

SANNERGATA NATATORIUM

*a center for therapy*

KATRINE LOUISE EGERDAHL

*diploma spring 22*

**THANK YOU TO**

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Andrea Pinochet, Architect

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Ingvar Tautra, Engineer

## CONTENT

The project is located at a site between Sannergata, Markveien and a park area to the west down towards Akerselva. The site descends gradually towards the river. The park area contains many large trees, almost forestlike in appearance. The building is located on top of Grünerløkka and very central for large parts of Oslo. Parking possibilities are good and very close to public transport. The facilities are designed for all groups of people in need of water therapy and ordinary swimming lessons for schools in the area. The swimming facilities can also be used for regular swimming exercises for the occasional user or groups at times when not in use for therapy.

The natatorium has been evolved out of the fact that most of Oslo city's therapy facilities has been closed over the last years, e.g.: the Radium hospital and Ullevål hospital facilities closed last year.

The natatorium is designed with the main entrance from the corner of Sannergata and Markveien, slightly raised above the sidewalk. One enters through glass doors into the main foyer, with sights through a glass wall to the swimming area. In the foyer there is a café, ticket office and entrance into the wardrobes, the basement and the first floor. The room is designed as a full two-story height with large windows to Sannergata and Markveien. Through the changing rooms one enters the therapy and swimming facility.

The facilities are equipped with two large pools, various smaller pools and water therapy objects. The large pool measures 25 x 15.5 m with six lanes for exercise swimming. The pool is equipped with an adjustable bottom that can be raised up to a 90 cm water depth in half of the pool. There is also a bridge that can be raised above water level, dividing the pool into two different areas. Temperature in the pool is normally 26 – 28 degrees C but is planned that it can be partially raised up to 32 degrees C in the end, towards the therapy pool.

The therapy pool measures 12.5 x 9 m and normally holds a temperature of 32 – 34 degrees C. It is equipped with a solid 1 m wide ramp and a staircase leading down into the pool, in addition to normal swimming pool ladders. The ramp makes it possible to bring patients that cannot support themselves into the water, either by wheelchair or on beds. The facilities are also equipped with a pool lift for people with disabilities. The pool has a wide range of use from baby swimming, to exercise for geriatric or rheumatic patients.

A child's pool, 30 cm deep is located near the therapy pool, and will often be in use when there is baby swimming in the therapy pool. A large sized hot tub is located nearby and next to that there is located an ice basin. Furthermore, there is planned three high pressure massage showers, a regular sauna, an infrared sauna, a relax area and pool for common wellbeing.

The first floor contains six therapy rooms for physio-, chiro- and osteopathic treatment and two rooms for therapeutic exercise: one with stationary equipment and one open spaced exercise room for groups etc. From the first floor there is access to a spectator gallery in the main swimming hall for parents or assisting personnel. If there should be held a regular local swimming competition the gallery could seat up to approximately 75 people. The rest of the first-floor area consists of employee rest area and employee changing rooms.

The basement is almost entirely a technical facility with treatment for water and air. A smaller part under the entrance area has two adjoining rooms that can be used for several activities, such as different dance or aerobic activities. Also, it is planned with sports parquet flooring.

The building is based on a hybrid construction, with concrete basement and core, prefabricated pools, a ribbed roof of laminated wood and cross laminated timber elements. The large supporting walls in the west wall towards the river consist of laminated columns on the inside and a wider shading part on the outside. The slim columns that form the west wall are repeated at the entrance towards Sannergata. The facade towards Markveien is planned with a double wall consisting of an inner layer of glass and aluminum, and an outer shading layer of hollow concrete blocks. These are stacked from the ground level to the roof giving shade and privacy to the therapy treatment rooms on the first floor. The entire building is given a mural look by using aerated plasterwork on all facades in a light, almost white color.

The roof over the pool areas have been perforated with light domes in a regular structure over the hall. Light is filtered down into the swimming area and will, together with the glass wall towards west, give a natural daylight into the entire room.

The pools are planned with prefabricated elements, made from white semi-polished concrete. Research is currently done on a technical solution for prefabricating pools out of concrete. The advantages compared to traditional tile covered pools will be time saving, cost saving and elimination of reoccurring problems with tiles falling off due to errors in production or chemical reactions. A pool made from concrete will need to be treated with a solvent for protection and a non-chlorinated water treatment such as an ultraviolet (UV) filter and antiseptic water cleaning system.

Use of chlorine in water treatment is the single highest factor of corrosion in swimming facilities. Removing chlorine will be very cost saving and potentially life-prolonging for new swimming facilities. A non-chlorinated water therapy facility will be experienced far better for regular users and especially for people with allergies and intolerances.

The operation of a bathing facility requires copious amounts of energy for heating and can therefore be expensive to operate. There are multiple opportunities here to use renewable energy sources in the area. The alternatives for energy sources include photovoltaic cells, district heating, solar collectors and geothermal heat. Based on the solar conditions, one can exclude photovoltaic cells and solar collectors. District heating is dependable and widespread, but it has one problem. Prices follow the price of electricity and in periods of expensive electricity this can be unfavorable. With high electricity prices in price areas NO1, NO2 and NO5 in 2021 and 2022, geothermal heat can be a better energy source. The local area for the building has several boreholes that indicate a depth to rock of between 3 and 46 meters. This data is obtained from NGU (Geological Survey of Norway) and presented in an appendix. This is favorable for rock heating, but in such a case test drilling should be carried out. Heat pumps is a costly investment that entails a certain risk due to unpredictability in how competitive it will be in the future, but as of today this is probably the most favorable alternative.

## ANALYSIS



site situation  
Oslo

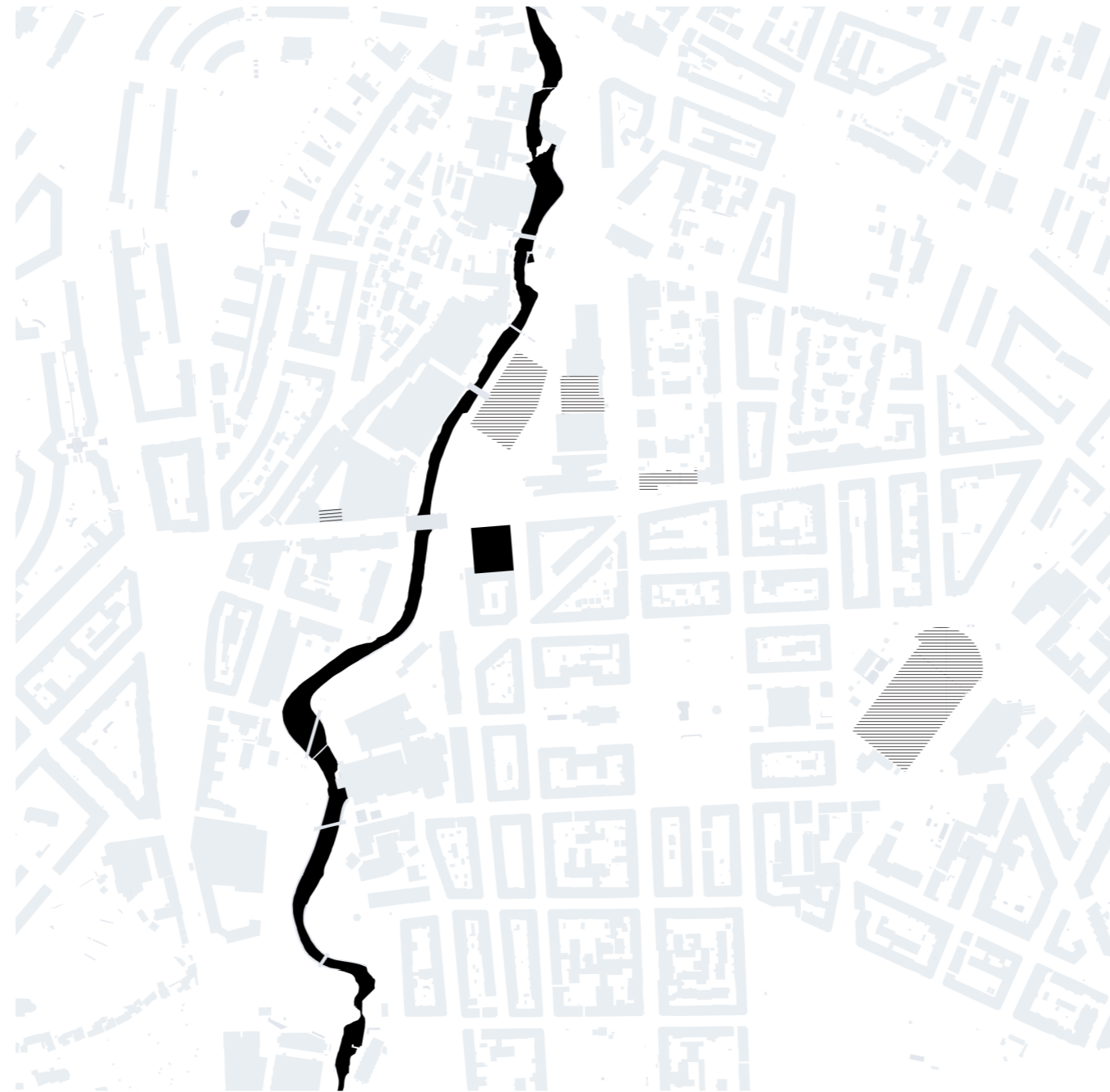


site situation  
Grunerløkka





public transport and parking



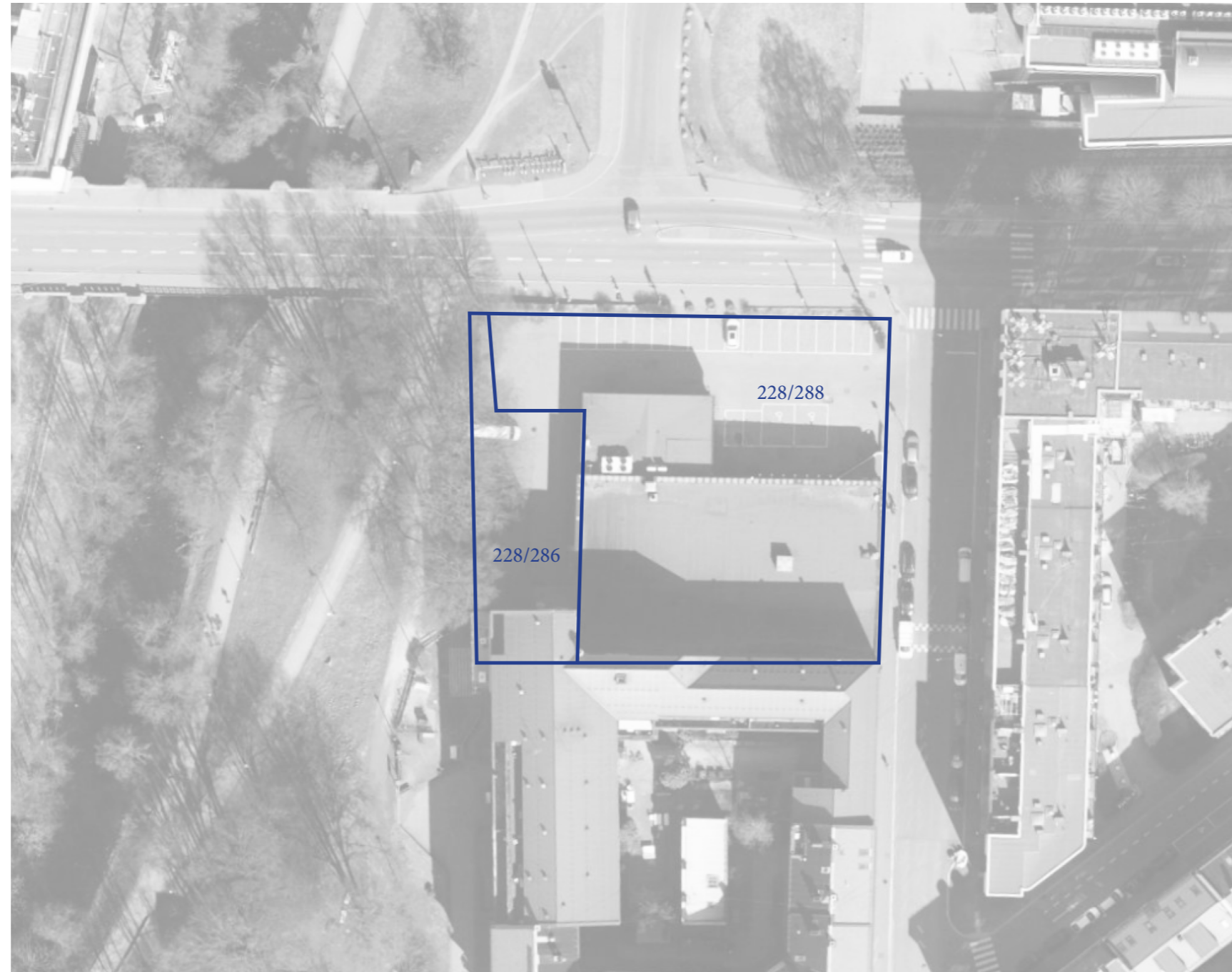
green areas with activity



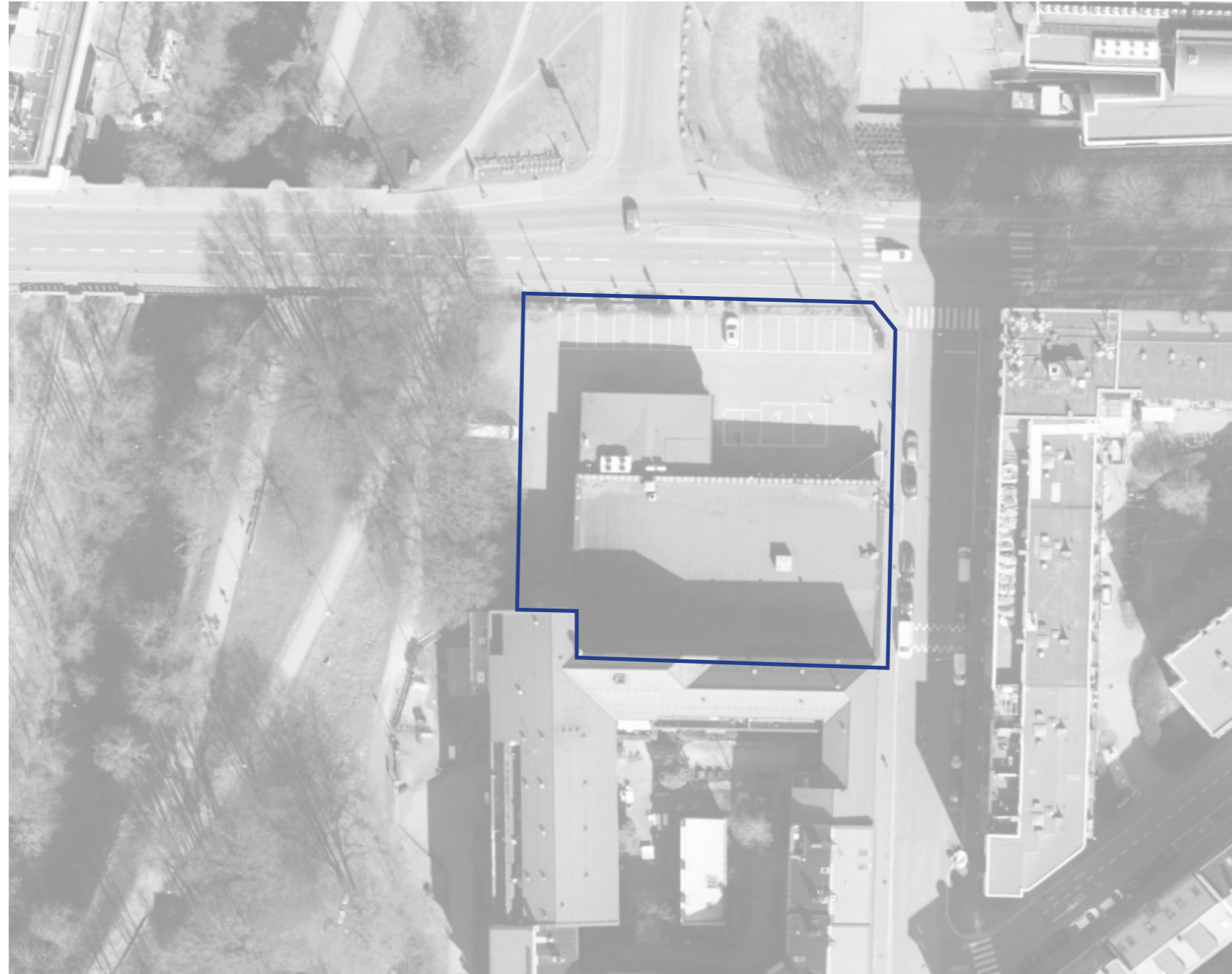
senior center



orthophoto of site



property on site



site regulated for business, institution, elder care, serving



photos of site and surroundings



photos of site and surroundings



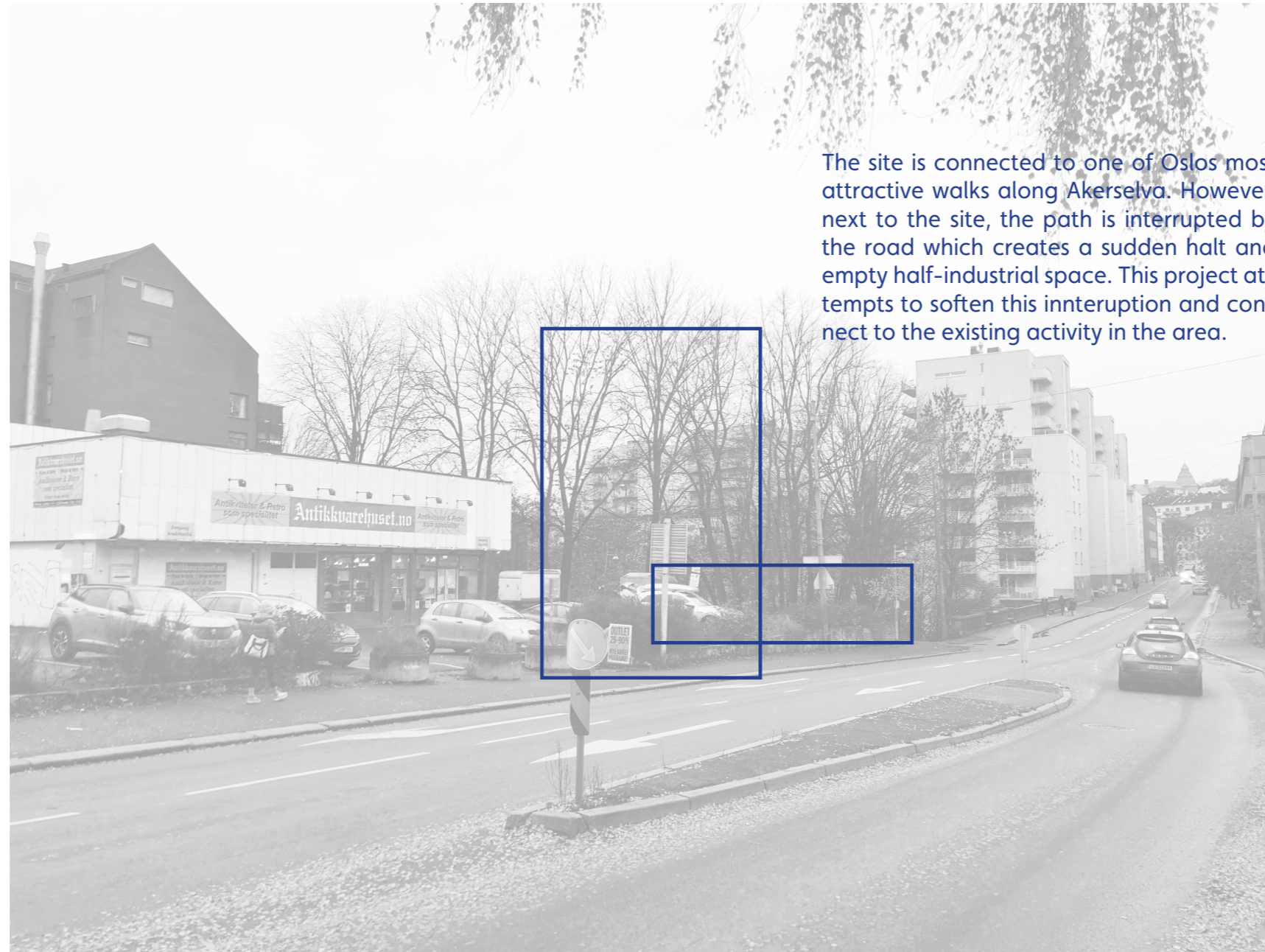


photos of site and surroundings



photos of site and surroundings



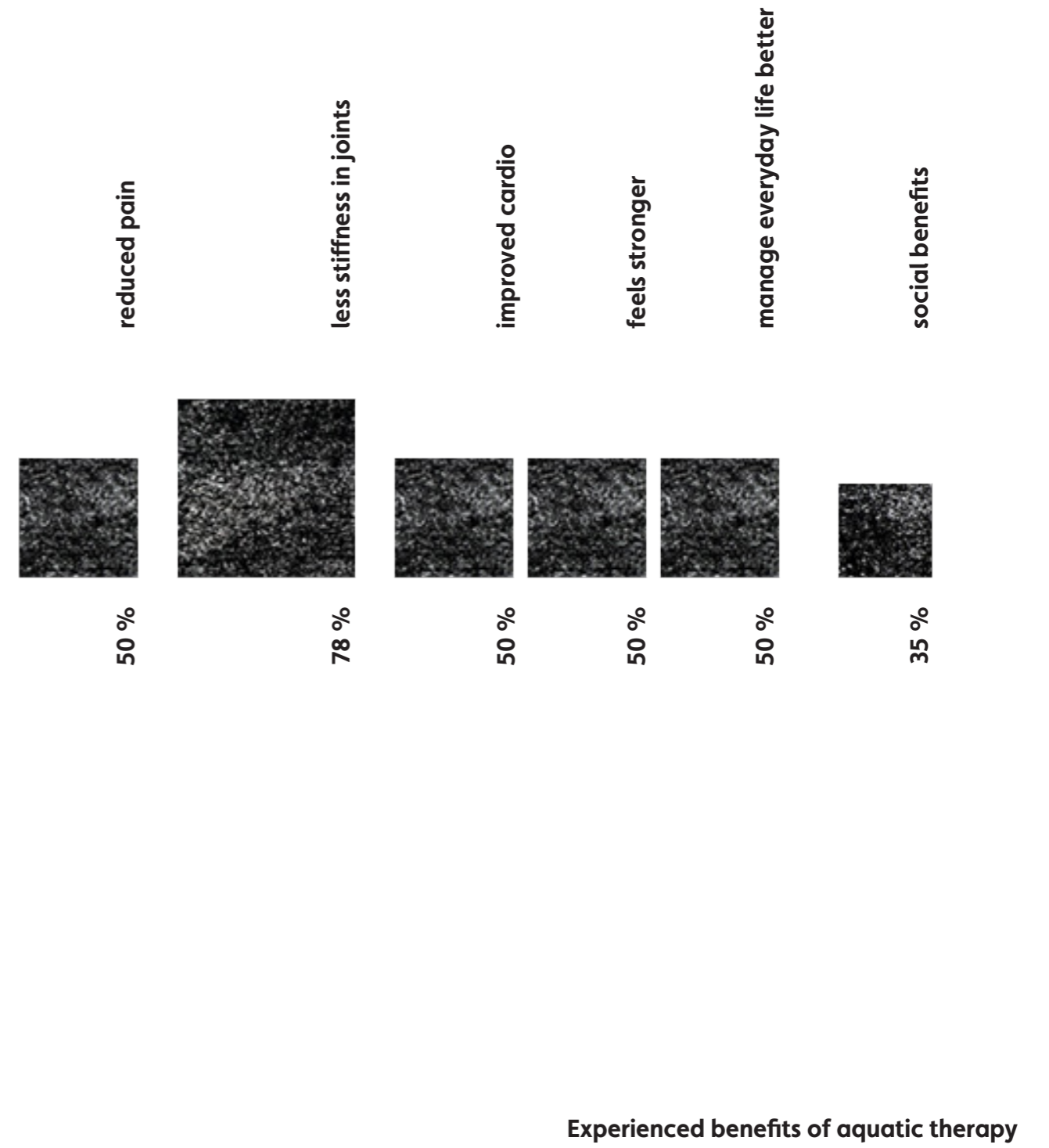
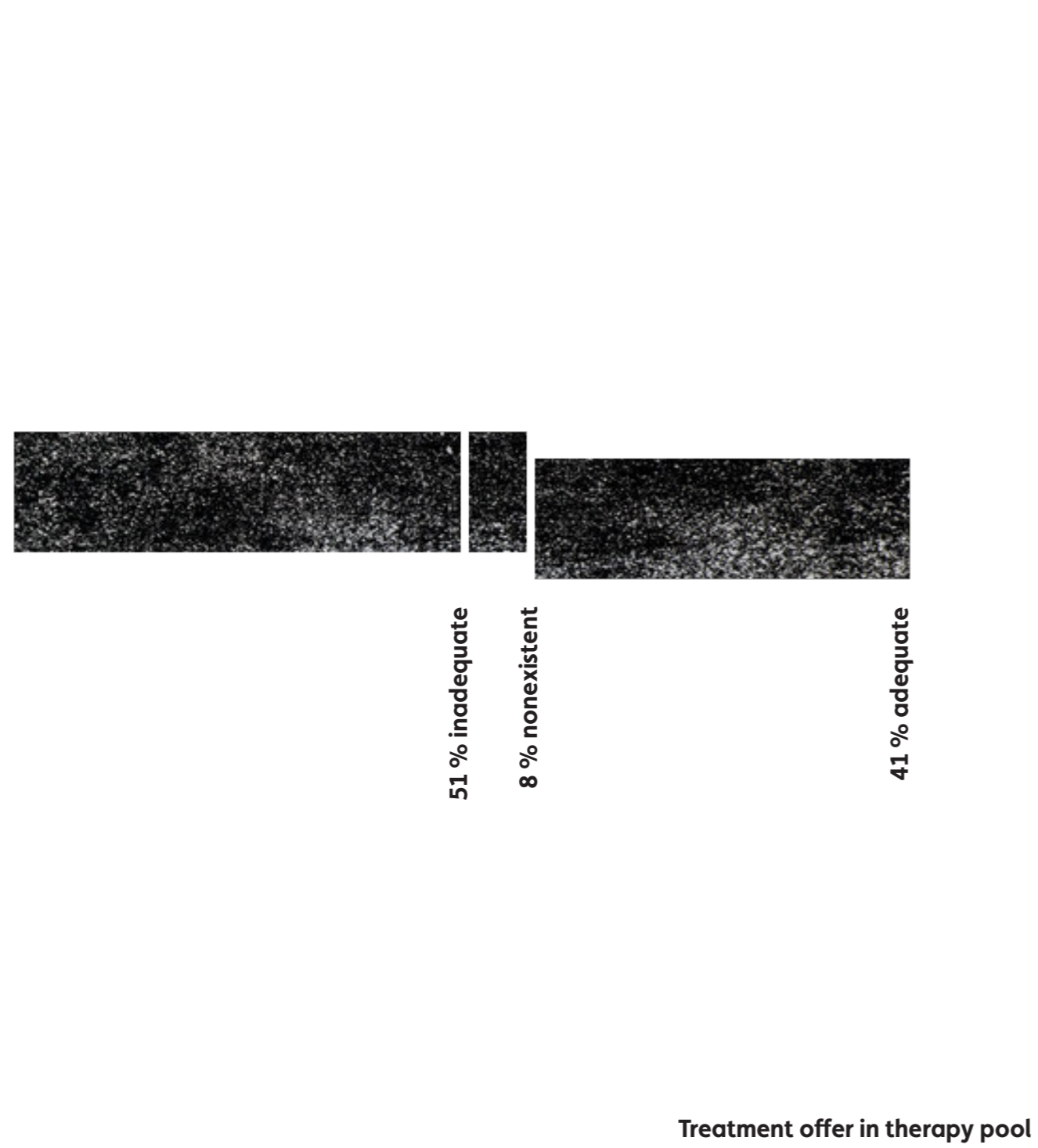




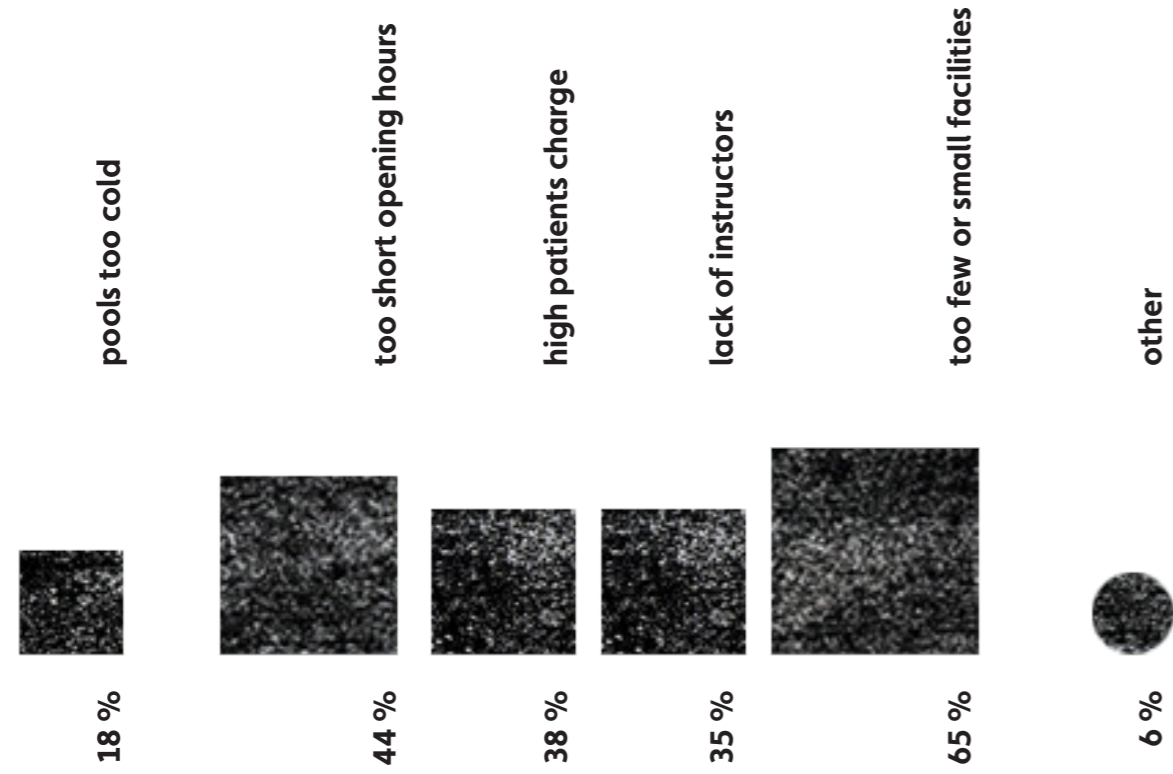
The project attempts to connect the two sides of the road, both at this time characterized by nature and activity, but also an industrial building typology and parkinglots.

## BACKGROUND, USE AND USERS

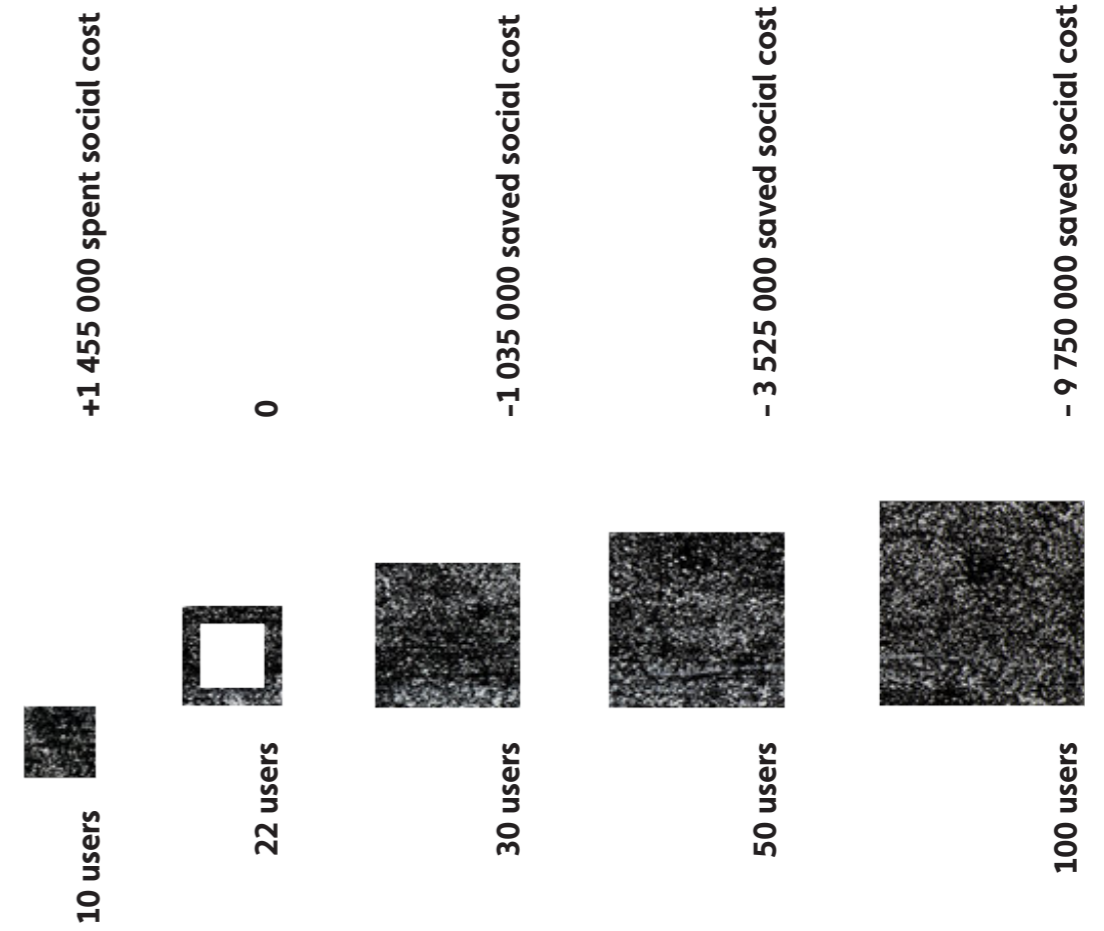
### THE EXISTING OFFER



**THE EXISTING OFFER AND ECONOMY**



Reasons why the offer feels inadequate



Total social cost in 2016 related to muscle- and skeletal diseases was over 255 bill NOK.

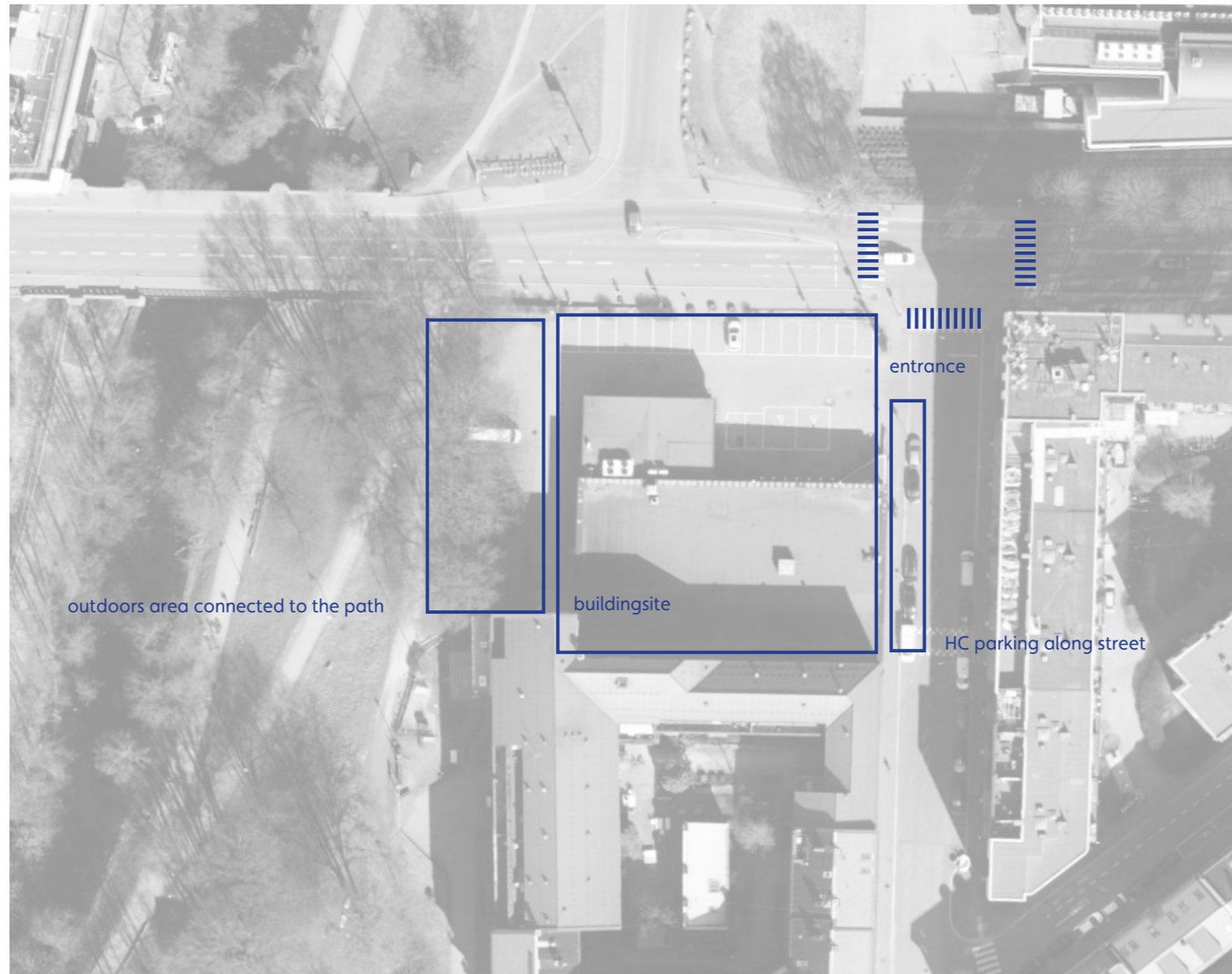
**Social cost per pool according to amount of users, if we assume the cost of operating a facility by the public is 2,7 mill NOK a year.**



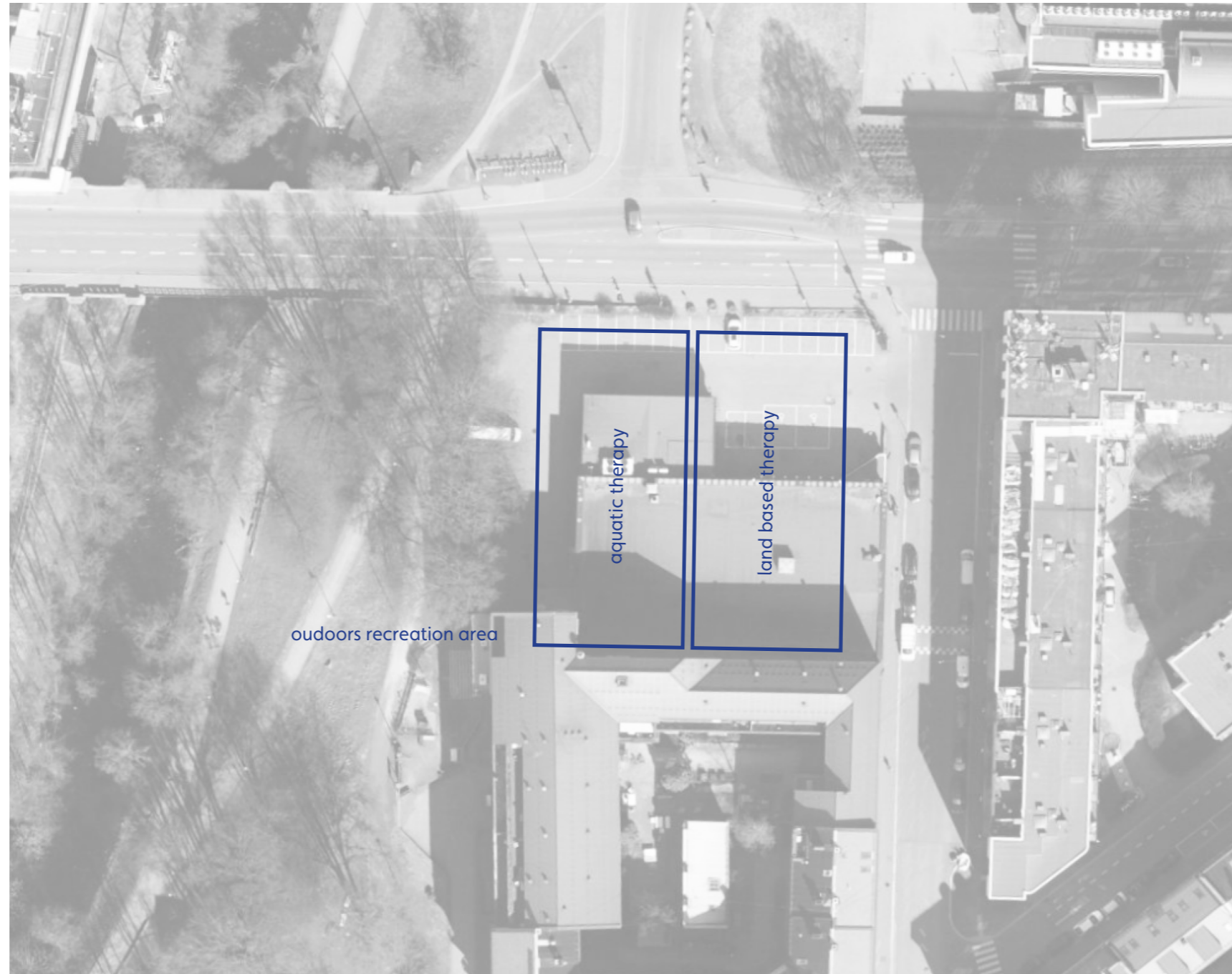
**TIMETABLE FOR POSSIBLE USE OF THE FACILITY**

	<b>MONDAY</b>	<b>TUESDAY</b>	<b>WEDNESDAY</b>	<b>THURSDAY</b>	<b>FRIDAY</b>	<b>SATURDAY</b>	<b>SUNDAY</b>
<b>09.00-16.00</b>	<input type="checkbox"/> rehab <input type="checkbox"/> rehab	<input type="checkbox"/> rehab <input type="checkbox"/> schooltraining	<input type="checkbox"/> rehab <input type="checkbox"/> rehab	<input type="checkbox"/> rehab <input type="checkbox"/> schooltraining	<input type="checkbox"/> rehab <input type="checkbox"/> rehab	public use all day	public use all day
<b>16.00-20.00</b>	<input type="checkbox"/> baby swimming <input type="checkbox"/> adult swimming	<input type="checkbox"/> <input type="checkbox"/> swim practice	<input type="checkbox"/> baby swimming <input type="checkbox"/> adult swimming	<input type="checkbox"/> <input type="checkbox"/> swim practice	<input type="checkbox"/> <input type="checkbox"/> public use		

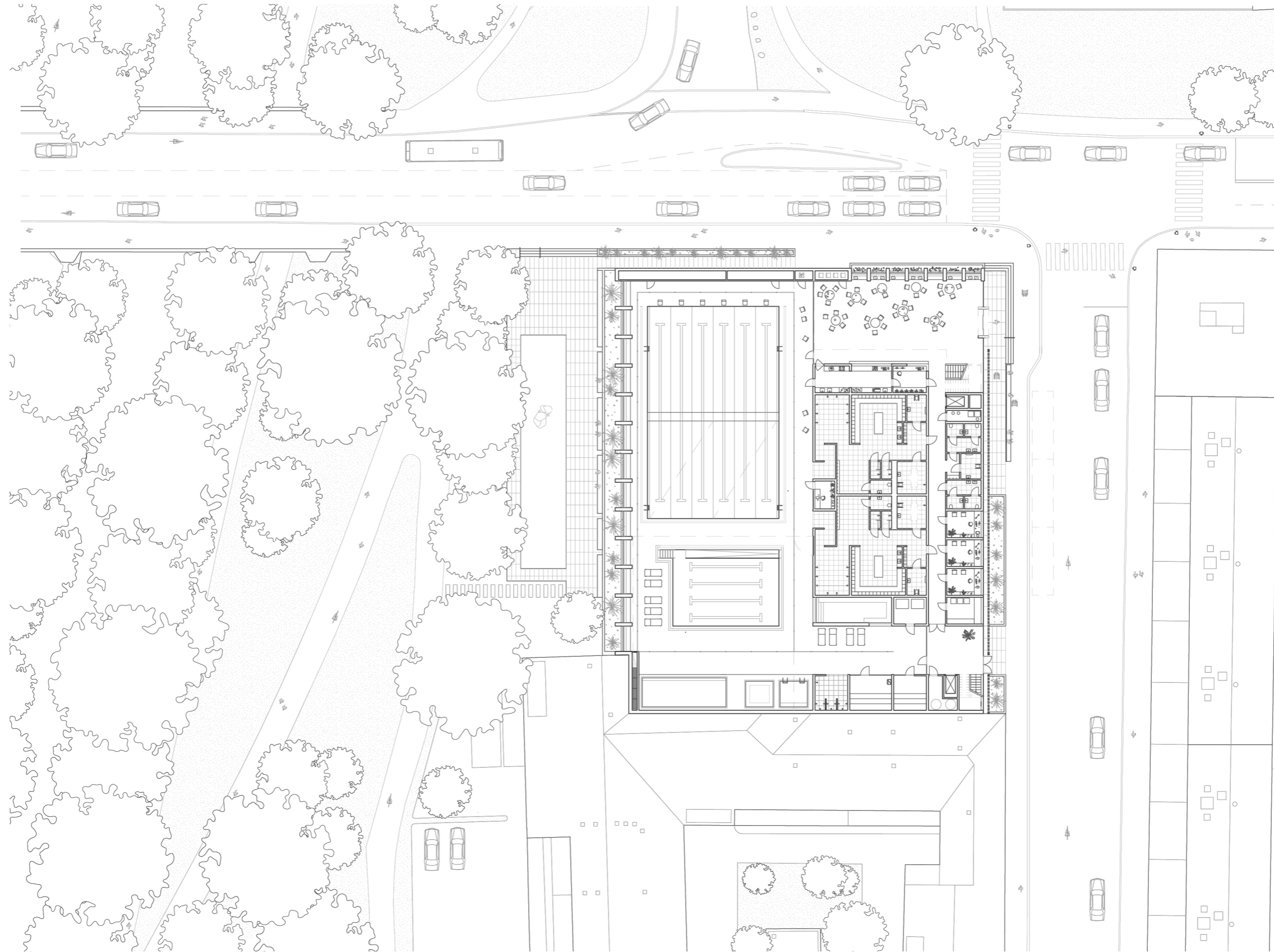
## PLANS



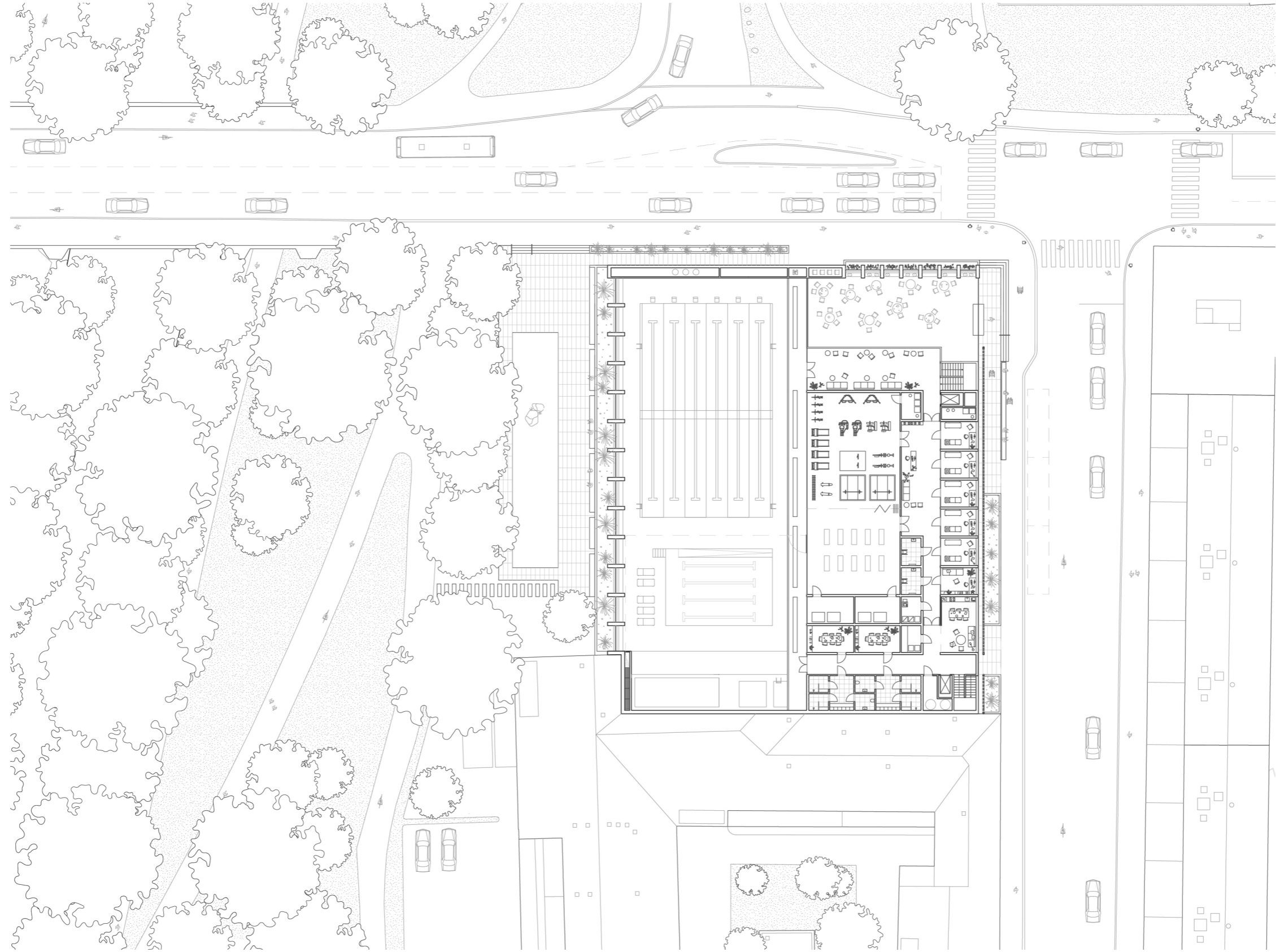
general exterior organisation



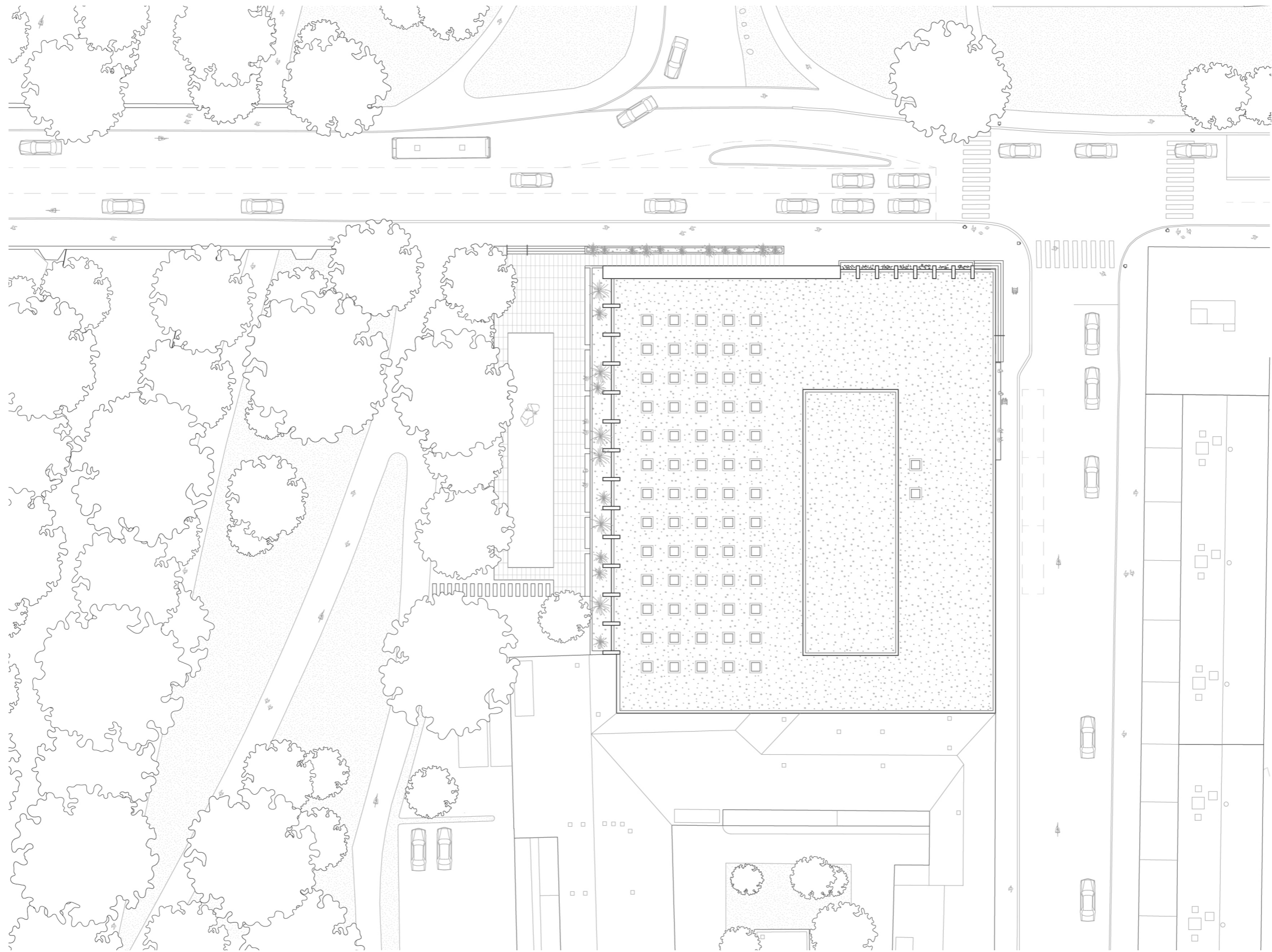
general interior organisation



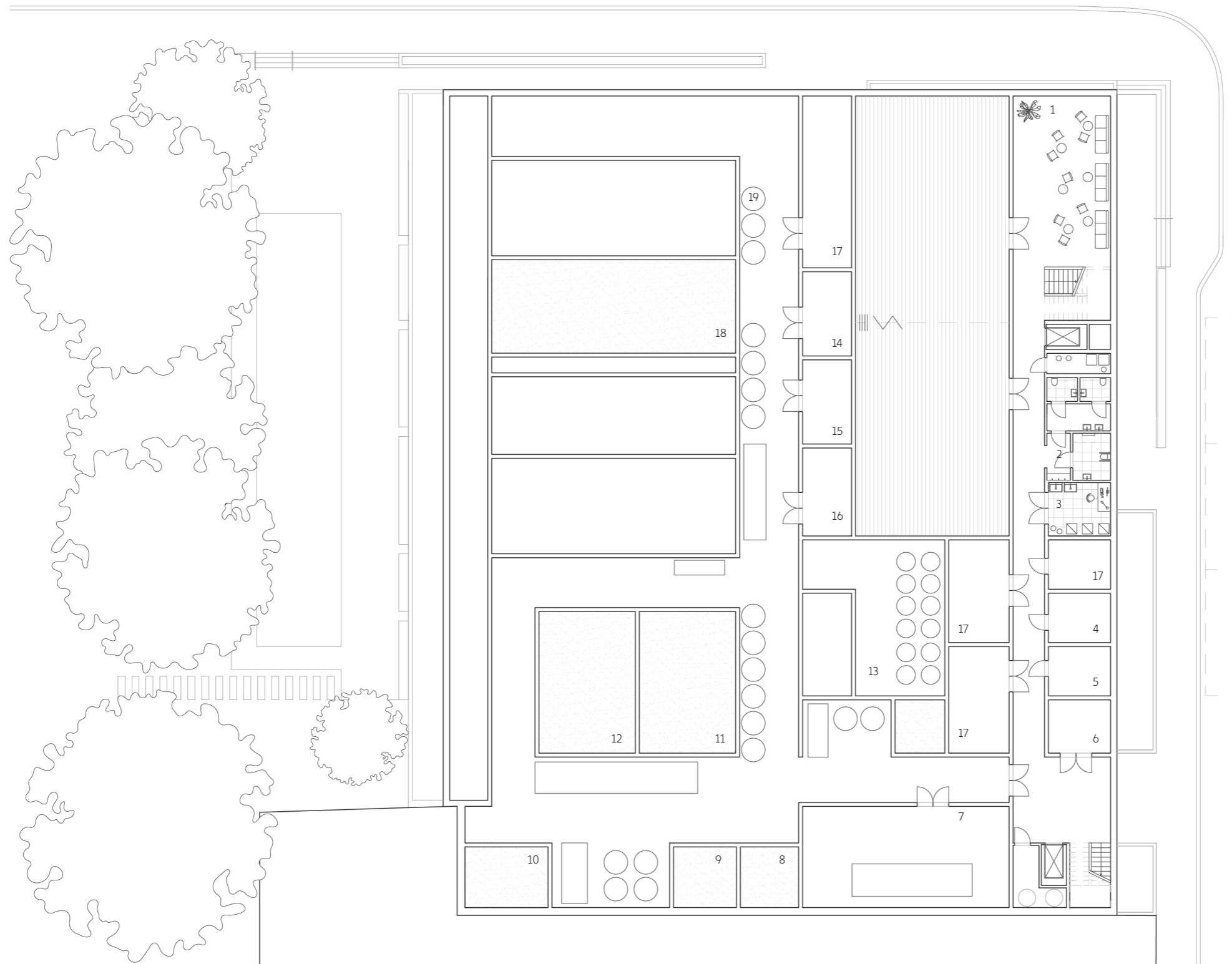
ground floor



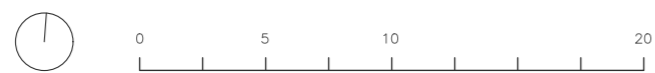
second floor



roof plan

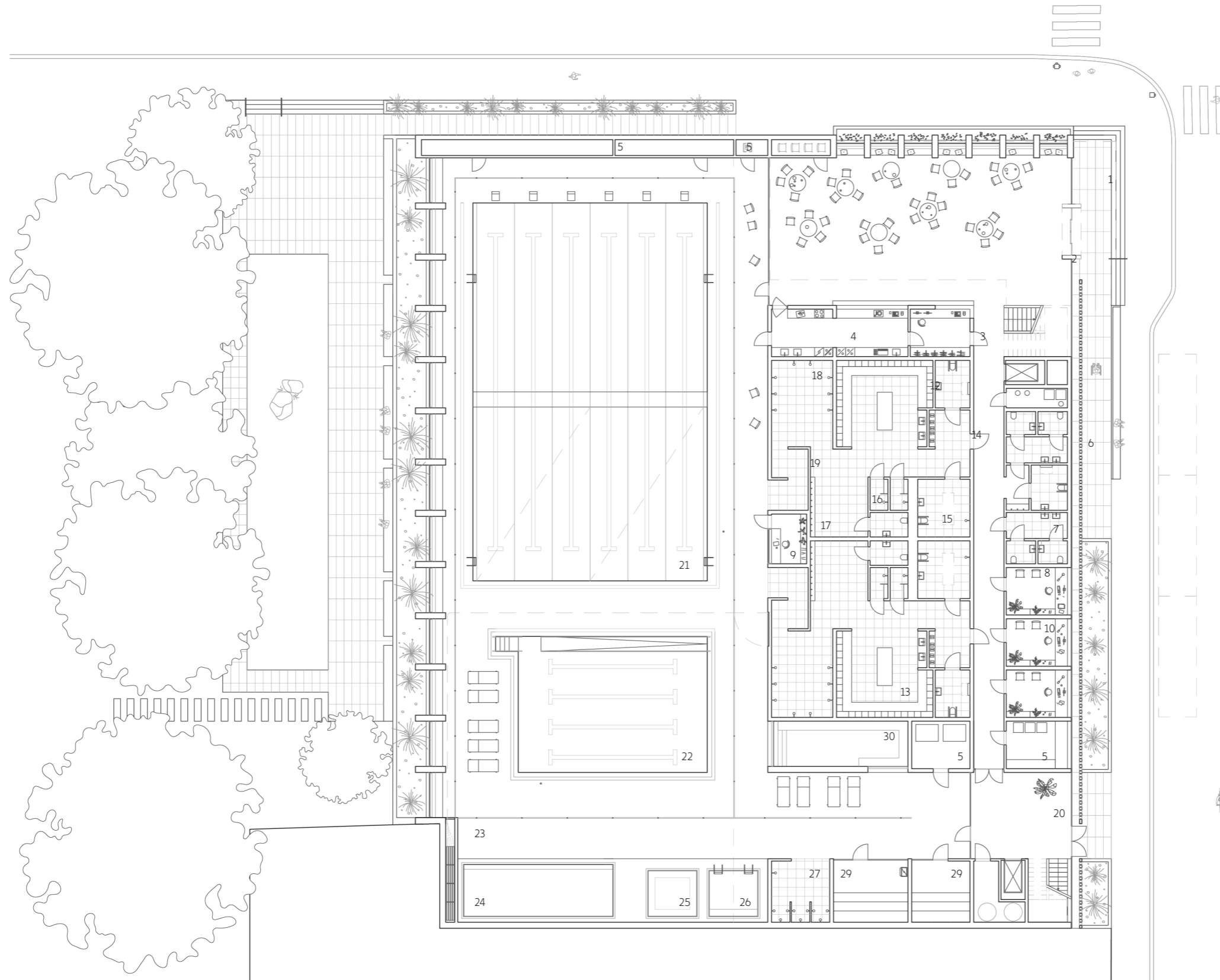


- 1. sosial area
- 2. wc
- 3. cleaning central
- 4. electricity room
- 5. data room
- 6. goods receipt
- 7. ventilation room
- 8. expansion tank icewater
- 9. expansion tank hot tub
- 10. expansion tank child pool
- 11. greywater tank
- 12. expansion tank therapy pool
- 13. boiler room
- 14. lab 1
- 15. lab 2
- 16. lab 3
- 17. storage room
- 18. expansion tank swimming pool
- 19. sandfilters and UV light filter, cleaning system

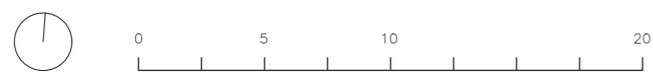


basement plan

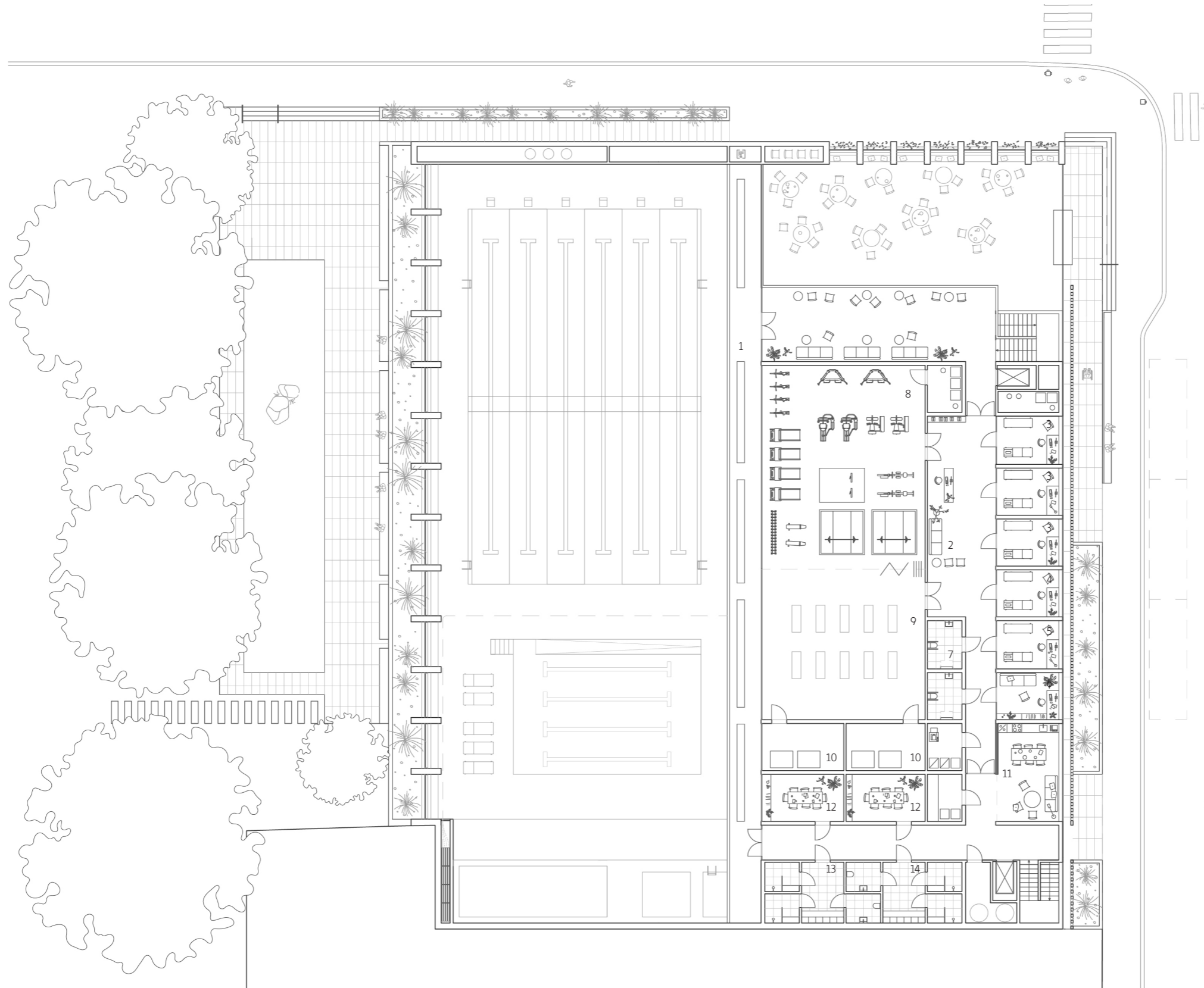




1. entrance
2. foyer w kiosk and serving
3. ticket office
4. kiosk and kitchen
5. storage
6. toilet public
7. toilet employe
8. office center leader
9. office lifegards
10. office tecnlal lead
11. storage
  
12. changing room men
13. changing room women
14. entrance w hcwc
15. changing rom w shower for bedlying patients
16. private changing rooms
17. drying sone w wc
18. shower sone
19. sluice
  
20. entrance 2, employee and goods
  
21. 25 x 15,5 m pool 6 lanes  
adjustable bottom in part of pool  
bridge partition  
part with adj. bottom may have 32 gr C in part of pool  
26 - 28 C normal temp
22. therapy pool 9 x 12,5 m  
32 - 34 C normal temp
  
23. activity sone
24. child pool, 30 cm deep
25. hot tub
26. icebath
27. massage showers, high pressure
28. sauna Infrared
29. sauna steam
30. relaxation pool



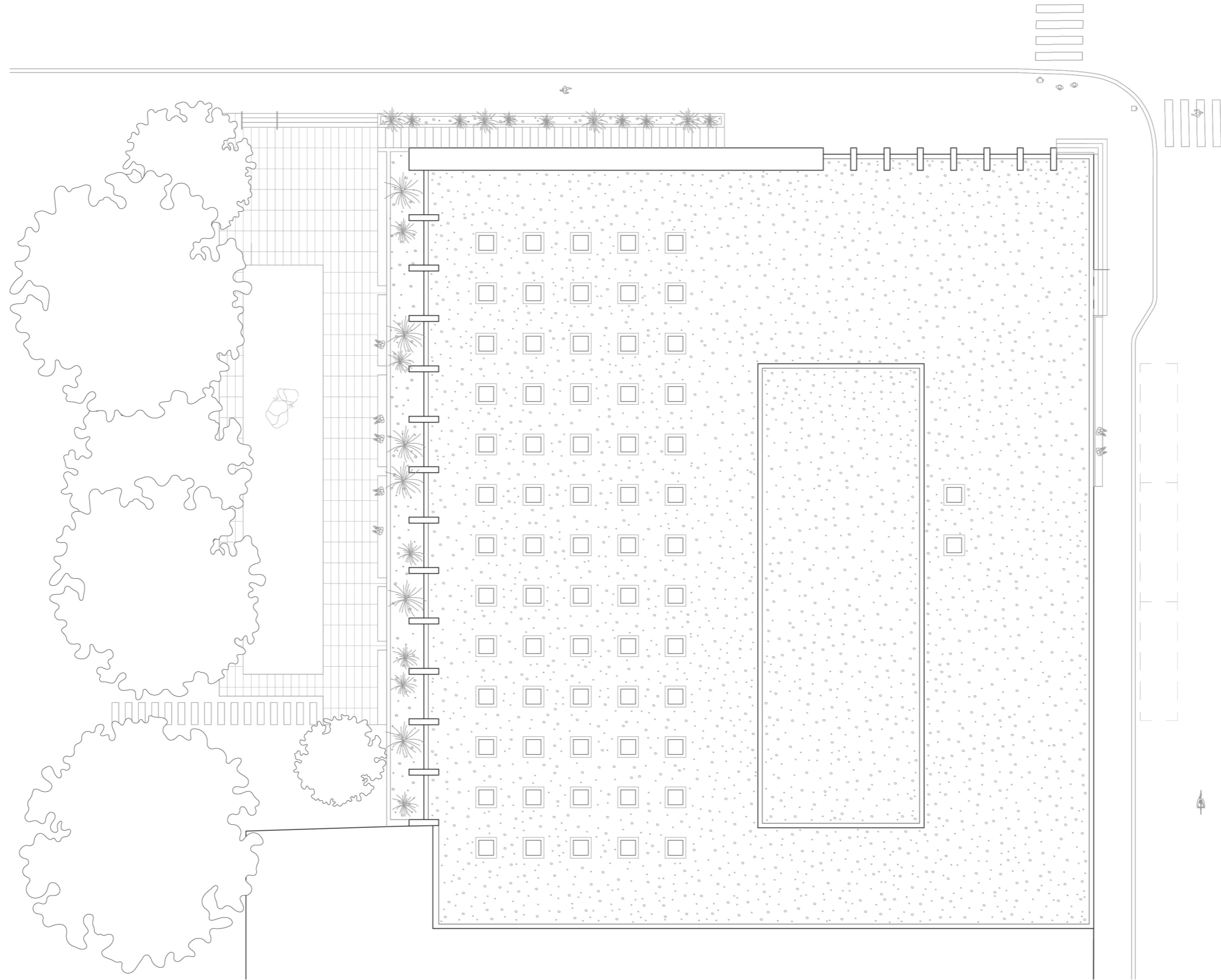
ground floor



- 1. gallery
- 2. waiting area
- 3. physiotherapy room
- 4. chiropractor room
- 5. osteopathy room
- 6. psychologist
- 7. hc wc
- 8. exerciseroom w apparatus
- 9. exerciseroom free floor
- 10. storage
- 11. employee rest area
- 12. meeting rm
- 13. employee changing room women
- 14. employee changing room men

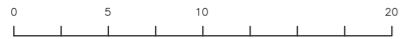
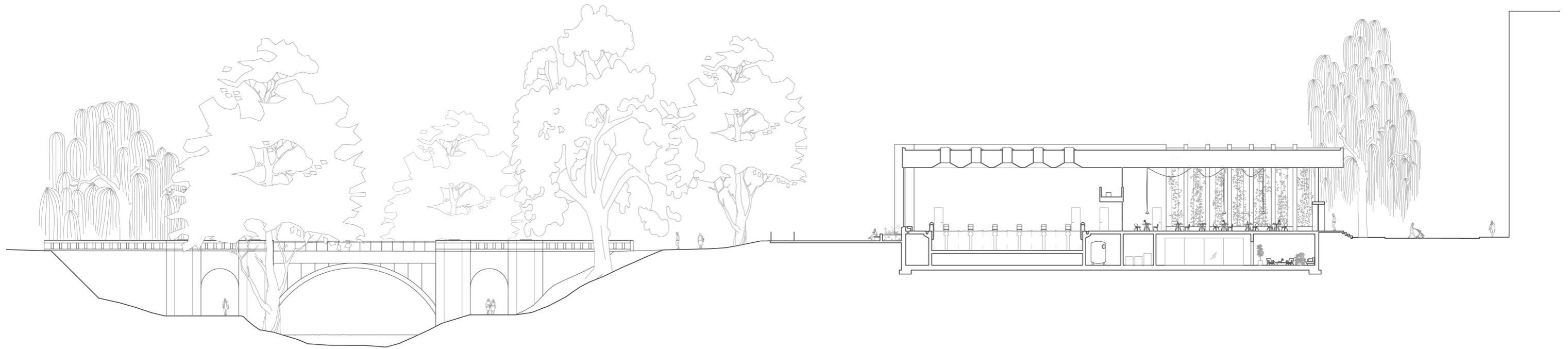
second floor



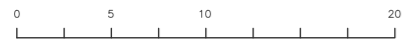


roof plan

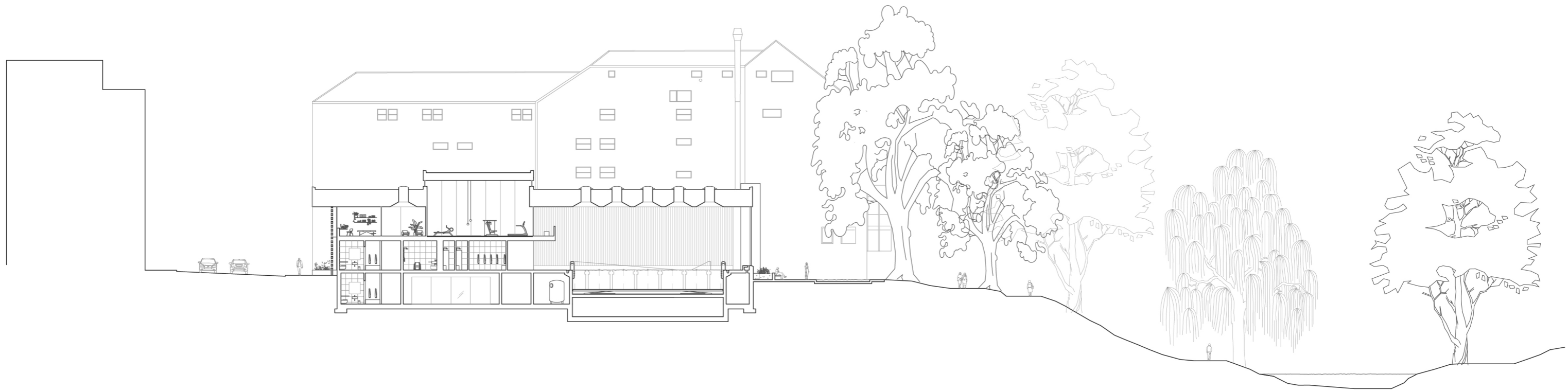
## SECTIONS



section AA

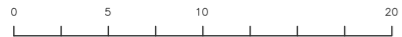
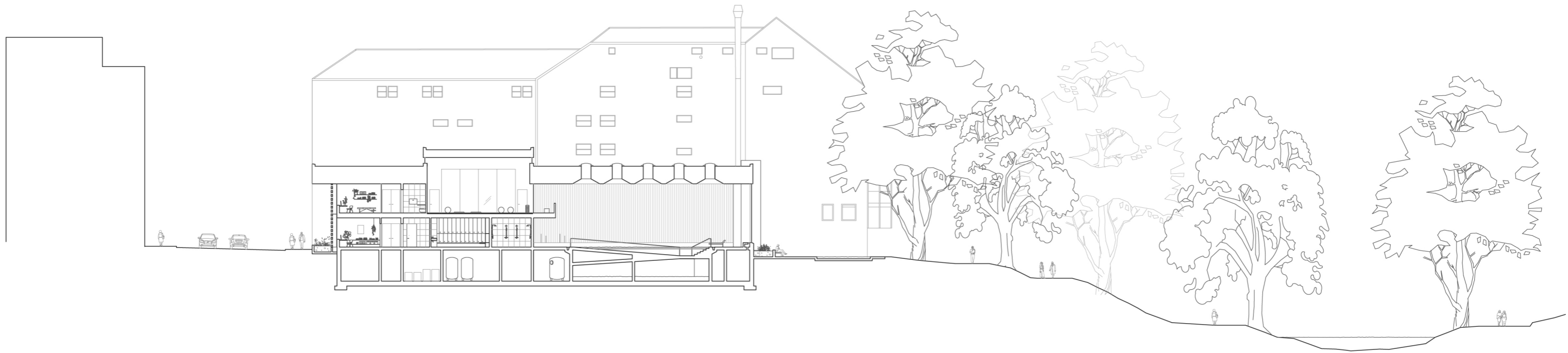


section BB



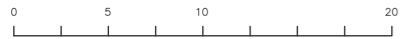
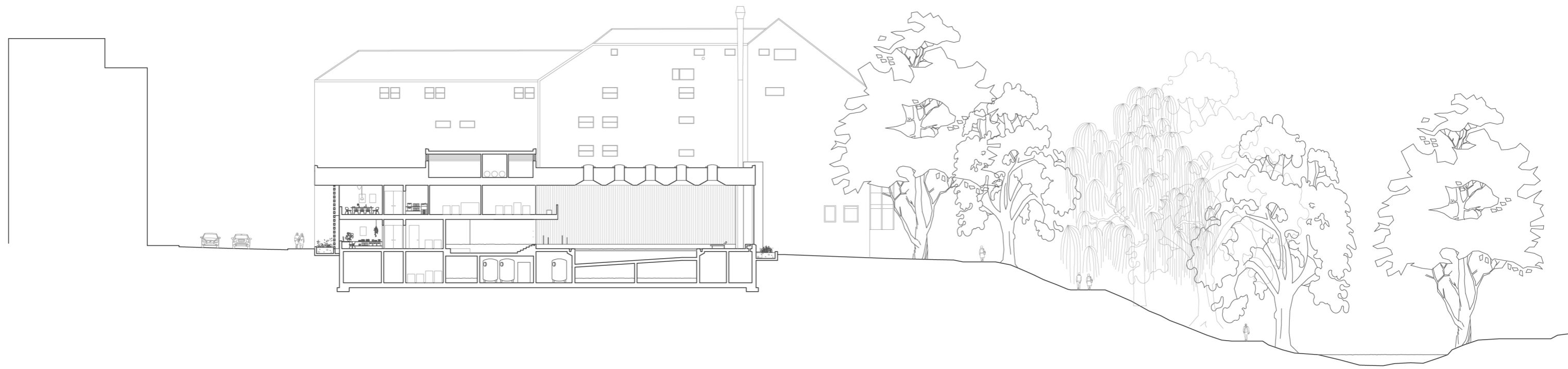
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section CC

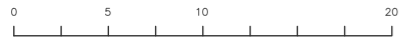


section DD

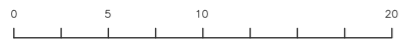
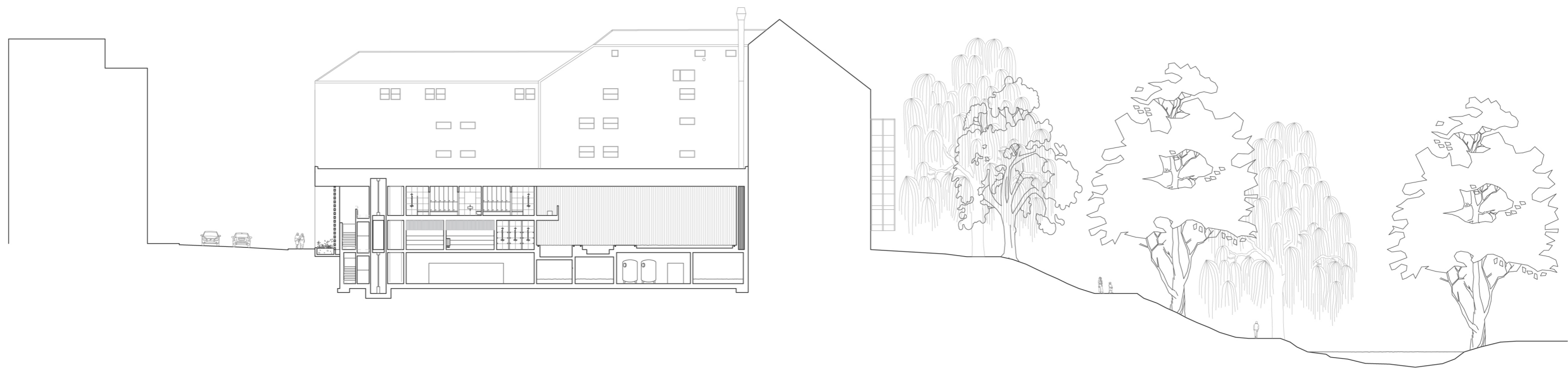




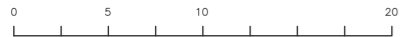
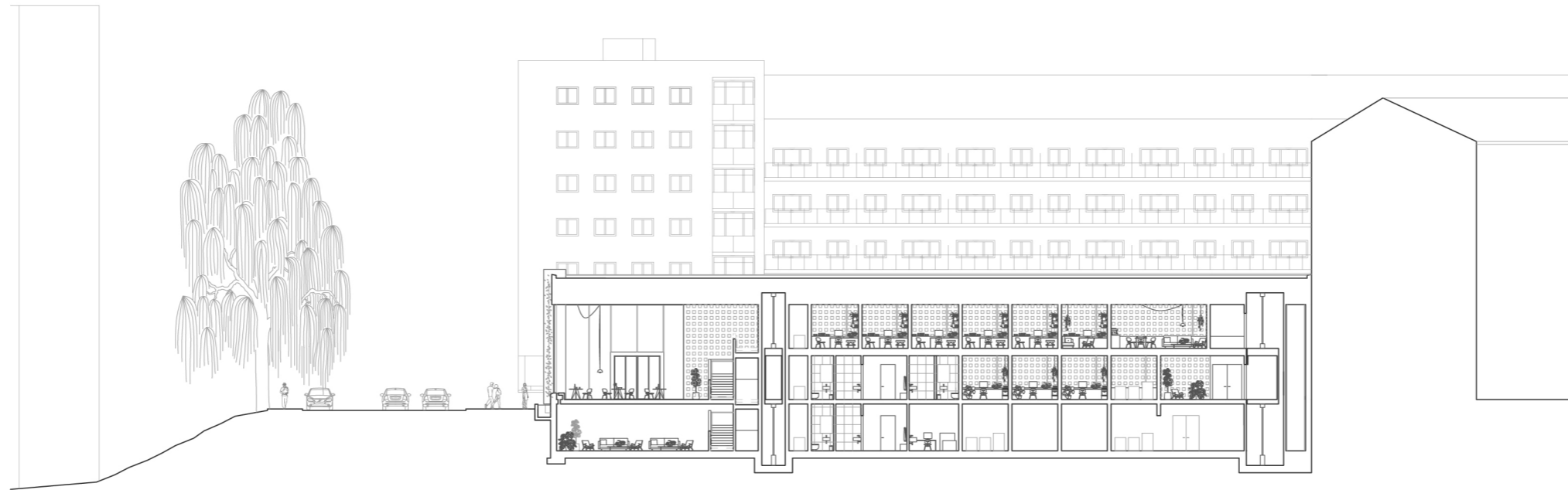
section EE



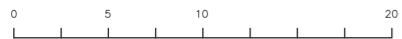
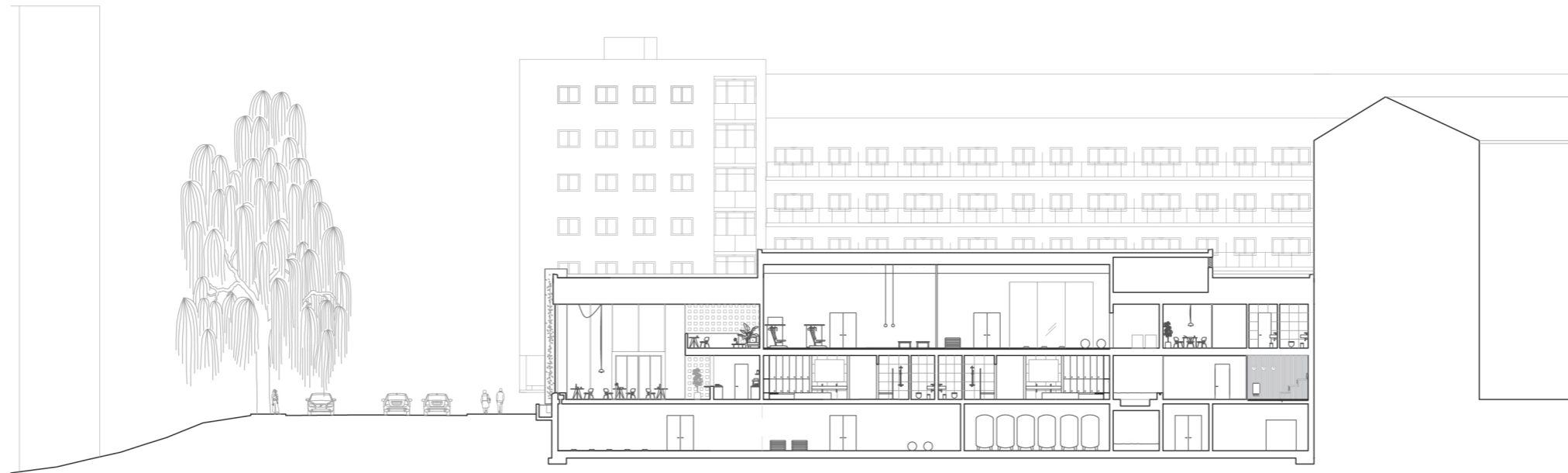
section FF

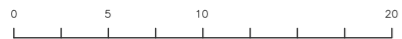
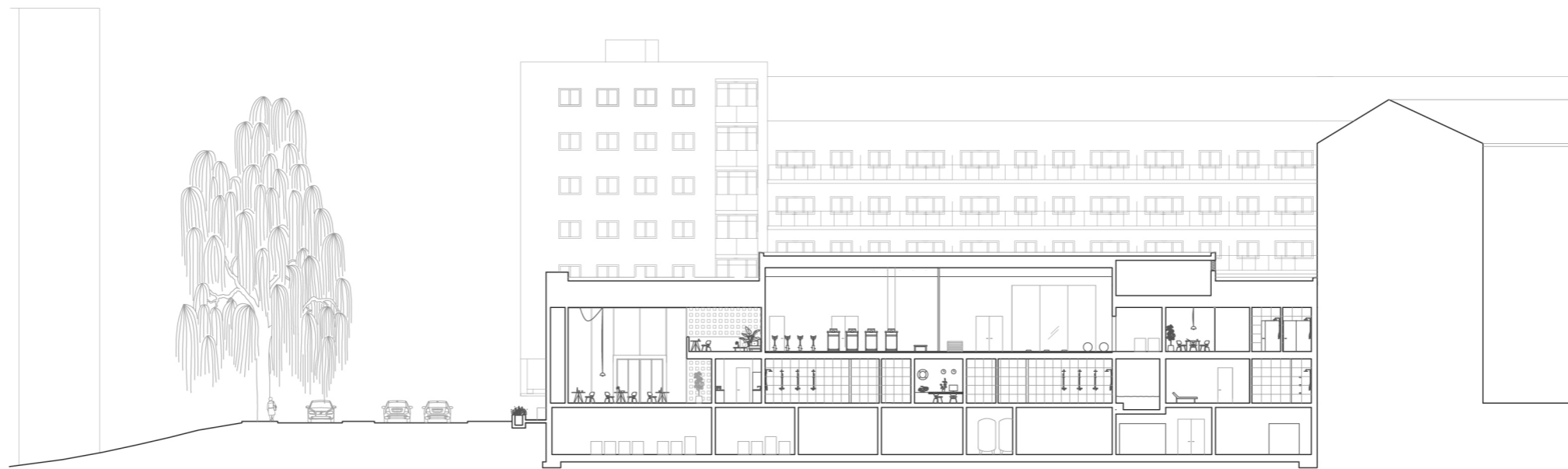


section GG

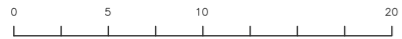
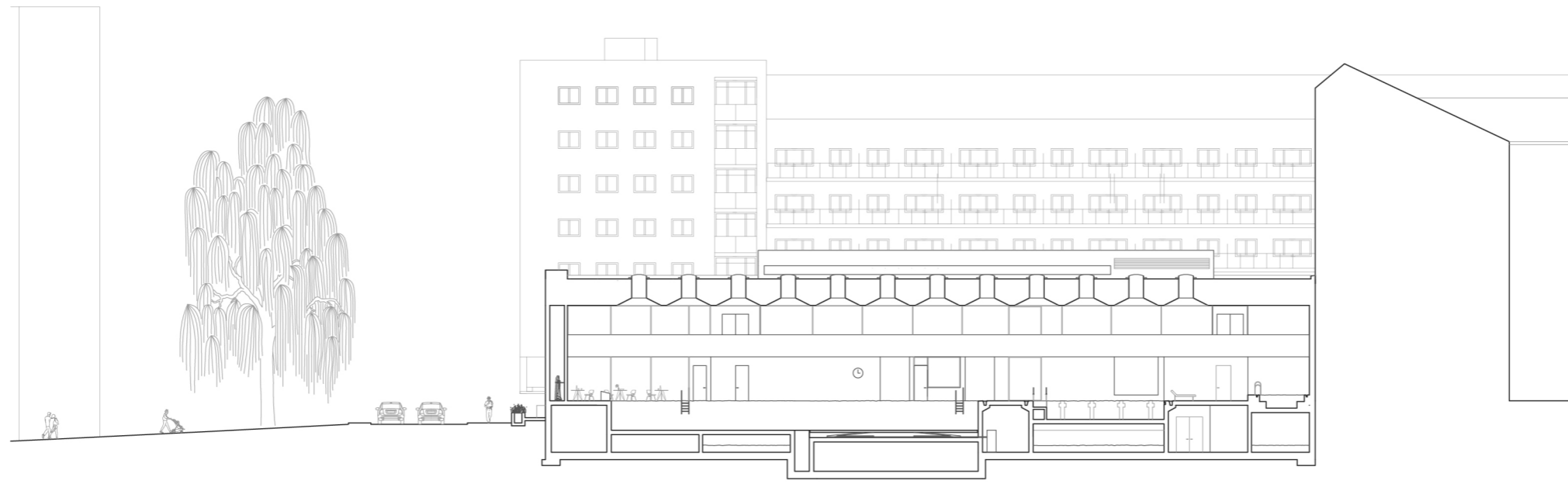


section HH

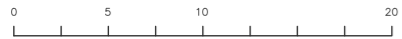
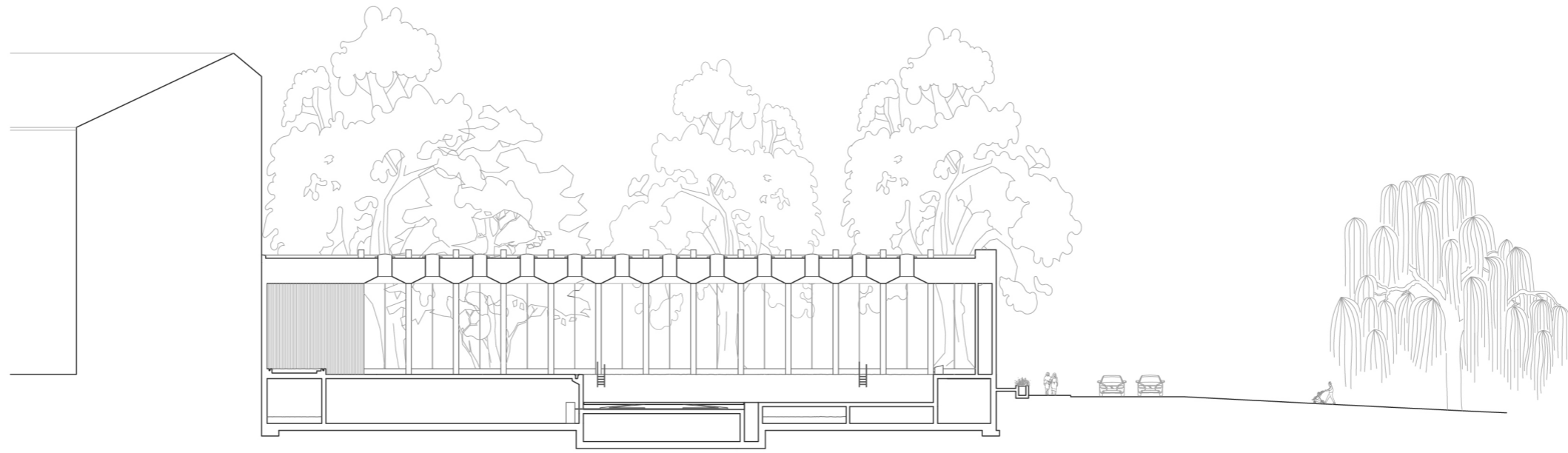




section JJ

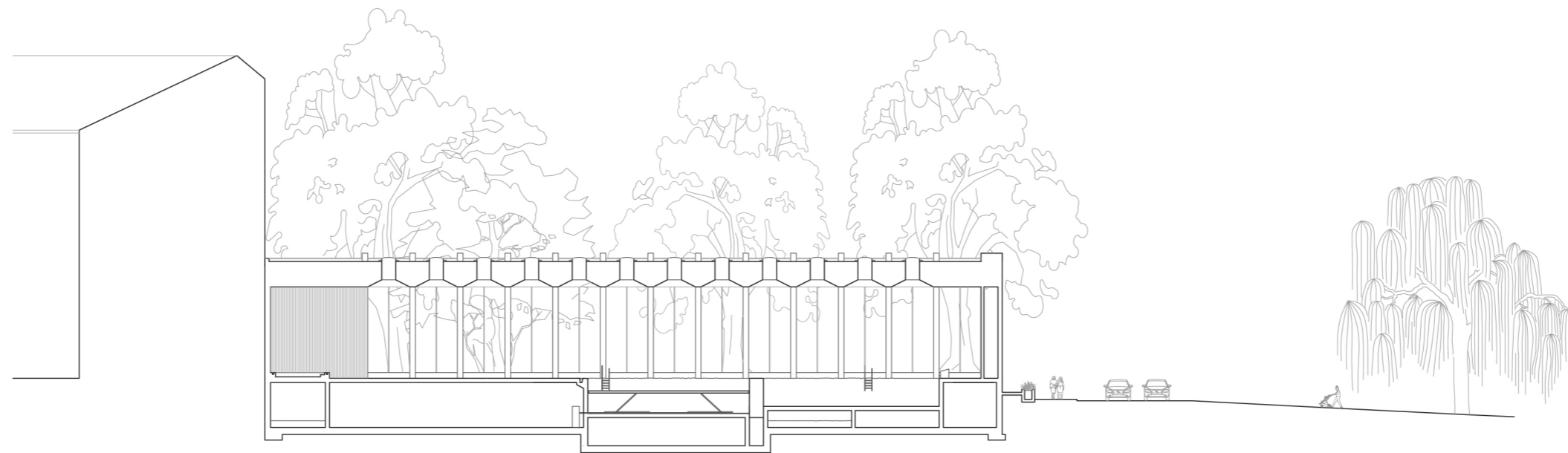


section KK

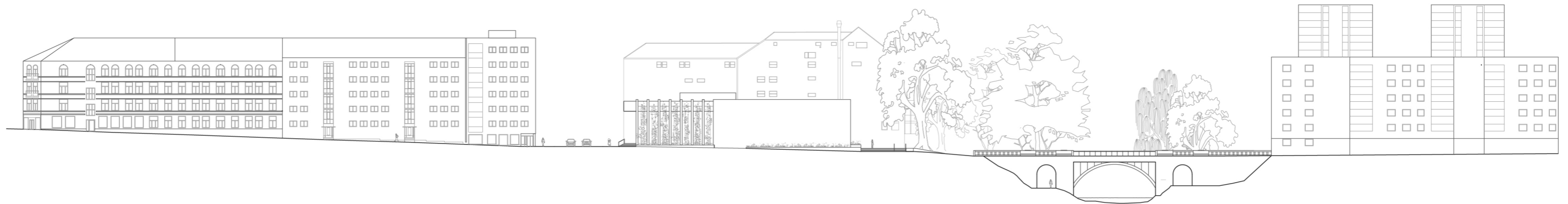


section LL I





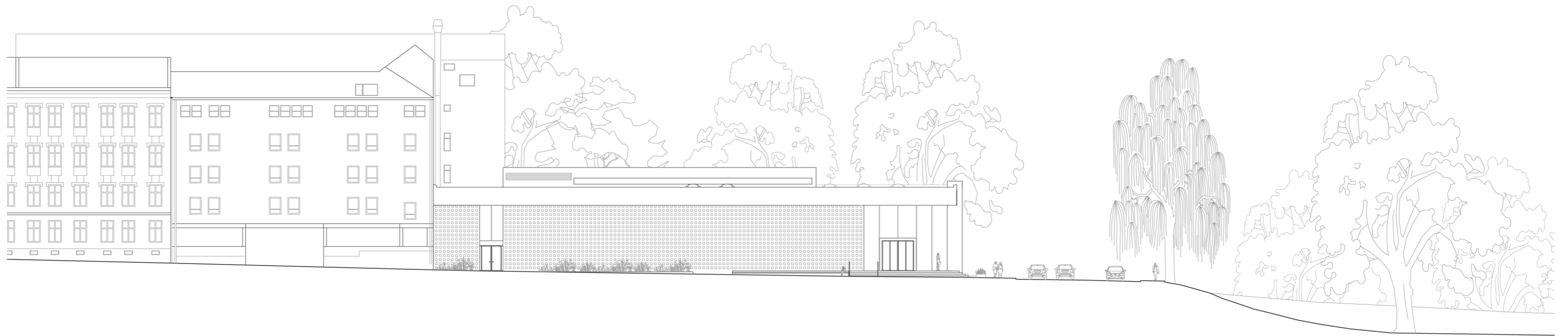
## SECTIONS

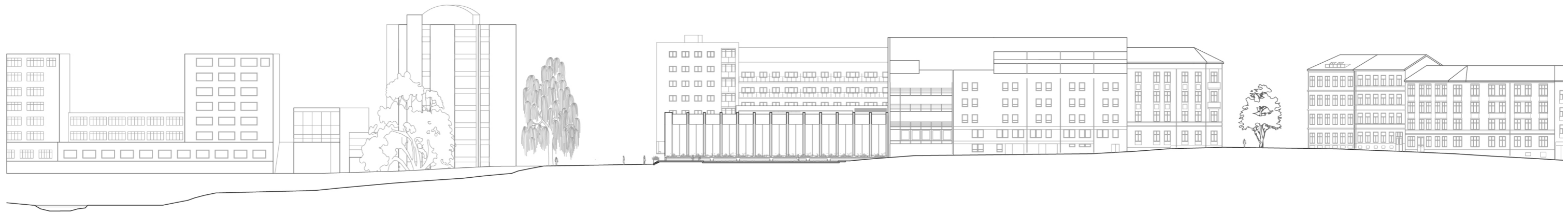


facade Sannergata









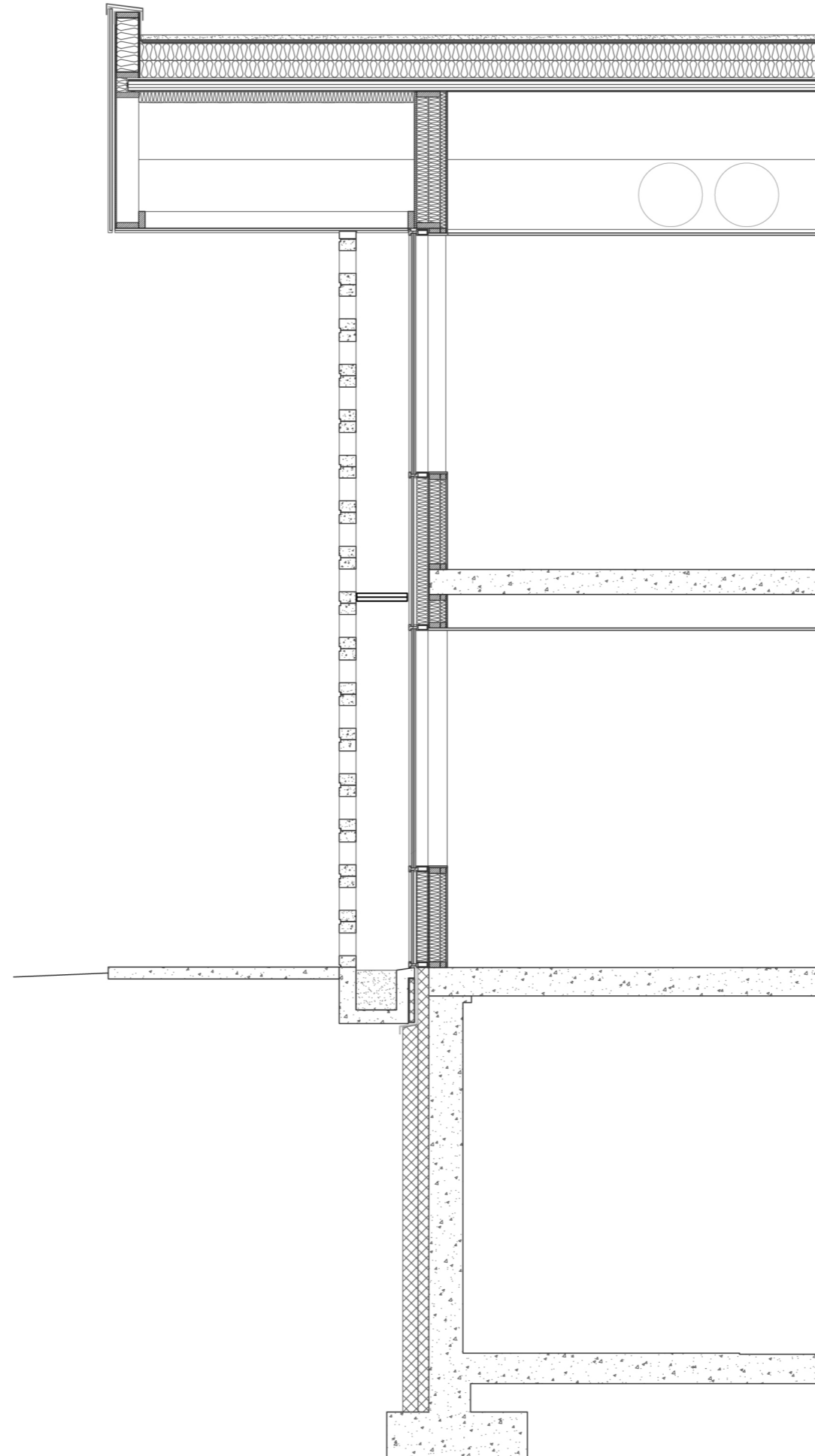


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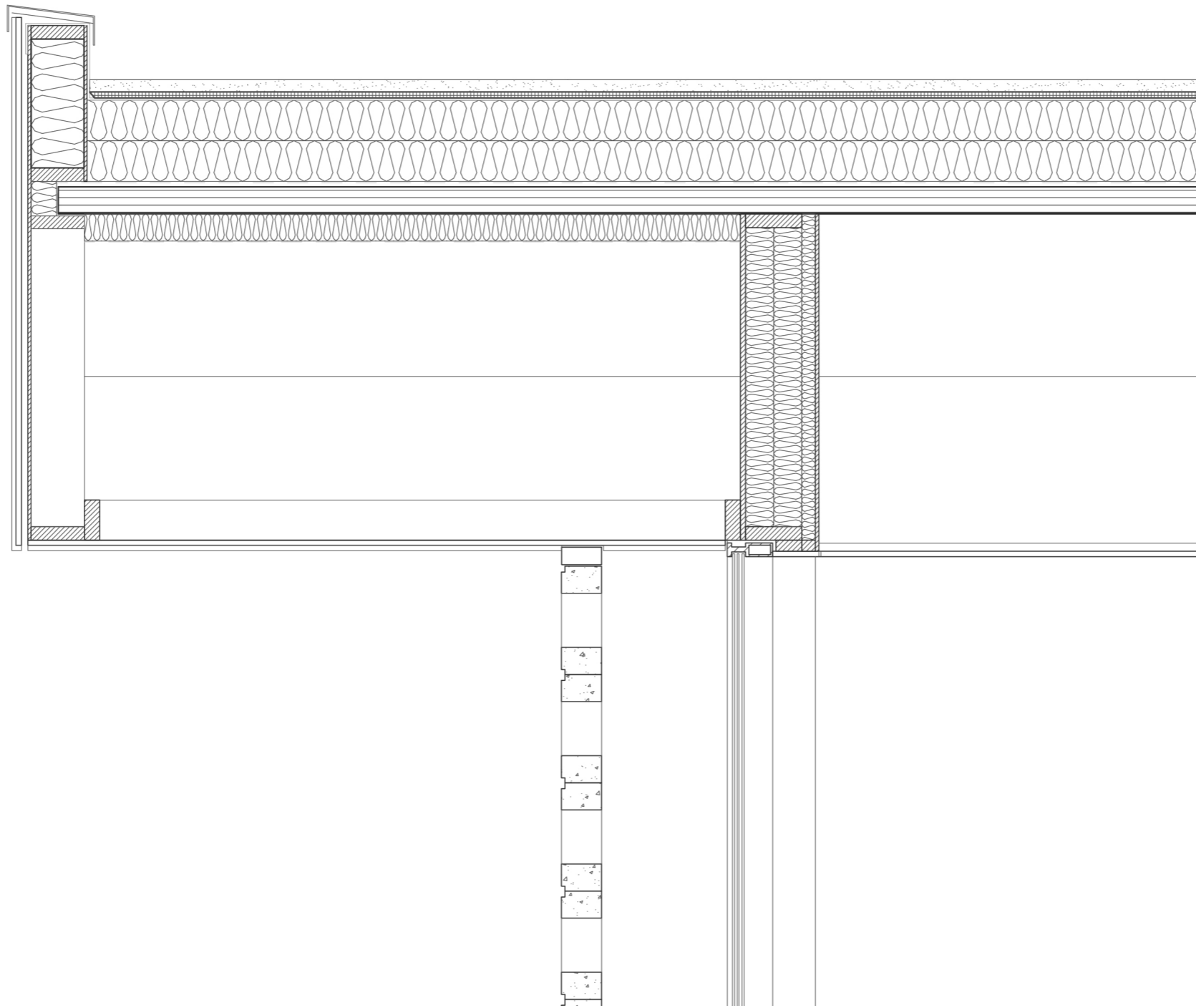
facade Akerselva



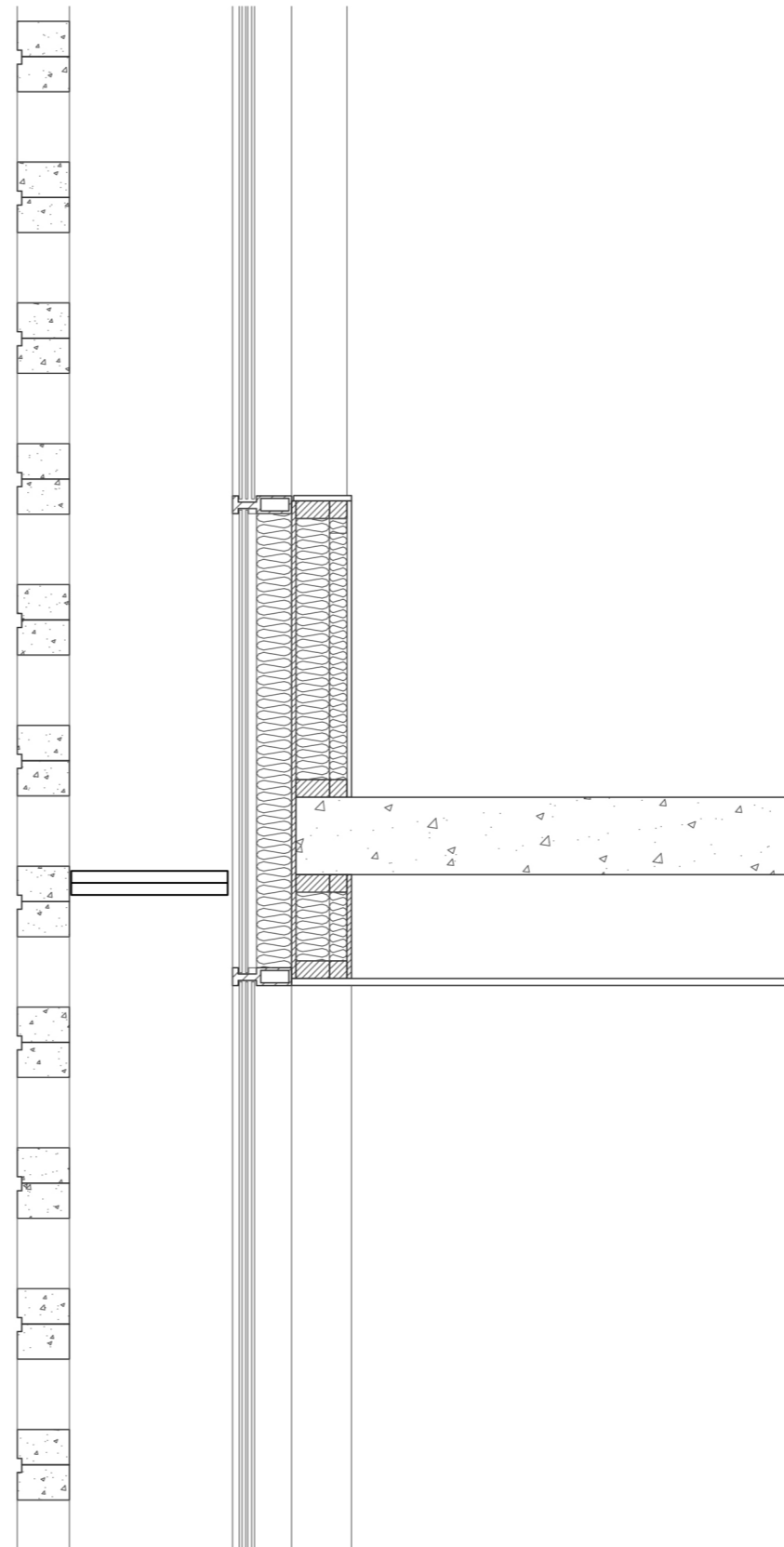
## SECTIONS



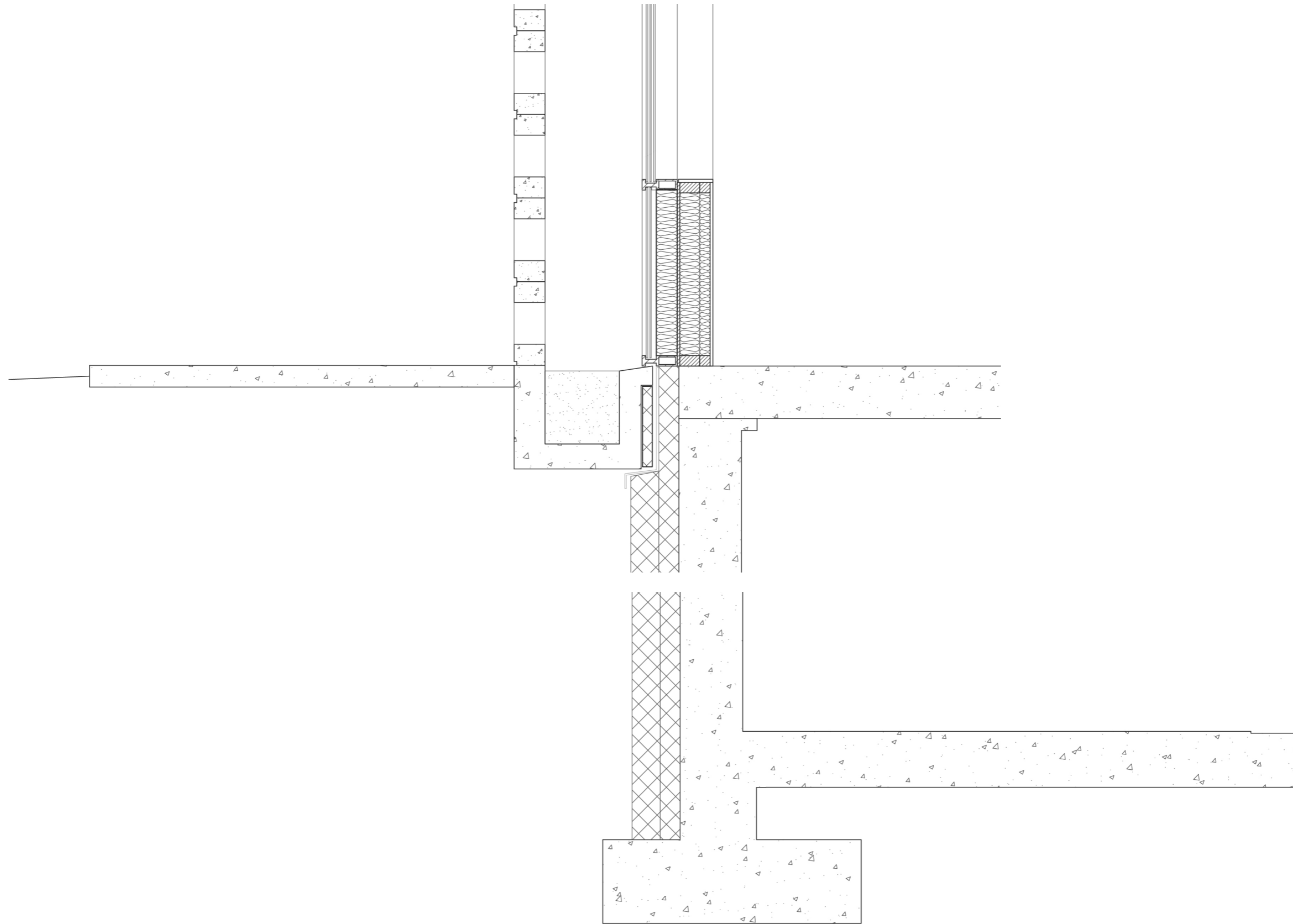
detailed section of facade Markveien  
1:50



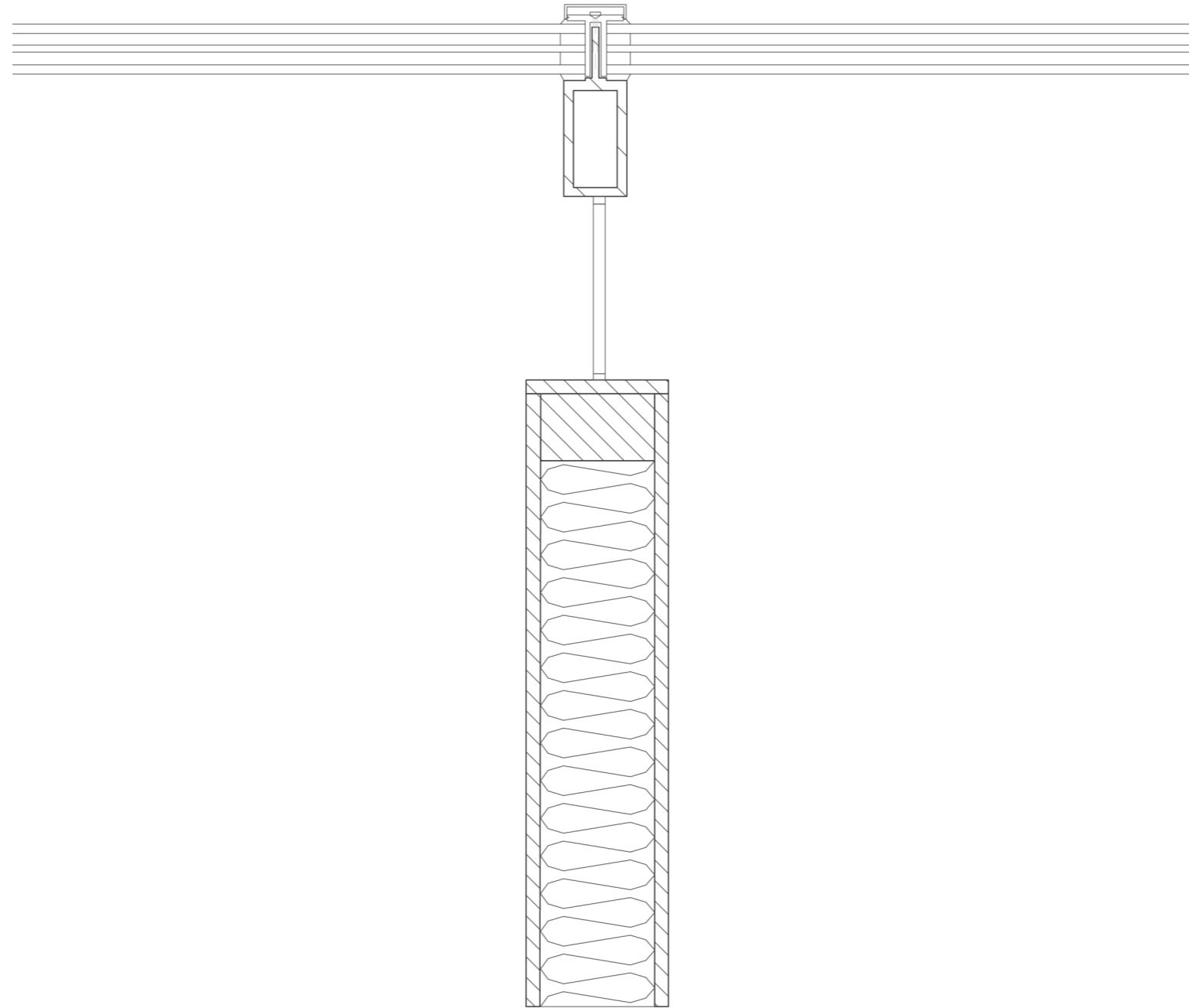
detailed section of facade Markveien  
1:20



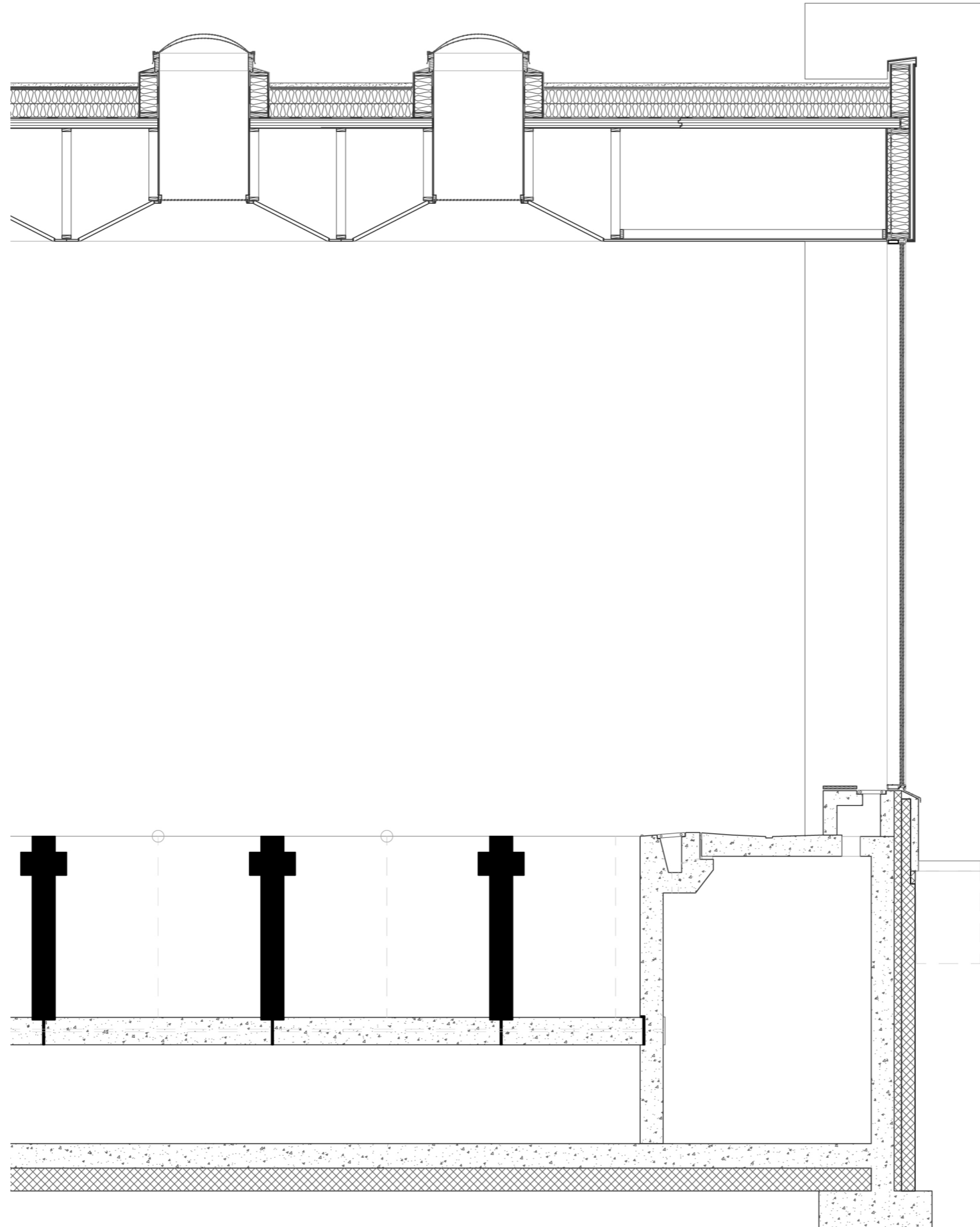
detailed section of facade Markveien  
1:20



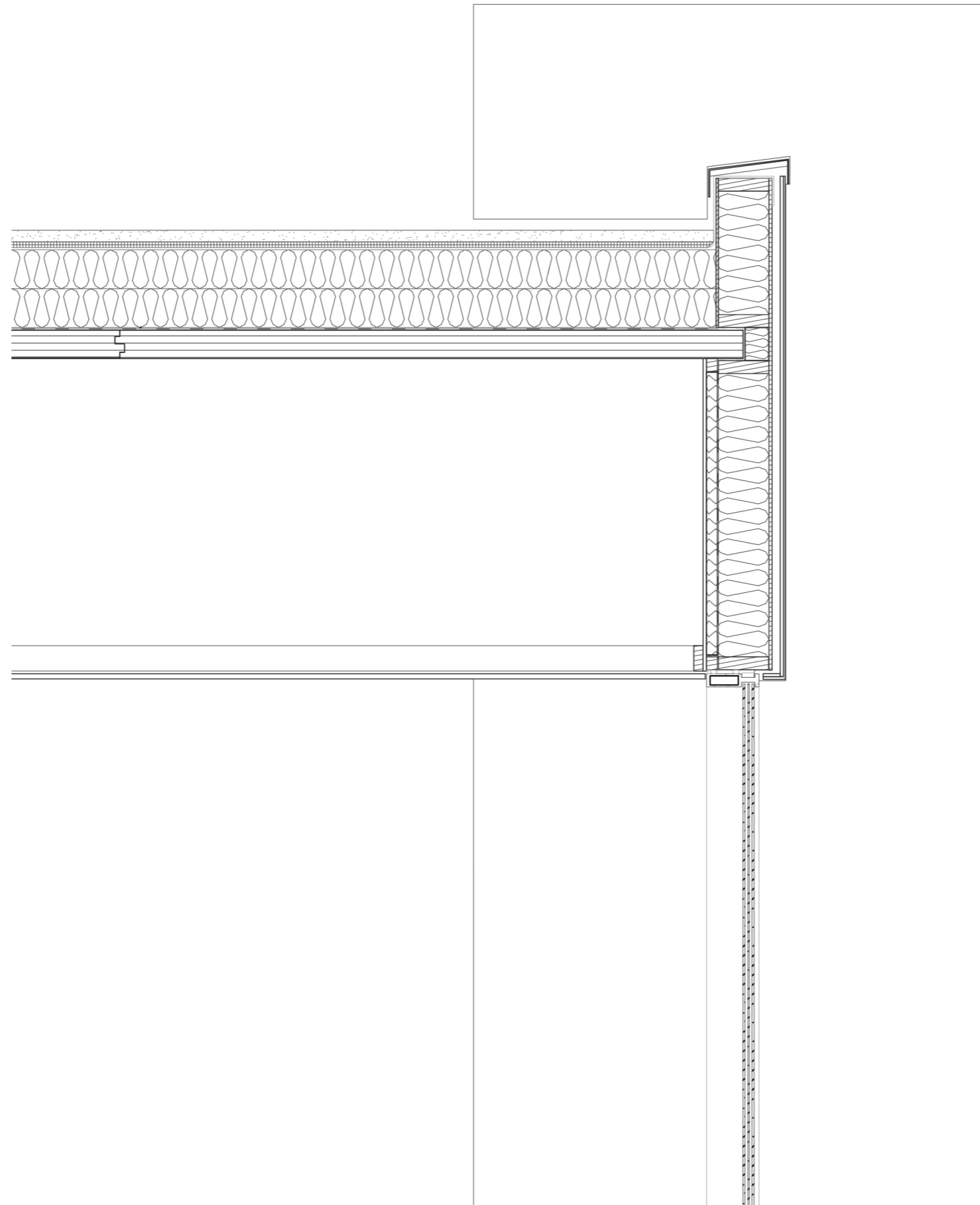
detailed section of facade Markveien  
1:20



horizontal section of window, facade Markveien  
1:5

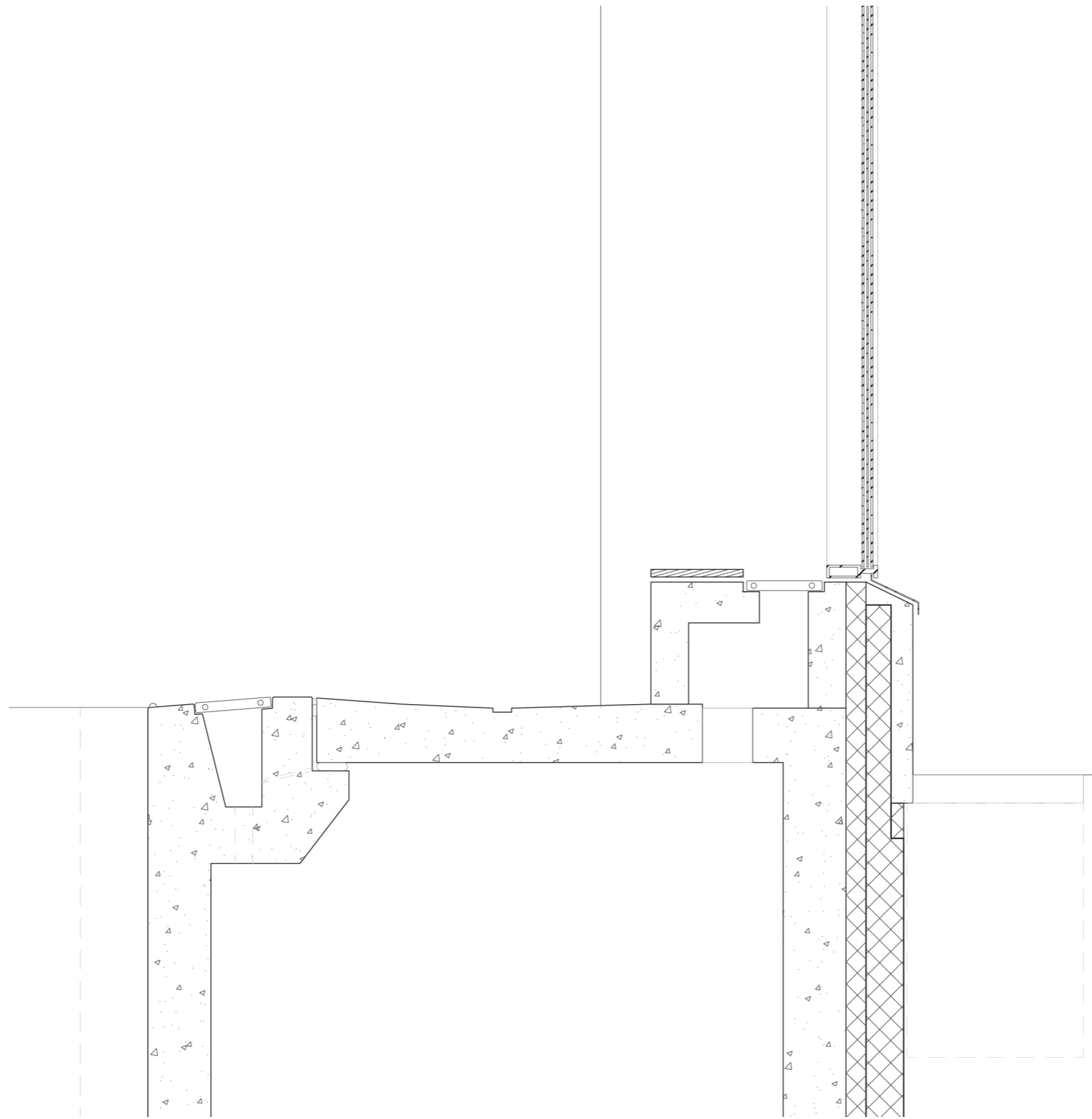


detailed section of facade Akerselva  
1:50

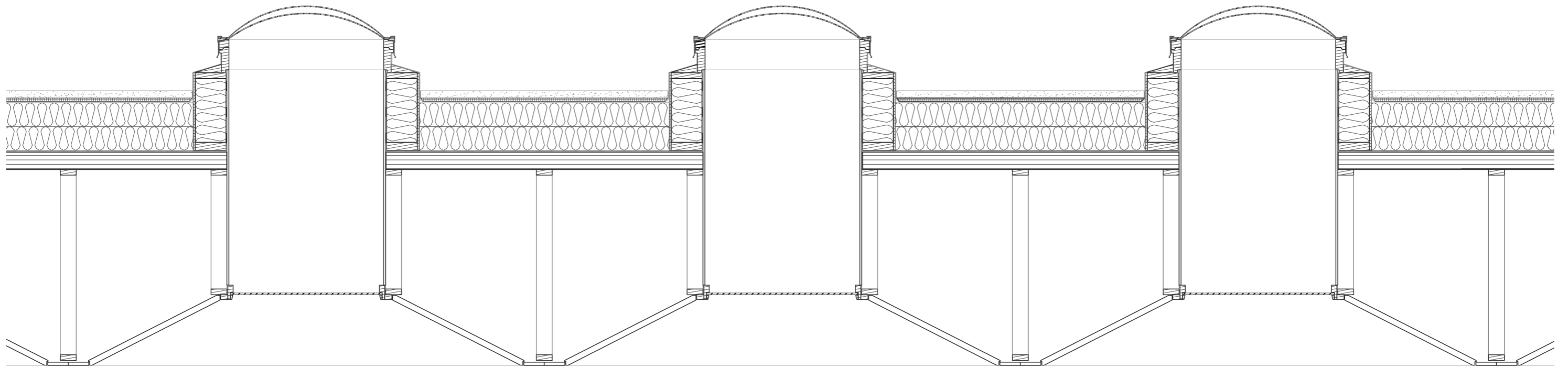


detailed section of facade Akerselva  
1:20

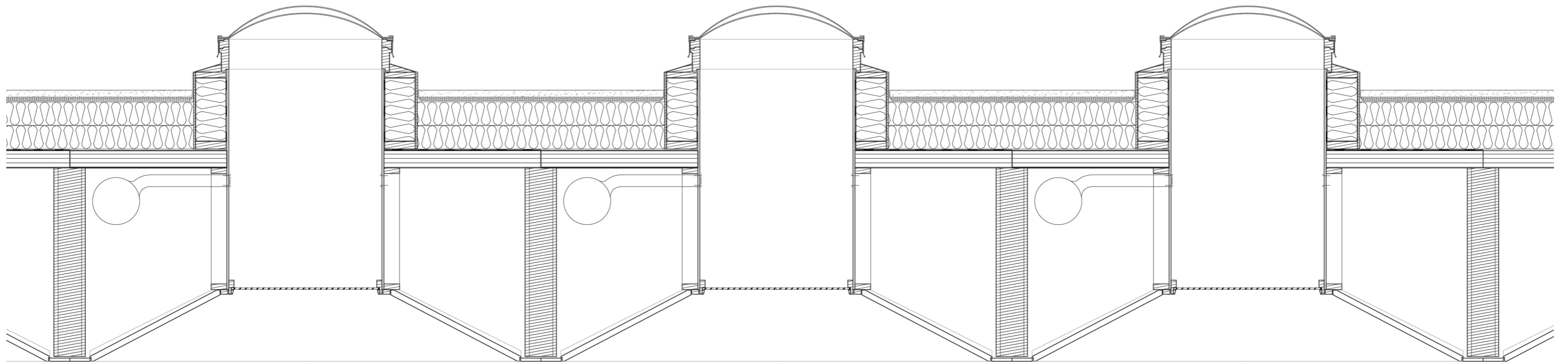




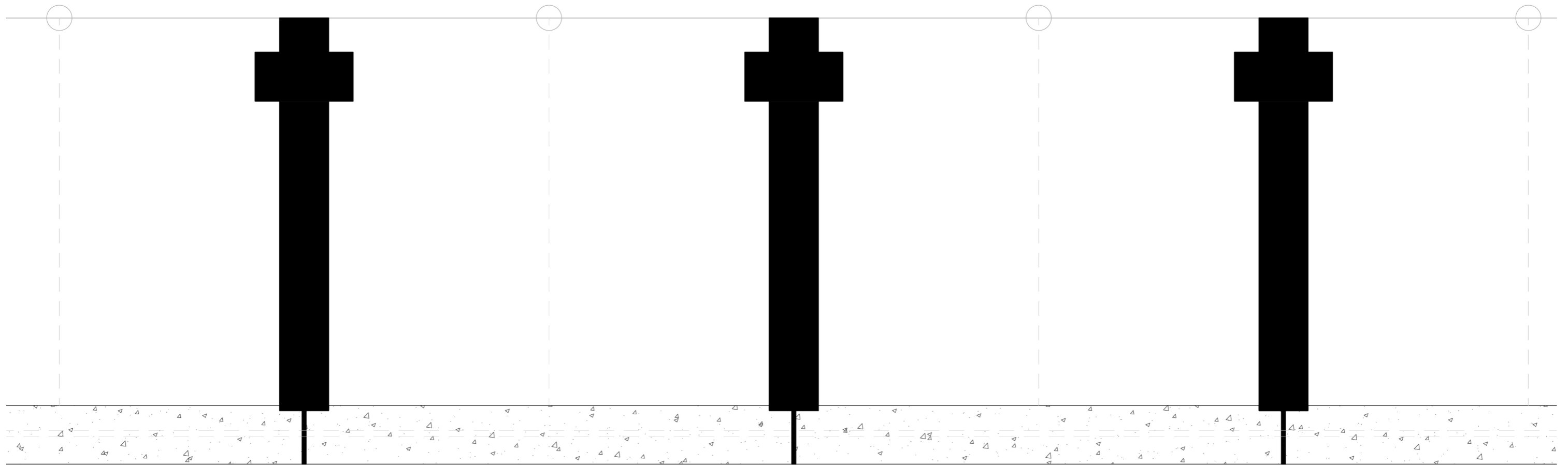
detailed section of facade Akerselva  
1:20



detailed section of roof structure  
EW  
1:25



detailed section of roof structure  
NS  
1:25



detail of concrete elements in pool construction  
1:20



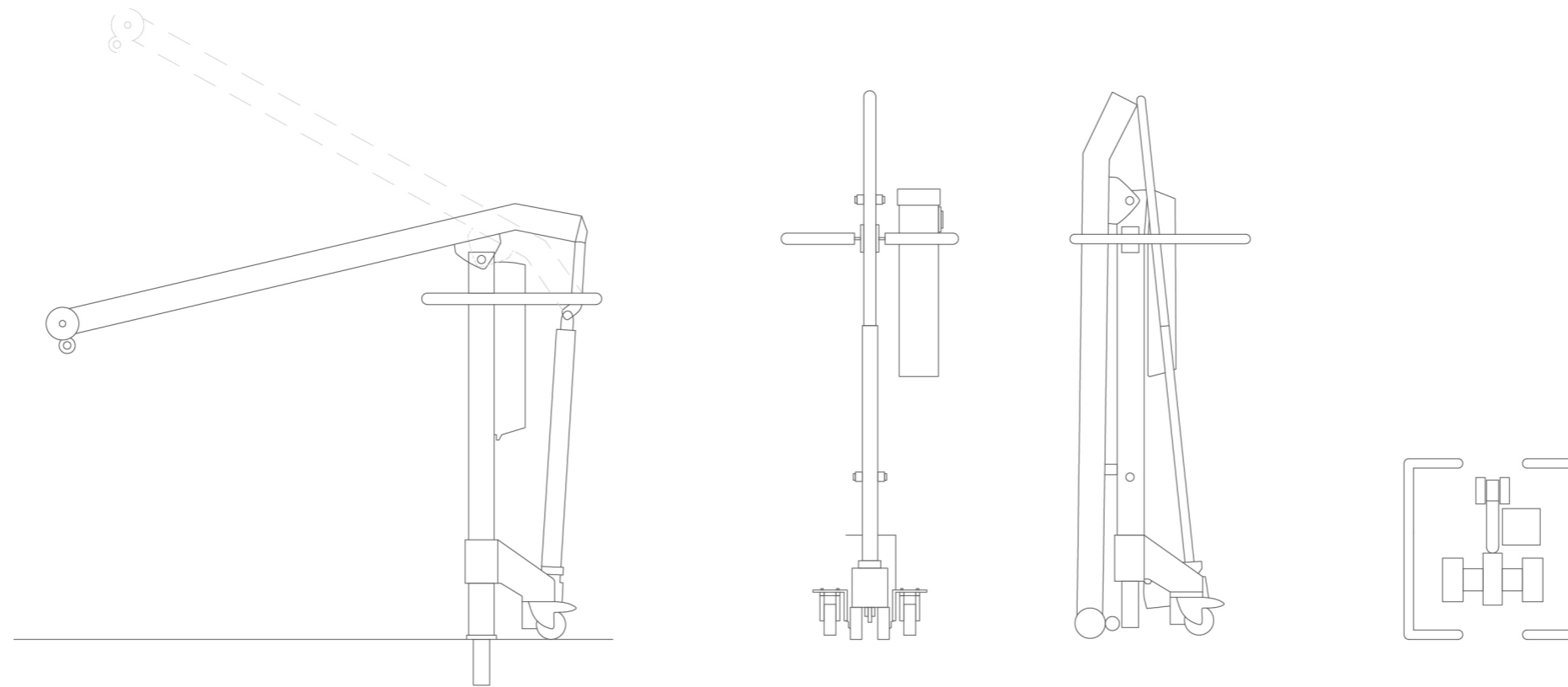
Foyer with cafeteria



Flexible area for relaxing and land training, socket in floor for pool lift



socket for pool lift



pool lift, equipment to help people into the water if needed, movable





view from relaxation pool



hot water therapy pool 34 degrees



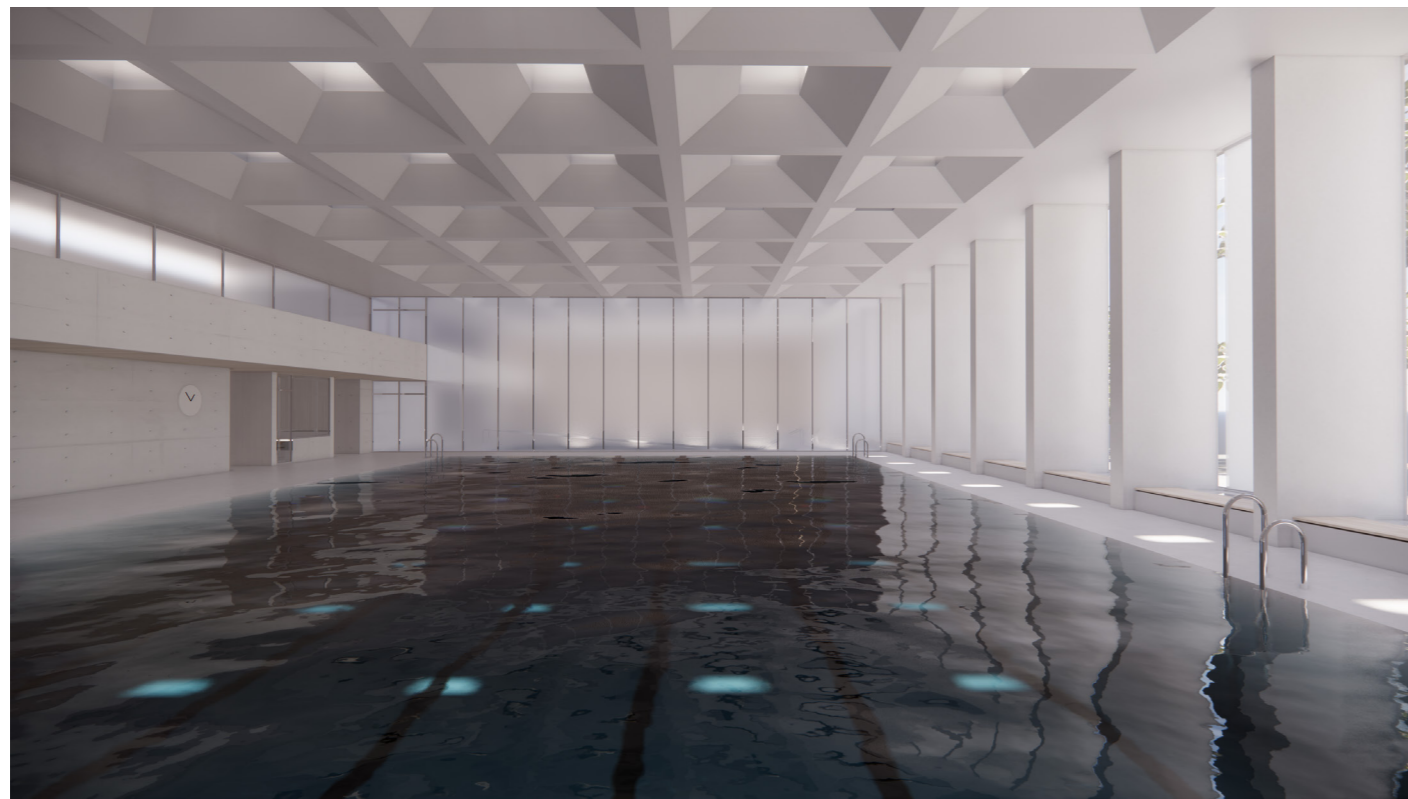
therapy pool, movable element wall



therapy pool, movable element wall



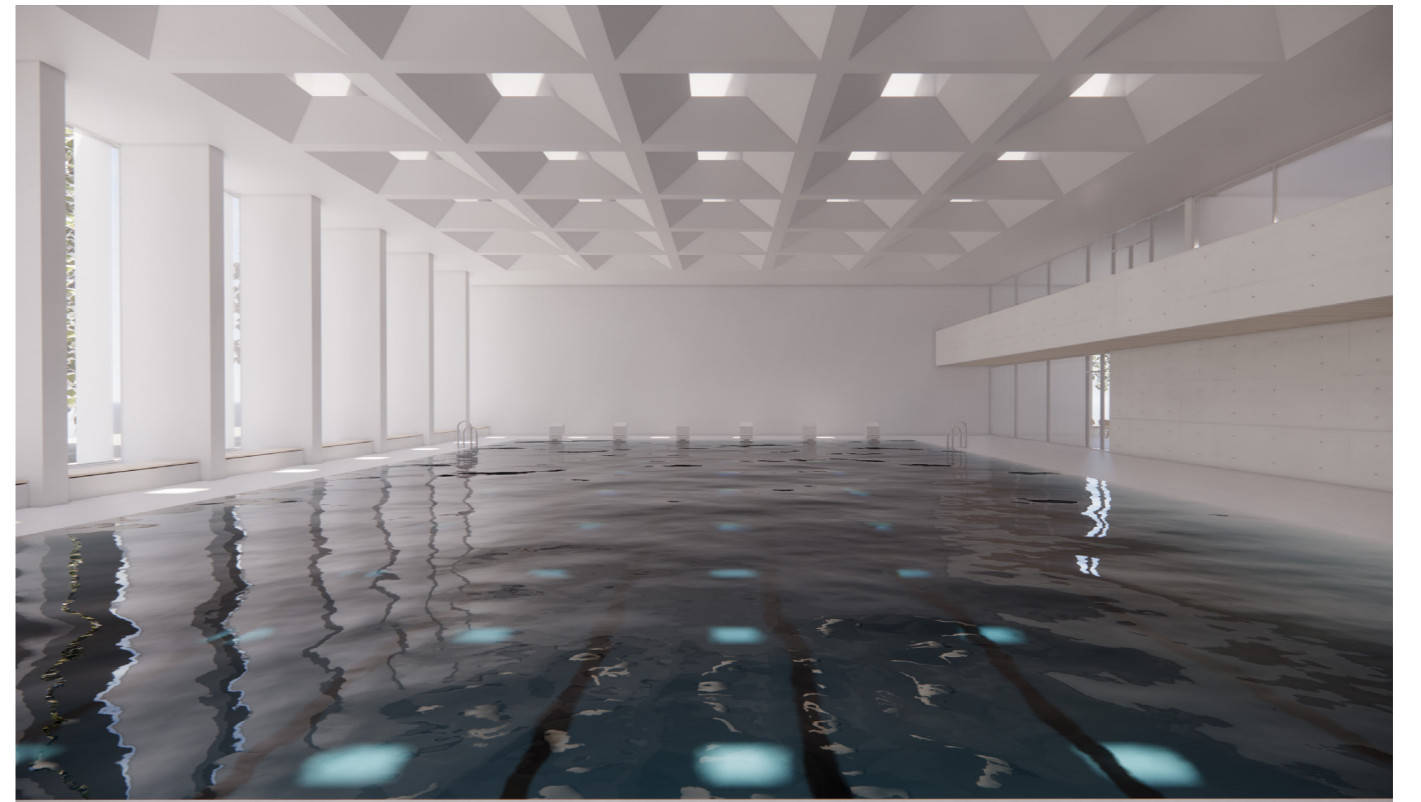
framin nature and light in the city



adjustable bridge in 25 m pool to divide if needed, temperature can be changed in the different parts  
movable element wall



full length pool area, dividing bridge



towards Sannergata, dividing bridge

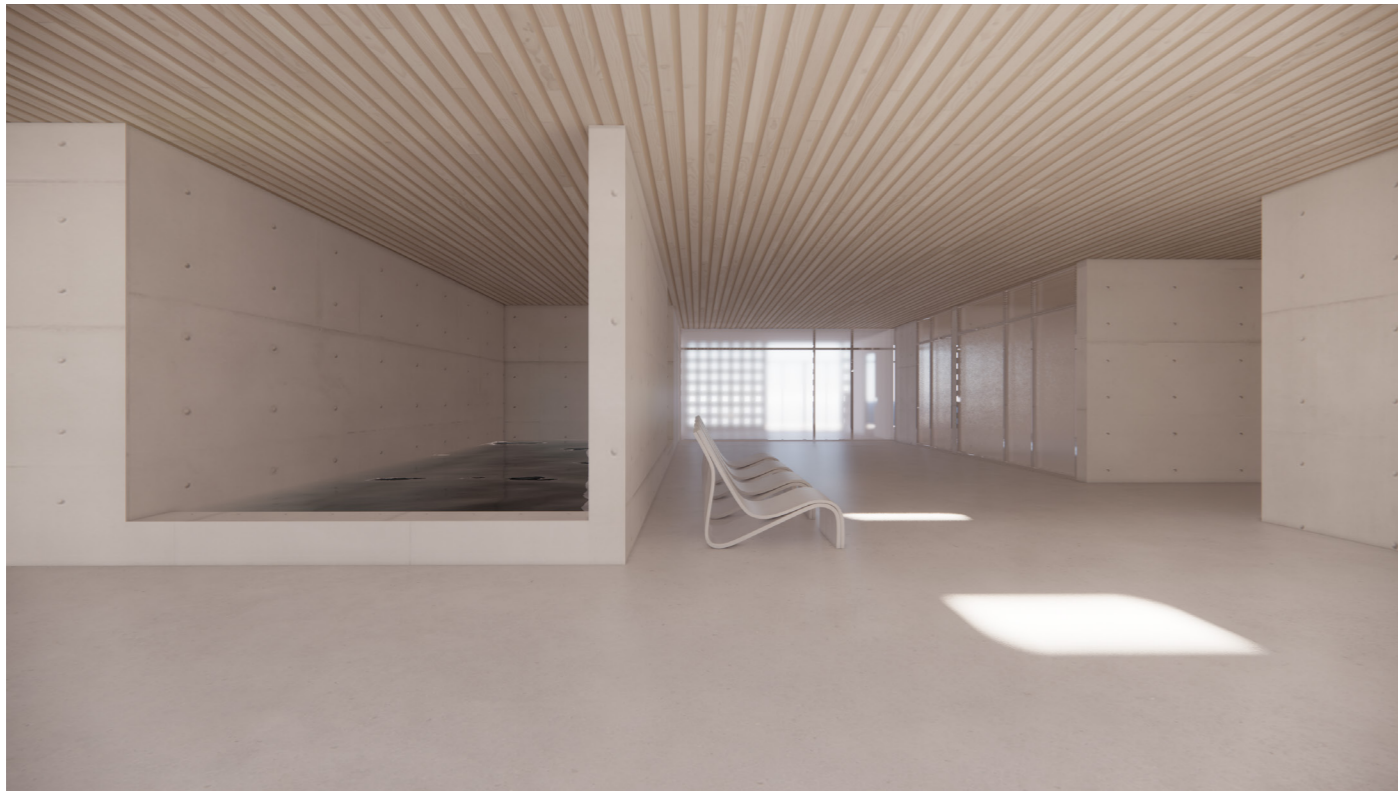




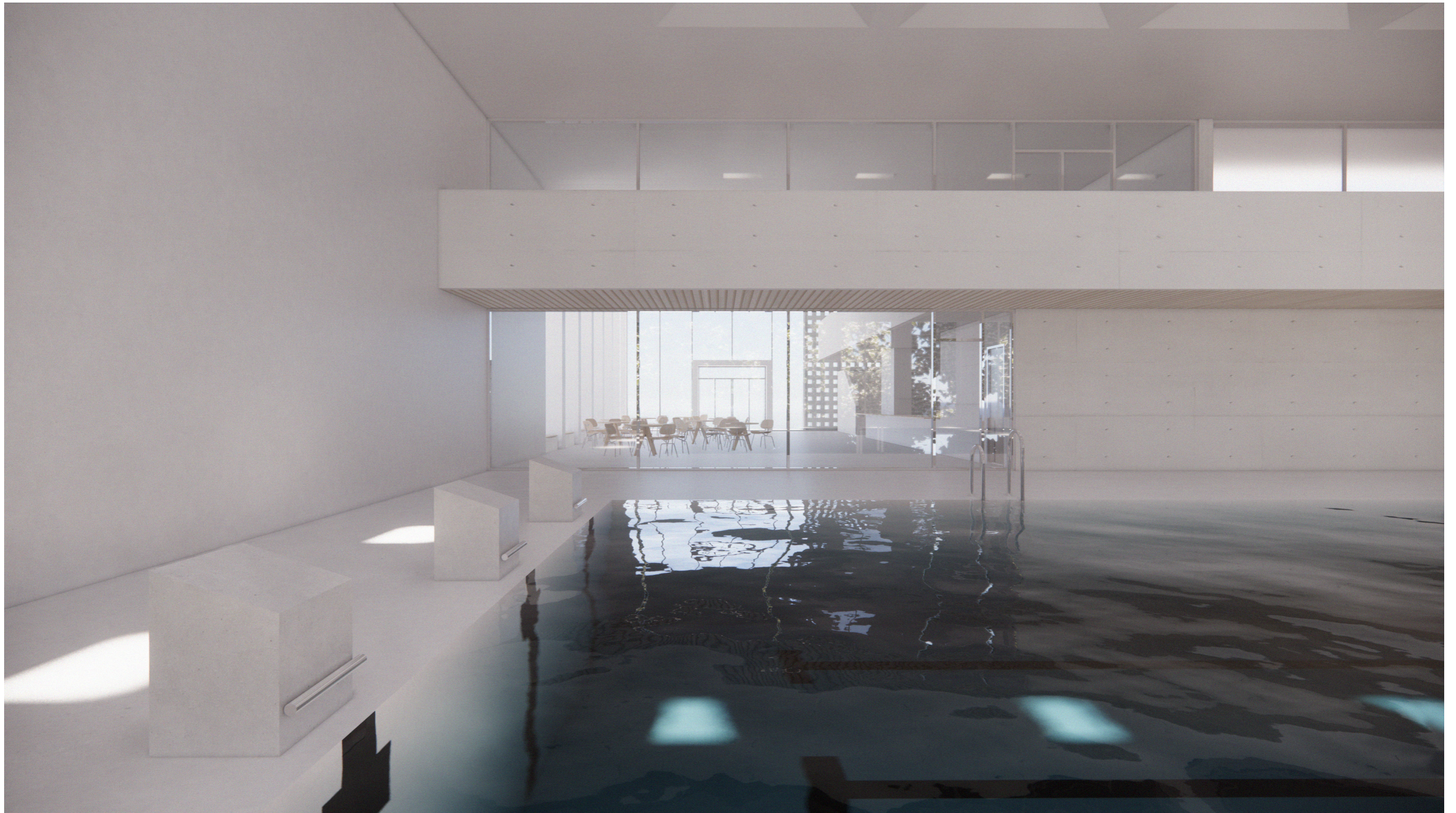
ice bath, hot tub, shallow pool for children



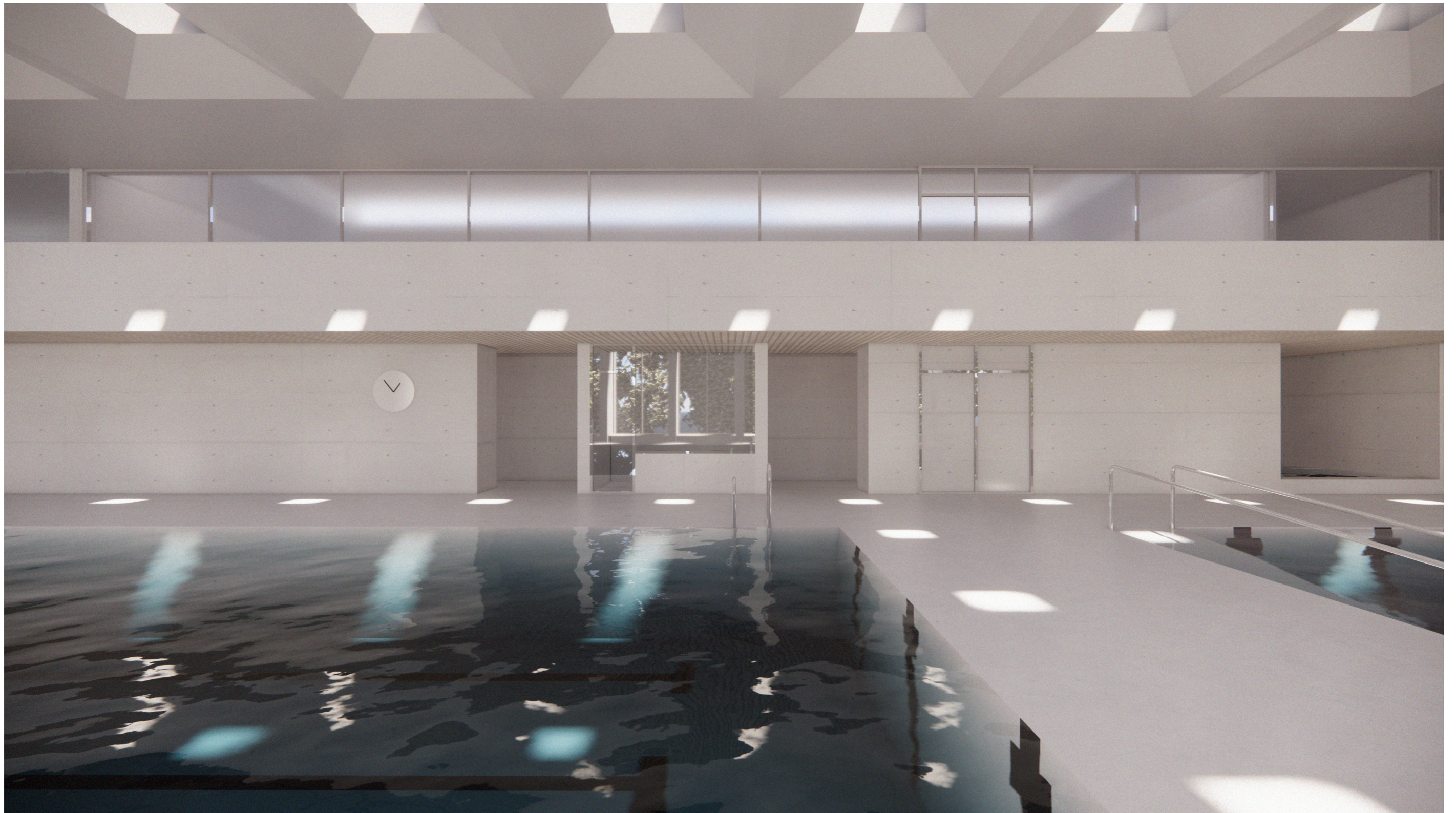
ice bath, hot tub, relaxation pool



therapy zone, relaxation pool, saunas, view towards entrance for personell in Markveien



view towards foyer and entrance



entrance to changing rooms and life guards



therapy zone



entrance for personell, facade shades from activity in street and neighbour



main entrance from Markveien foyer with cafeteria





facade Akerselva , water mirror and seating directed towards the trees and the river