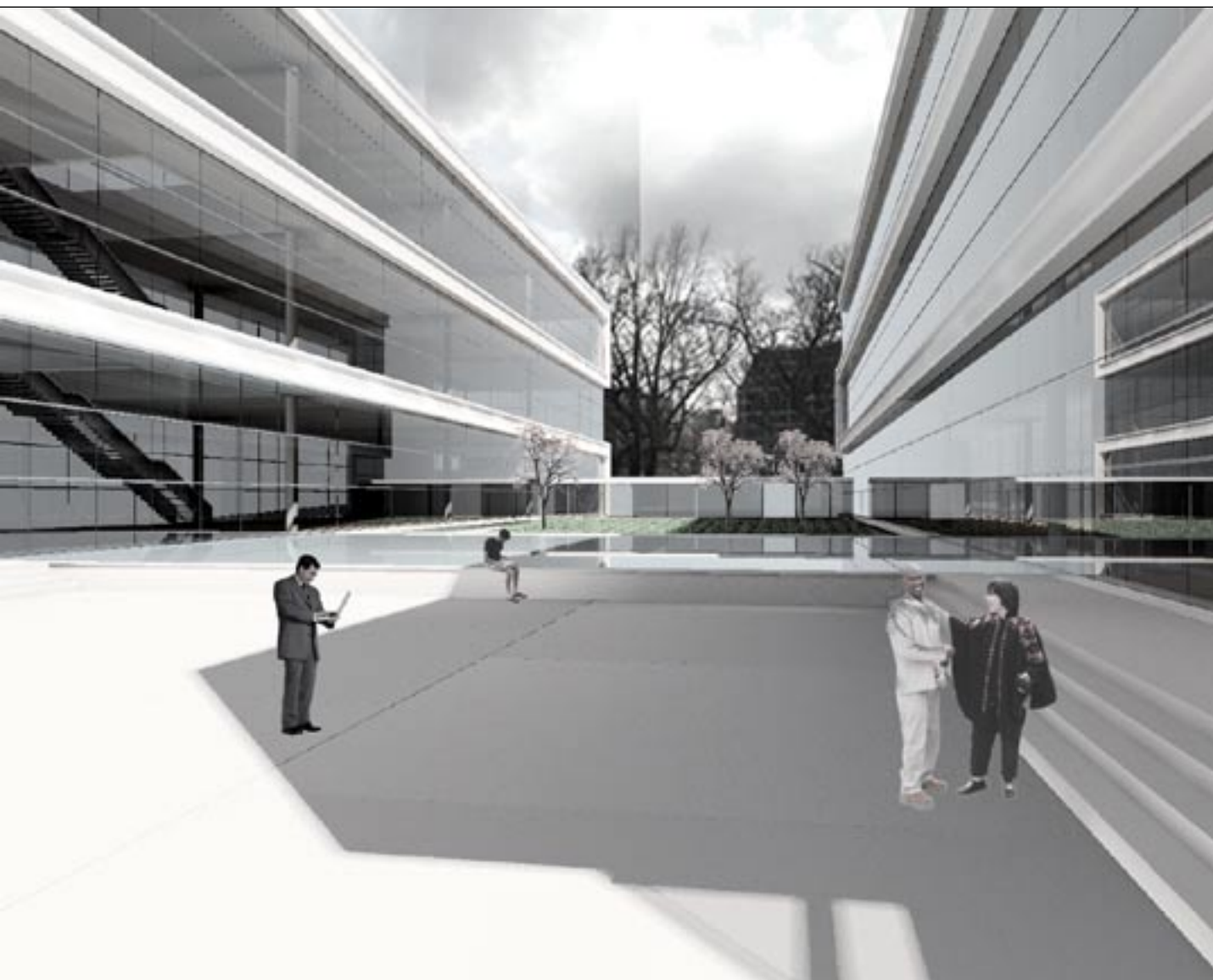
building and also relative to the site. While moving through the three different floor levels, different views of the site and its surroundings are offered. To amplify vertical continuity, rectilinear subtractions of ten by ten and ten by twenty meters in the floor visually and acoustically connect the three floor levels. The elimination of partition walls also supports the impression of one continuous room.

reversing direction
of the two ribbons

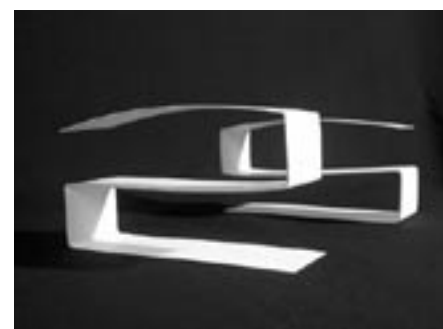


night view from
Pennsylvania Avenue

Identity through Direction



view from terrace into
sculpture garden



the two different corner situations
experienced on the inside

The overlapping of two ribbons which move against each other, offers a certain dynamic. This condition becomes most apparent in the courtyard between the two buildings. Several other perspectives inside the building also reveal that the two ribbons are running in opposite directions. The intention of this opposition was to offer an indication of the different uses of the two buildings and to continue a spatial movement from one part of the site to the other.

Water As An Element Of Continuity

Water seems to be an enjoyable element in architecture. It changes the atmosphere of a space and provides a source of calm energy.

A long, flat water basin crosses the site in north-south direction. It begins outside on the plaza, runs through the gallery lobby on the ground floor, divides the court yard into terrace and sculpture garden and terminates in the administration building separating lobby and gallery store.

This continuous water surface adds two major qualities to the project. On the outside, it provides a sense of coolness on a hot day, on the inside it generates reflections and changes the smell, humidity and the acoustics of the space. The gallery benefits from these changing conditions as the water creates a certain dynamic.

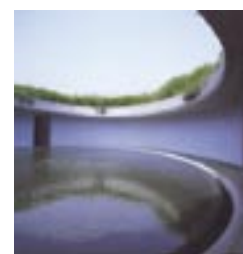
- 1 Gallery Lobby
- 2 Restaurant
- 3 Terrace
- 4 Sculpture Garden
- 5 Gallery Shop
- 6 Administration Lobby



Komjoji Temple
by Tadao Ando,
Japan



The Garden of the Fine Arts
by Tadao Ando,
Kyoto



Naoshima Contemporary Art
Museum Guest House
by Tadao Ando

view from second floor
gallery onto water surface



view across the water
into the lobby



Sculpture by Richard Serra
at The Pulitzer Foundation for the Arts

I would like to think of this as the creation of “a place of possibility” or “a place of mutual discovery.” In other words, I see it as the making of a “space” to inspire visitors and even expand their consciousness. I wanted to create a very stimulating place, where works of art are not exhibited merely as specimens but can speak to us as living things.

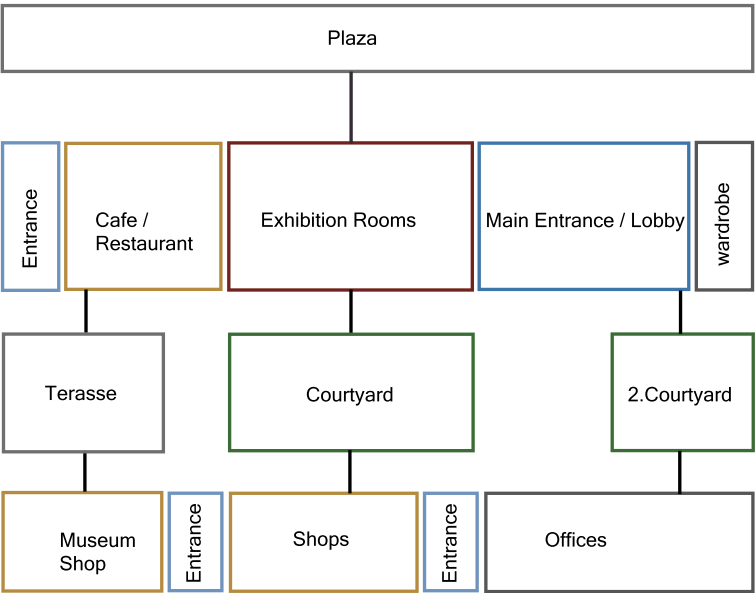
Tadao Ando on The Pulitzer Foundation for the Arts

Architecture is as much about the event that takes place in a space as about the space itself.

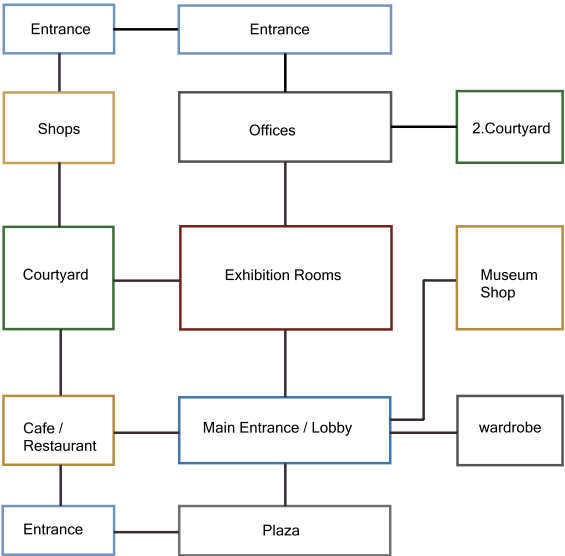
Bernard Tschumi in Event-Cities

The Exhibition Space

combining the idea for the urban design with the program of the gallery



first diagram

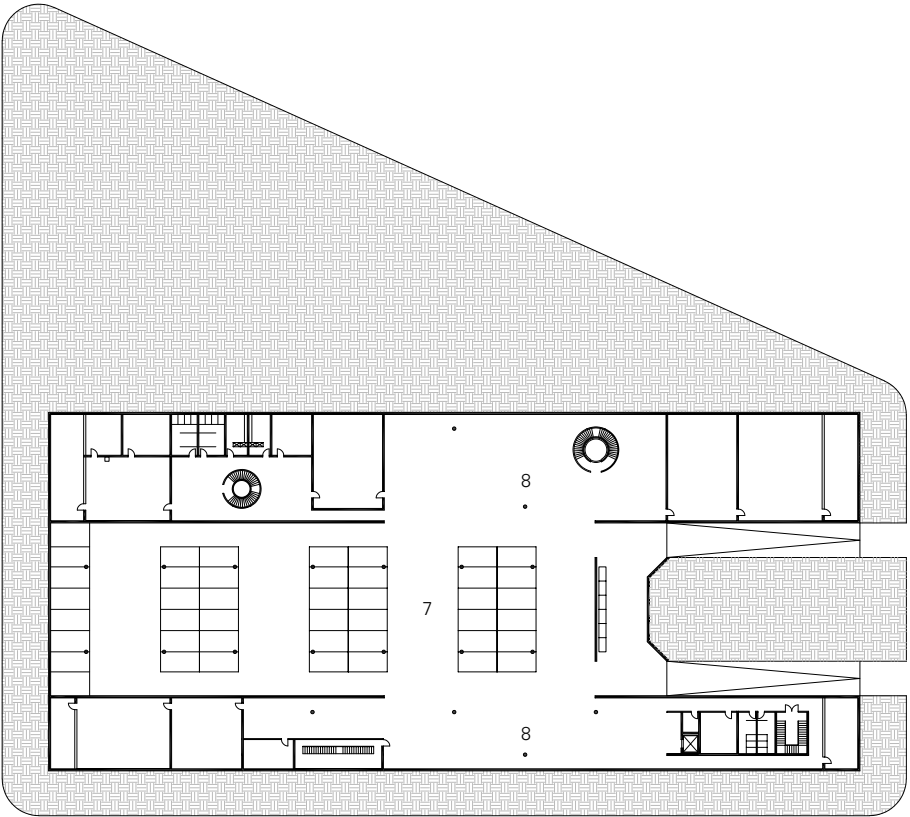


Program For A Gallery

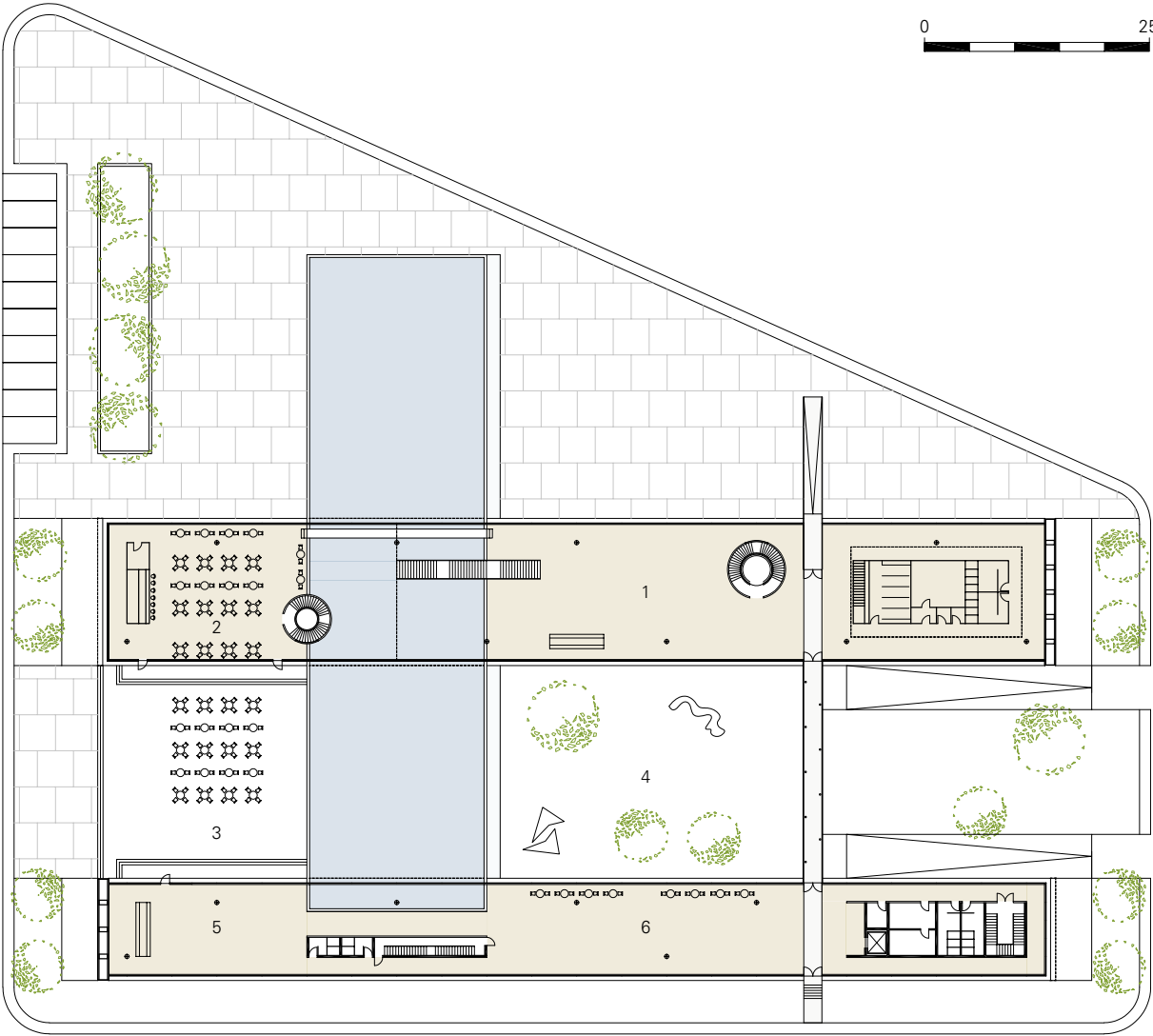
- entrance hall / lobby
- ticket counter and information desk
- wardrobe
- rest rooms
- exhibition rooms
- gallery space for George Washington University
- courtyard
- shops
- classrooms
- café / restaurant
- terrace
- museum shop
- offices
- rest rooms
- technical rooms
- storage

Basement & Ground Floor

- 1 Gallery Lobby
- 2 Restaurant
- 3 Terrace
- 4 Sculpture Garden
- 5 Gallery Shop
- 6 Administration Lobby
- 7 Parking Garage
- 8 Loading Area



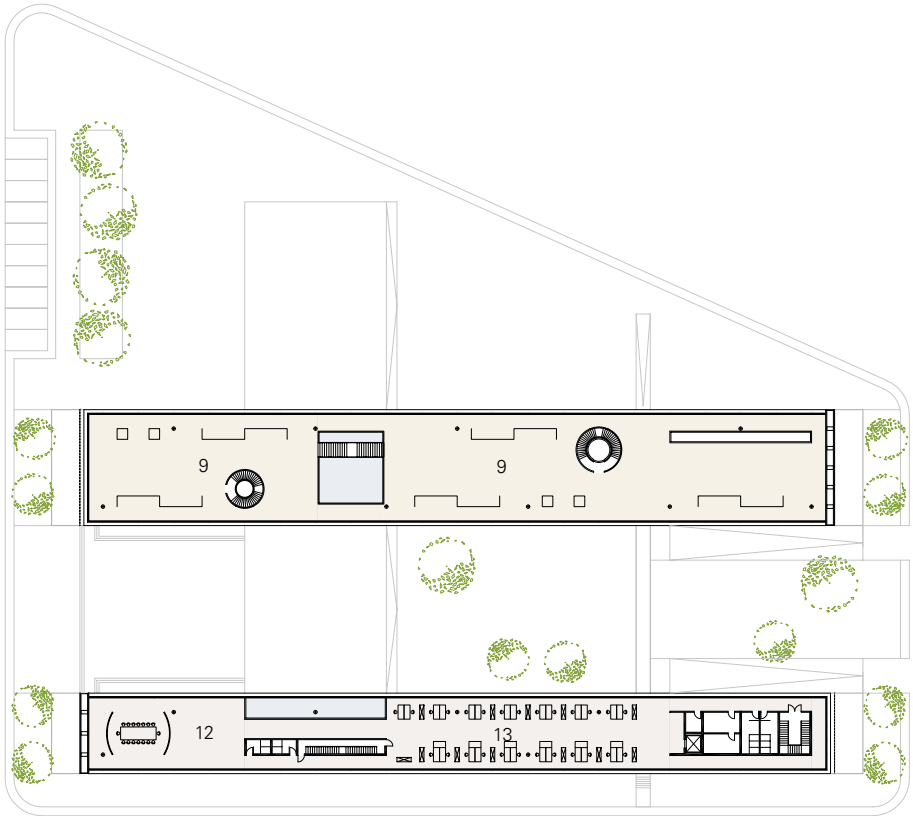
Basement



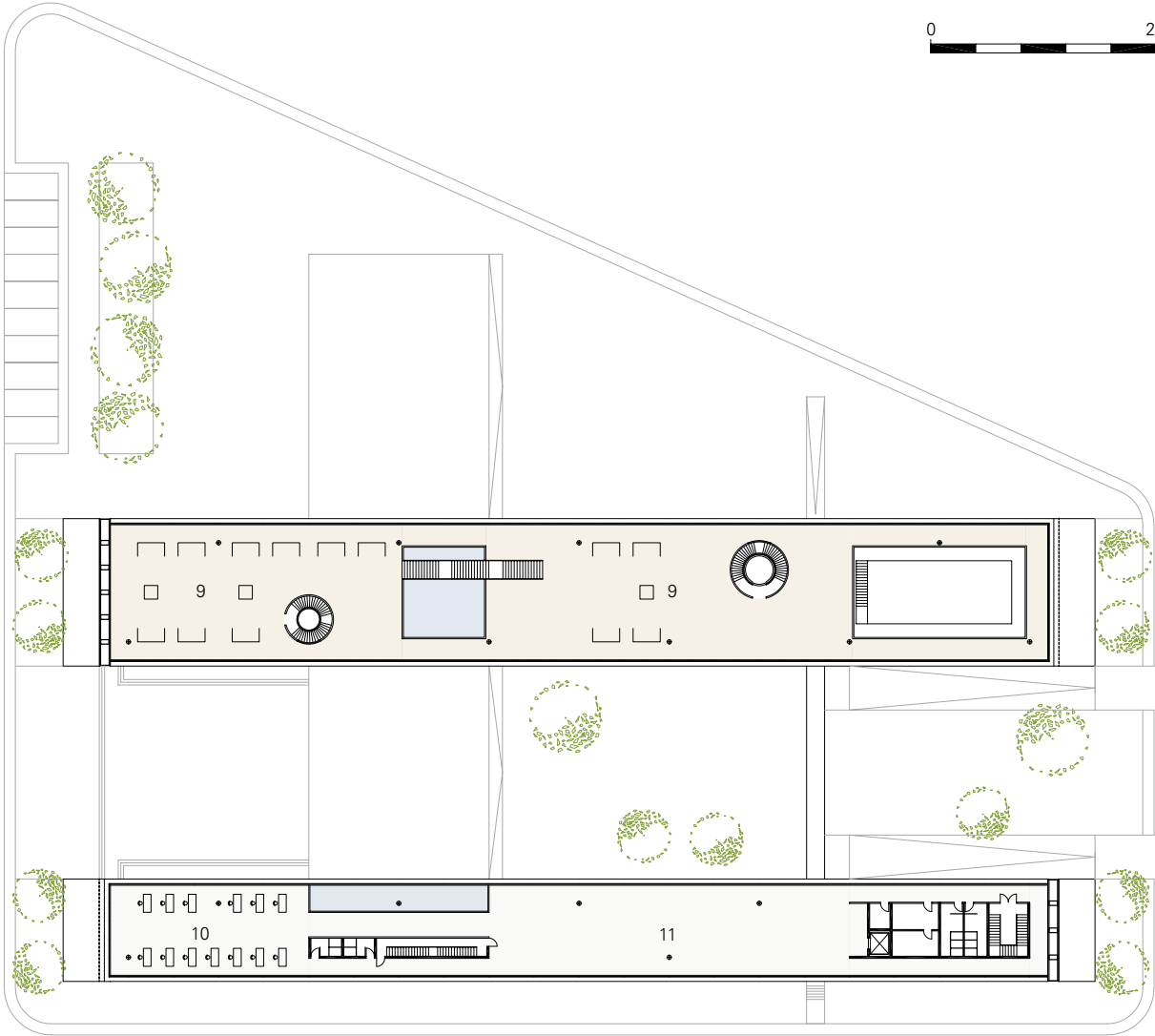
Ground Floor

Second & Third Floor

- 9 Exhibition Space
- 10 Classroom
- 11 Workshop
- 12 Conference Room
- 13 Office Space



Third Floor



Second Floor

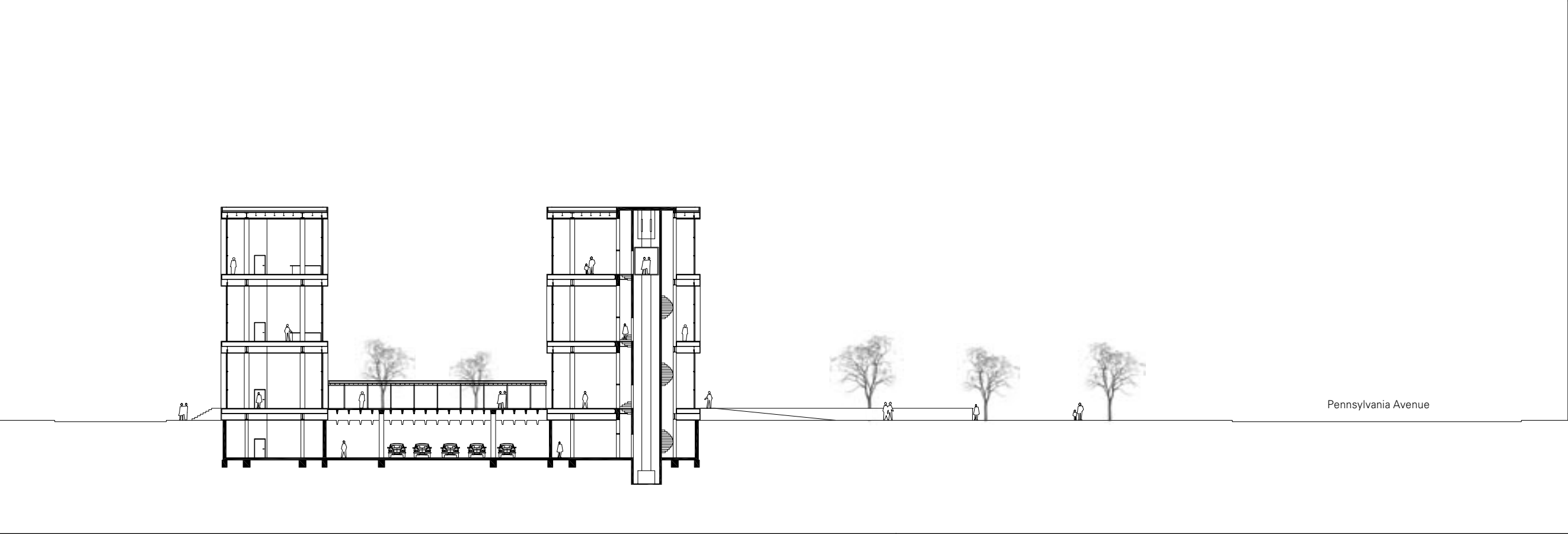


view from first floor office
building into courtyard

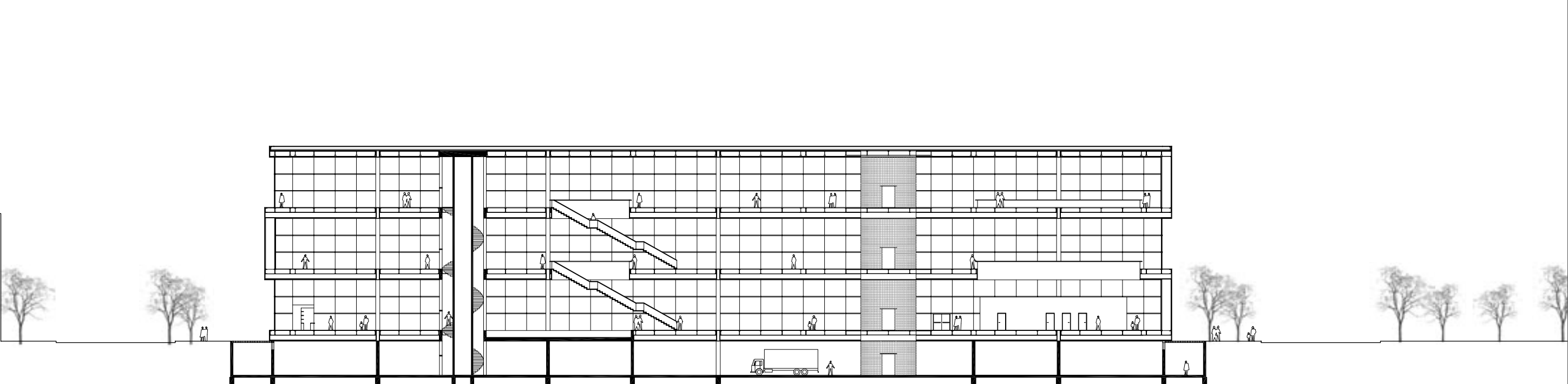
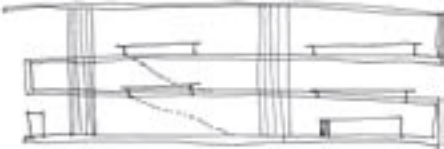


second floor
exhibition space

Cross-Section



Longitudinal Section



Two Planes Defining Space

The gallery space is defined by two planes: floor and ceiling. One floor of the building forms a single room, penetrated by two small cores and the main staircase. The distance between floor and ceiling determines the appearance of the room.

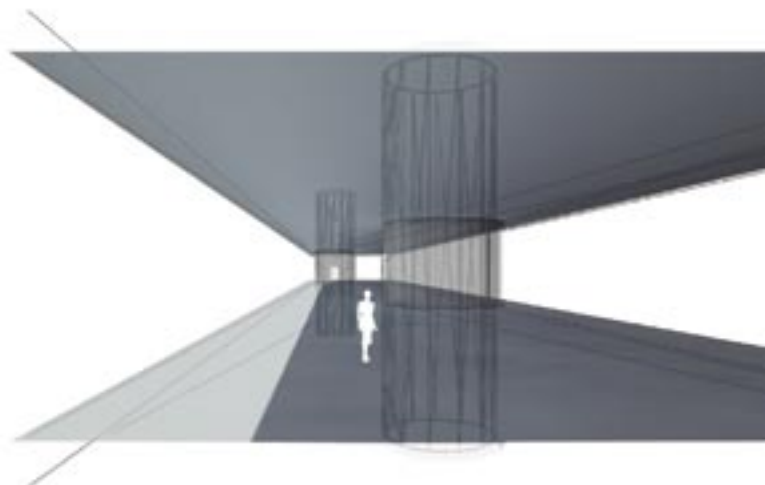
One room is one hundred meters long but only fifteen meters wide. The proportion of this room emphasizes a clear and strong horizontality. Relative to the height of a human, the six meter distance between floor and ceiling should avoid an overt sense of compression.

final height of the exhibition space:
5.90 meters

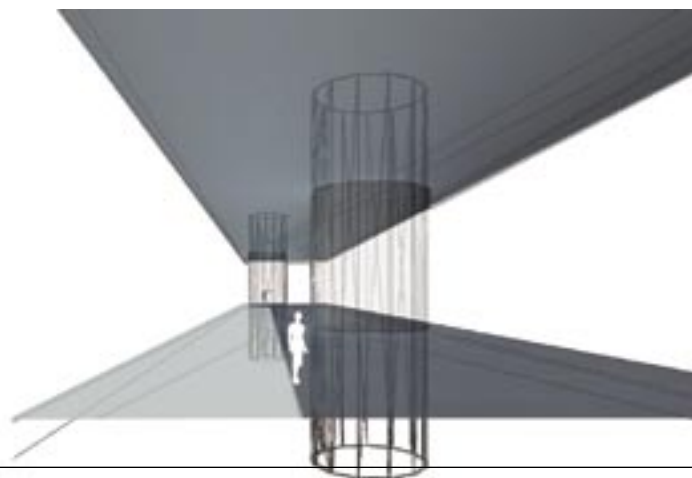
Two Planes Defining Space

A Proportional Study

distance of 4.5 meters



distance of 7.5 meters



distance of 6.0 meters



A height that seemed reasonable at first was four and a half meters. This distance most supported the horizontal appearance of the room. But since the building is one hundred meters long the two planes got to close to maintain the openness of his large space.

At a height over seven and a half meters the room began to lose its definition and to merge with the environment.

Finally with a distance of six meters, although the horizontality was not as strong, the space became more "comfortable" and appropriate for exhibition. Since each floor is enclosed on three sides by glass, the boundary had to be defined by floor and ceiling. And even though the gallery should offer large open spaces for exhibition, the definition of a room was necessary to provide a backdrop for the exhibited pieces.

Finding A Structure



first & second system



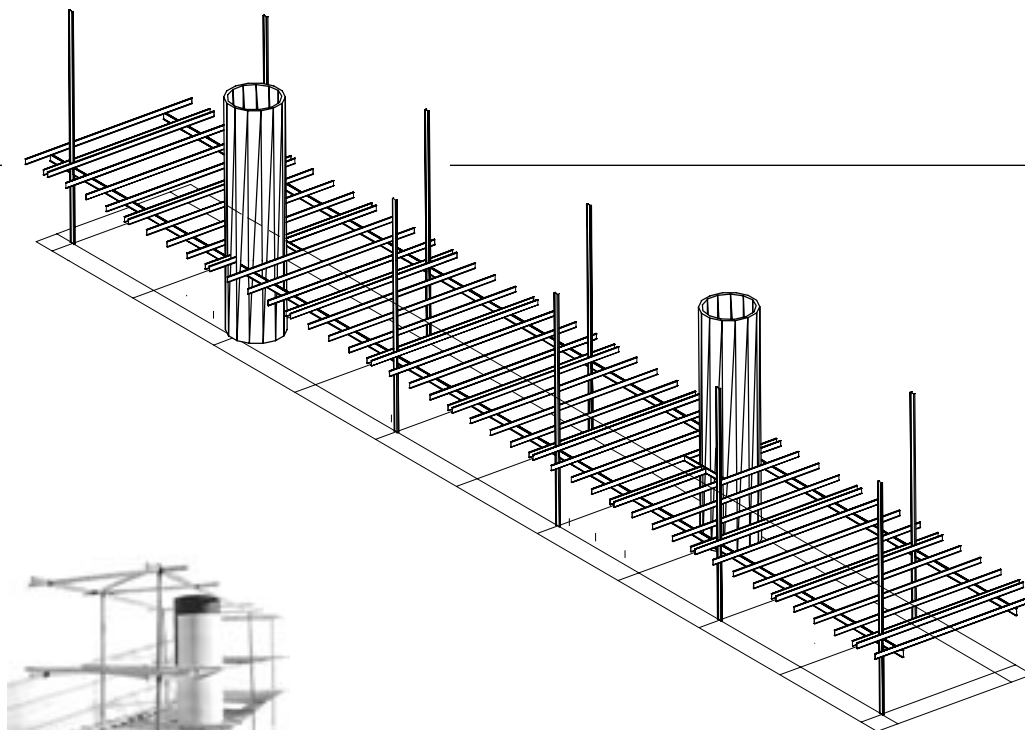
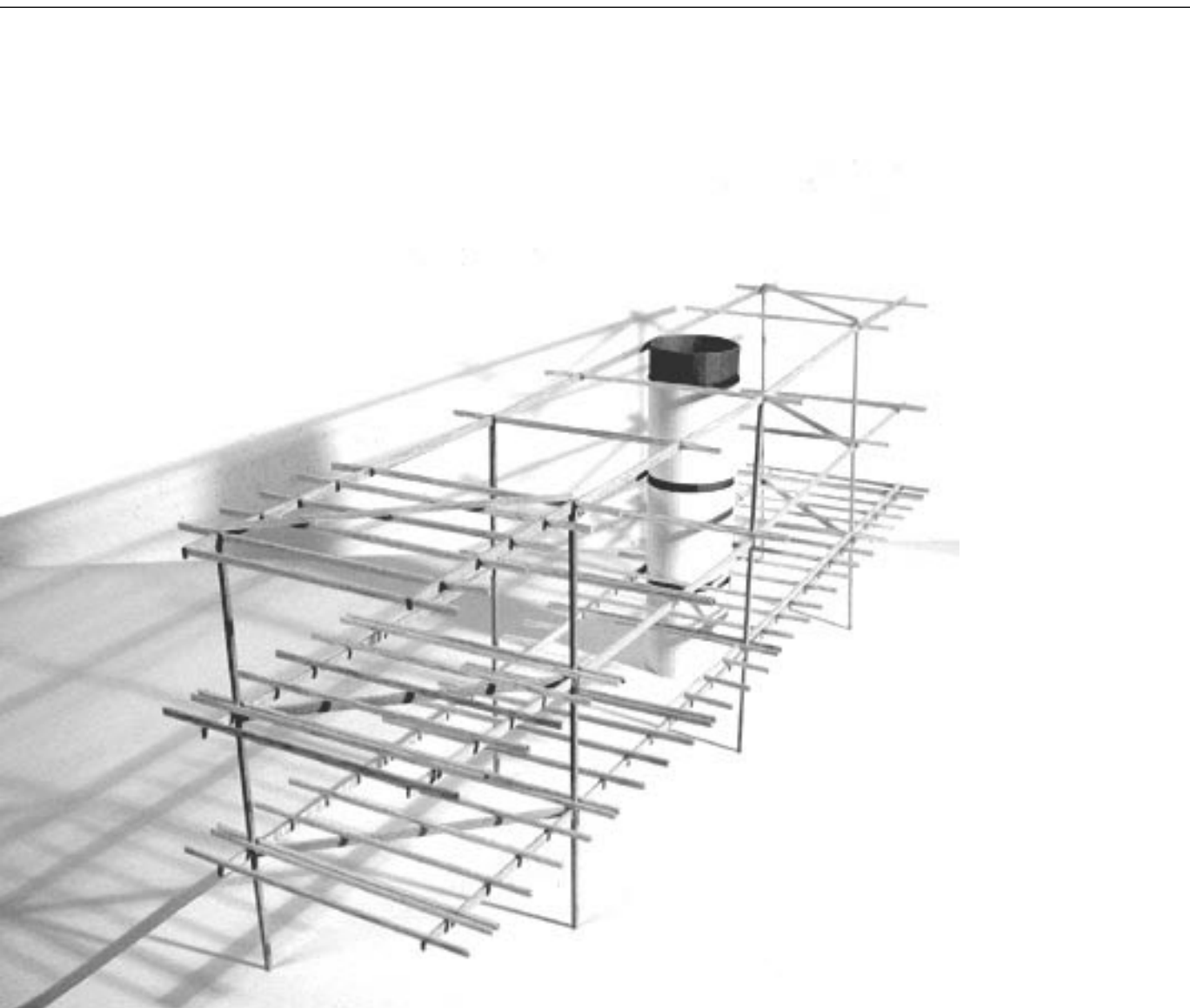
final system for supporting structure

To find a structure that supported the strong appearance of the ribbon, a study of different structural systems was performed.

The first system was a sequence of walls which could also be used as surfaces for exhibition. With this system, the vertical appearance was too strong and the ribbon almost disappeared. The second approach was

two rows of columns with a 10 meter span. The ribbon became more clear but there were still too many vertical lines interrupting the planar nature of the ribbon.

Therefore the columns were reduced to every second one in a diagonal rhythm. In this way, the supporting structure became less visible and the ribbon could stand out as the main element.



Steel Structure

set back from the facade by about 2.5 meters. To keep the columns to a minimum they are enclosed in white plaster tubes.

On both ends of the building, one of the two main beams cantilevers half the span. To keep the height of the beam as low as possible, an additional flunch is welded on top of the secondary beams which are connected to the main beam. Thereby these three elements function as a Veerendaal truss.

Two cores in each building stiffen the structure longitudinally. In the gallery, the cores are circular to stay within the language of the columns. The structural part is made of concrete with the rest made of fire-proof glass blocks. Both cores contain a fire stair case with the one next to the entrance containing an elevator and the inner part of the other core used to run technical supply.

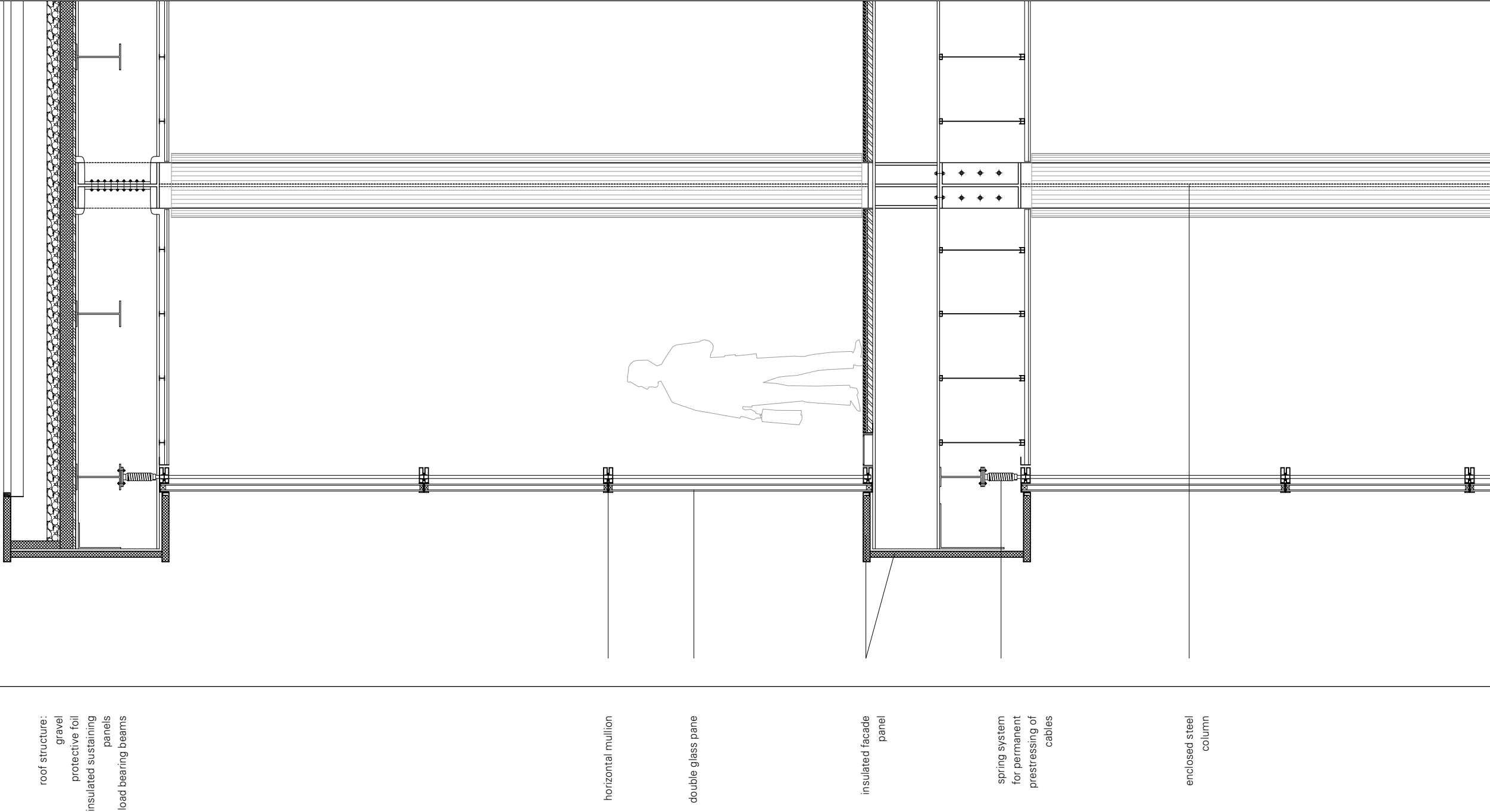
The primary load bearing structure of the two buildings is steel. The columns are continuous over three floors with main beams running in-between with a 20 meter span and the secondary beams sitting on top of the main beams. In each building there are two rows of columns that are offset by half the span.

The intention was to have as few columns as possible to not interrupt the horizontal direction of the building. For the same reason the columns are

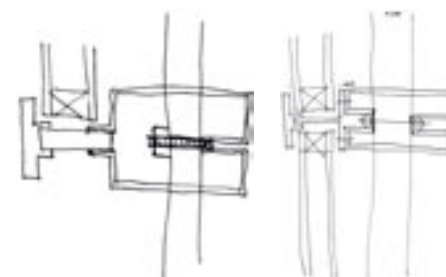
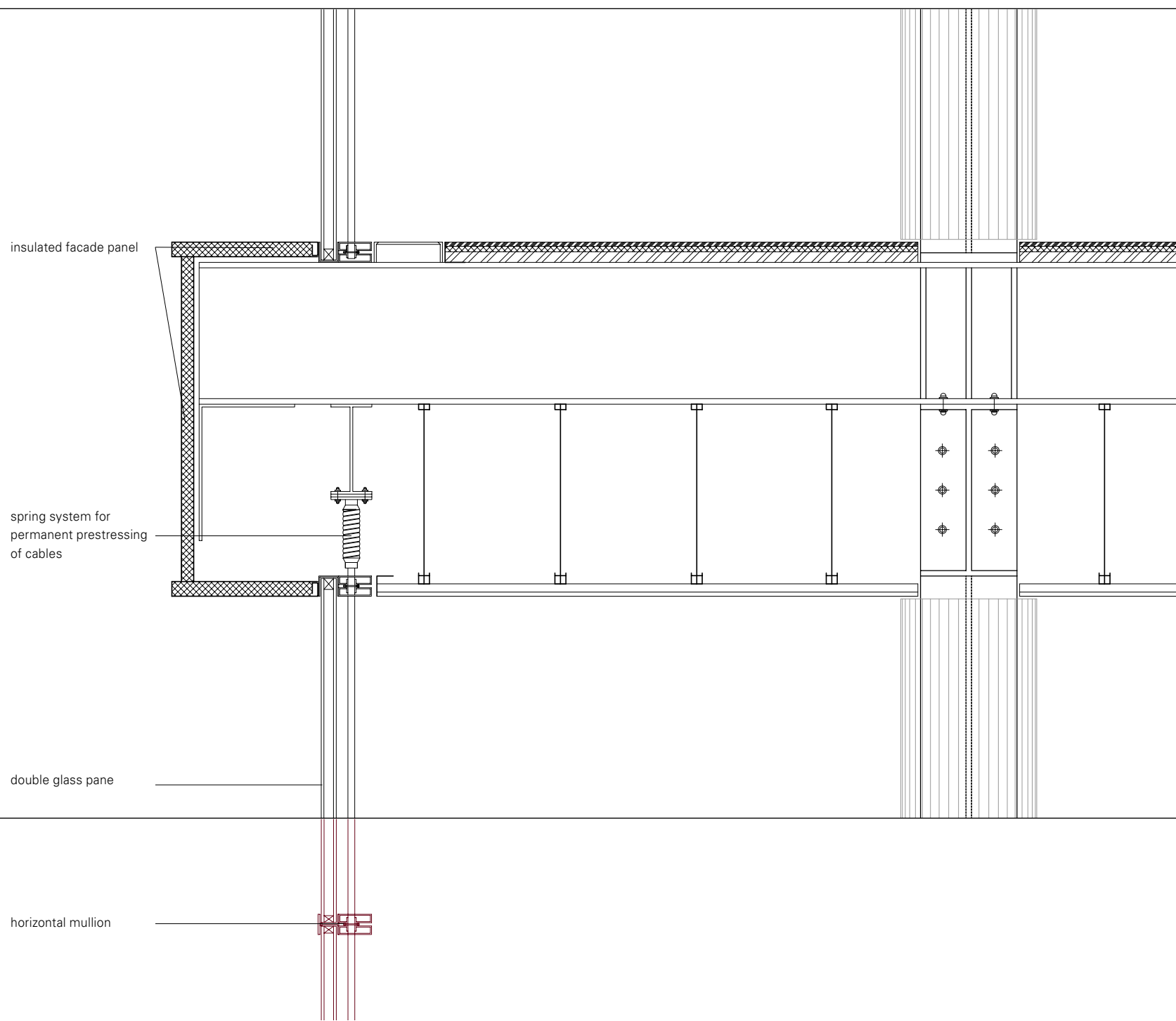
Facade

A space and a surface, the interface between the building and the outside world acquires a certain autonomy, a three-dimensionality that structures the three-dimensional building itself.

Gerhard Mack in Building with images,
Eberswalde Library by Herzog and de Meuron



Facade Elements



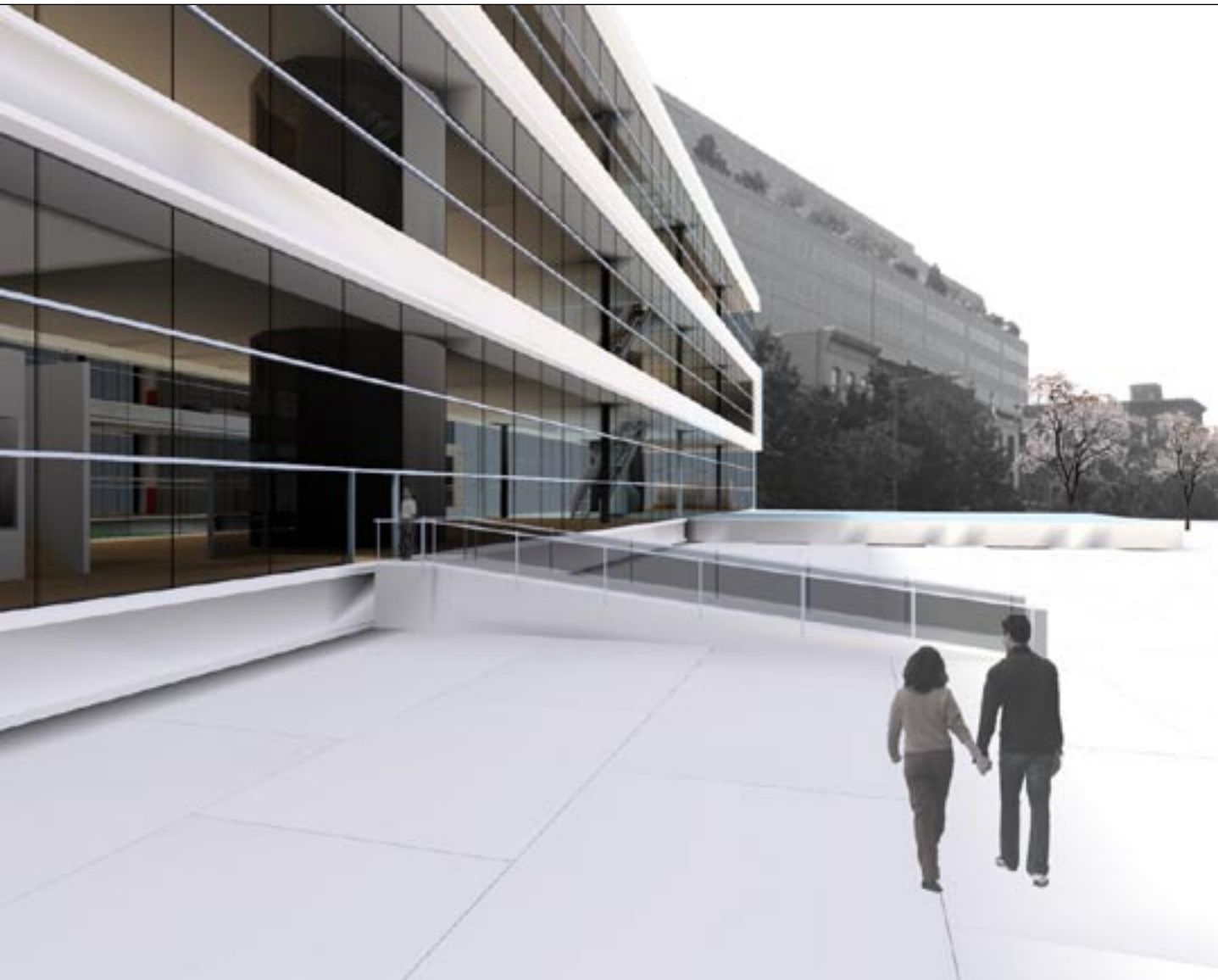
The facade is dominated by the ribbon. The ribbon is made of insulated steel panels that wrap around the slab. To emphasize the outline of the ribbon, those steel panels are “folded” in a way that they form two edges and a surface in between so that three lines of the ribbon are showing.

To further enforce the continuity of the ribbon the glass facade is set back by half a meter. To keep the horizontality of the building the glass is held by horizontal mullions connected to tensile members. The vertical joints of the glass panels are filled with silicon. One glass pane, two meters high and five meters wide, is supported by three tensile members to keep these cables as slim as possible. Since the structure of the slab is framed in steel all technical supply like air condition, electrical wiring and plumbing runs within the cavities of the frame.





visible facade elements:
mullions and tensile members



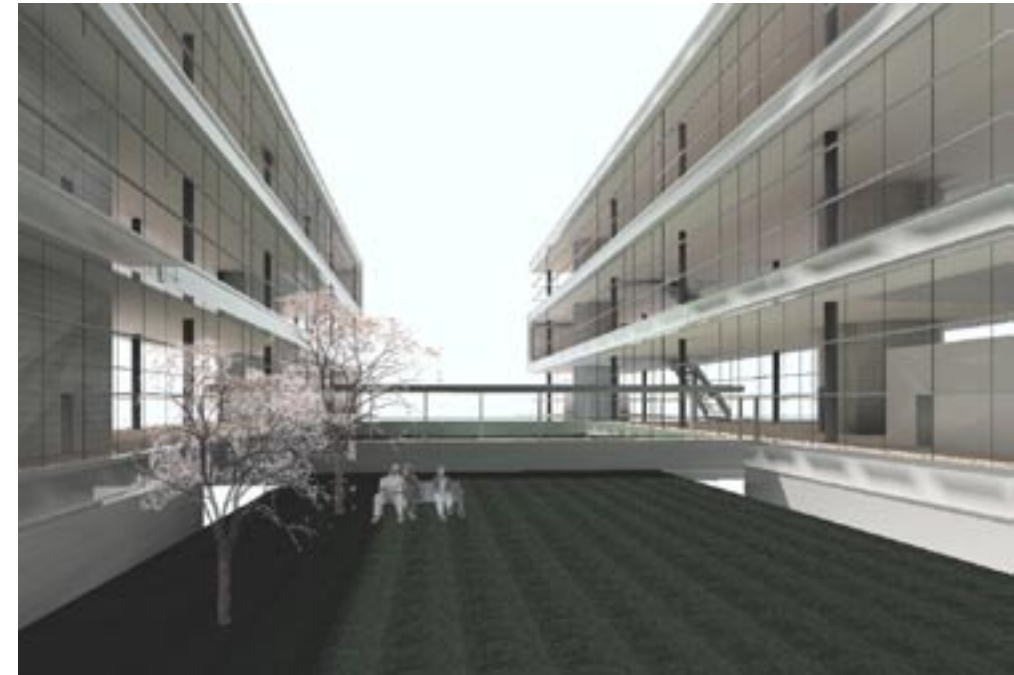
main entrance from plaza on
Pennsylvania Avenue



view into lobby
and courtyard



view from connecting hallway
into sculpture garden



extending the green space
"into" the building

Conclusion

It is clear that architecture can be achieved in many ways. In this case the architectural intention was to create a continuous room, interior and exterior, which provided various opportunities for exhibition as well as guidance through the space.

The idea of a continuous ribbon is one possible approach of directing space and toward an architectural continuity. The ribbon was chosen because of its potential to direct space with a continuous motion and simultaneous guidance through the project. Decisions about structure, enclosure, surface qualities and arrangement were made in support of the clarity of the ribbon. The result was open, flexible space

which enabled the accommodation of various kinds of exhibitions.

The focus on one strong architectural idea can guide the design process in a way that results in a clearly defined artifact with an unassailable position in its architectural context. It is very clear however, that the obligation of an architect has to go beyond the formation of an interesting object. Aside from the definition of formal characteristics, Architecture demands an excellent response to a well defined program as well as accommodation of human spatial desires. Even though a building might change its use over the years, its valued architectural qualities should ensure its continuity over time.



view from second floor office
building into courtyard

Acknowledgements

*I want to dedicate this book to my parents who
always supported me on my way in life and who
taught me to believe in myself.*

I want to thank Professor Heinrich Schnoedt, Professor William Galloway and Professor Michael O'Brien to challenge and influence my way of thinking in the study of architecture and design.

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And last but not least: I want to thank all my friends in Blacksburg who extended my horizon by sharing all their different cultures with me and with whom I shared times of hard work and a lot of fun.





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Richard Serra, sculpture at the Pulitzer Foundation for the Arts

www.google.com/ images :
GJON MILI, stroboscopic image of tumbling sequence

Anne Arden Mcdonald, buoys in water

Gary S & Vivian Chapman, businessman facing arrow painted on road

MVRDV, design for department store

quotations

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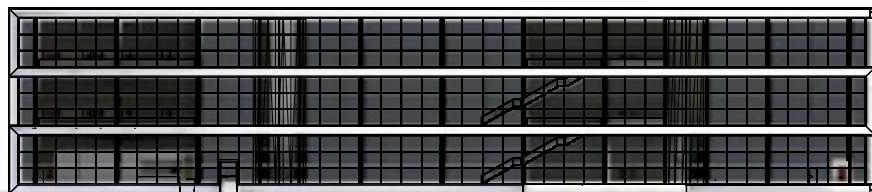
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