

## Chapter 8 Design development

### Introduction

The object of the design proposal is to allow city inhabitants and visitors to experience both the urban and historical value of the surrounding context. As such, the form of the proposed building is strongly determined by its surrounding urban context. In an attempt to create a greater appreciation for the local heritage resources of Hatfield, the proposed project aims to create the opportunity for a richer experience of the historic built environment.

This chapter explores the design process and the various design generators. Much of these design generators are adopted from Francis D.K. Ching's book entitled *Architecture: form, space, and order*.

### Design generators

#### Generator 1: Urban context

- Existing Rissik Station complex

The existing Rissik Station complex served as a design generator through its inspiration of the existing two elevator towers. These two towers function as landmark elements that give identity to the station, as these are the elements that make the station unique. The loss of the southern elevator shaft due to the Gautrain works has sparked the concept of working with the memory of the station building through the use of vertical elements.

The proposed new station concourse is similarly orientated as is suggested by the existing station building, and thus extends the memory of existing movement patterns. In addition, the proposed new station concourse partially encloses the public space, which forms the connection between old and new, and between the public space of the plaza and the railway platforms.



8.01 View from the south onto Rissik Station with its two elevator shafts and foot bridges

8.02 Western façade of Rissik Station

• Other existing buildings

Two other existing buildings in particular influenced the design, namely Mozambique Café and The Diplomat building west of Rissik Station. Inspiration was drawn from Mozambique Café in the way it strives to respond to the streetscape with its active building front and overhang.

The Diplomat office building influenced the design in the sense that it was an existing structure onto which the proposed building will attach itself. This allows for a new entrance that will serve both the proposed and this existing building. In addition to this, The Diplomat also determines the extent of development for the proposed building. Along with the existing Rissik Station building, The Diplomat determines the position of the circulation spine, the point of vertical circulation, as well as the extent of the two internal courtyards.

It thus becomes clear that the initial shape of the proposed building was, therefore, determined by a process of subtractive form. This means that portions of volumes were removed from the initial mass without deteriorating the street edge, corners and overall profile thereof. With these spatial volumes subtracted, it allowed the creation of recessed entrances, positive courtyard spaces, and window openings shaded by the horizontal and vertical surfaces of the recess.



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- 8.03 Mozambique Café
- 8.04 The Diplomat office building
- 8.05 Linear form
- 8.06 Base plane
- 8.07 Overhead plane

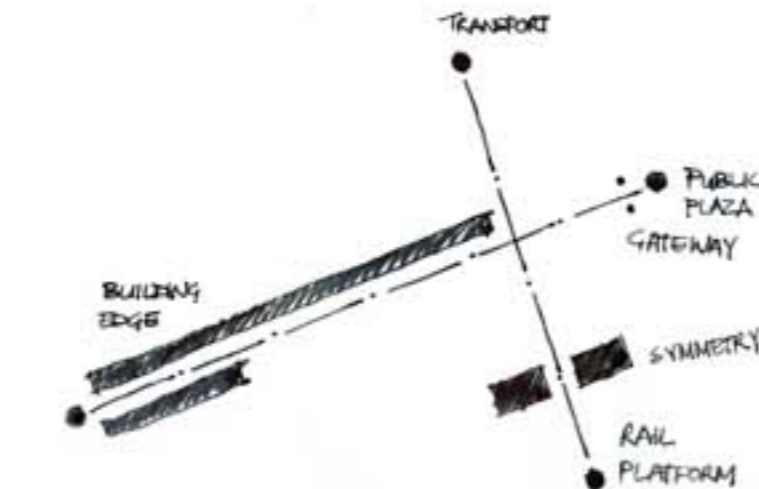
**Generator 2: Form & Space**

• Linear form

The proposed building has a linear form that is derived from an arrangement of a series of forms along a path. While the series of forms are repetitive in most instances, others are dissimilar in nature and organised by a separate and distinct element which creates a point of focus. The proposed new ticket sales office is a point in case. At times the linear form front on or define an edge of an exterior space (such as the main circulation bridge), while at other times it defines a plane of entry into the spaces behind it (as is the case with the proposed new station concourse). Another use of the linear form can be observed with the landmark element, where the linear form is oriented vertically as a tower element to establish a point in space, and thus acts as a landmark for Rissik Station.

• Grid form

The geometry of the square is used to create a 6 meter by 6 meter grid form on plan. This allows an equality of dimensions that is essentially non-hierarchical and non-directional. Vertically the grid form is used to break the scale of the façade surface down to the human scale while at the same time giving the façades and even texture. In so doing, it wraps the building surfaces and unifies them with its repetitive geometry. The result is a spatial network of reference points and lines. Any number of forms and spaces can be organised within this modular framework.



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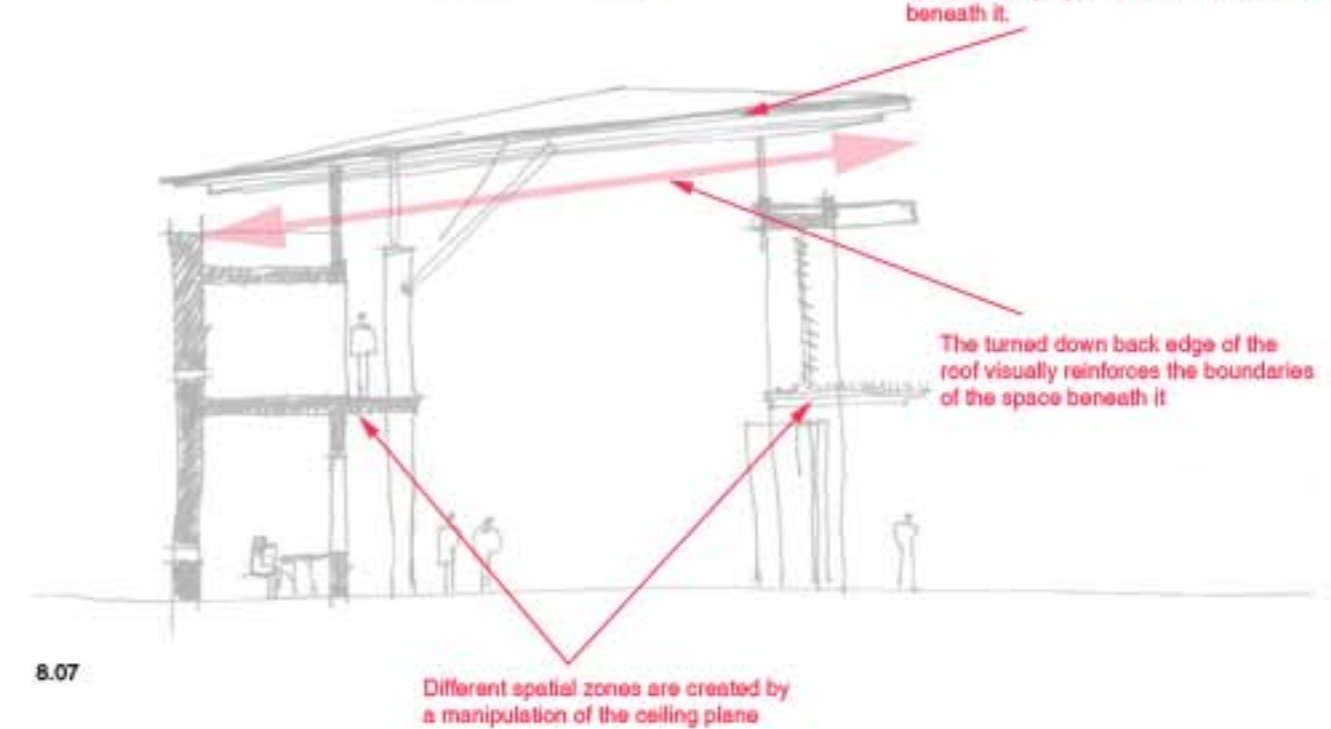
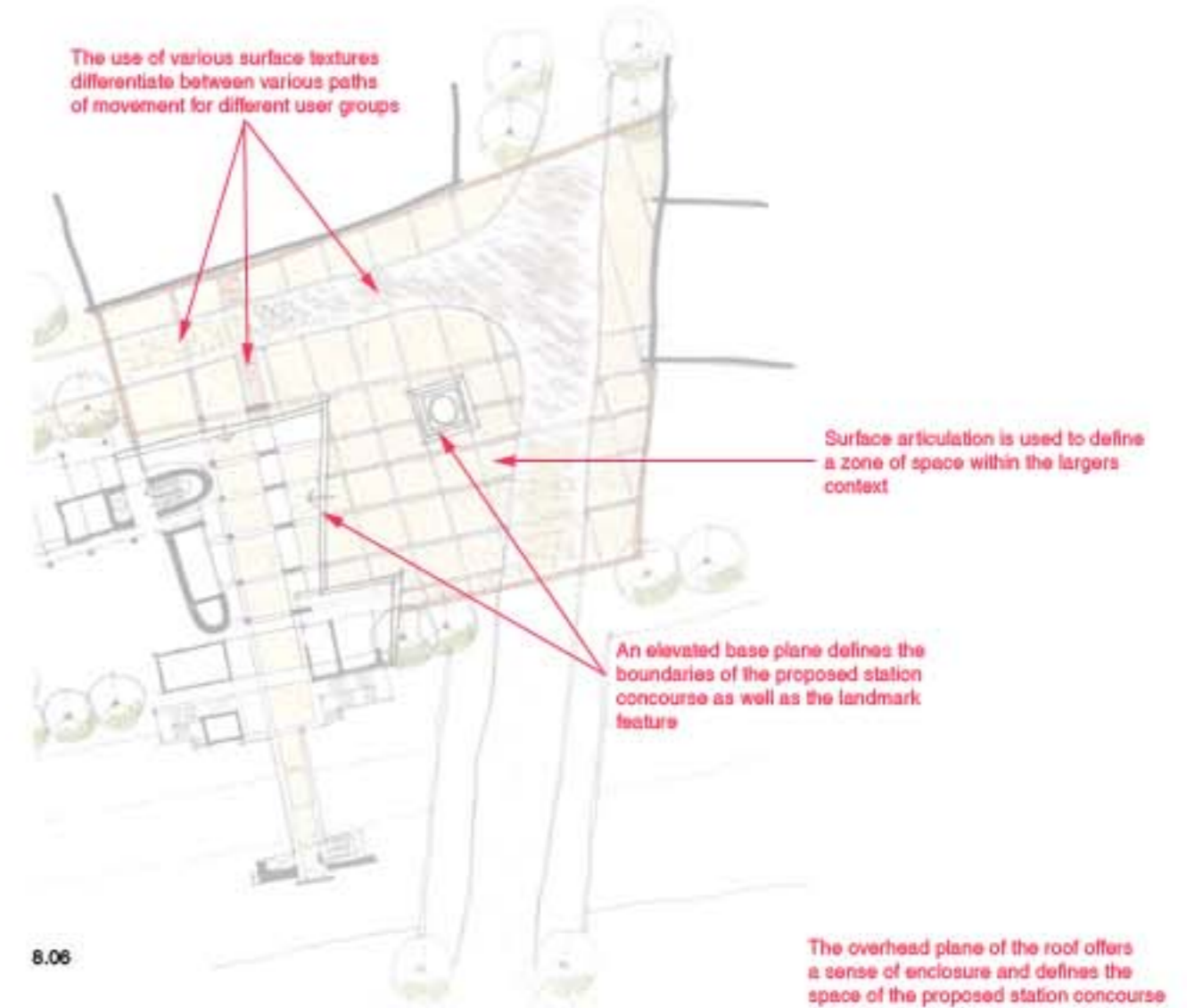
• Base plane

The surface articulation of the ground plane of the proposed plaza is used to define a zone of space within the larger context growing from Festival Street, to Hatfield, and even Pretoria as city. Texture is used to differentiate between a path of movement and places of rest, and establish a field from which the form of the building rises out of the ground.

An elevated portion of the base plane along the proposed new station concourse creates a specific domain within the larger spatial context of the plaza. This helps to define the boundaries of the station concourse and interrupts the flow of space across its surface. The fact that the surface characteristics of the plaza base plane continues up and across the elevated plane, helps to establish that the field of the elevated plane forms part of its surrounding space.

• Overhead plane

The boundaries of the proposed new station concourse is spatially defined both by an elevated base plane and the roof plane with its one edge turned downward. Not only does it shelter the interior spaces of the proposed new station concourse from the natural elements of rain and sun, but it is proportioned to its structural system and the manner in which it transfers its loads across the space to its support columns. The roof plane is the major space-defining element of the proposed new station concourse. It visually organises a series of forms and spaces beneath its sheltering canopy.



• Vertical elements defining space

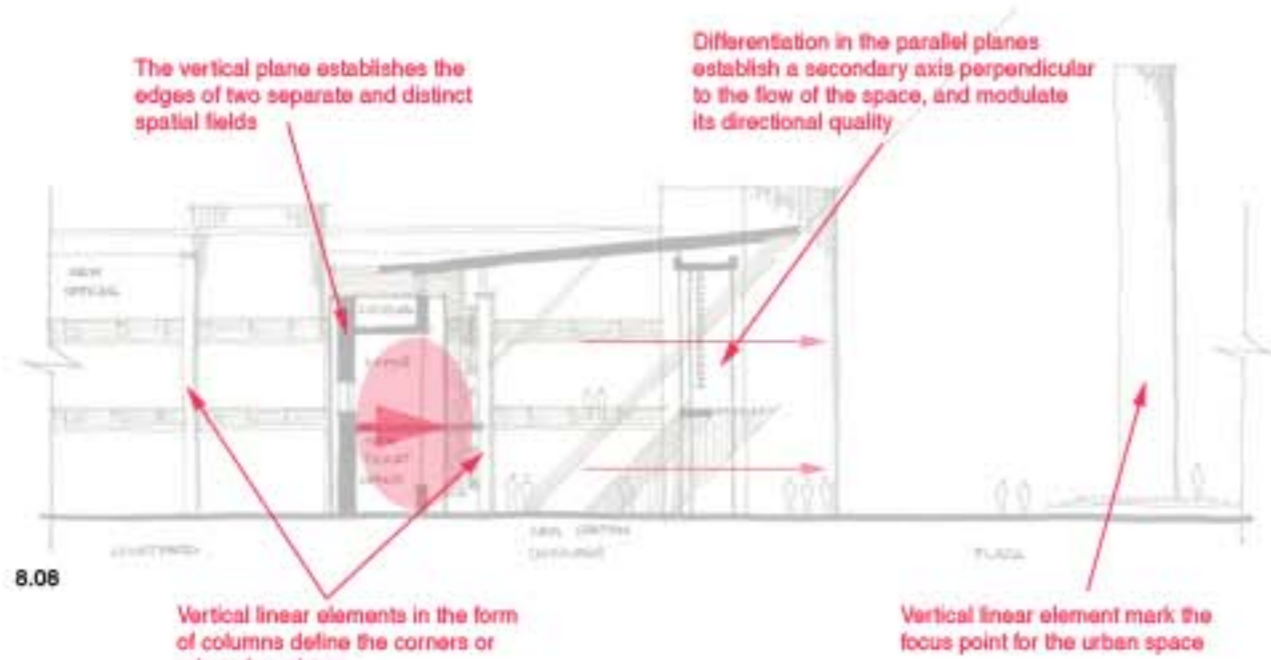
Vertical elements were used in two distinctive ways, namely to serve as structural supports for floor and roof planes, and to provide shelter and protection from the climatic elements.

> Vertical linear elements  
Vertical linear elements define the perpendicular edges of a volume of space.

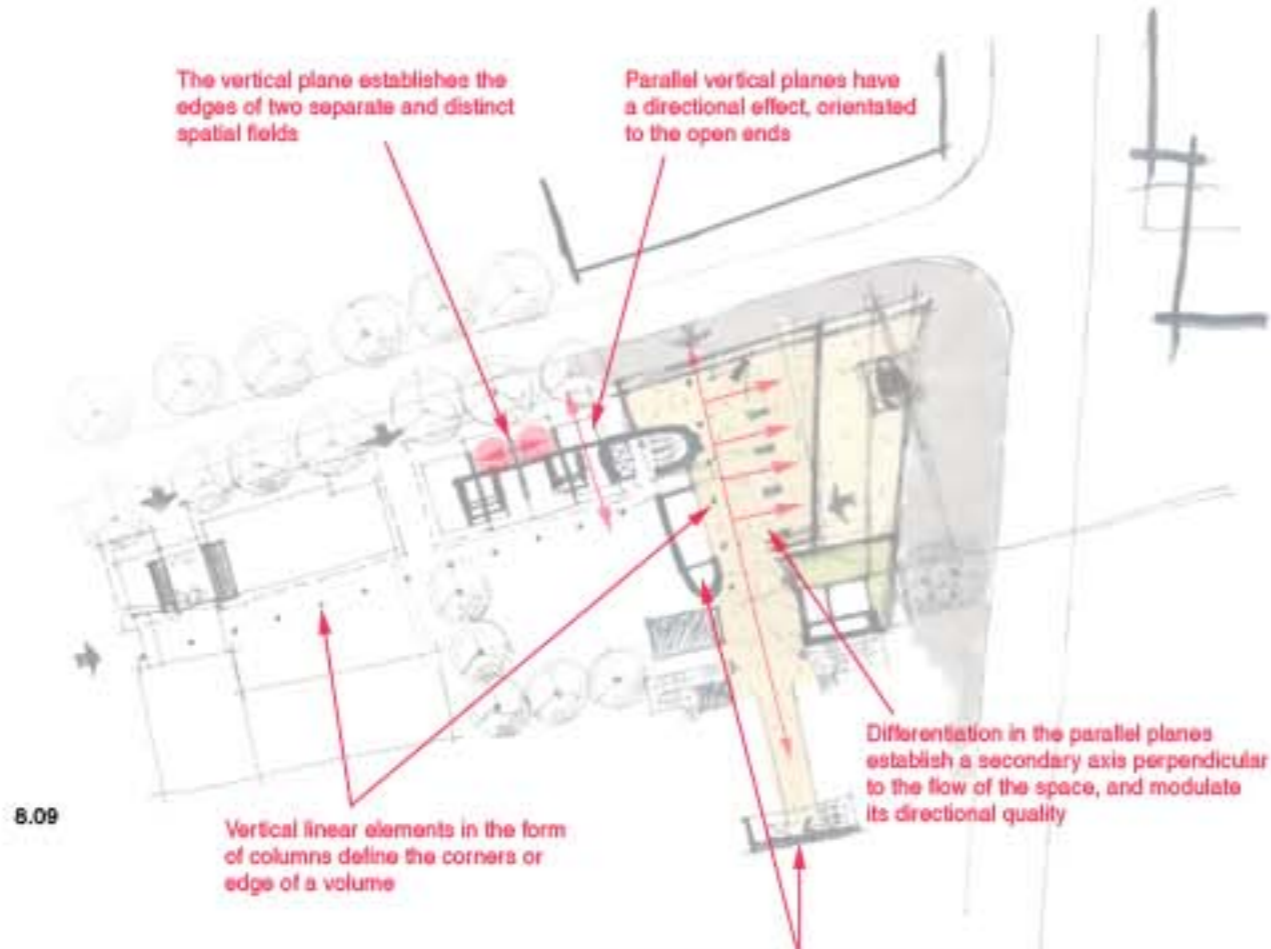
> Single vertical plane  
A single vertical plane articulates the space on which it fronts.

> Parallel planes  
Two parallel vertical planes define a volume of space between them that is oriented axially toward both open ends of the configuration.

> U-shaped plan  
A U-shaped configuration of vertical planes defines a volume of space that is orientated primarily toward the open end of the configuration.

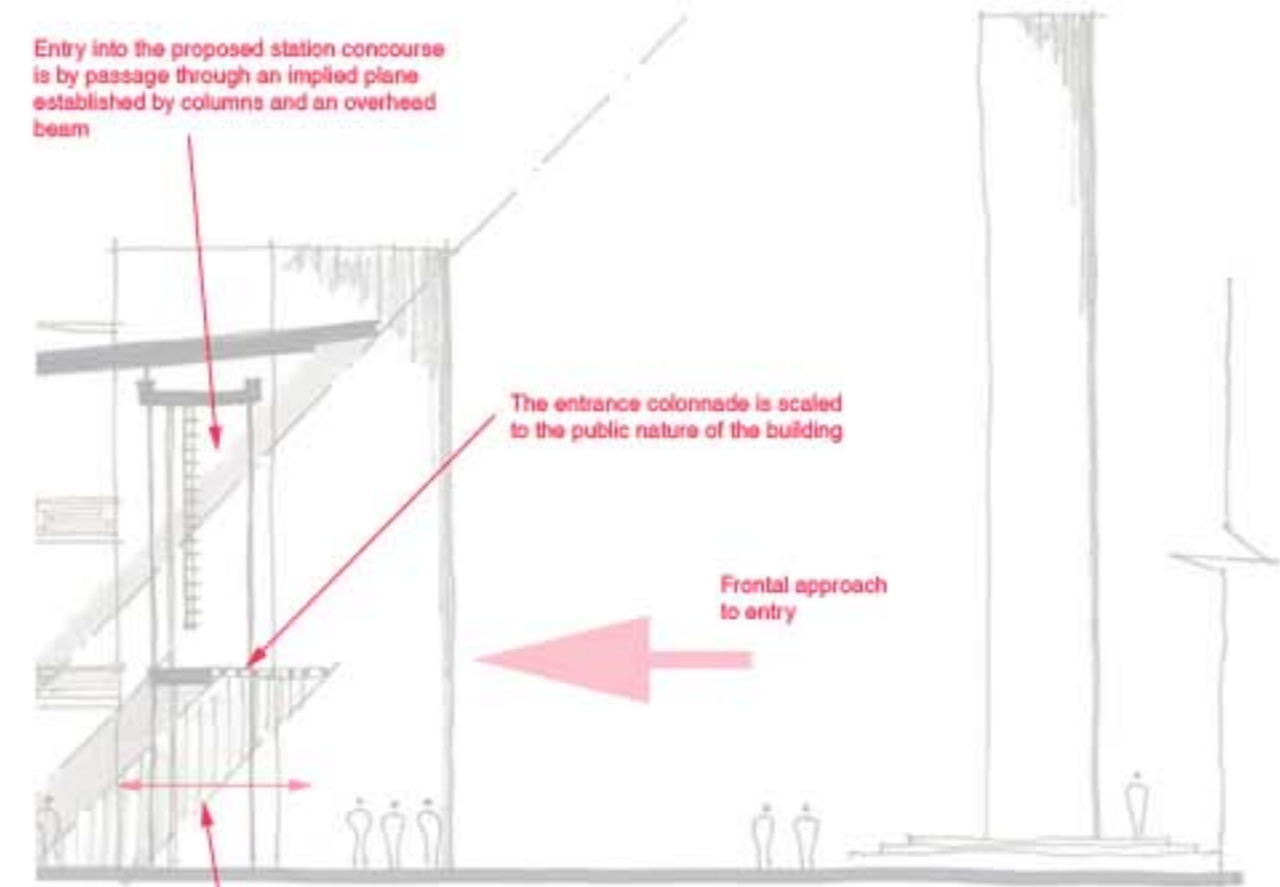


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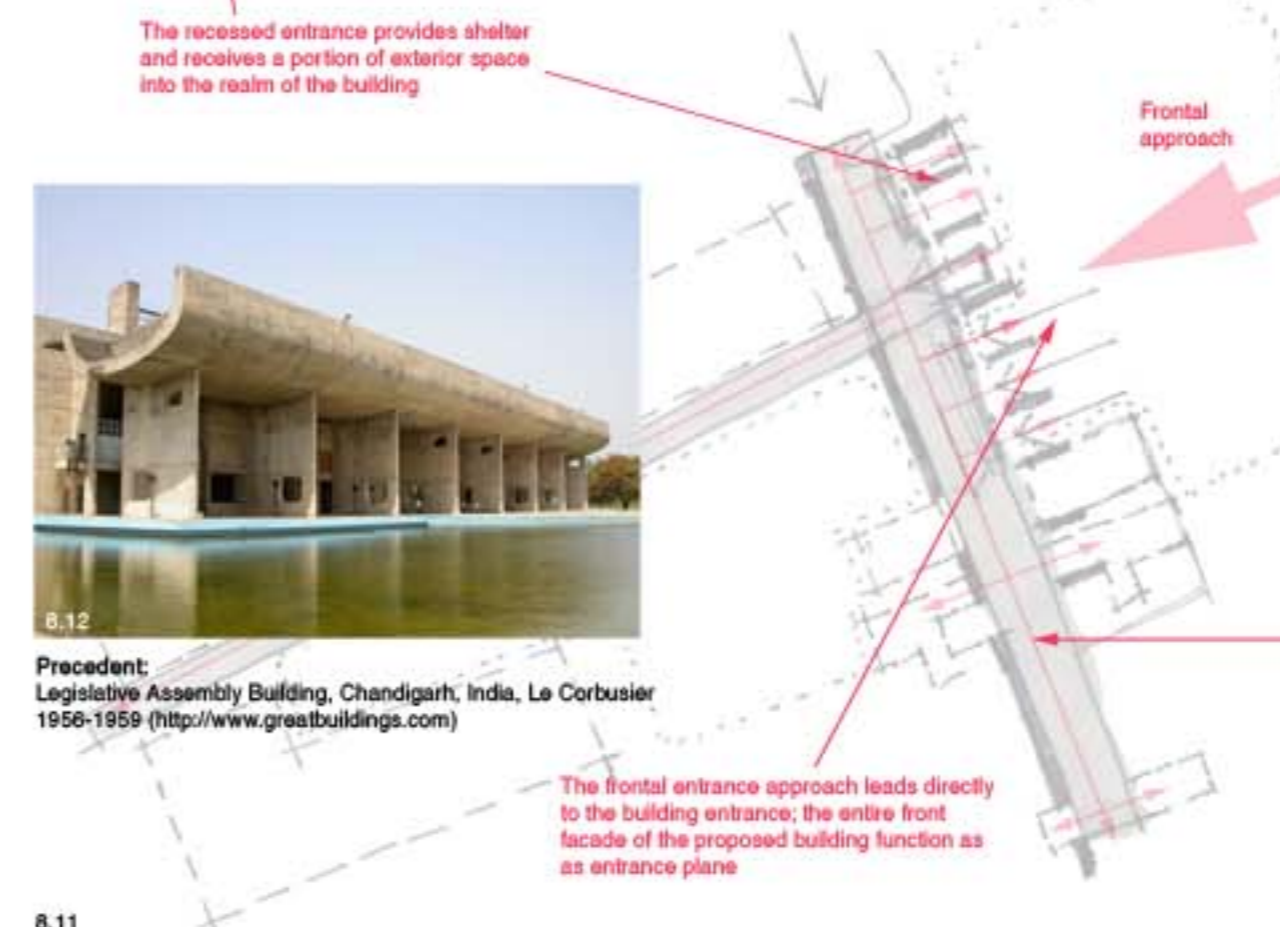


8.09

8.08 Sectional exploration of vertical elements defining space  
8.09 Plan view of vertical elements defining space  
8.10 Entrance and approach exploration on section  
8.11 Entrance and approach exploration on plan  
8.12 Legislative Assembly Building, Chandigarh, India, Le Corbusier, 1956-1959 (<http://www.greatbuildings.com>)



8.10



8.11



8.12  
Precedent:  
Legislative Assembly Building, Chandigarh, India, Le Corbusier 1956-1959 (<http://www.greatbuildings.com>)

• Circulation

This section deals with the proposed building's circulation system as elements that affect the perception of the forms and spaces of the building.

> Approach  
The frontal approach to the proposed new station concourse results from a straight, axial path that leads directly to the entrance of the building. The visual goal that terminates the approach is clear as the entire front of eastern façade function as entrance within the plane.

> Entrance  
Entry into the building is defined by a passage through an implied plane established by an entrance colonnade which is scaled to the public nature of the proposed station building. In order to achieve greater visual and spatial continuity between the plaza and new station concourse, a change in level helps to establish a threshold and mark the passage from one place to another.

The recessed entrances of the retail and office complex provide shelter and receive a portion of exterior space into the realm of the building.

> Configuration of the path  
All paths in the proposed building have a linear configuration. Not only does this aid in enhancing legibility, but it also serve as the primary organising element for a series of spaces.

A linear path configuration serve as primary organising element for a series of spaces that clip onto it

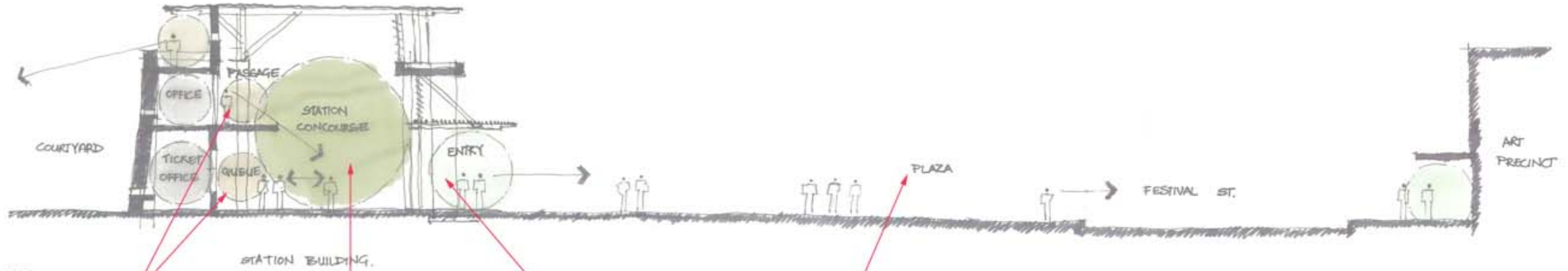
• Path-space relationships

In the proposed project, the paths are related to the spaces they link in the following ways

> Pass by spaces  
The integrity of each space is maintained; The configuration of the path is flexible; and Mediating spaces are used to link the path with the spaces.

> Pass through spaces  
The path passes through a space axially, or along its edge.

> Terminate in a space  
The location of the space establishes the path.



8.13

Space open on the one side forms a balcony or gallery

With and height of the proposed station concourse is proportionate to the type and amount of movement it must handle

Space open on both sides forms the entry colonnade that becomes a physical extension of the exterior and interior spaces

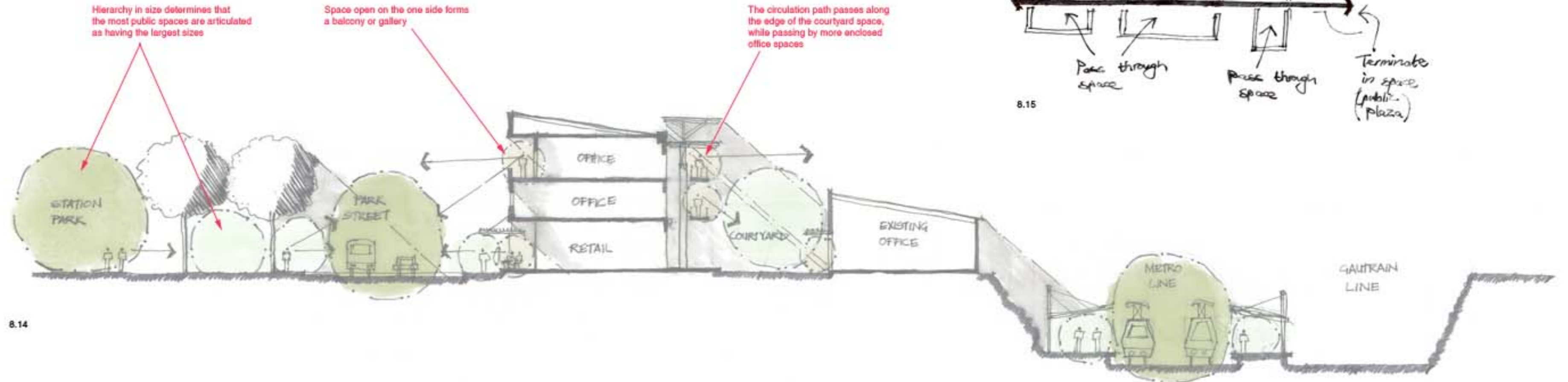
Hierarchy in size determines that the most public spaces are articulated as having the largest sizes

• Form of the circulation space

The form of the circulation differentiate between:

> Open on one side  
Forming a balcony or gallery that provides visual and spatial continuity with the spaces it links.

> Open on both sides  
Forming a colonnaded passageway that becomes a physical extension of the space it passes through.

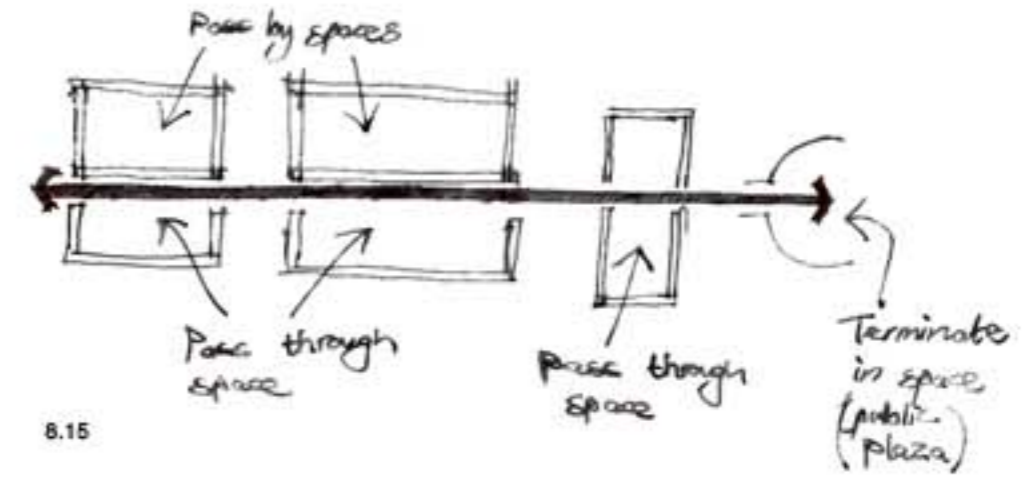


8.14

Hierarchy in size determines that the most public spaces are articulated as having the largest sizes

Space open on the one side forms a balcony or gallery

The circulation path passes along the edge of the courtyard space, while passing by more enclosed office spaces



8.15

• Hierarchy

Hierarchy in the proposed building is achieved through size, shape and placement.

- 8.13 Section through station exploring path-space relations
- 8.14 Section through proposed office and retail complex exploring path-space relations
- 8.15 Diagrammatic path-space relationship

## Concept model one

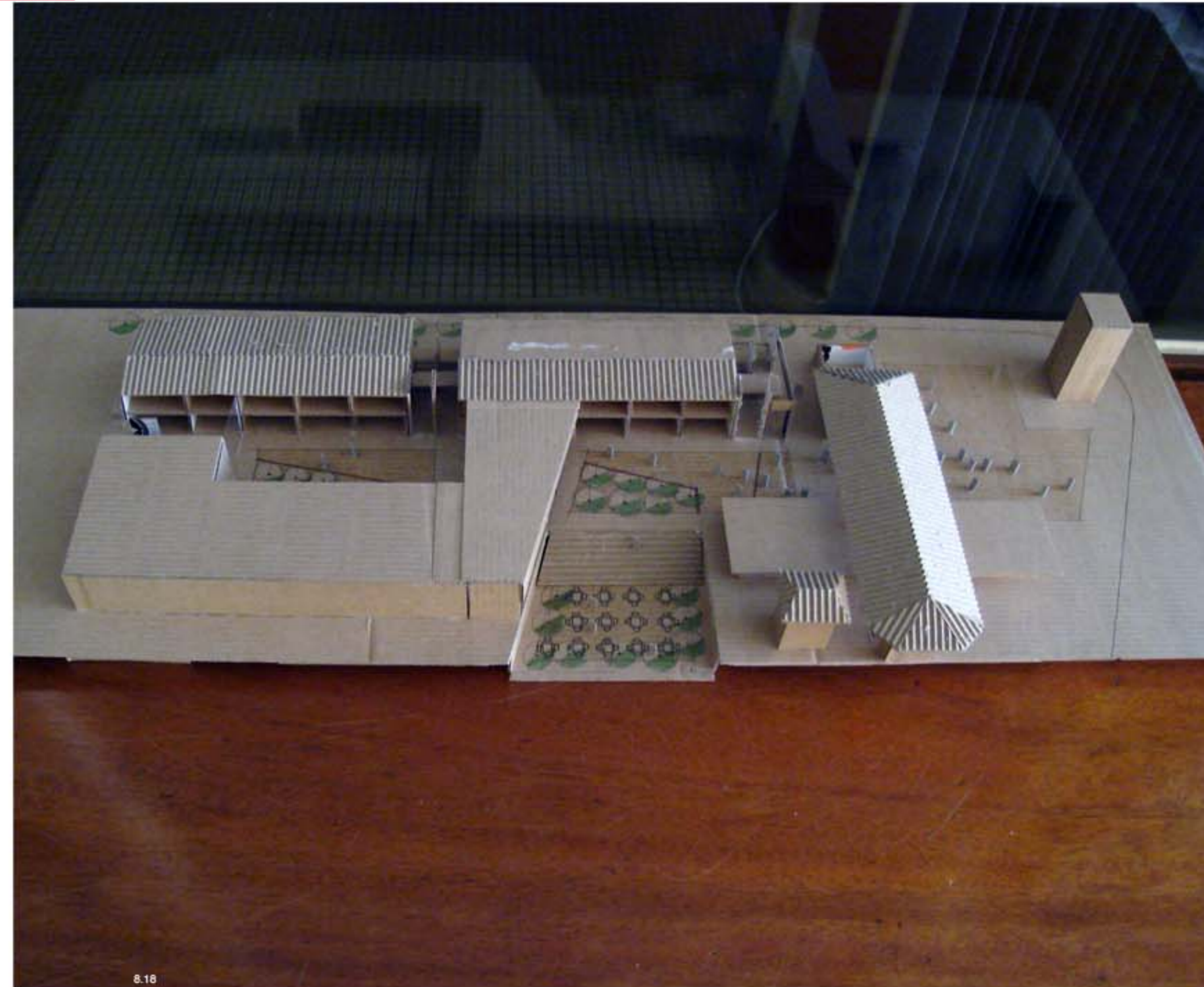
This first model was built to a scale of 1:200. Its main objective was to explore an approach that responds to the surrounding buildings, where the scale matches that of The Diplomat office building, while raising that of the existing Rissik Station complex. The approach also tested an approach that remains very sensitive to the historic Rissik Station building complex, retaining most, if not all, of the existing structures. In addition, it responds to the proposed group framework that proposes a public plaza in front of the station building. The proposed building faces both Festival and Station Place Streets in an attempt to define the urban edge. Similarly, the building steps back from The Diplomat office building, not only to create an internal courtyard, but also to allow sunlight to enter this space as well as the existing structure.

The proposed building attempt to maximise northern light in order to benefit from seasonal changes.

Circulation through the station complex continues to function in its existing and historical two-tier approach. A new vertical circulation core is created between the station and the retail and office complex, with circulation in this latter complex being completely internal. This divided the building into north and south facing units. In keeping with the group framework, the objective was to accommodate pedestrian movement as freely as possible.

### Criticism:

- The conceptual approach is vague;
- Response to the surrounding context is not strong enough;
- Circulation paths through the building is not celebrated
- The approach of "maintaining all" to the existing Rissik Station complex results in a more problems than solutions;
- The issue of scale is not effectively addressed;
- The new and old structures are not integrated enough to form an architectural dialogue with one another; and
- On the positive side, the spatial intention is strong and clear.



8.16 View from the south to the internal courtyard and depressed base plate  
8.17 The main approach from the east  
8.18 View from the top onto the proposed facilities



## Concept model two

As with the first concept model, this second model too was built to a scale of 1:200. The main objective of this model was to investigate an approach where the new and old structures are more integrated with each other. It also attempted to address many of the criticism laid against the first concept model.

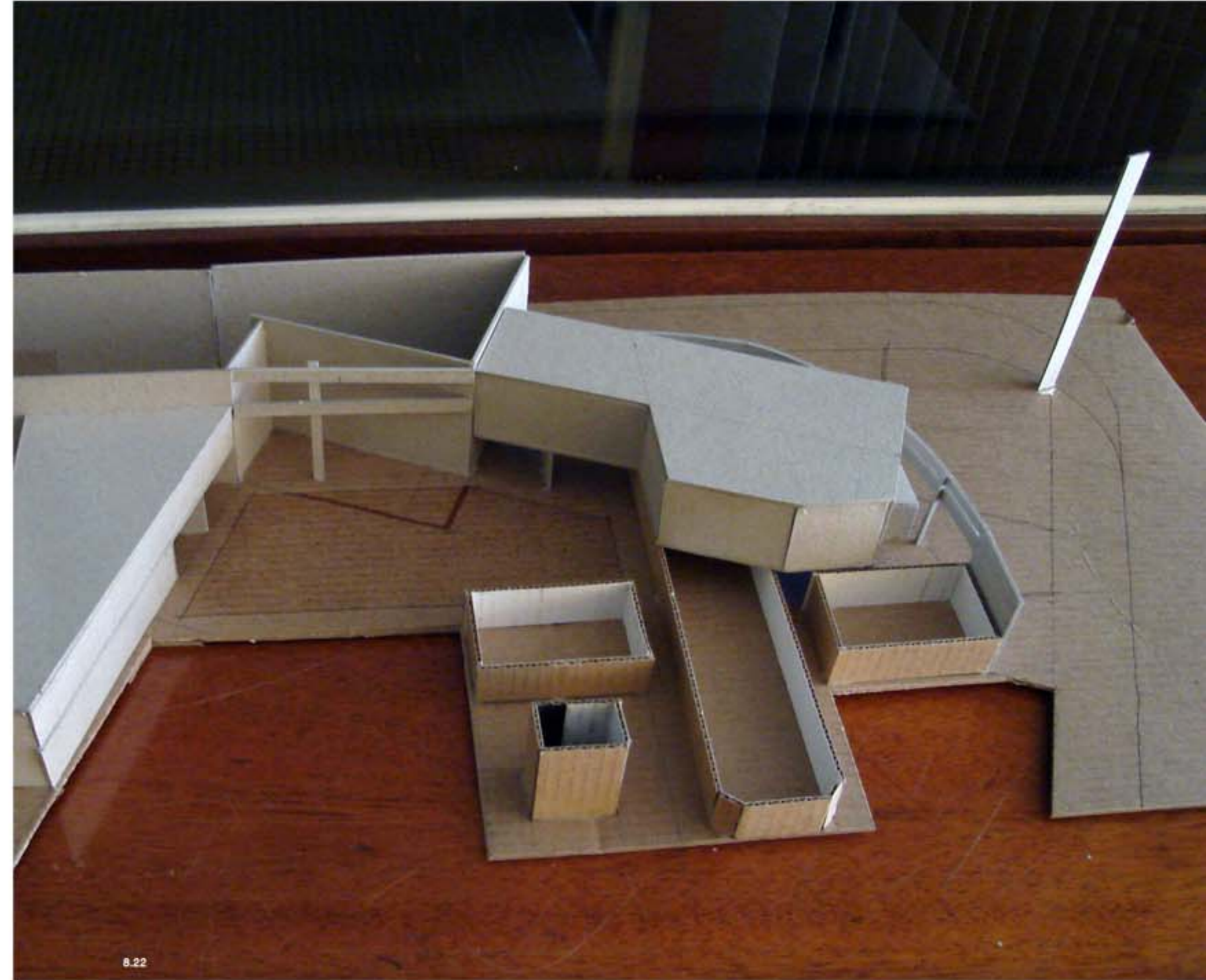
### Criticism:

- Circulation routes through the spaces and building is still not strong enough as this is a central design concept;
- The internal courtyards are shaded throughout the day in mid-winter;
- The new structure pulling over the old structure completely dominates it and causes it to lose its integrity;
- Despite the new structure pulling over the old, the existing structure continues to be viewed as too precious; and
- The attempt to create a new entrance to the station is not successful as it does not respond to the plaza in front of it.



8.21 View from the north-east

8.22 Top view of model with focus on connection with Rissik Station



### Concept model three

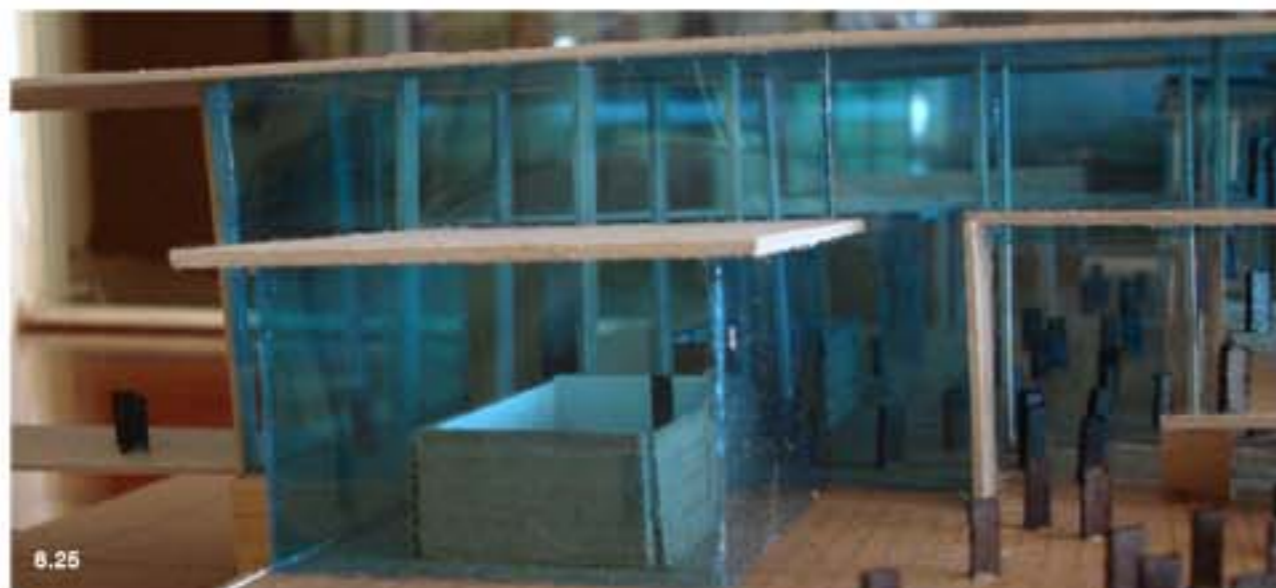
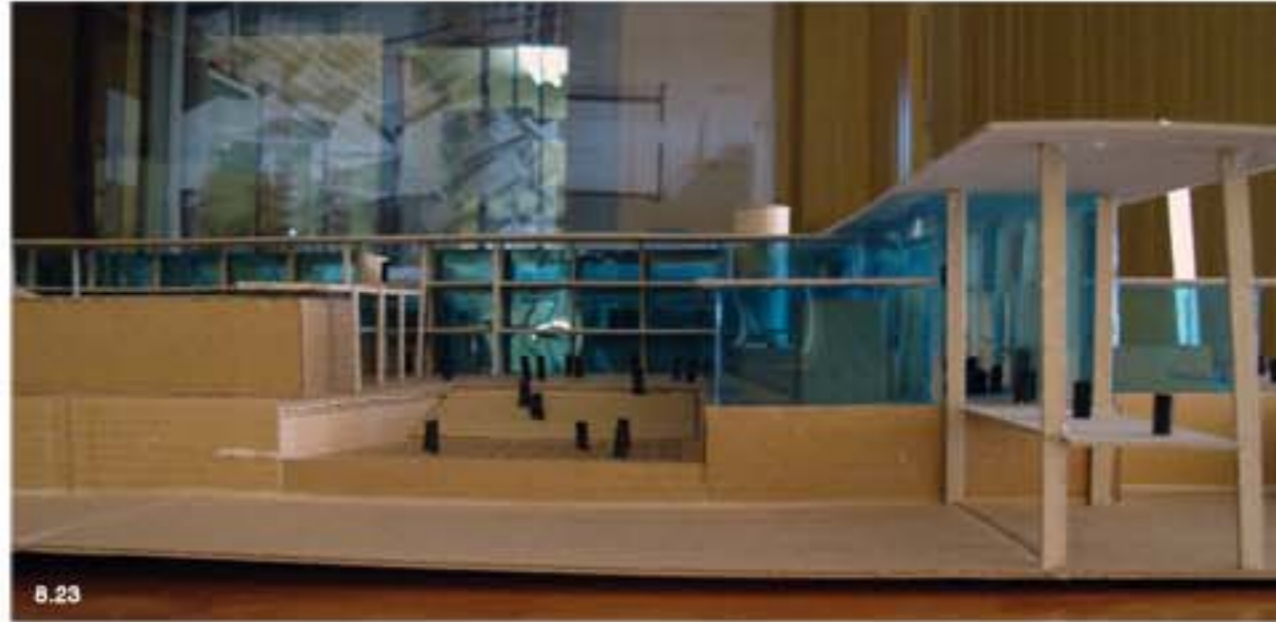
In an attempt to strengthen the concept, the circulation path was pulled out and loose from the proposed building. This external circulation path forms the back spine of the building that links Rissik Station, the proposed retail and office complex, and The Diplomat office building with one another.

Vertical circulation is housed on either ends of the circulation path, which allows for clear and unobstructed views of the internal courtyards. In so doing, the individual becomes part of these spaces. It also allows for an expression of the building's structural grid.

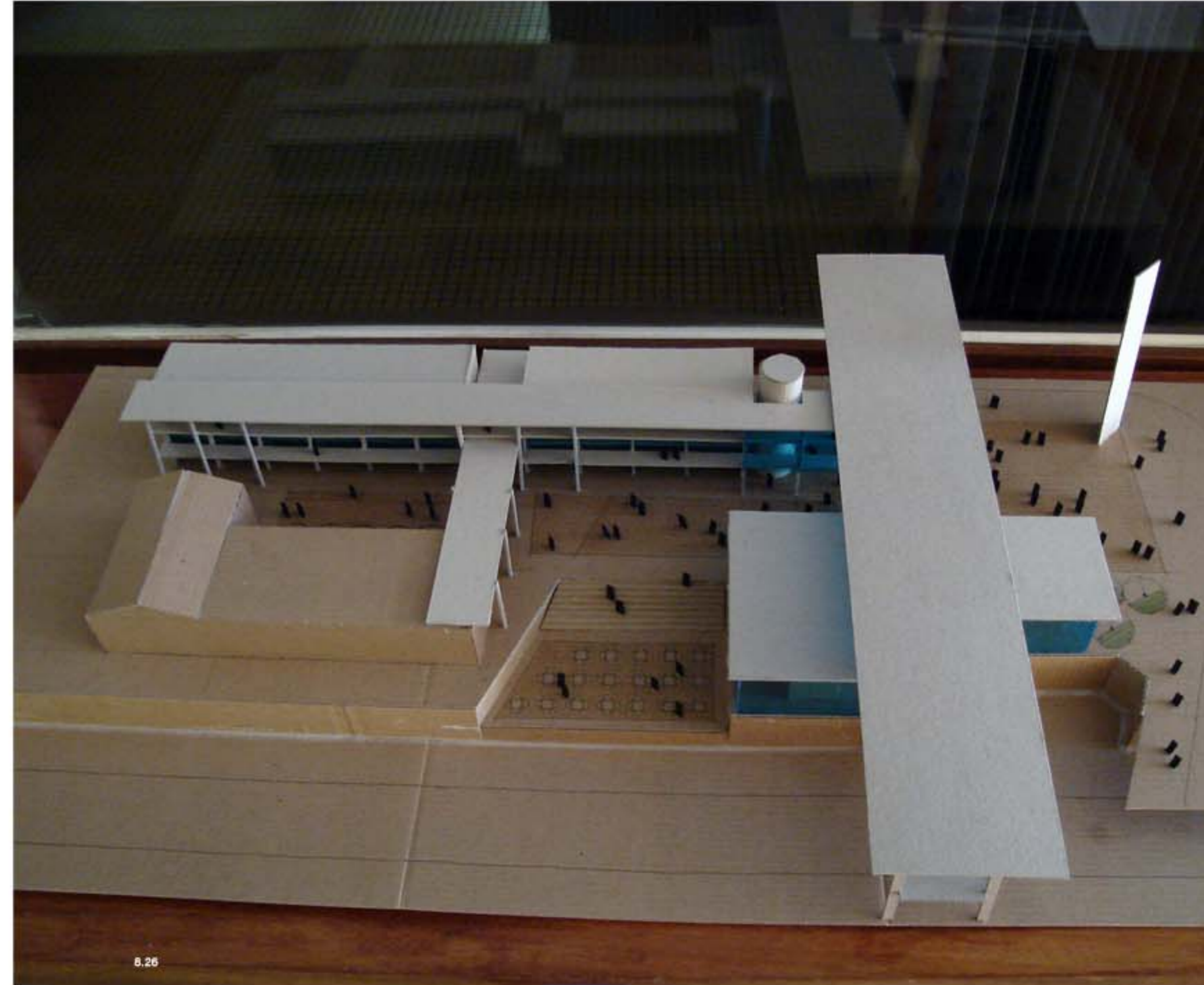
The meeting of old and new at Rissik Station is now expressed in a new manner, where the new envelope the old. This approach helps to address the scale of the proposed group framework, as well as the definition of the public nature of the building.

#### Criticism:

- The circulation path loses its human scale to the internal courtyards;
- An open circulation path is exposed to natural elements;
- The internal courtyards continue to be shaded throughout the day in mid-winter;
- Extensive use of glass can cause problems on the western façade;
- Public use of the internal courtyards can prove problematic;
- The depressed base plate of the eastern courtyard can become isolated and unused; and
- Connection between the proposed station concourse and the platform level is still unresolved;



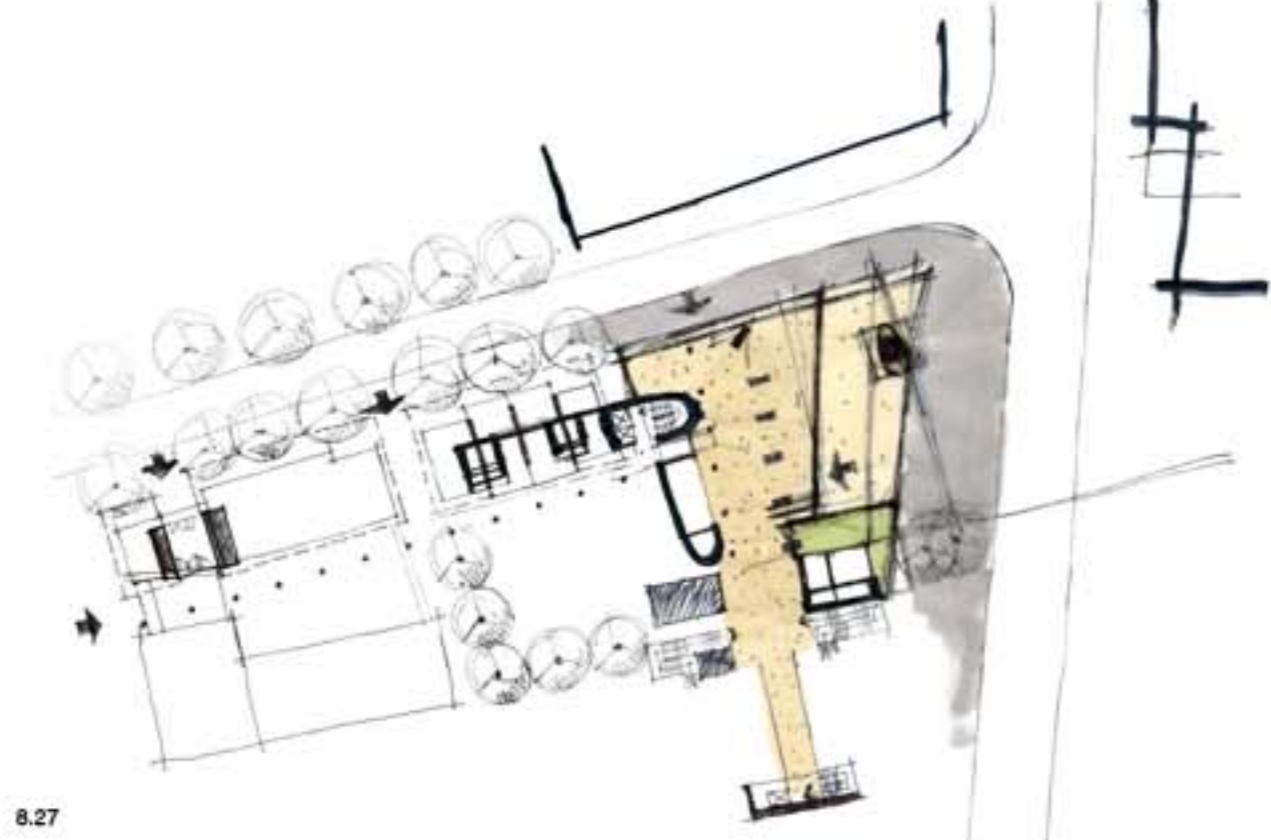
8.23 View from the south looking at the internal courtyard  
8.24 View from the east overlooking the plaza and proposed new station concourse  
8.25 The new envelope the old  
8.26 Top view onto the proposed building



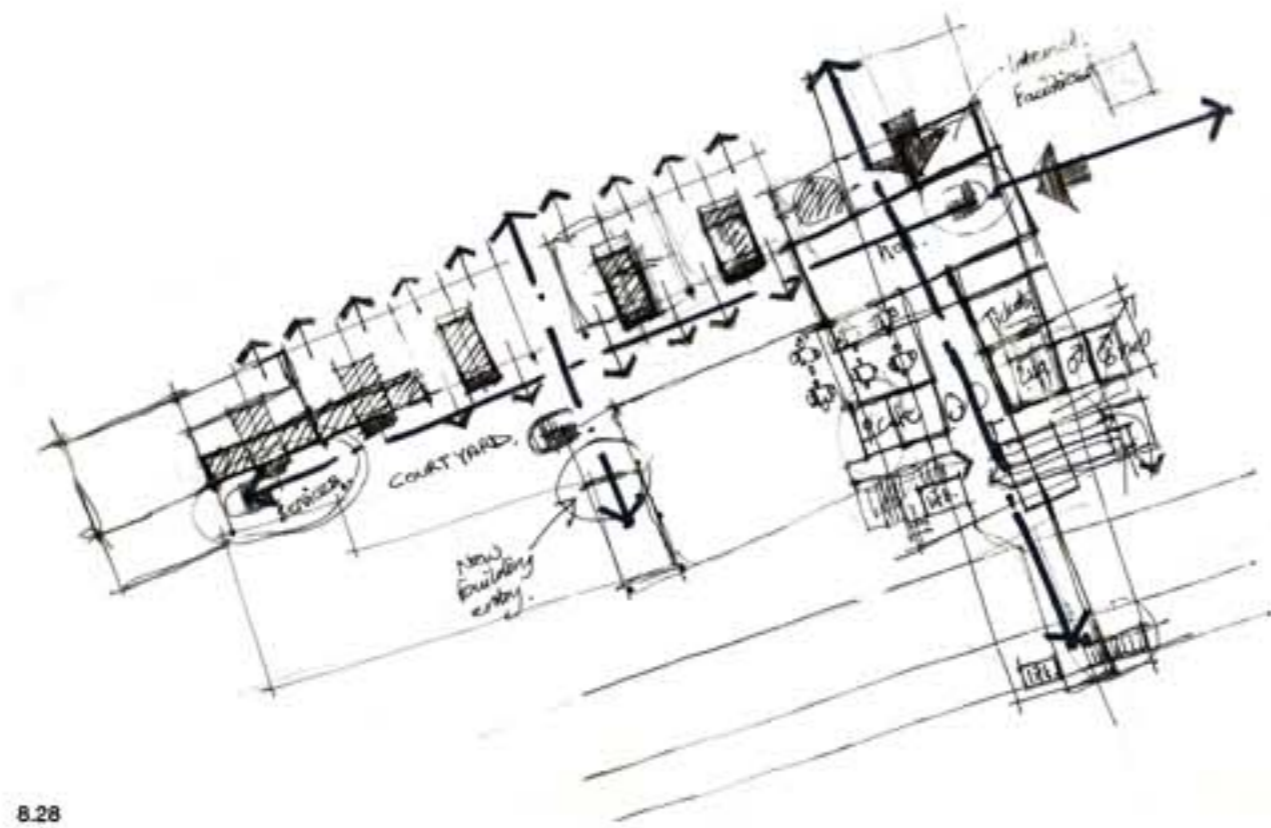


Sketches

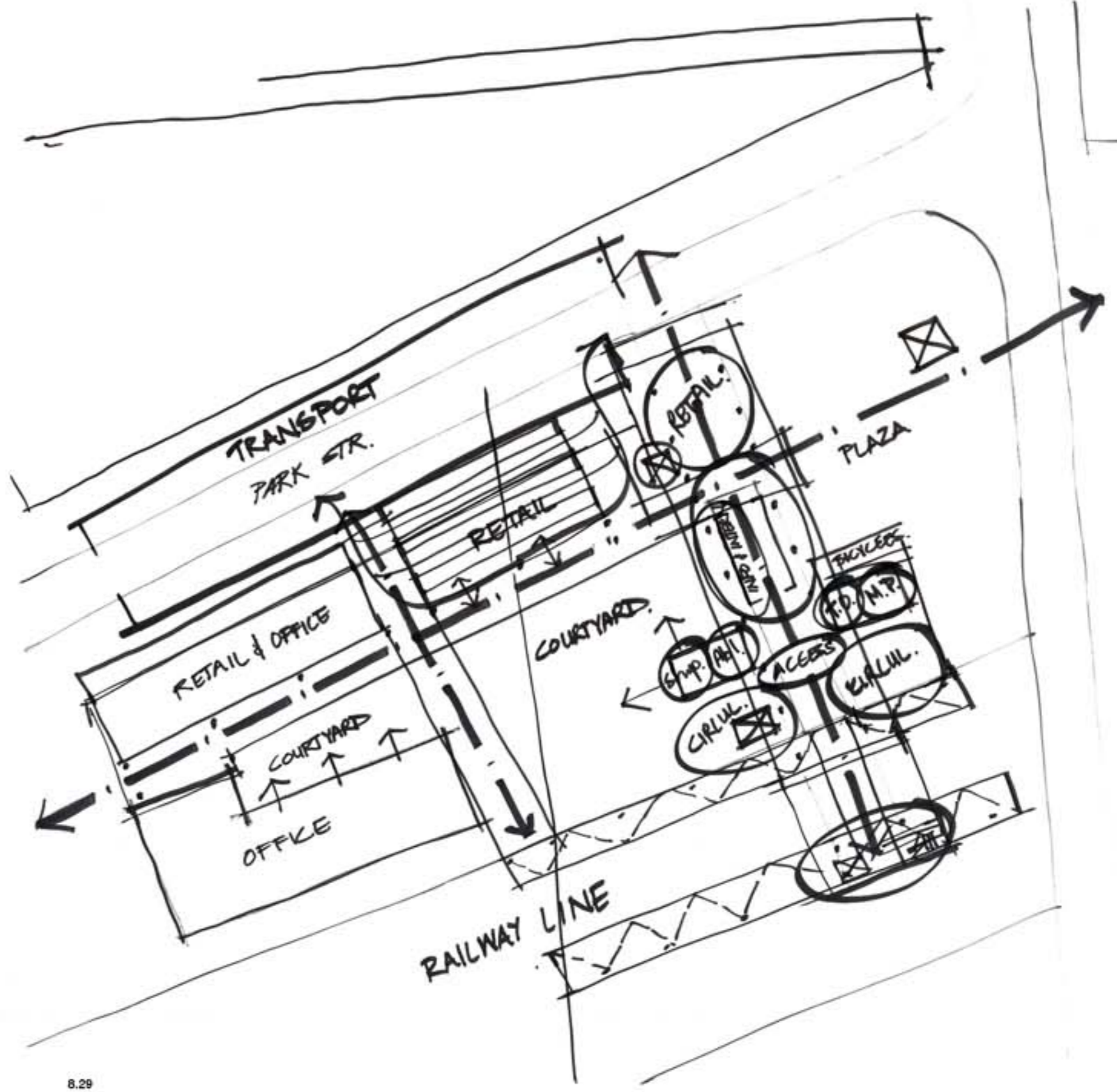
- 8.27 Refining the plan basics
- 8.28 Designing the position of service cores
- 8.29 Refining the axial design



8.27



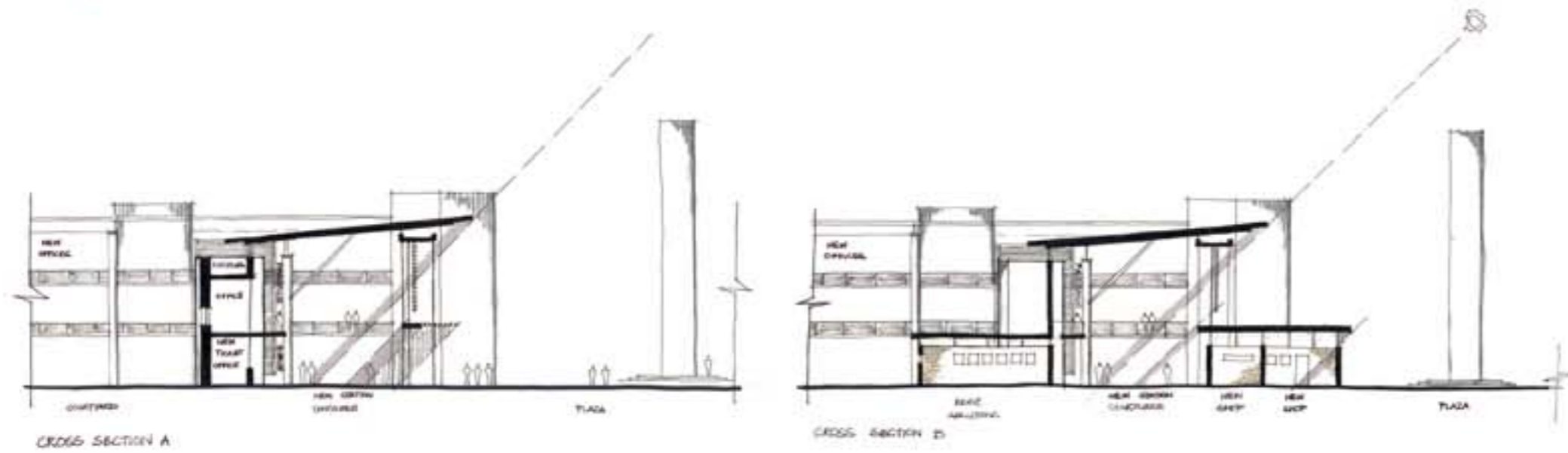
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Sketches - concept sections

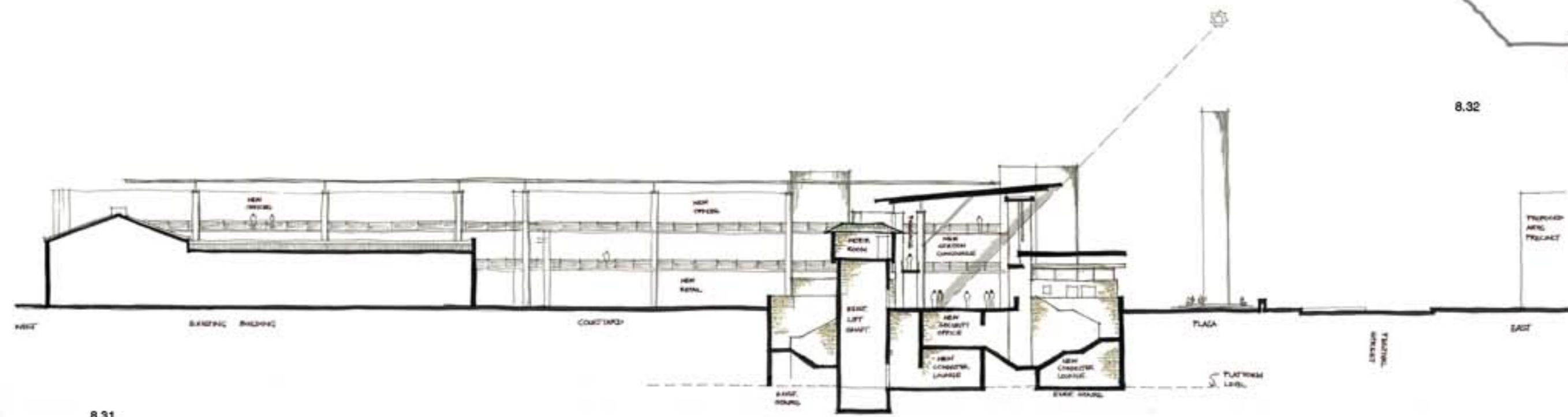
- 8.30 Cross section through proposed new structure
- 8.31 Cross section through existing structures
- 8.32 Longitudinal section



8.30



8.32



8.31