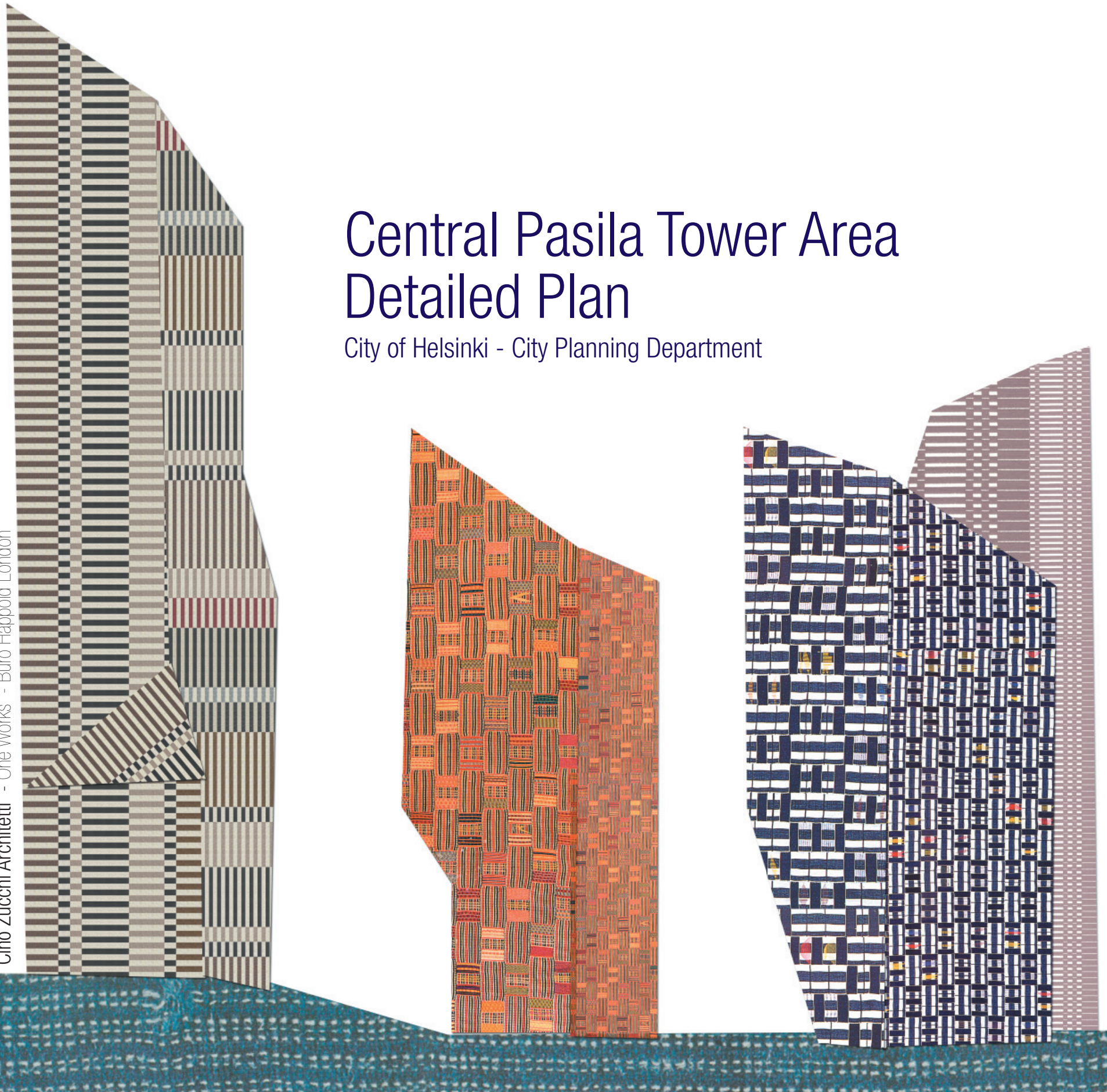
Central Pasila Tower Area Detailed Plan

City of Helsinki - City Planning Department



Cino Zucchi Architetti - One Works - Buro Happold London

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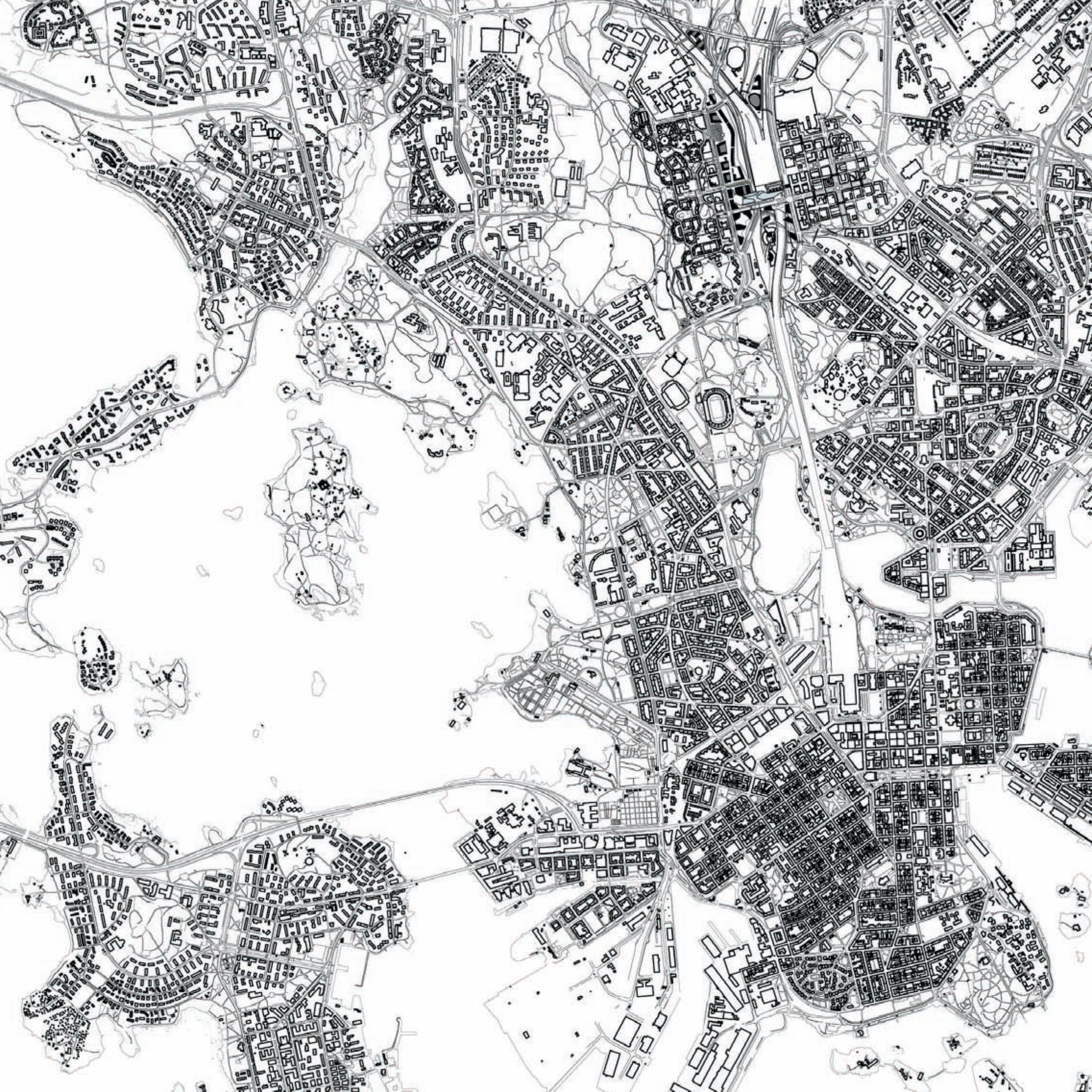
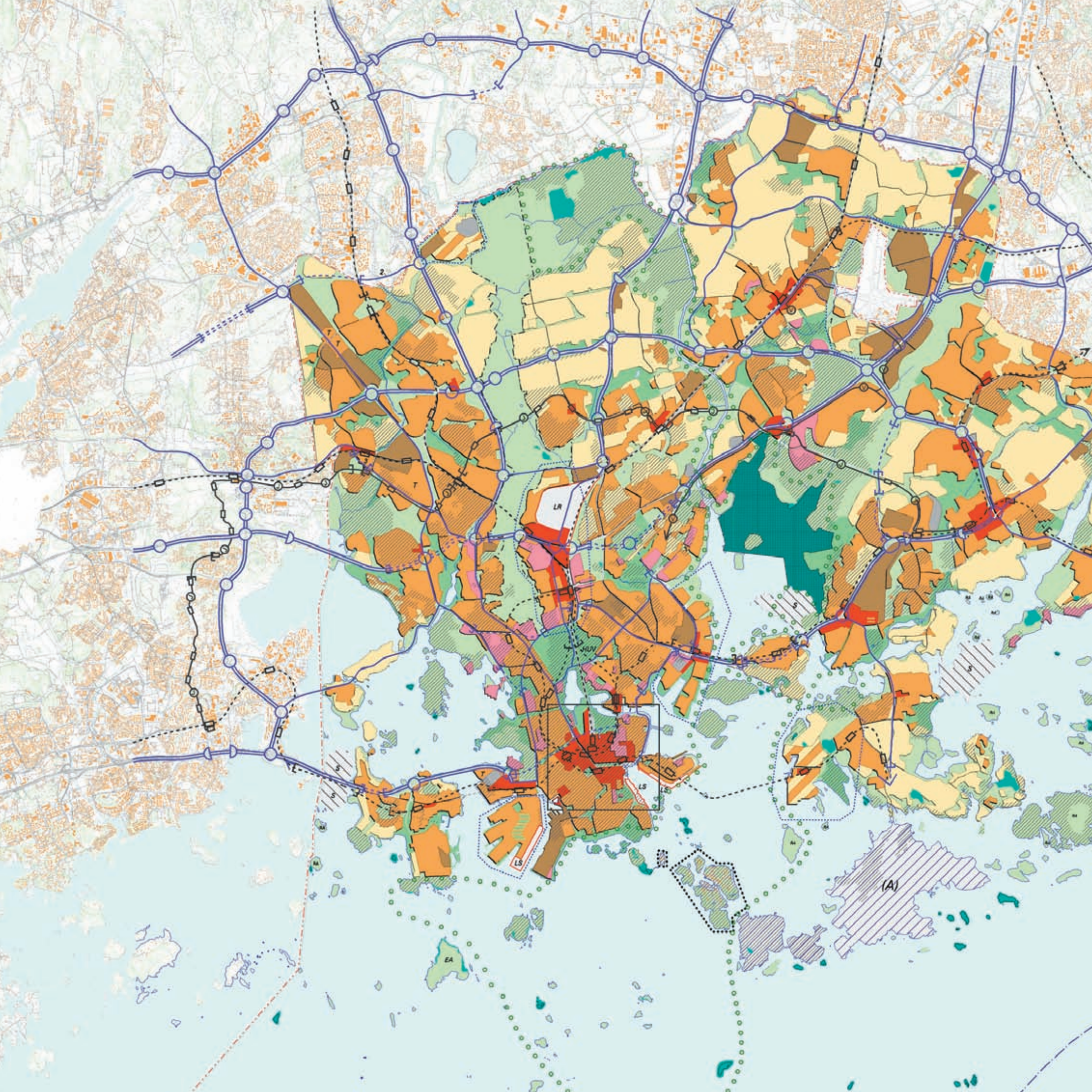


Lines of change

Helsinki is a unique city, where the strong, relatively compact urban design of the Ehrenström early eighteenth-century grid breaks against the fragmented coastline and the vast granite topography. The Pasila quarter, already conceived as a relief for the building pressure on the historical center in the 1918 Saarinen plan and developed in various phases in the recent past, is ready to take a new important role in the new territorial dimension of the city.

The area of Pasila acts as a hinge between different important parts of the wider city: the urban highways going north-south and east-west; the regional train lines; the new planned metro line; important functions like the Hartwall Arena, the Helsinki Fair Centre, the headquarters of the Finnish Broadcasting Company, the Main Library; and the large Central Park extending north-south on the west border of Länsi Pasila.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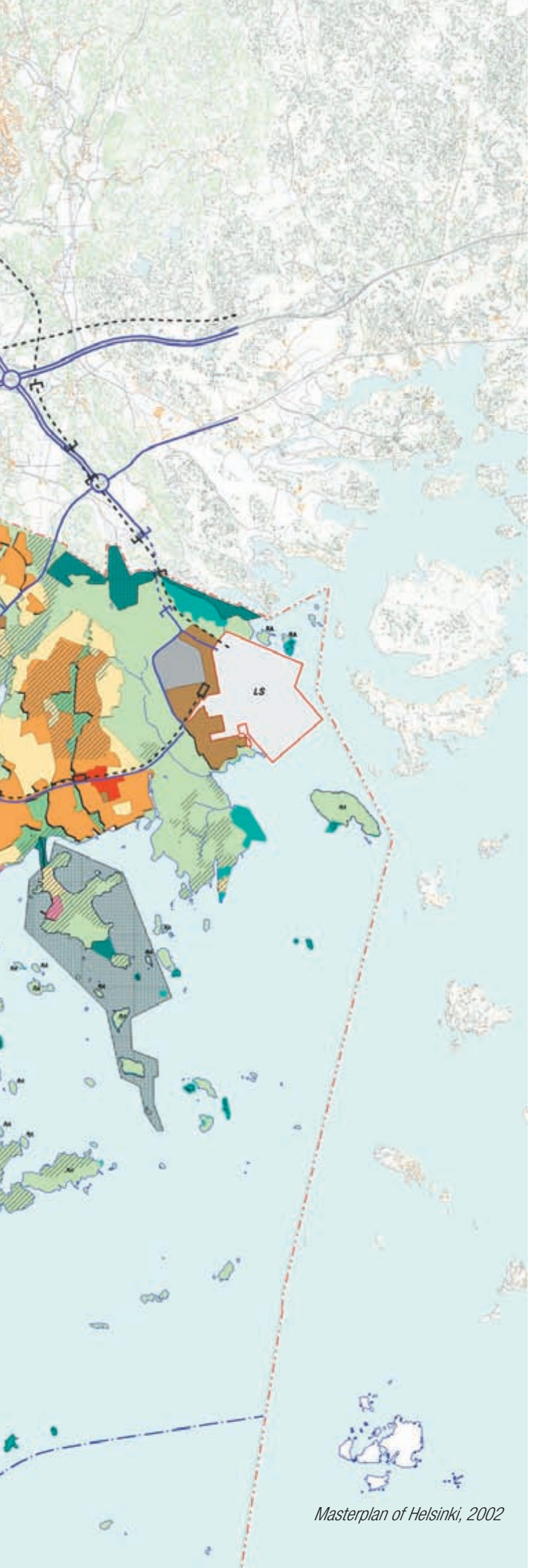
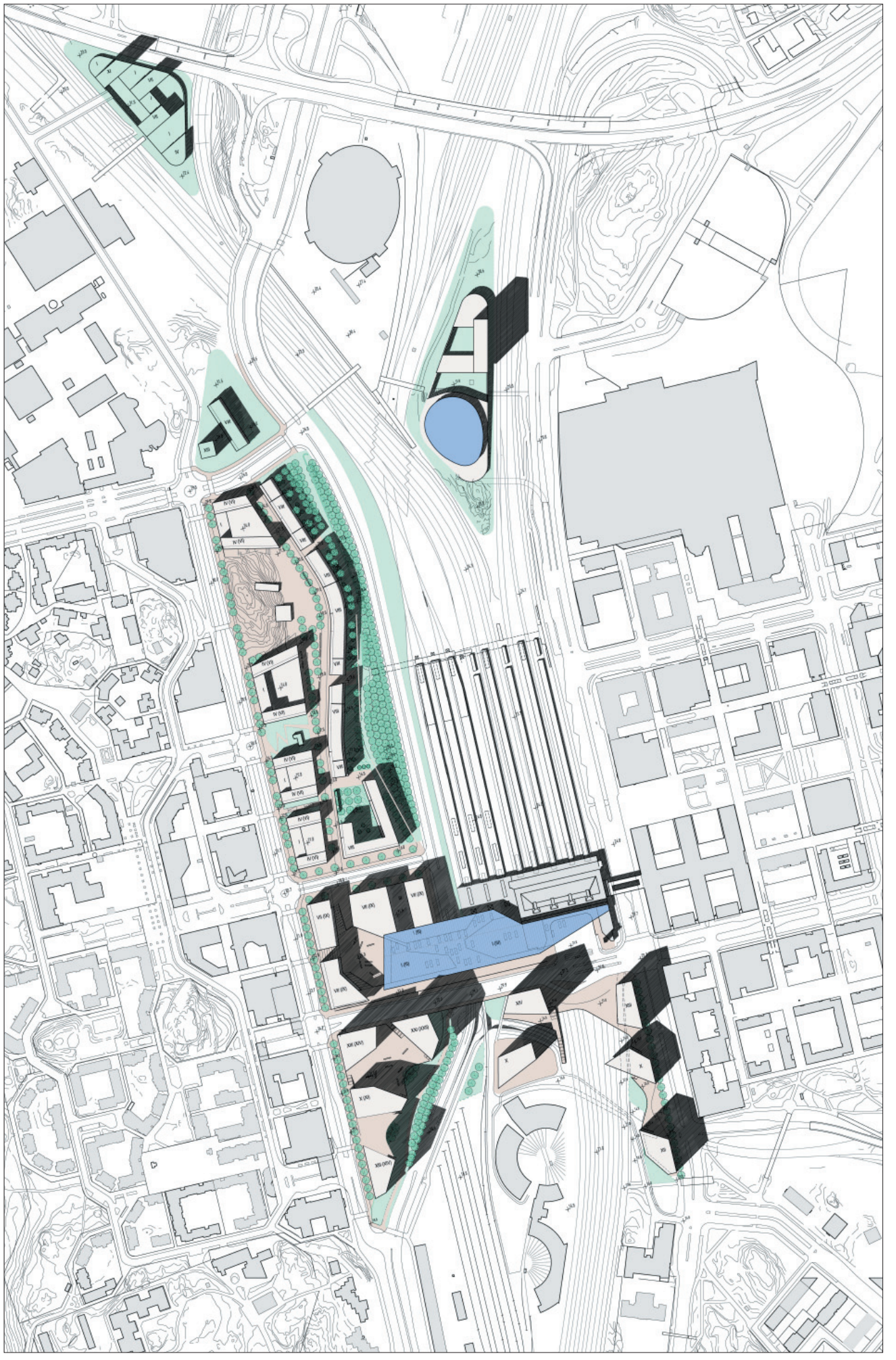


Masterplan of Helsinki, 2002

A planned process

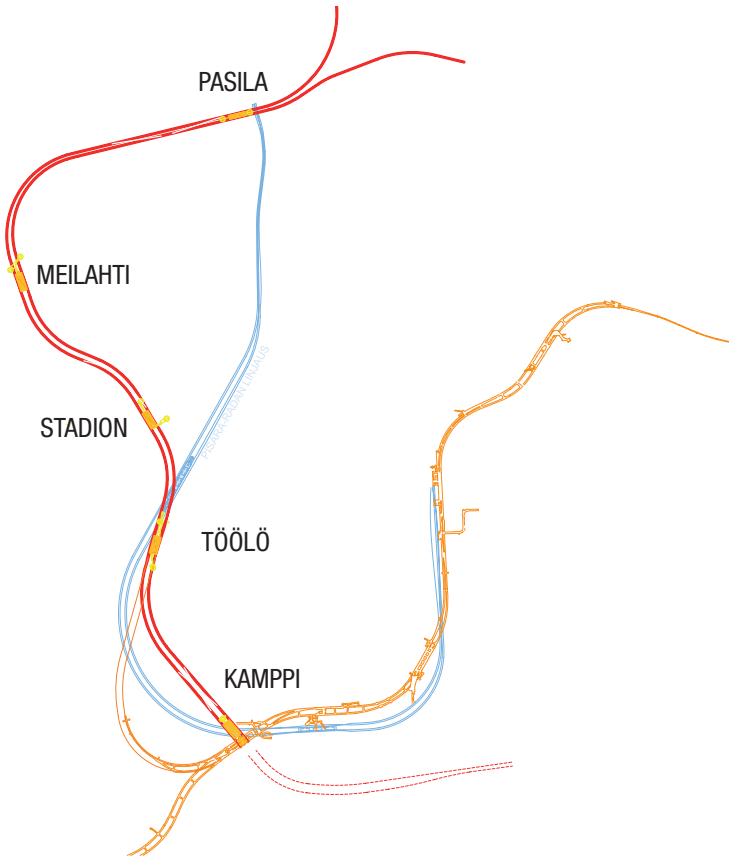
On the base of the letter intent between the State of Finland and the City of Helsinki, and a series of consultations with Finnish and international architectural offices to get development ideas on the area, the Central Pasila Master Plan - legally binding since 2006 - sets the framework for smaller-scale detailed plans. The Central Pasila Tower Area Detailed Plan follows the indications of this earlier planning instruments and the indications by the City Planning Committee of introducing tall building typologies and a mixture of office and housing destinations in the same building.

The previous studies carried on by Cino Zucchi Architetti in 2004, a proposed urban and morphological setup of the mixed-use program planned for the area, allowed the City to consolidate the ideas about the main setup for the Pasila new developments. The different parts of the proposed Outline Plan showed the need for a varied urban landscape, making the most of the relationship with the existing city, the topography of the site and the transportation lines. The plan tried to connect the different existing ground levels through a continuous sequence of open spaces of different qualities. The present Detailed Plan for the Tower Area is developed on the line of the spatial hypothesis contained in the Outline plan, and taking in consideration the wishes of the City Planning Committee advocating slender, mixed-use towers. The detailed plan for the tower area gives functional and spatial substance to the longer sequence of strategic decisions about the future of the area and its relationship with the wider urban framework.



Cino Zucchi Architetti with One Works, Central Pasila outline plan, 2004

From infrastructure to city



The area around Pasila station is going through a number of important transformations. The new planned developments will transform it from an infrastructural “enclave” separating East and West Pasila into a new urban pole, well connected to the surrounding fabric, to the network of highways and to the regional public transport system.

The two sides of Pasila are presently connected only by a bridge running east-west. The two sides have a different character: the layout of West Pasila, articulated along a main street traced by the tramway, branches off in residential clusters opened toward the long green linear park on the west; East Pasila embodies the good intentions and the limitations of post-war urban planning: rational grid hosting large office buildings, separation of pedestrian and car traffic, generously-dimensioned public spaces lacking functional mix to sustain their liveliness.

area

The site as a resource

The Detailed Plan for the Tower Area is based on a number of ideas which are born out of a throughout analysis of the present urban situation and its urban potential. The shallow valley running North-South separating the two sides of the Pasila Quarter will be partially freed of the railroad tracks, allowing the surrounding city to gain new public spaces and a new occasion for development.

The general aims of the transformation are confronted with the physical conditions of the area, its constraints, its present and future resources. Beside mere functional considerations, the layout of the project responds to a number of physical elements already present in the area, integrating them into a coherent whole. The area considered for the Detailed Plan is primarily the one obtained by the reduction of the railway yard possible by a joint City-State protocol. The envisaged functional program will generate a rich urban mix and not just a mono-functional suburb.

Site area

Planning goals

> To build a central area connecting the two sides of Pasila

> To give form to a dense, articulated urban part

> To generate a complex and functionally diverse scheme

> To give life to a new centre with the aim of becoming a destination and a reference for the larger metropolitan area

> To plan a clear and flexible scheme to be developed in well-timed phases, capable of self-sufficiency and integration

> To assure to each building a clear “address”

Urban design goals

> To determine a sound and meaningful urban structure integrating circulation, public paths and building outlines

> To build a lively second city centre with high capability of attraction for its pleasant public spaces, its architectural quality and its capacity to fit in with the surroundings

> To build a new skyline for the city

> To create a sequence of meaningful public spaces serving the different parts of the scheme

> To build a climate-responsive scheme both in public and private spaces

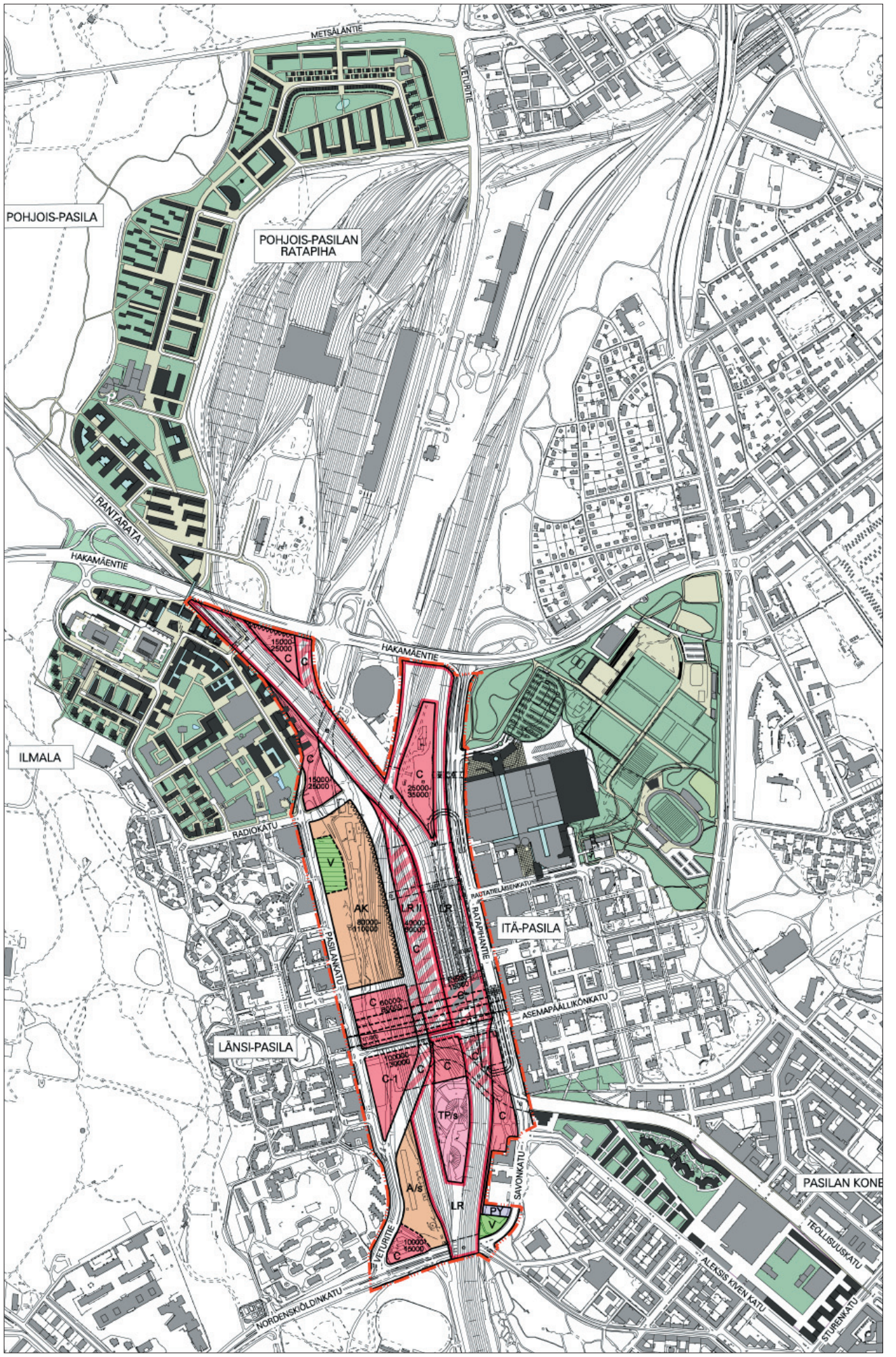
> To give the existing bridge a more urban character

> To integrate the station into the new urban fabric

> To interpret the existing topography and site constraints, establishing fruitful relationships between location, functions and the patterns of public and private space

> To maximize a feeling of “place” in respect to the pedestrian movement

> To respond well to the needs of buildings, allowing for degrees of freedom of specific design issues in the coherence of the overall urban structure



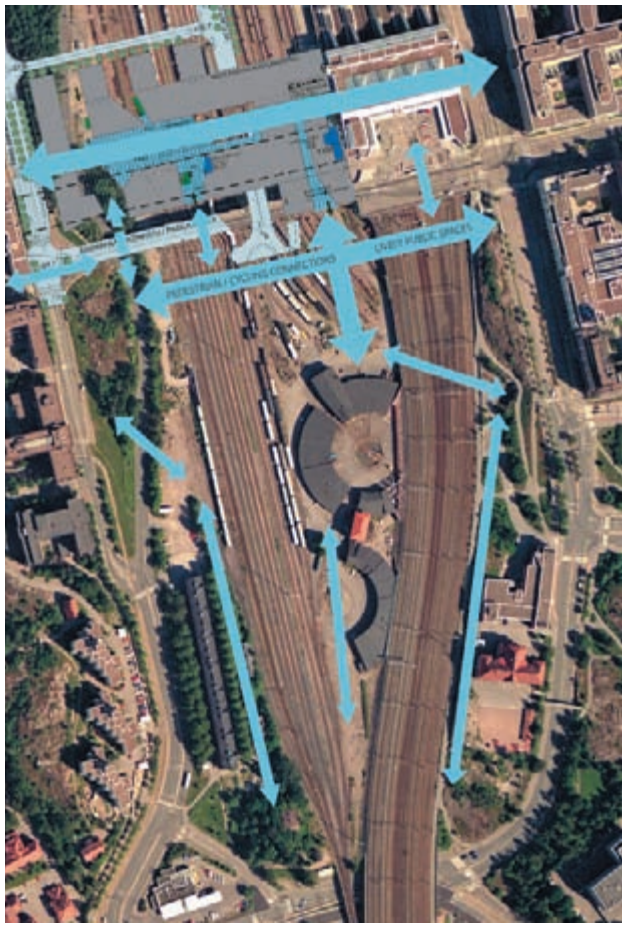
Fair Center development

Central Pasila

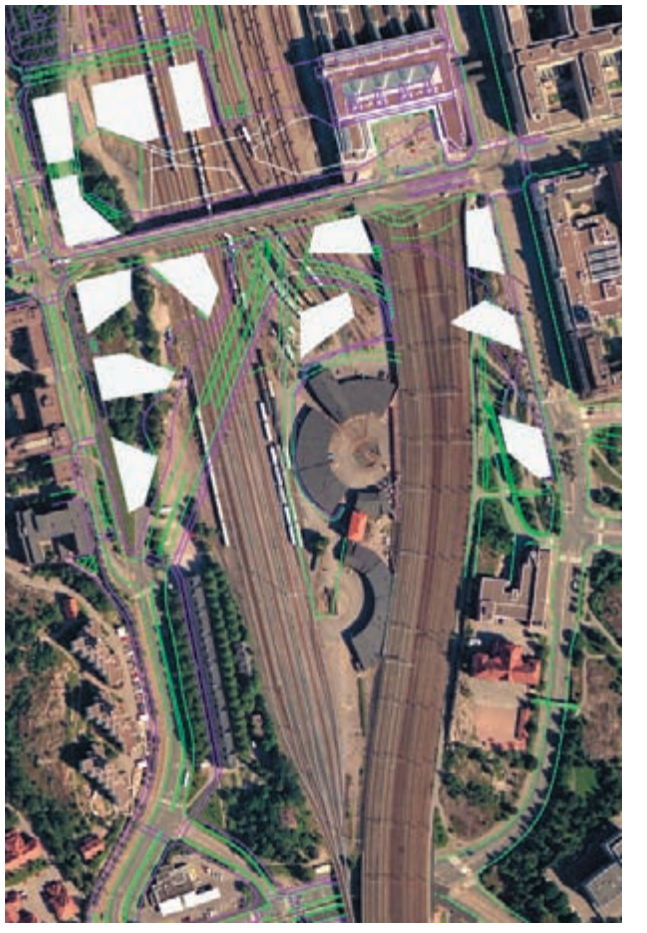
Other developments

Pasila area with the Central Pasila Component Masterplan

Plot area

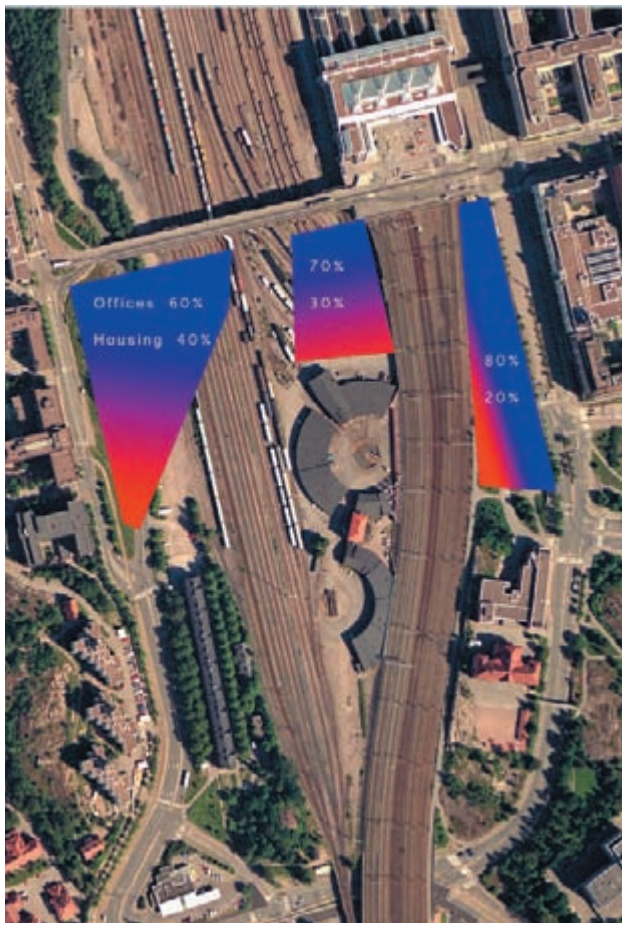


Light traffic



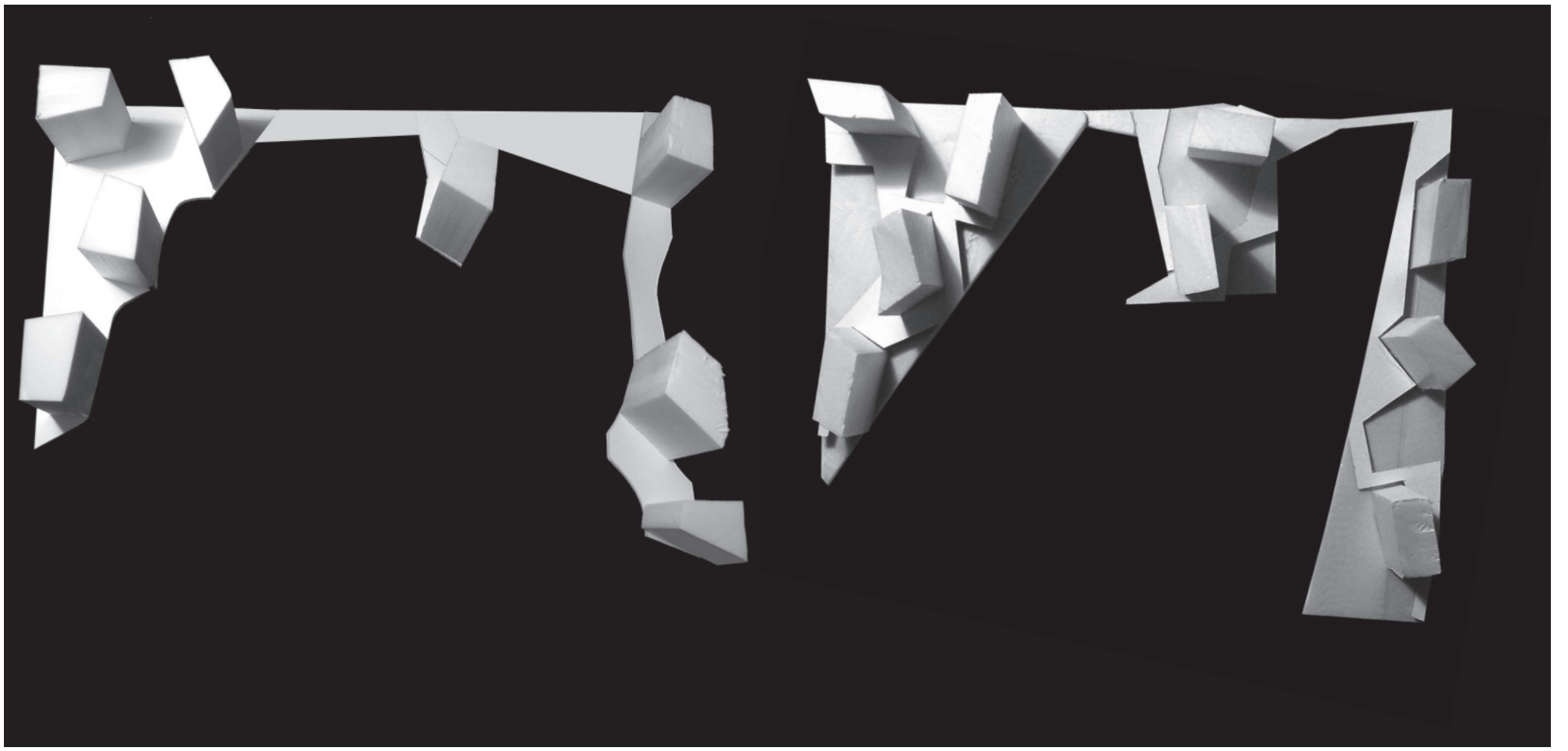
Outline plan

Space between the towers



Program

Implementation



Study models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General plan

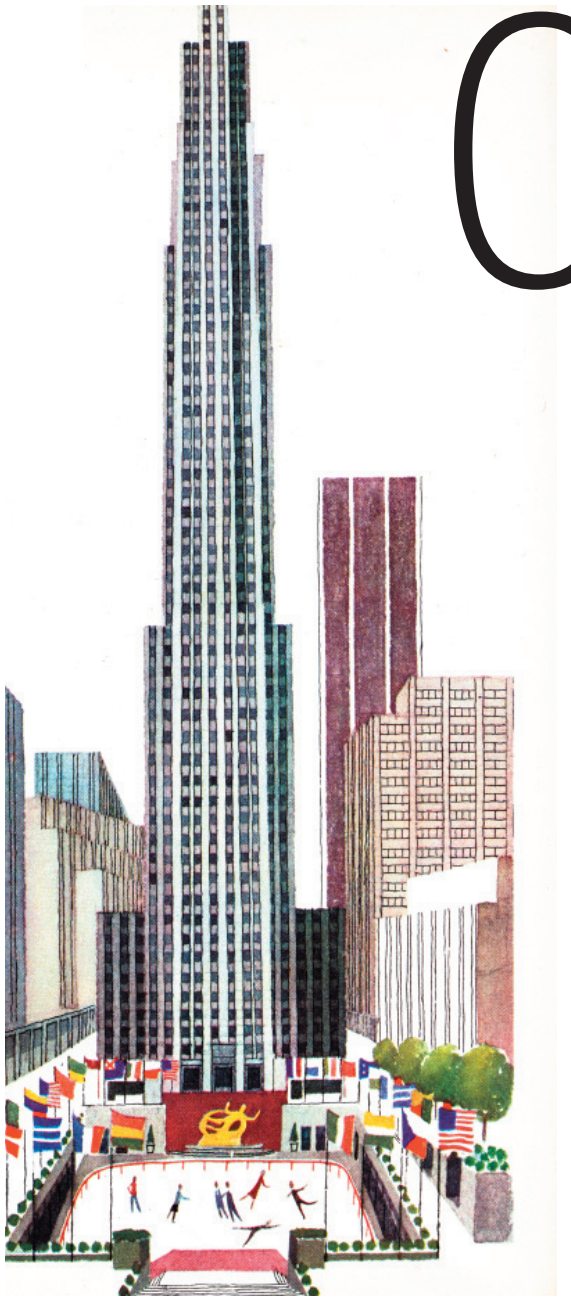
“We could state the formal problem of modern art in this way: when and how it will happen than those universes of forms which in mechanics, in cinema, in technology, in new physics developed independently from us all the way to overwhelm us, will show us what in them belongs to nature? When will we reach that state of society in which these forms or the ones born from them will presents themselves to us as natural forms?”
Walter Benjamin, *Das Passagenwerk*, 1927-1940

A sustainable settlement

The awareness of the ever-increasing environmental responsibility of urban planning and architecture brings new ways of looking at the theme of urban environments and their future planning. An integrated analysis of urban settlements shows how the present forms of growth of the “diffuse city” are consuming too many natural resources both in terms of land use and of energy consumption.

The suburban expansion of the city along the road network and its high dependence on private means of transportation, even if animated by the search for privacy and green, has revealed itself against many principles of sustainable development. The infrastructural expense in long roads, sewers, power lines, the generation of heavy car movement from the suburbs to the inner city, the high heat dispersion of the single-family house model (because of the very high surface-to-volume ratio of smaller buildings), are not compensated by its illusory advantages. All studies and researches about “sustainable” human settlements demonstrate that the solution is to highly increase density and functional variety around points of high accessibility by public transportation.

“Most ancient cities owe their exceptional beauty to the precinct of ramparts or walls which encircles them. Today there is no reason to limit the city in the same manner; to do it would be meaningless and it would increase urban congestion; nevertheless, if we let them expand freely, it is important to somehow define the limit of their settlement. In any case, we have to create, with an interesting mean, a line up to which both city and country can, both on their own side, extend and stop in a clean way.”
Raymond Unwin, *Town planning in practice*



Critical mass

The unique presence of high accessibility from the road network and the present and future net of public transportation naturally lead to a “sustainable” solution: to create a dense, mixed-use urban settlement next to the station, capable of pulling together the two existing sides of East and West Pasila and to dialog with the wider expanded city network.

A number of recent studies considering the question of sustainability integrating social aspects, energy consumption, land use issues and material durability indicate density as the main single factor helping human settlements to save precious natural resources. Avoiding free land consumptions by redeveloping “brown” areas such as dismissed railway yards and industrial plants, contrasting the use of public transportation and saving the expensive road and service needs of the “diffuse city” are universally recognized as “good practice” behaviours in the planning of new settlements. Creating high density points in the proximity of public transportation lines is regarded as one of the “healthier” move to save unnecessary energy consumption. A critical mass has also an impact on the financial and social sustainability of the quarter, assuring a lived-in public space and the possibility for it to attract high-quality functions and activities, thus avoiding a number of problems suburban locations often have such as social problems, vandalism, appropriation from secluded social groups. Many recent development projects next to railway stations demonstrate the rightfulness of this urbanistic approach.

Julian Opie, Installation

A living landscape

To blend the richness and quality of urban life with a new awareness of the relation between human settlements and nature: this is the primary goal of the new master plan for the Pasila central area. The new city silhouette and the concave public space between the buildings are conceived as a varied landscape, offering environmental quality and a rich spatial experience at all scales.

If the city expansions of the eighteenth and nineteenth centuries were based on the repetition of a general model, today's city planning has absorbed many of the sensibilities of landscape design: we are capable of interpreting the uniqueness of places, their particular history, their physical and social peculiarities, their role in a wider territorial system. Rather than endlessly expanding the city in all directions, we realized that the variety of city parts is precious, enhancing the singular "mood" of places. The "perceptual" character of urban places is as important as their functional aspects, which have to be hosted and enhanced by the vessel which contains them.

Open space as an urban catalyst

"The jug's void determines all the handling in the process of making the vessel. The vessel's thing-ness does not lie at all in the material of which it consists, but in the void that holds."
Martin Heidegger, *Das Ding*, in *Vorträge und Aufsätze*, 1936-53

In the plan for the Central Pasila Tower area, open spaces are not just as empty buffers between adjacent buildings, but rather as living figures, shaped by their margins and the treatment of their surfaces, and hosting the rhythms and modes of public life in the different hours of the day and in the different seasons.

Cities are not just made of buildings, but rather of a network of well-connected open spaces, capable with their scale and form to host daily life in its various aspects. To assure their lively character, in new city parts they have to be designed carefully along the main directions of pedestrian movement and in close relation to the entrances to the buildings. In the detailed plan, a careful study of the new bike and pedestrian paths ensures a series of very easy and natural paths guided by the open space design, reconnecting the new central spaces of the intervention with the transport system and the wider context.

Bird's eye view of the towers from north east

New silhouettes for the extended city

"Landscape – this becomes the city for the flaneur. Or more precisely: (…) it opens to him as a landscape and encloses him as a room."
Walter Benjamin, *Das Passagen-Werk 1927-40*

Bruno Taut, Die Stadtkrone (1919), View of the new Center

The city as a whole is first felt as a body, a landmark whose perception from different points orients the experience of a territory. While the historical centre should be preserved and consolidated in its existing physiognomy, the extended city need new orientation points both from the social and the architectural standpoint.

Examining the relationship between city and topography in his seminal book *Die Stadtkrone* (1919), Bruno Taut advocated the role of architecture to create an artificial landscape able to complete the natural one. The first perception of a building in a territory is of a "geological" nature, generating in the observers the awareness that architecture is primarily a modification of the earth's crust. The "generic" discussion of how high one should build in Helsinki should be refined by a second one, which deals with the position and the architectural quality of the "highpoints" of a city in such a precious landscape. Beside the important quantitative considerations about height, many high buildings of the past appear the result of a simple functionalist attitude of "piling up floors" which is not really capable to generate a synthetic architectural image of a landmark.

Responding to a program, we are also permanently modifying the city silhouette. This is usually discussed in negative terms of "minimizing the impact" of new interventions, but has been seldom considered as an opportunity to interpret the scale of the city, its borders, its relation to the natural morphology, its accents.

Julian Opie, Installation

Rocks, trains, buildings

Creating a new city part is more complex that to respond simply to a list of functional quantities: the project has to fulfil them properly, but it has also to donate to the city a series of lively and well-proportioned public spaces.

If the space of the traditional city is shaped almost entirely by architectural forms, today's extended territory is full of elements which are not controlled by our discipline. This "middle landscape" is populated by many things escaping from the traditional tools of "urban design": illumination, visual communication, trees and landscaping, technical artefacts such as highways and bridges are often more important in its perception than architecture itself. Today we have to evaluate carefully the appropriateness of our tools in giving form a new urban environment. This environment has to have the "natural" feel of the ancient city, but it has to respond fully to the ways we live, build, move, communicate today. It has to respond to our sensibility toward ecological sustainability, to the new demands of a friendly collective space, toward the changing patterns of domestic life, work habits, leisure, culture. The project for the Center Pasila Tower Area is one of the great occasions of Helsinki to give itself a new environment able to enrich its layered structure overcoming the "beautiful centre-dull periphery" stereotype.

Buildings and spaces

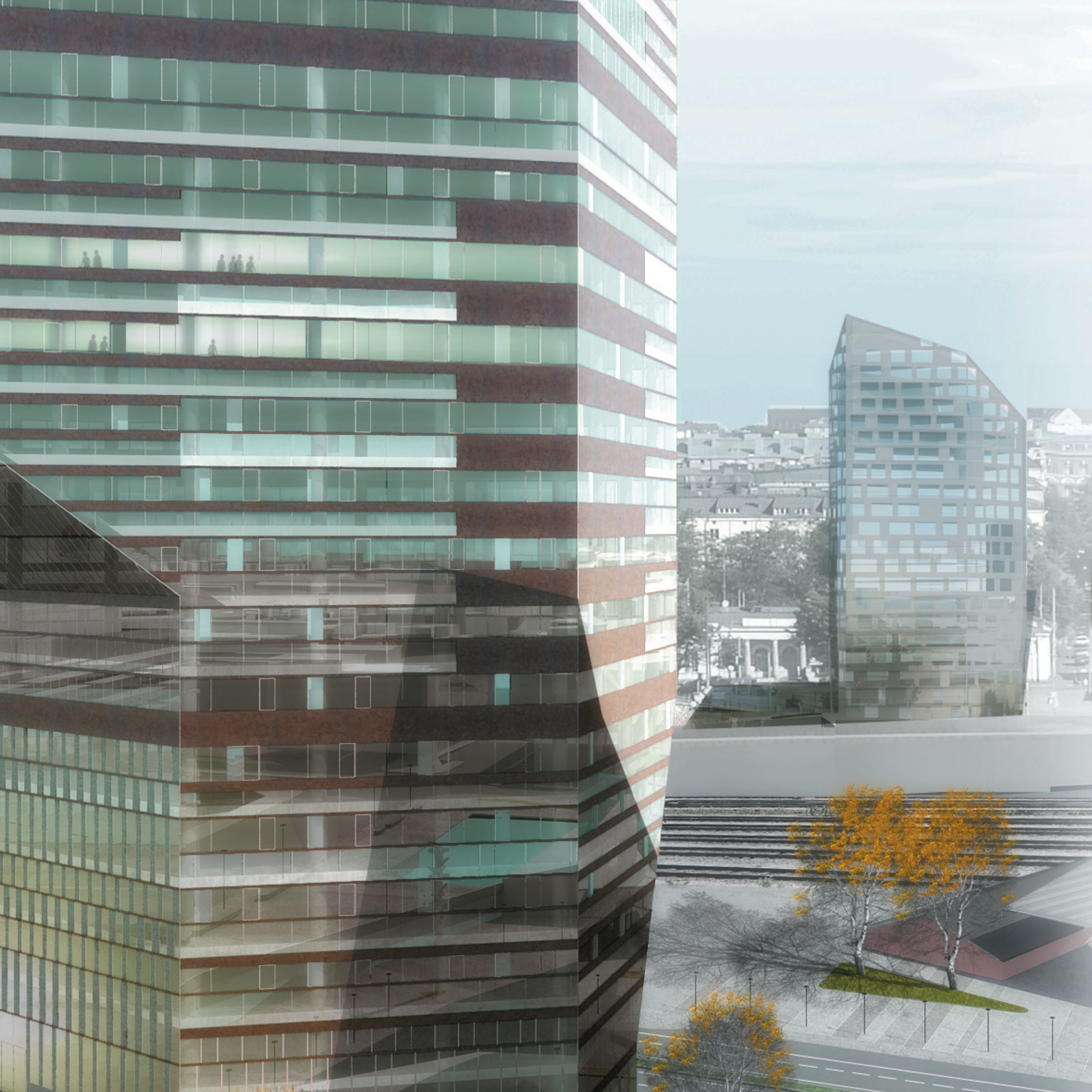
The conceptual dilemma between the “concave” space of the historical city and the “isolated objects” of the contemporary one, originally described by Camillo Sitte and somehow trivialized by Colin Rowe, is today a crucial point of urban design. If we feel that functionalist planning has often weakened the public space by conceiving buildings as pure “types” obtained by the mere repetition of cells, the experience of Modernism shows unexpected capacity of shaping city form without losing the rational character of modern building needs. In many cases, this “morphological” attitude is obtained by the combination of a free-standing building overlayed on a base which is shaping the form of the public space.

The Detailed Plan for the Central Pasila Tower Area adopts a double strategy: on one side, its aim is to give urban presence to single, well defined tall buildings with clear points of access by public transportation, car, bicycle and foot. On the other side, the ensemble aims to create a pleasant urban environment, which has the cosy feeling of the historical city without necessarily imitating its forms. The public base of the buildings, hosting different kind of functions depending on their position in relationship with the various collective spaces, gives shape to a continuous pedestrian space which follows the contours of the terrain. The pedestrian movement between the various levels is always very natural, and it is meant to be felt as a modification of the existing slopes to create a common urban space.

New forms, new lifestyles

The urban feeling results from a meaningful interaction between the life generated by different activities and functions and the spatial quality of places which host them. Against a narrow-minded “zoning” attitude separating functions by genre, the proposal finds new interactions between different spaces hosting different activities.

The interaction between different dimensions, the one of the whole and the one of the parts, is a key point of the Central Pasila Tower Area. Its aim is to dispose an adequate mix of functions into an urban layout which recognizes the single buildings as clear entities, but which is also able to create an “inner city” feeling. The aim is to create a “sustainable” contemporary living and working environment, where the proximity of public transportation will further discourage the use of the private car and favour a place living all day long.



Zoom in, zoom out

The project looks for a deep correspondence between a “distant” perception and its inner structure. Its silhouette changes as one moves around the area. From the vast “artificial river” of the railroad tracks coming from the main station the new cluster of high buildings has the character of a geological formation penetrated by the new road and the railroad line, while the structure of “concave” open spaces embrace the flux of pedestrians coming out from the station to the new square.

The changing perception of a pedestrian walking along a building edge and watching a sequence of shops is very different from the long, flat profile of a skyline against a foggy sky. The massing of the building tries to acquaint for this differences without losing the design simple attitude, and the “convex” profile of the polygonal towers transforms itself on the ground level in the concave profile of the low, extruded bodies embracing the public space.

Central Pasila Tower area, Detailed plan, view from South West

A cluster of towers

The area to the south of the existing bridge is heavily marked by the high difference in level from the upper urban realm and the “infrastructure valley” lying below. The new layout of the traffic roads and the future transformations of the railroad tracks create a series of building plots strongly related to the design of infrastructures. The detailed plan defines the place and the size a number of mixed-use tall buildings adapting their footprint to the irregular land geometry so to create a number of interlocked public spaces between them.

An extensive research of case studies and a number of typological researches demonstrates that the average floor area of the proposed buildings is optimized for both the overimposed functions: atriums, showrooms and services on the lower floors, offices over them, and housing on the upper half. The office part can accommodate well big corporation headquarters, middle-sized space unities, and smaller cuts. Almost each planned building has a side facing directly the existing streets (Pasilankatu, Ratapihantie) or the new boulevard obtained by the enlargement of the existing bridge. This creates for each building a clear “address”, with the possibility of a car or taxi drop-off and a lobby with a direct connection to the street. The “cluster” structure of this group of buildings creates a series of well-proportioned public spaces embraced by them, placed at different levels so to move gently from the upper urban level of the bridge (+31,00 /+28,00) to the bottom of the “valley (+ 15,00) where the round-shaped existing locomotive sheds are located.
The ground floors of the buildings opening toward the street or the plaza level can host cafes, restaurants, showrooms, art galleries, specialized shops or other semi-public activities, which take advantage of the nicely-proportioned outer spaces.
The polygonal footprint of the buildings, which maximize land use and the creation of interlocking public spaces, is emphasized in elevation by the “sculpted” bodies of the new volume and their upper sloped silhouette. This crystal-like “envelope” greatly reinforces the landmark, far-sighted vision of the building cluster. The various open spaces determined by the buildings take different characters in relationship with their position, sun orientation, level and size.

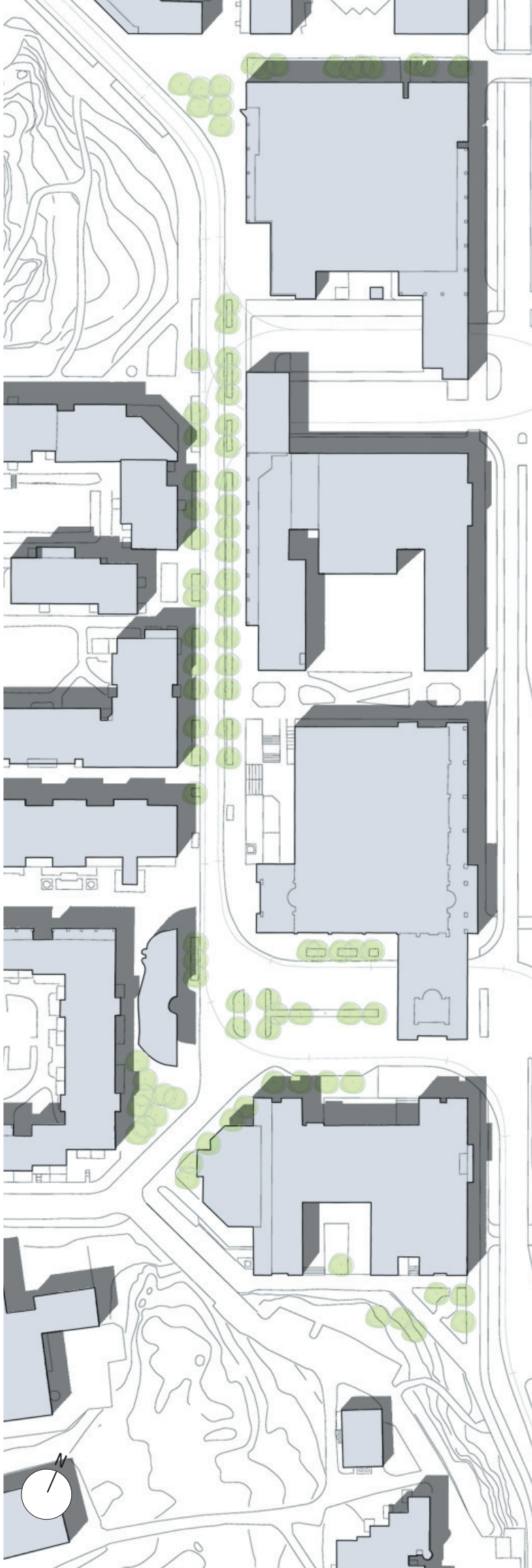

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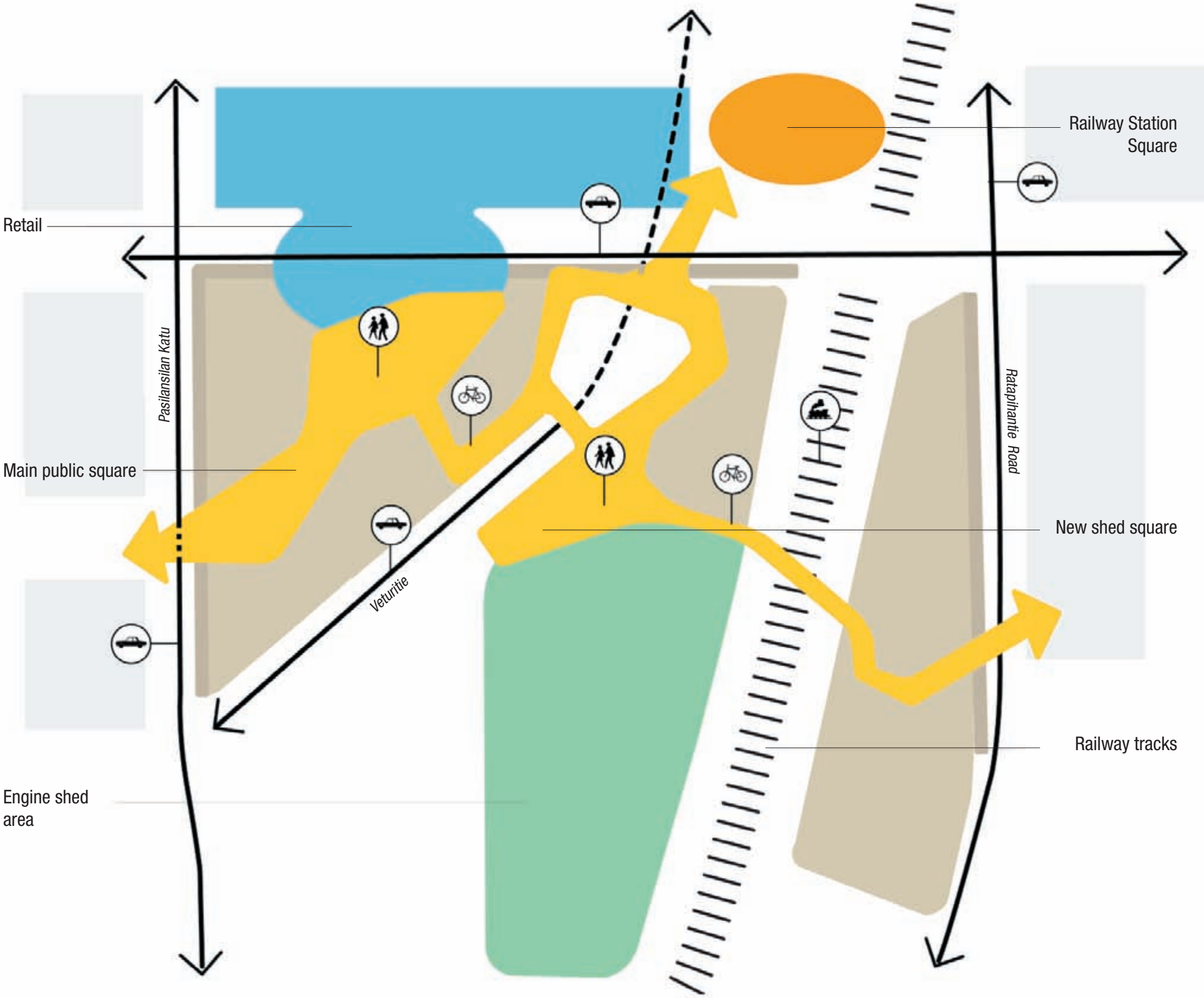
Illustration plan

Building rules

The area of the towers needs a coherent planning but also a capacity to adapt itself to future unseen changes of use, to time phasing, by a straightforward relationship between public and private spaces and realizations. The proposed “cluster of towers” is held together by a strong design of the road infrastructure and the public spaces, a set of simple rules about the form of buildings in plan and elevation, a number of easy understandable guidelines about the relationship between the spaces in the lower floors, the office area, the residential one and the roofscape.

The area is divided in three main independent development units: A on the west side, adjacent to Pasilankatu; B between the new diagonal tract of Veturitie and the railroad tracks coming out of Pasila station; and C, between tracks and Ratapihantie. This sub-units are in turn divided in seven plots, (A1, A2, A3, A4, B, C1, C2). Plot A4 corresponds to the main area of the new square, and hosts no buidings; plot B requires two buildings with common access; three plots (A1a-b, A2a-b, C1a-b) are divided in sub-plots and accept two buildings, separated or connected among them. This allows for some real-estate flexibility and possible connections between the buildings on the ground floor without altering the overall structure and massing.


Railway Station Square
Retail
Pasilansilan Katu
Ratapihantie Road
Main public square
New shed square
Veturitie
Railway tracks
Engine shed area

Public and private areas

Building alignments and public spaces

Great care has been put to give each building a clear “address” from the public spaces, both from street and from the net of pedestrian and bicycle paths. While the sum of the plot surface covers all the available space left free by the roads and the railway tracks, on the main “urban” level a certain ratio of public space must be realized by the private developer to assure a network of pathways.

Buildable level

Public spaces on private plots

Pedestrian connections

The network of paths guarantees the connections between the different ground levels (from the +15 m of Veturitie to the + 30 meters of the station square), to the planned Töölö subway entrance, the shopping center, and to east and west Pasila. All the levels are accessible from persons with reduced mobility by sloped paths or, where the level difference makes it impossible, by public elevator.

Buildable area

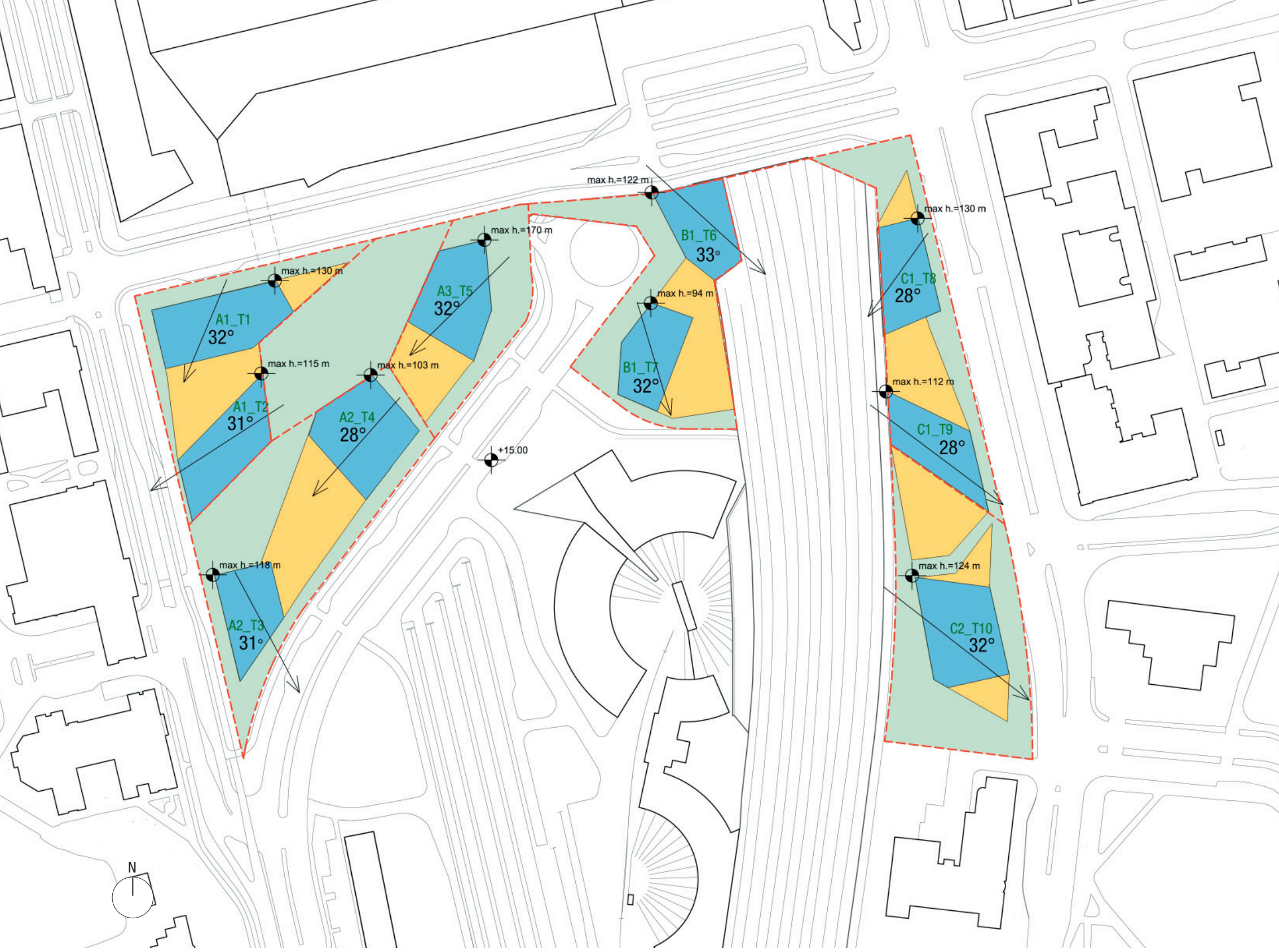
Mandatory connection between levels

suggested connections between levels

Alignments

In the single building plots, the Detailed Plan specifies the maximum footprint of the towers in plan, the location of the pedestrian access (when needed, the buildings have distinct entrances at the different levels with internal connections between them) and a defined area for a private garden or a low extension of the ground floor space to host different functions of public interest.
The high and the low volumes of the buildings are ruled by some required alignments. This prescription guarantees that the edges of the public space toward the existing streets and the new elongated square in the sub area A are defined at least partially by the building fronts.

- Buildable area
- Public space
- Maximum perimeter of the tower
- Ground floor mandatoryalignement
- Tower mandatoryalignement



Roofscape

Setting building maximum “envelope” defines no only the maximum height of the buildings (between 88 and 170 meters at the peak) but also the pitch of the single-eaved top roof, whose slope varies between 28° and 33°, with a prevalence of south, south east and south-west orientations. This rather simple envelope rule gives the buildings a coherent silhouette, which in turn will account for a well-studied skyline and a “chorus-like” feeling.

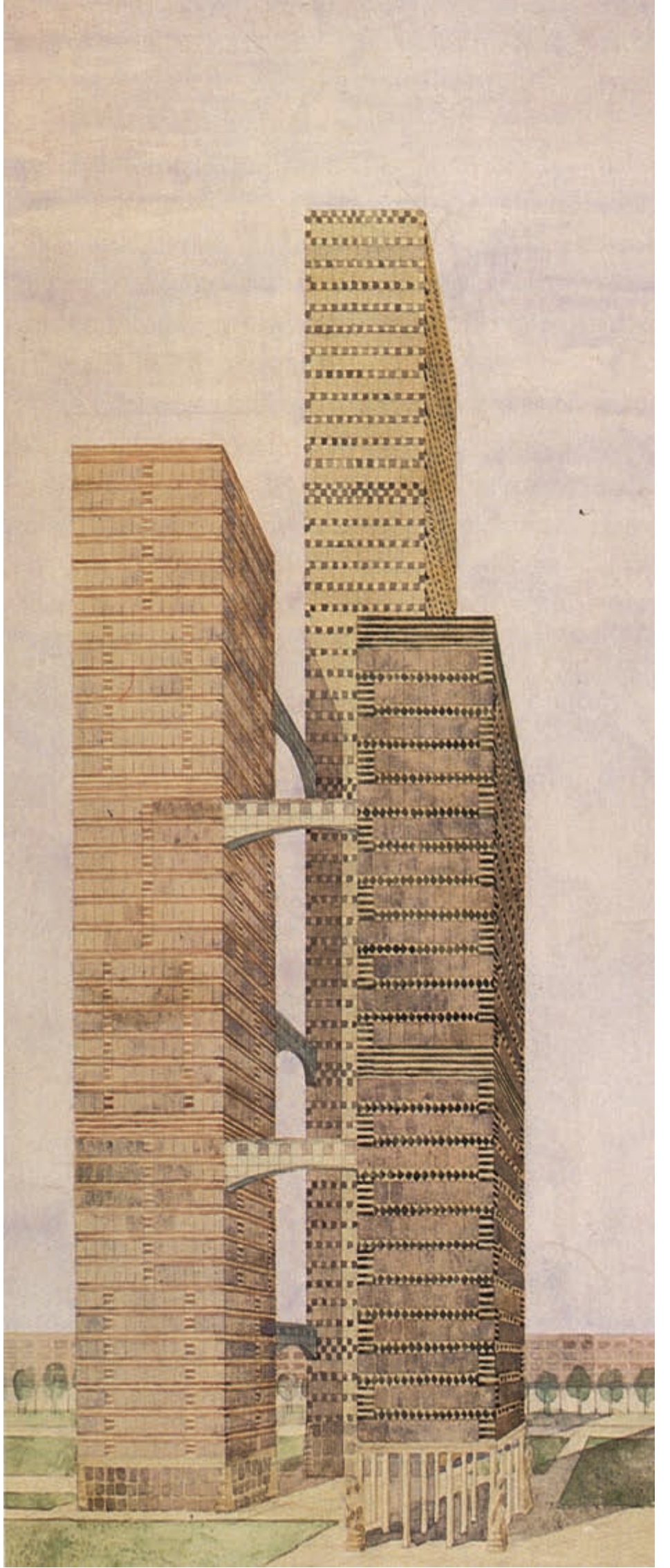
Buildable

Public space

Maximum perimeter of the tower

Maximum roof height

Slope of the roof

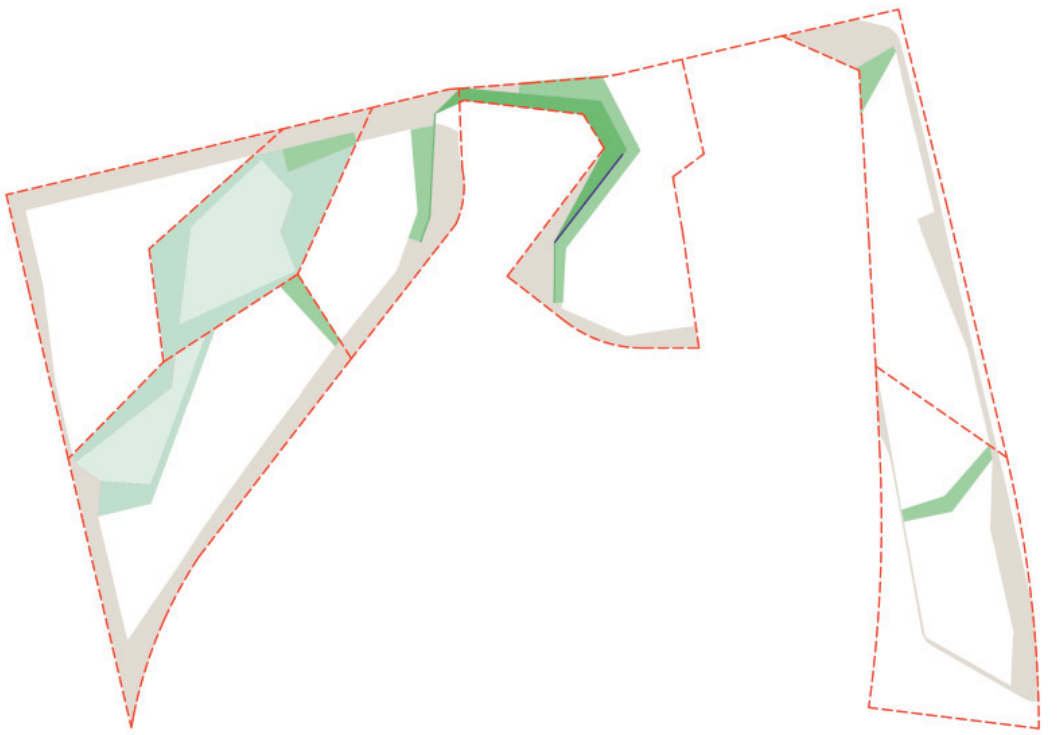


Josef Frank, UNO-Gebäude, New York, 1948

Architectural guidelines

The new intervention is organized along a sequence of collective spaces of different character, designed and proportioned to create a lively environment and to make the most of the views, the sun orientation, protection from the wind. The new urban fabric is “grafted” on the existing site rather than just imposed on it. This generates a feeling of continuity and harmony between the buildings and the existing topography, creating a number of interlocking spaces which hold together the different buildings. The architectural guidelines contained in the master plan underline and reinforce this concept of “environmental sequences”. The master plan indicates some very simple architectural themes or “palettes” capable of giving a “family feeling” to the single architectural designs of the buildings and of generating sequences and variations responding to the specific location.

The architectural guidelines concern heights, building silhouette, definition of the edge of public space, architectural “grain”, materials. The final effect of this attitude departs from the “add-up”, mechanical character of many contemporary schemes which simply constitute an addition of single buildings, and tries to reproduce the “natural” feeling of historical city environments without recurring to direct mimetic acts.

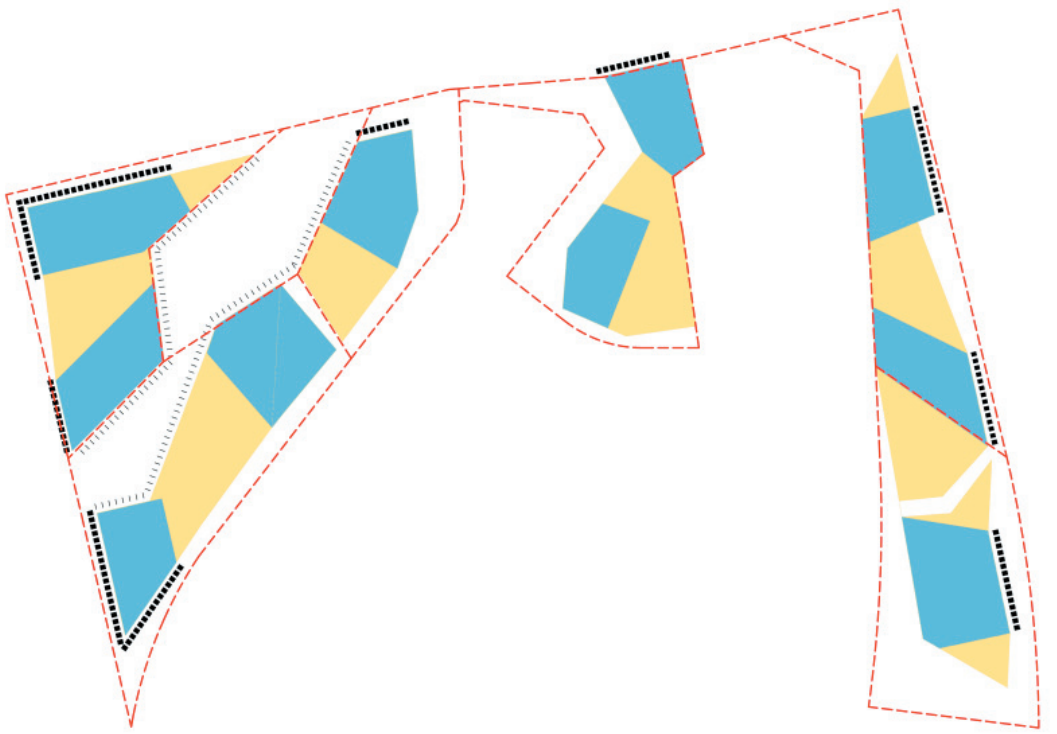


Open space

Open space finishes

The pattern of open spaces defines a combination of “softer” and “harder” areas of paving, with rows of trees along the existing roads and in particular ground “pools” finished in grass or pebbles. All the stairs and the main pedestrian routes will be finished in Arctic White of Kuru Grey granite stone of different dimensions, and a small stone trim paving will surround the buildings edges, finishing the existing asphalt sidewalks. In the main public spaces, a number of granite continuous seats will define the main rest spaces and guide pedestrian paths. Two locations call for specially-commissioned large scale outdoor sculptures or permanent installations: the central square next to the access to the subway and the shopping centre, and the roundabout connecting Veturitie with Teollisuuskatu.

- New walkways must be treated with the same materials as the existing ones
- Square stone pavement with the possibility to plant trees or bushes
- Square stone pavement
- Staircase stone pavement
- Compositional unity
  Uniform architectural treatment



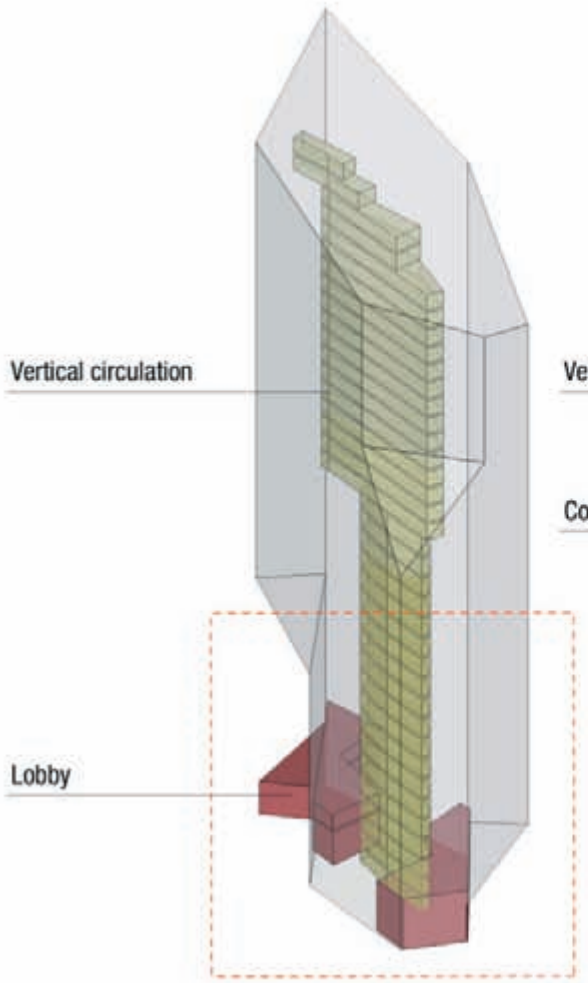
N

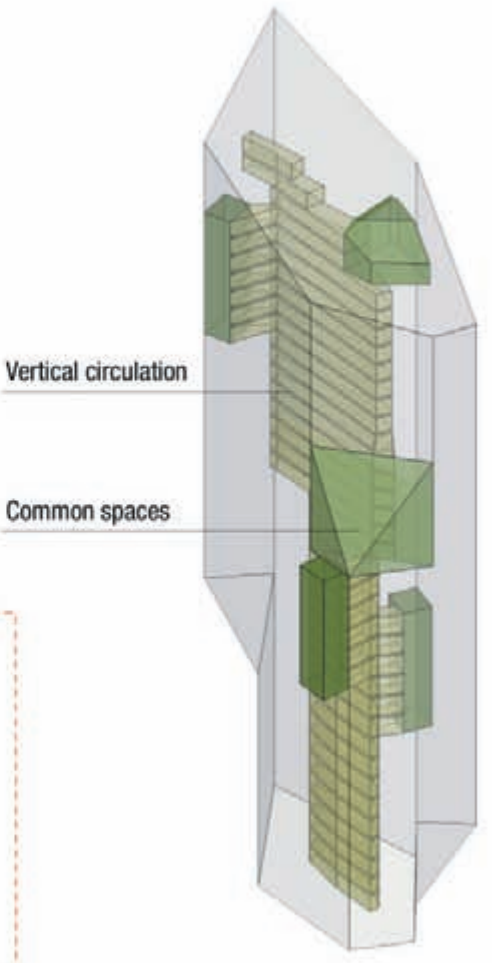
Streetscapes

Streetscapes

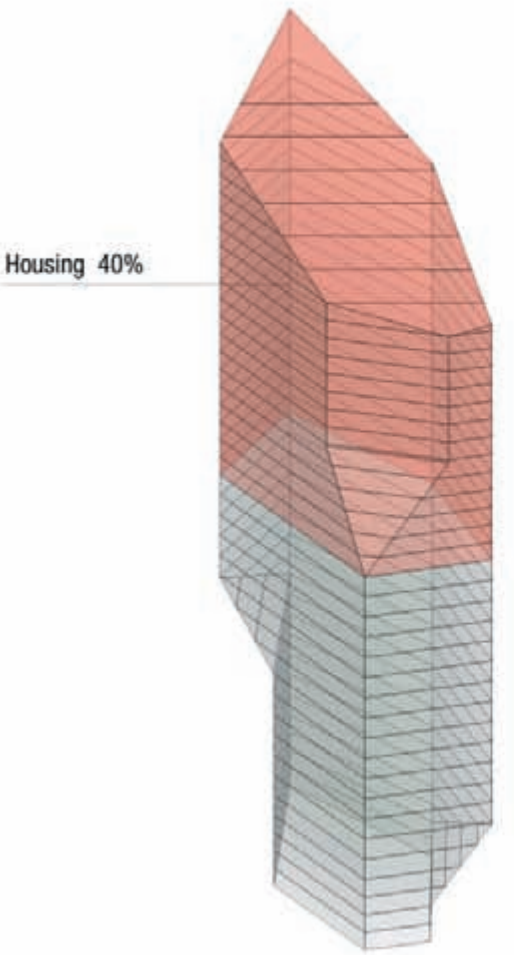
To give the buildings a more “urban” feeling, the Detailed Plan prescribes on the exterior three edges toward the existing city (Pasilankatu on the west, Asemapäällikönkatu on the north and Ratapihantie on the east) a “stone” palette for the first five floors, while toward the new public square on area A the edges are prescribed in a glazed, curtain wall finish to maximize the relationship with the interiors.

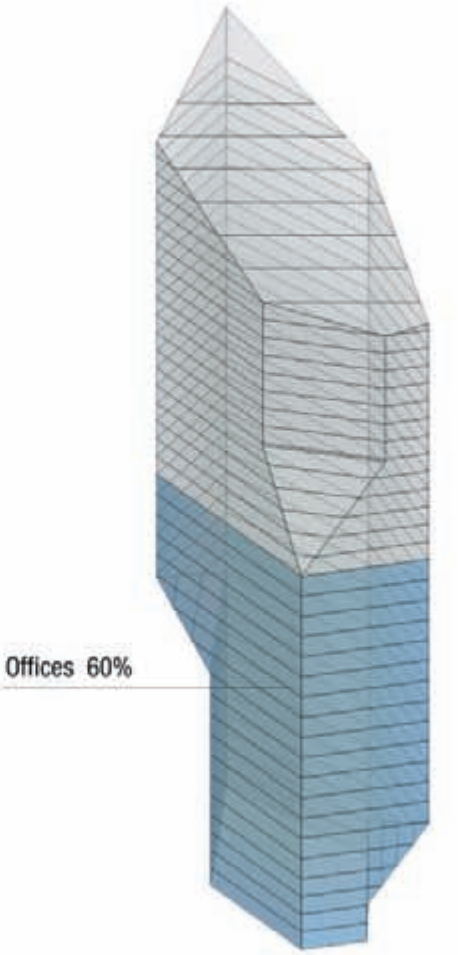
- Buildable area
- Area designed for towers
- “Wall” surface 50-80% solid
- “Glass facade” 0-20% solid



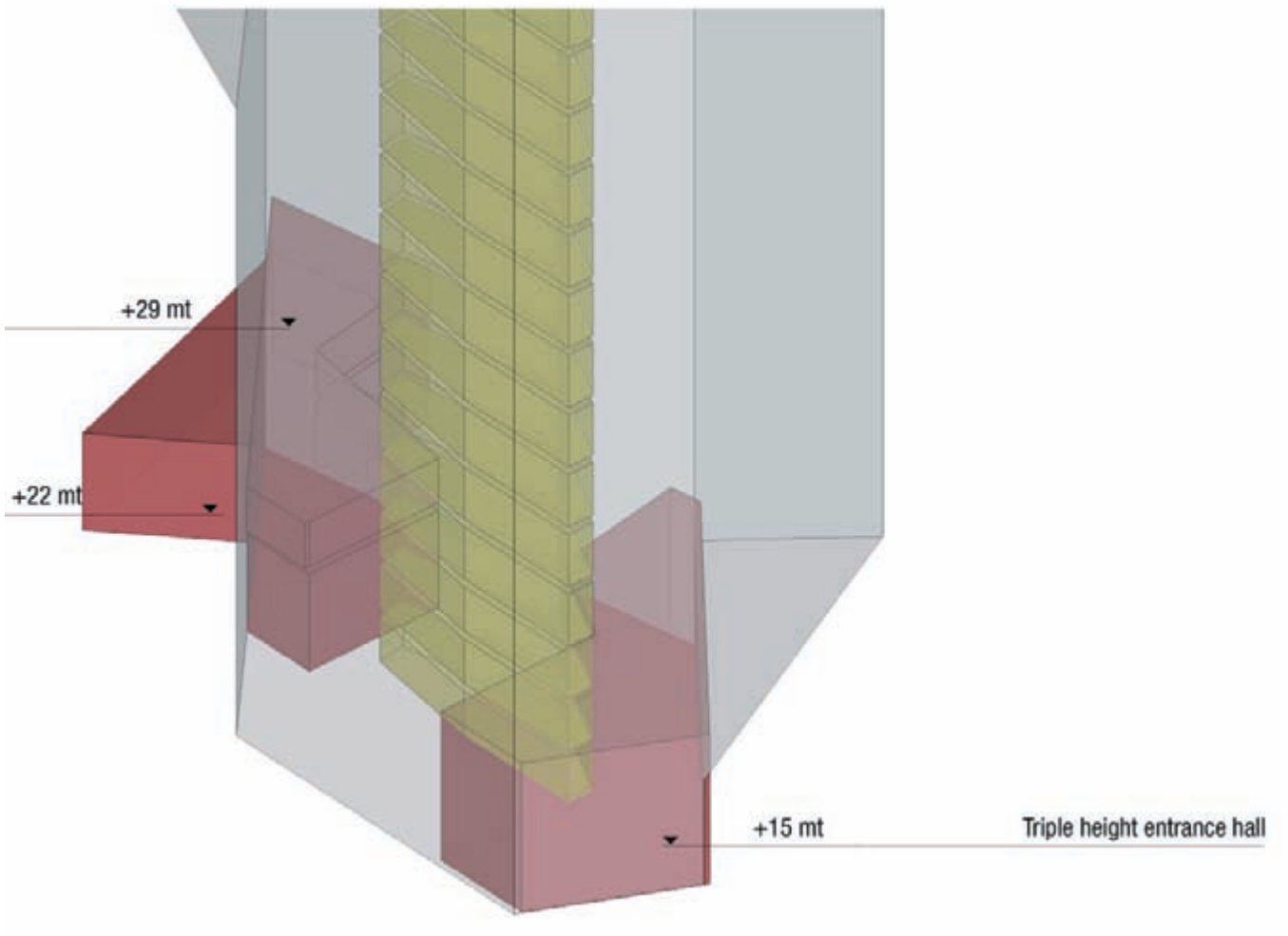


Example of circulation scheme





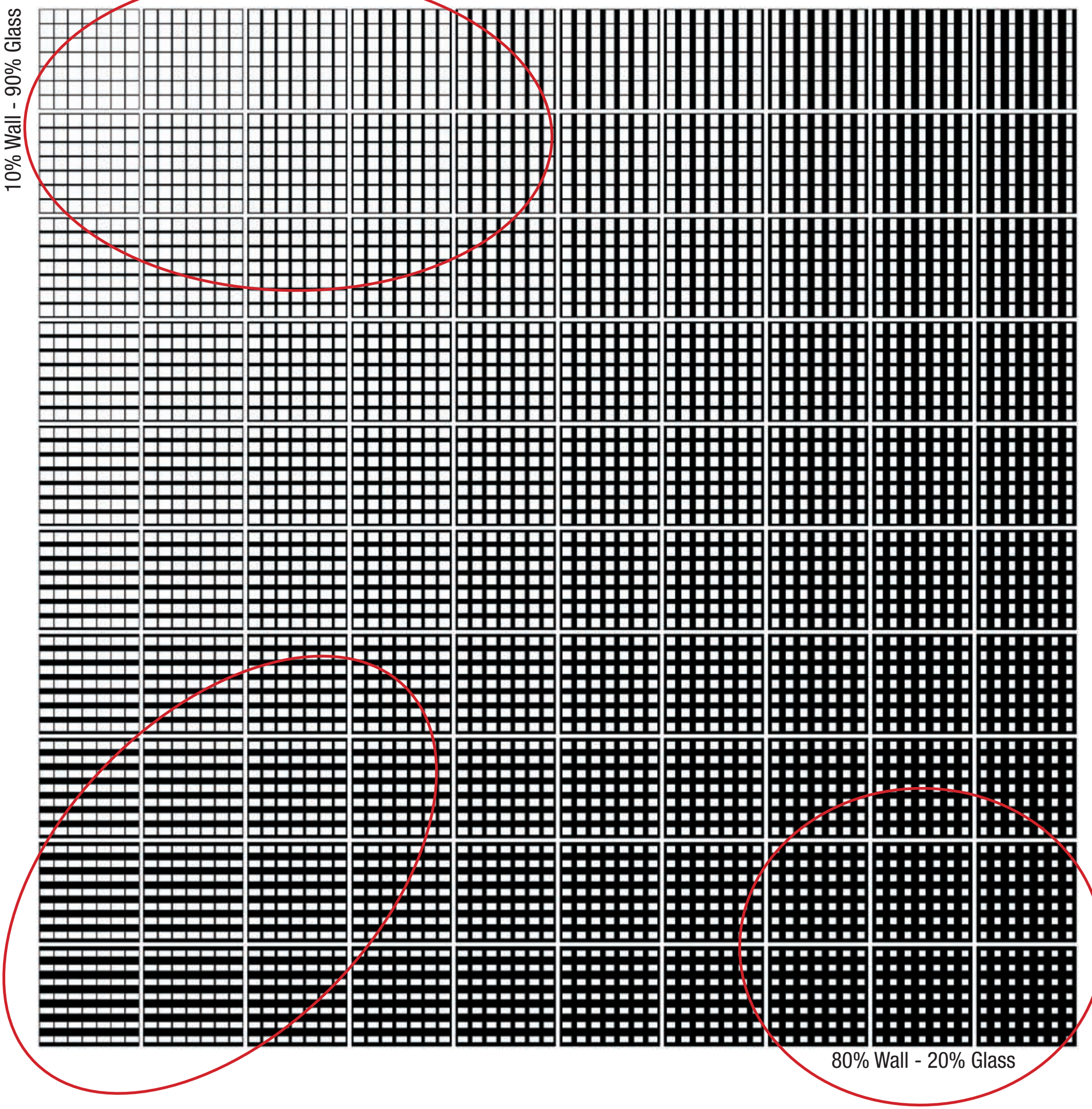
Example of offices and housing storey subdivision

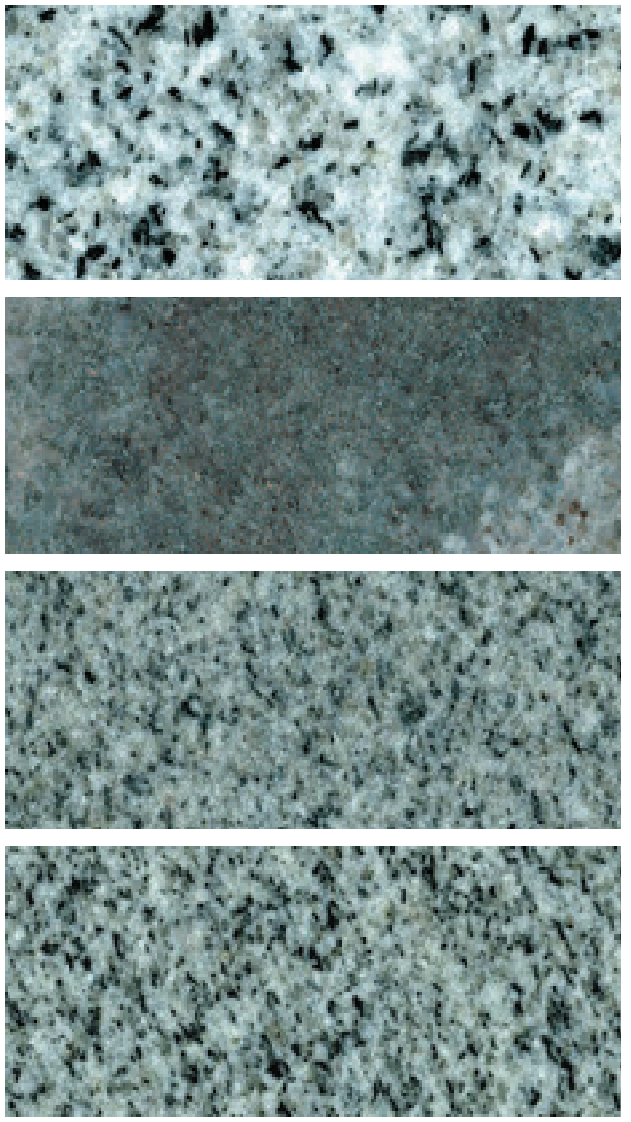


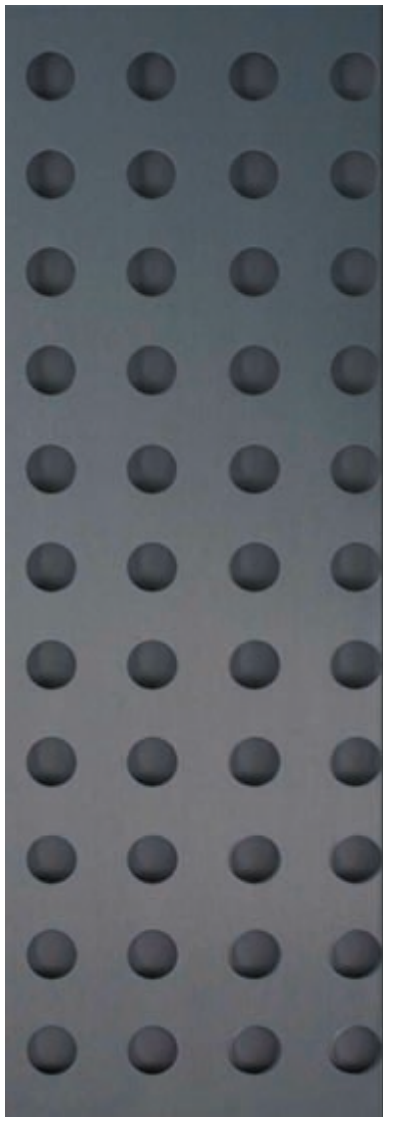
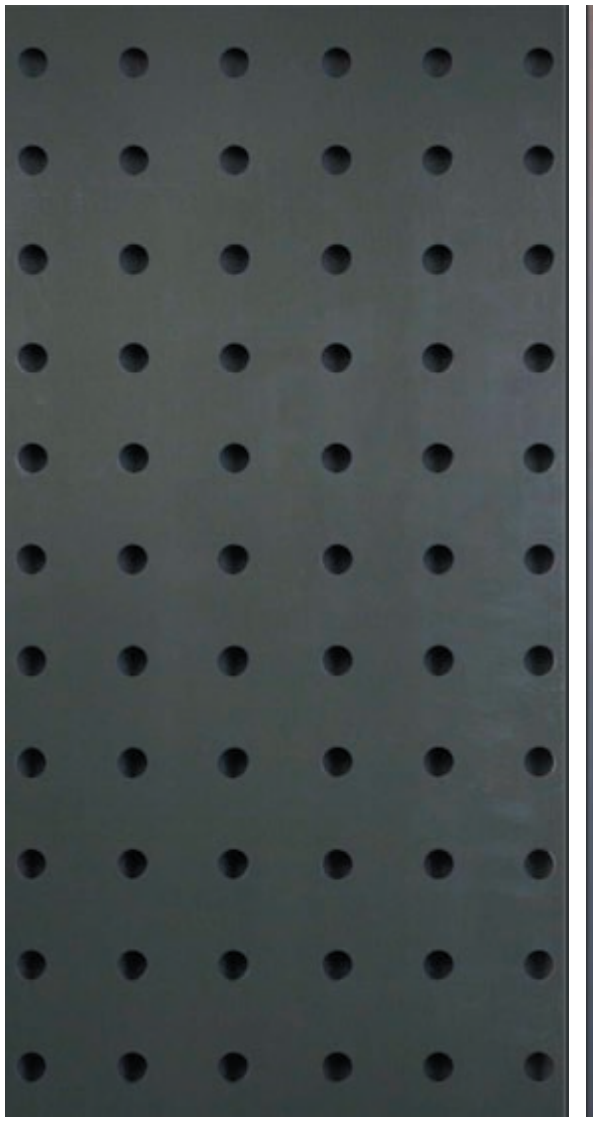
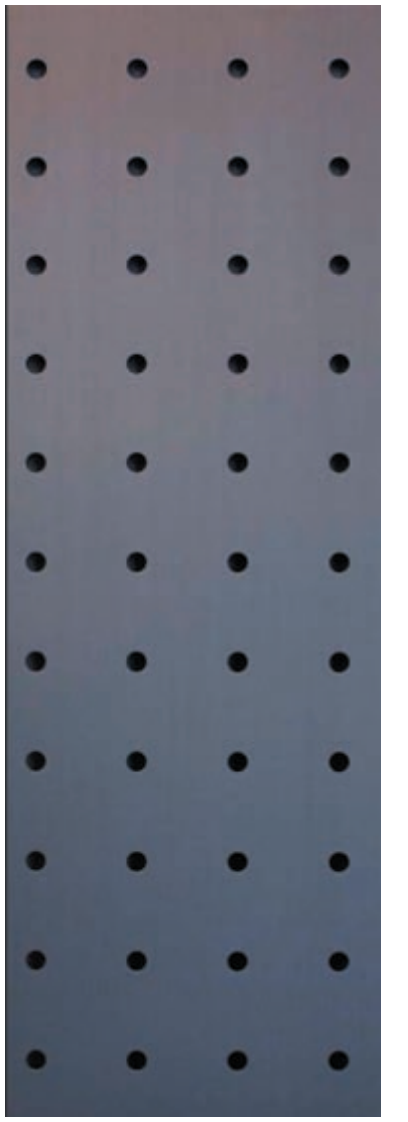
Detail of the typical obby

Collective spaces in the towers

The towers superimpose housing floors over office ones. The plan prescribes high entrance lobbies to connect the different levels among each other, and a number of collective “greenhouses” or other collective spaces giving rhythm to the building and generating nice outlooks over the city.


10% Wall - 90% Glass
80% Wall - 20% Glass



Architectural “textures”

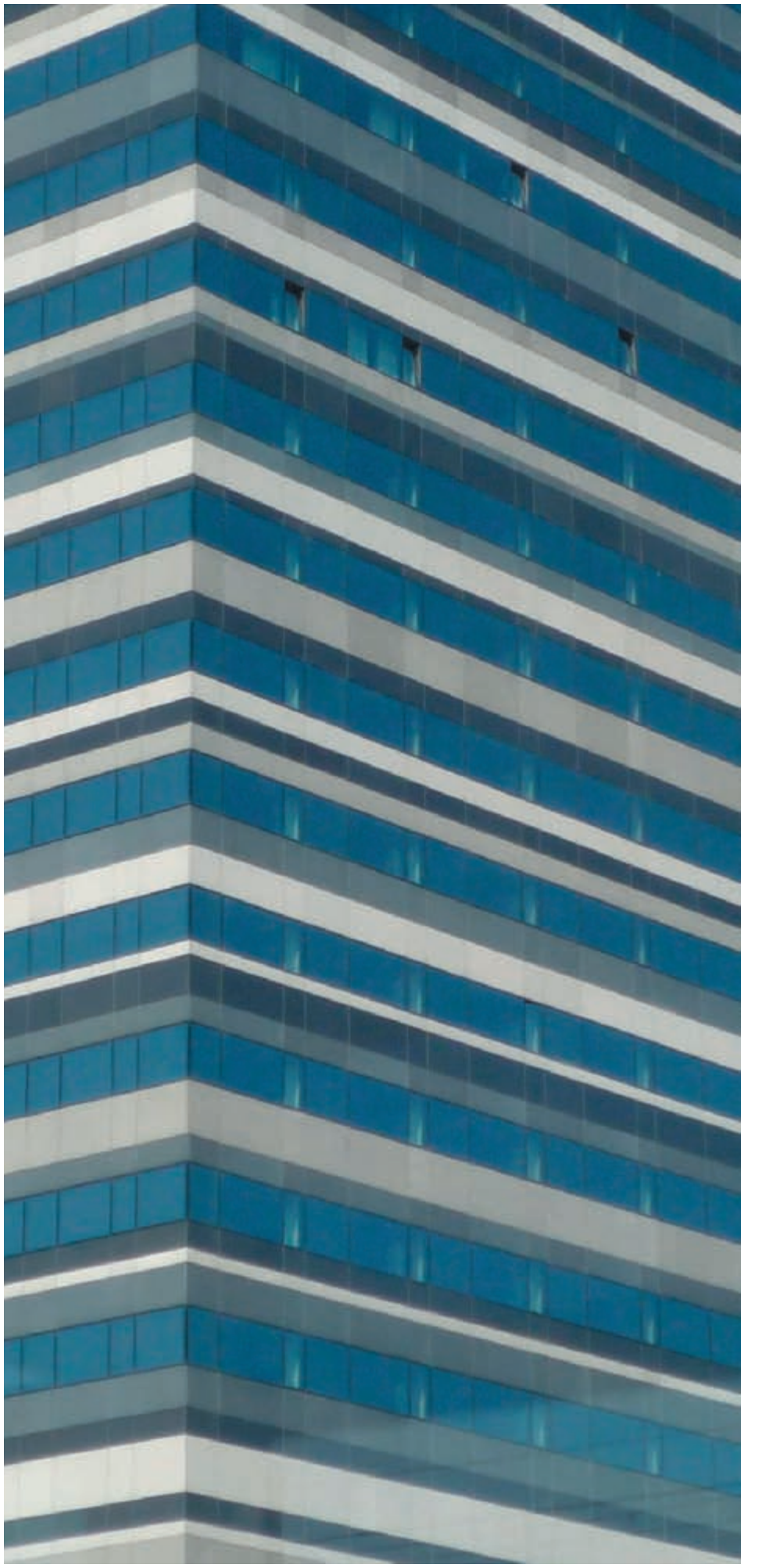
Without predetermining single architectural solutions, which should be left at the choice of the designer of the single buildings, the detailed plan could indicate a number of sample architectural patterns whose varying parameters could be “solid/void”, “horiziontal/vertical”, “rough/smooth”, “regular/random” and their high number of possible combinations.

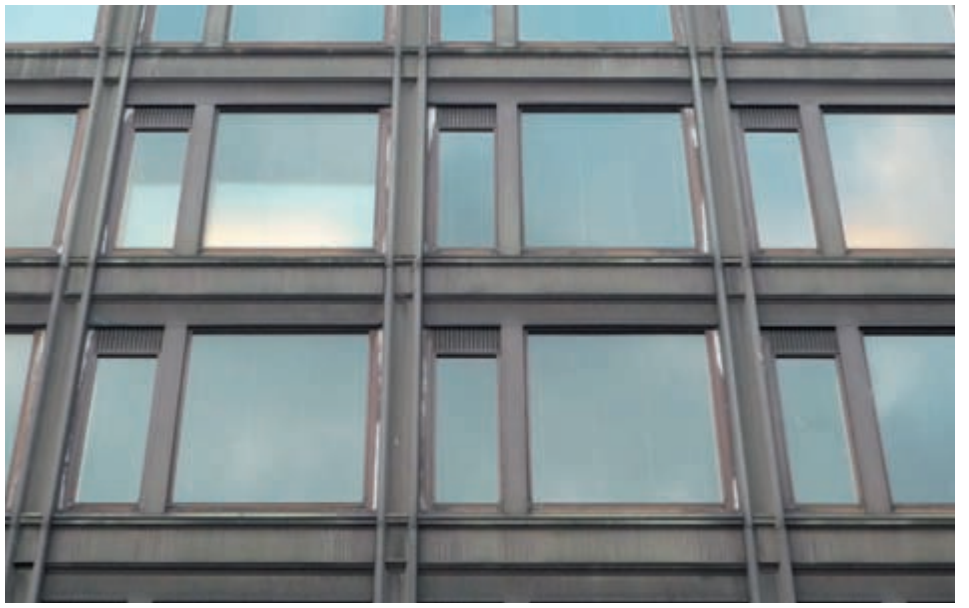
Colors

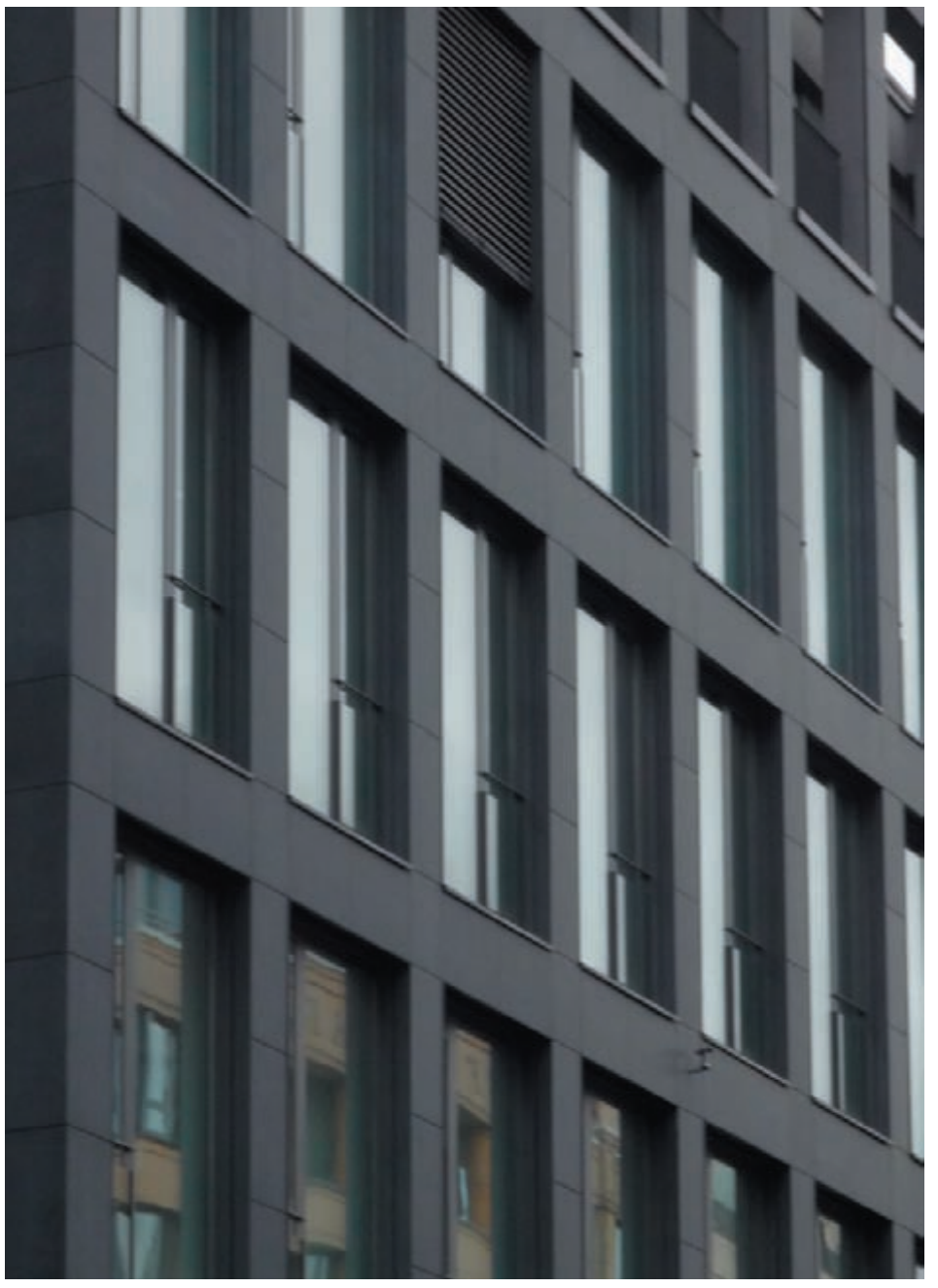
There Detailed Plan offers a palette of five colour hues with variations in brightness and saturation (four for each colour hue) chosen following a NCS or a RAL Design code intended as a range to choose from for the enamelled metal parts, which allows to create some colour accents in the building without generating a “chromatic anarchy”.

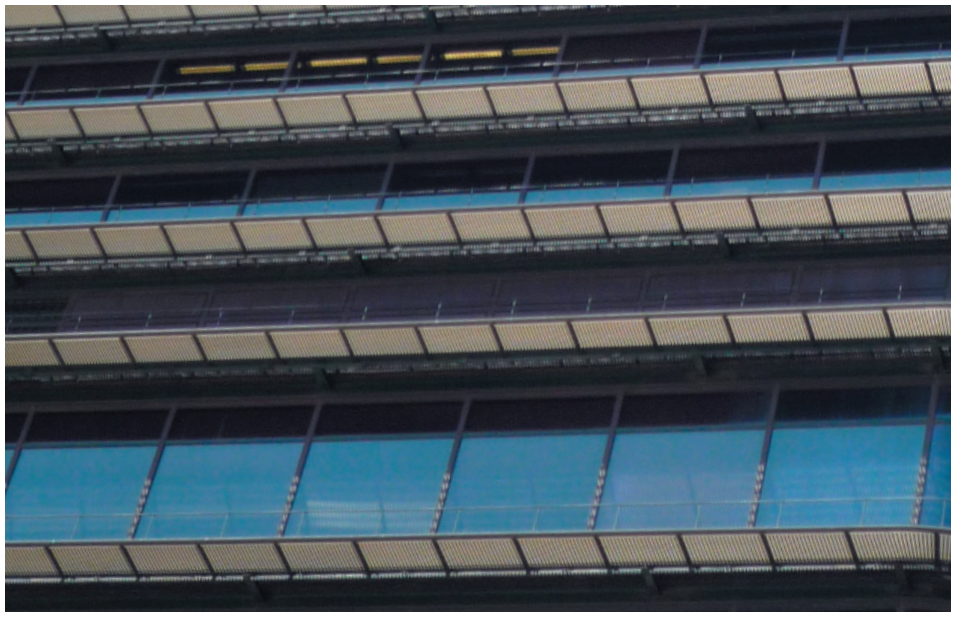
A palette of materials

The detailed plan suggests also limiting the materials of the façades to a range of three (glass, stone, metal) plus one (wood, used only in setback, weather-repaired situations). These materials, in turn, are considered as a “family” or a “cluster” of finishing options which can allow for a wider range of architectural expression without endagering the sense of order of the intervention.
For example, glass has a variety of transparencies (extra-clear, normal, sanded, silkscreened, etc.), metal can go from polished stainless steel to anodized aluminium to naturally weathered copper or brass cladding, an option very used in the modern architecture of the fifties and sixties in Scandinavia that we would like to be reinterpred in Central Pasila in a contemporary way; stone, in the shades of white, grey and green, has a series of “Finnish” interpretations (Arctic White, Green Sea, Kuru Grey, Silver Green) and a wider international palette, with a range of surface finishes (polished, sanded, etc.).





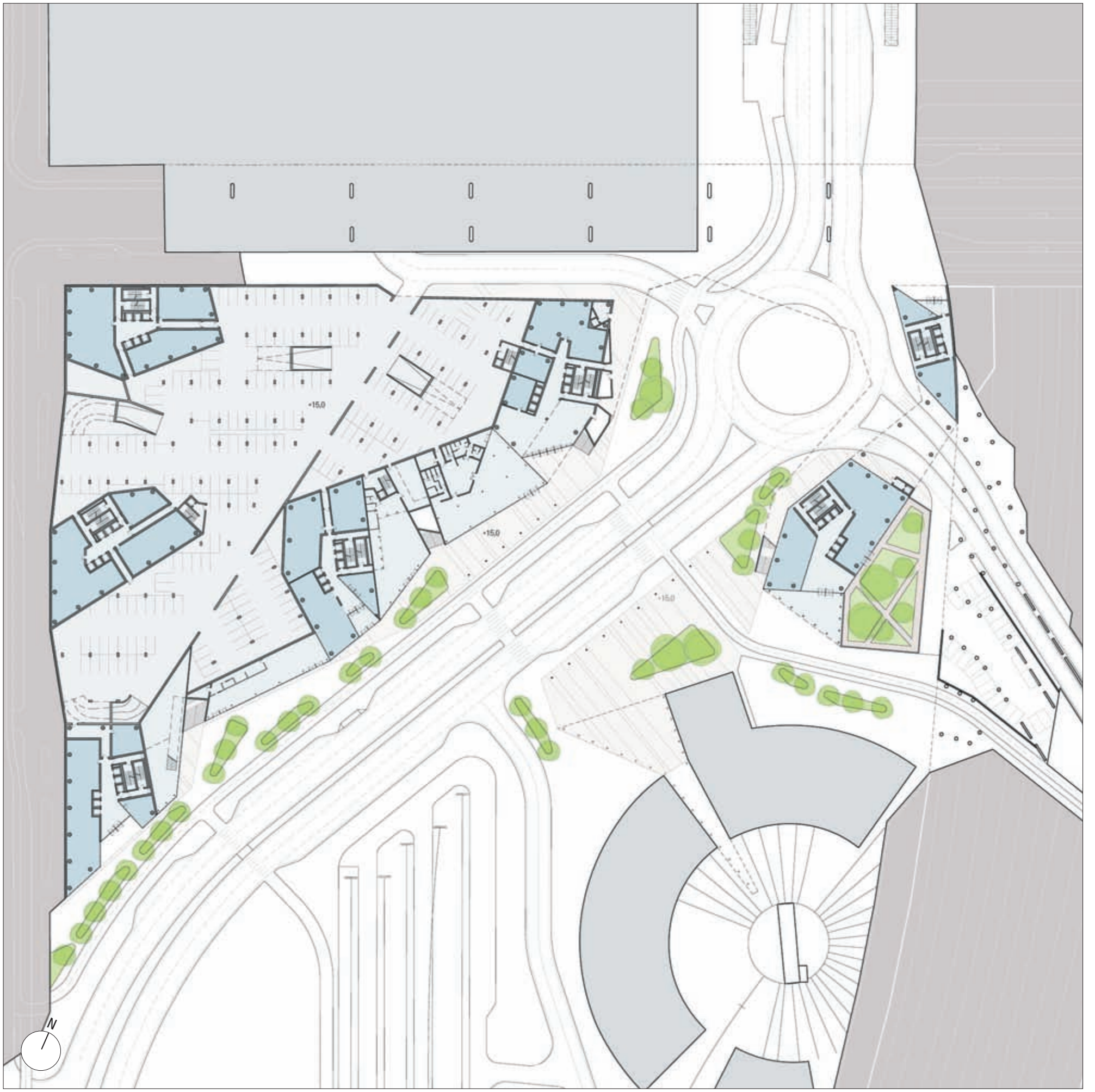




Lighting design

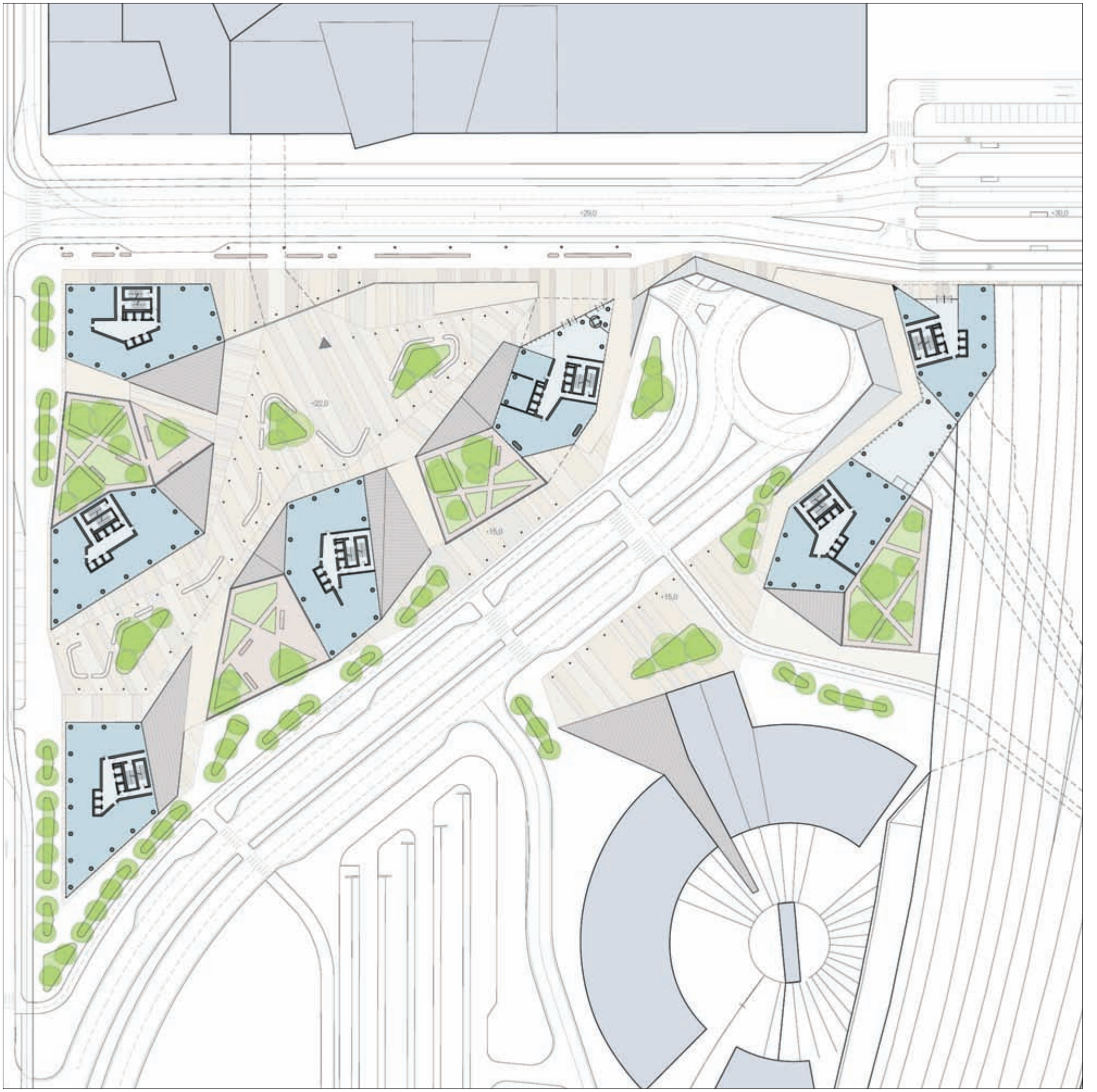
The open space will require a detailed design of the illumination. The guidelines for it imply several general indications, as:

- light sources not oriented toward the sky to avoid “light pollution”
- Use of low consumption lighting typologies such as fluorescent or vapour lamps
- In the main square, use of low, frequently spaced lampposts plus one higher, custom designed “lighting sculpture”, plus “floor-washers” lighting elements imbedded in the stone benches and in the walls bordering the square
- Higher and wide-spaced lampposts on the perimeter streets.

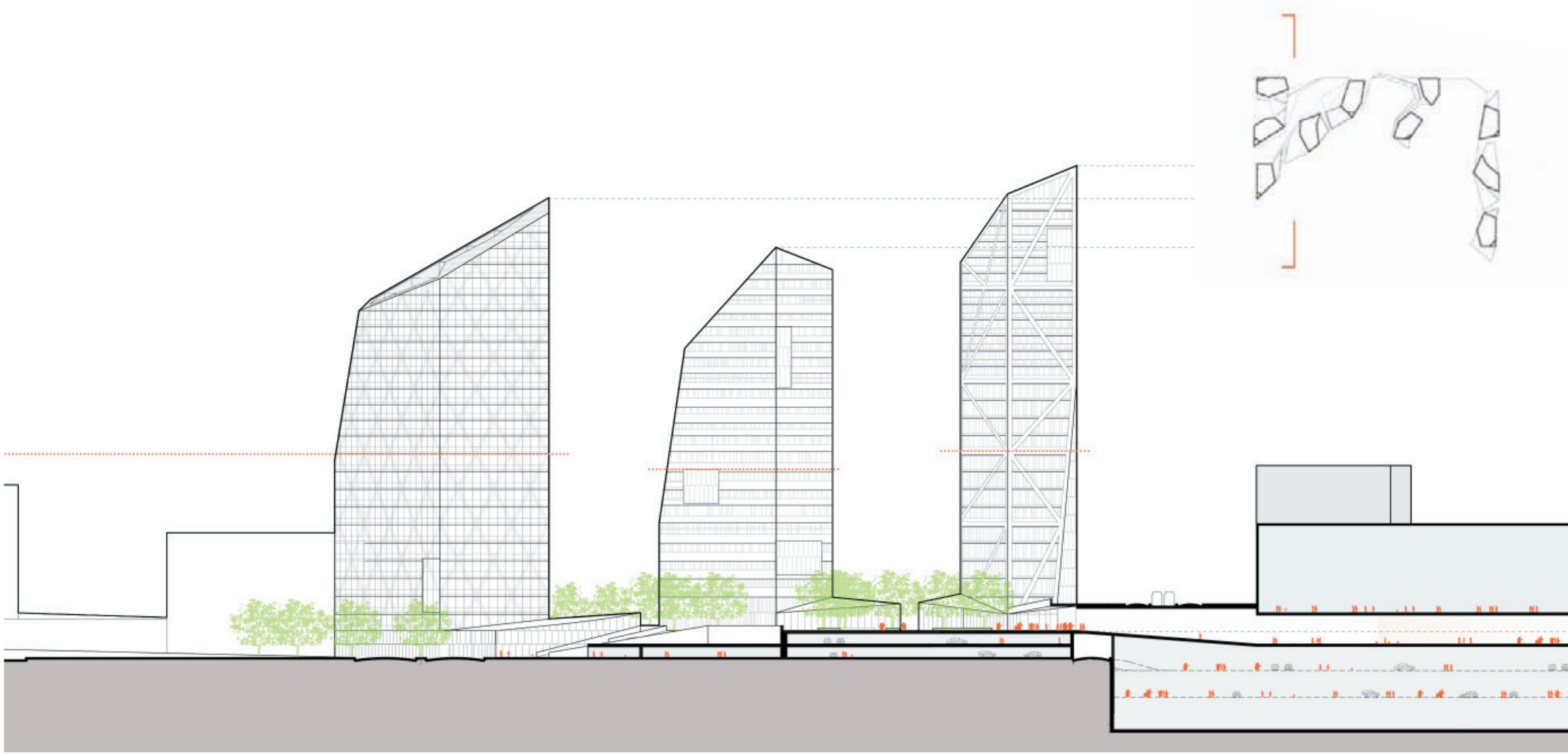


Level +15 mt

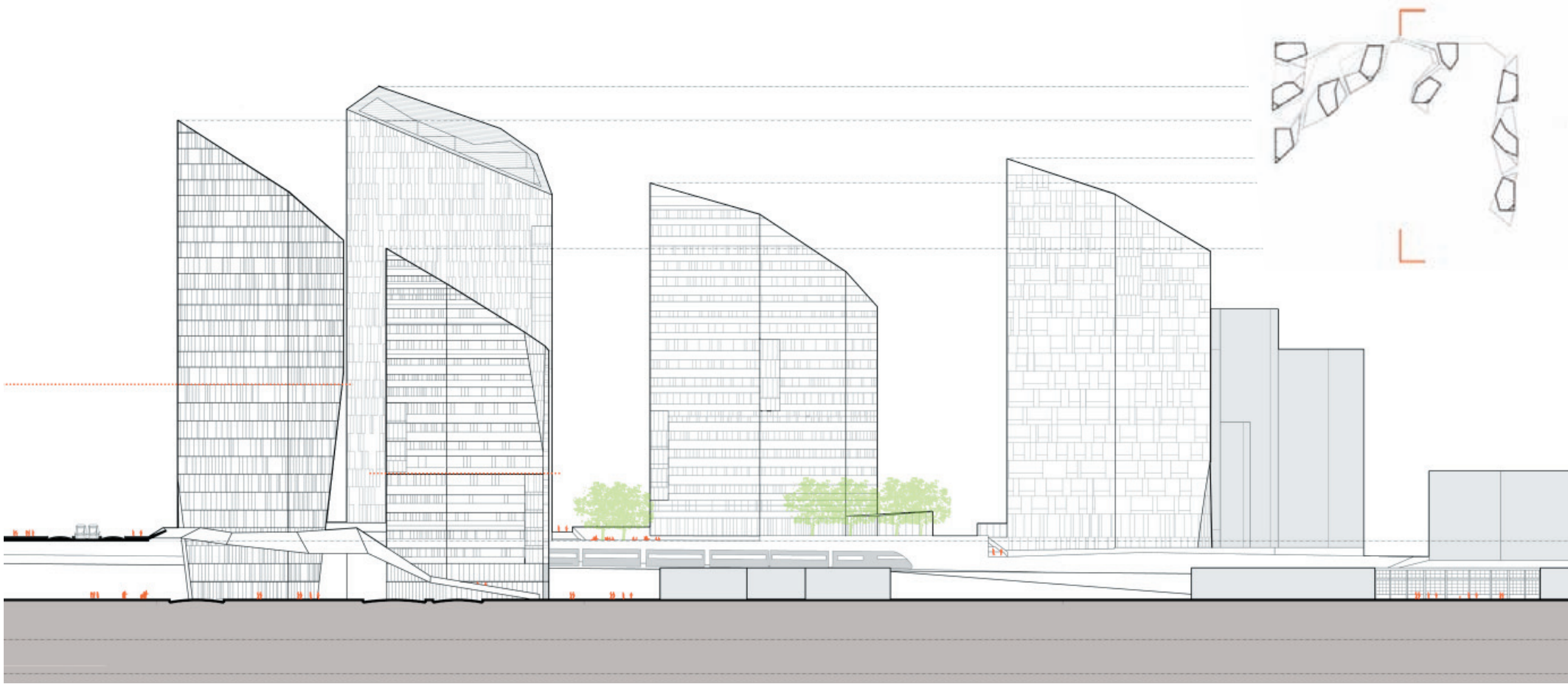
Level +24 mt



Level +31 mt



Section AA



Section BB

Sample Towers

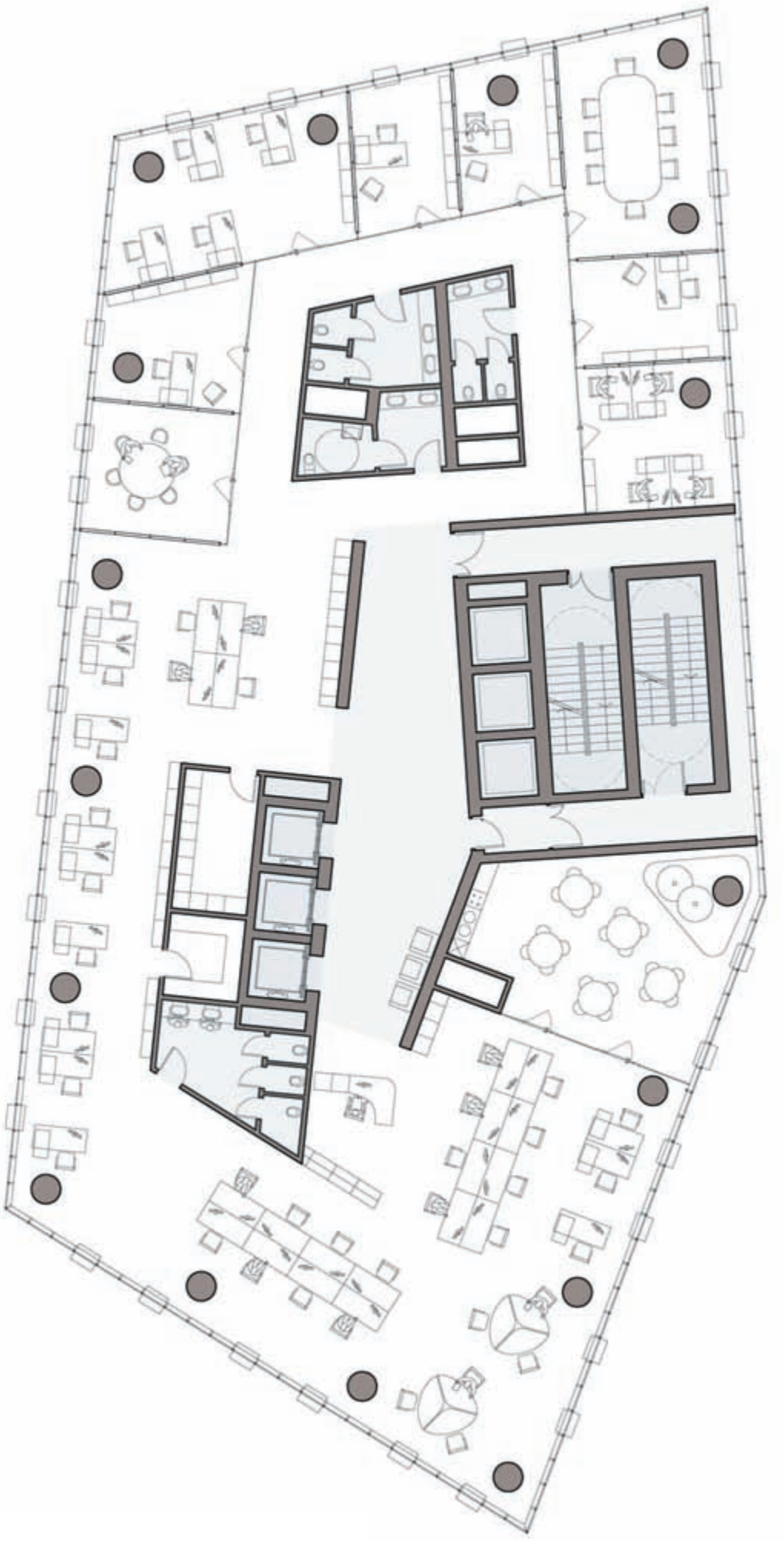
The development of two “sample towers” (the lots chosen are A3_T5 and A2_T4) shows a number of possible solutions for the typological and architectural development of the Detailed Plan.
The project for a tower takes into account a number of functional conditions and constraints and optimizes their mutual interactions:
-relationship with the parking spaces, technical rooms and service areas at the base
- taxi and pedestrian access from the different levels of public space
- rain, snow and wind protection for the public at the ground floor
- extended space of lobbies in relationship with public space
- design of private outdoor space
- lobby services and control of the different publics accessing the building
- separate elevator blocks for the office and housing floors
- efficient fire exit routes
- floor plan surface optimization for offices and housing floors
- efficient access and horizontal distribution at all floors
- dimensioning of the structural bays in relationship with typological needs (offices and housing)
- other structural optimizations in relationship with floor layout and partitions
- elimination of thermal bridges between inside and outside
- need of vertical plumbing and energy distribution for housing and offices
- flexibility of use from mono-tenant to multi-tenant for the offices and possible insertion of secondary private vertical connections between floors
- capacity of hosting a variety of apartment sizes in the housing floors
- storage spaces at floors
- presence of internal double-heights between floors and of common social spaces in intermediate floors
- form, orientation and wind protection of private outdoor spaces in housing floors
- relationship between varying horizontal sections and typological issues
- integrated solutions for the top floors
- relationship between individual units and the whole
- possibility of customization of apartment and offices
- skin design for offices and housing sections
- architectural strategy and materials

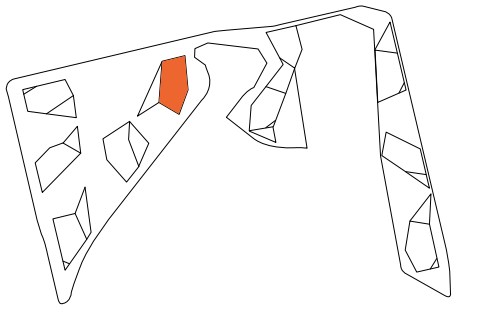
Level +25,5 mt

A simple plan

Both “sample towers” (A2_T4 and A3_T5) are based on a simple plan concept: a polygonal perimeter, carefully shaped and dimensioned in relationship with the spam from the outer bay to the central distribution space. The vertical distribution core, including the main elevator block for the upper housing floors, two separate fire exits reaching a naturally-ventilated corridor and the smoke-safe elevator and emergency stairs, plus a number of vertical ducts, spans the distance from the inner distribution to the skin. Its position favours the orientation of living areas to the south-east, south and south-west to make the most of the sun exposure.
The set of vertical structural elements is set back from the outer edge of the façade to avoid thermal bridges, permits architectural freedom of the envelope and maximizes the structural efficiency of the horizontal floor slabs.
In the housing floors, the depth of the outer ring of living spaces is carefully dimensioned to host a well-lighted room and an inner service space (bathroom, closet, computer alcove, etc.). The insulated outer façade layer is set back from the building perimeter, creating a double skin continuous “wintergarden” (in the A3_T5 tower) and leaving space for deeper wind-screened private terraces.
The correctness of the dimensional choices is demonstrated by variety of possible apartment types (single large rooms, two, three, four room apartments, maisonettes, etc) surrounding the central core and almost always looking out at least two edges of the building to favour sun exposure and natural ventilation.
On the office floors, the outer skin assumes the role of thermal insulation, increasing slightly the overall depth of the office spaces, and allowing a large variety of office layouts from traditional corridor-room ones to open spaces and “non-territorial” offices.

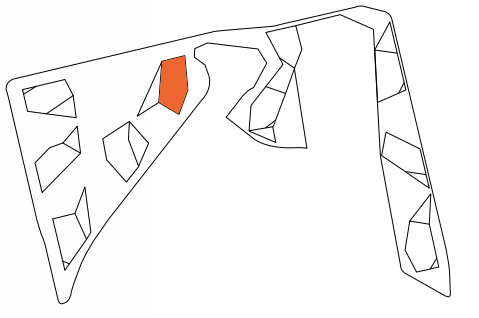
Level +29 mt





N

A3_T5, Typical Office plan



N

A3_T5, Typical Housing plan

Level +93 mt

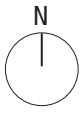
Level +96,5 mt

Level +100 mt

Level +103.5 mt

Level +107 mt

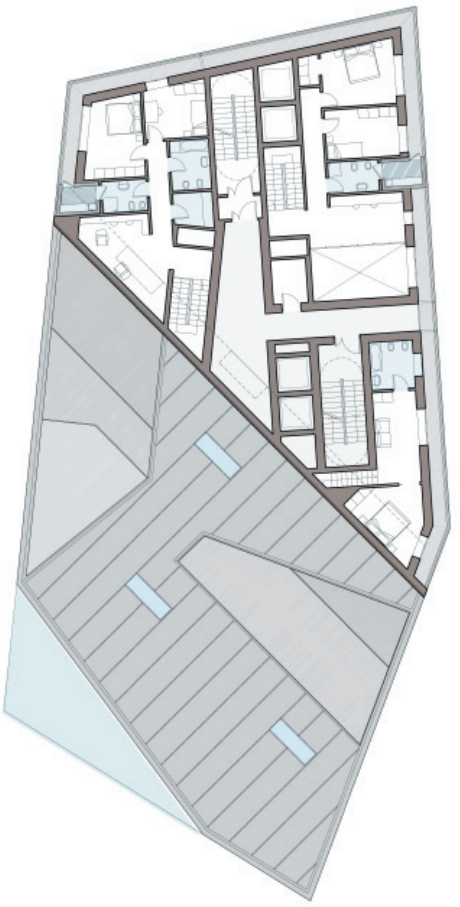
Level +110.5 mt



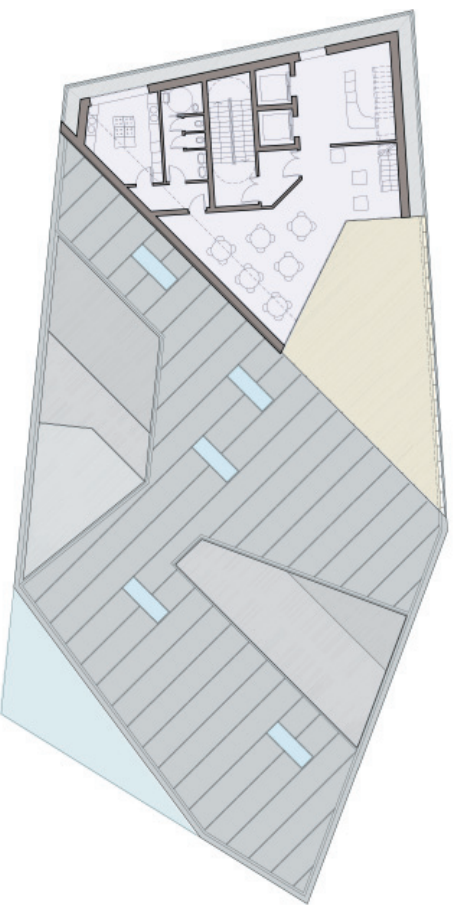
Level +142mt

Level +145.5 mt

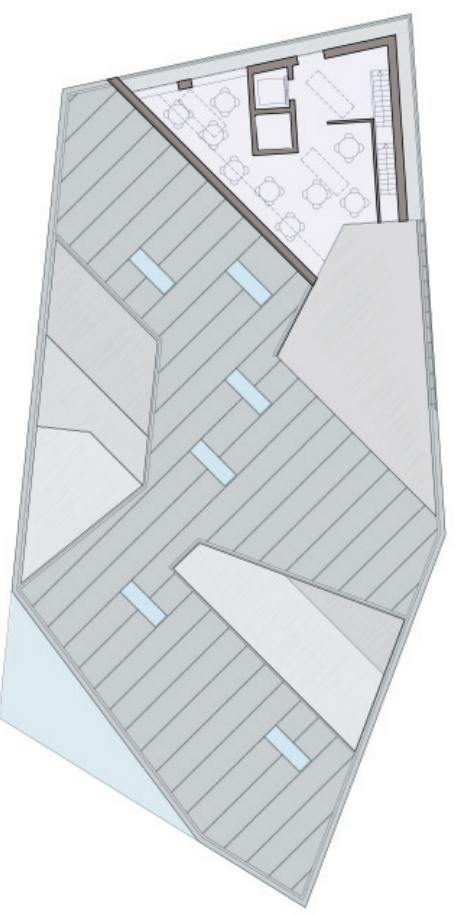
Level +149 mt



Level +152.5mt

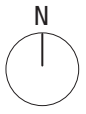


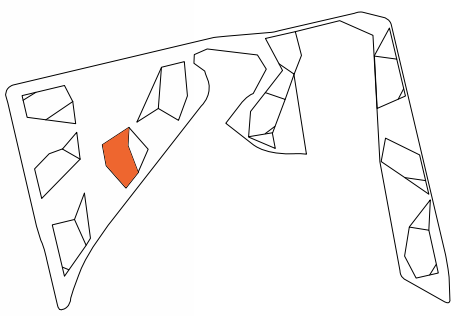
Level +156 mt



Level +159.5 mt

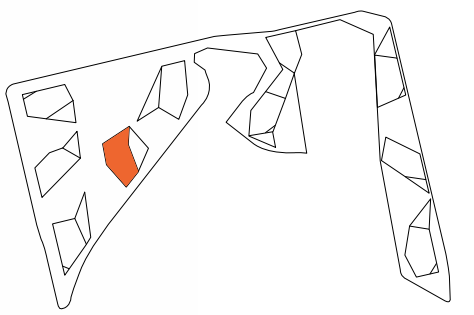
A3_T5, Penthouses and Sky deck





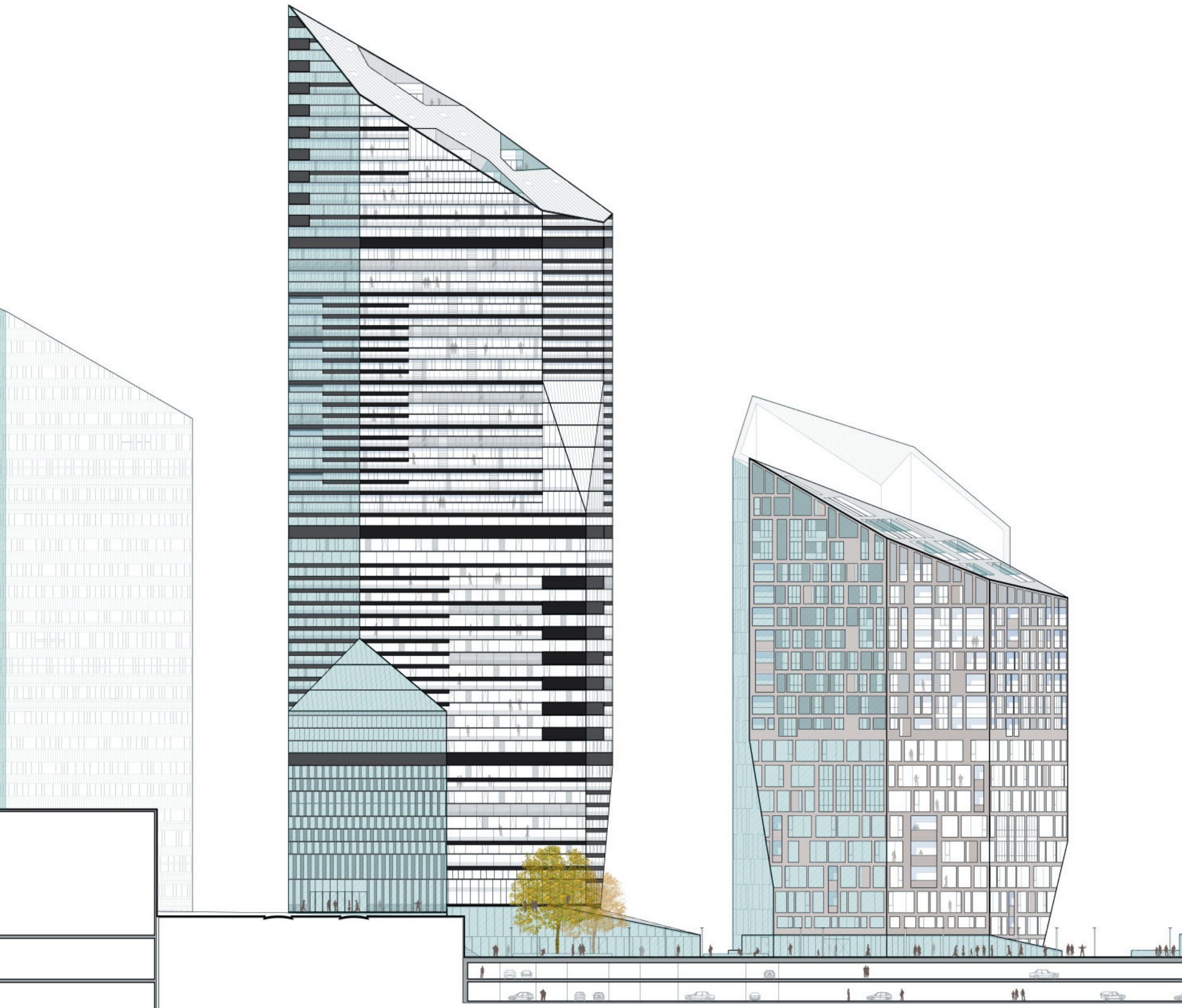
N

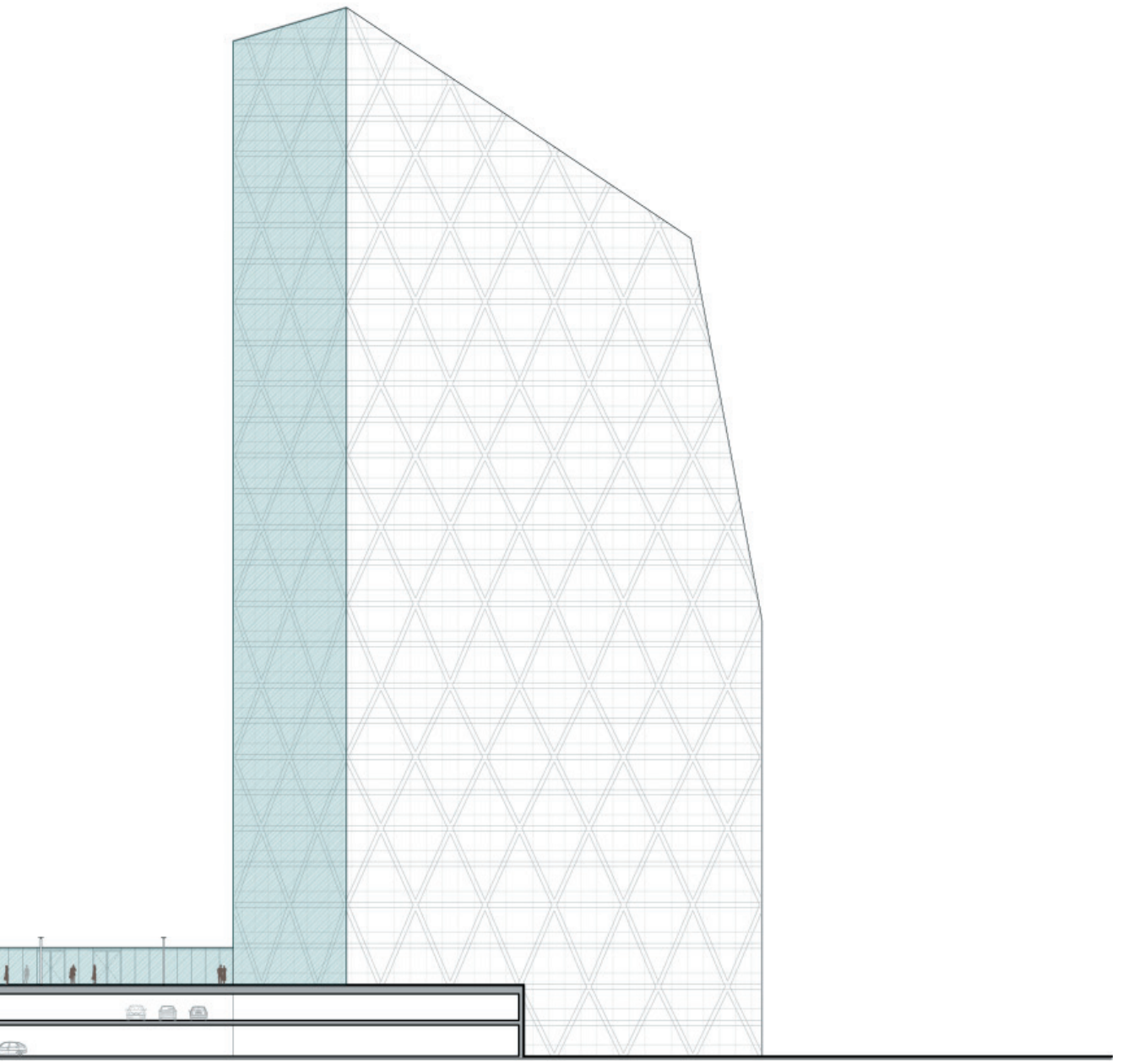
A2_T4, Typical Office plan



N

A2_T4, Typical Housing plan



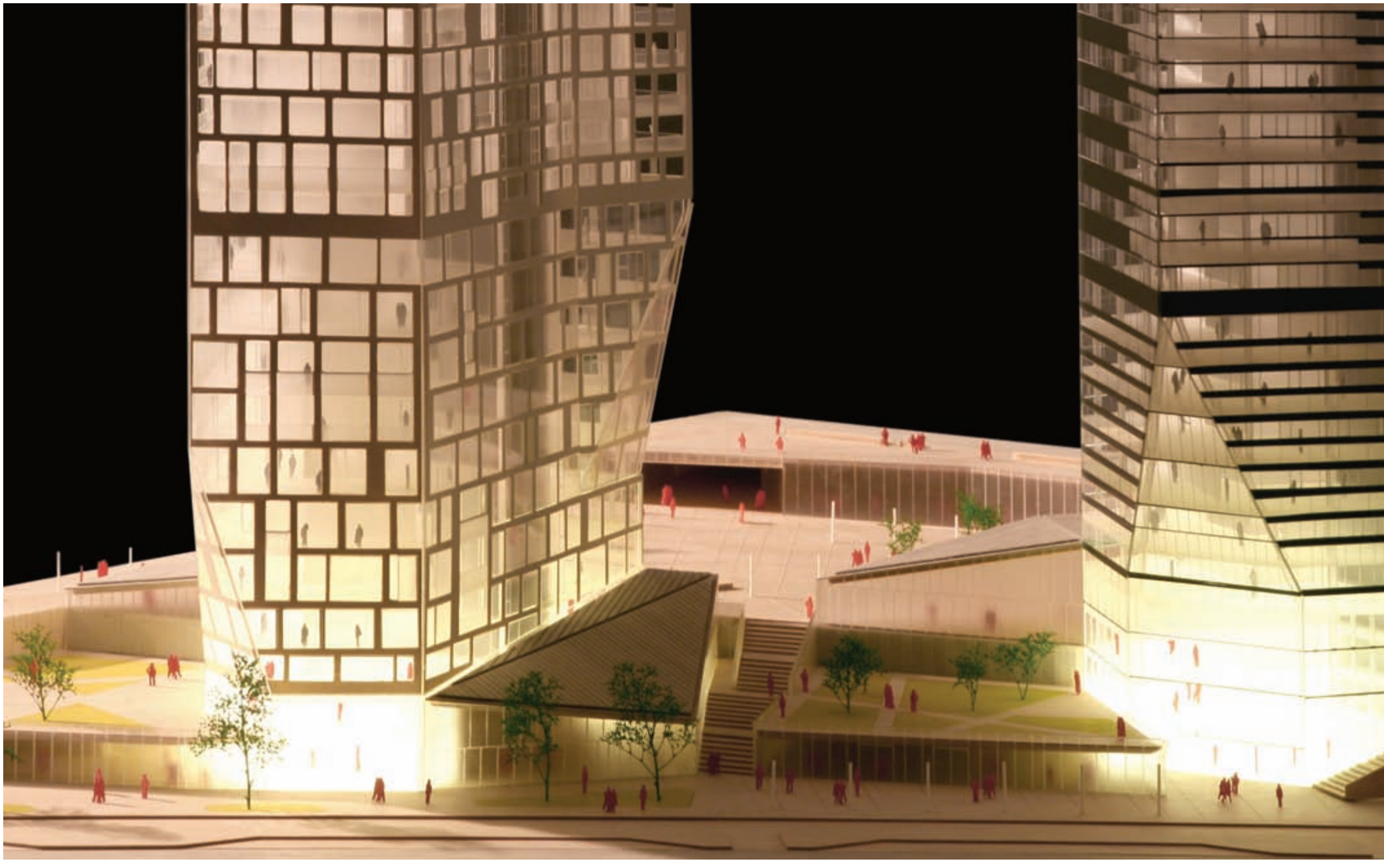


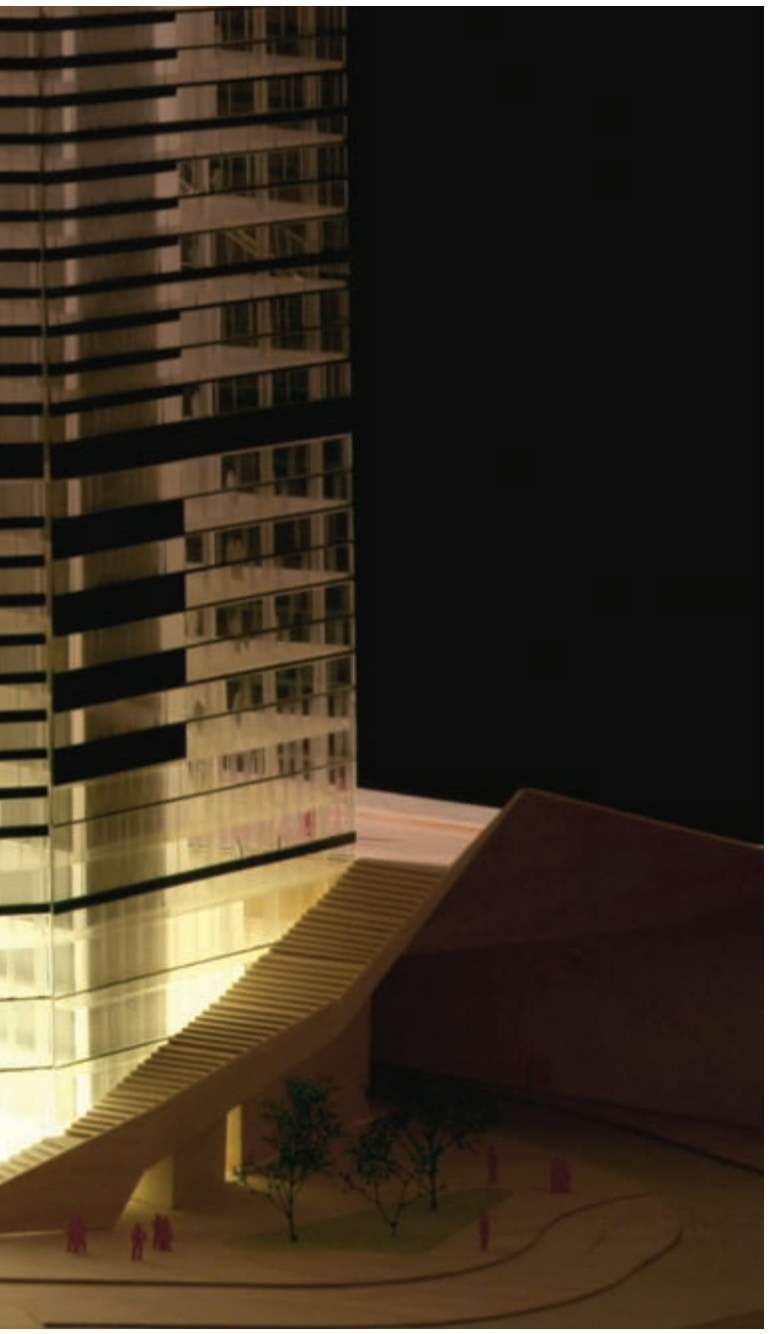
A lively section

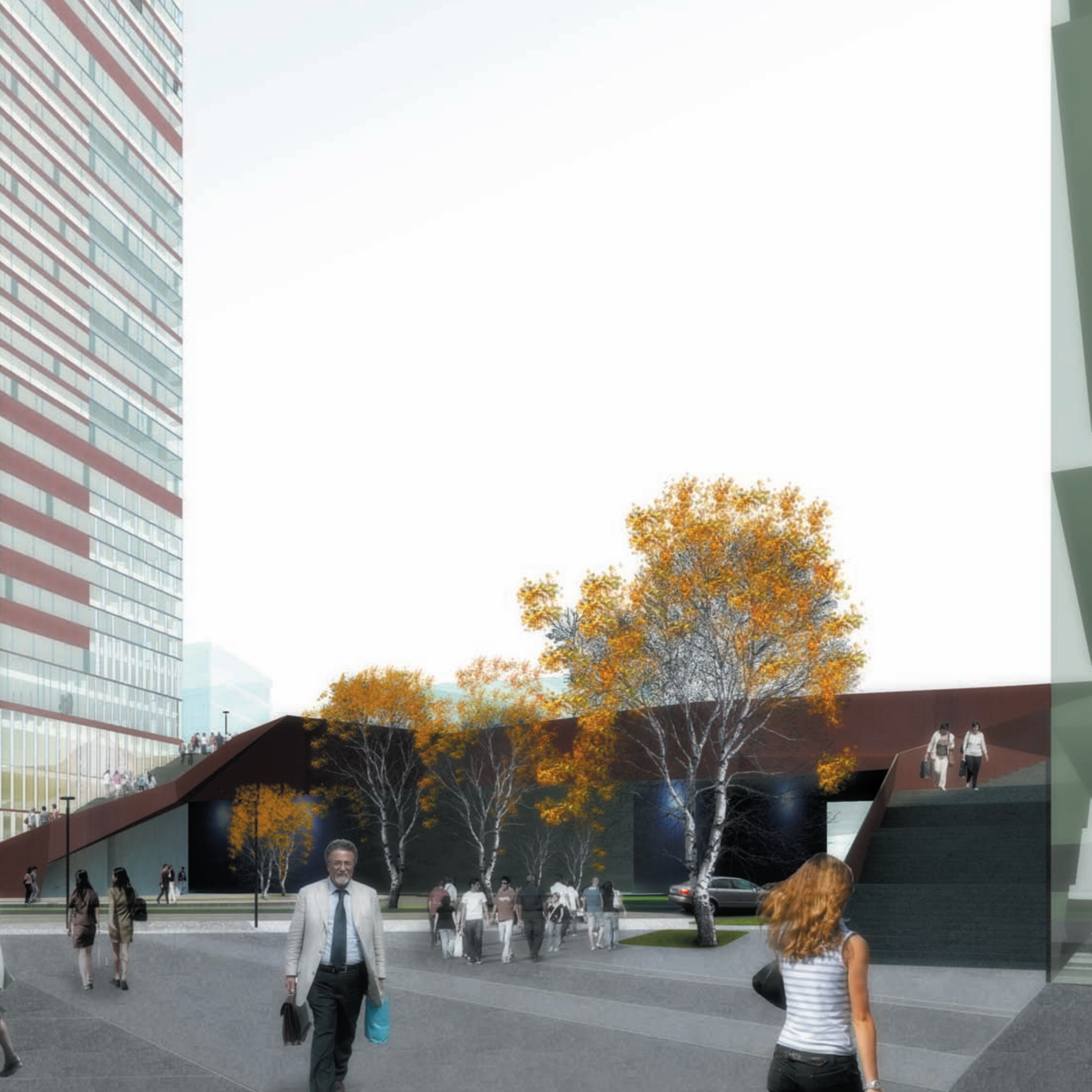
In the great search for overall efficiency and optimization between structural, typological, and climatic issues, a simple plan can yield a wide number of variations in section. The “extruded” character of an efficient tower is complemented by sculpted outer perimeter inflected to host the richness of the open spaces it overlooks. A number of double-height common glasshouses can host common lounges, leisure rooms or hanging gardens in the office areas, and common kitchens or playgrounds in the housing part. The spaces near the ground floor can host a variety of complementary functions (showrooms, commercial and cultural spaces, cafeterias) and extend to protect the private garden. The A3_T5 tower is marked by the large difference in level from the upper and lower public levels. It hosts a public elevator which connects the levels with each other, and a public stair wraps around its east edge to connect Veturitie with the upper level of the station.
The sloped roof becomes the occasion for a richer relationship with the long beautiful views overt the landscape and the inner city, and is developed in two different versions in the two towers, one with very nice terrace houses and the other with a mixture of hanging gardens separating “rooftop townhouses” and a common panoramic restaurant. The remaining surface of the roof, favoured by its orientation, is very well suited for solar energy devices.

Variations on a theme

The sample towers show two among the large number of possibilities of architectural development of the rules and guidelines contained in the Detailed Plan. The taller one, A3_T5, shows a number of more ambitious spatial features in terms of common spaces (interconnected lobbies at the bottom floors, a common greenhouse playground in the housing area, a small rooftop restaurant) and a glass and metal skin wrapping the building and taking a different character in the office part and in the housing one, where it screens the glazed verandas. The shorter one, A2_T4, shows the option of maximizing private spaces with a rather compact distribution, completely residential attics, and a more “tectonic” outer skin.



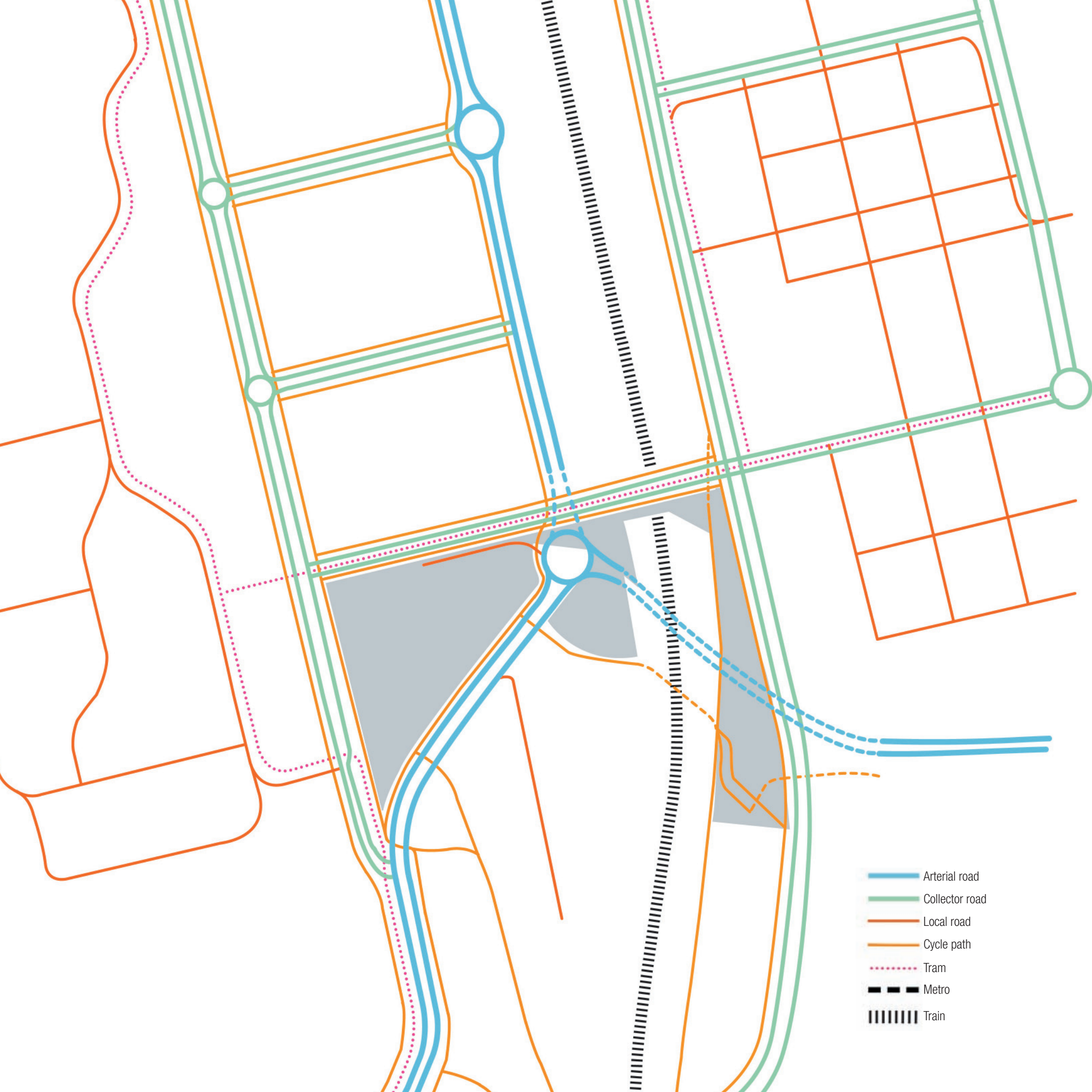




Transport strategy

The proposed Pasila Tower District is located in an area of great accessibility both by public transport and highways. The presence of the second railway station of the country, the tramways and the planned extension of the metro line, together with the planned new road running north-south directly connected with the northern highway system, suggested the planning of a scheme of great building capacity. Accessibility gives way to density allowing the planning of a new, lively and sustainable city centre.

Connections across the site are strongly related with the understanding of existing and future infrastructures. Roads, bike paths, pedestrian walkways, train station, tramways and the planned metro station are carefully considered by the scheme as well as the proposed retail development to happen north of the bridge. The limited amount of parking areas provided is also part of the overall transport strategy allowing for a well balanced supply of public and private infrastructures.


Arterial road
Collector road
Local road
Cycle path
Tram
Metro
Train

Public transport

The existing accessibility given to the area by Pasila train station is going to be highly increased by the planned extension on its west side with the adding of new platforms. The existing tram and bus services connect the train station to the local neighbourhood and on a mid-range time scale a new subway line is planned to run east-west, interchanging with the railway station.

The proposed urban scheme integrates all these lines into the design of public spaces, making the most of their interaction and using them as the main attractors of the public movements. As part of the scheme, the new commercial arcade planned to the north of the bridge and across the abandoned railway yard is put in direct connection with the new pedestrian square, heart of the new Pasila Tower District. This will allow simple and convenient pedestrian accessibility to the proposed development.

The new road layout

The urban scheme is based on the existing road system and the main road layout proposed by the Traffic department of the City of Helsinki. The new north-south road departing from Veturitie, the roundabout which gathers the traffic from Teollisuuskatu, the new junction with Radiogatan, the new design of Pasilankatu and Asemapäällikönkatu are given as starting points, with very slight geometric modifications to adapt it to the new plan.

The local road system is adapted to the morphology of the proposal; all the smaller-section roads serve well the different parts of the scheme avoiding all dead-end solutions. While enhancing pedestrian circulation, the proposal lets the local car movement come close to every building, avoiding the excesses of a radical “pedestrian island” policy which often damaged the public character of places, the feeling of security, the easiness of “finding your way around” and the need for emergency and safety vehicles access. Each building of the scheme has its base directly accessible by a public street allowing for a high degree of flexibility in terms of parking and deliveries of the different parts.

The carefully designed road sections as well as the direct facing of the buildings onto the new and existing roads will enhance their urban character promoting the idea of a new and lively urban destination.

Access and parking

The scheme strategically places the underground parking lots avoiding large concentrations. West and central premises are directly served by the new north-south road by mean of the future roundabout, avoiding all interference with the local road network. The east plots are directly served by Bangårdsvägen road.

The car park design addresses both residential and commercial use. Residents will be allowed to access their premises directly from the car park while employees and visitors will access the public space before reaching their final destination. A limited amount of parking for disabled people is provided at the foot of every tower, directly accessible from the local road network.

Bicycle and pedestrian paths

A fine network of bicycle lanes borders the area and connects it to the adjoining parks and neighbourhoods. When possible, as next to the new north-south road, the bicycle path bends away from the main traffic lines to find better environmental conditions and more pleasant visual paths.

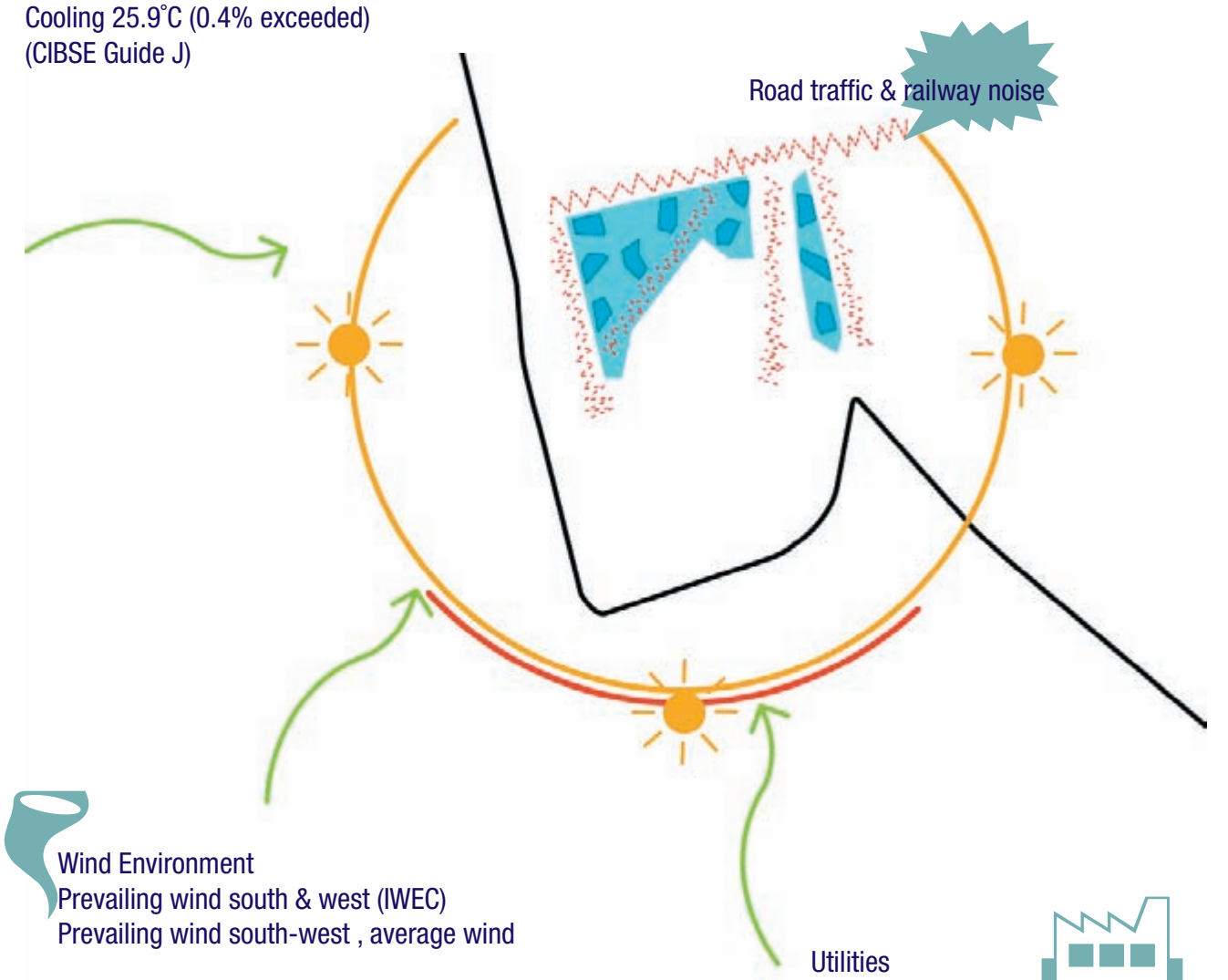
The network of pedestrian paths is very clear and generally coincides with few and well-defined public spaces. Increasing pedestrian density is one of the main weapons to create an urban feeling, and many times the low satisfaction for suburban environments is given by and excess of undefined public space.

The pedestrian strategy is key to the definition of the overall plan. All towers face a public road giving character to the sidewalks. The western plot is built around a central pedestrian square in direct connection with the planned commercial arcade to the north of the bridge and consequently to the railway station. A gentle system of staircases allows for simple connections between the different levels of the site. All changes in level are served by public elevators as well.

Finally, specific care was given to the design of the new road departing from Veturitie street. The presence of the old railway depots suggested the creation of a new access to the premises from the new road, strengthening its urban character.

Helsinki Location
Latitude 60˚12'N
Longitude 24˚55'E

Design Temperatures
Heating -23.7˚C (99.6% exceeded)
Heating -19.5˚C (99.0% exceeded)
Cooling 25.9˚C (0.4% exceeded)
(CIBSE Guide J)

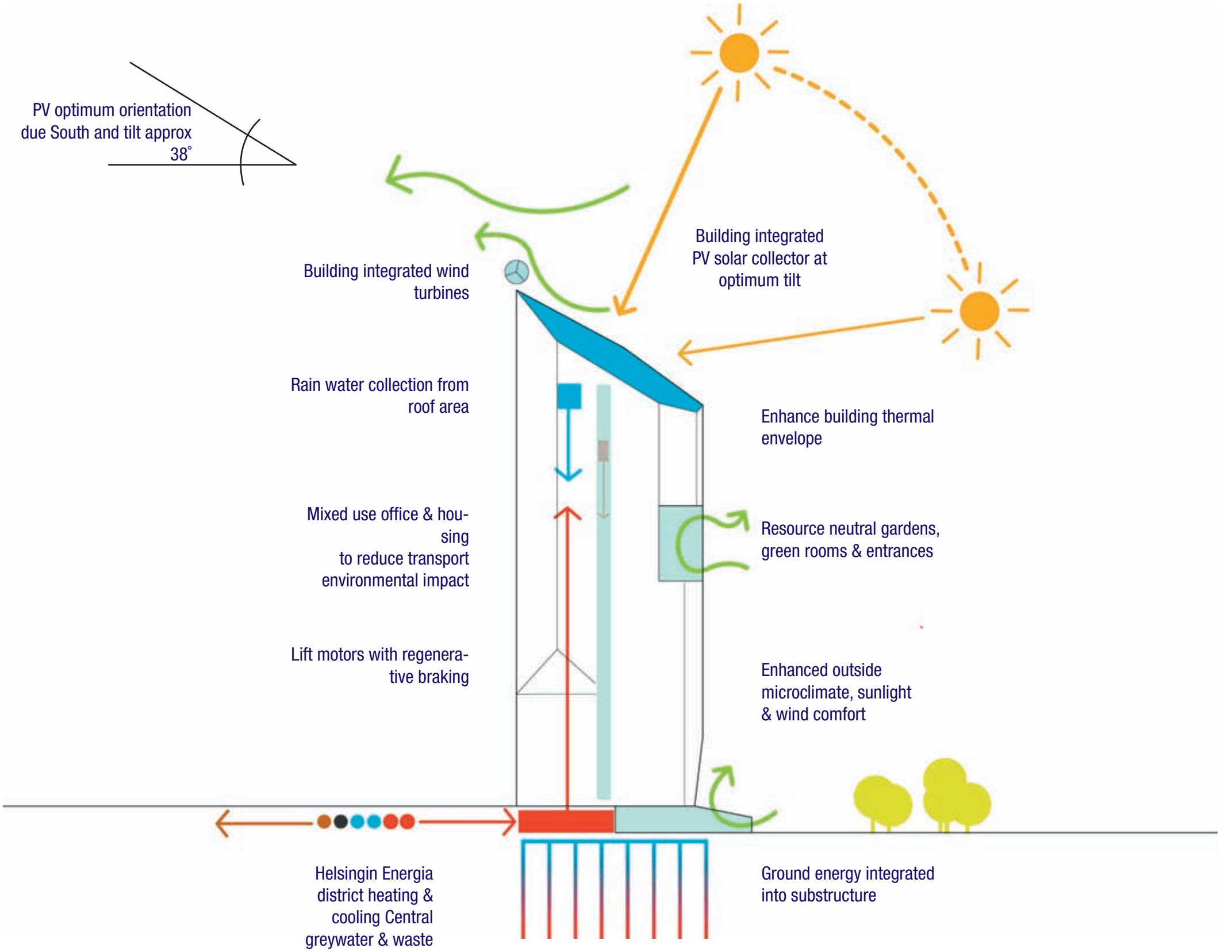


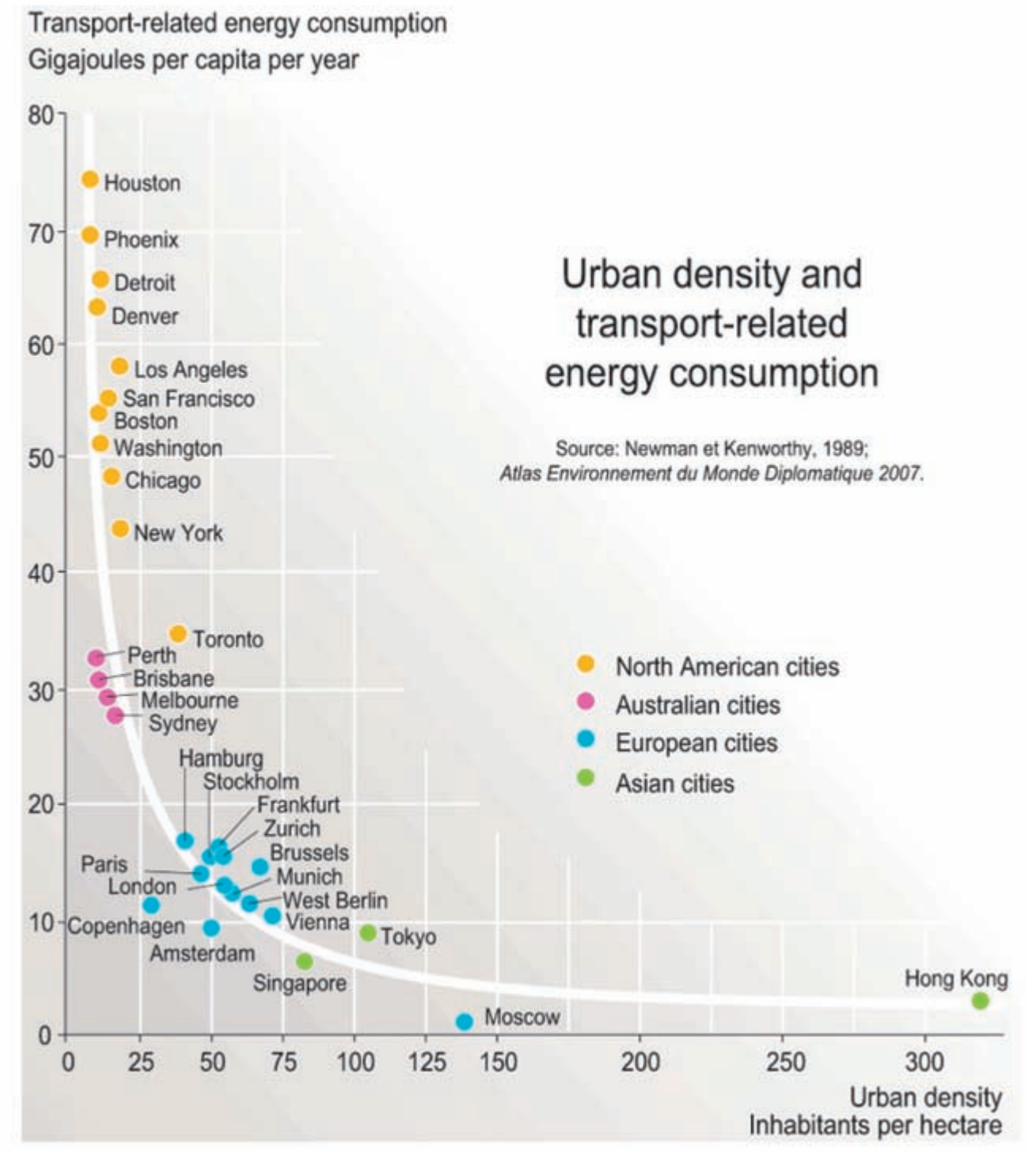
Wind Environment
Prevailing wind south & west (IWEC)
Prevailing wind south-west , average wind

Utilities
Helsingin Energia district cooling network
(also separate district heating network)
speed 4-5m/s (www.windfinder.com)

Climatic and environmental strategies

The scheme has been planned taking into account from a very early stage macro and microclimatic issues and energy-saving criteria. This includes correct sun orientation both for public spaces and for private buildings, snow and wind protection in winter season, planning of power sources and possible use of passive or photovoltaic cell energy production. A pre-assesment of the scheme indicates that its features of placement in the city, proximity to public transportation lines, brownfield redevelopment, pedestrian movement and energetic politics could deserve the U.S. Green Building Council LEED Gold Certificate for Neighbourhood Development. Beside numerical evaluations, all the main urban design decisions have been following the best guidelines for sustainable settlements.


PV optimum orientation due South and tilt approx 38˚
Building integrated wind turbines
Building integrated PV solar collector at optimum tilt
Rain water collection from roof area
Enhance building thermal envelope
Mixed use office & housing to reduce transport environmental impact
Resource neutral gardens, green rooms & entrances
Lift motors with regenerative braking
Enhanced outside microclimate, sunlight & wind comfort
Helsingin Energia district heating & cooling Central greywater & waste collection & treatment
Ground energy integrated into substructure



Urban density and transport - related energy consumption

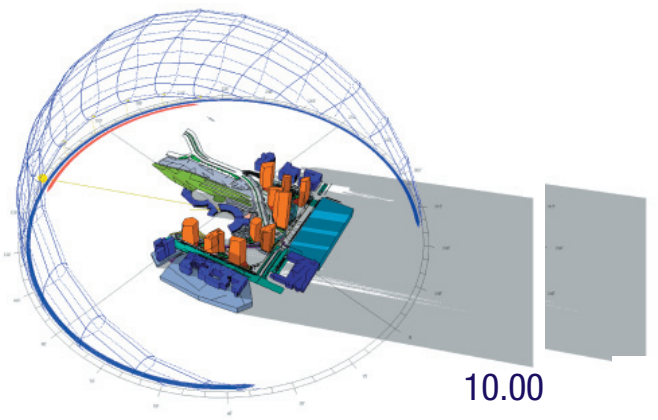
The ecological advantages of density

Recent studies managed to calculate the energy consumption of cities in relationship with density. As the diagrams show, dense environments are very efficient in terms of saving much on public transportation and surface-to-volume ratio of the buildings, thus saving heat dispersion and heating costs.

Sun exposure

The location of Helsinki at the 60° parallel gives low sun angles, all the way down to 6° over the horizon in winter solstice. This strongly influences the distances and orientation of the buildings to assure both a good sun exposure of public spaces and of building facades. The sun and temperature diagram of Helsinki, together with residential life cycles, favours strongly at least for the housing part a south and west exposure to make the most of the afternoon and evening sun. The lower office part of the towers can be advantaged by avoiding excessive direct sunlight to reduce glare. However, good sun orientation has to be obtained without falling into overly simplified functionalist patterns, which ended up destroying city form and public space.
No residential parts are located in sun-blind spots, and the shadow of the adjoining towers seldom reaches the upper residential part. When possible, the reflecting properties of south-facing facades are employed to lighten up the north sides of buildings.
A number of sun path and shadow cast studies show that, although high-rise buildings cast long shadows with low winter morning and afternoon sun angles, the fragmented pattern of a tower scheme causes the main public spaces to have reasonable hours of sun at all hours: The central public space in area A is elongated along a south-west direction, making the most of the summer afternoon sun.
The analysis about incident solar radiation on the various facades of the towers helped to evaluate the possibility of using sloped roofs and upper part of vertical facades (with very good angle and direction in respect to the sun course) for installing Photovoltaic panels, giving good results in terms of efficiency.

Winter



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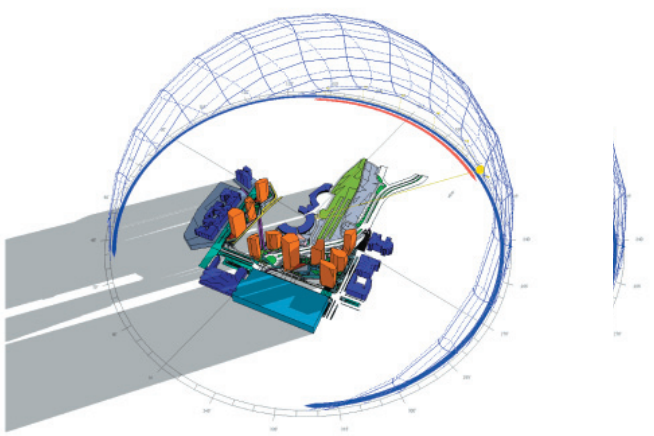
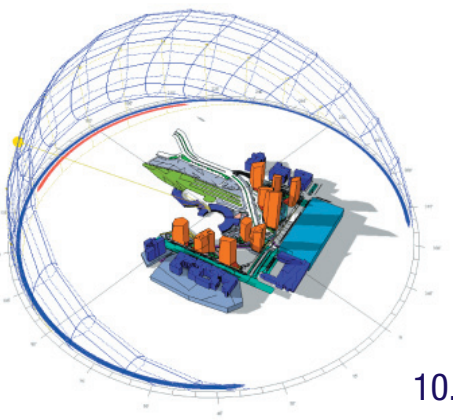


14.30

Mid season



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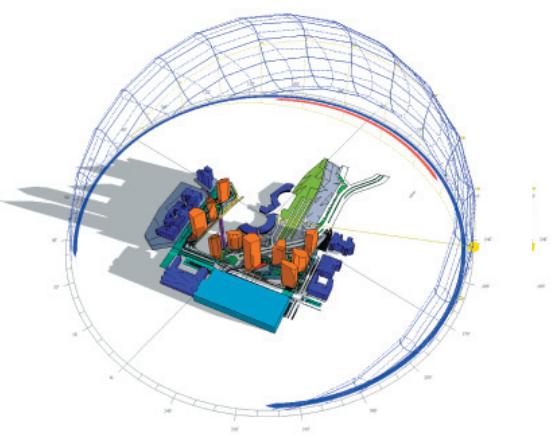

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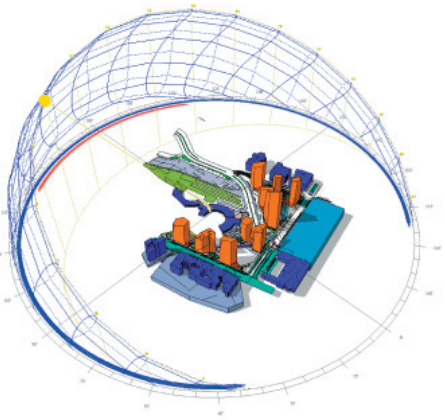
Summer



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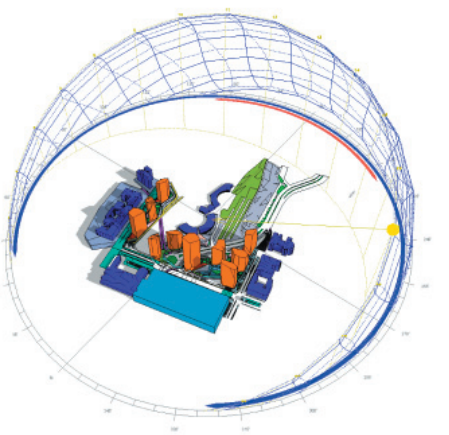
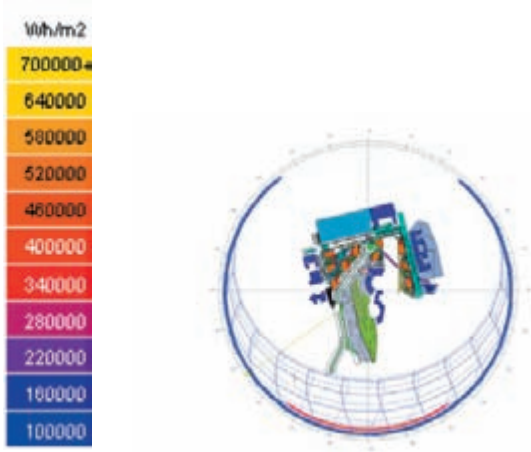


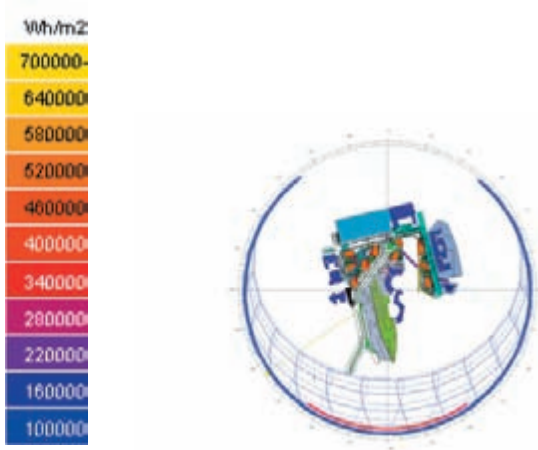
17.00

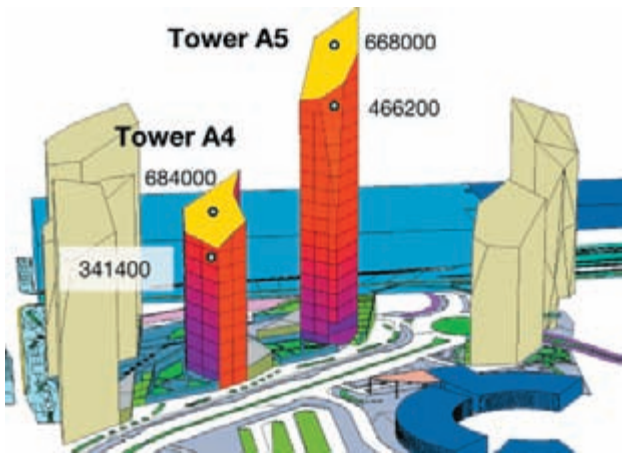
Site Sunpath Shadow Diagrams

Energy production, heating and cooling strategies

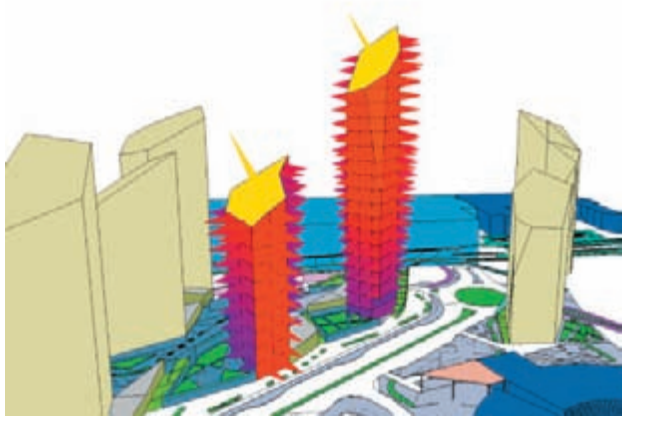
The advanced politics of the City of Helsinki in term of centralized heating and cooling energy production are a precious resource in the Pasila development. The tower are conceived as having three main plantroom spaces, one at the parking level hosting heat exchangers, transformers and standby generators; an intermediate technical floor hosting office ventilation plant and drainage realignment from the upper, frequent apartment risers hosting pipelines to the more open space structure of the lower offices; and a third one on top with photovoltaic control devices and rainwater collection. Approximately 2000 sq meters of photovoltaic panels placed half on the roof and half on the upper part of the façade could generate globally 175 MWH/yr. Ventilation systems are centralised in the office part and individual in the housing part. Heat exchange devices at every floor allow for individual control and measurements of heating and cooling. Radiant floor heat is provided in apartments, while ceiling radiant elements are preferred in the office area. Other strategies like thermo-active foundation piles and basement retaining walls, rainwater collecting for garden irrigation, buffer “green rooms” with glazed protections, ventilation air heat recovery, and other “latent energy” recovery devices such as elevator regenerative breaking could significantly contribute to the overall energy balance of the buildings.



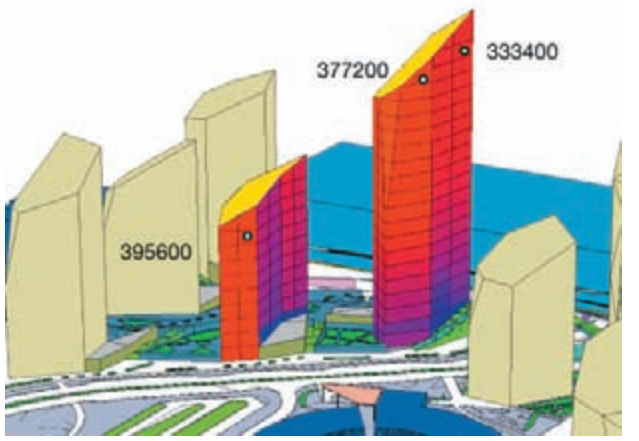




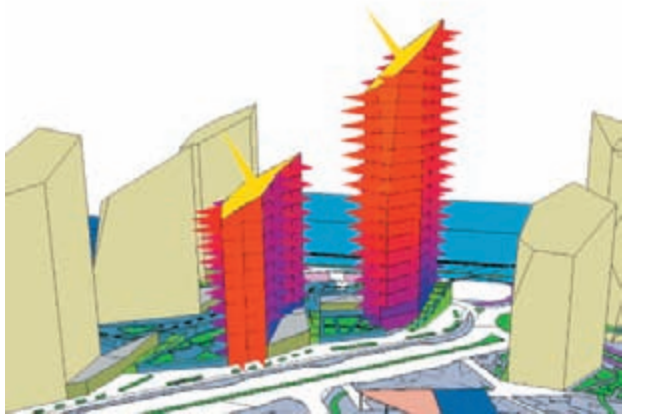
South view



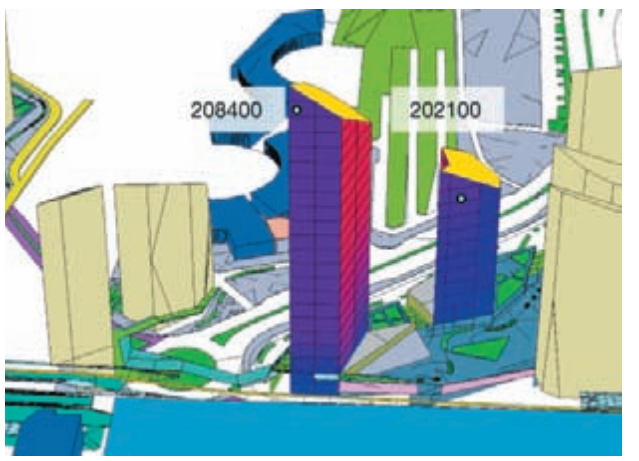
South view



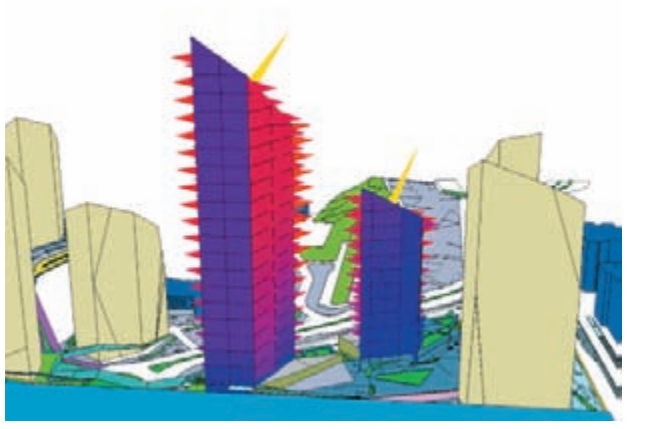
South east view



South east view

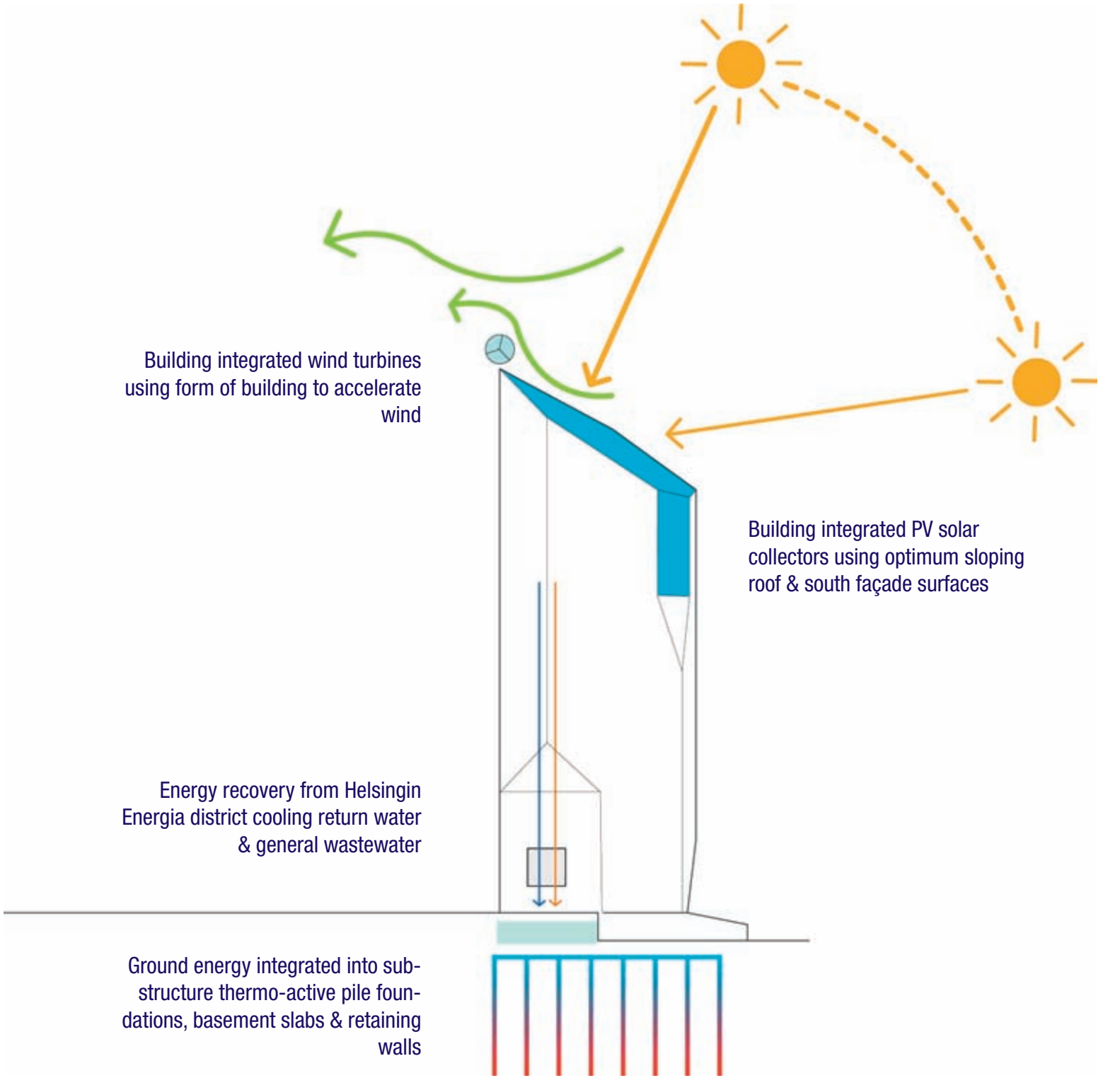


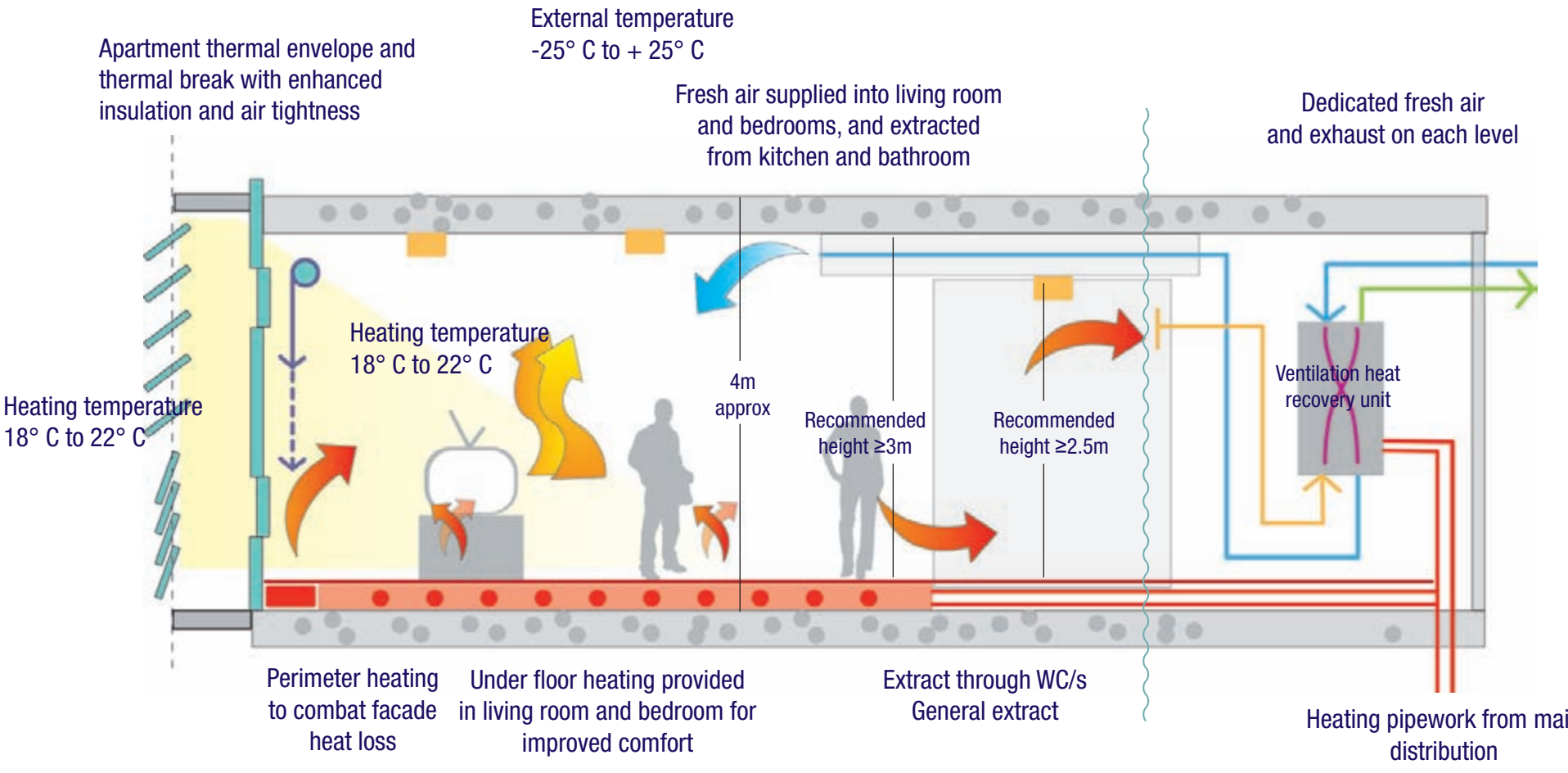
North view



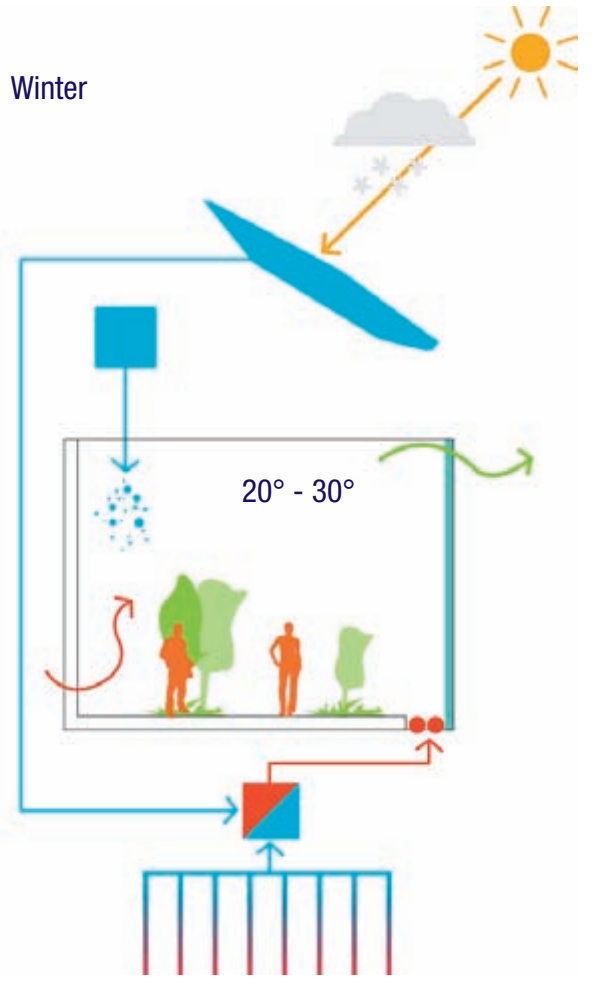
North view

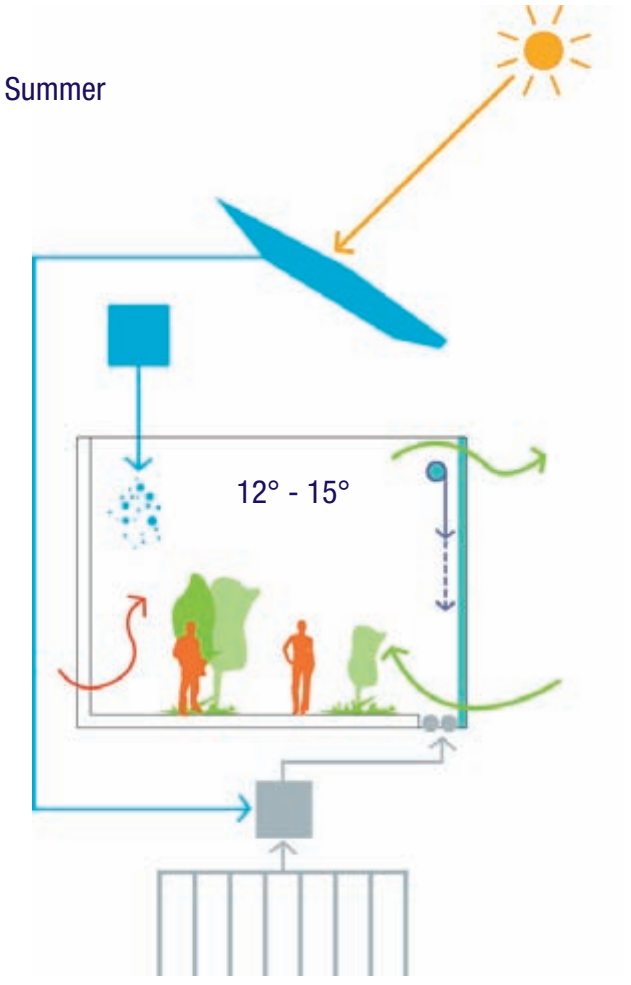
Solar Radiation (Direct & Diffuse) May to September


Building integrated wind turbines using form of building to accelerate wind
Building integrated PV solar collectors using optimum sloping roof & south façade surfaces
Energy recovery from Helsingin Energia district cooling return water & general wastewater
Ground energy integrated into sub-structure thermo-active pile foundations, basement slabs & retaining walls

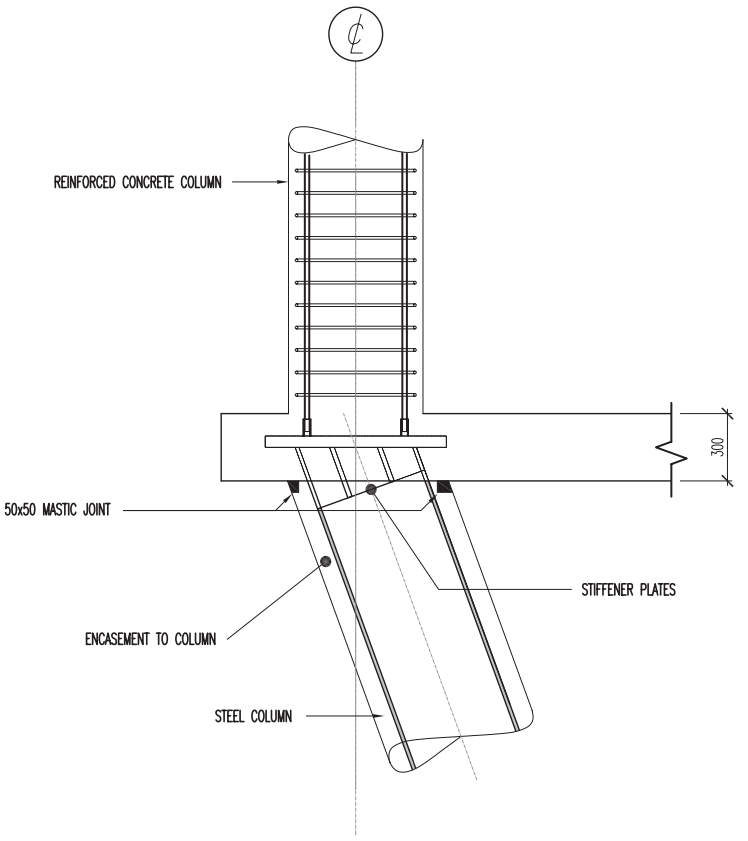


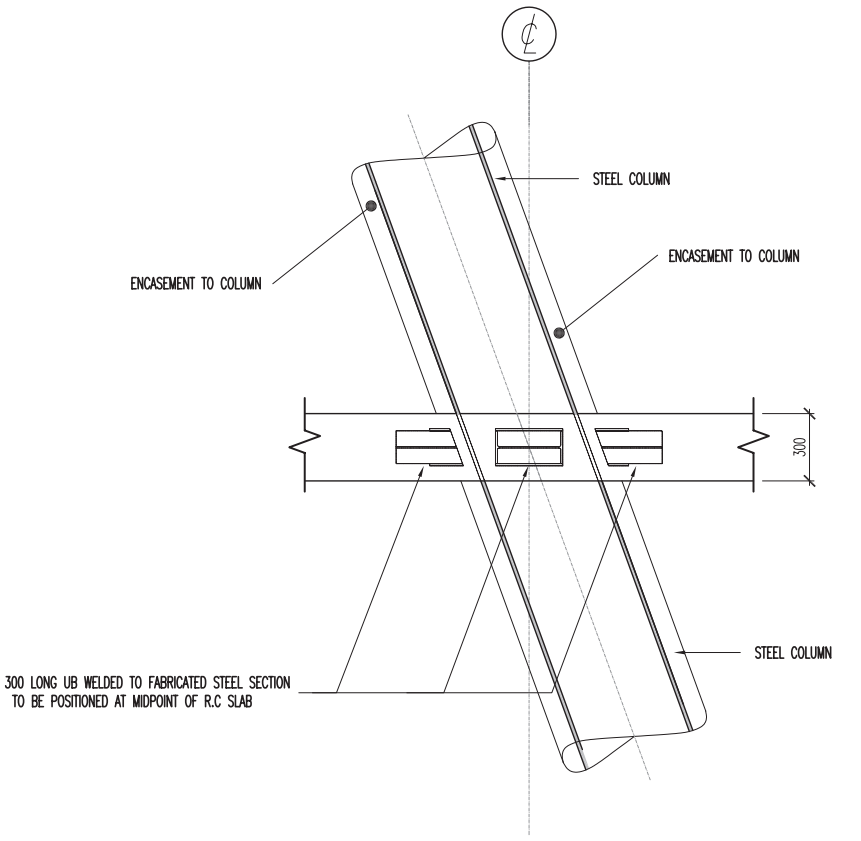
Typical Apartment Environmental Strategy

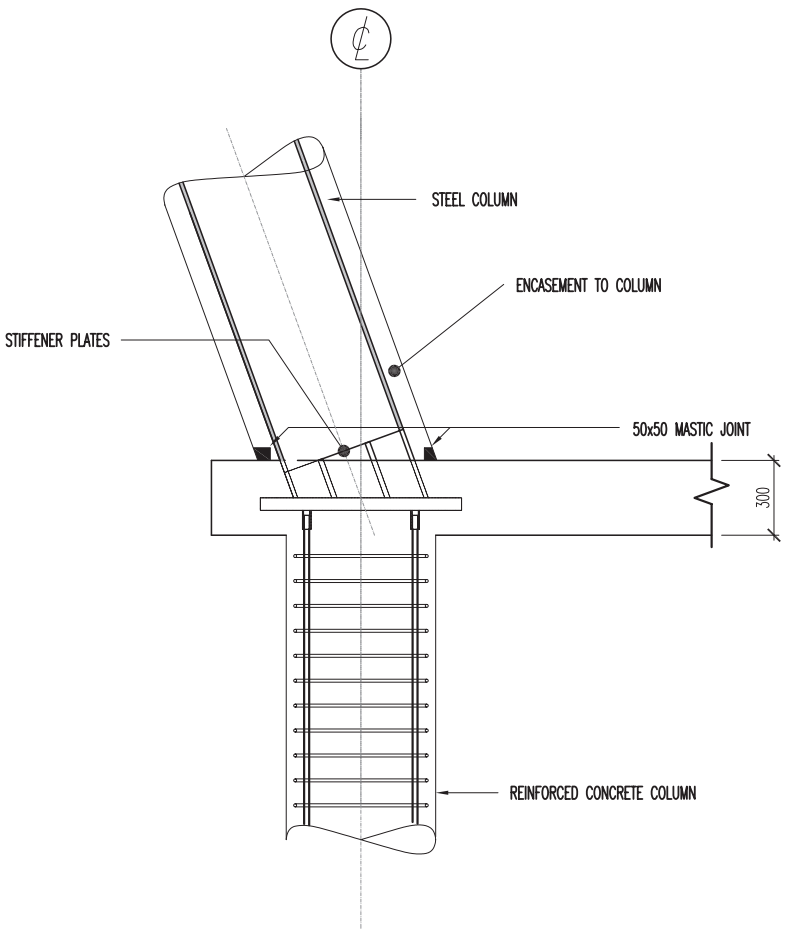




Garden Environmental Strategy







Transfer structures details

The structural concept has been driven by criteria such as the search for structural typologies to allow simple and fast construction; the definition of a structure respecting the proposed architectural scheme and achieving economical goals through the appropriate use of the materials; the use of construction methods that minimize the program and limit the costs.

Lateral Loads

Giving the height of the towers, the lateral stability design is controlled by the overall deflection of the buildings.

Seismic actions

The region is characterised by a very low seismicity (see seismic hazard zonation of Scandinavian countries provided by the European Commission Joint Research Centre showing no seismic hazard for the area of Helsinki).

Wind Actions

The lateral stability design will be hence governed by the wind action.
Given the shape and the slenderness ratio (H/d) of the buildings, it's strongly recommended that a specific wind engineering study will be carried out in

Structural design notes

the following design stages.

Lateral Stability System

On the basis of the preliminary evaluation of the lateral stability of the buildings and having examined a wide range of feasible options, a Reinforced Concrete Core solution is adopted.
The advantages of the chosen solution are the efficient use of lift shafts, stair cores and service risers, and the flexibility due to the use of concrete core walls suitable for steel, concrete or composite floor plates and columns.
Typical disadvantages of this solution are that it is efficient up to 45 storeys and that the system presents a limited ductility. Given the maximum height of the buildings (about 40 storeys) and the low seismicity of the area, this solution is considered particularly efficient for the case under examination.

Floor Options – Reinforced Concrete (RC) Flat Slab

Having examined a wide range of possible options, a reinforced concrete flat slab is considered the best compromise between technical and economical advantages and disadvantages of the proposed structures.
This choice provides:

– Inherent thermal mass
– Flat soffit for service distribution
– Repetition in formwork
– Good structural response to vibrations

The slab, having a thickness of 300mm (size determined assuming 3.5kN/m2 live load), can be post-tensioned in some areas in order to limit deflections where the span length / thickness ratio exceeds the maximum limits acceptable for ordinary reinforced concrete flat slab.

Column Options - RC

A basic option with reinforced concrete columns has been considered. Columns sizes have been determined under the following assumptions:

- 3.5 kN/m2 live load
- Concrete cube strength: 80N/mm2 (high strength concrete)
- Columns not part of the lateral stability system
- 20 to 40 floor storeys

Transfer Structures

Transfer structures will enable the desired architectural shape of the buildings, characterised by inclined planes of its external façade.
Inclined steel elements will transfer vertical loads between different reinforced concrete columns alignments. Steel beams will transfer shear actions between the slab and the inclined columns in the positions where the two cross each other.
A steel plate, cast in the reinforced concrete slab, will allow the connection between inclined steel columns and vertical reinforced concrete columns.
Where the inclination of the steel columns exceeds a maximum limit, part of the structure, built in steel, will be hanged to the main reinforced concrete structure.

Foundations

Considering the depth of the bedrock in the area, a pile foundation systeme is proposed.
In particular, the piles will set into competent bedrock to form a rock socket.

Credits

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City Planning Department

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