

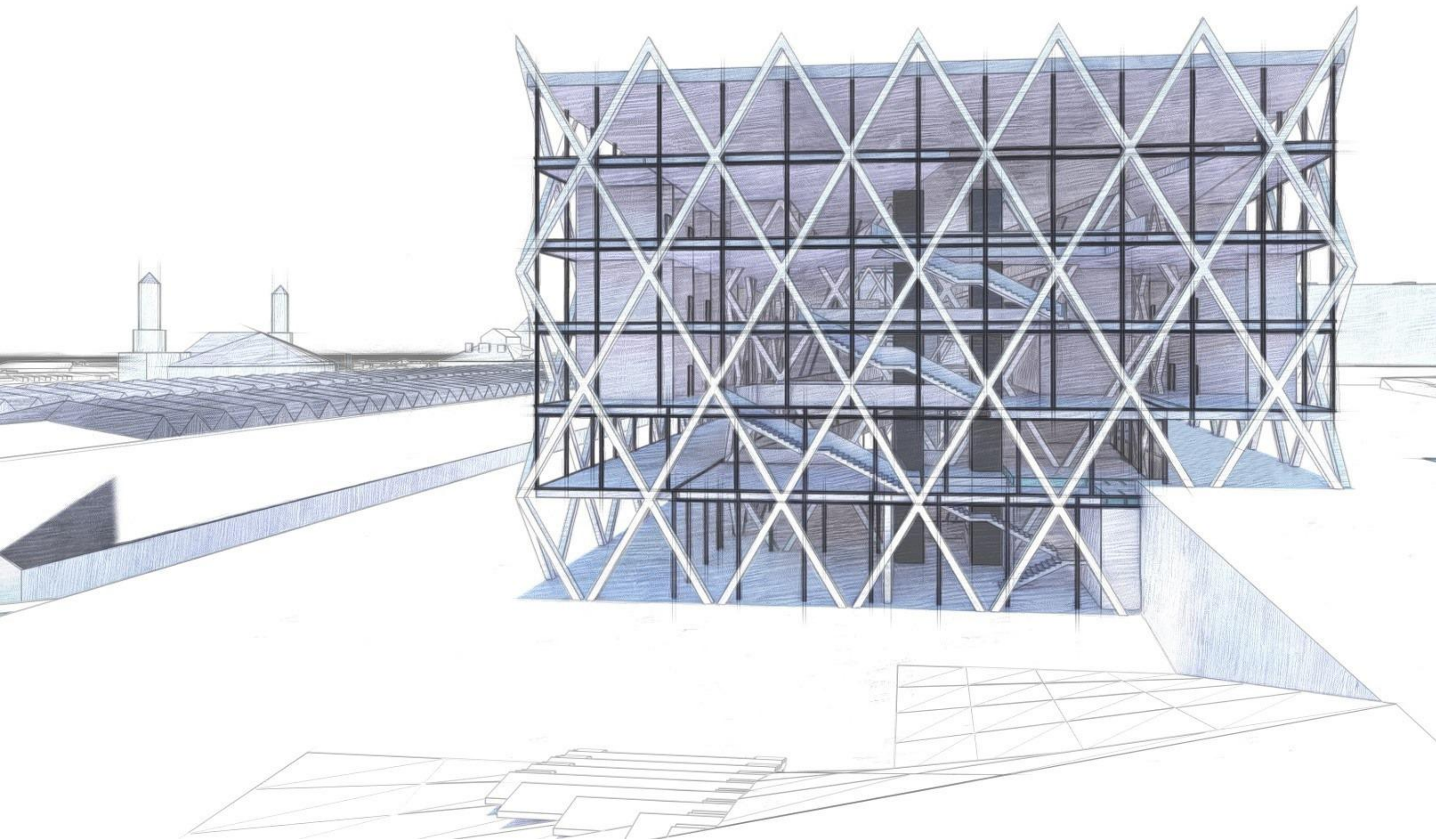
# CITY ABOVE RAILS: EXHIBITION HALL

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FA CVUT

ZS 2020/21





# CITY ABOVE RAILS

Big citties have tendency to grow bigger and bigger, to which Prague is no exeption. This causes urbanistic challenges, even more difficult ones for Prague with her historical character and "distrust" of anything resembling a skyscraper.

The increase in density of population (and, consequentially, of build up area) is the obvious answer demanding creative apporoach.

It seems hardly believable there might be tens of thousands of square meters of potential brownfield available just next to the city centre. Yet it is exactly the possibility this semester's assignment in Achten & Pavlíček design studio decided to dive into and analyse the potential and possibilities of building above the rails of Prague's Main Station.

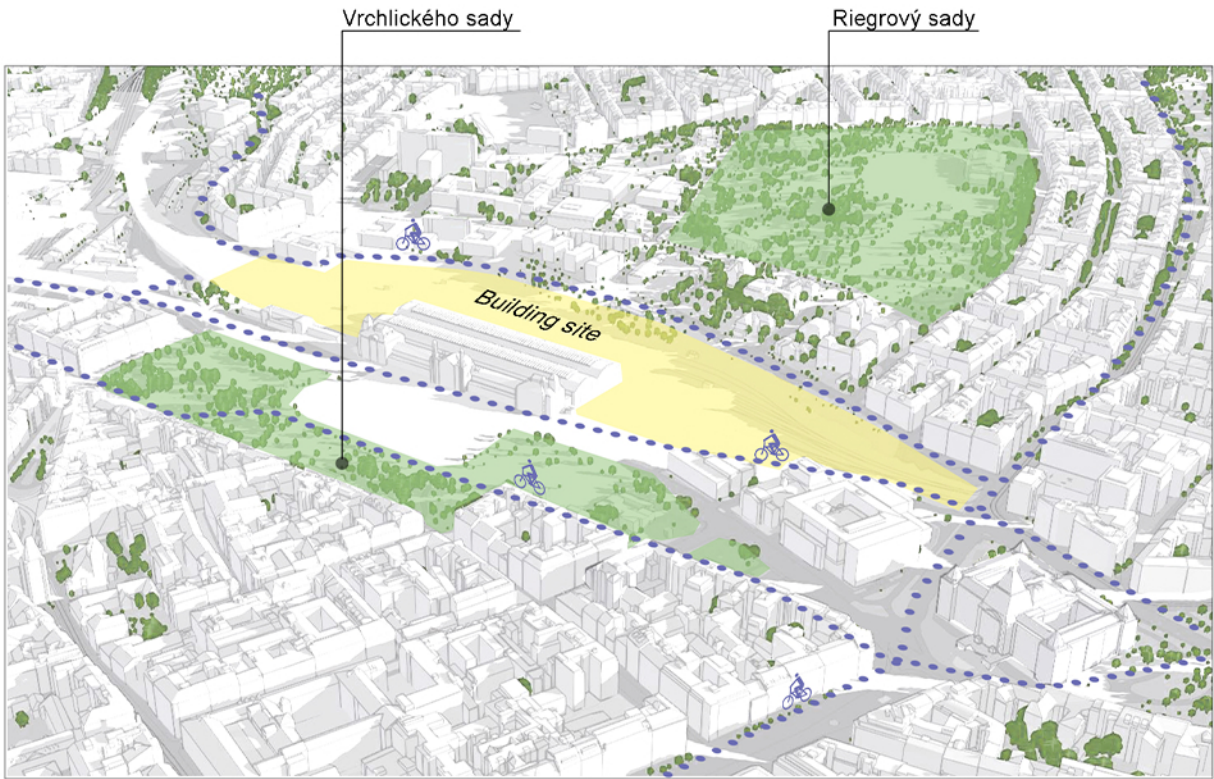
The term started with analysis

A significant importance was being paid to the site and working together to understand the area, its challenges and peculiarities and urban potential so we as a studio might propose a suitable master plan for the individual projects to fit within.

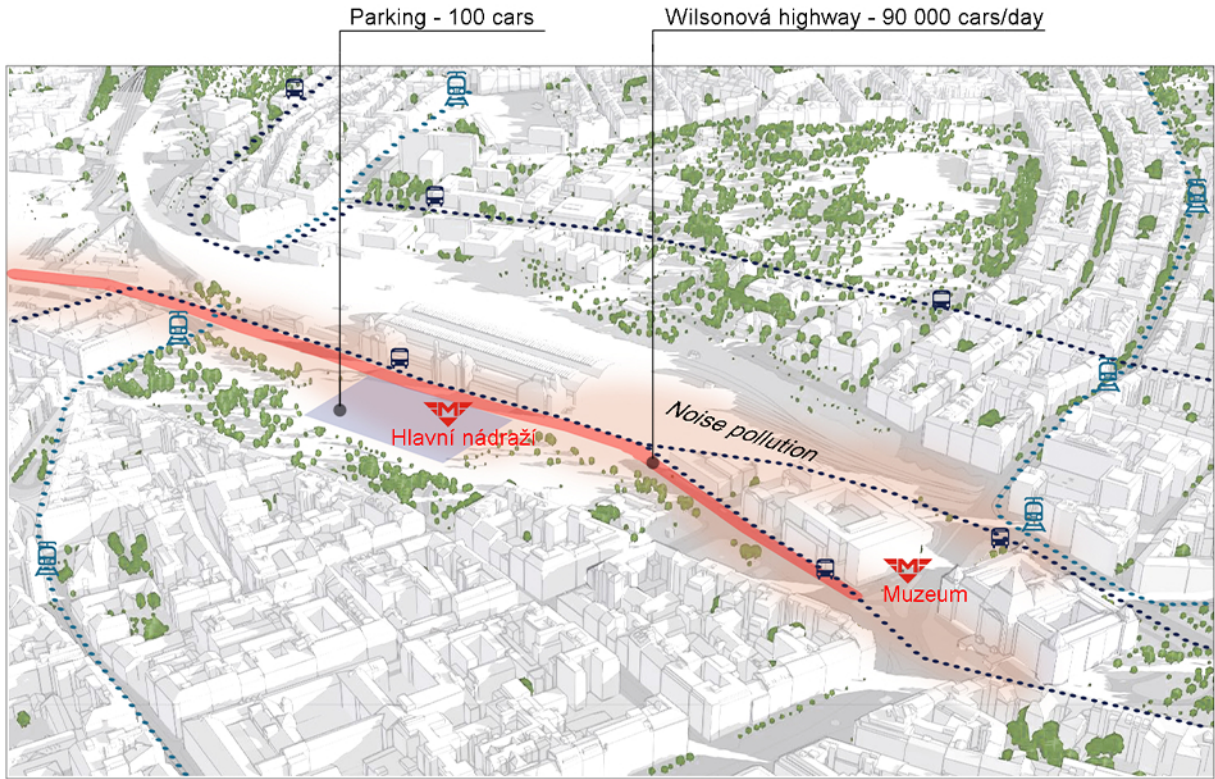
# ANALYSIS



# ANALYSIS OF THE CURRENT SITUATION



GREEN AREAS AND CYCLE ROUTES



TRANSPORT SITUATION



FUNCTIONS



HIGHT AND HISTORY



ASPECTS TAKEN  
INTO ACCOUNT,  
CHALLENGES  
AND  
SOLUTIONS



PUBLIC INTEREST		TOOLS	REGULATIONS
RECREATION	Attractive street Španelská	Number and dimensions of sidewalks, benches/relaxing areas, terrace, restaurant/café, the amount of greenery	STREET PROFILE 05
	Obvious place for entertainment and socialization	Creation of local centers, civic amenities, squares, attractive elements - fountains, relax areas, view, legibly situated in area	Delimitation of PUBLIC SPACE and its CHARACTER in the place of the local center. Condition PUBLIC FACILITIES immediate vicinity of the center -> TYPE OF BUILDING LINE + ACTIVE PARTERRE____Southern develoment - 1 local center; Park area - 5 local centers (southwest,east, a center of the park, northwest, northeast) next to the steel roof, east = area behind the steel roof); northern development - 1 local center; all must be connected to the central micromobility route (promenade)
	Attractivity of outdoor sport activities - cycling, skating, ...	Rental shops, cycle routs, leading routs around attractive places (social centres),	Determination of the exact places of facilities/determination of the minimal distance between facilities and center____ individual stands with a spacing of 0,9m for bicycles along the route = 2m micro parking lane, minimal street width 4m => pedestrians, micro-mobility, central green promenade and local centers in areas with potential to create sports and other social activities
	Large park in front of the railway station without cars	Moving parking, creating new parking places	Define the area - determination of entrances and floors used for parking, creation of second deck primary for parking and service - according to calculation ____ add about 130 parking spaces, which were taken away from main train station + 70 % of Prague Building Regulation (PSP) requirements - viz "parkovací stání" document
	Easy acces from Vrchlického sady to Riegrový sady	Barrier free, lenght of the rout, concentrartion of greenery, concentration of attractive elements - fountain, cafes, social centre, minimize number of crosswalk = cteation of a green bridge	Street profile design of given streets, inclination/rising, design of elements (staircase, ramp, ...), greenery design, ... ____ 6 outdoor accesses (elevator, staircase, escalator, ramp) from the current highway to upper deck level, green bridge, 4 exits from underground to street Dudovska, define barrier-free accesses
	The main route connecting the area = promenade	The promenade leading from south to north, a width of a particular lane, civic amenities surrounding the promenade	SUITABLE CONNECTION + CHARACTER / FACILITIES OF THE SPACE + OVERVIEW - Direct connection of local centers with civic amenities and recreation to the promenade; fixed position in the park area/south and north adjustable route shape; STREET PROFILE in the park area = 01, STREET PROFILE in the southern and northern areas = 02
	An indoor passage to individual areas	accessibility of areas from the lower deck, extension of the network of a subway. subway capacity, number of exits to the upper deck and individual buildings, visibility of exits	Exact determination of exits FROM SUBWAYS TO THE UPPER DECK. VISUAL DIFFERENTIABILITY of EXIT - illumination by natural and artificial light, color, unique character, direct visibility within the territory. CONCENTRATION OF EXITS - 11 exits in the park + individual exits within the buildings. Location of the exit at Dudova Street regarding persons heading to Žižkov / VŠE students

MOBILITY ON THE UPPER DECK LEVEL	easy orientation at the upper deck	"intuitive", clear raster of streets, direct views thru development, the character of entrances, facades	MINIMAL STREET PROFILE, MICRO-MOBILITY NEEDS, AND TERRITORY SERVICES (FIREFIGHTERS, SUPPLIES, ...) BUILDING LINE DUE TO VISTAS, HEIGHT REGULATION -> SUNLIGHT FOR MAIN PROMENADE _____ existing prominence of main streets = preservation of clear vistas, diversity of width of street profiles based on occupancy; entrances to the metro in the center of the whole area (center of the park ), minimal street profile in the area = 4 m. Street at the facades of buildings regarding fire safety. The requirement for the division of facades and their uniqueness within the territory
	dostupnost, variabilita a lehké přestupy v rámci "mikromobility"	Location and number of micro-mobility stands, offices for car sharing, route connectivity, route network size	Adherence to MINIMUM STREET PROFILES in the design of SUITABLE STREET PROFILES, design of suitable transport equipment, delimitation of given areas / their design _____ parking lane for shared bicycles, scooters 2 m wide, parking (stands, reserved places) means every 50 m; the possibility of riding anywhere in the area with scooters and bicycles; Accessibility of all buildings by car within the lower deck - easy transfer to the means of micro-mobility, carsharing in buildings in the middle area with connection to the Španělská street
	Barrier-free entrances and exits	Ramps, low street inclination, elevators, distances, visibility	DESIGN OF SUITABLE ELEMENTS IN SUITABLE PLACES _____ Ramp inclination max. 1:16 (in rare cases also 1: 8 = if not used for primary access to buildings), lifts, escalators, a legible position of entrances, a perpendicular grid of main streets
	Easy and quick transport on the upper deck	Micro-mobility and its availability, length of routs, a width of rout network	STREET PROFILES, STREET STRUCTURE, STREET LINE, HEIGHT REGULATION _____ Minimum street width = 4 m (+2 m for micro-parking + relax + greenery) = street profile 04; the streets around each house; the central promenade and the network of orthogonal main streets; micro-mobility means every 50 m
HISTORICAL CONTEXT	Protection of cultural heritage - Fant's building, steel railway station, the new building of the main railway station, State Opera	Distances from historic buildings, construction restrictions in the area of views of monuments, height regulation	DISTANCE of the park area from the steel roofing min. 2 m, design of the park area around the steel structure - max. Building height within the park area = 5 m with a minimum distance of 5 m from historic buildings
	Preservation and maximum allowance of views of the Prague castle and the park	perpendicular orientation of the streets to the upper deck, the width of streets, free vistasof the streets	MAINTAINING THE VIEW in the southern part of the park, the network of main streets perpendicular to the platform with the preservation of the vista = construction restrictions in the street profile
	Easy accessibility of Fantova building	number and location of vertical communication from the upper deck to fantova building level, sidewalks, crossing the road	6 outdoor accesses (elevator, staircase, escalator, ramp) from the current highway to upper deck level, green bridge, limitation of the current high way (1 lane in both directions)



ACCESSIBILITY OF THE SURROUNDINGS		Easy and safe access to schools for residential areas (so that children can get to school safely)	the shortest way to a destination, minimum of road crossings, the character of the road crossing, so that driver sees children	Design of a CLEAR pedestrian crossing, placement of deceleration elements or speed control in suitable places ... ____ The upper deck only with micro-mobility with a speed limit of 20 km/h, only one crossing over car road on Španělská street, a wide sidewalk at Španělská street + green line between the road and the sidewalk.
PLATFORM ACCESSIBILITY	METRO/TRAIN STATION	Easy access to the train station from the upper deck	Number of accesses to train platforms and their readability within the area, length of routes, protection of pathways against environmental conditions, capacity of routes, non-barrier design	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ 2 covered escalators and 2 elevators from train platforms in the middle area, 1 escalator in southwest of the park, individual entrances to buildings in the middle area, green bridge, crossing over calmed "magistrála"
		Accessibility of metro for the norther part of the upper deck	distance and readability of entrances to the parking level, capacity of underground routes, non-barrier design	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ 2 entrances to the underground in the middle part of the upper deck, 1 access from northwest by Fantova budova, crossing over calmed "magistrála"
		Accessibility of metro for the area of Dudova street on the way to the University of Economics	distance and readability of entrances to the parking level, capacity of underground routes, non-barrier design	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ easy access through 4 central entrances on the upper deck and following walk through Dudova street
		Accessibility of metro for the middle part of the upper deck (eastwards from the train station hall)	distance and readability of entrances to the parking level, capacity of underground routes, non-barrier design, green bridge - uncovered attractive route to the new building of train station	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ 6 entrances to the underground + individual inside buildings
		Accessibility of metro for the southern part of the upper deck	distance and readability of entrances to the parking level, capacity of underground routes, non-barrier design, green bridge - uncovered attractive route to the new building of train station	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ green bridge, 1 escalator to train platforms + 2 entrances to the platforms in central part of the upper deck, crossing over calmed "magistrála"
	AUTOMOBILITY	Better accesibility of cars to and on the Španělská street	Width of streets, number of entrances to a street, wavyness of a street, connection to main transport routes	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ 3 lanes - direction from Vinohrady = 3,25+3 / direction from Seifertova = 3,25; street profile 05
		Comfortable public transportation	New bus lane on Španělská street	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ Dimension of Španělská street to fit bus lane = in both directions one lane of 3,25 m in width
		Car transit from Vinohradská street to Seifertova street	Connection of Španělská street and Seifertova street	Design of CLEARLY VISIBLE ENTRANCES, suitable STREET PROFILE ____ Extension of Španělská street - dimensions to fit 3 car lanes (2 from Vinohrady and one from Žižkov)
		Easy accesibility of buildings by car	Establishment of logistical level under the upper deck = parking deck, number of entrances to this level	UNDERGROUND LEVEL = PARKING DECK under the level of UPPER DECK with the ACCESS TO BUILDINGS and PARKING LOTS - requirements according to the Prague civil engineering regulations (reduced to 70% due to the character of highly flexible traffic node), main access to the parking level from Španělská street by ramps - min. width = 3 m + max. incline 15%, another access within the building adjacent to Vinohradská street

MAINTENANCE	Easy firefighting	Passageway for fire trucks. accessibility of all buildings, width of streets for fire trucks	STREET PROFILE, CROSSROADS ALLOWING TURNING OF FIRE TRUCKS + ACCESIBILITY OF BLOCKS' INSIDE_____ Min. total width of streets = 4 m (+2 m for microparking+relax+greenery), necessity of street next to every facade of all buildings (firefighters accessibility); street profile 04
	Easy clearance of the area - dustmans, street maintenance	Accessibility of all buildings, width of streets suitable for garbage trucks	SUITABLE STREET PROFILE, STREETS AND CROSSROADS_____ Min. total width of streets = 4 m (+2 m for microparking+relax+greenery) necessity of street next to every facade of all buildings (firefighters accessibility); street profile XX
	Supply of public amenities	Accessibility of all buildings on the upper deck and on the parking/logistical level too.	SUITABLE STREET PROFILE, STREETS AND CROSSROADS,   ENOUGH ENTRANCES ONTO THE PARKING LEVEL, HEIGHT OF THE PARKING LEVEL_____ Min. total width of streets = 4 m (+2 m for microparking+relax+greenery), necessity of street next to every facade of all buildings (firefighters accessibility); street profile 04; 2 main entrances (ramps) to the parking level from Španělská street and 1 from Vinohradská; min. clear height of the parking level = 2,5 m
OUTLOOK	Outlook from public space	Place with a viewpoint, vistas between buildings	LOCALIZATION OF PLACES WITH OUTLOOK - relevant STREET PROFILE on the axis of a vista (suitable placement of greenery - trees especially), ELEMENTS for FREE-TIME ACTIVITIES, benches, ...
	Outlook from buildings	Buildings placement ensuring vistas, height of buildings	HEIGHT REGULATION, regulation of some vistas in floorplans
HEIGHT REGULATION	Elimination of high buildings	Maximum height 6. NP	HEIGHT REGULATION OF MAX. 6 LEVELS
SUNSHINE PENETRATION	Enough light	Regulation of shading elements/buildings	STREET PROFILE, STREET ORIENTATION, ULIČNÍ PROFIL, ORIENTACE ULIC, verification by the 45° DIAGRAM
	Daylight penetration to the train platform level.	Skylight placement	Requirement for an even distribution of skylights within the park zone above railway platforms
ARCHITECTONIC/ARTISTIC CONNECTION TO ADJACENT BUILDINGS	Architectonic concept	Facade division relatively to adjacent buildings	Requirement for facade division, mass context to existing buildings (Vlnohrady)
NATURAL ENVIRONMENT	Microclimate	Public greenery, green roofs, water elements	Design of the central park around the main train station building with a requirement of an even distribution of water elements.
	Rainwater harvesting	Rainwater gutters from the upper deck below the level of train platforms.	Návrh vodovodních svodů s retenčními nádržemi pod povrchem hlavního nádraží



# MASTER PLAN

Taking our extended analysis into account a masterplan for urban development was proposed.




Working with a sloping site we proposed a flat platform on which we will design our respective buildings to be slightly lower (6 meters to be exact) than Španělská street, which is creating an eastern border to our area, and raised to the level of the arches of the art nouveau glass roof of first few terminals of the Main Station.

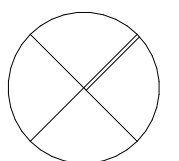
The platform and buildings above are supported by an intricate network of columns and trusses, we managed to hide the parking/ car accessible level below our proposed street and park level.



# current railways level



-  communications to parking level
-  Main station underpasses
-  Main micromobility communications (ramp leading to the higher floor)





# parking level



Load-bearing structures



Load-bearing structures and  
vertical communication combined



Underground parking exits



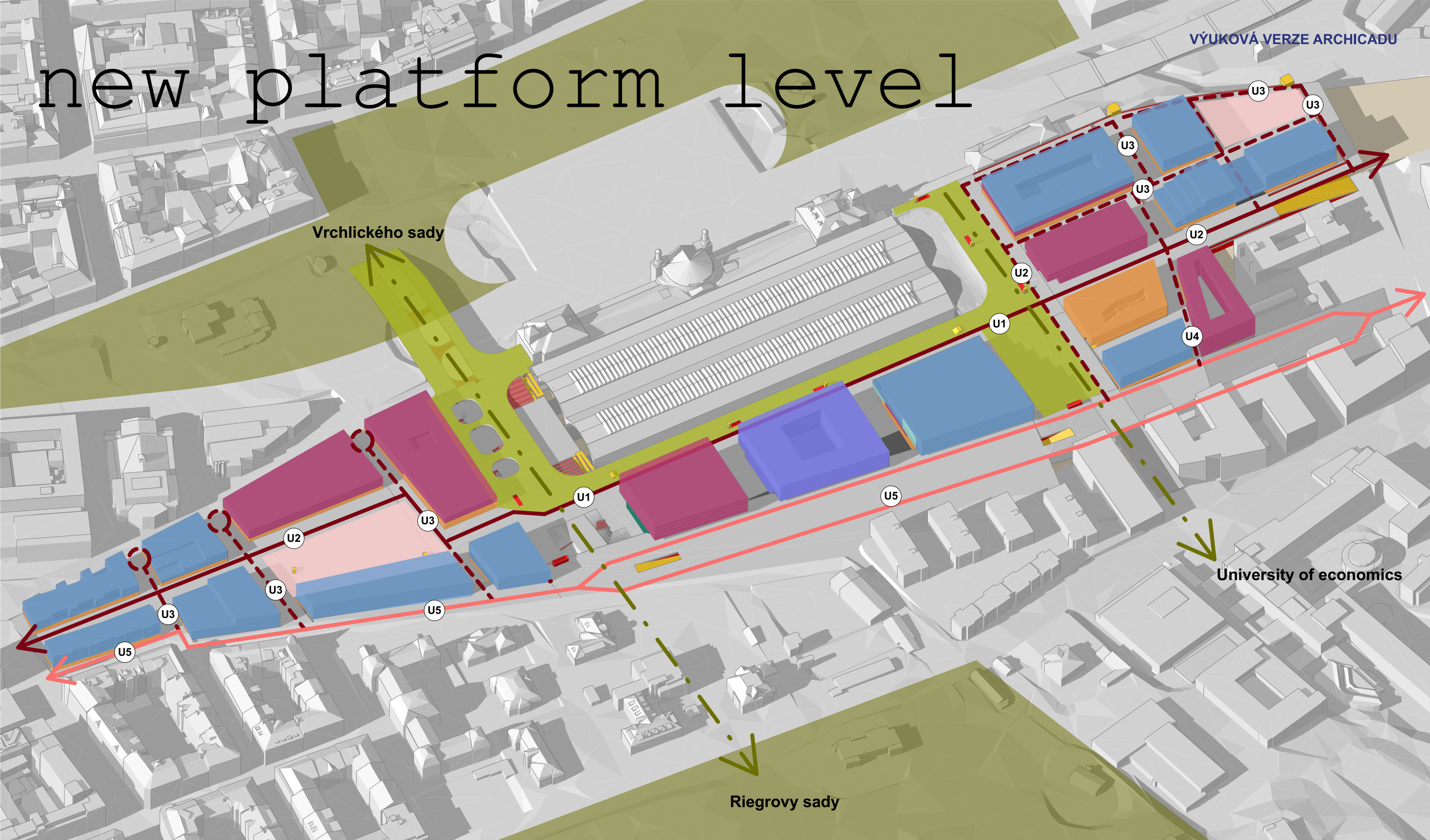
Vertical communication













Underground parking communication







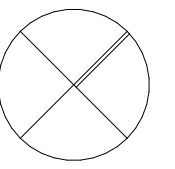
# new platform level



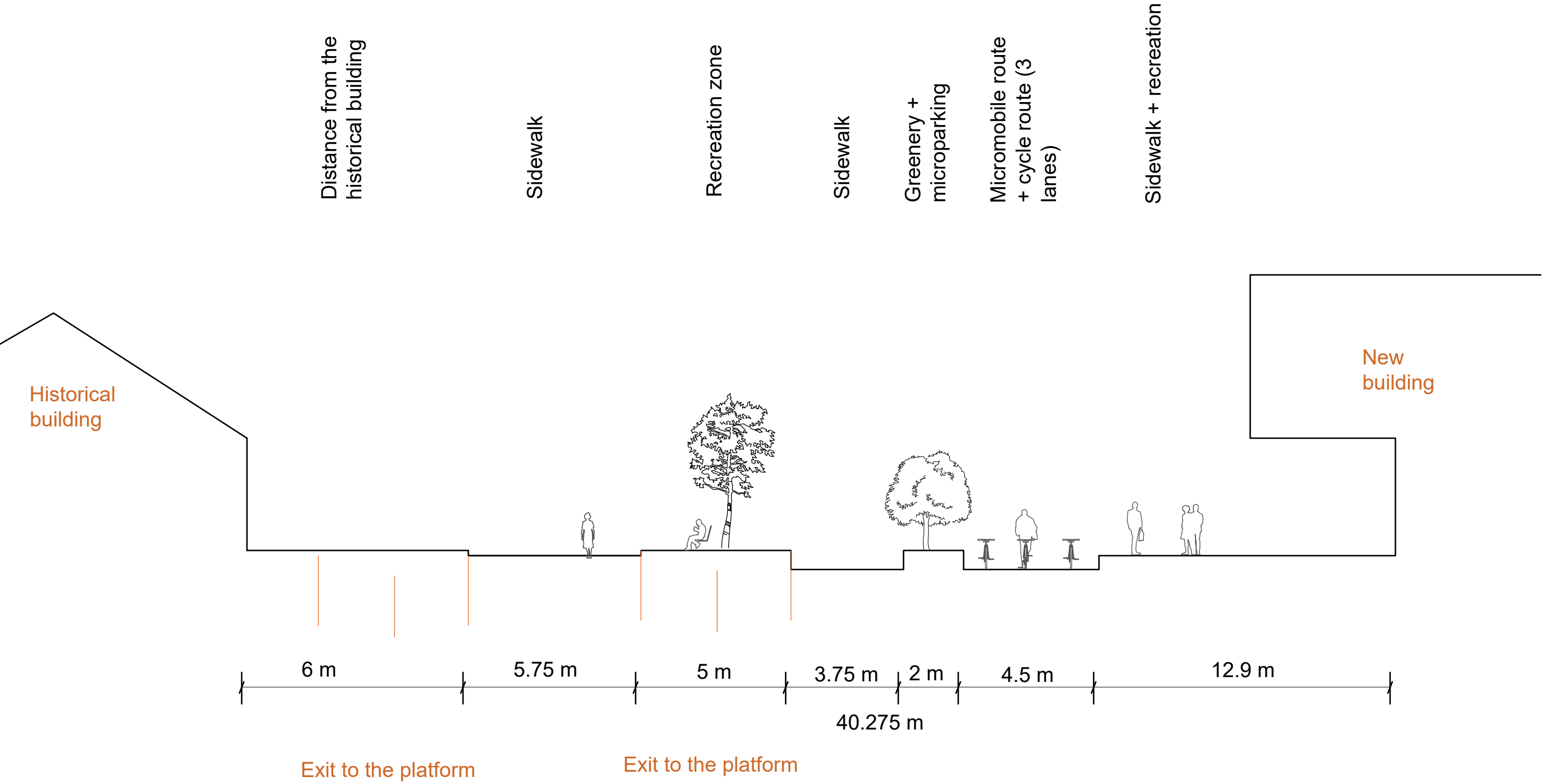
- |   |             |   |              |
|---|-------------|---|--------------|
|  | Park        |  | Hotel        |
|  | Residencial |  | Sport        |
|  | Offices     |  | Culture      |
|  | Commercial  |  | Local centre |

- |   |                         |
|---|-------------------------|
|   | Vertical communications |
|  | Street profile          |

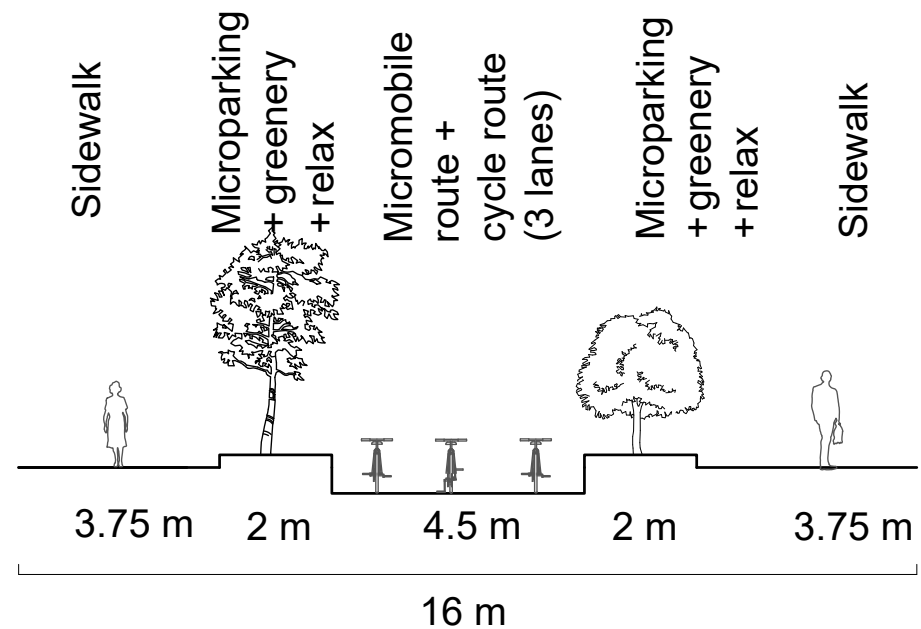
- |   |                                   |
|---|-----------------------------------|
|  | Main micromobility communications |
|  | Side micromobility communications |
|  | Španelská street                  |
|  | Geen connection line              |



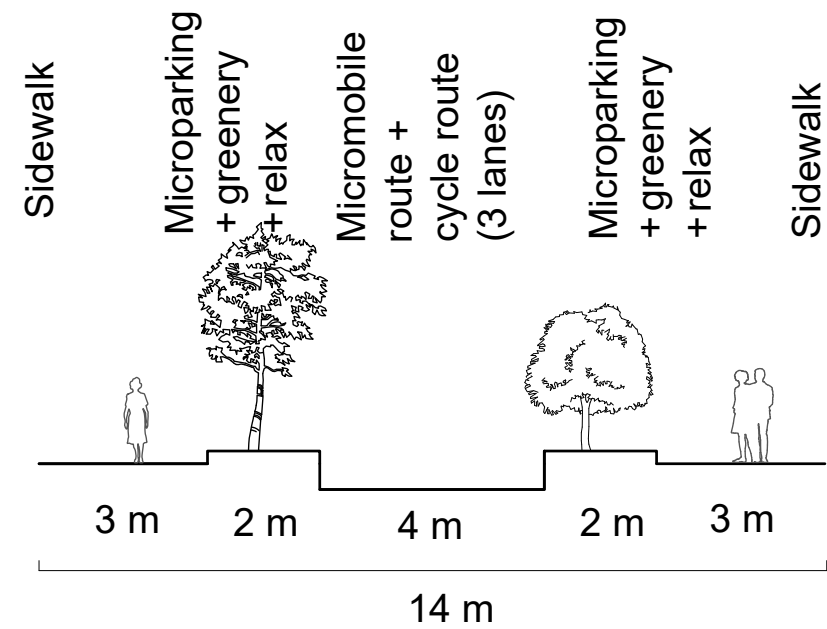
U 1 PROMENADE PROFILE



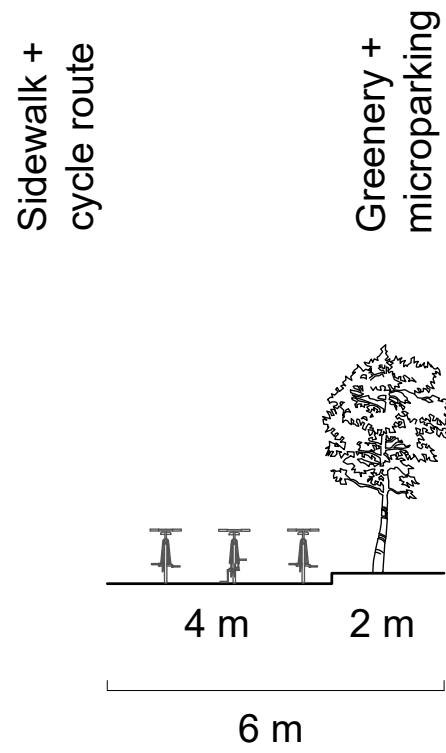
U 2 PROMENADE PROFILE IN THE  
NORTHERN AND SOUTHERN PARTS



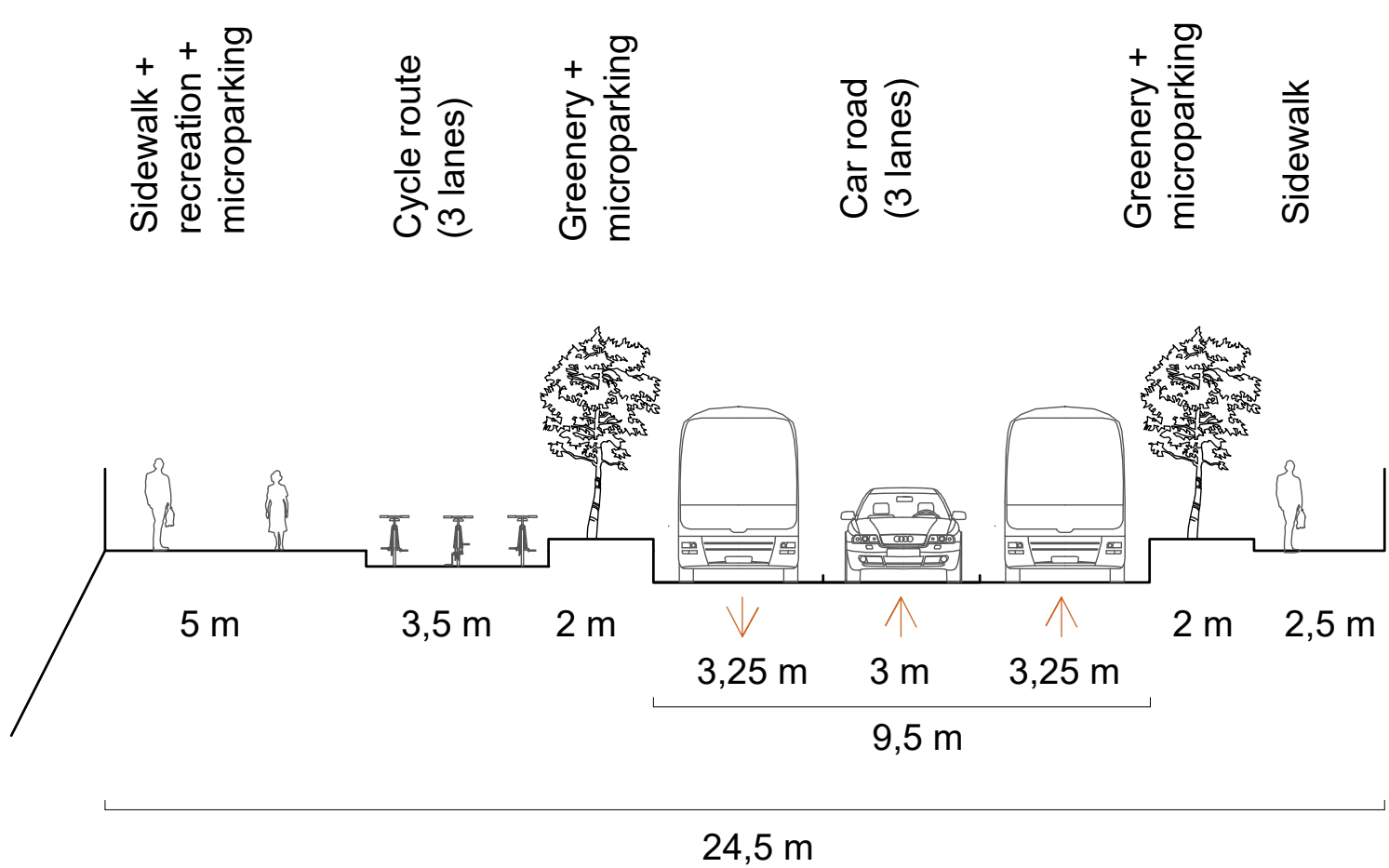
U 3 MAIN STREET PROFILE



U 4 SECONDARY STREET PROFILE



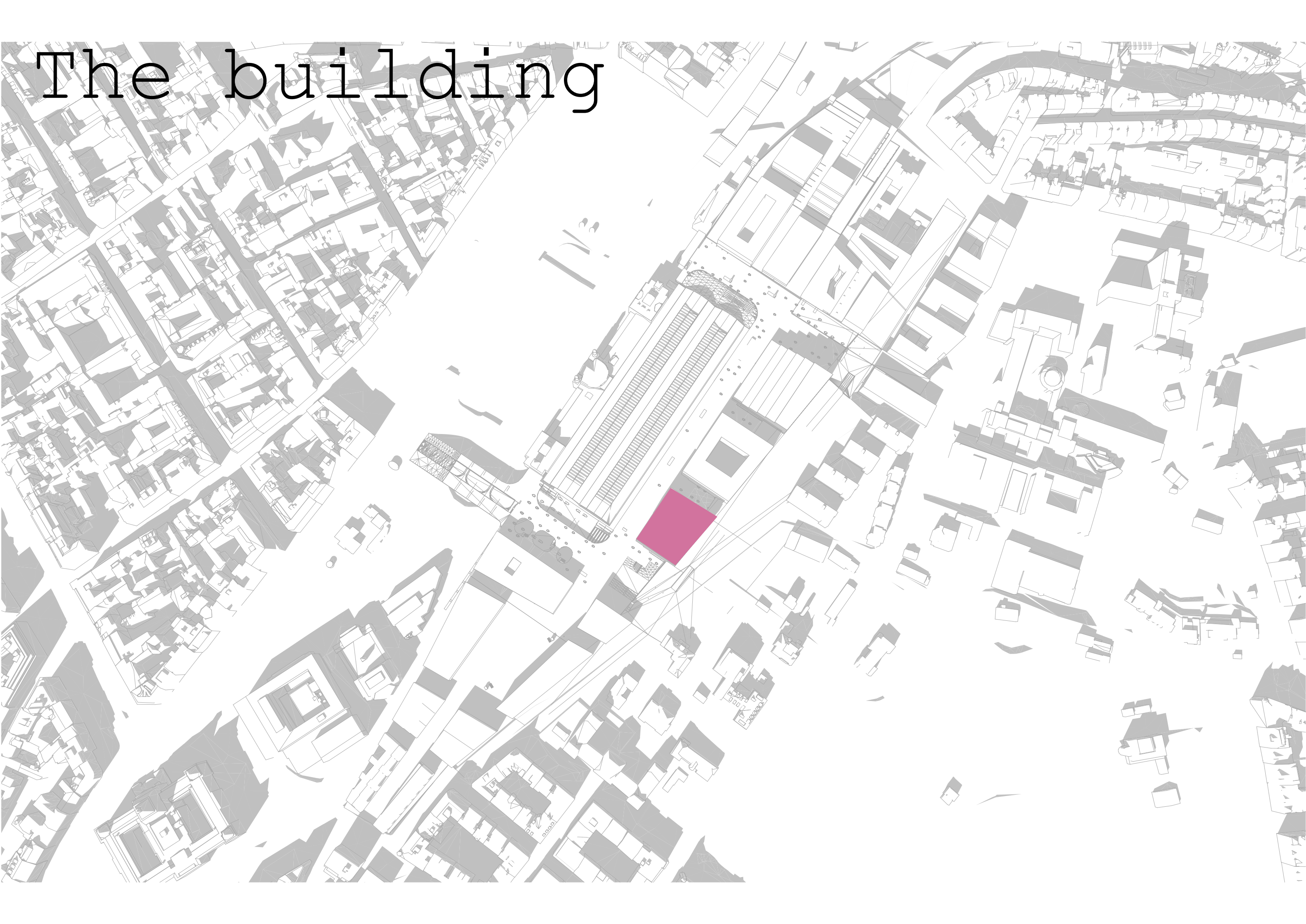
U 5 PROFILE OF THE STREET ŠPANELSKÁ



# INDIVIDUAL PROJECTS

After we have finished defining the master plan and assigning functions to its respective areas we began the last part of our development - the design of our individual projects





The building

# EXHIBITION HALL

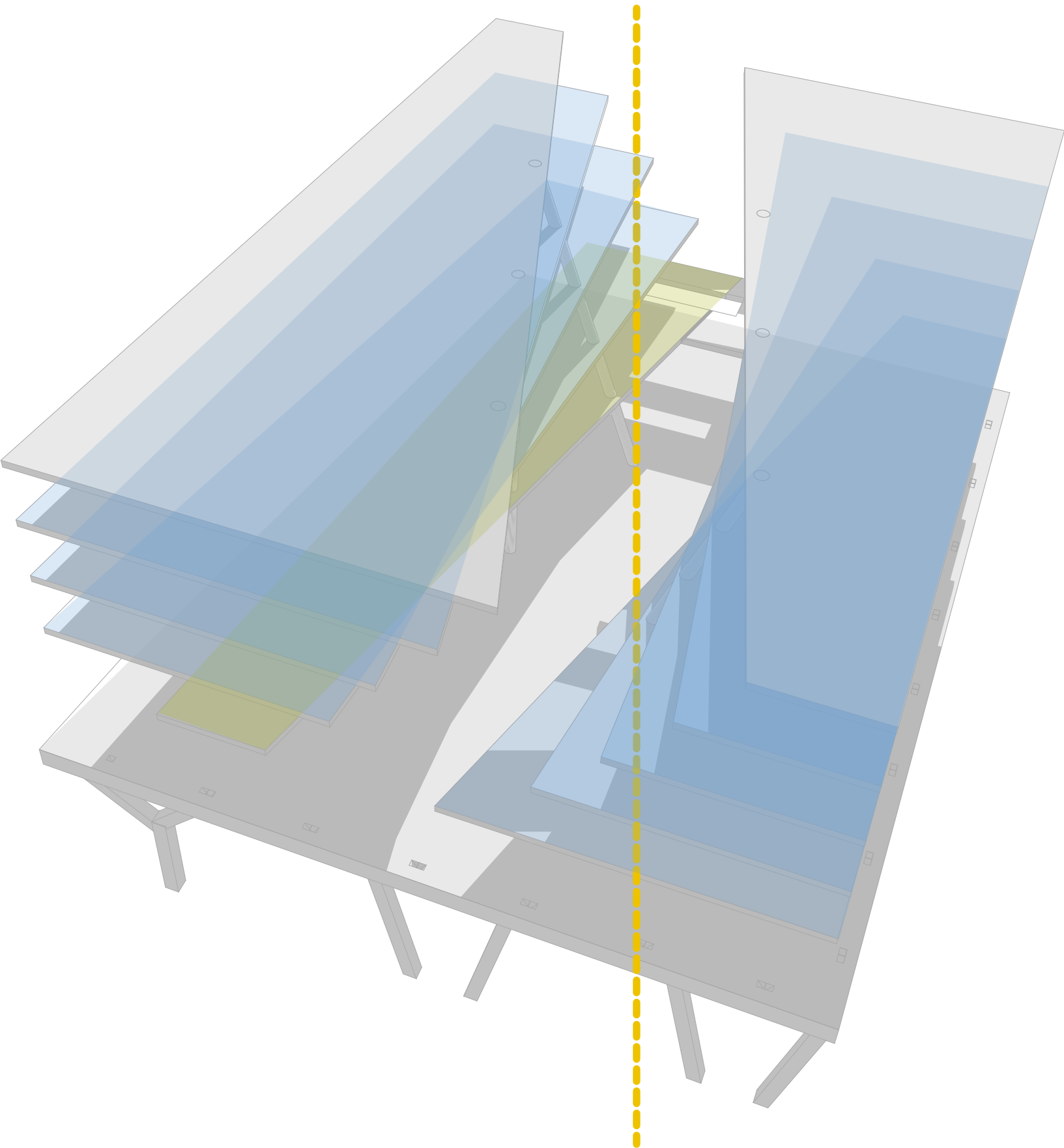
The portion of the site I've designed in detail is part of the three representative buildings facing the Main Station.

Urban plan gave the building its specific shape - slightly diagonal facade running along Španělská street and upper floors overlapping over both the promenade and Španělská street creating covered passages.

Thanks to its position on the platform and the platform's position in the city this building site presents notable qualities - views, accessibility from the Main Station, the new platform and Španělská street alike, a considerable surface within... the building demanded a representative public function and/or rentable one.

Thus the combination of an exhibition/ fair hall surrounded by higher standard offices arrived.

# SPACIAL LAYOUT



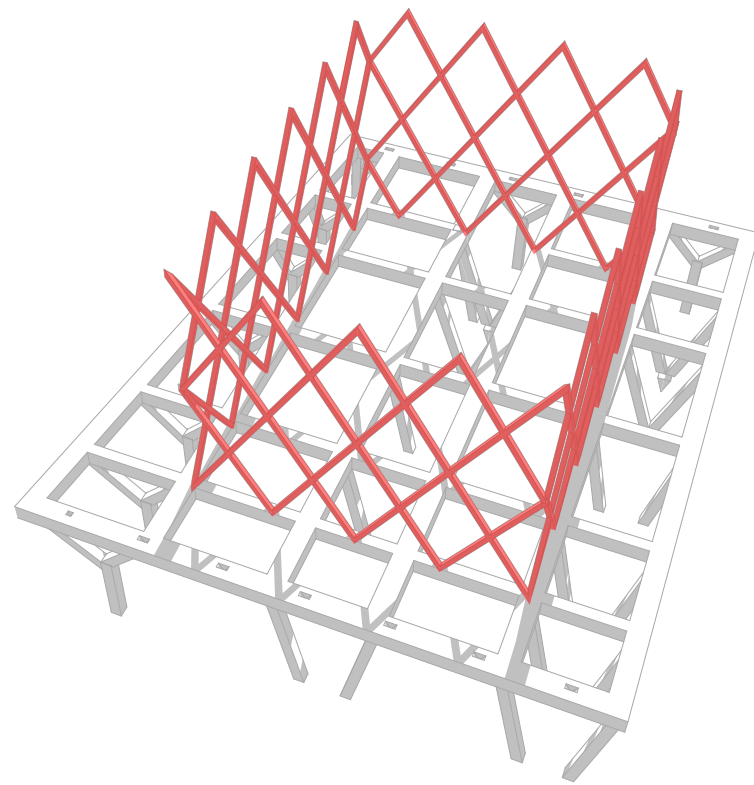
SOUTH

- /restaurant
- /buffet
- /cafe
- /offices
- /rentable areas
- /exhibition hall
- /upper gallery

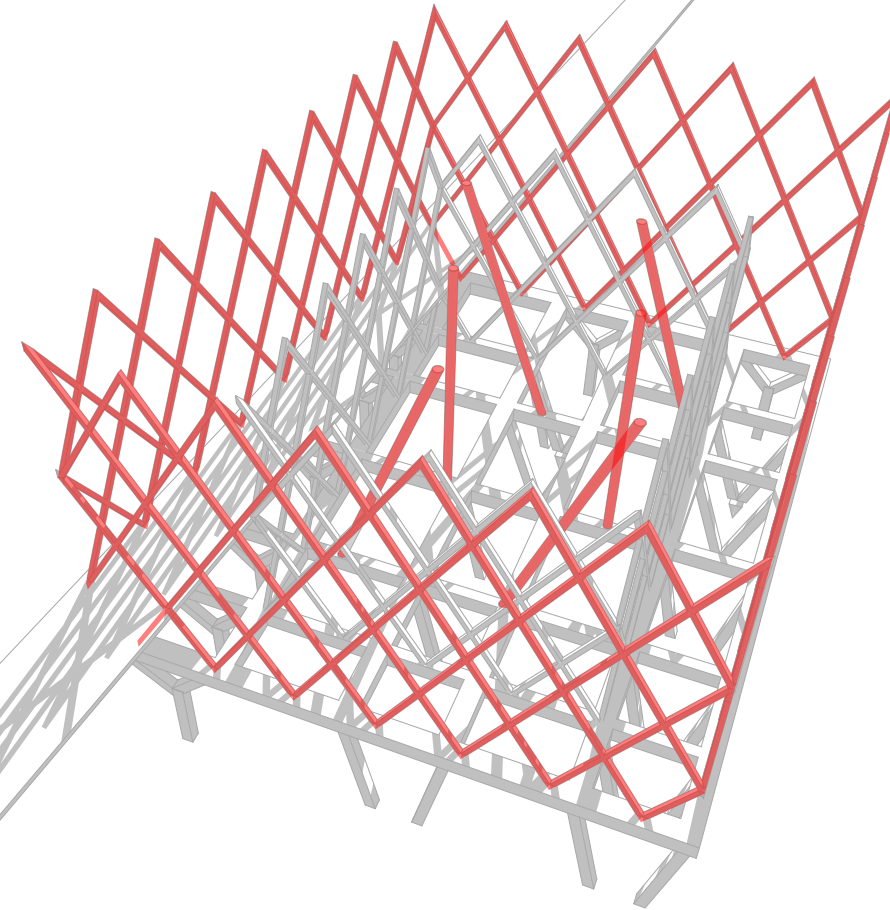


# CONSTRUCTION CONCEPT

platform level  
load-bearing structures

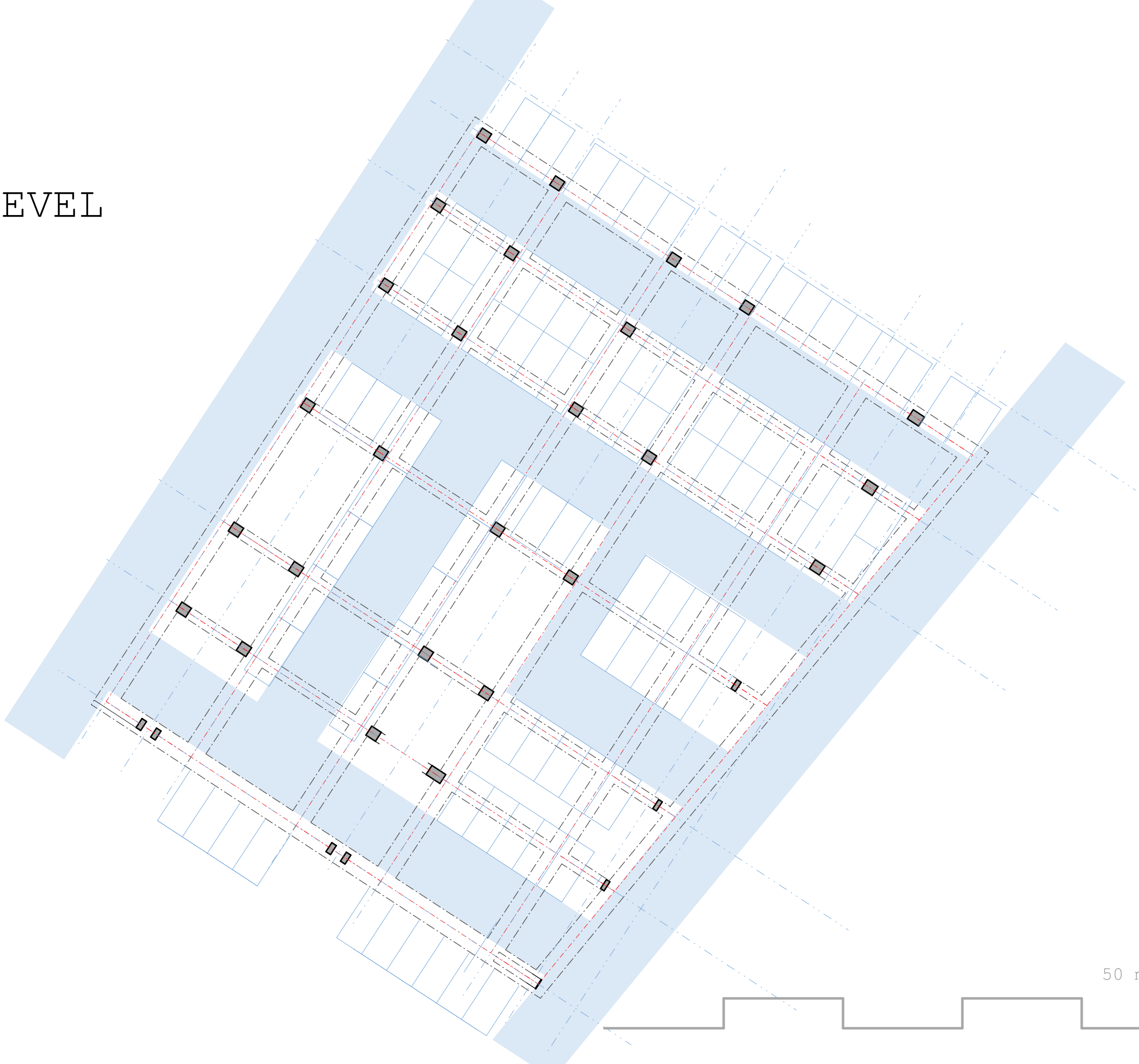


Španělská  
street level



/parking level  
/train station level structures  
/foundation

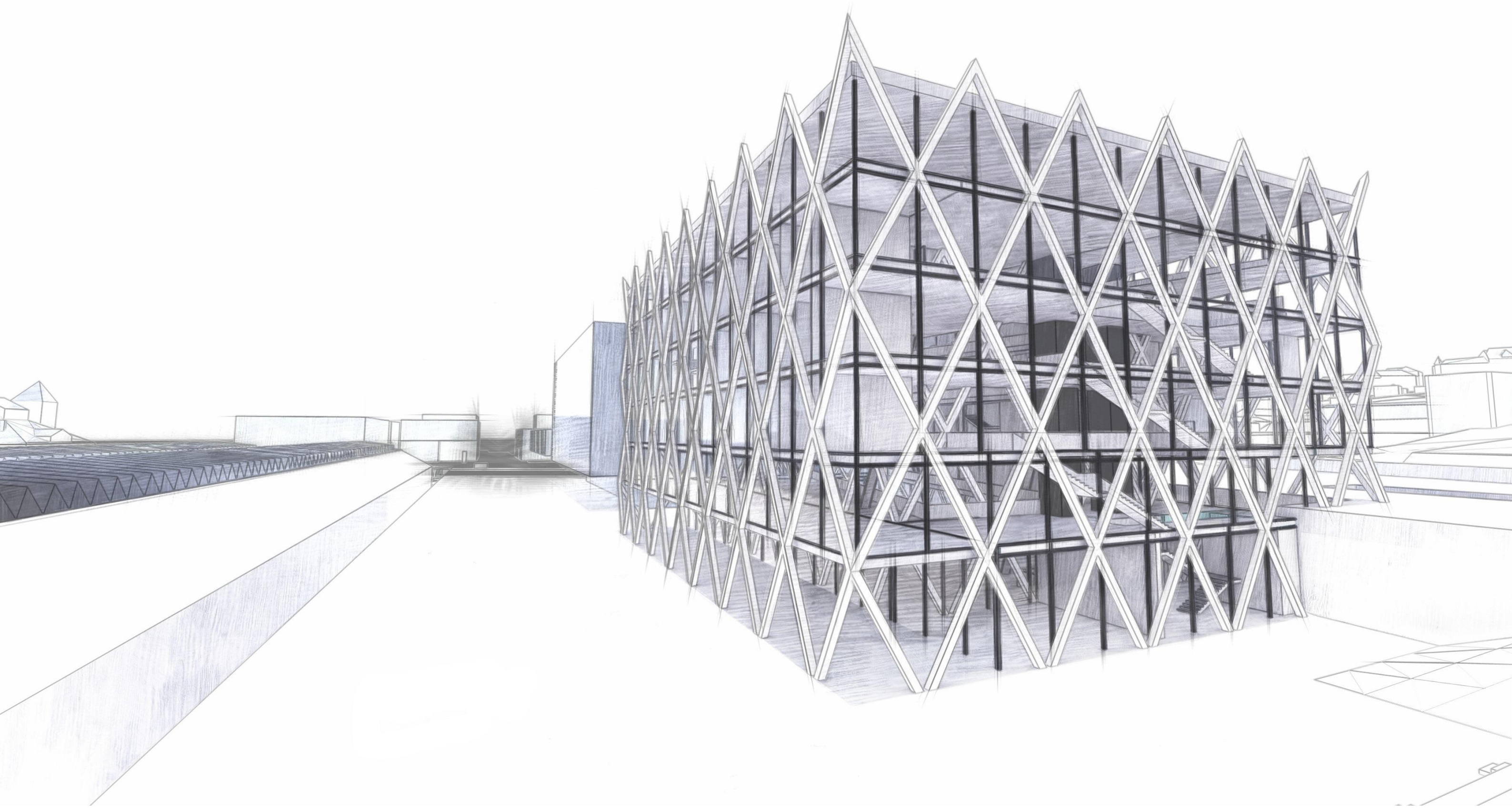
PARKING LEVEL



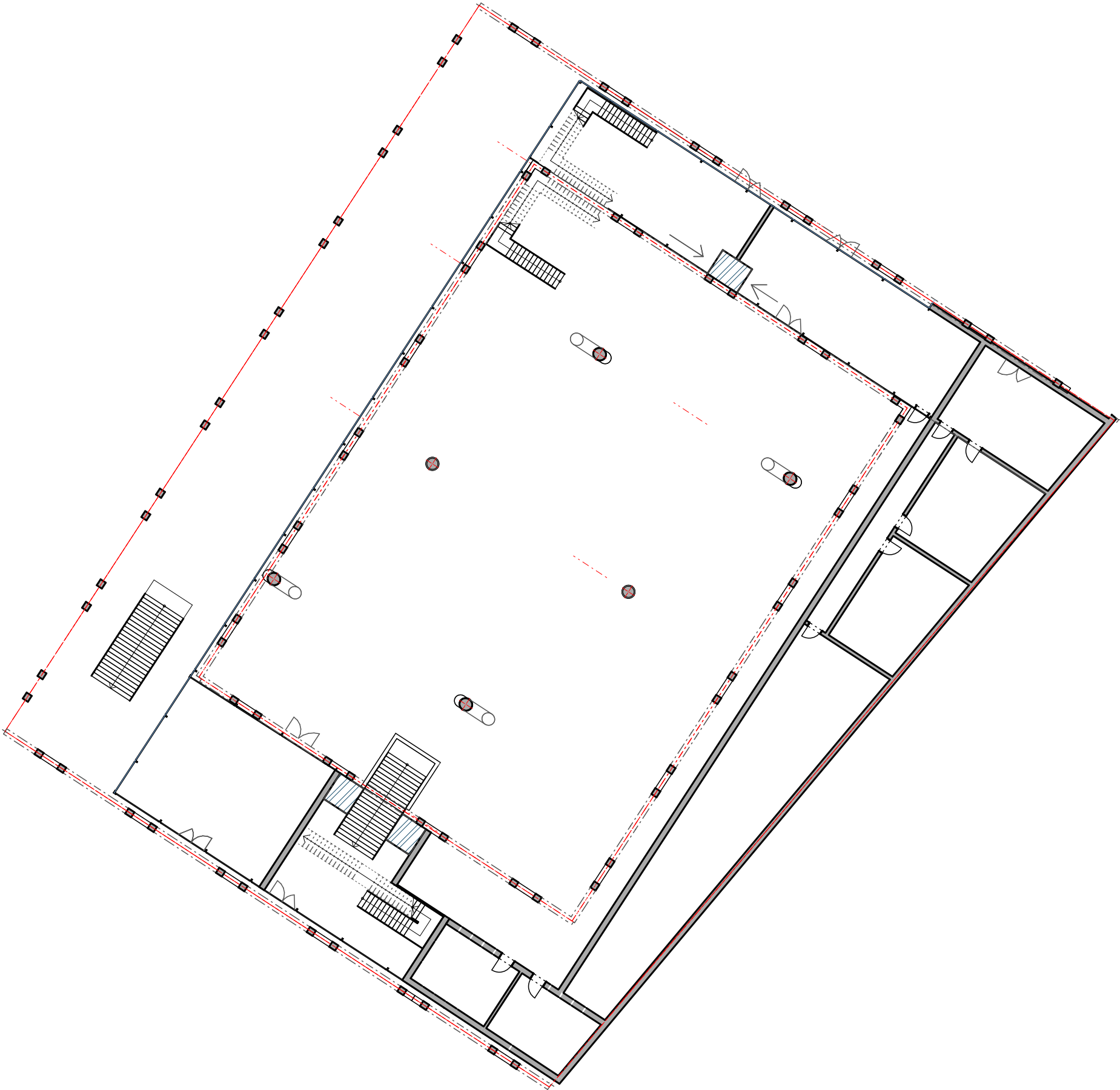
50 metres







new platfrom  
GROUND LEVEL

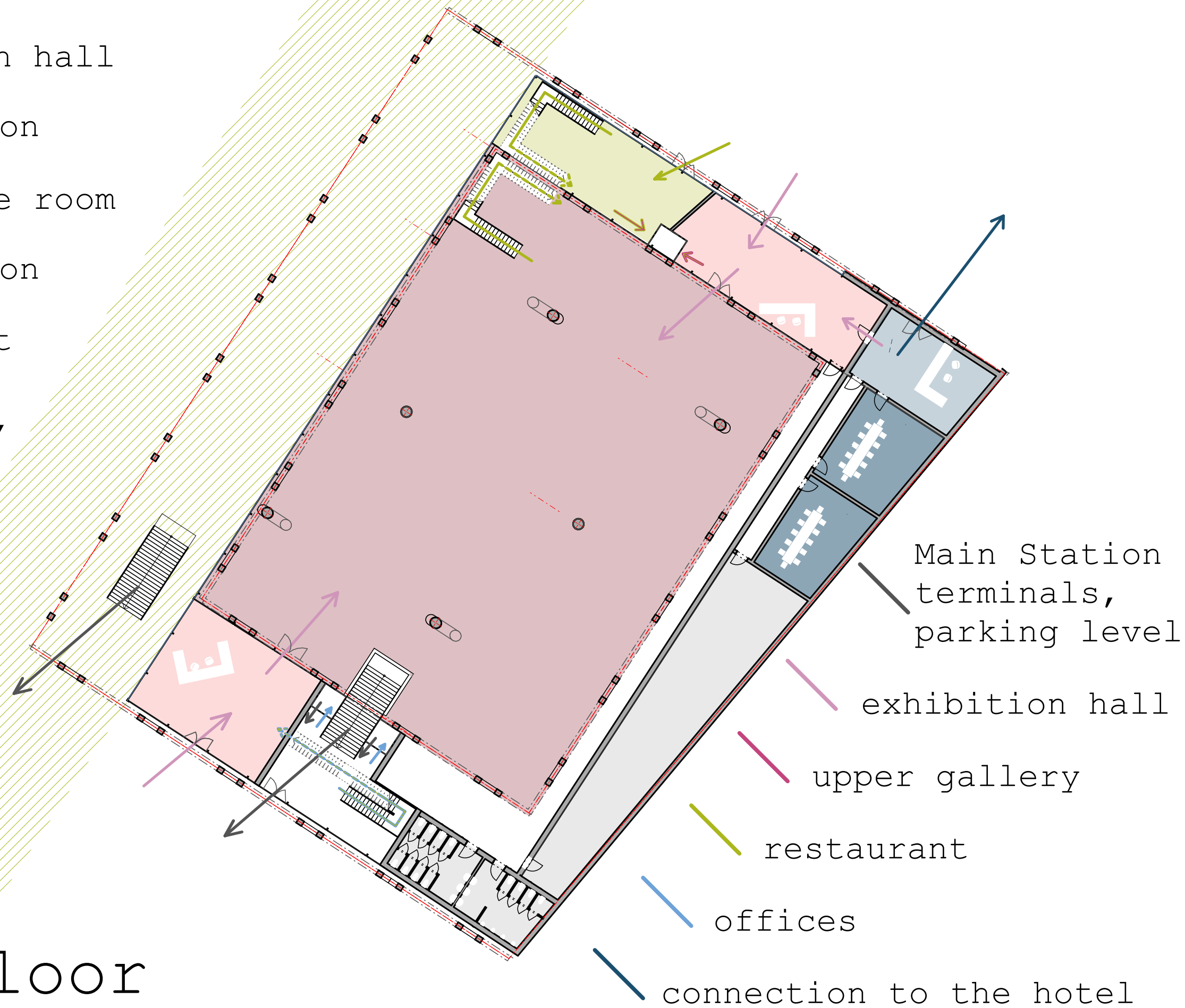


50 metres





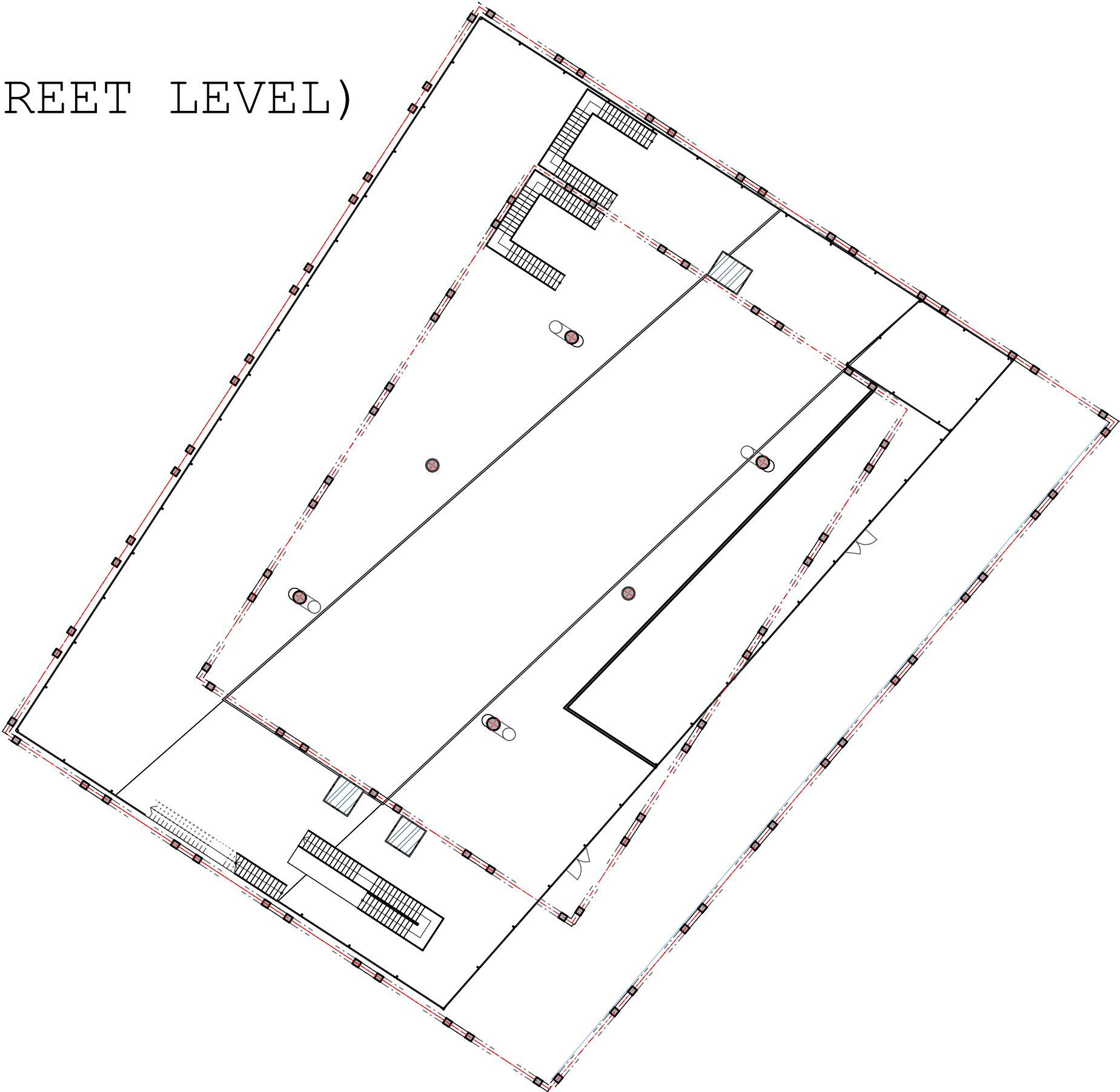
- the promenade
- exhibition hall
- reception
- conference room
- reception
- restaurant
- restrooms,  
utility  
area



ground floor



FIRST FLOOR  
(ŠPANĚLSKÁ STREET LEVEL)



50 metres



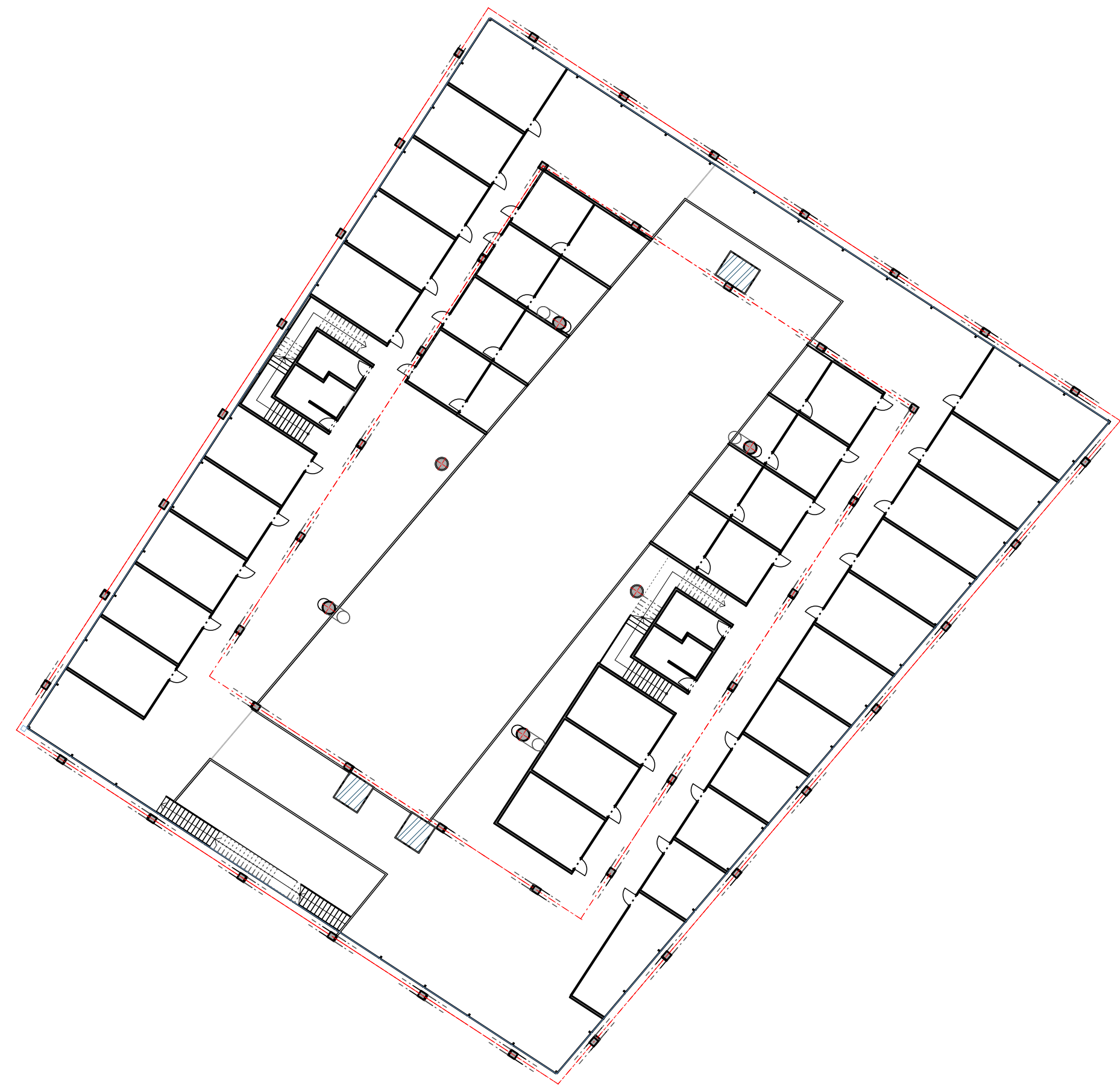
- Španělská street
- exhibition hall  
overview
- offices
- reception,  
auxiliary spaces
- restaurant
- renatble area  
- shop



first floor



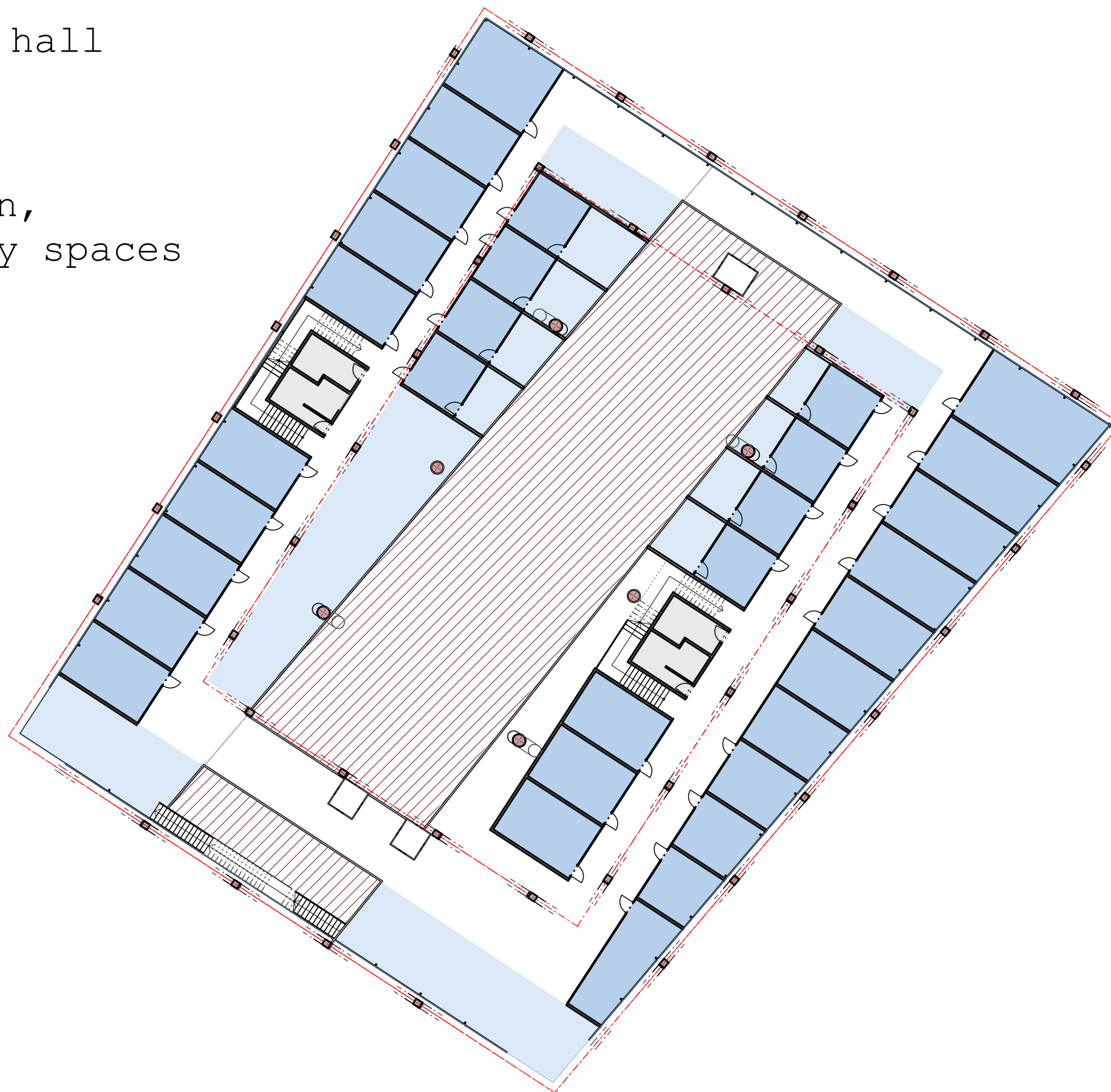
SECOND FLOOR



50 metres

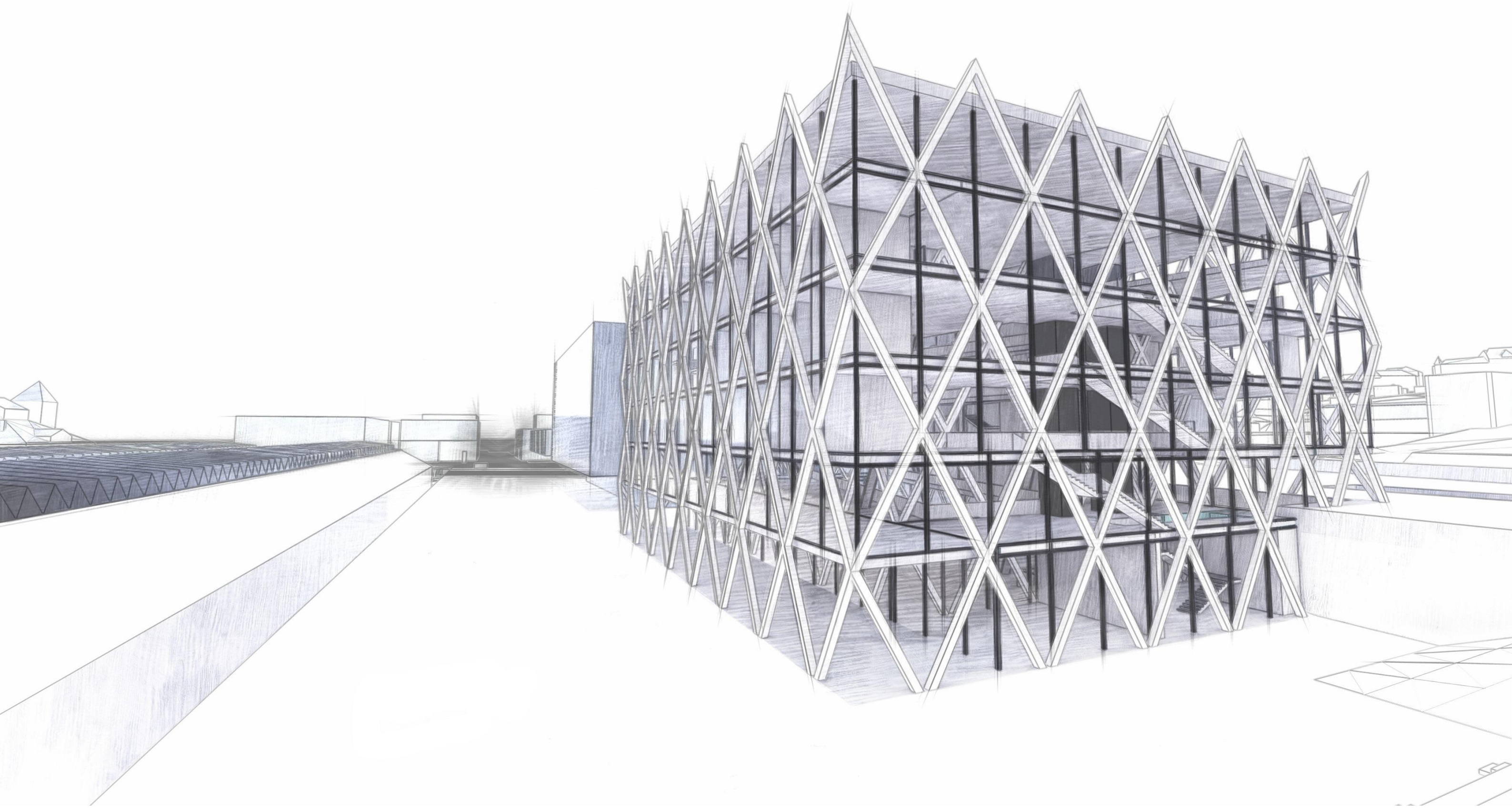


- exhibition hall  
overview
- offices
- reception,  
auxiliary spaces
- restrooms



second floor





THIRD FLOOR

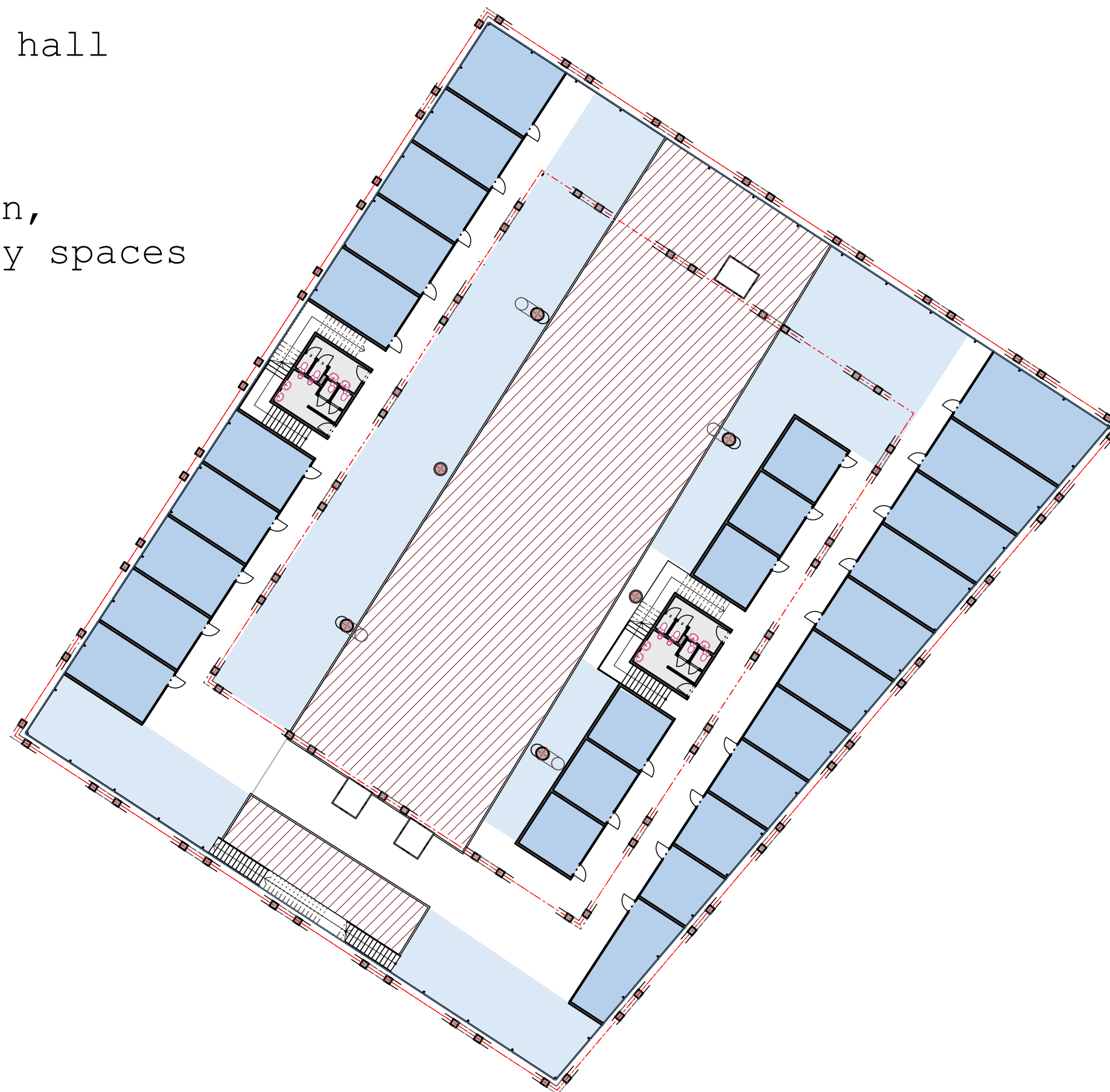


50 metres



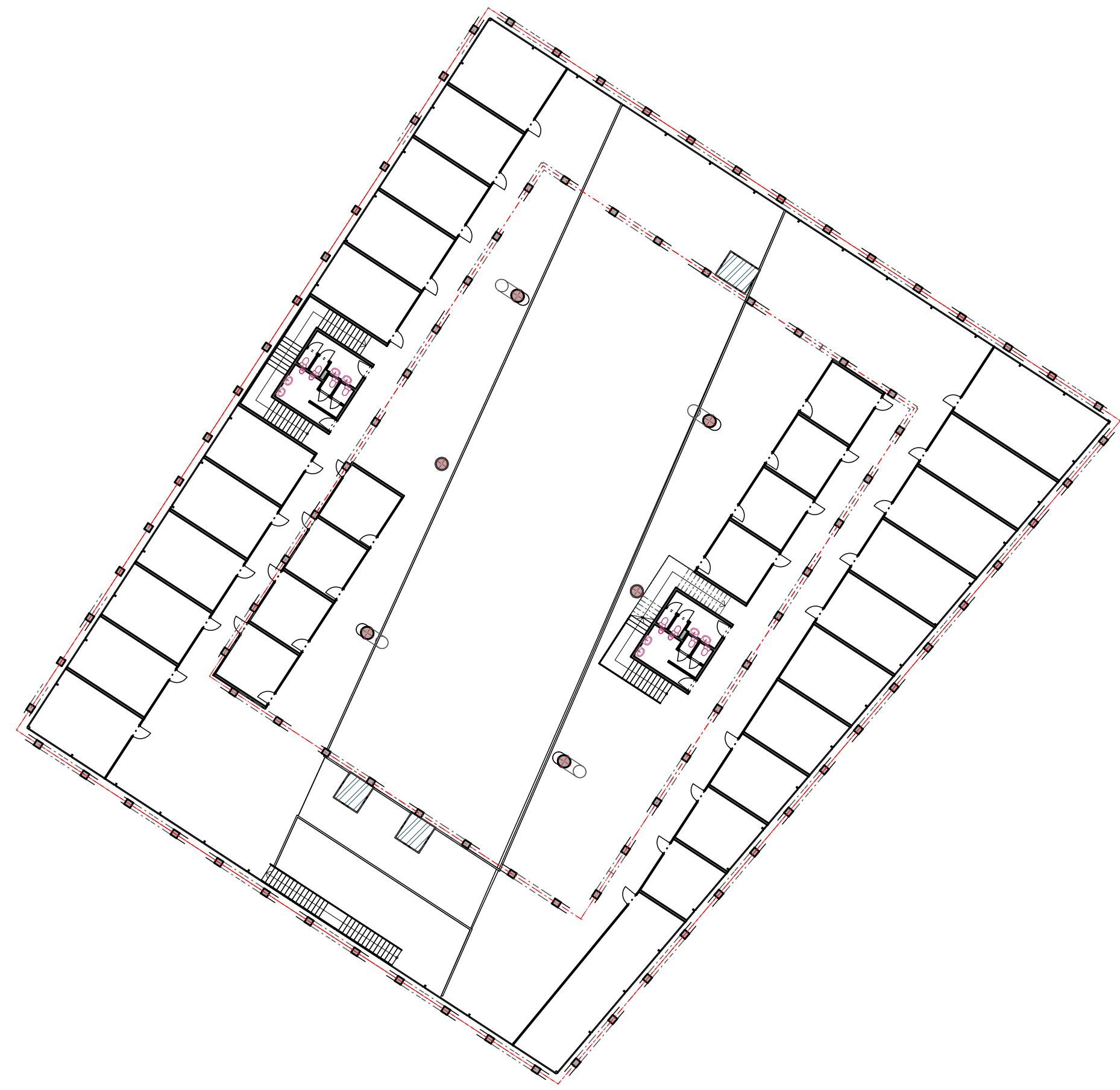


- exhibition hall  
overview
- offices
- reception,  
auxiliary spaces
- restrooms



third floor

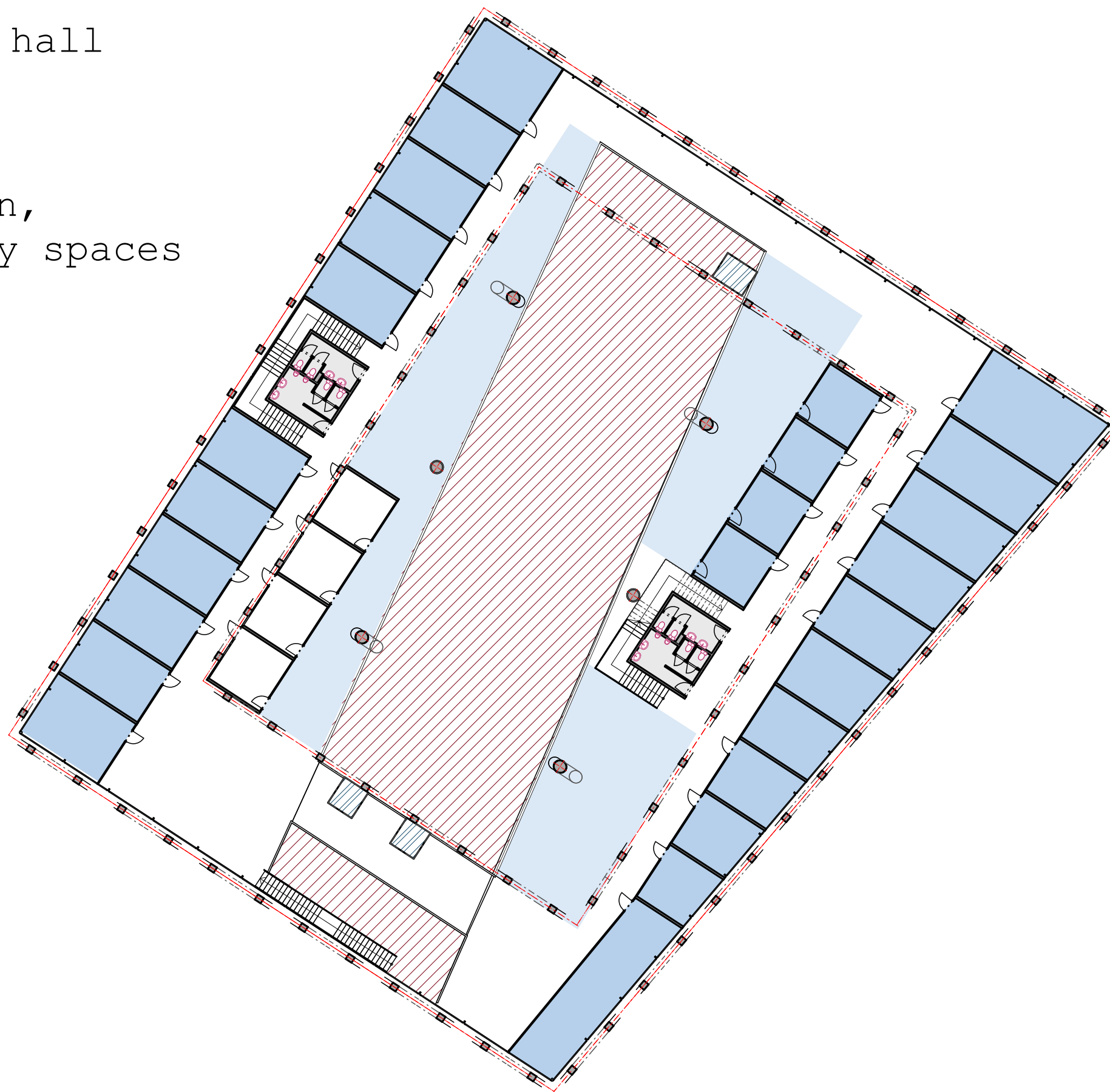
FOURTH FLOOR



50 metres



- exhibition hall  
overview
- offices
- reception,  
auxiliary spaces
- restrooms

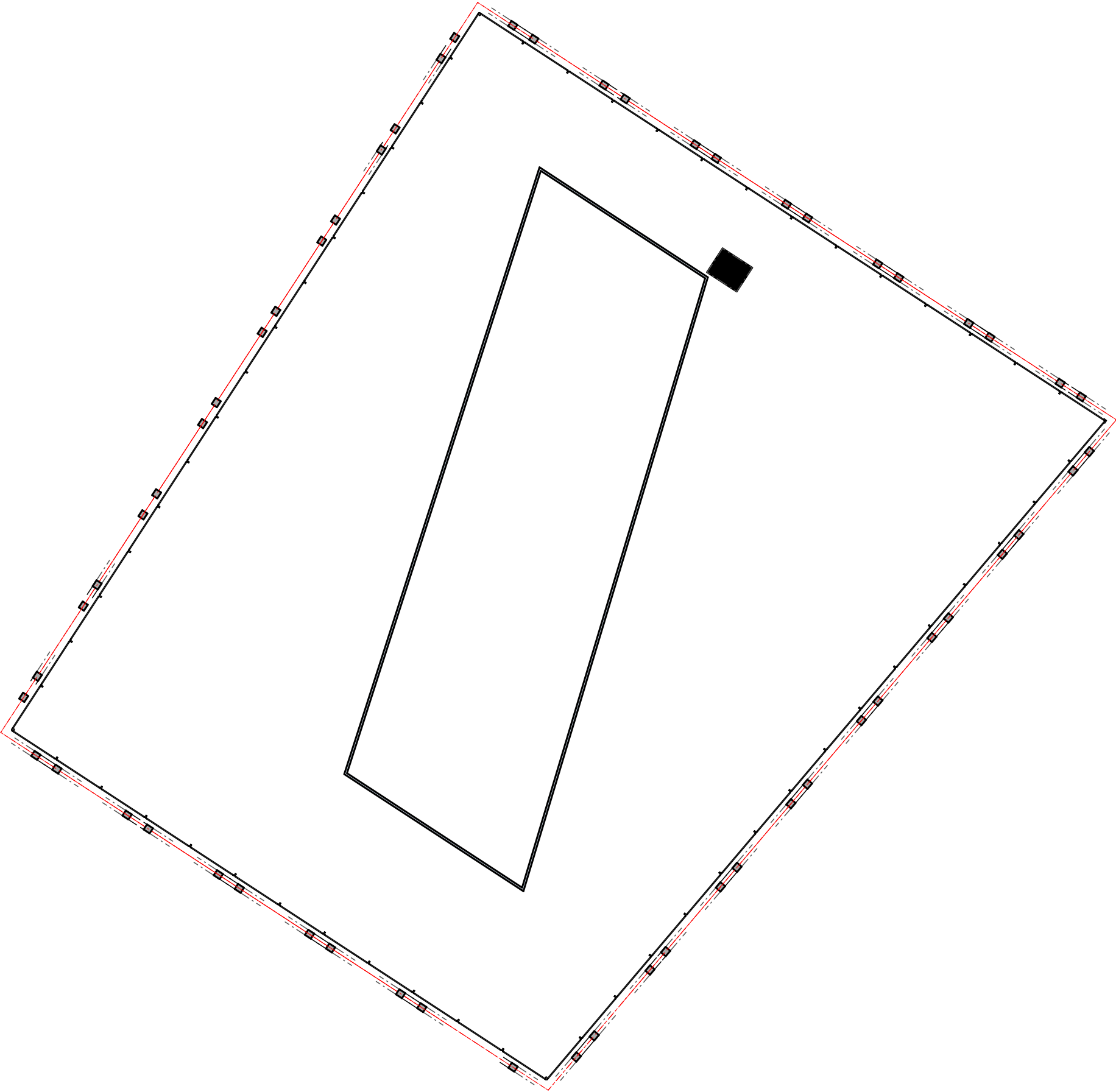


fourth floor



FIFTH FLOOR

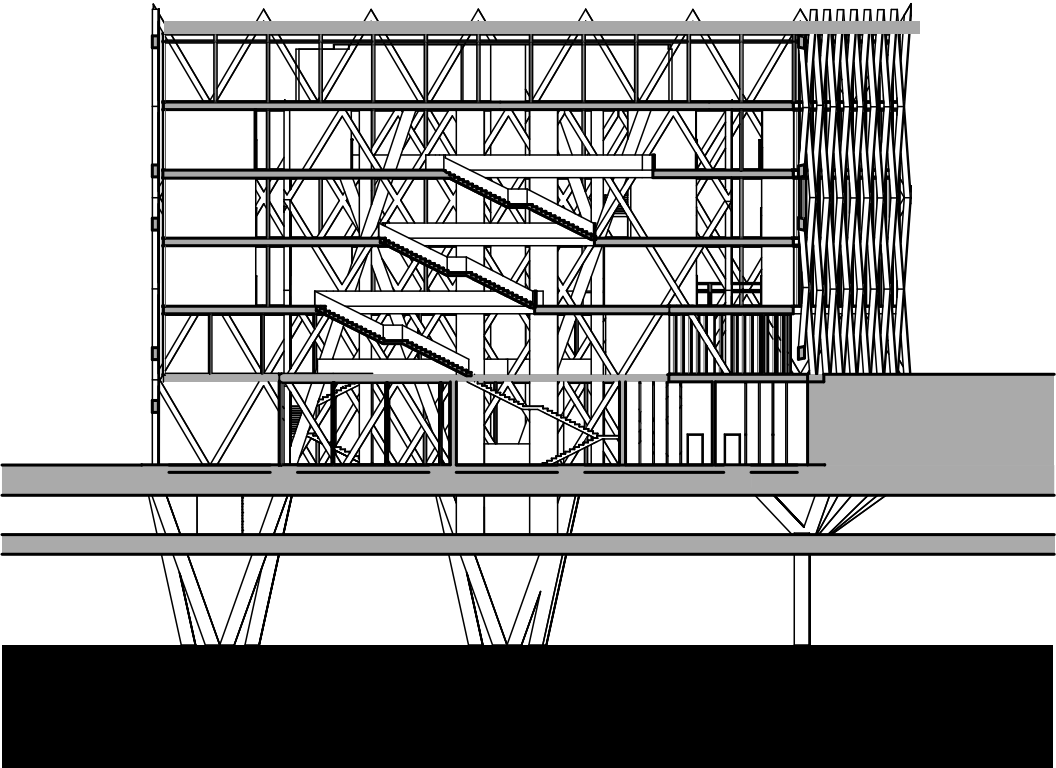
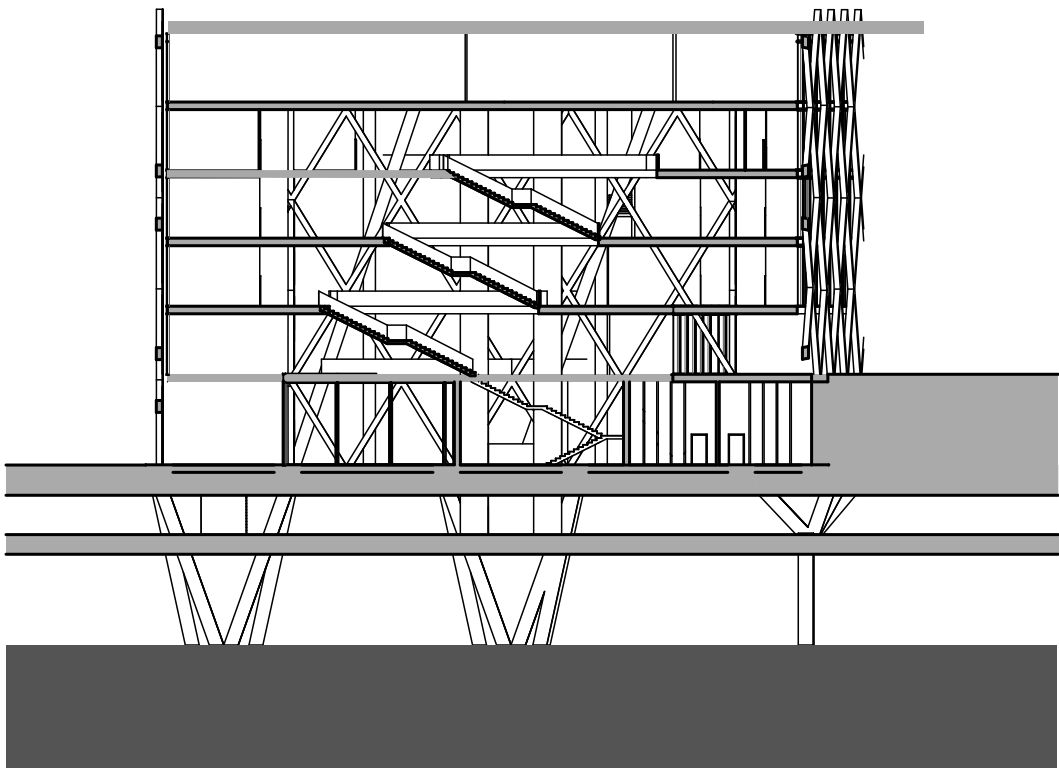
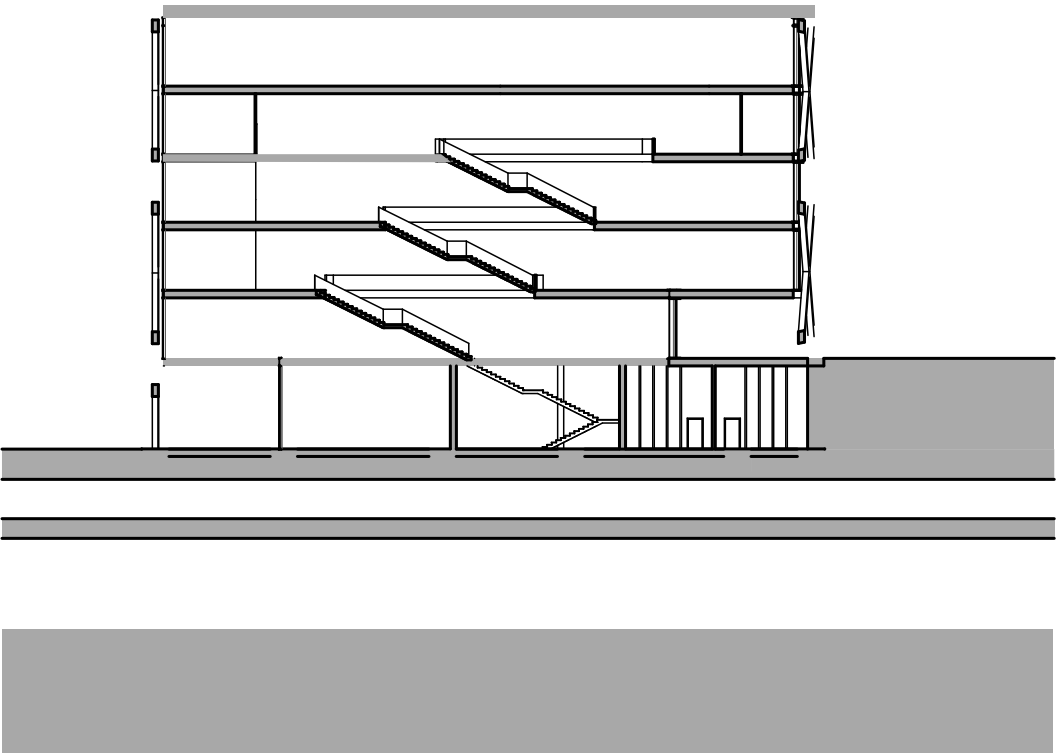
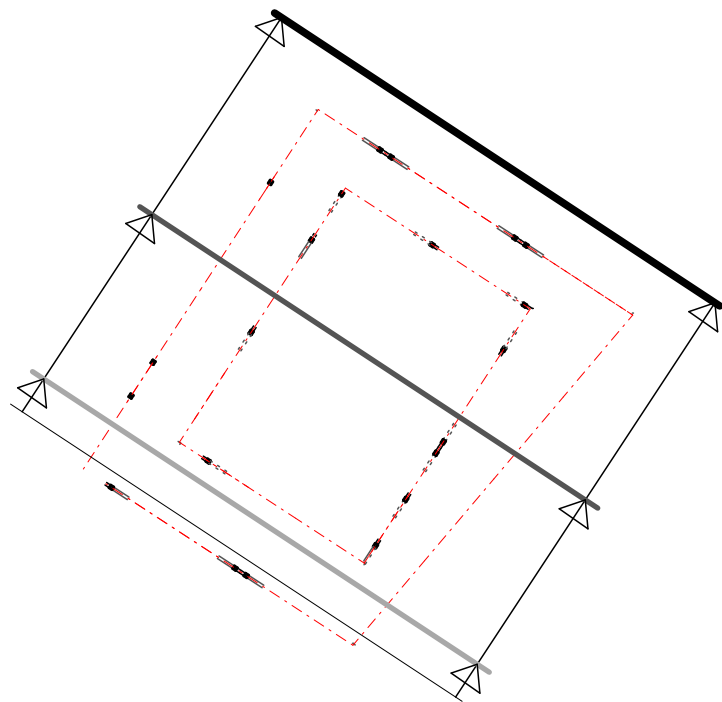
UPPER GALLERY



50 metres



SECTION



# ELEVATIONS 1:500

