



Ferdowsi University
of Mashhad



Horizon TOD Project

Transit-Oriented Development (TOD)

Faculty of Architecture and Urban Planning
Master Architectural Design Studio

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Eng. Dalili

Students: Zahra Pourhosseini, Maryam Farahi,
Sahar Milanifard

Feb 2024



TOD Project



Shahid Gornam Square



Project Introduction



- ✓ **Name Project:** TOD Project
- ✓ **Architects:** Zahra Pourhosseini, Maryam Farahi, Sahar Milanifard
- ✓ **Year:** 2023
- ✓ **Location:** Iran, Khorasan Razavi, Mashhad Railway Limited, Muftah, Moghadam Crossroads, including the industrial heritage site of Anbar No. 1 of Mashhad Oil Company
- ✓ **Area:** 10000_30000 m²





Project Introduction



The planned TOD project is situated near the shrine of Imam Reza in the city of Mashhad, Iran, seamlessly combining history and modernity. The project features three bridges located on a 30-hectare land, with the organic and intertwined form of the bridges resembling a taropod that connects the past to the present.

The pedestrian and bicycle paths of each bridge weave harmoniously into each other and the surrounding scenery. This entanglement symbolizes the connection not only between these two paths but also between an important historical area and the contemporary context adjacent to it. The bridges, while serving a functional purpose, also reflect the landscape of the region and preserve the sanctity of the historical and religious context of the shrine.

To enhance integration with the surrounding environment, the materials chosen for the bridges and their paths have colors and textures similar to the natural earth. This subtle choice aims to create visual continuity intertwined with the historical context. The distinction between the bicycle path and the pedestrian path is achieved through a subtle difference in color, which, in addition to preserving beauty, provides coherence to the paths.

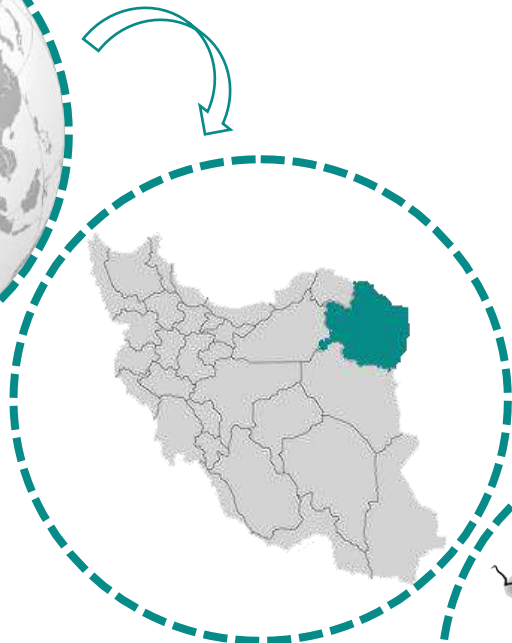
By considering these bridges as more than mere structures, the design seeks to pay homage to the region's rich history and provide a pathway that seamlessly links tradition with the present and future."



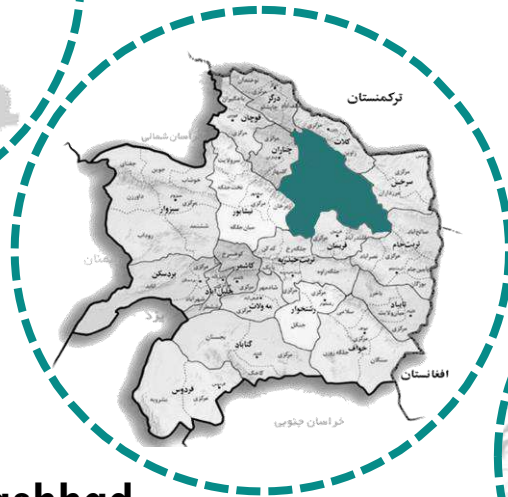
Location



Iran

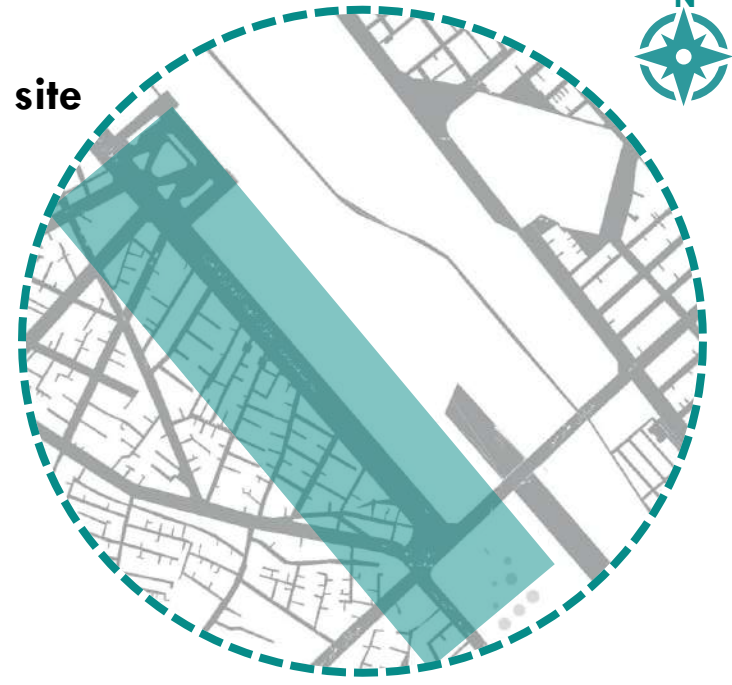


Khorasan Razavi



Mashhad

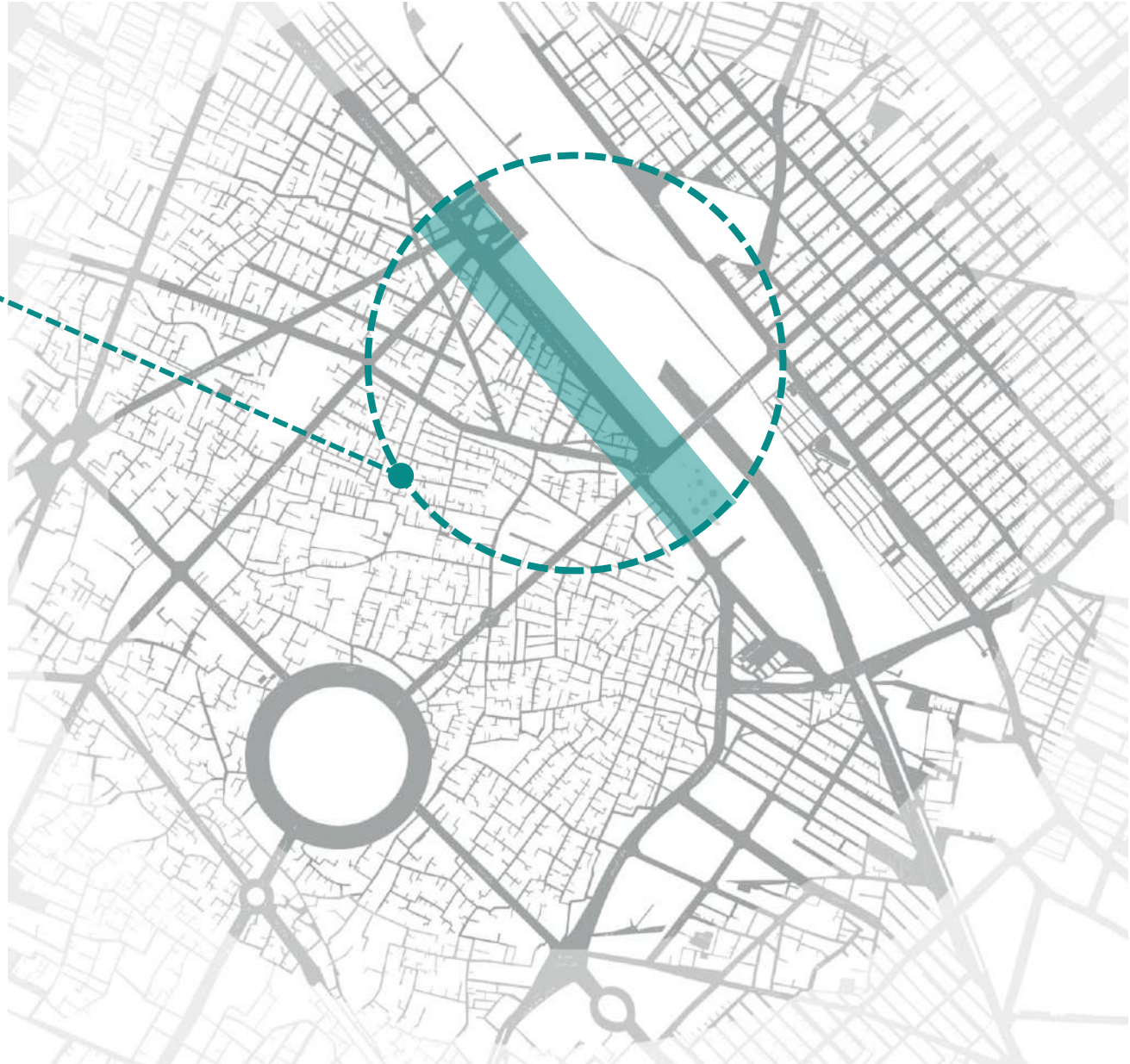
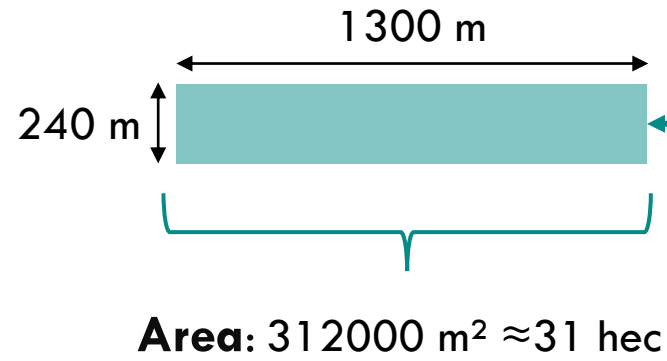
Design site



Railway Limited, Muftah, Moghadam Crossroads



Site dimensions & geometry

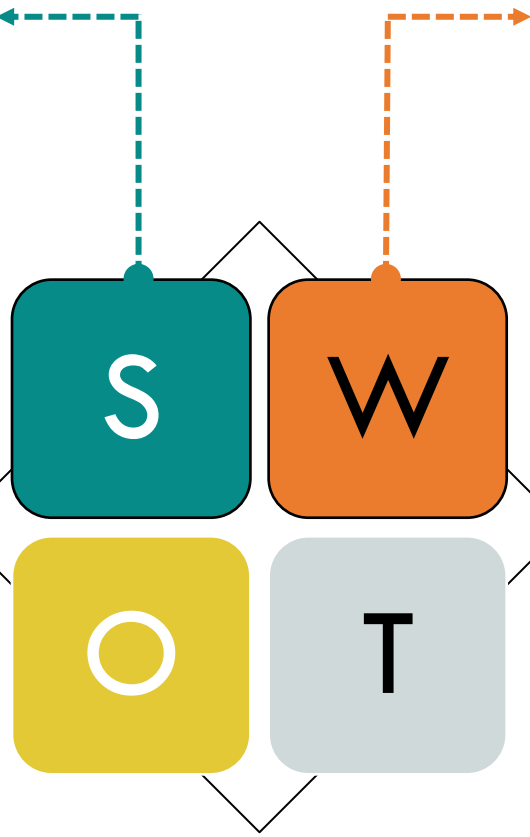




SWOT



Strengths
<ul style="list-style-type: none"> • Location and proximity to metro line 2 and Shahid Gornam bus terminal
<ul style="list-style-type: none"> • Placement within the boundaries of Razavi's sanctuary and the centrality of Mashhad's historical and cultural fabric
<ul style="list-style-type: none"> • Access and proximity to Mashhad railway station
<ul style="list-style-type: none"> • Existence of openings (breathing points) in some parts of the sidewalks
<ul style="list-style-type: none"> • Existence of similar function in specific areas
<ul style="list-style-type: none"> • Presence of different people from all groups from the city and villages in this area
<ul style="list-style-type: none"> • The combination of greenery on the wall of warehouse No. 1 of Mashhad Oil Company from Mufteh side to Moghadam Crossroads
<ul style="list-style-type: none"> • Existence of a separate path for bicycles from the Mufteh metro side to Tabarsi and Moghadam Crossroads
<ul style="list-style-type: none"> • Existence of valuable physical, semantic and functional index elements such as warehouse No. 1 of the oil company and the railway station
<ul style="list-style-type: none"> • The persistence of some historically valuable buildings and their crystallization in the city skyline is one of the important factors in increasing legibility and the residents' sense of belonging to the context.
<ul style="list-style-type: none"> • Existence of pedestrian bridges on Vahdat and Railway streets



Weaknesses
<ul style="list-style-type: none"> • Lack of attention and respect for pedestrians on Tabarsi and Mufteh streets due to the existence of B.R.T. The path and the impossibility of crossing the street for pedestrians.
<ul style="list-style-type: none"> • Existence of unsafe places due to the presence of unused spaces in some parts of the outskirts of Tabarsi
<ul style="list-style-type: none"> • Not paying attention to the existence and need of parking
<ul style="list-style-type: none"> • Existence of building facades with visual disturbances
<ul style="list-style-type: none"> • Absence of vegetation on the way to Vahdat warehouse No. 1 of the oil company
<ul style="list-style-type: none"> • Uneven passages
<ul style="list-style-type: none"> • Lack of use and design in flyovers and underpasses for the passage of vehicles in Moghadam Crossroads
<ul style="list-style-type: none"> • Non-separation of pedestrian and riding surface in some areas
<ul style="list-style-type: none"> • High volume of motor vehicle traffic
<ul style="list-style-type: none"> • The density of all types of vehicles, the irregular and uncoordinated traffic and presence of cars, motorbikes, bicycles, wheelbarrows and carts, buses
<ul style="list-style-type: none"> • Weakness in the municipal sewage disposal network and unpleasant smell in some places
<ul style="list-style-type: none"> • Excessive visual disturbances in space caused by electric poles and cables
<ul style="list-style-type: none"> • Lack of social and interactive nodes and Lack of green space with social function
<ul style="list-style-type: none"> • Placement of heterogeneous functions in the vicinity of each other, such as a girl's school, a smoothing and car repairs, a grocery store, and the No. 1 warehouse of the oil company in the vicinity of each other.



SWOT



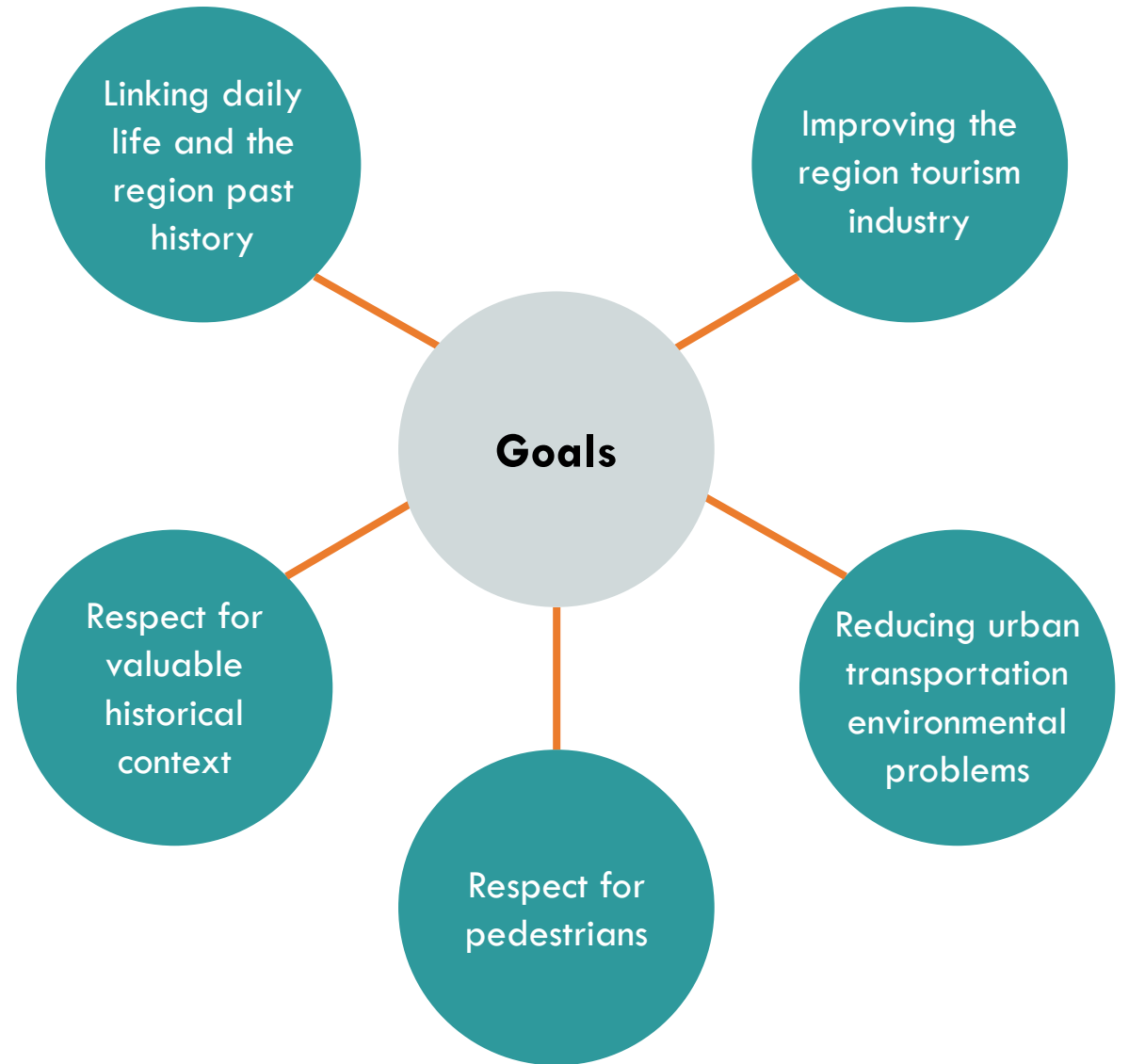
Opportunities
<ul style="list-style-type: none"> Existence of urban furniture in the wall of No. 1 warehouse of the oil company on the side of Tabarsi
<ul style="list-style-type: none"> The neighborhood of the area with the site of historical value of the industrial heritage of Mashhad Oil Company No. 1 warehouse
<ul style="list-style-type: none"> Availability of improvement and renovation opportunities
<ul style="list-style-type: none"> The possibility of creating historical-tourism axes
<ul style="list-style-type: none"> The possibility of using important key elements and signs and connecting them to index axes to increase readability
<ul style="list-style-type: none"> The possibility of changing the use of the historical building to cultural-service uses attracting tourists and pilgrims
<ul style="list-style-type: none"> The possibility of gradually changing incompatible activities with compatible activities
<ul style="list-style-type: none"> The possibility of using valuable patterns of traditional architecture in order to increase the continuity and integration of landscapes and perspectives
<ul style="list-style-type: none"> The possibility of creating bicycle and pedestrian paths on the side of the railway and connecting it to the axis leading to the historic warehouse number one of Mashhad Oil Company
<ul style="list-style-type: none"> Proximity to the shrine and the Mashhad railway station in the continuation and attraction of tourists and pilgrims in the area
<ul style="list-style-type: none"> The possibility of strengthening the connection of the key points of the area by pedestrian bridges and having active commercial and cultural careers and economic tourism boom
<ul style="list-style-type: none"> The possibility of converting low-value micro-units into service, cultural and tourism uses

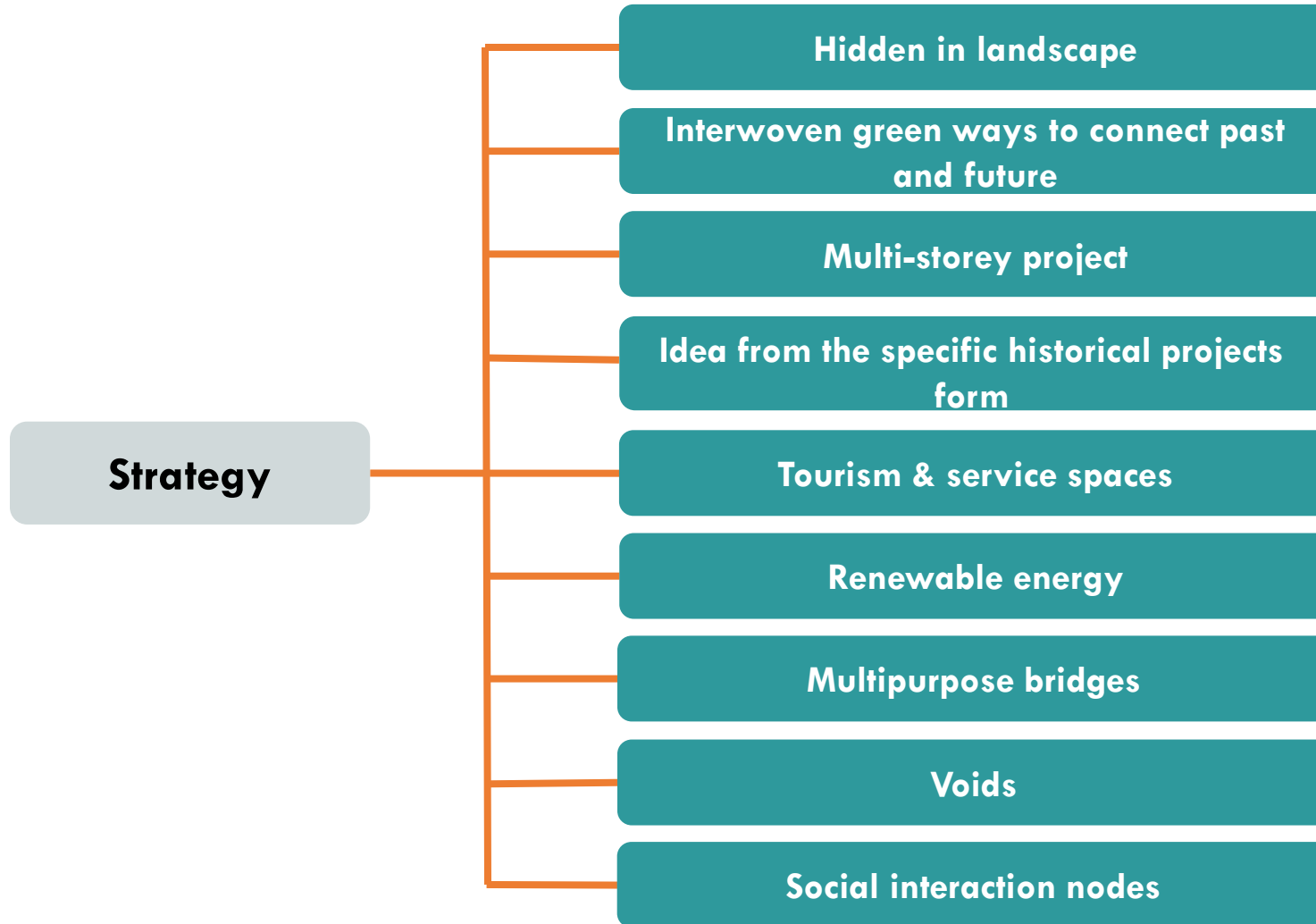


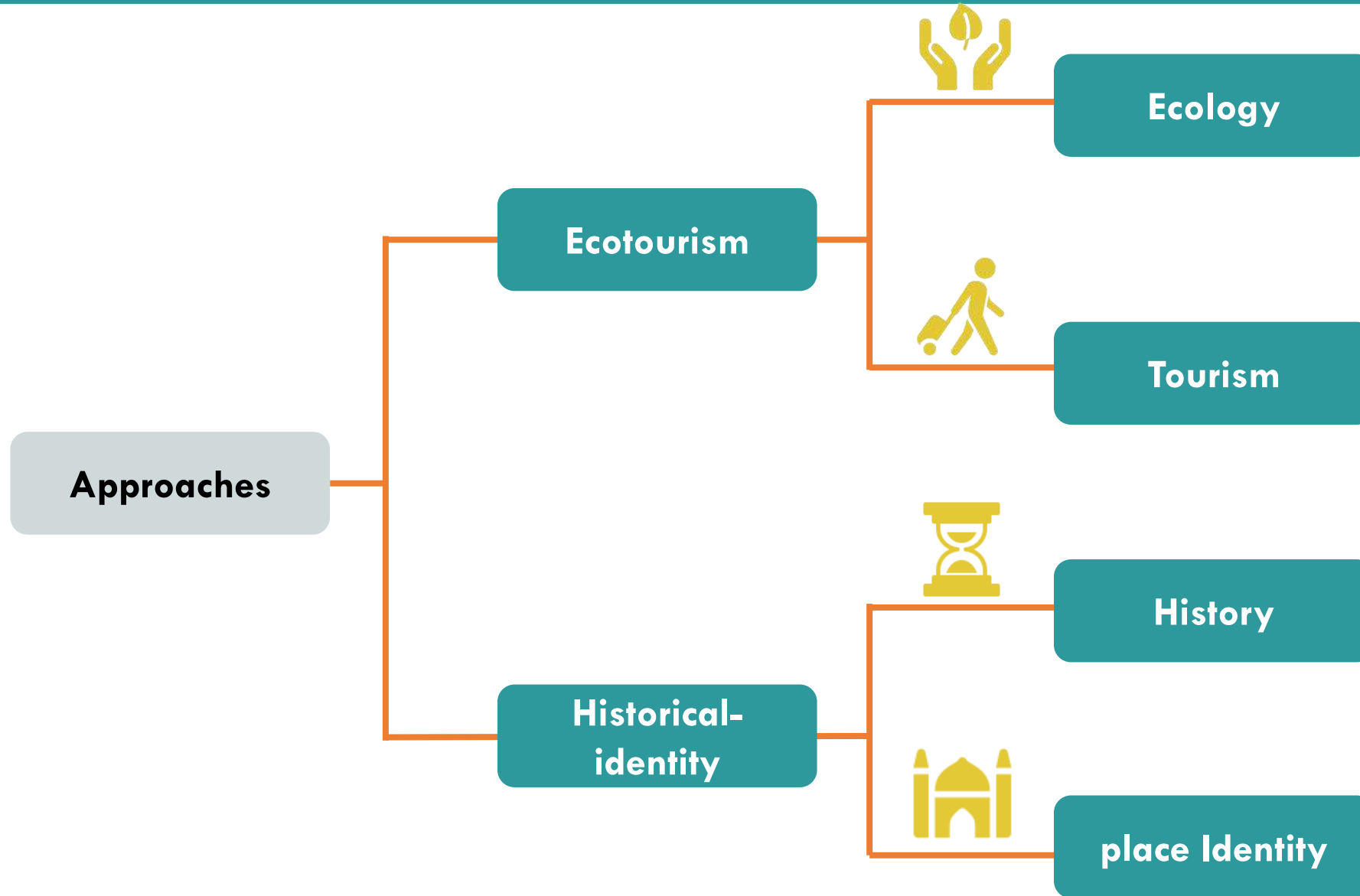
Threats
<ul style="list-style-type: none"> Existence of unused spaces in some parts of the site and its surroundings
<ul style="list-style-type: none"> Existence of wide walls without design and use in some places
<ul style="list-style-type: none"> Lack of use in the wall of the oil company's warehouse number one in Tabarsi and creating insecurity for pedestrians
<ul style="list-style-type: none"> Motorcycle traffic on sidewalks
<ul style="list-style-type: none"> Causing trouble for women and the possibility of pickpocketing
<ul style="list-style-type: none"> Unsafe route for girls high school on Vahdat Street
<ul style="list-style-type: none"> Lack of pedestrian lane along long routes
<ul style="list-style-type: none"> Loss of the geometric order of the skyline
<ul style="list-style-type: none"> Physical, spatial and functional discontinuity of the range structure due to new and uncoordinated developments
<ul style="list-style-type: none"> Pedestrian scale threat with motor vehicle traffic
<ul style="list-style-type: none"> Lack of waste land that can be converted into service parking lots
<ul style="list-style-type: none"> Restrictions due to being located in Razavi's sanctuary and historical buildings
<ul style="list-style-type: none"> Forgetting rituals, culture and traditional customs in the studied area
<ul style="list-style-type: none"> Existence of abandoned lands and spaces in underbridges and creating spaces for drug addicts and homeless (lost space)
<ul style="list-style-type: none"> A region with a weak and vulnerable segment of society
<ul style="list-style-type: none"> Mentioning irrelevant content by some people



According to the project site location, the proximity to the Holy Shrine, Mashhad railway station, the presence of the valuable historical building of the No. 1 warehouse of the oil company (industrial heritage) and the location between two metro stations are among the strengths of the design area. The presence of Compatible uses and the appropriate distribution of various types of them are among the positive points of this site. The lack of attention to pedestrians, the existence of unsafe points, the lack of interactive social nodes, the lack of municipal services, etc. can be considered as significant problems in the carried out analyzes. Proximity to the Holy Shrine can be known as both an opportunity and a threat because despite the defensive, social and cultural limitations of the Razavi Shrine area, it provides a suitable potential to attract domestic and international users to the project.

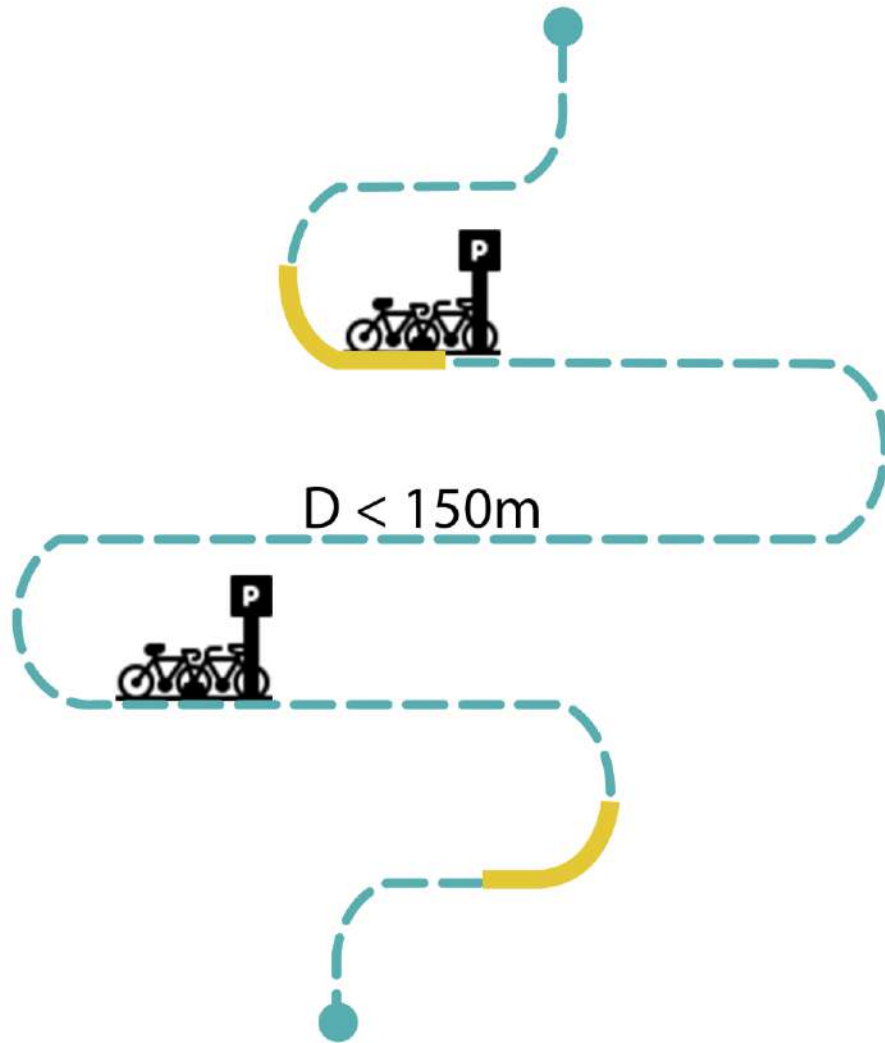




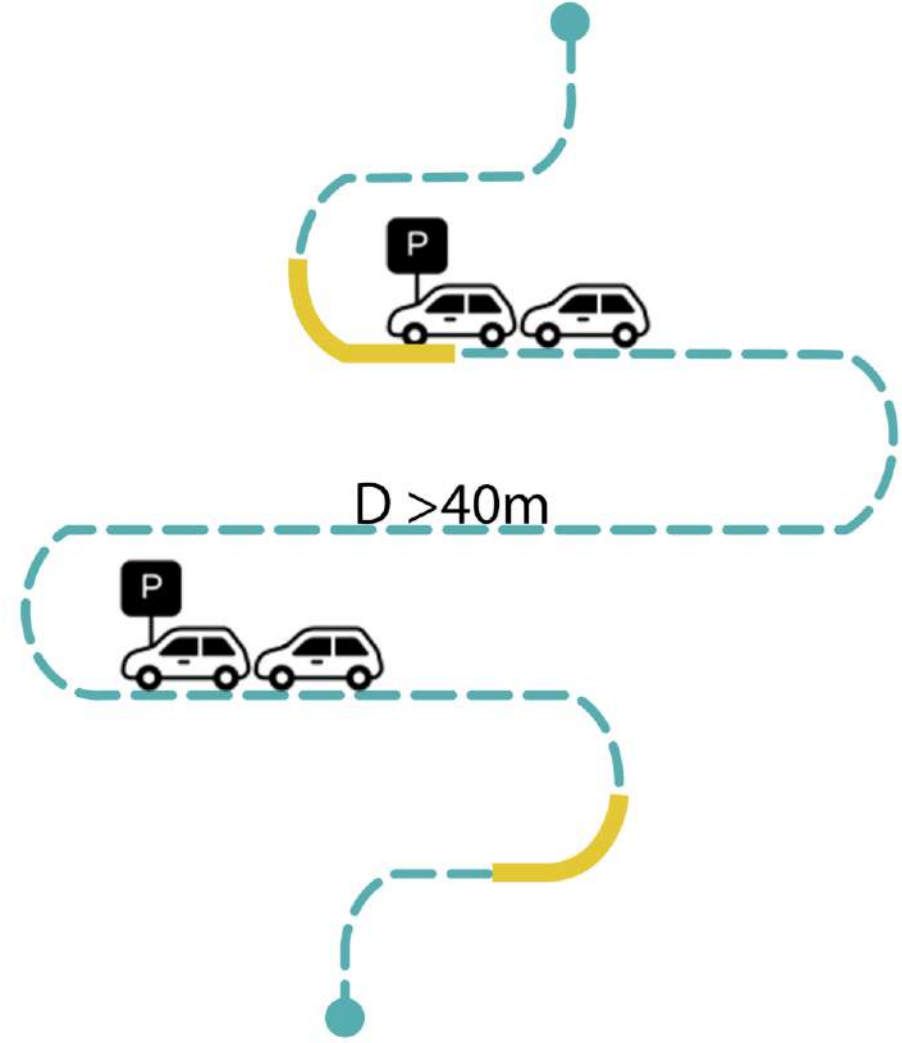




TOD principals considered in design process



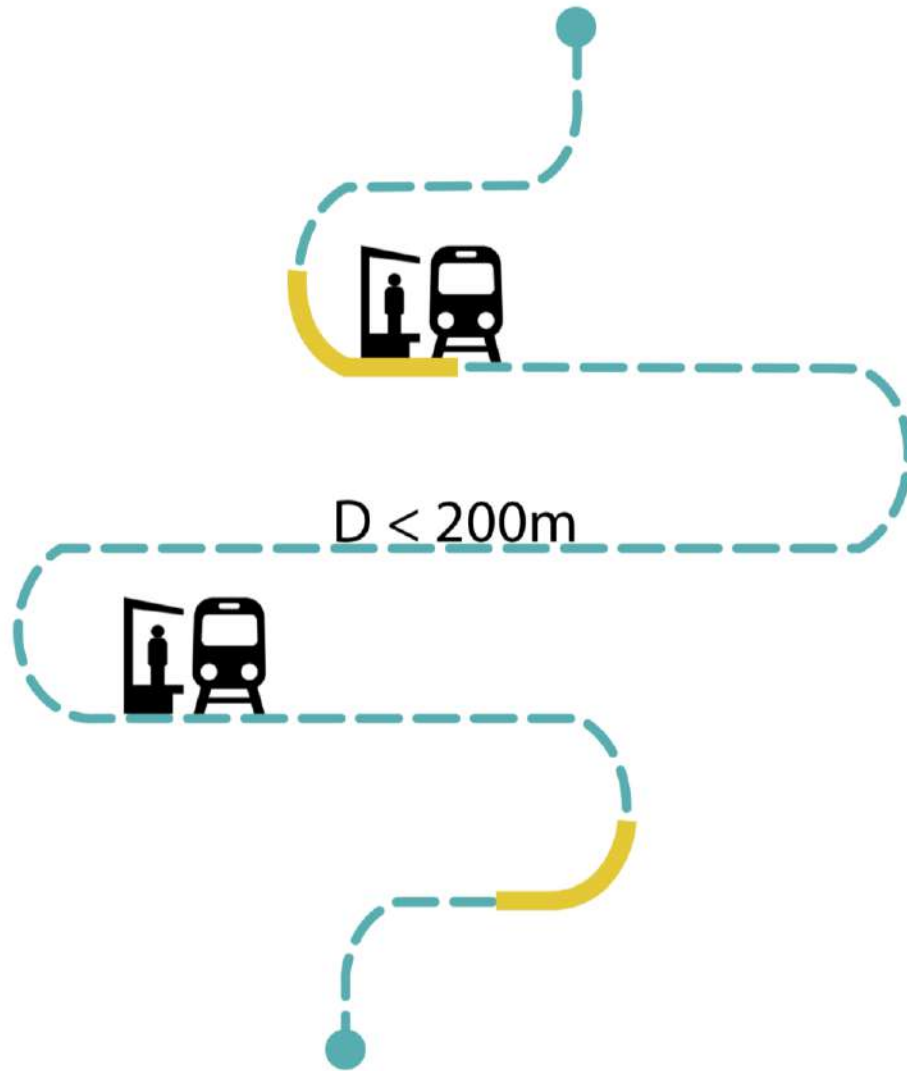
Bike Parking Distance



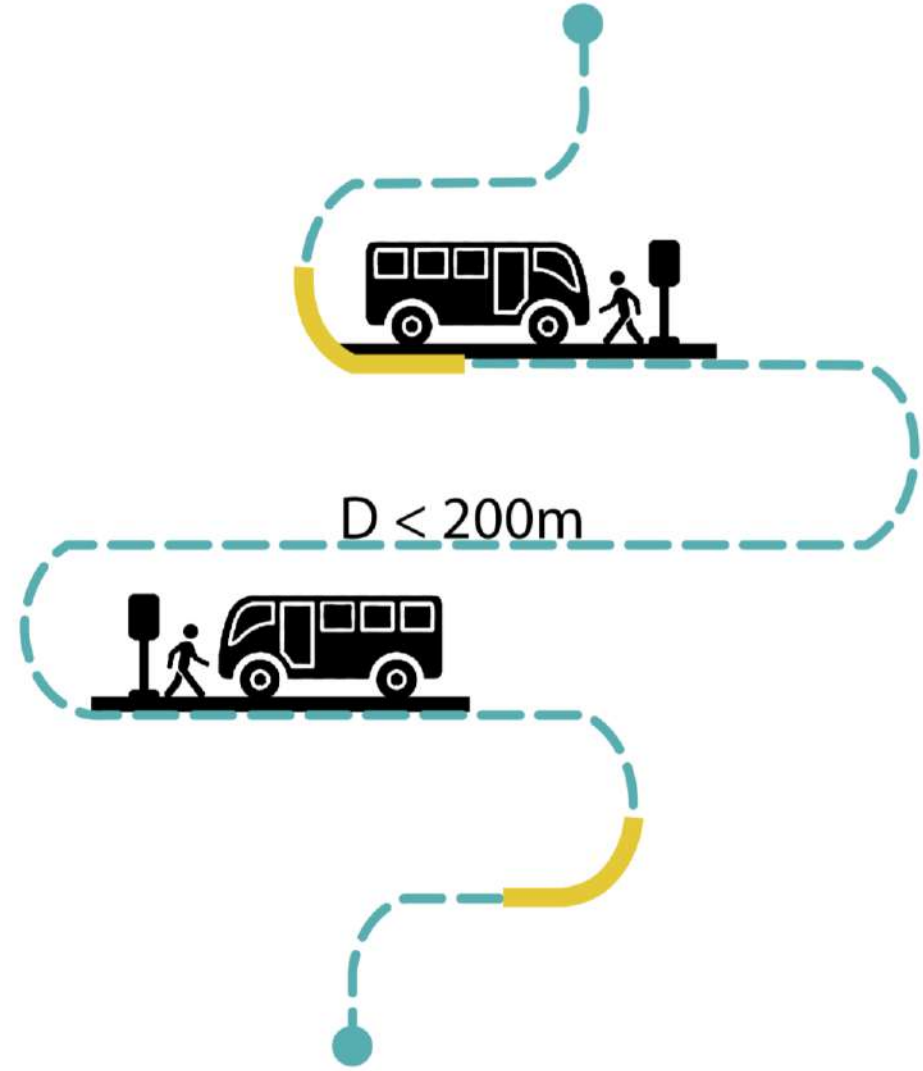
Car Parking Distance



TOD principals considered in design process



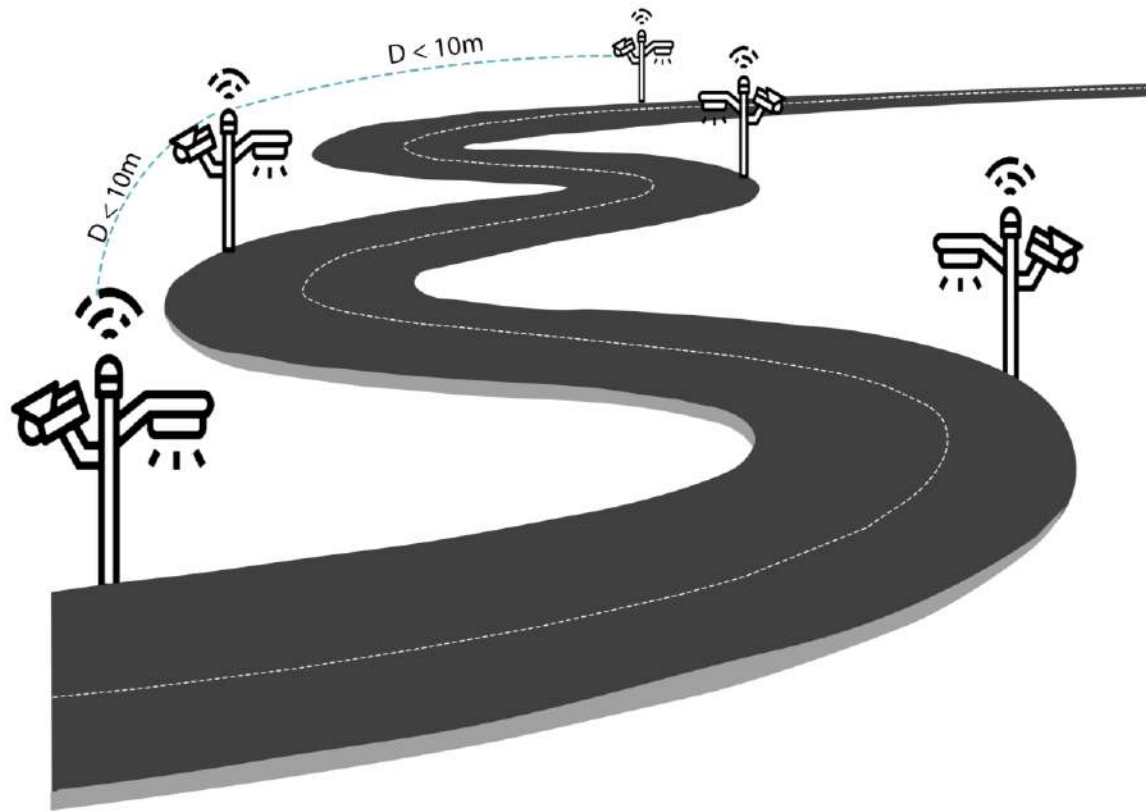
Tram Station Distance



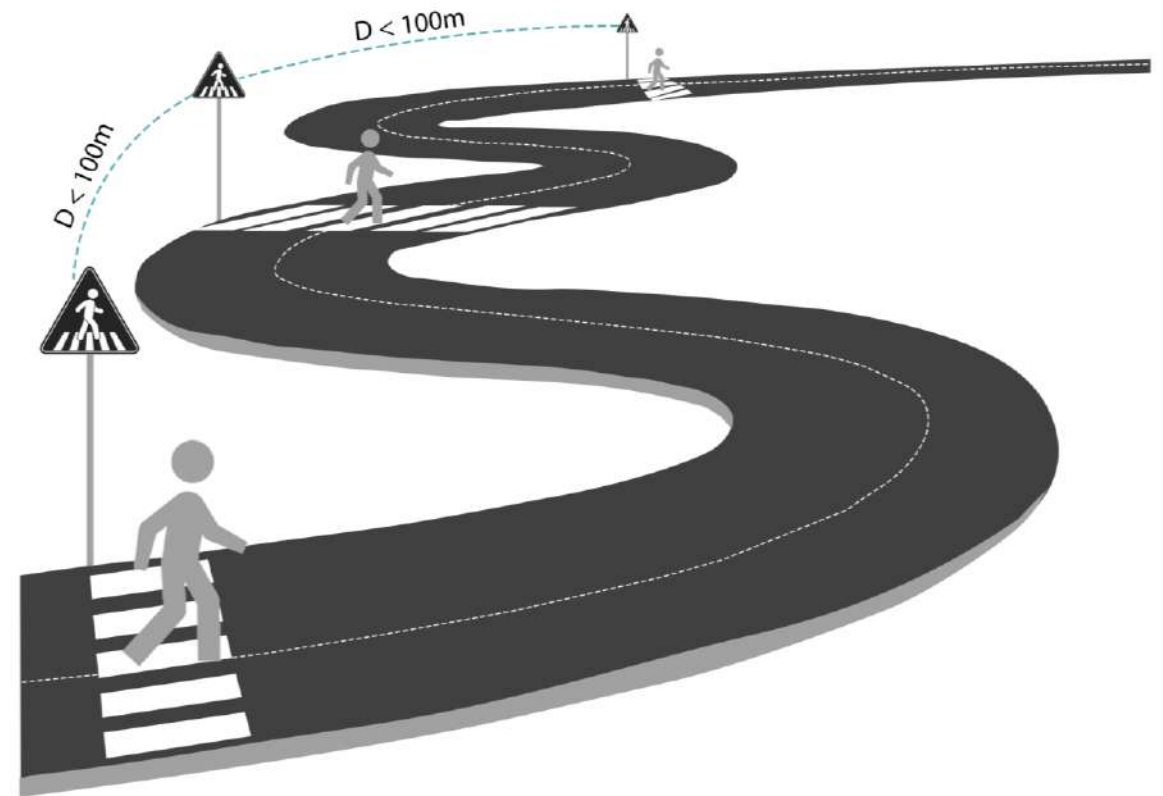
Bus Station Distance



TOD principals considered in design process



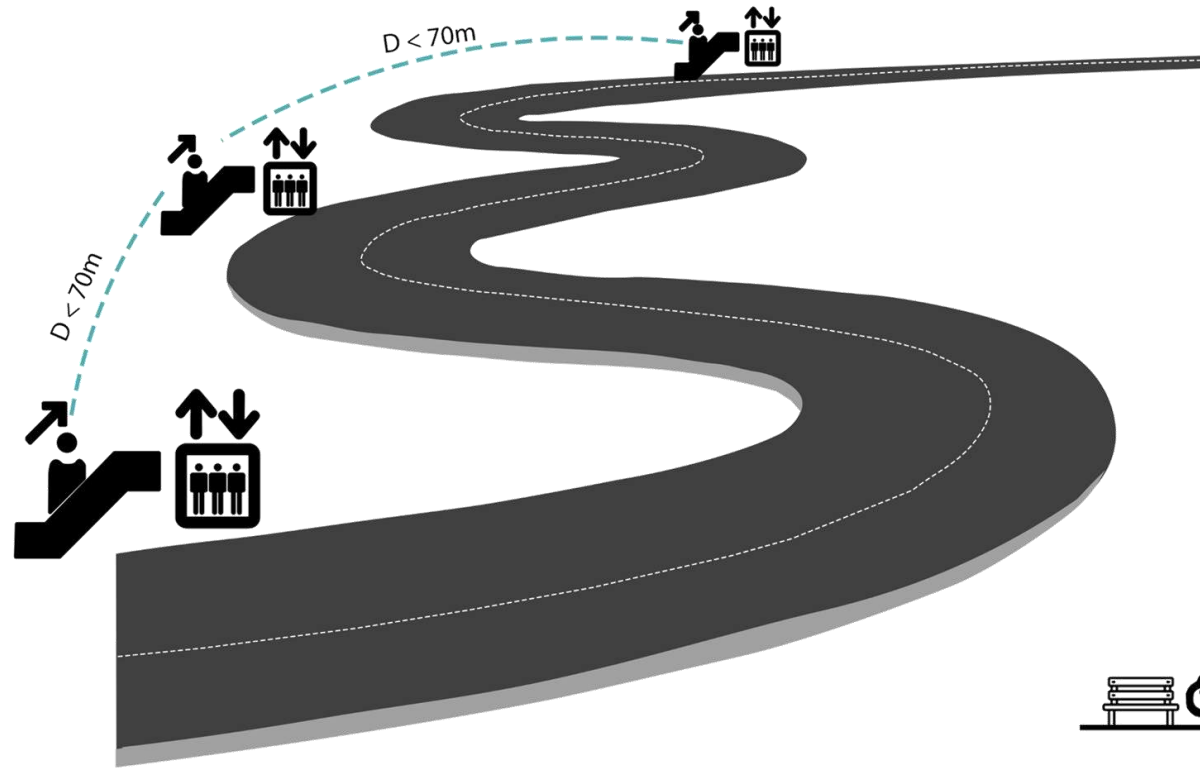
Pedestrians of the light, camera and wifi



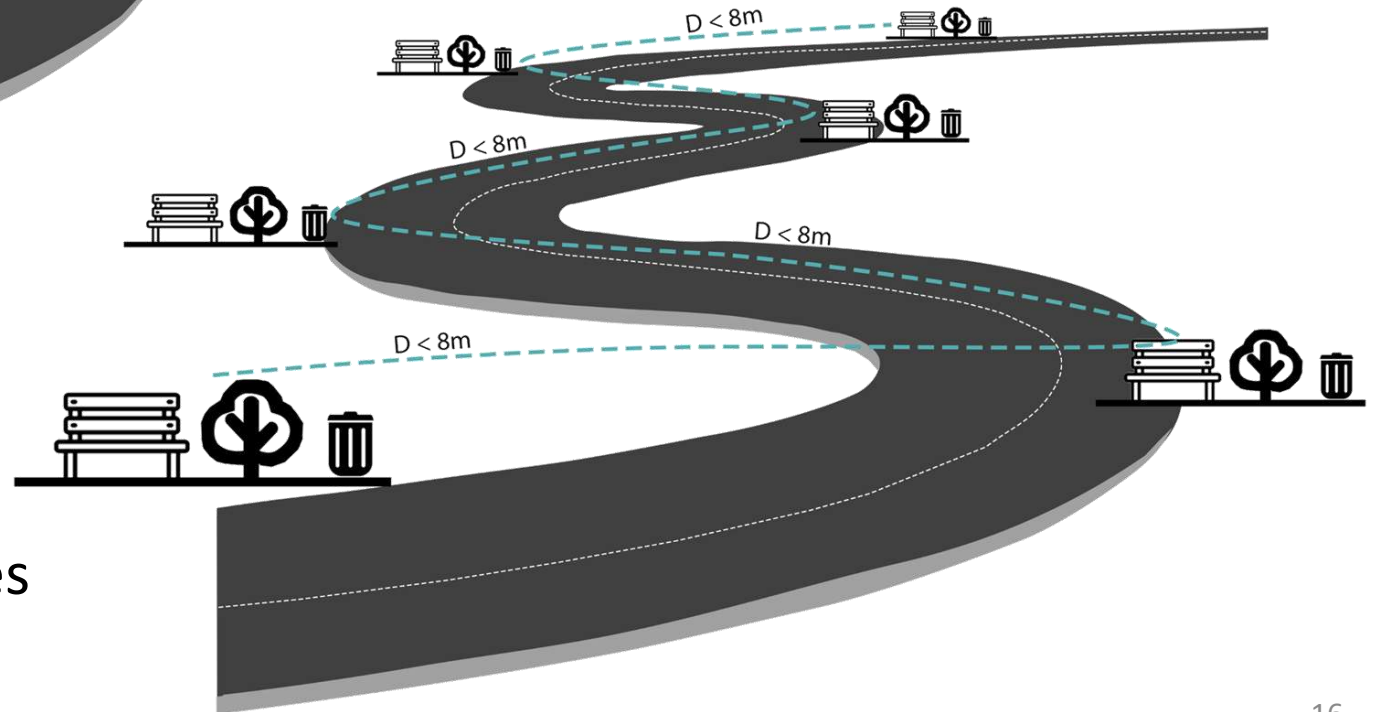
Pedestrians crossing the street



TOD principals considered in design process



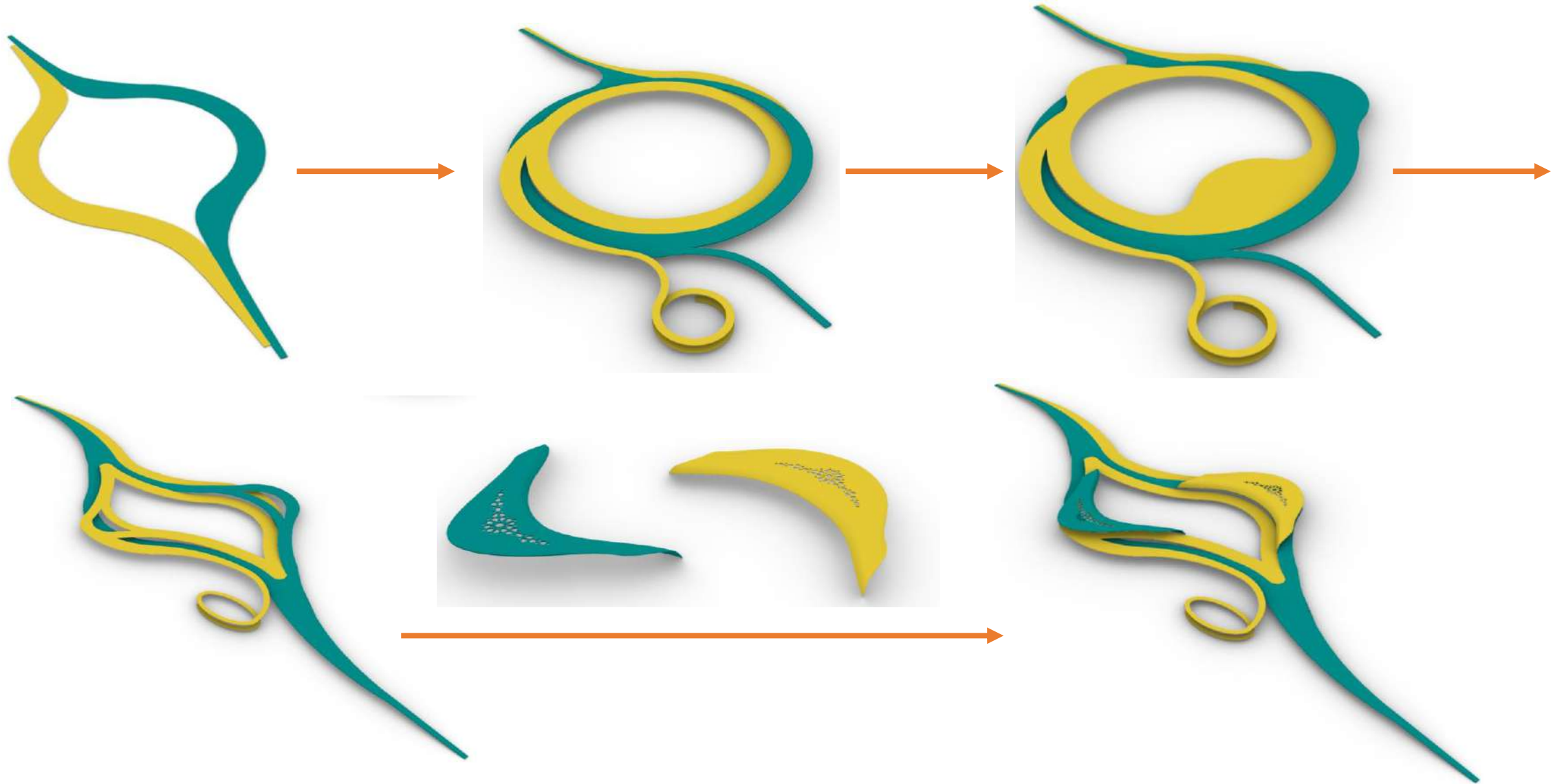
Placement of stair and elevation



Placement of benches and bins



Ideogram





Layers on level



Bus lane



Tram way



Slow lane



Bike lane



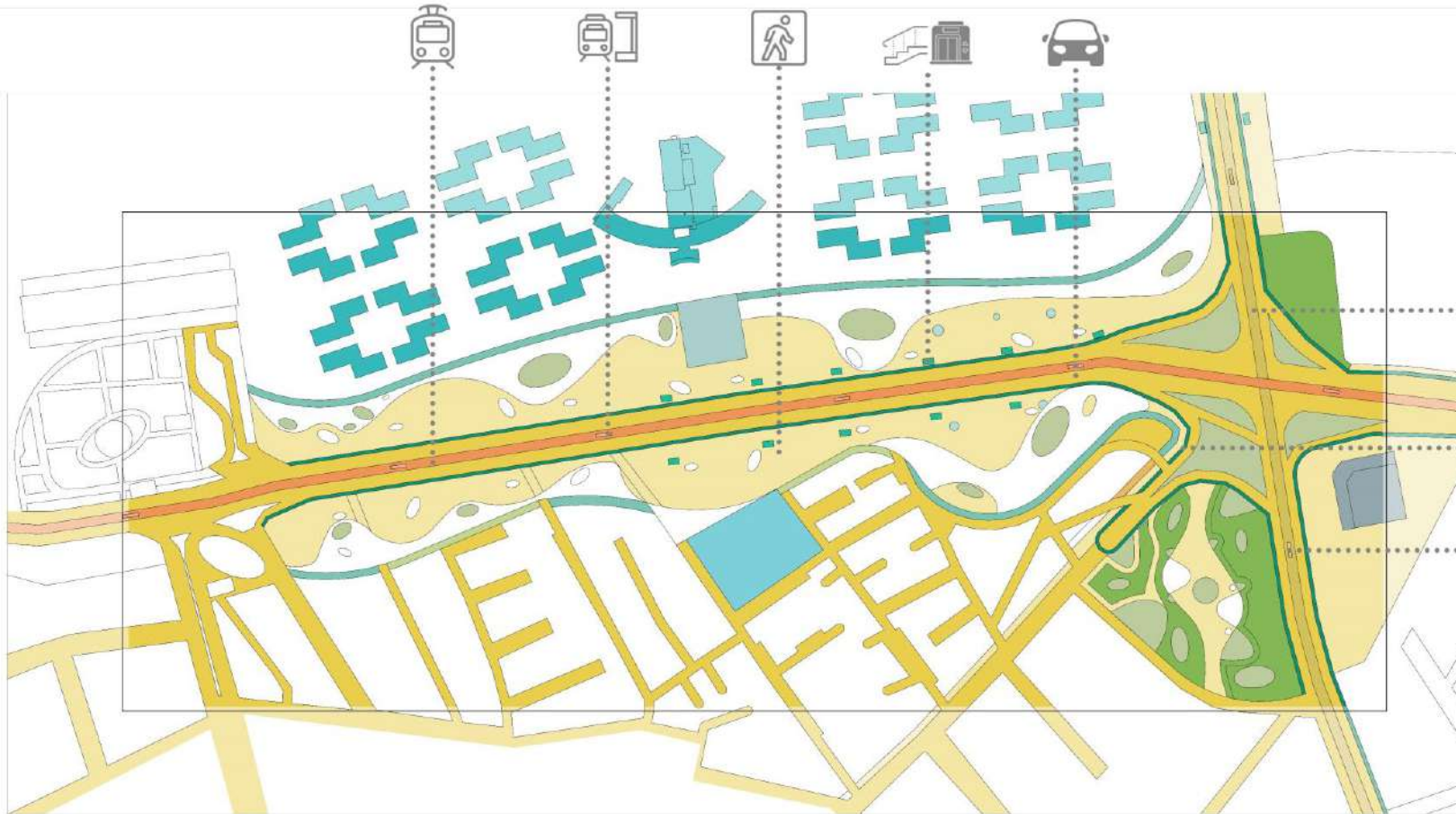
Pedestrian



Fast lane



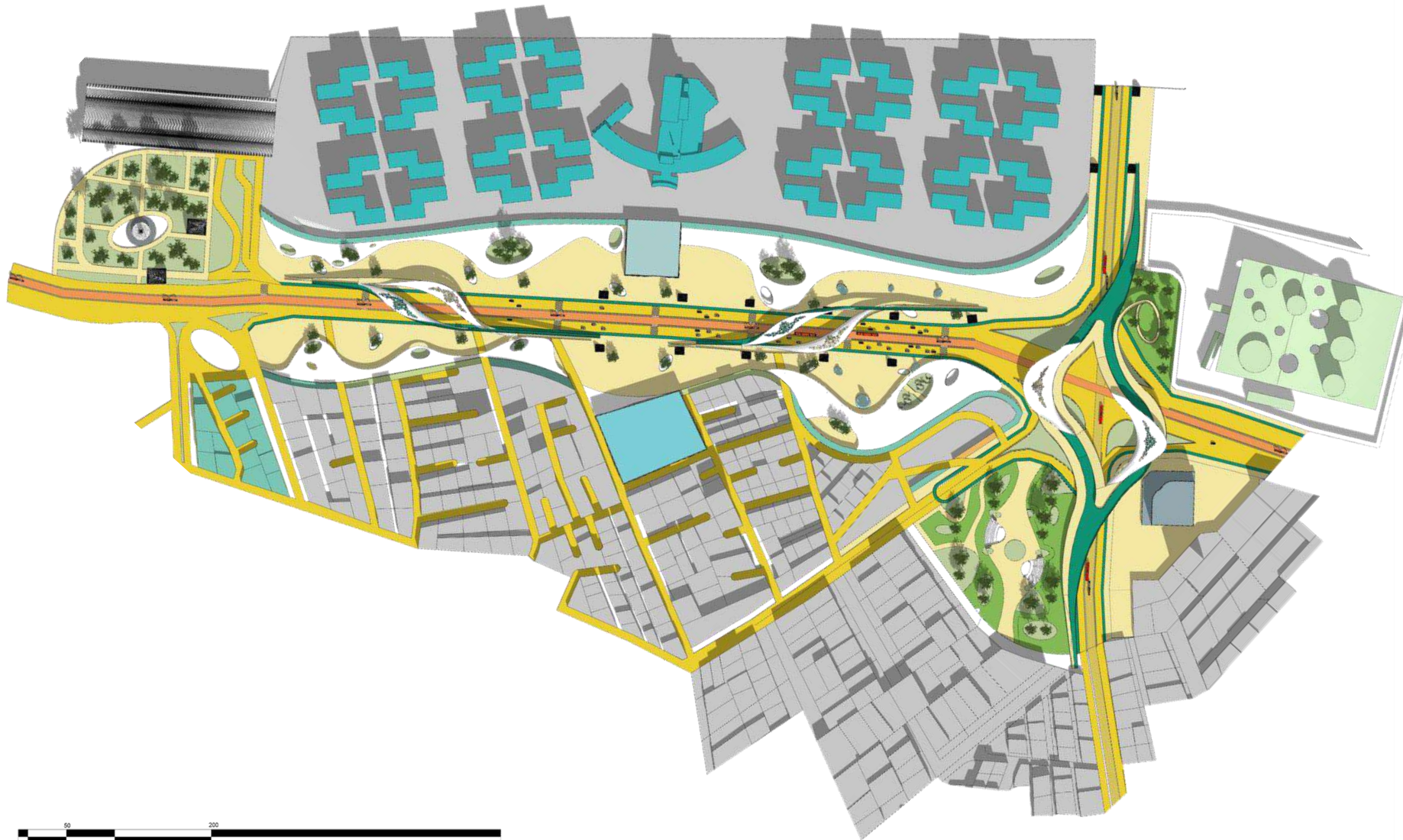
Concept Plan



-  Pedestrian
-  Greenery
-  Bike lane
-  Water flow
-  Parking
-  Slow lane
-  Fast lane
-  Tram way
-  Tram station
-  Bus lane
-  Bus station
-  Shop
-  Food/Restaurant
-  Office
-  Hotel
-  Gym
-  Gallery Cafe
-  Library
-  Museum
-  Commercial office buildings
-  Bank
-  Diorama
-  Plaza
-  Metro lane
-  Metro station
-  Prayer room
-  Lift and stairs
-  W.C
-  Service / Warehouse



Master Plan

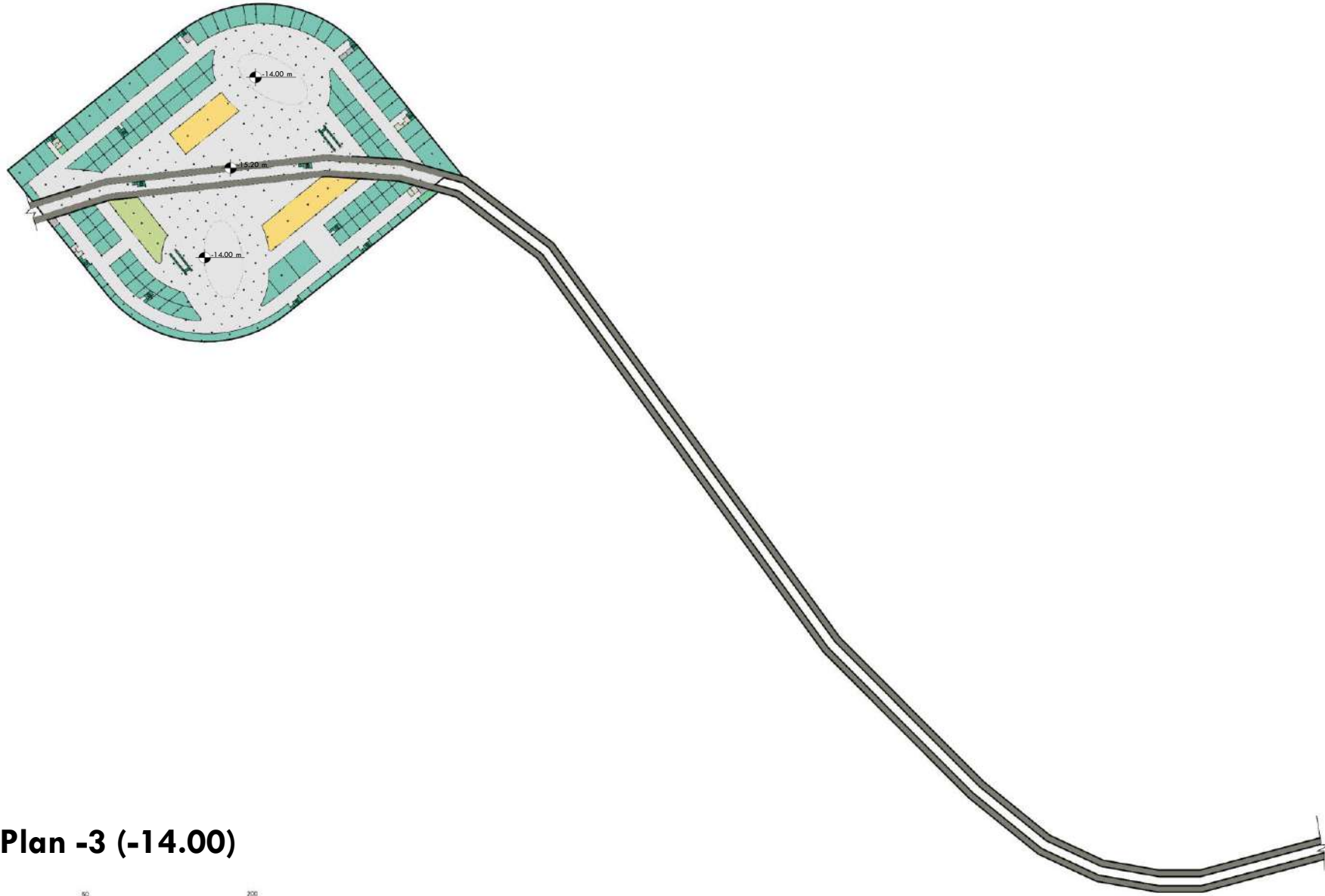


-  Pedestrian
-  Greenery
-  Bike lane
-  Water flow
-  Parking
-  Slow lane
-  Fast lane
-  Tram way
-  Tram station
-  Bus lane
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-  Plaza
-  Metro lane
-  Metro station
-  Prayer room
-  Lift and stairs
-  W.C
-  Service / Warehouse





Plan



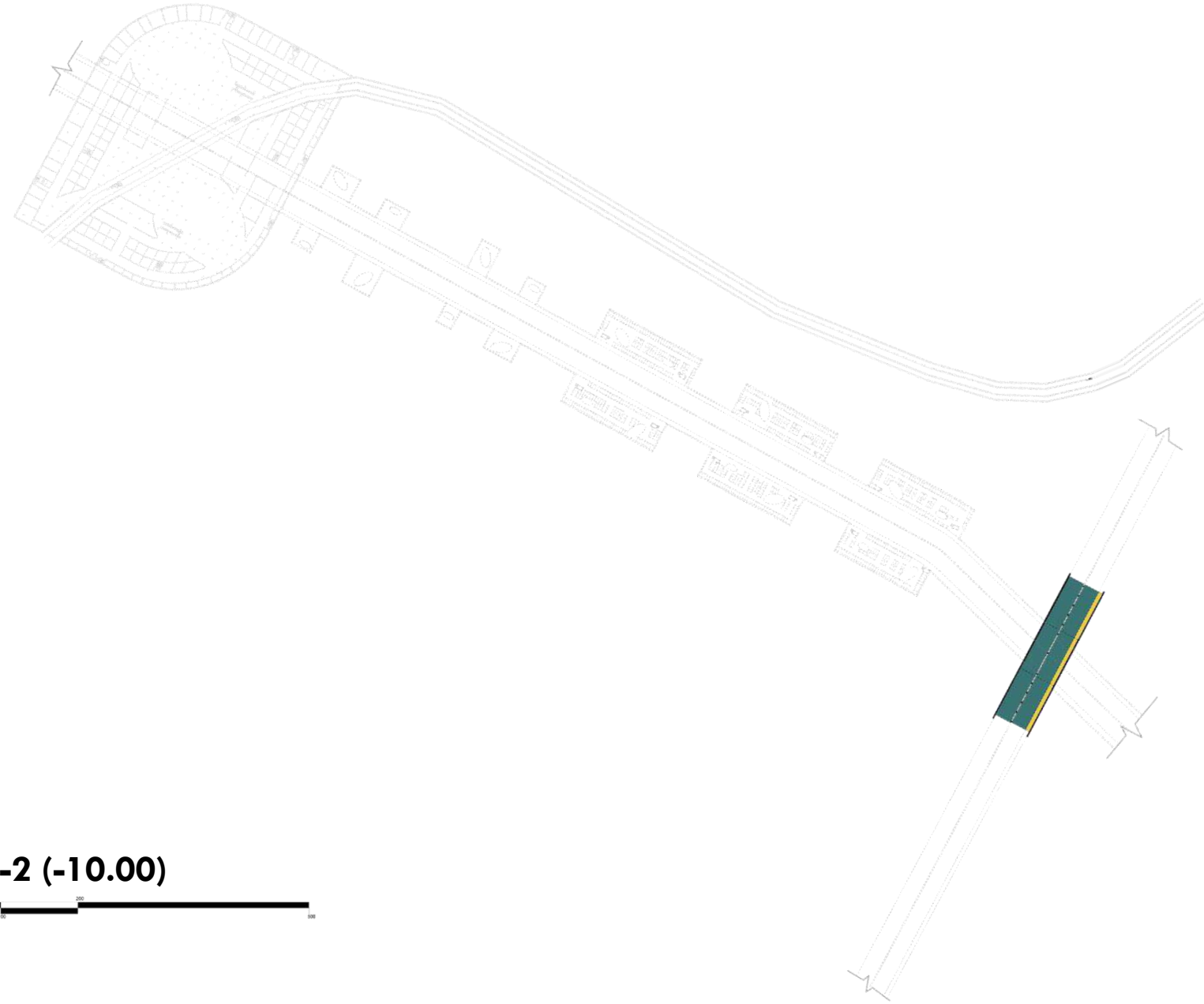
-  Pedestrian
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-  Museum
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-  Bank
-  Diorama
-  Plaza
-  Metro lane
-  Metro station
-  Prayer room
-  Lift and stairs
-  W.C
-  Service / Warehouse

Plan -3 (-14.00)





Plan



-  Pedestrian
-  Greenery
-  Bike lane
-  Water flow
-  Parking
-  Slow lane
-  Fast lane
-  Tram way
-  Tram station
-  Bus lane
-  Bus station
-  Shop
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-  Service / Warehouse

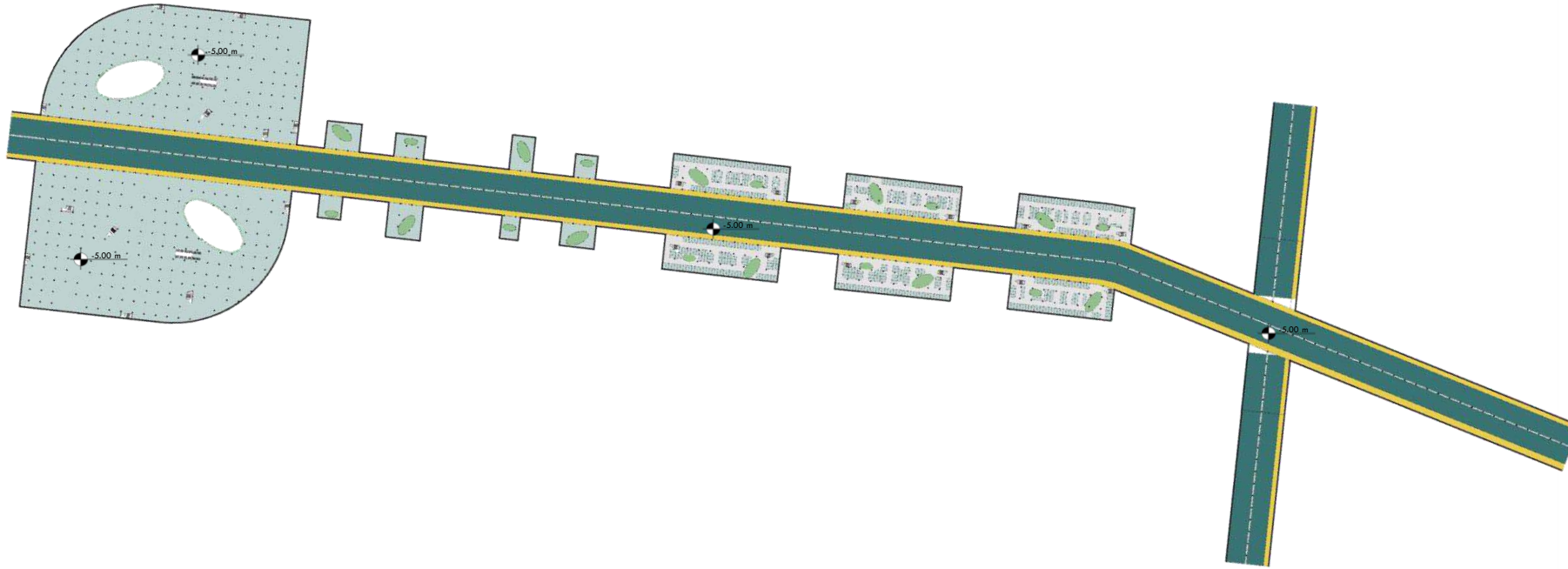


Plan -2 (-10.00)





Plan



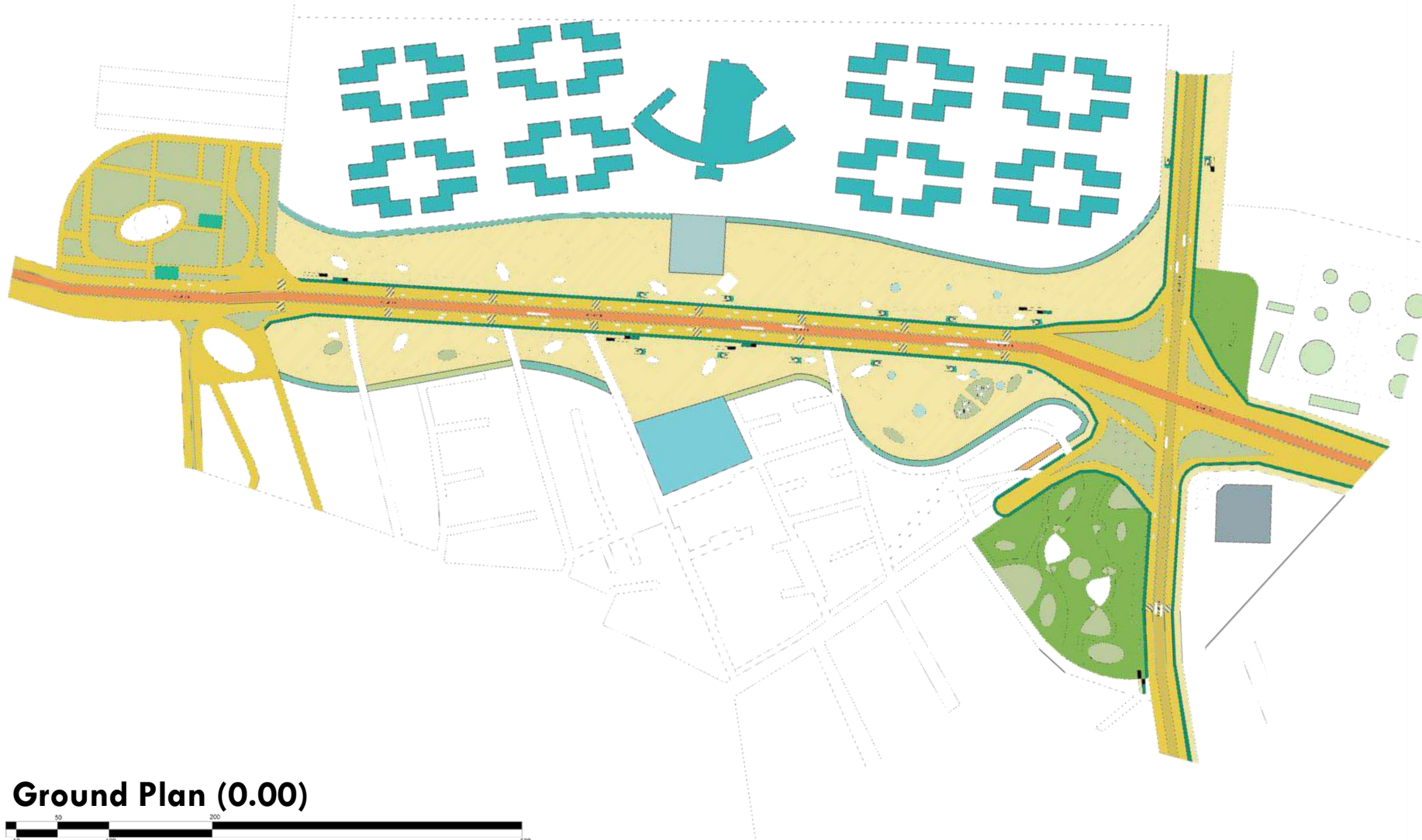
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-  Greenery
-  Bike lane
-  Water flow
-  Parking
-  Slow lane
-  Fast lane
-  Tram way
-  Tram station
-  Bus lane
-  Bus station
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-  Library
-  Museum
-  Commercial office buildings
-  Bank
-  Diorama
-  Plaza
-  Metro lane
-  Metro station
-  Prayer room
-  Lift and stairs
-  W.C
-  Service / Warehouse

Plan -1 (-5.00)





Plan



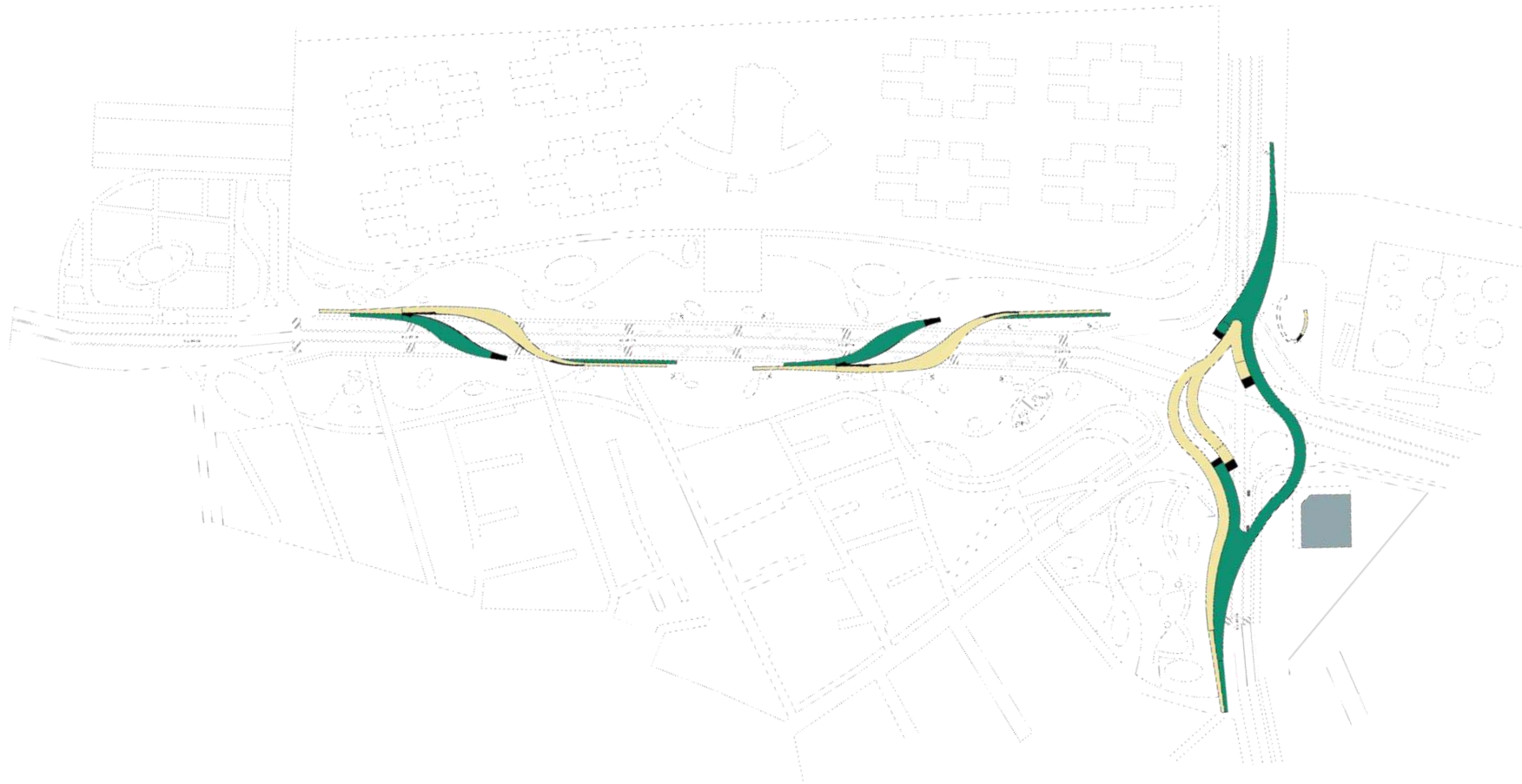
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-  Greenery
-  Bike lane
-  Water flow
-  Parking
-  Slow lane
-  Fast lane
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-  Tram station
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-  Diorama
-  Plaza
-  Metro lane
-  Metro station
-  Prayer room
-  Lift and stairs
-  W.C
-  Service / Warehouse

Ground Plan (0.00)





Plan



-  Pedestrian
-  Greenery
-  Bike lane
-  Water flow
-  Parking
-  Slow lane
-  Fast lane
-  Tram way
-  Tram station
-  Bus lane
-  Bus station
-  Shop
-  Food/Restaurant
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-  Museum
-  Commercial office buildings
-  Bank
-  Diorama
-  Plaza
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-  Metro station
-  Prayer room
-  Lift and stairs
-  W.C
-  Service / Warehouse

First Floor Plan (+3.80)





Plan



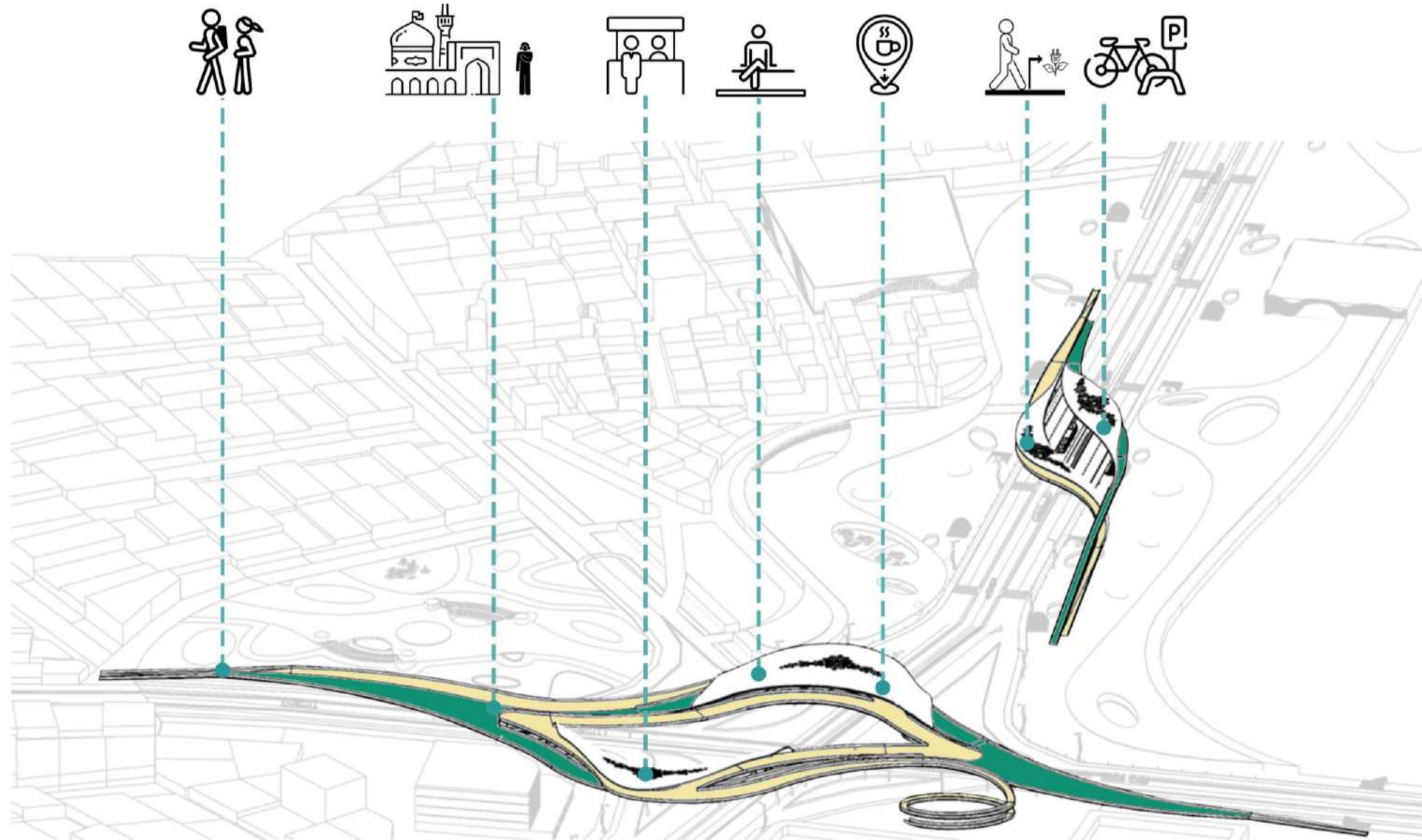
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-  Metro lane
-  Metro station
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Second Floor Plan (+6.80)



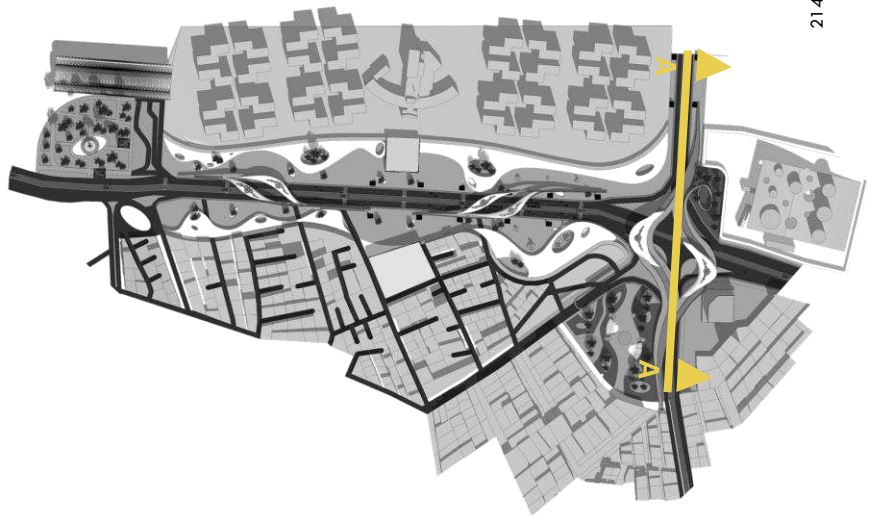
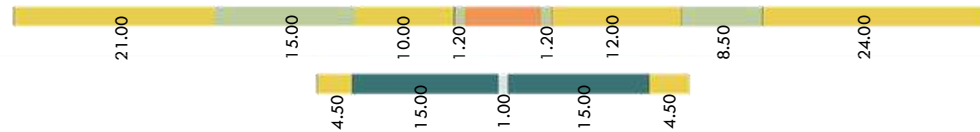
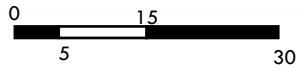
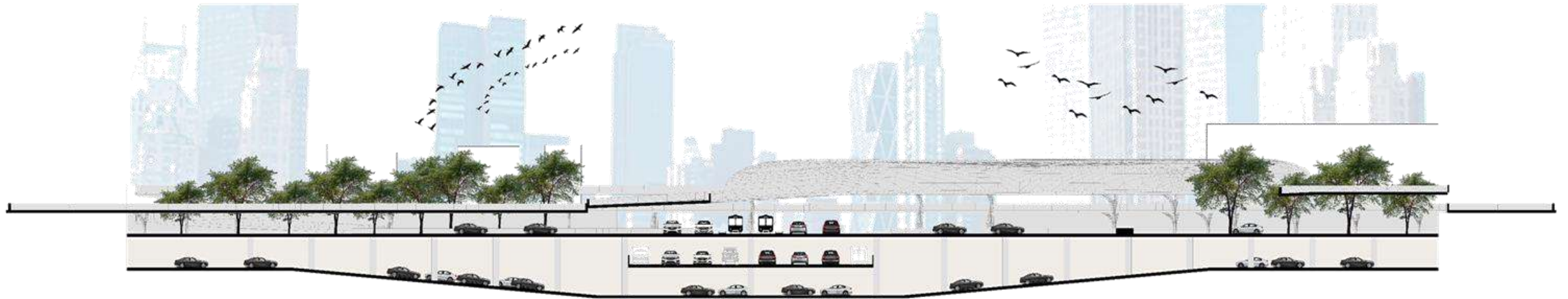


Functions





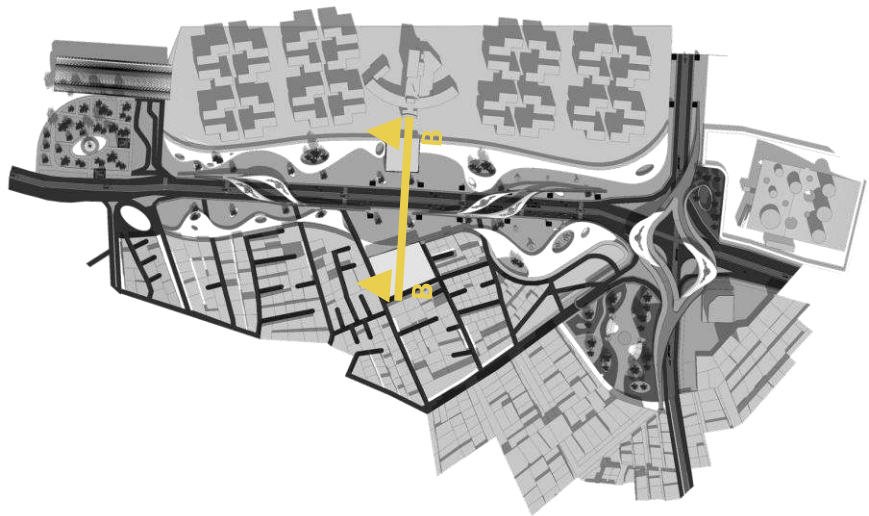
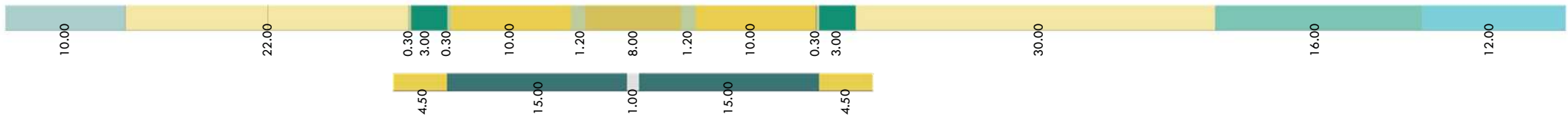
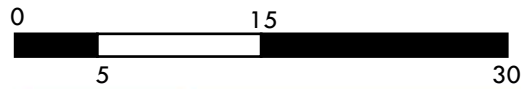
Section A-A



- Pedestrian
- Greenery
- Bike lane
- Slow lane
- Fast lane
- Tram way
- Bus lane
- Shop
- Hotel
- Gym



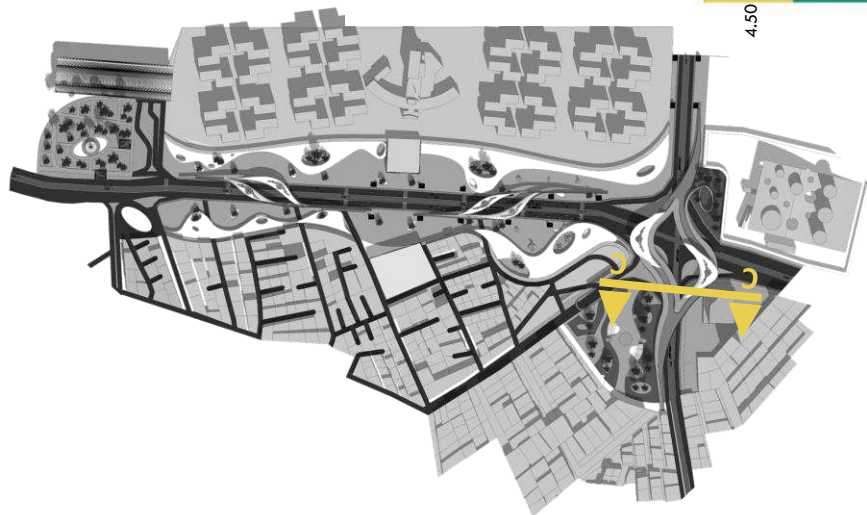
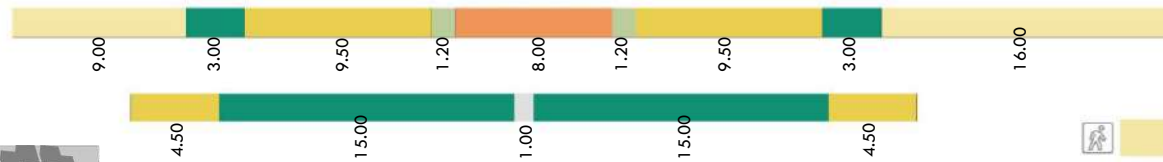
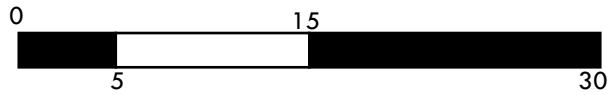
Section B-B



- Pedestrian
- Greenery
- Bike lane
- Slow lane
- Fast lane
- Tram way
- Bus lane
- Shop
- Hotel
- Gym



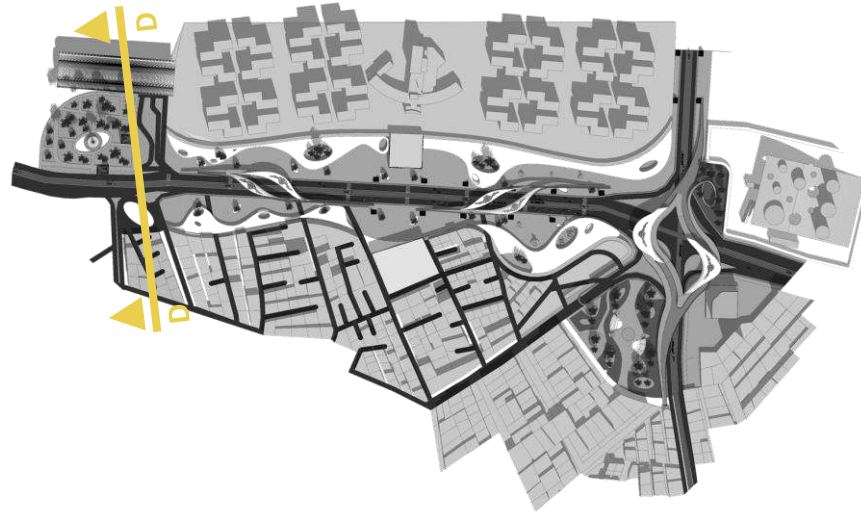
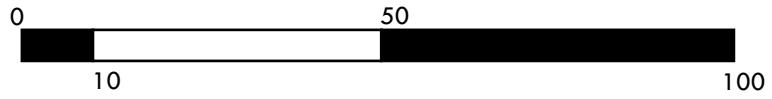
Section C-C



- Pedestrian
- Greenery
- Bike lane
- Slow lane
- Fast lane
- Tram way
- Bus lane
- Shop
- Hotel
- Gym

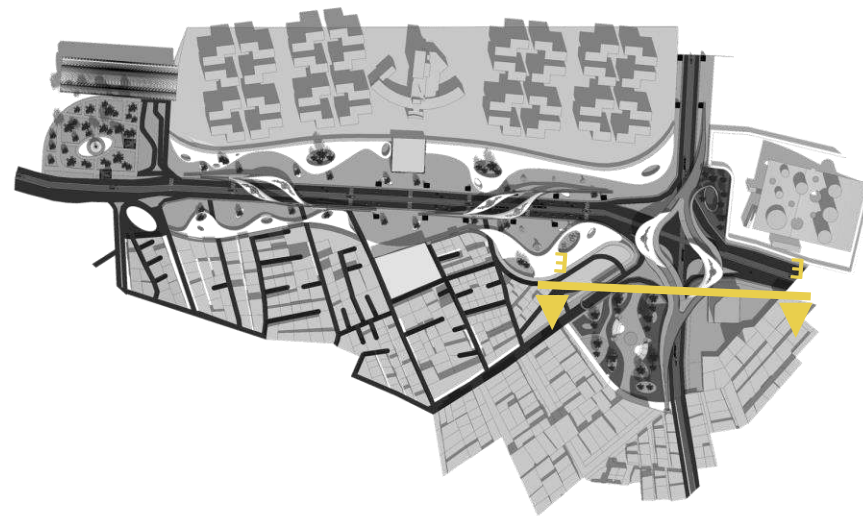


Section D-D



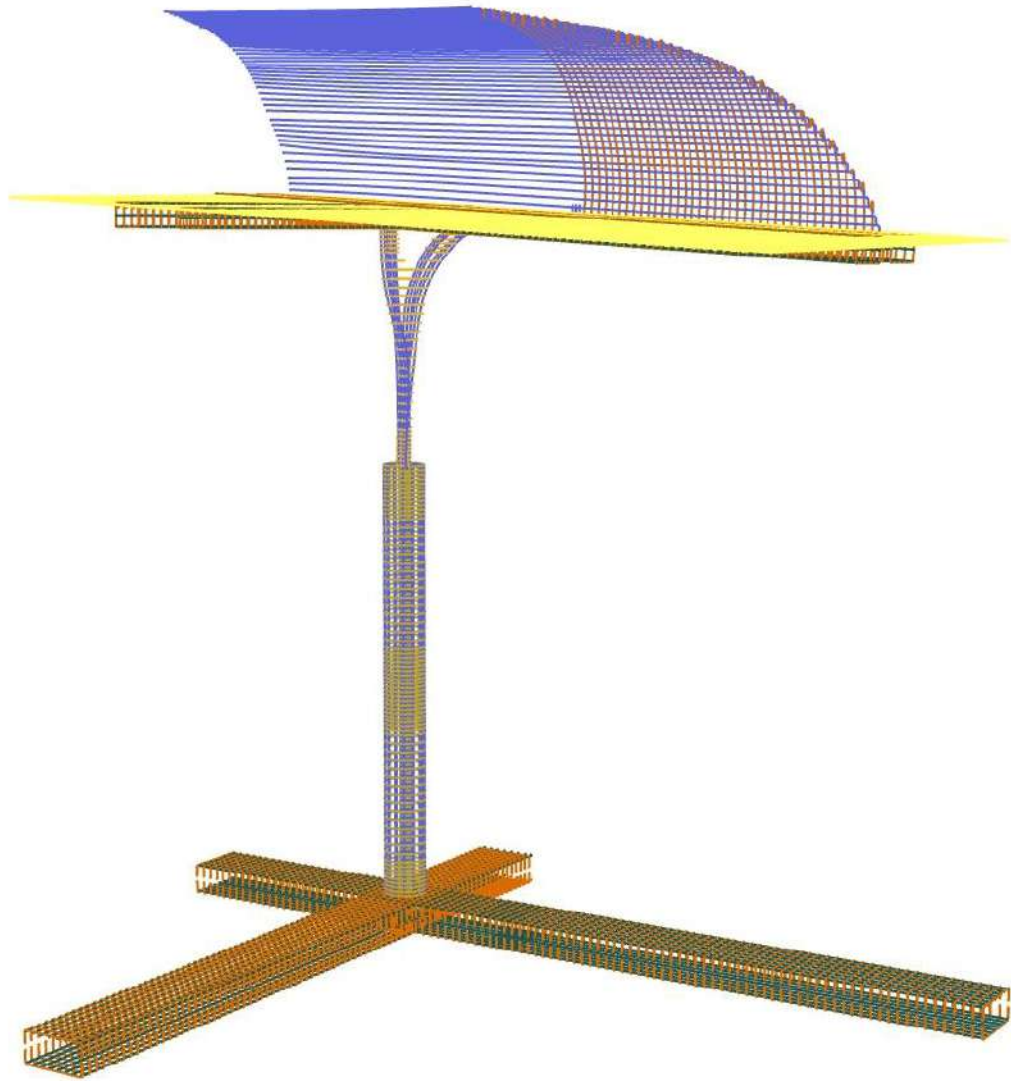


Section E-E





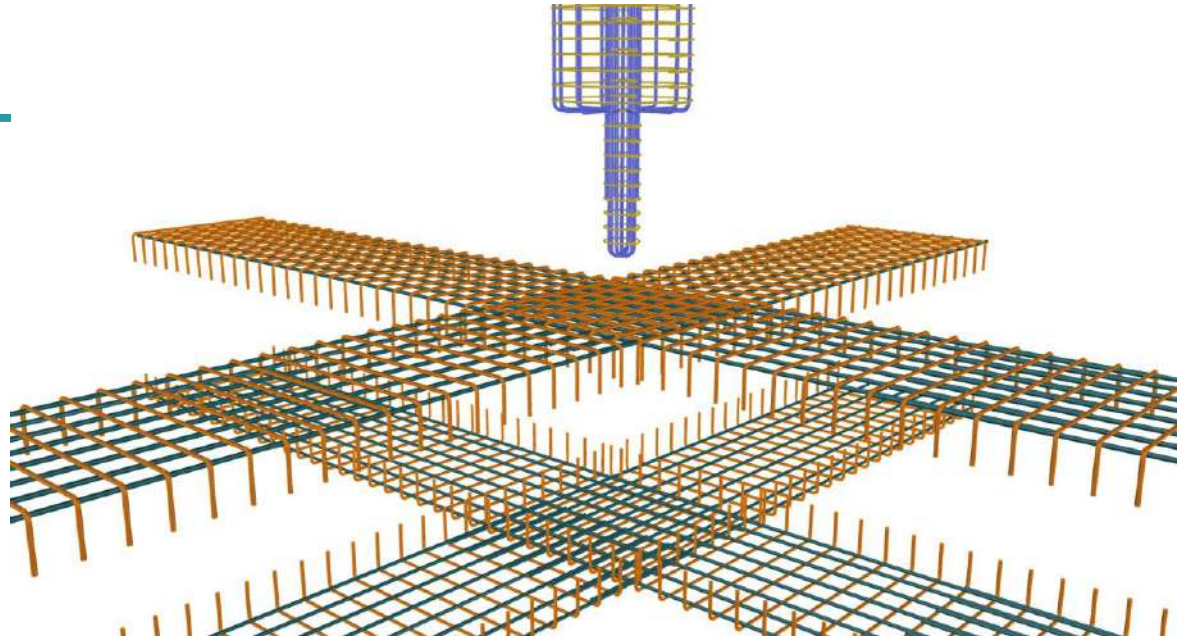
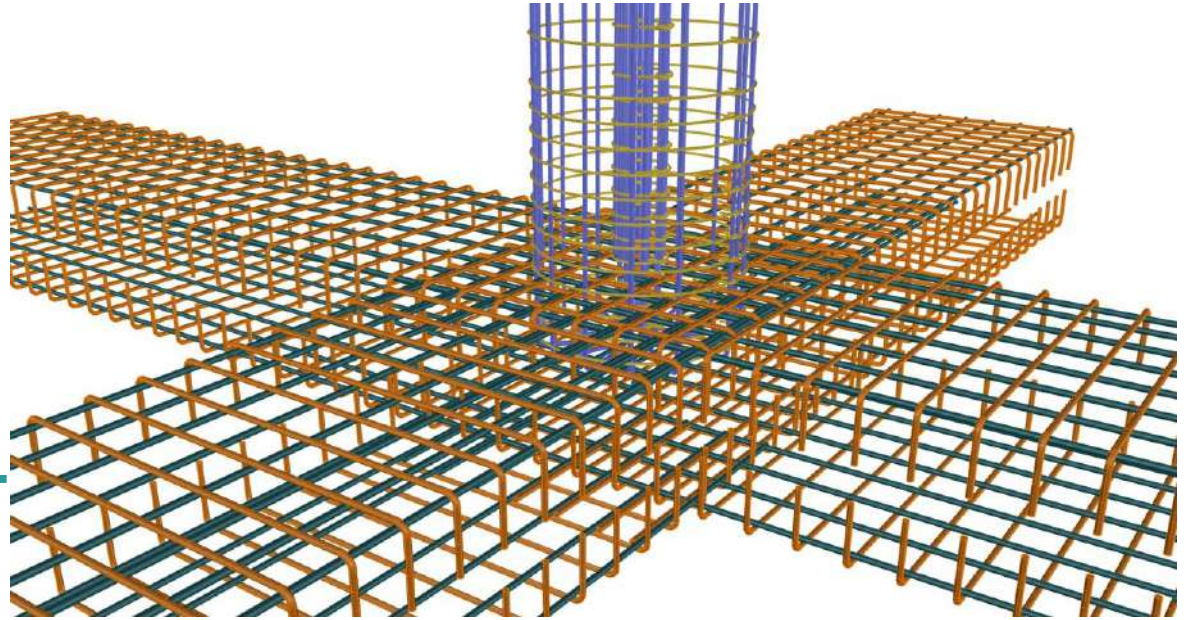
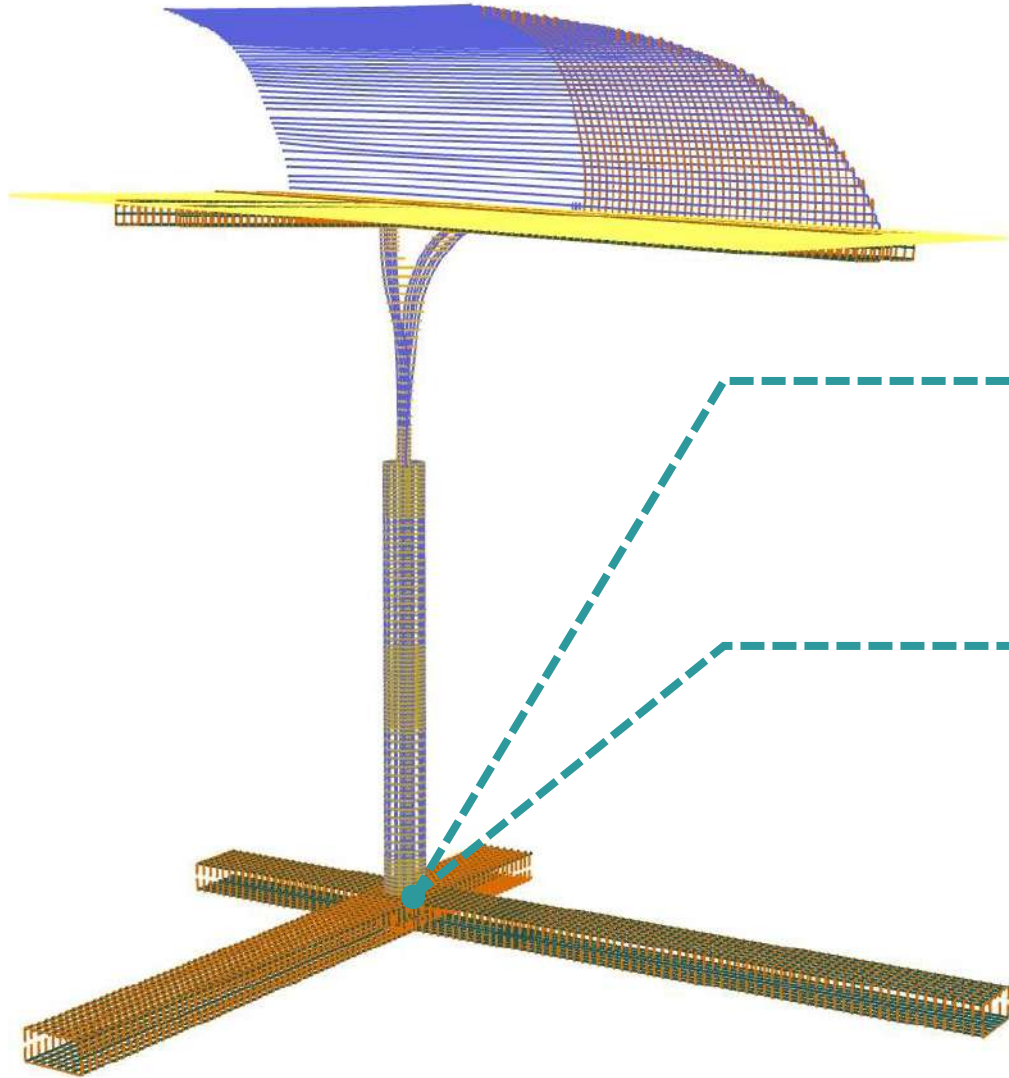
Form & structure





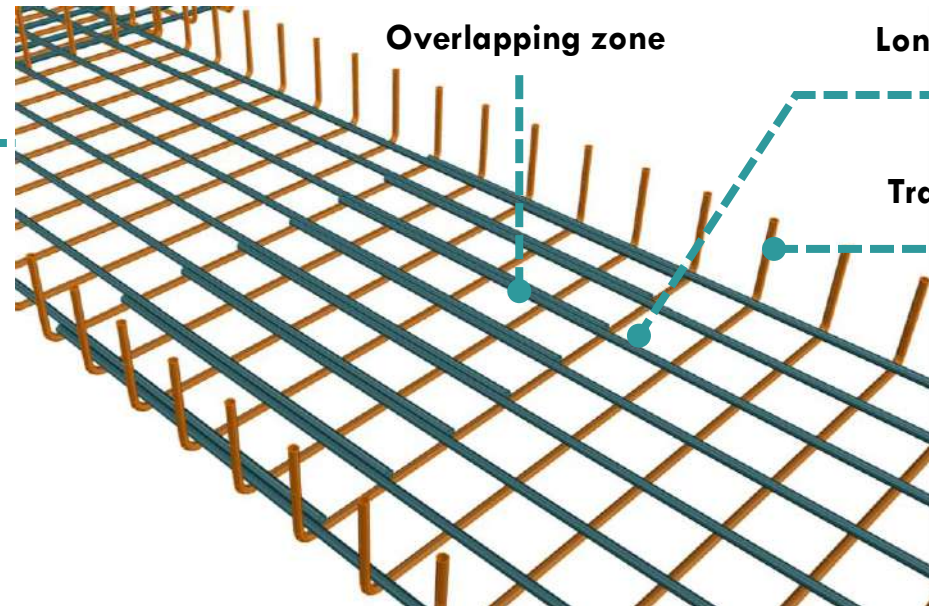
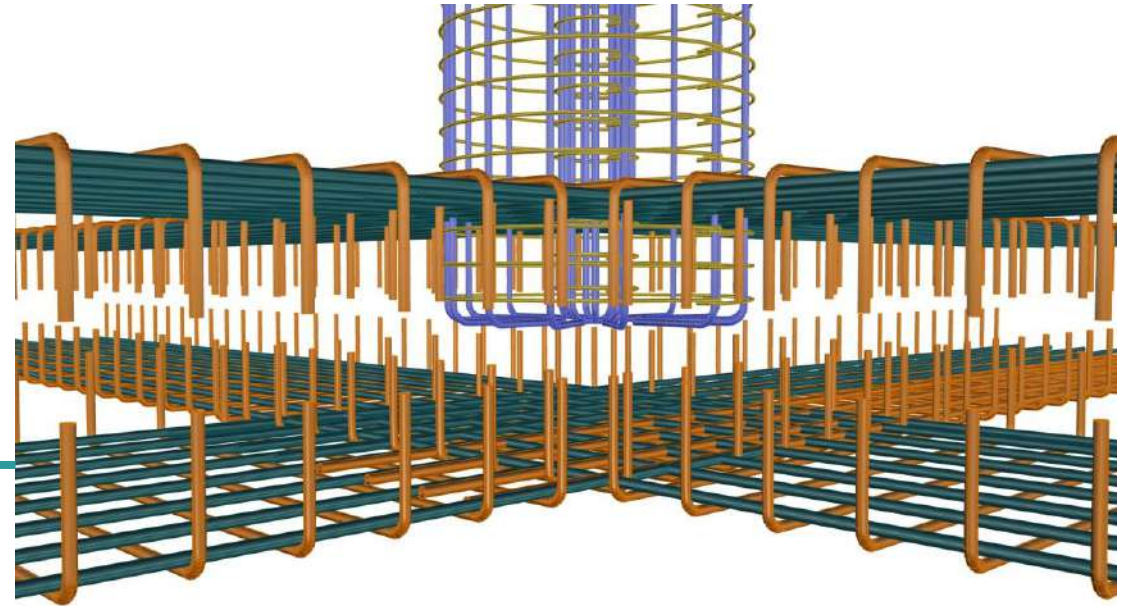
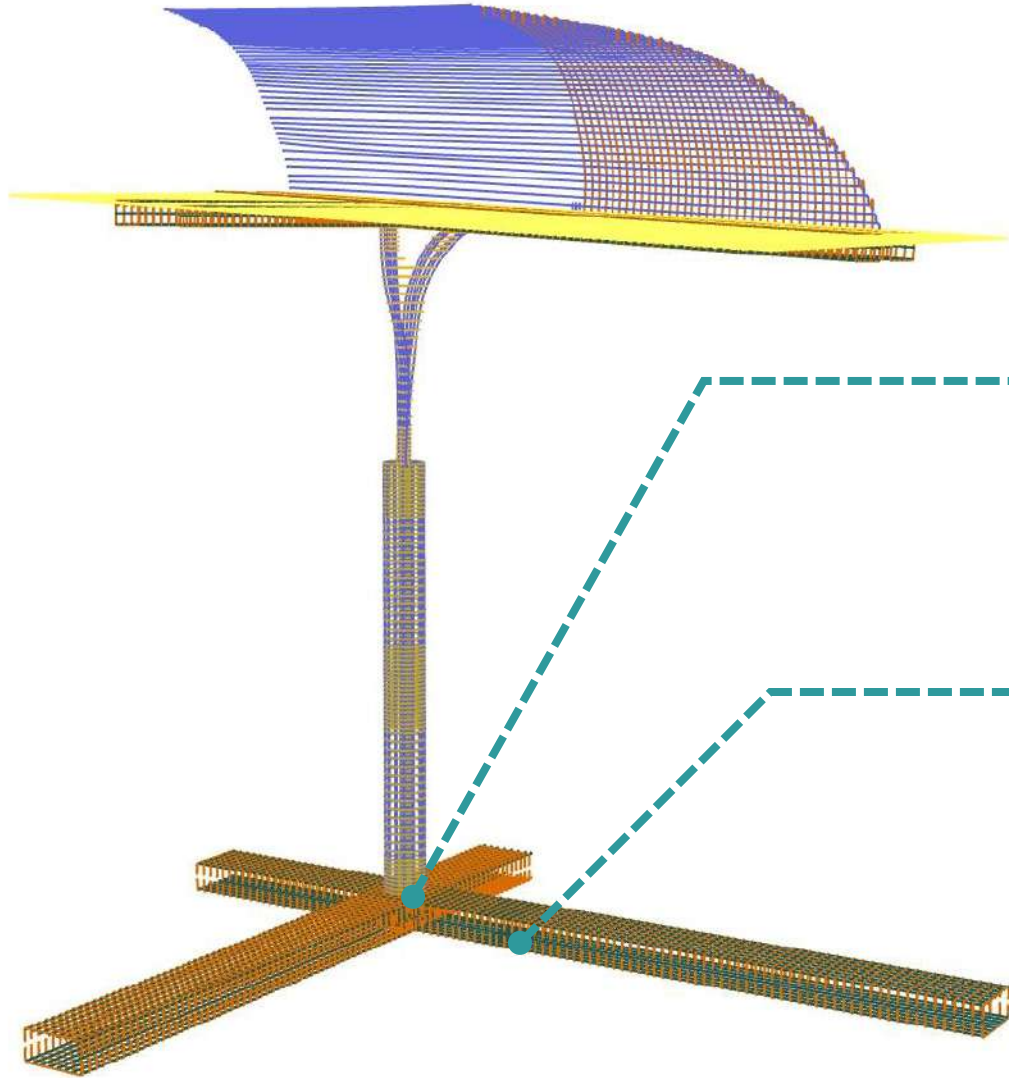
Technical Detail

Column & foundation connection





Column & foundation connection



Overlapping zone

Longitudinal reinforcement

Ø25@20

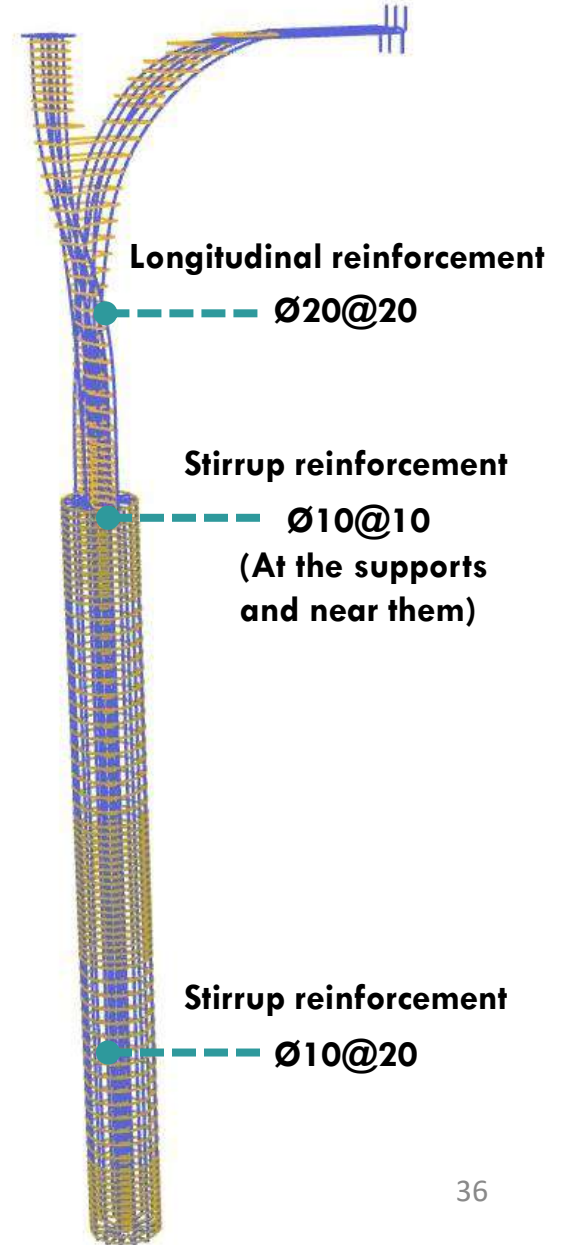
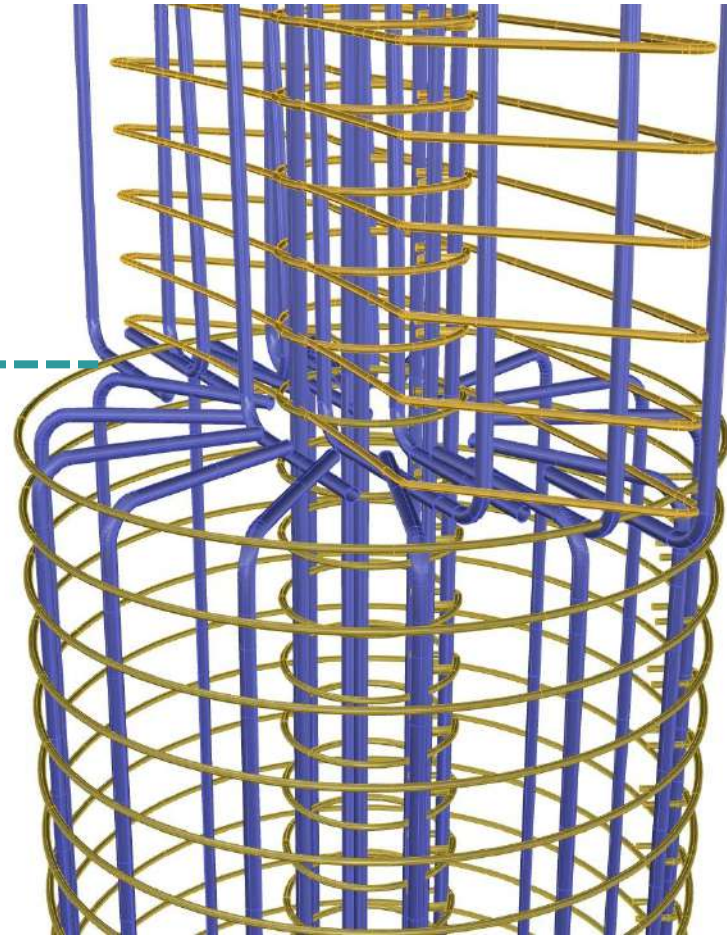
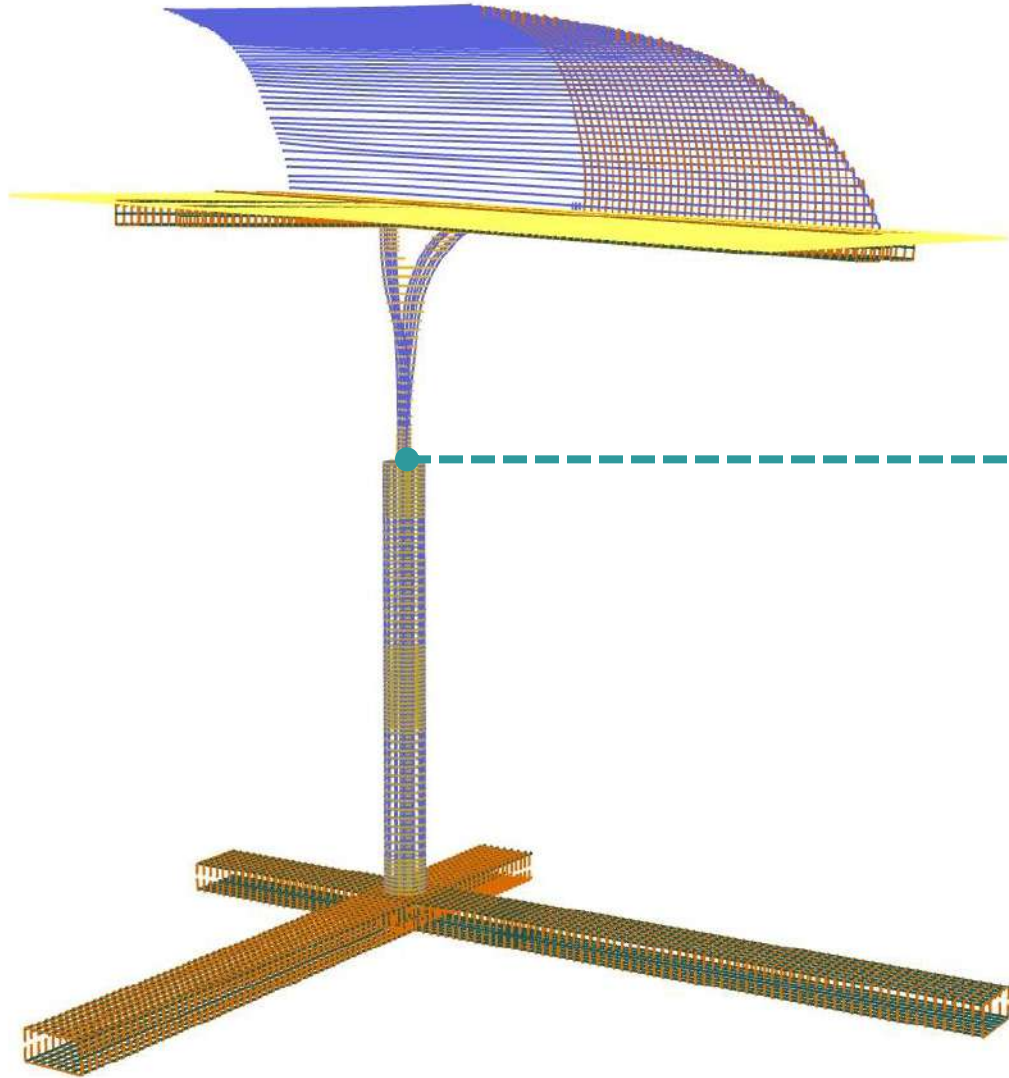
Transverse reinforcement

Ø22@20



Technical Detail

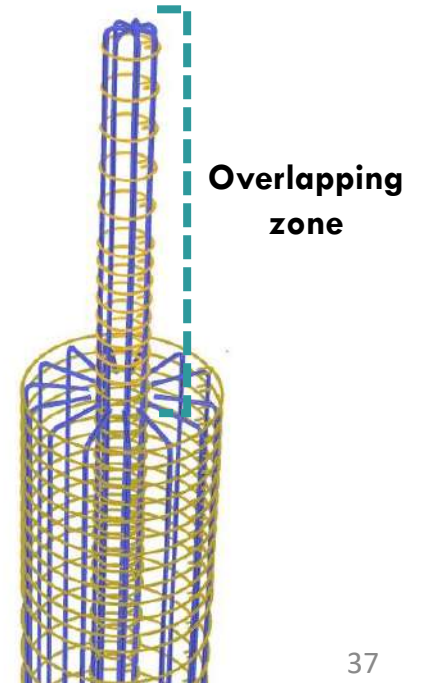
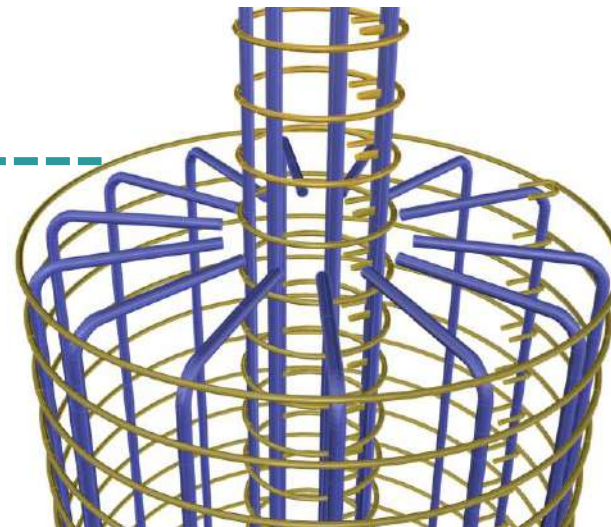
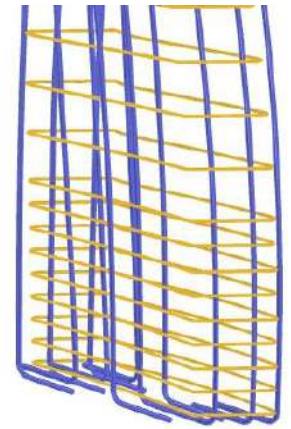
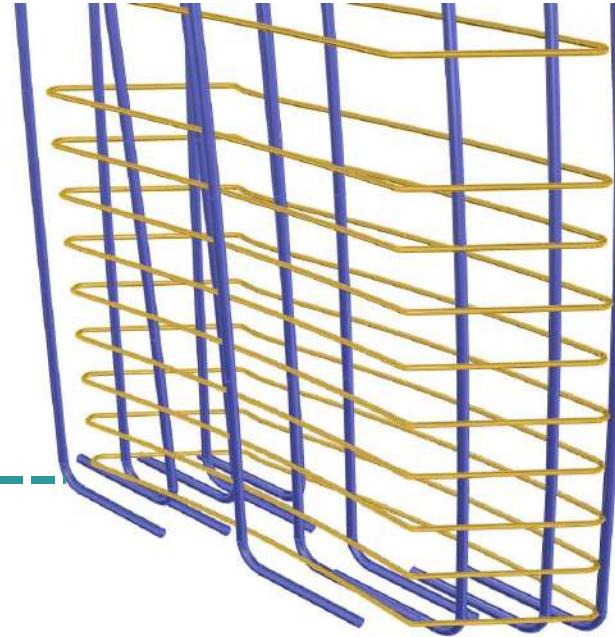
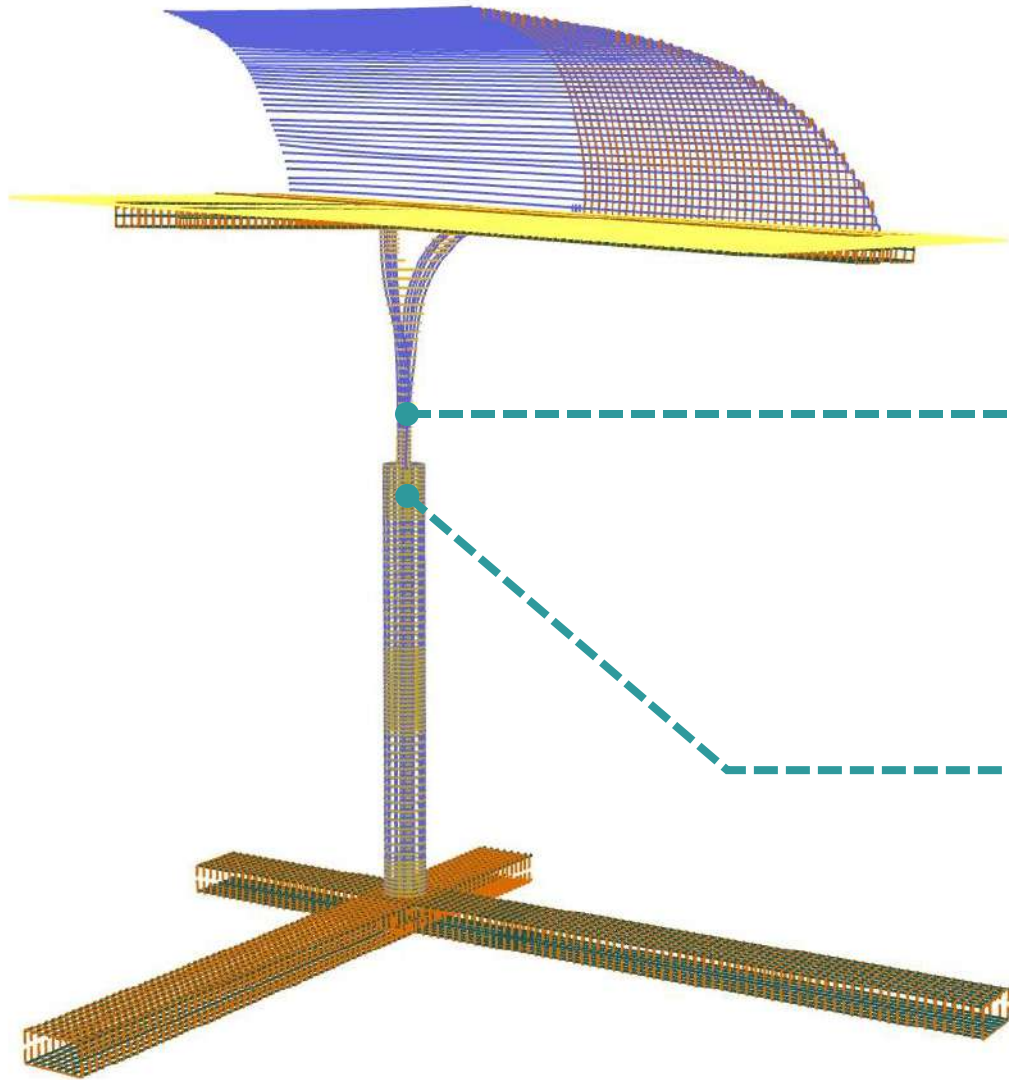
Twisted Column & cylindrical column connection





Technical Detail

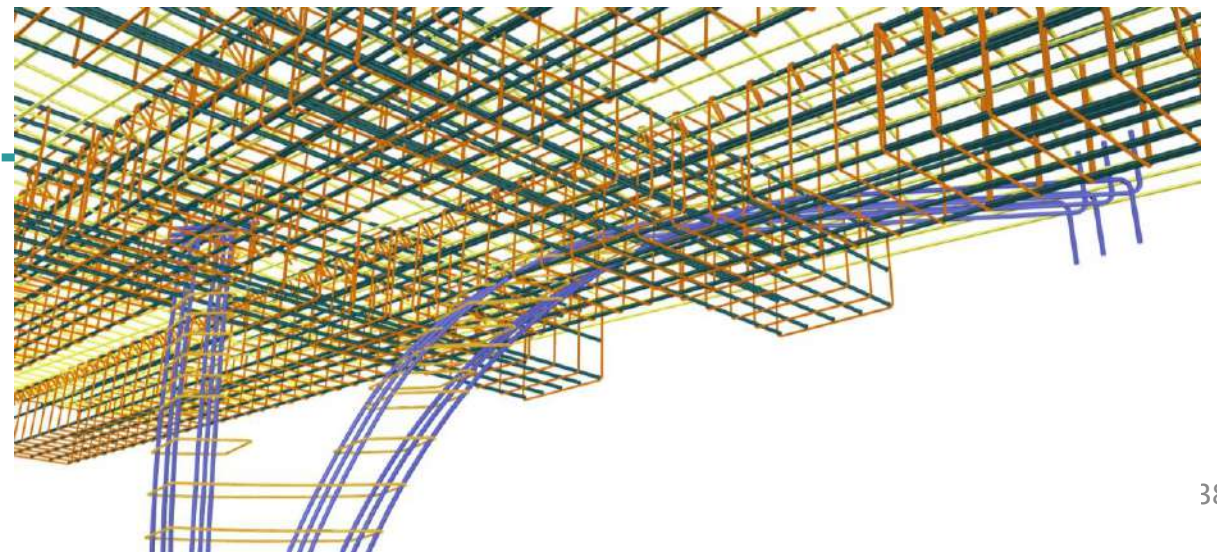
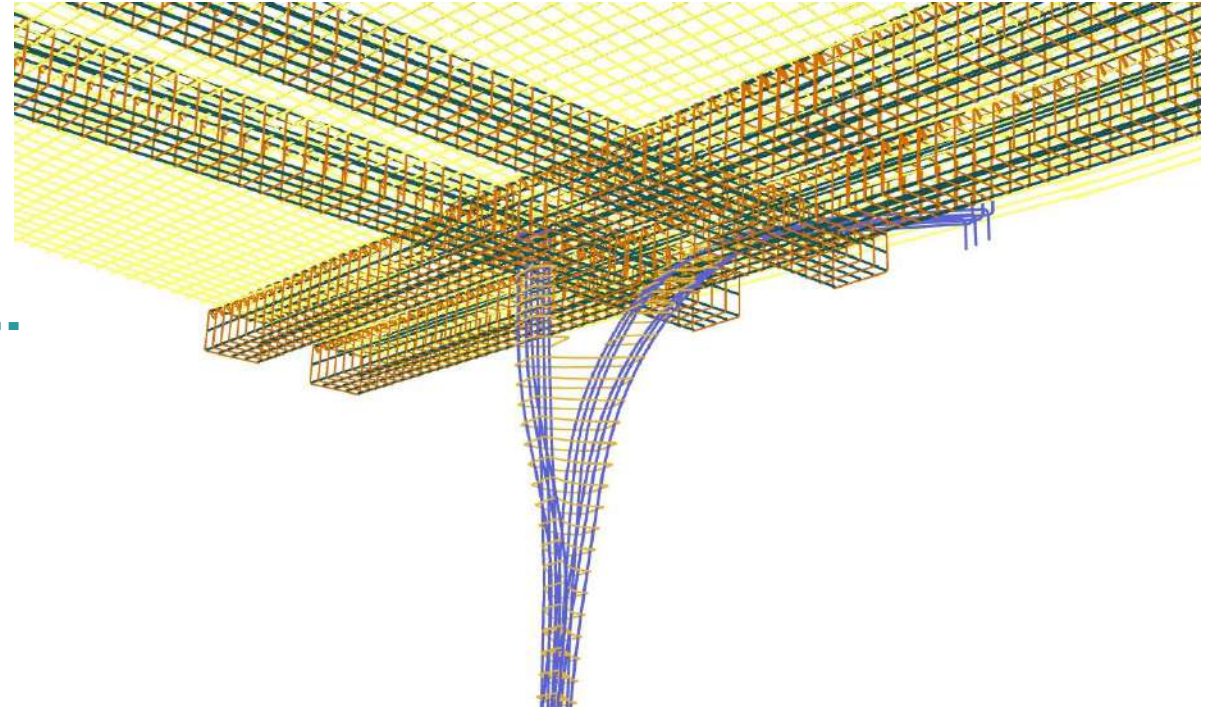
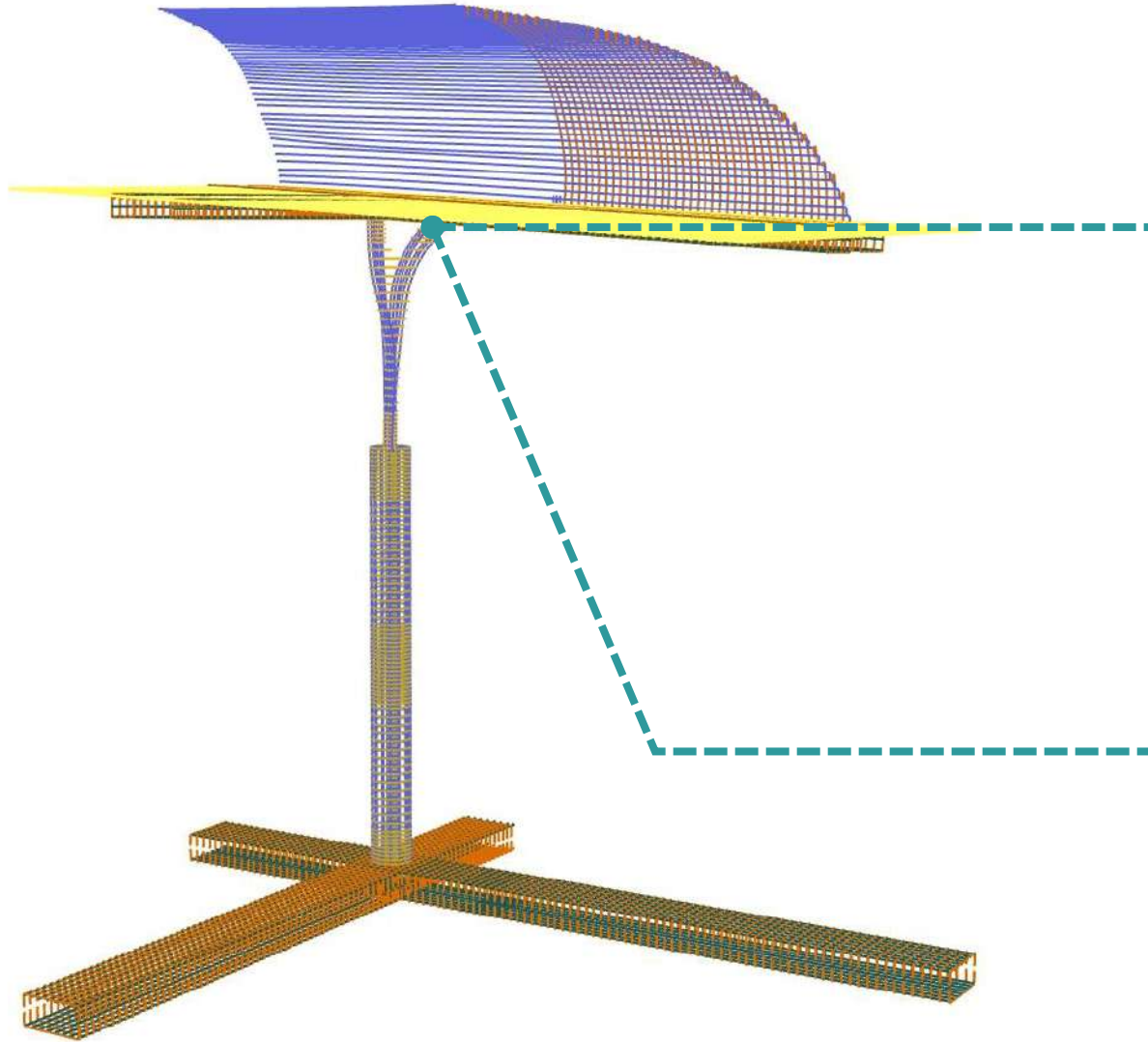
Twisted Column & cylindrical column connection





Technical Detail

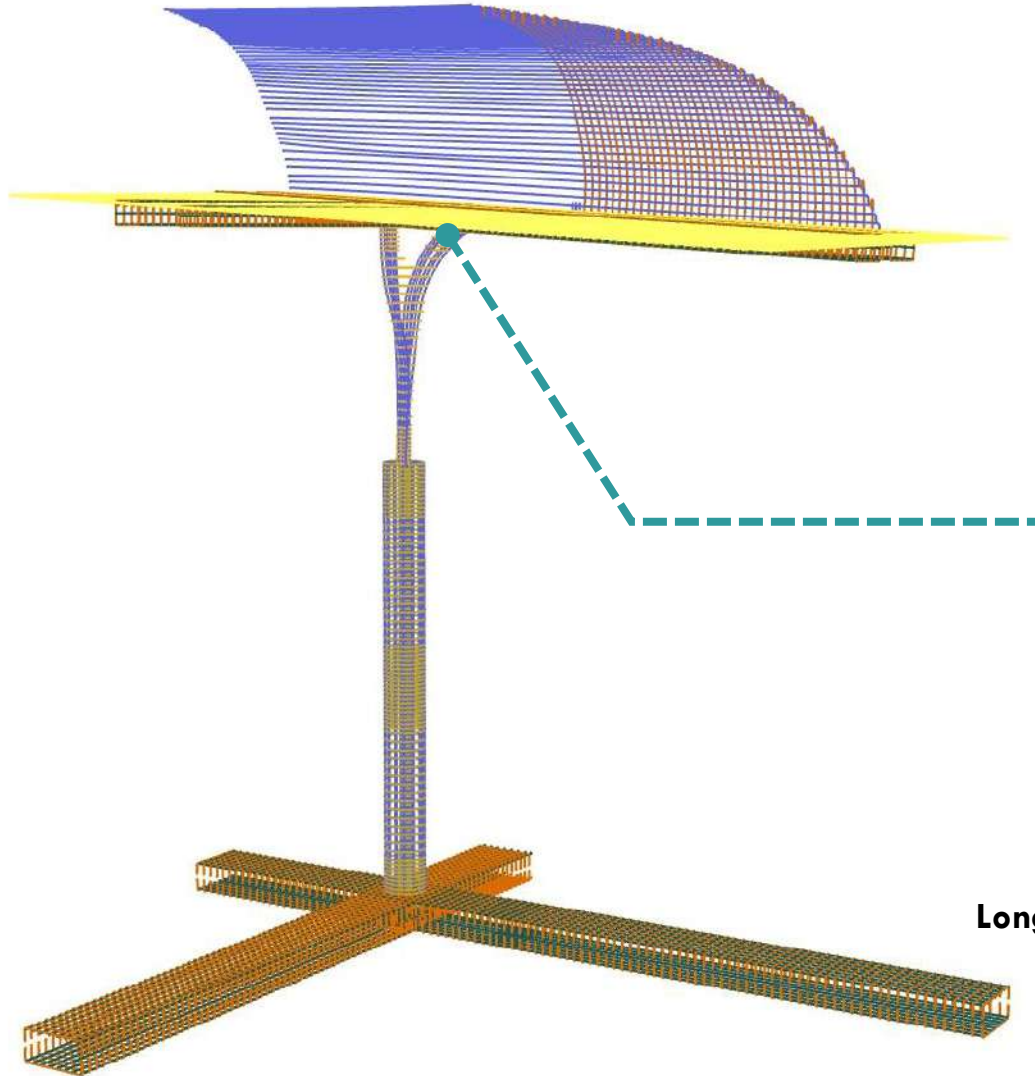
Column & floor connection





Technical Detail

Column & floor connection

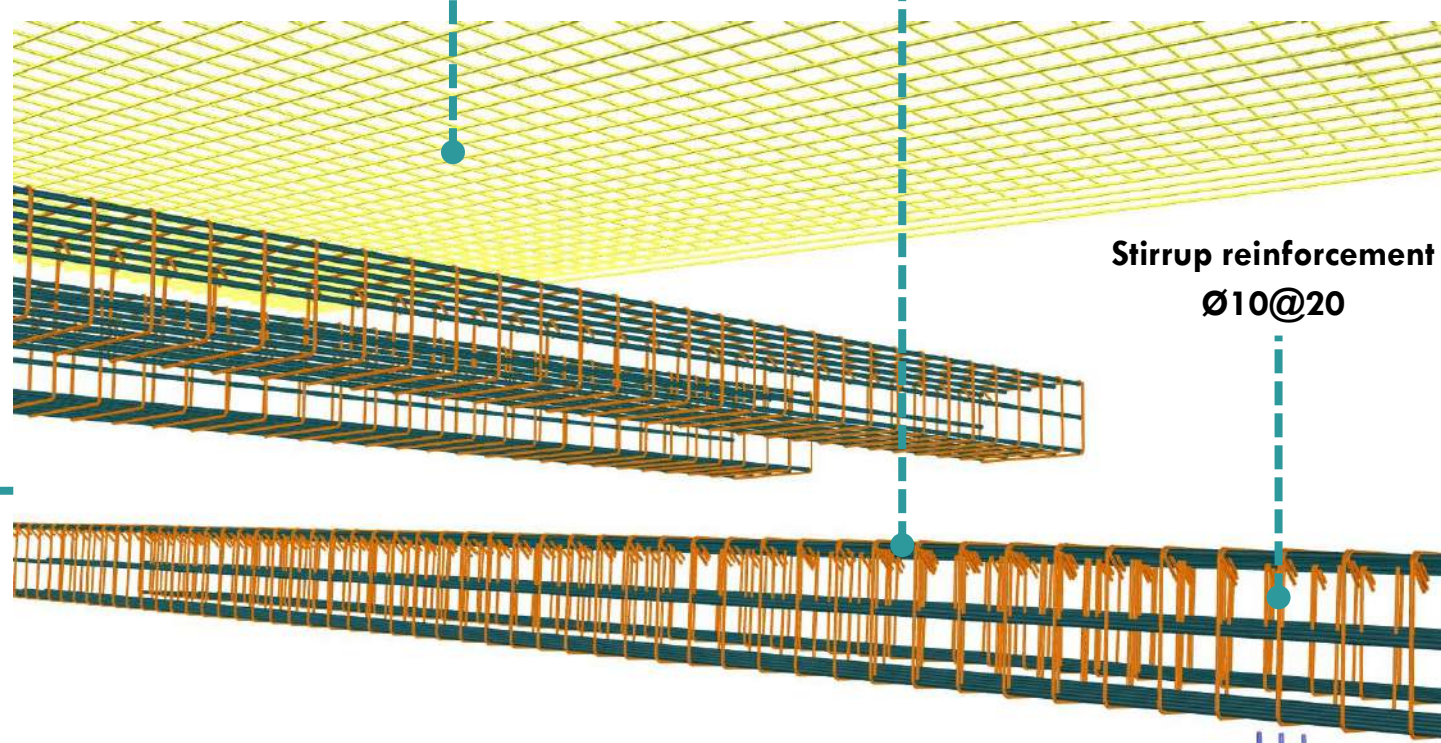


Concrete slab reinforcement Longitudinal reinforcement

Ø16@20

Ø20@16

Stirrup reinforcement
Ø10@20

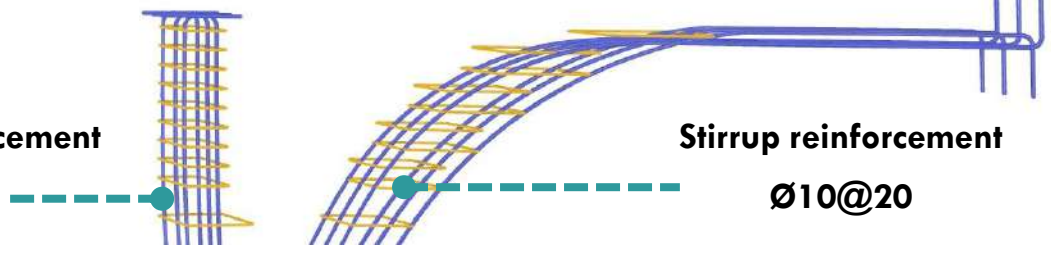


Longitudinal reinforcement

Ø20@20

Stirrup reinforcement

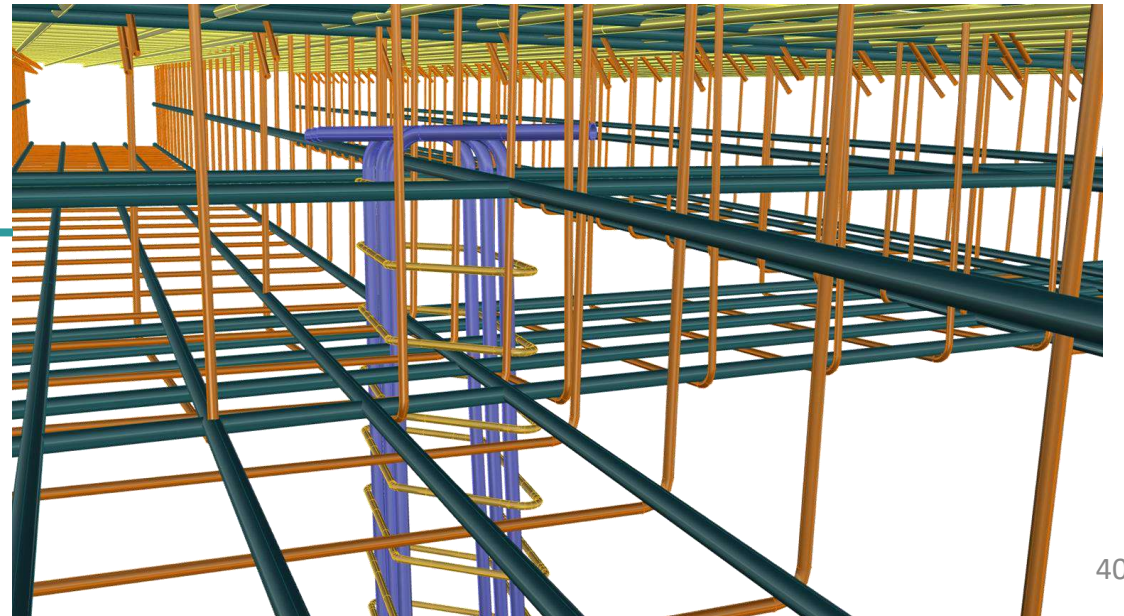
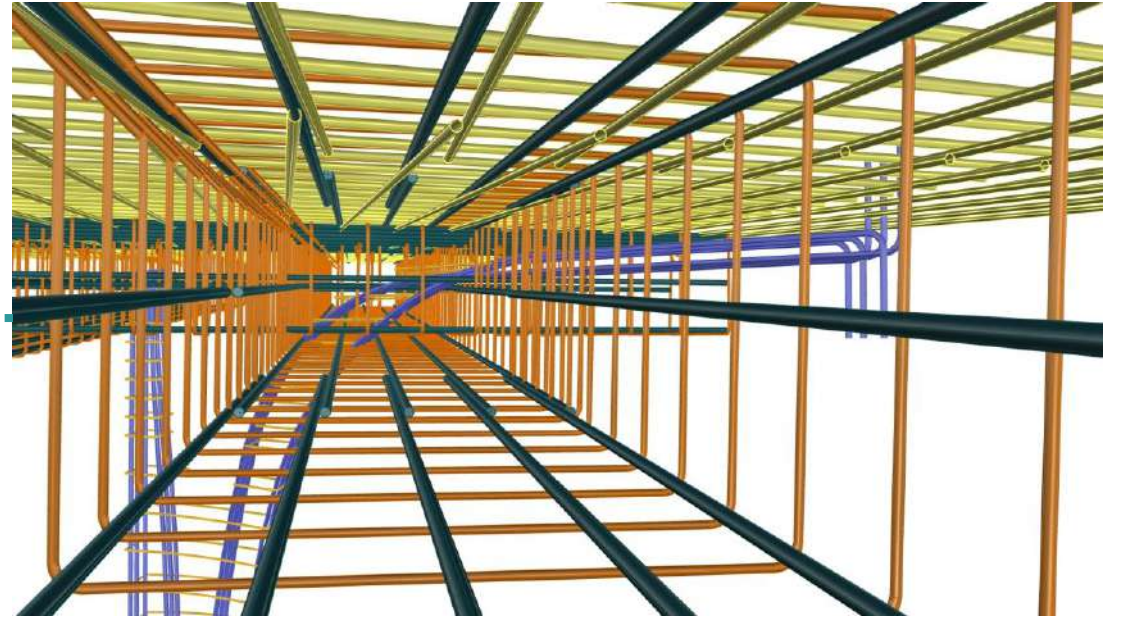
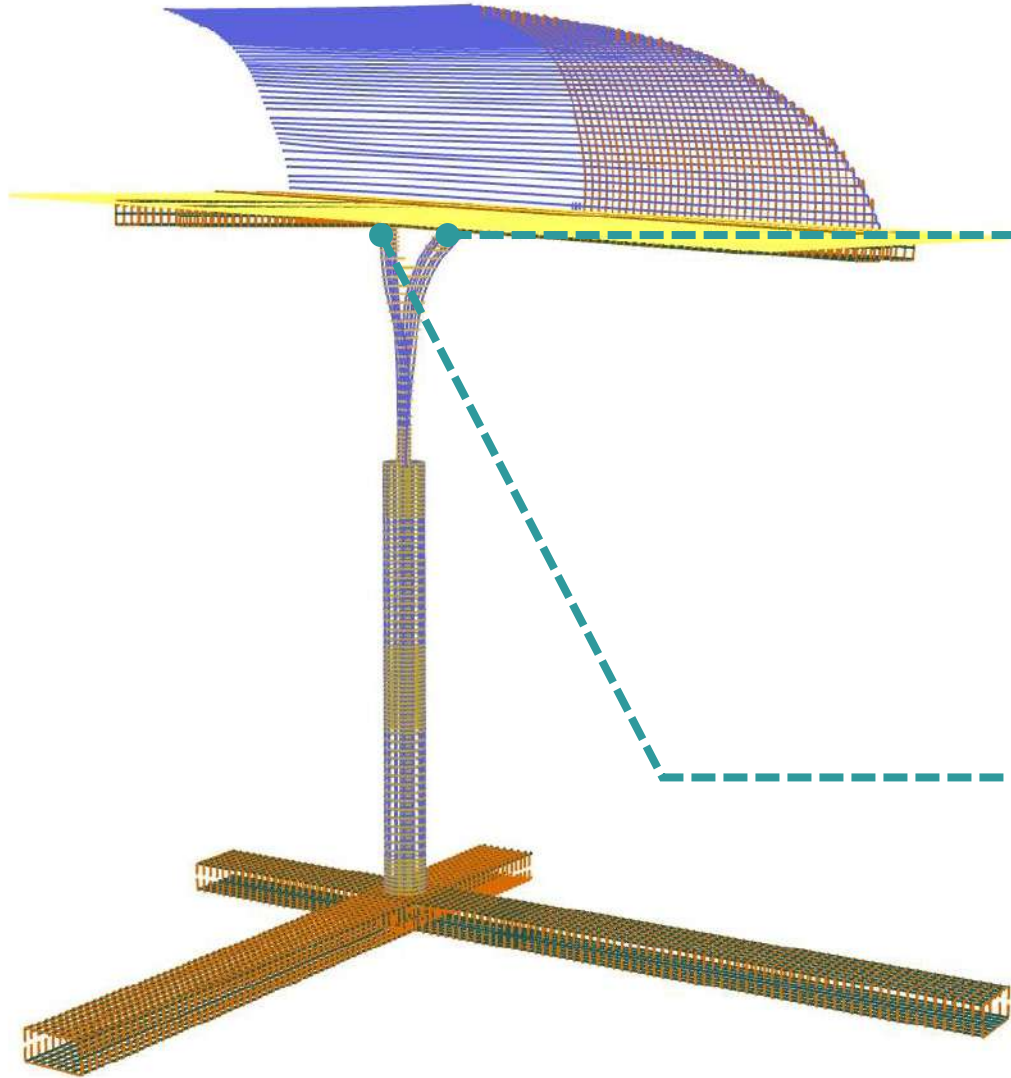
Ø10@20





Technical Detail

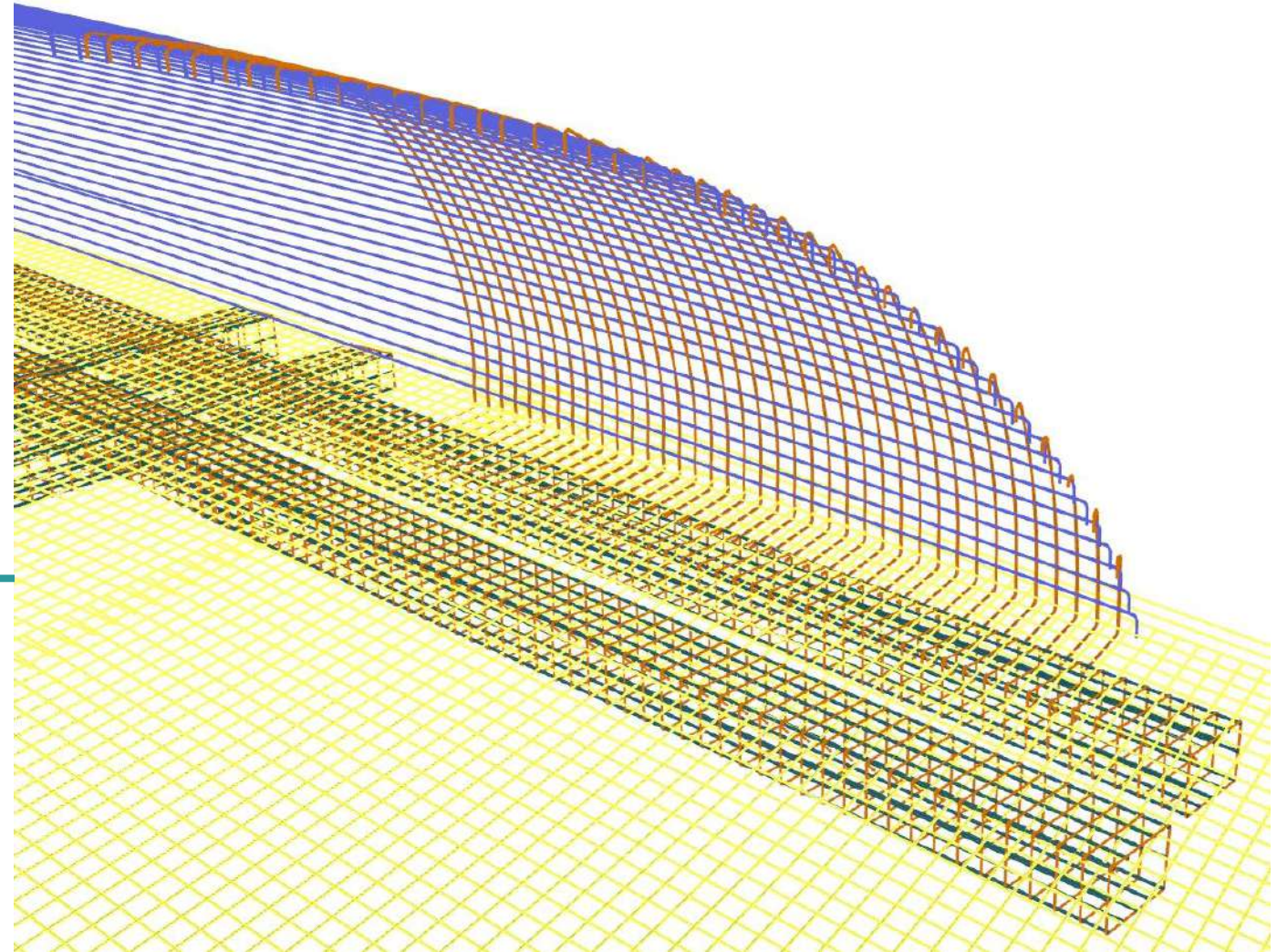
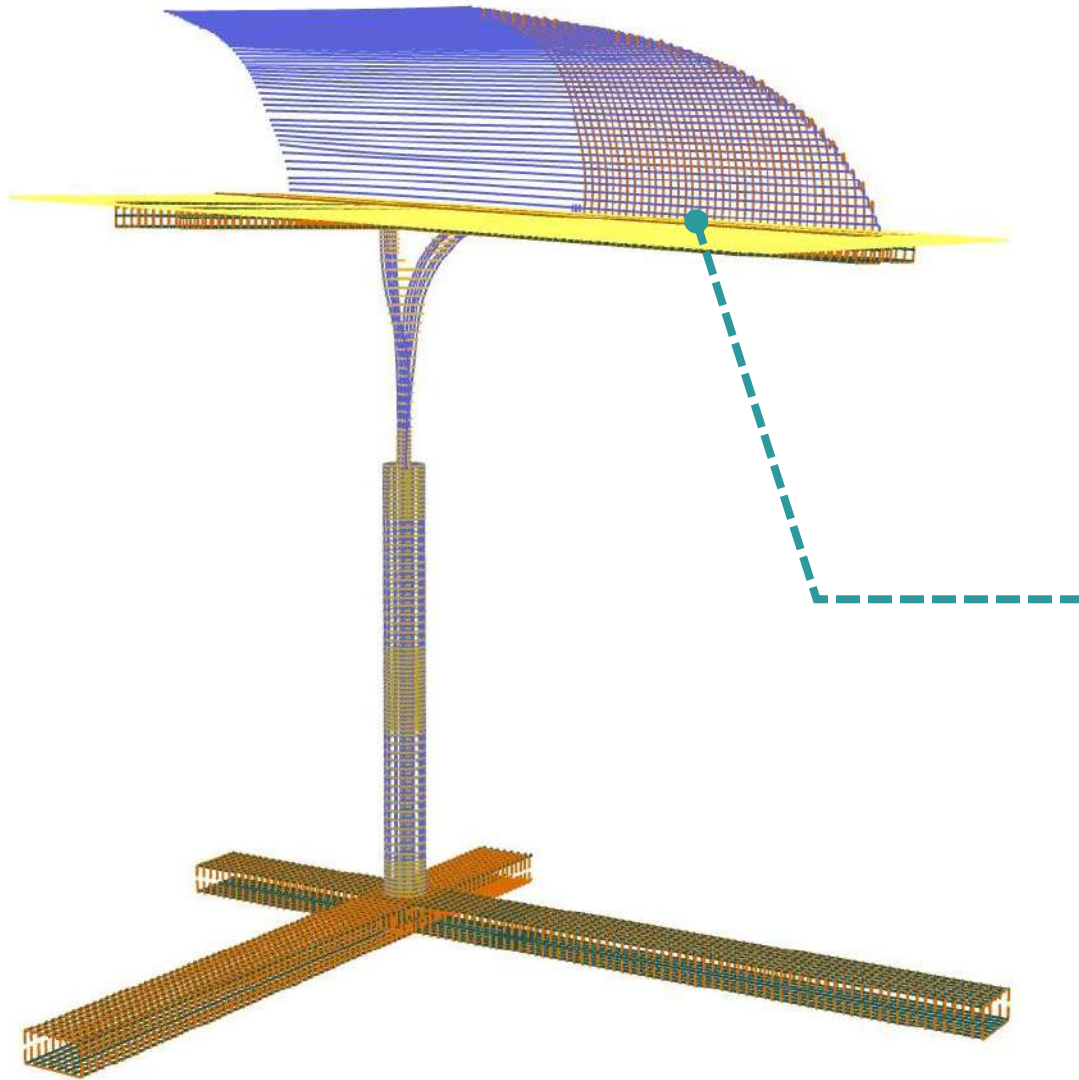
Column & floor connection





Technical Detail

Sunshade shell & floor connection

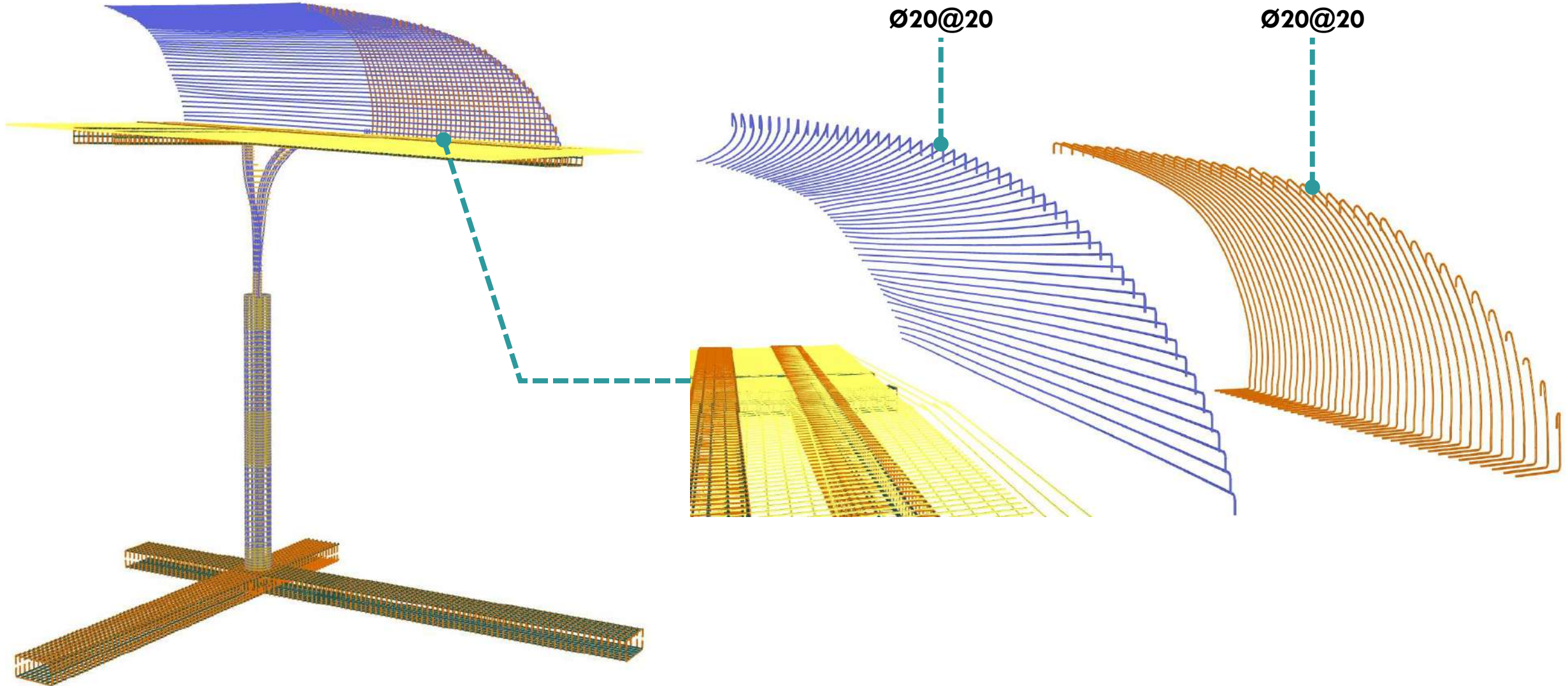




Technical Detail



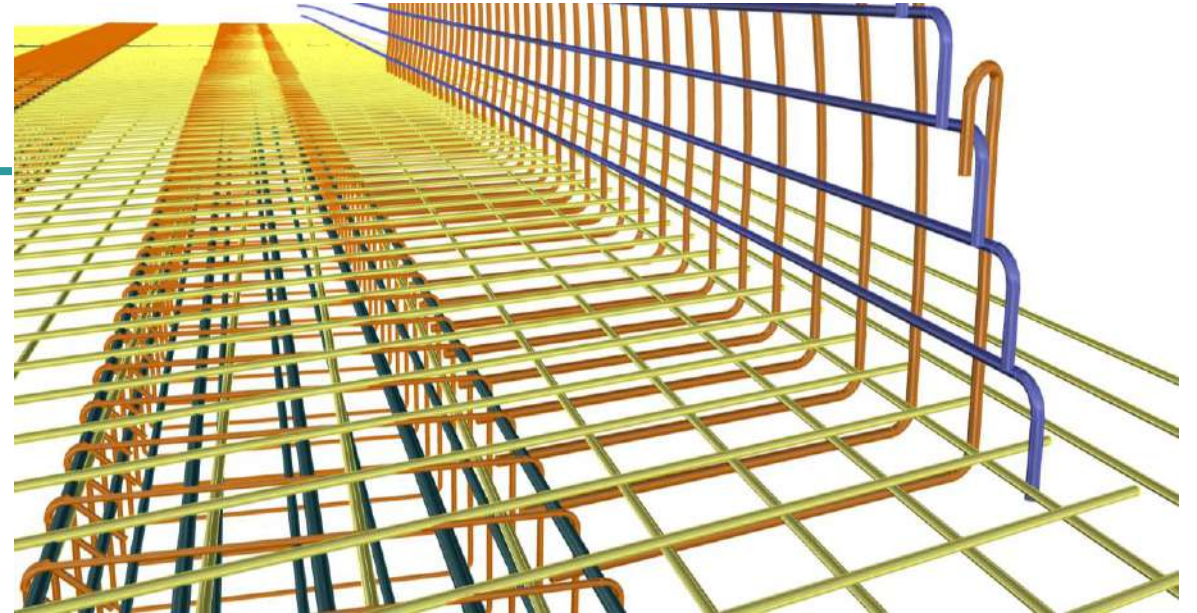
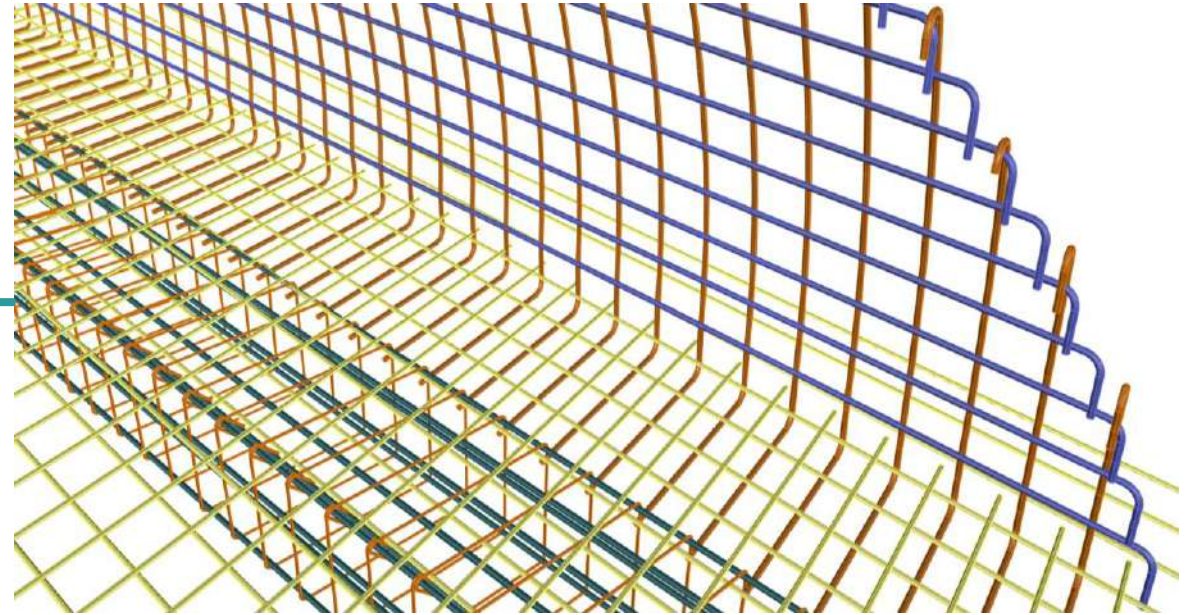
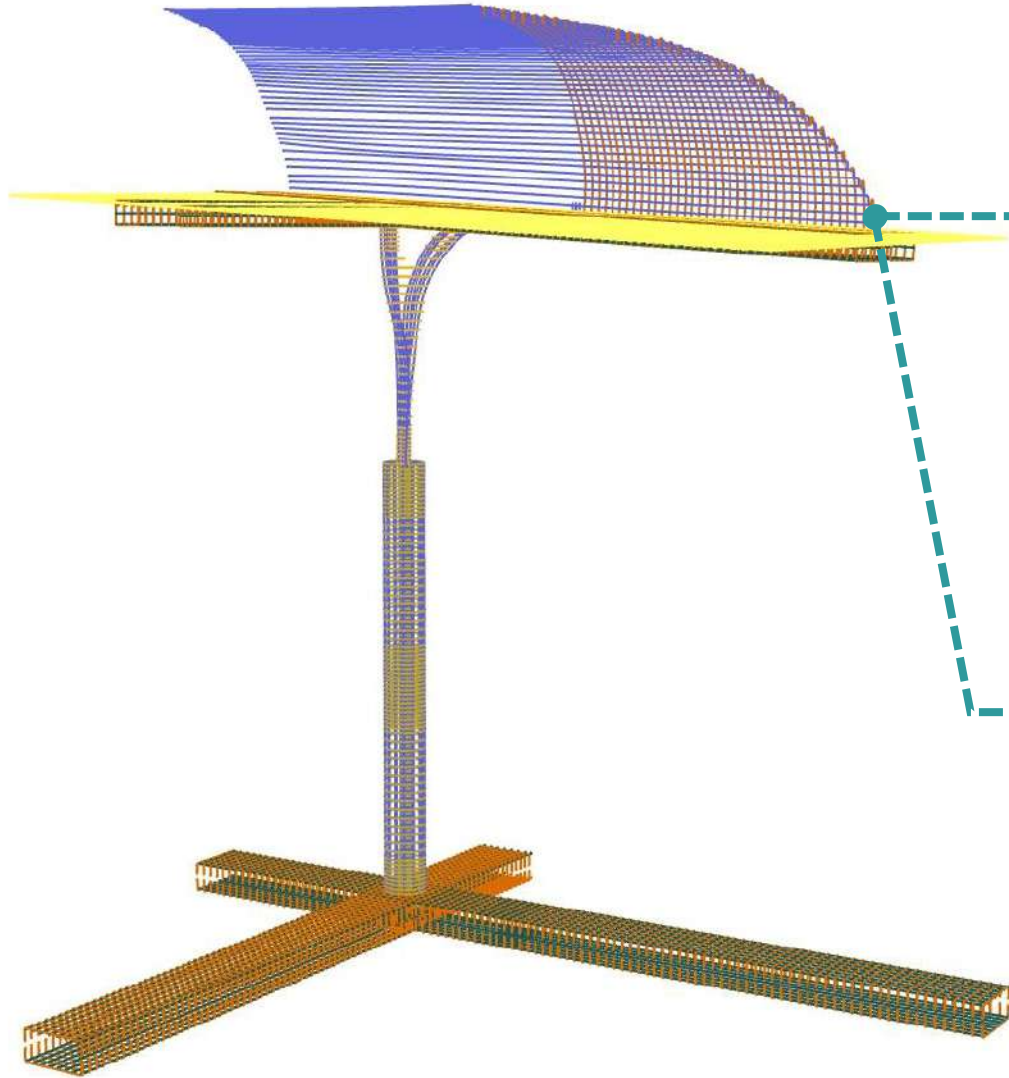
Sunshade shell & floor connections





Technical Detail

Sunshade shell & floor connection

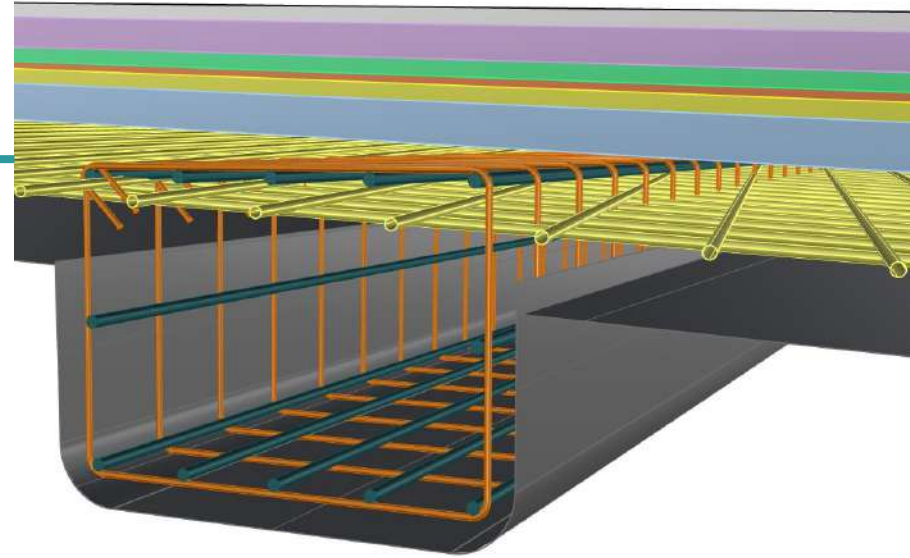
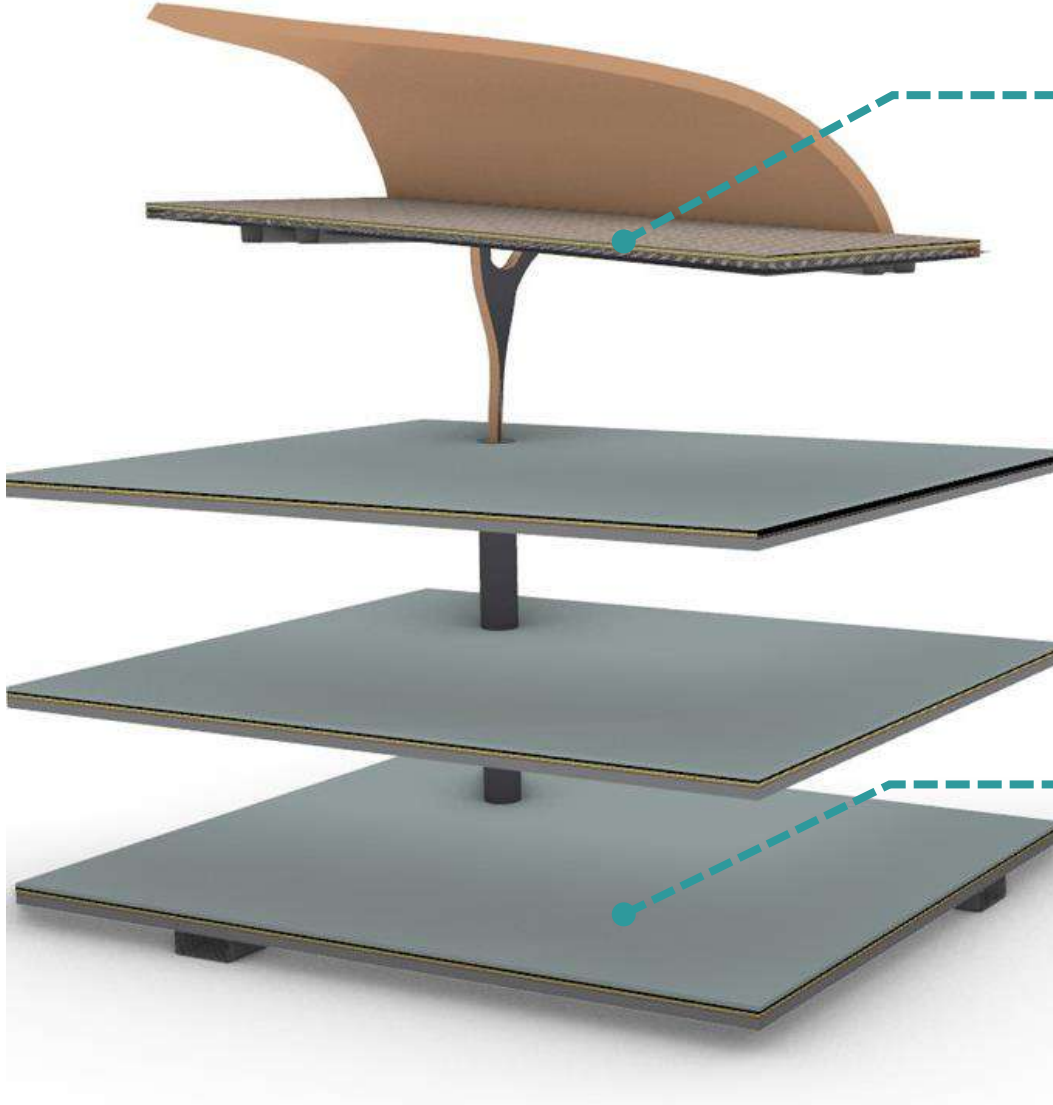




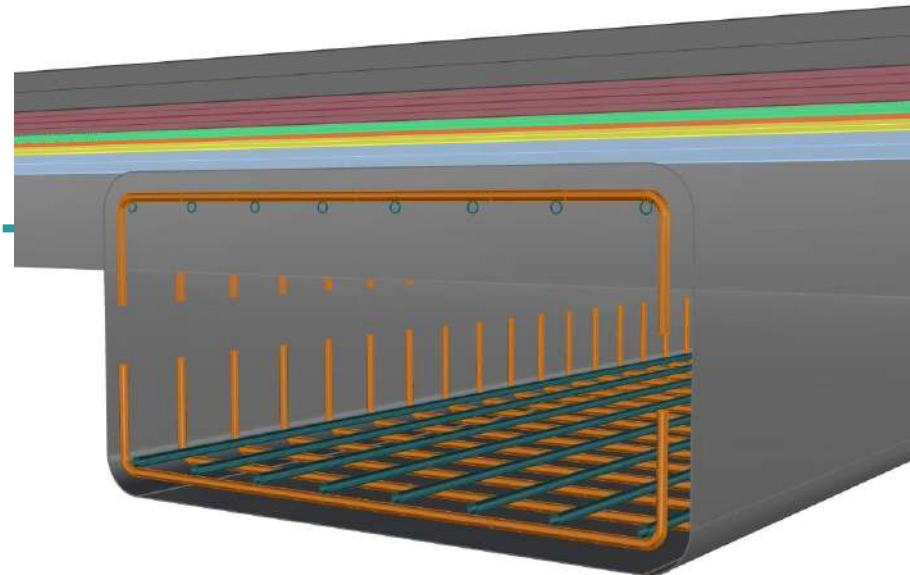
Technical Detail



Floors layers

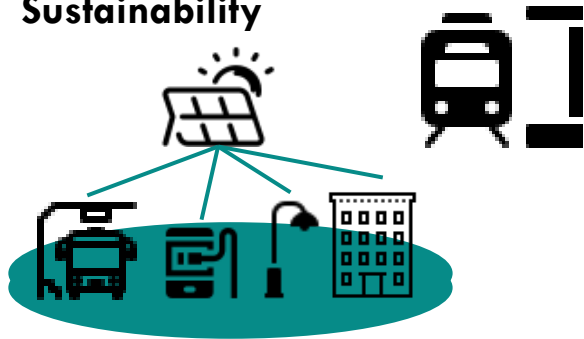


- Concrete tile
- Cement sand mortar
- Waterproofing protective layer
- Waterproofing layer
- Waterproofing substrate layer
- Mineral pumice
- Concrete slab
- Concrete beam



- Asphalt
- The second asphalt binder
- The first asphalt binder
- Waterproofing protective layer
- Waterproofing layer
- Waterproofing substrate layer
- Mineral pumice
- Strip foundation

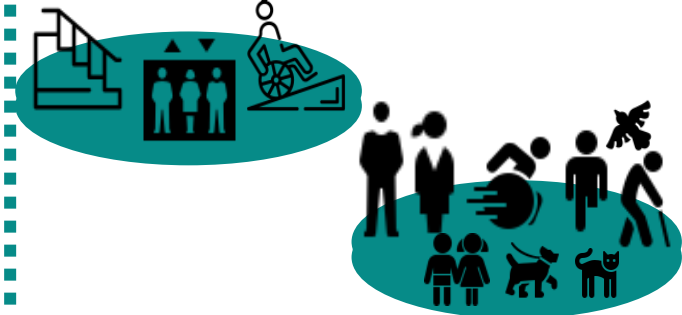
Sustainability



Social/ Culture



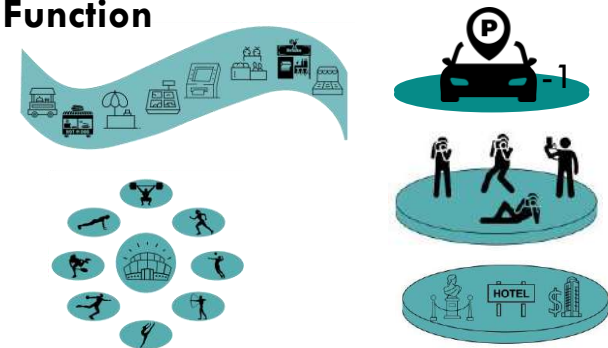
Accessibility



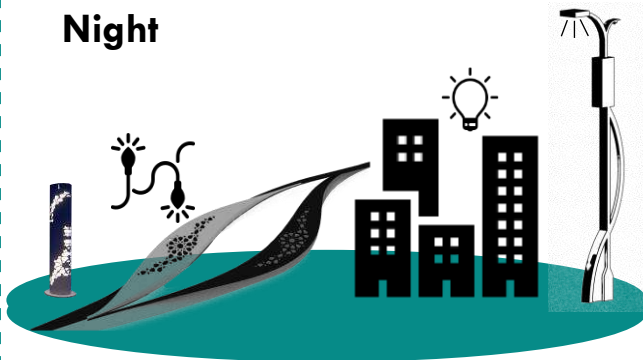
Dismantle/ Structure



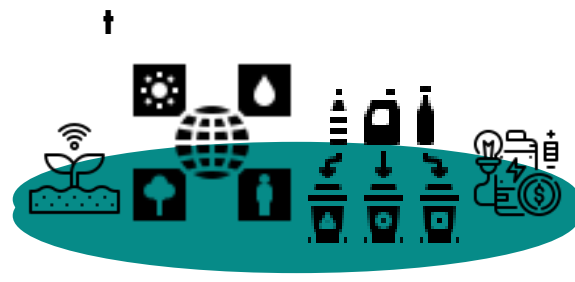
Function



Night



Environmen



Economy

