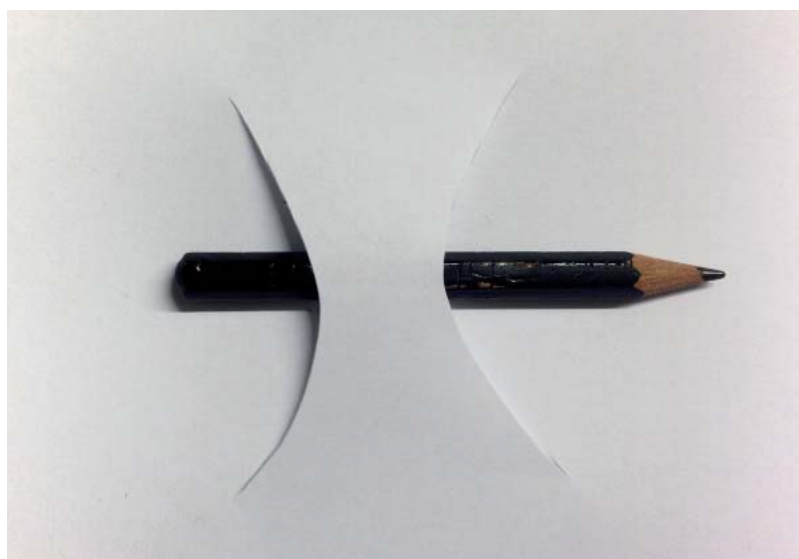




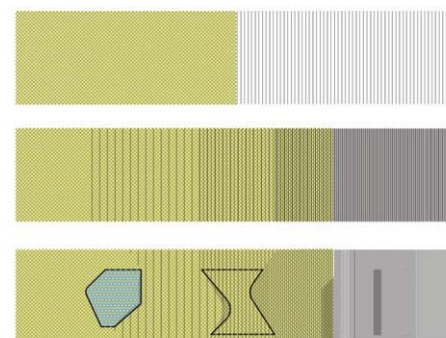
SMART; GREEN AND URBAN - TRYGVE LIES PLASS stage 2 - **FLYING CARPET**



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The Nordic Buildt Challenge
 Submission stage 2
 Booklet Din A3
 Projectname: FLYING CARPET

MXSI Architectural studio SLP, Barcelona
 Mestres Wåge architectes SLP, Barcelona
 DOF- Degree Of Freedom AS, structural engineers, Norway
 Granlund Consulting Oy , Finland



Generation of form:

- A existing situation
- B blurring borders between green and grey
- C programmatic cuts defines final shape

THE FLYING CARPET

CONCEPTUAL URBAN OPERATIONS

An urban recycling operation consisting of the following operations:

1. insertion of a green mobility center as continuous surface and facade of the plaza which acts as a dynamizer over an existing area,
2. densification of existing alignment trees and reduction of parking.
3. asymmetric arrangement of wheeled traffic circulation.

Superficial interventions reconfiguring the existing urbanization (perforations, fillings, paint, etc.) that defaces the executed kerb development.

There are two main objectives: one of a social nature, aimed to generate urban, economic, cultural, sport, recreational, activities in a multipurpose space, and one of an environmental nature: The bioclimatic adaptation of an outdoor space reacting differently according to the weather conditions.

The formal concept has three main components:

- 1)Green gradation to urban public space
The green from the park blurs into the public

open plaza in a gradual way that allows different natural and urban atmospheres.

2)Urban topographical carpet

The site is understood as a continuous carpet that alters its geometrical topography in order to host with a very simple gesture -a curvilinear folding-, the green mobility center in one of its sides, and a water natural element in the other.

3)Programatic urban actions

Different kind of programs and seasonal events can be possible in this new plaza in order to create and promote identity and citizenship appropriation (green-Furuset, art-Furuset, play-Furuset, light-Furuset, shop-Furuset...)

URBAN MEDIATION SPACE

The main intention of these operations is to enhance an urban space that can shape itself depending on the seasons, program, flow, public activities, natural conditions and gradients of new possible mediating spaces in order to promote representativeness and multipurpose public experiences.

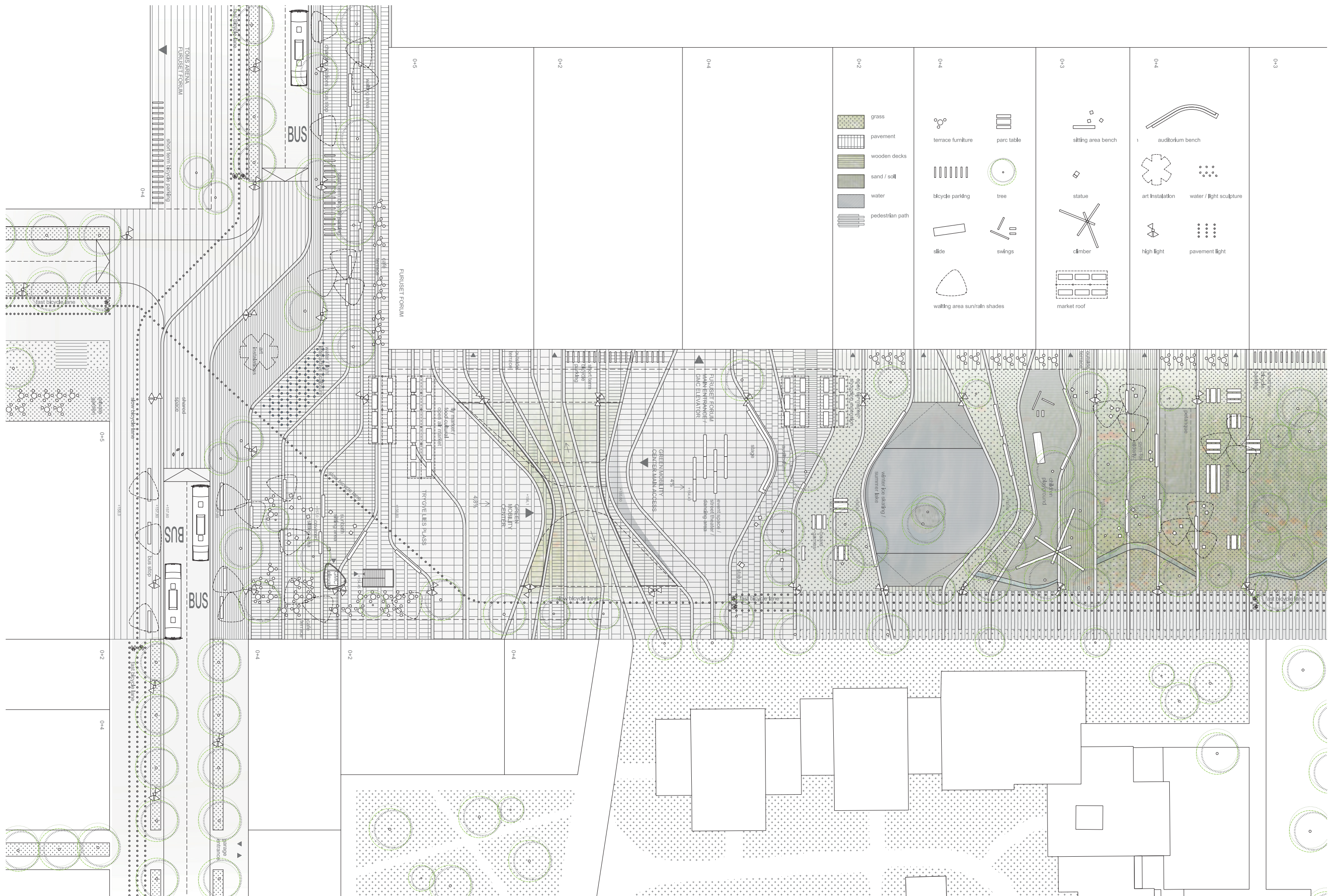
GREEN MOBILITY CENTER:

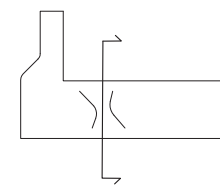
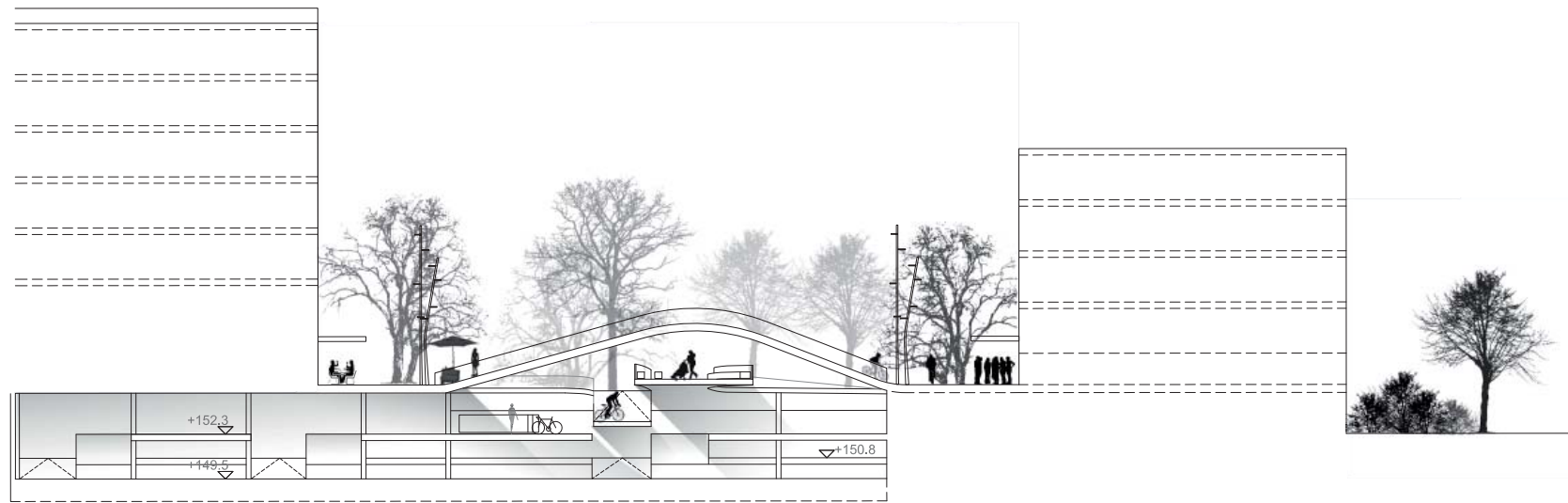
The existing parkinghouse on the plaza is transformed into a Green Mobility Center (GMC). The center has a curved roof which marks the entrance. GMC is shaped for movement across, under, around and the center can be entered from south and north. The roof covers the ramps to the existing parking garage. Car parking on plaza level is removed, and the upper level of the garage is used for bicycle parking. Lost parking spaces are recovered by extending the garage towards south and east or by using basement- space in new buildings surrounding the plaza.

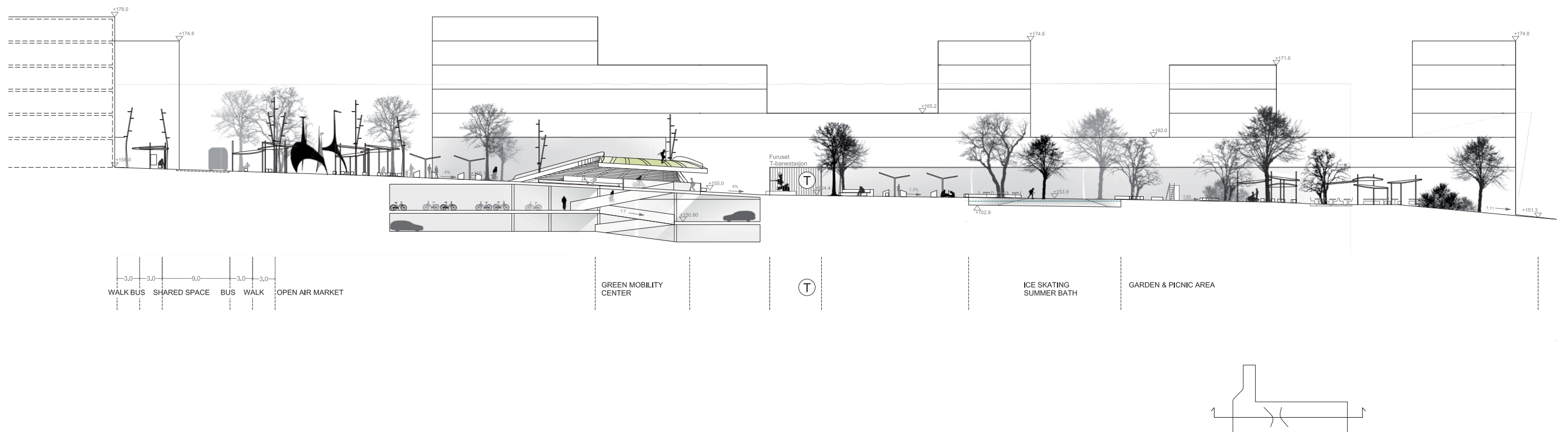
The green mobility center will contain charging stations for electrical bicycles, electrical cars, bicycle repair shop, and parking for bicycles electrical cars and "normal" cars, info and ticketsale for public transport. The idea is to enhance the transition towards sustainable means of transport and facilitate the shift from one to the other.

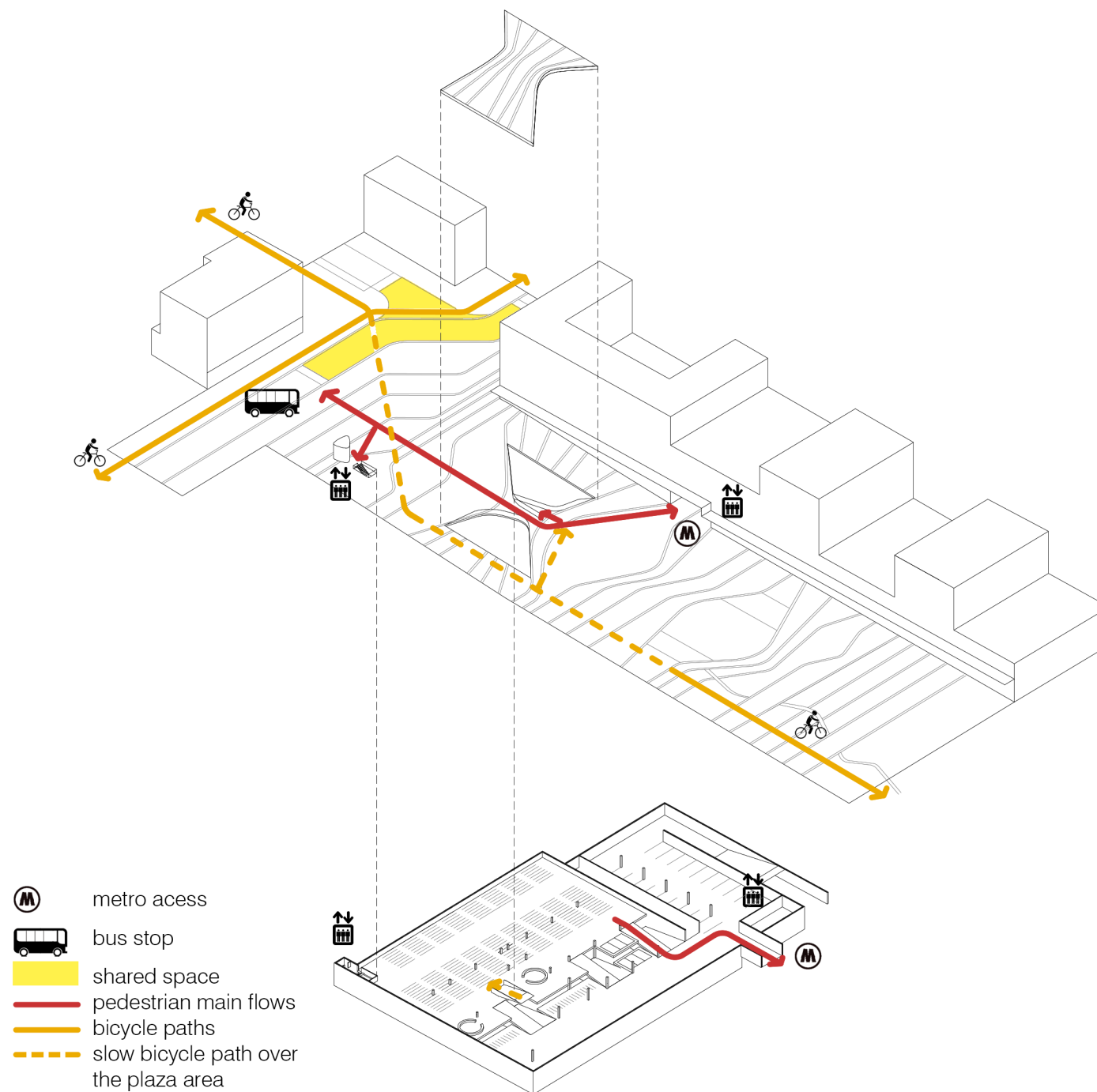
WAITING

Rather than traditional waiting areas close to the bus or metro the plaza has infopoints in several locations. This decentralization of info points populate the plaza and allow for waiting time to be used for other activities.









MOVEMENT/ MOBILITY:

The proposal understands Trygve Lies Plass as a field of mobility in the junction between carpark, T-bane, Bus stop, bicycle parking.

The plaza is shaped as a continuous topographical surface which allows free flow of people and vehicles except cars. "Slow and fast" areas are defined by change in topography, material, vegetation, lighting.

All main functions can be accessed by universally designed steepness, but some areas brake with these principles to enhance challenge of movement, fun for wheelchair, bicycle, skateboard, skis, skates...

Bus traffic is limited to the shared space in the main street, the bus stops are also located here.

The lane for bicycle that crosses the plaza has one fast zone that brings the cyclist to the plaza and one slow crossing the mobility plaza where there is a mix of pedestrian and bicycle movement. The zones are indicated in the pavement.

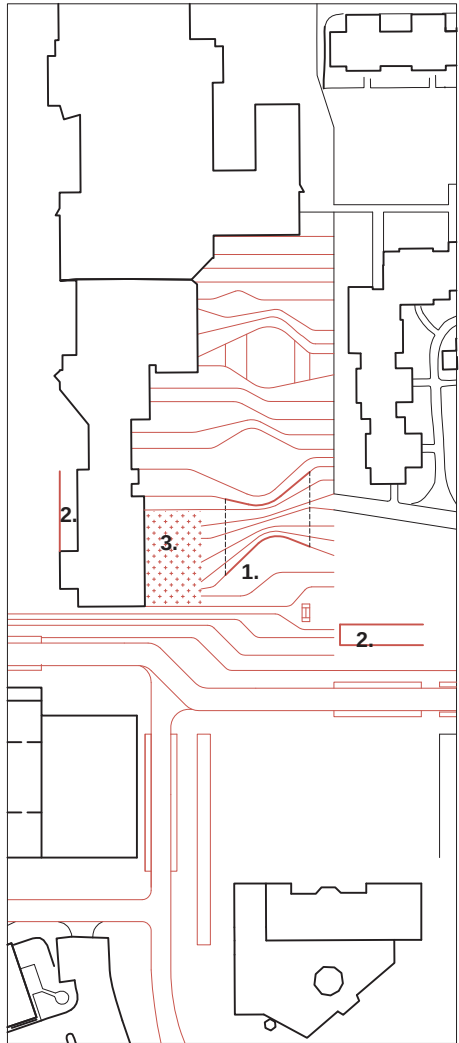


TUNED SCAPES

Although the plaza is expressed as one continuous carpet some areas are being tuned through transformation of pavements, material, furniture, playgrounds greenery, instalations and topography. The plaza has some tuned “scapes”.

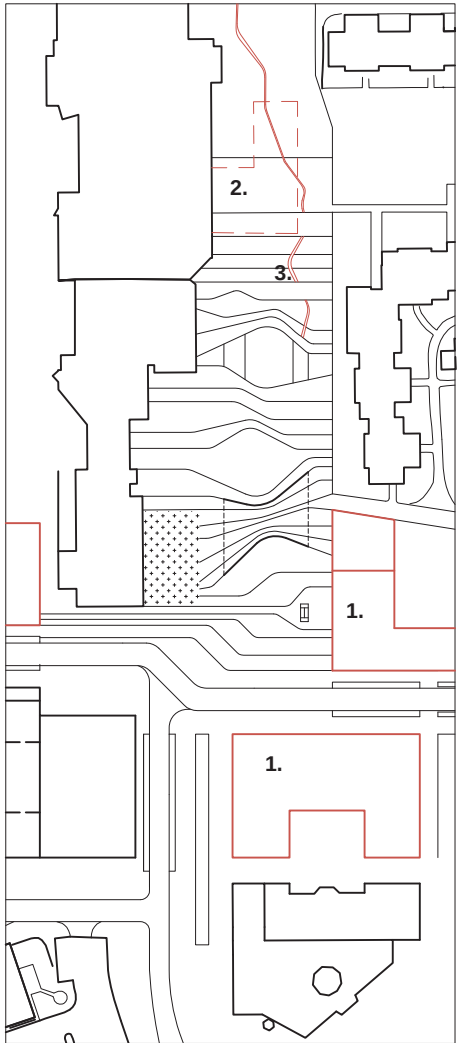
The main intention is to enhance an urban space that can shape itself depending on the seasons, program, flow, public activities, natural conditions and gradients of new possible mediating spaces in order to promote representativeness and multipurpose public experiences.

We find parks-capes, water- scape, art-scape, event- scape etc. The scapes have smooth transitions between them to create relations between different spacial experiences and activities.



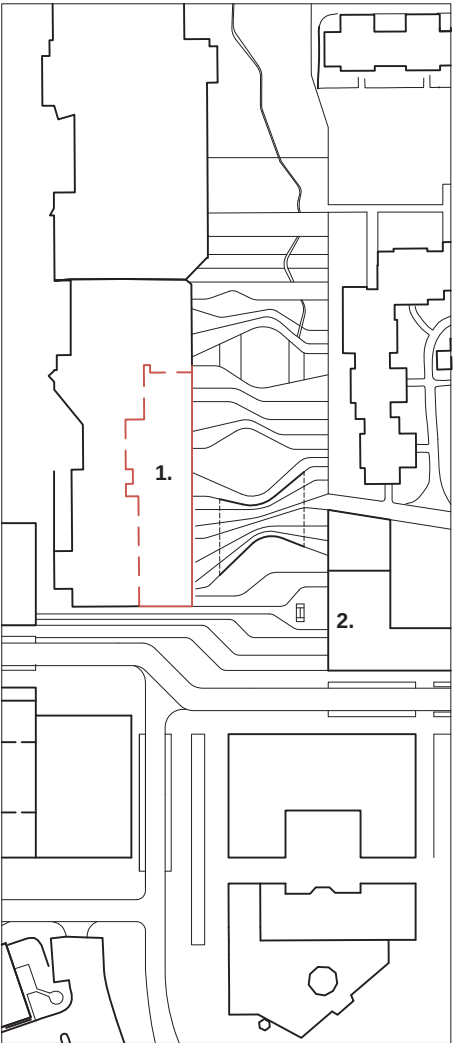
Phase 1

1. The flying Carpet is established and reorganizes public life and movement on the Plaza.
2. Parking and parking entrances on plaza level are removed and temporary entrances to the parking under Trygve Lies Plass are established on neighbouring plots.
3. The area outside the library is temporarily prepared for outdoor activities for the Library. The surface is covered with green and furnished as a temporary inexpensive solution.



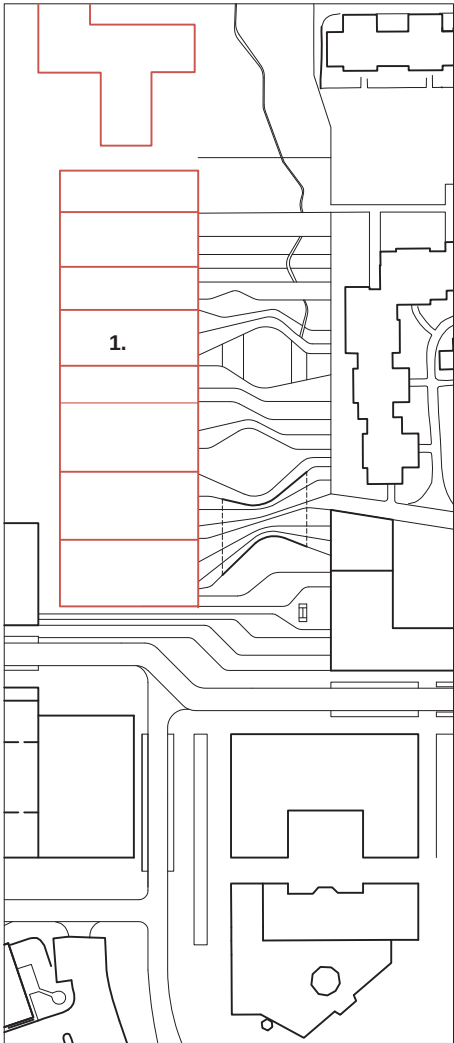
Phase 2

1. The developments around the plaza is buildt
2. Part of the swimming arena is demolished, and the continuity between the plaza and the park appear.
3. Reopened stream run through the park.



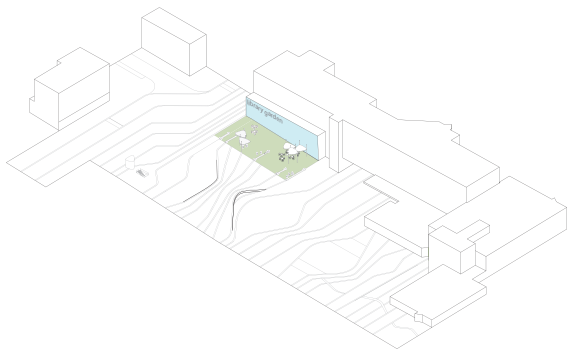
Phase 3 option A

1. The comunity center / Shopping mall is enlarged.
2. the library may move in to the new building in south and start using the sunny spot outside for its cafe/ restaurant.



Phase 3 option B

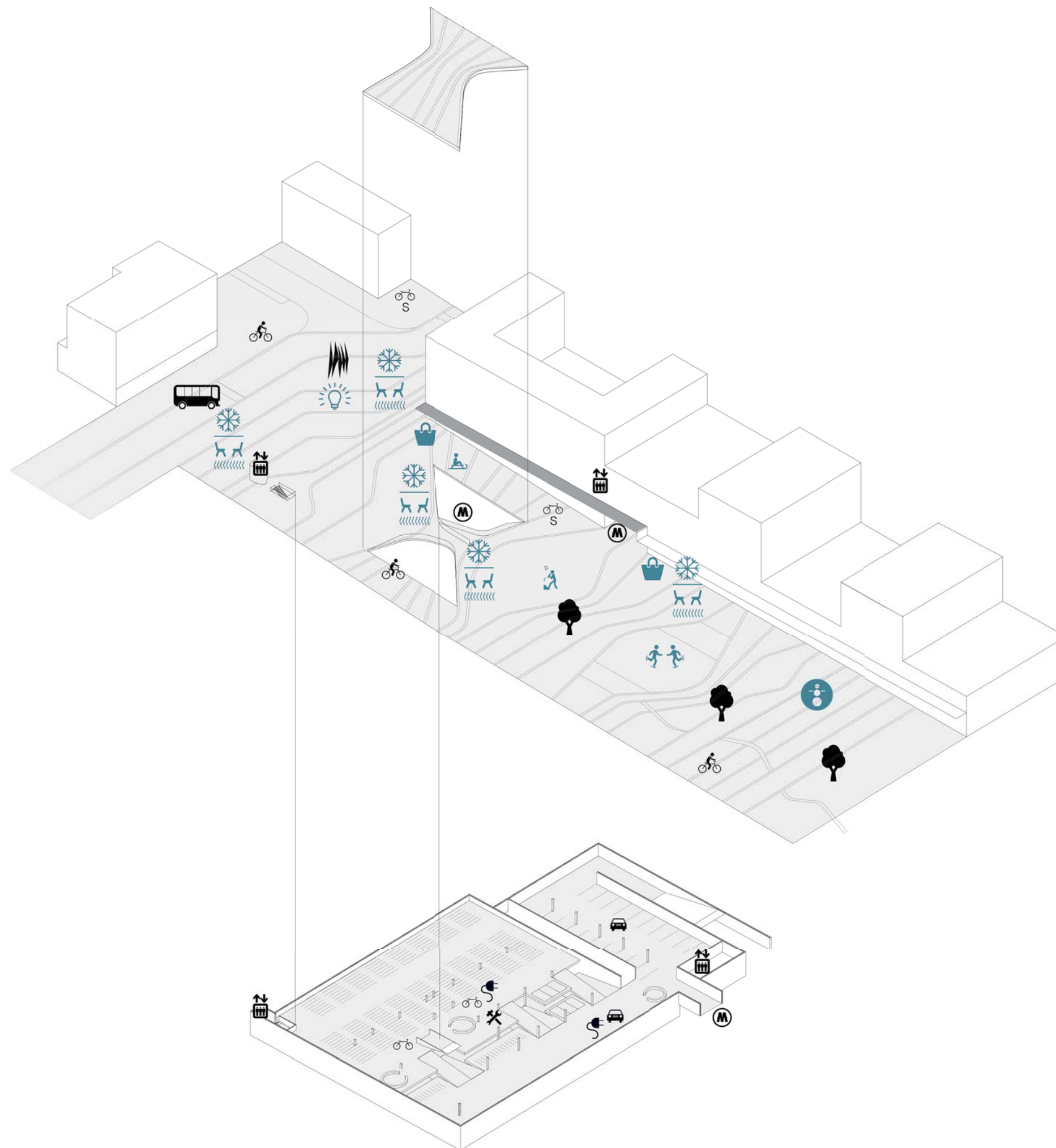
1. A new complex building is established.



Phase 1
Temporary use of outdoor area for the library. Outdoor reading area, cafetables, lecture furniture...

PHASES
Cities develop over time. Economical, political and social circumstances change. The ambitions of the urban plan for Furu-set will most probably be revised and re-visited over the years to come. The speed of development is dependent on a number of factors and Trygve Lies Plass will have to be operational in all phases of development.

A Field of interest:
The Flying Carpet is designed to have qualities in all stages of development. Future phases will relate to Trygve Lies Plass as the first step of a new urbanity. The flying carpet fills the whole square with lifebringing activities, this will provide a neighbourhood identity and generate care and interest for the future construction on and around the square.

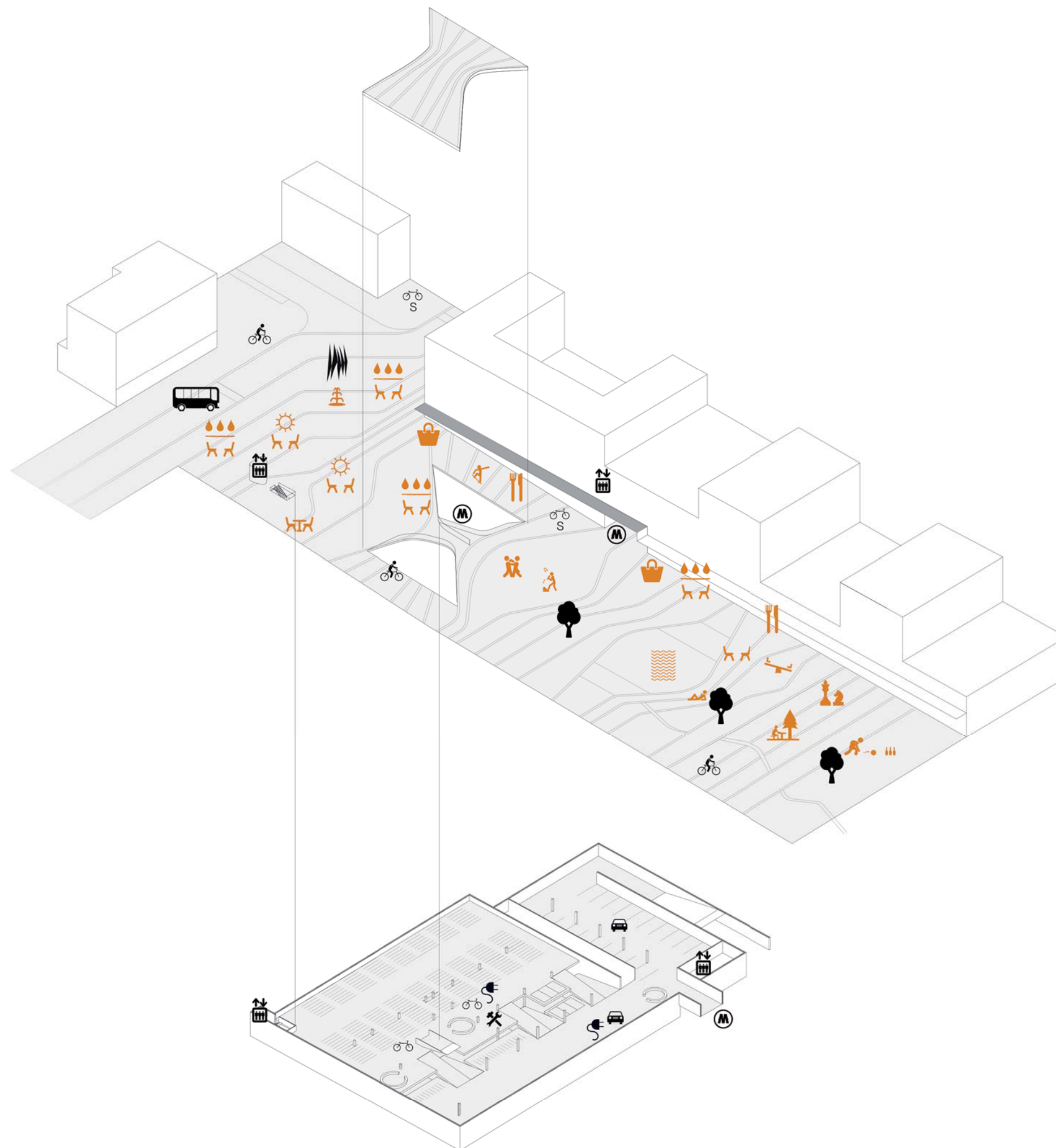


-  metro entrance
-  bus stop
-  bicycle lane
-  elevator to green mob. center
-  park area
-  short term bicycle parking
-  art instalation
-  long term bicycle parking
-  car garage
-  electrical bicycle / car parking
-  bicycle fast repair shop
-  canopy (alternative route from bus)
-  meeting place with snow protection and warm benches
-  ice skating
-  winter concerts
-  snow playground
-  light interactive sculpture
-  christamass & new yaer market
-  sliding

WINTER

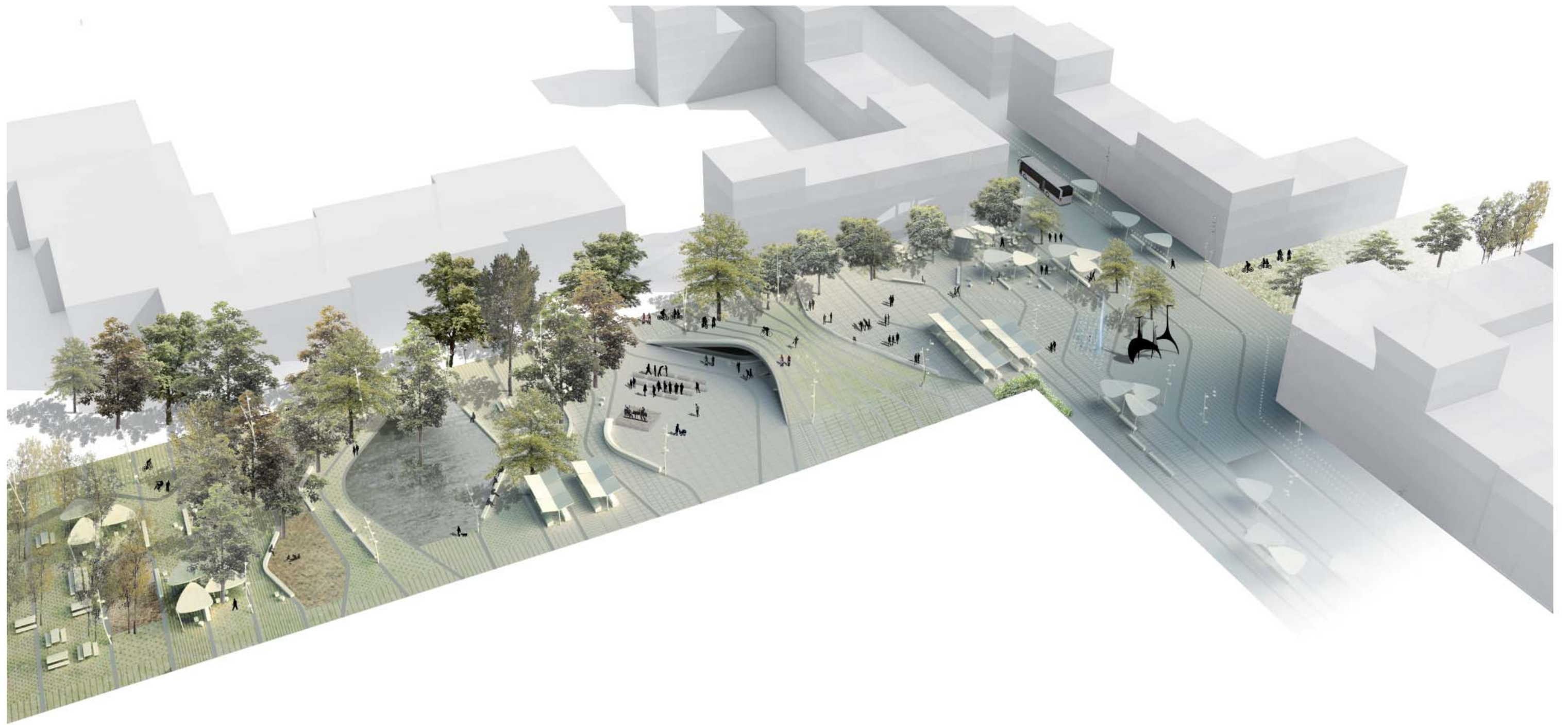
The square is prepared for winter specific activities such as ice skating on the waterpond, snow playground, warm benches to offer better comfort in waiting areas. Heated pavements provide comfortable snow and ice free movement between bus, metro and mobility centre.

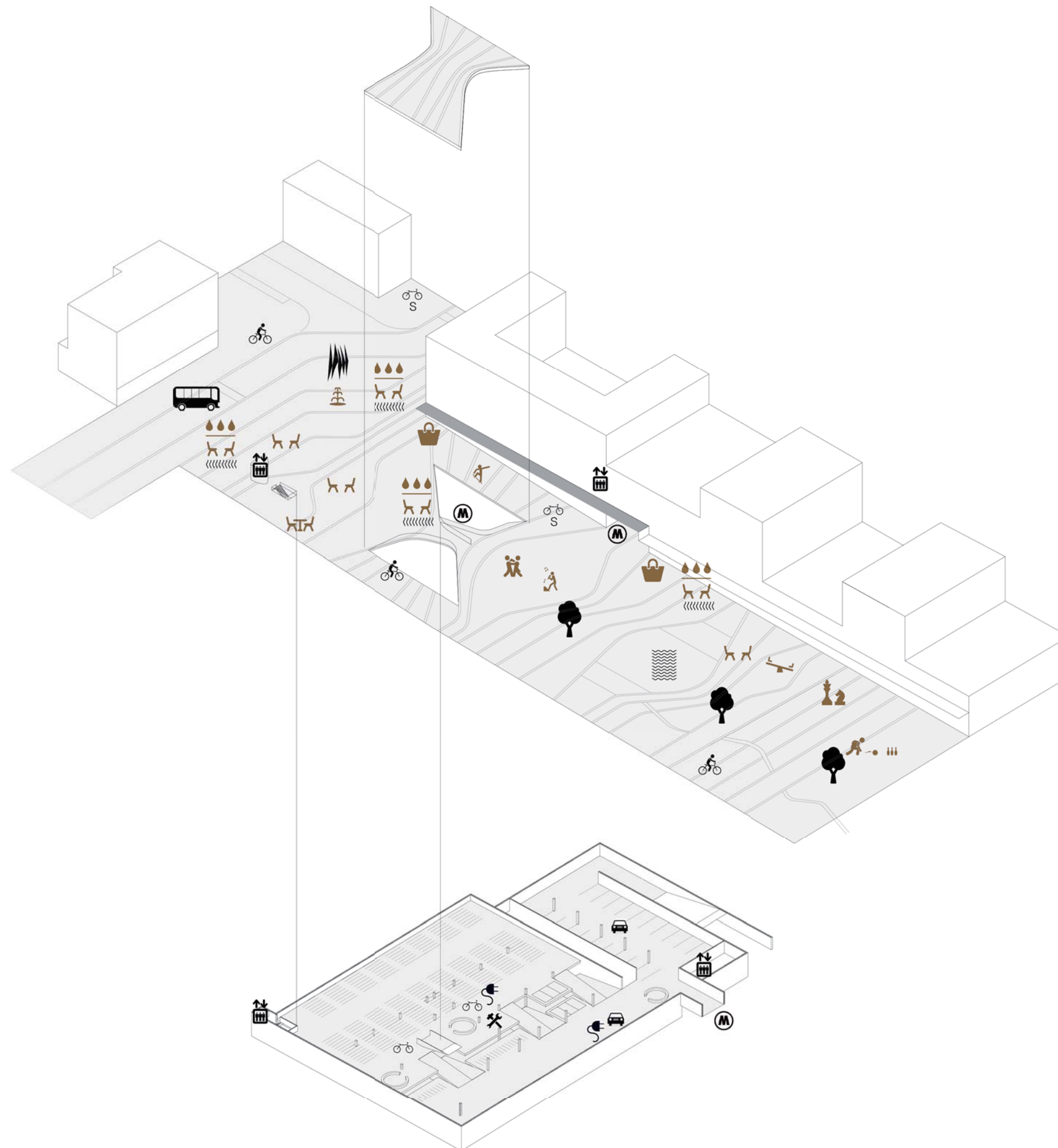




-  metro entrance
-  bus stop
-  bicycle lane
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-  park area
-  short term bicycle parking
-  art instalation
-  long term bicycle parking
-  car garage
-  electrical bicycle / car parking
-  bicycle fast repair shop
-  canopy (alternative route from bus)
-  sunbath sitting
-  sitting
-  covered siting area
-  coffe terrace
-  resting
-  events area
-  dancing area
-  children's playground
-  shopping market extension and cultural food & flee market
-  board games
-  petanque - elderly gym
-  lunch area
-  lake
-  water interactive sculpture
-  restaurant terrace

SEASONAL STRATEGY: SUMMER
In summer the square provide places for sunbathing, playgrounds, lunch areas, petanque, board games and many others in addition to its all year activities.

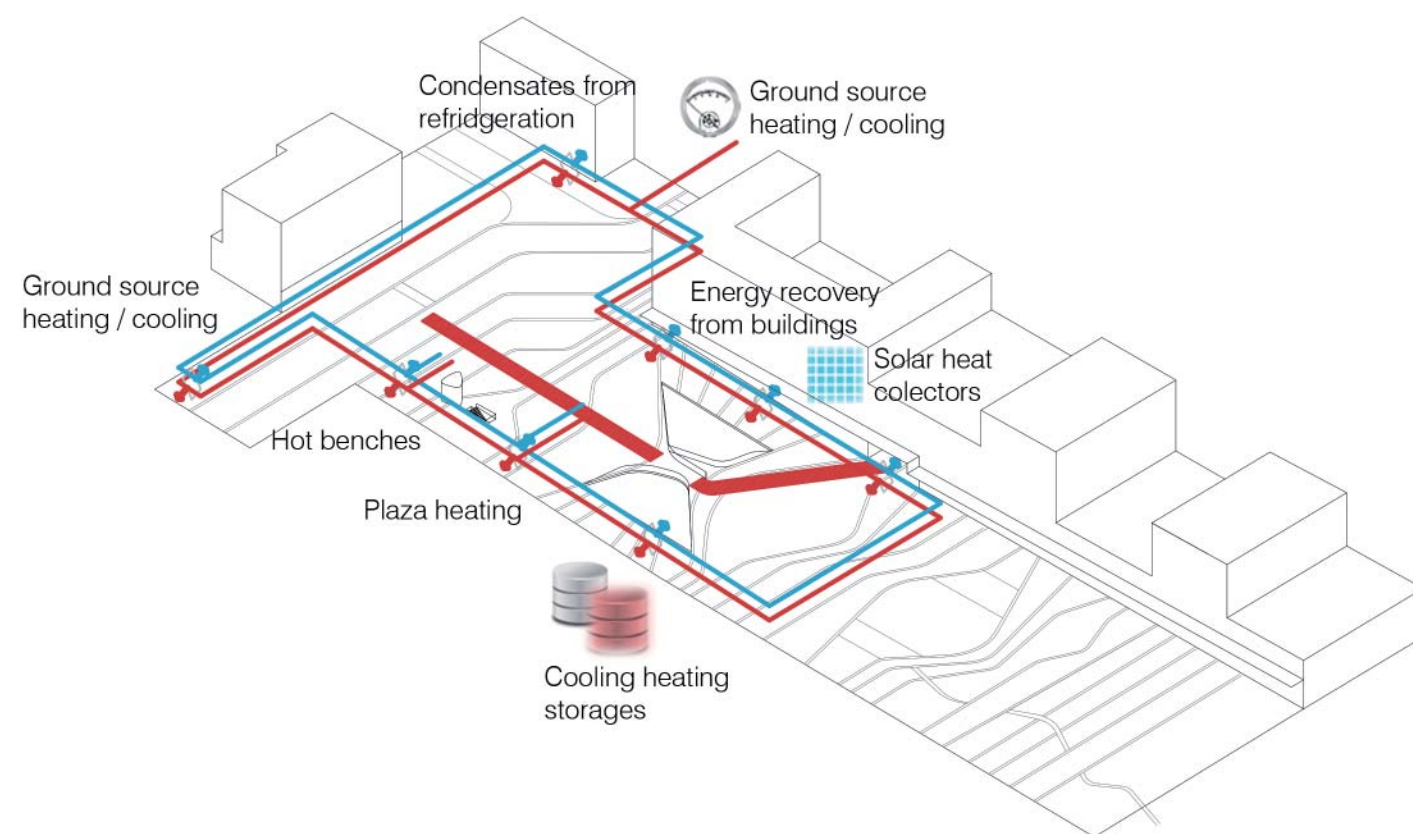




-  metro entrance
-  bus stop
-  bicycle lane
-  elevator to green mob. center
-  park area
-  short term bicycle parking
-  art instalation
-  long term bicycle parking
-  car garage
-  electrical bicycle / car parking
-  bicycle fast repair shop
-  canopy (alternative route from bus)
-  sitting
-  bad weather geathering with warm benches
-  events area
-  dancing area
-  playground
-  shopping maket extension and cultural food & flee market
-  social games
-  fountain

SPRING/ AUTUMN

In spring and autumn many of the activities of winter and summer merge, benches are starting to be warmed for cold evenings, still it can be good times for outdoor market activities and events. The plaza can be reprogrammed to host cultural activities organized by the community of Furuset or the municipality in order to favour the sence of belonging and ownership.



CONCEPT PLANNING FOR HEATING/ COOLING NETWORK AT TRYGVE LIES PLASS

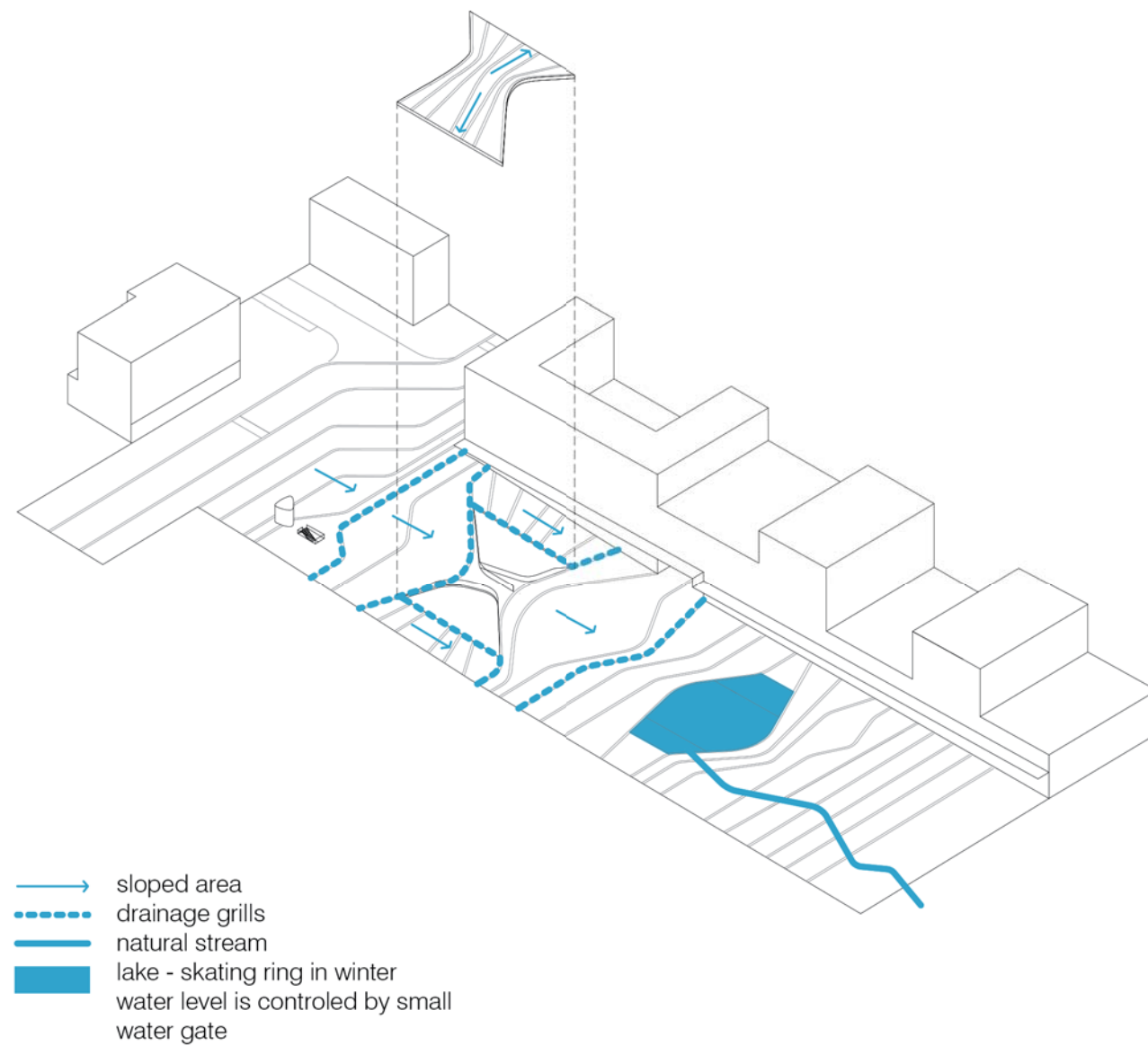
Heating system under the surface of the Trygve Lies Plass can be used to keep the plaza clear of snow and ice. Only selected areas, such as the area from the bus stops through the green mobility center to the T-bane will be heated. Some of the plaza benches will also be connected to the system and heated when its cold. The idea is to melt snow and ice from the plaza with energy flows that are normally wasted. Available energy sources can include condensates from cooling devices, low temperature heat pumps and district heat.

The buildings surrounding the Trygve Lies Plass, such as Furuset Forum and the public and commercial buildings can be linked to the local energy network. Local energy network around the plaza opens a possibility to circulate heating/cooling energy between buildings and link additional energy sources to the system.

The flexibility of the system enables the use of various energy sources, energy storages, load shifting and a link to the future district heat system. Cost efficient and sustainable energy solution around Trygve Lies Plass is sought together with local operators, which will ensure that all parts and subsystems are dimensioned according the actual energy needs and the upper lever regional energy goals.

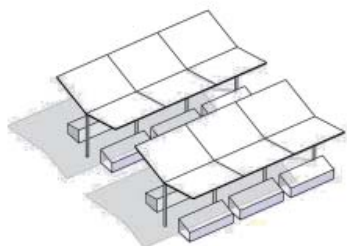
Benifits of Heated pavings:

- Snow and ice can be kept away without snowplows.
- Plaza activities can be extended over winter time.
- Safer access to metro, bus and Mobility center when there is snow and ice elsewhere.
- If waste energy flows are available, heating is energy efficient.



WATER ON THE PLAZA
 Drainage is organized in transversal drainage grills in the transversal lines on the plaza.

The river that today runs through pipes is brought to surface in the pond and the surface.



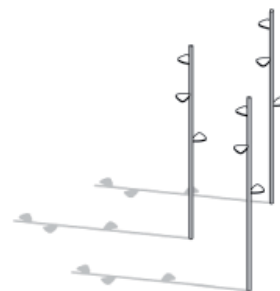
Market

The open air market is a temporal market. The assigned market areas in the plaza will have the necessary installations to accommodate for it (Water, electricity etc.)



Cafe tables

Tables for restaurant, library, cafe.



Street lights

Street lights illuminate the plaza at night, LED light, sunpowered, connected to grid.



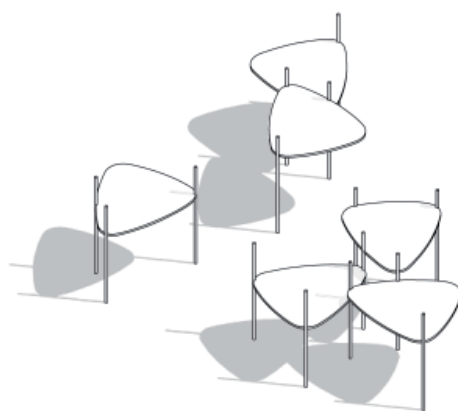
Light Fountains

Fountain area in floor with aleatory outlet - You never know where the water and light is coming next..



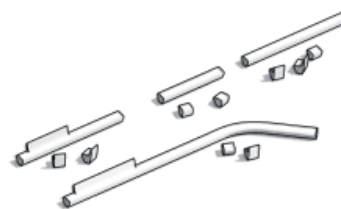
Amphi

Located by the eventspace



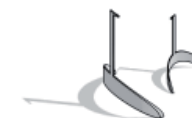
Umbrella/ Shadowmaker

These umbrellas house several functions: shelter from rain or sun, busstop, information point for public transport. Rather than a traditional bus-stop these serve as several waiting facilities in different places on the plaza.



Hot bench

The hot bench is heated by waste energy from the surrounding buildings. A snowfree warm place to sit, the bench enhances an all year use of the plaza. Different configurations of placement and shape accommodate for groups, resting alone, backrest.

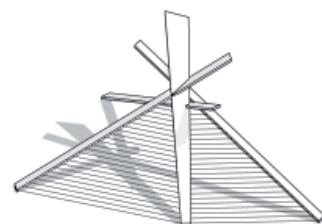


Art in public space



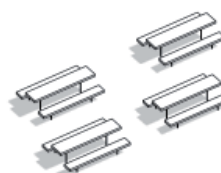
Cold bench

A simple wooden bench



Climbing installation

Climbing facility for children



Picnic tables



Mobility info board

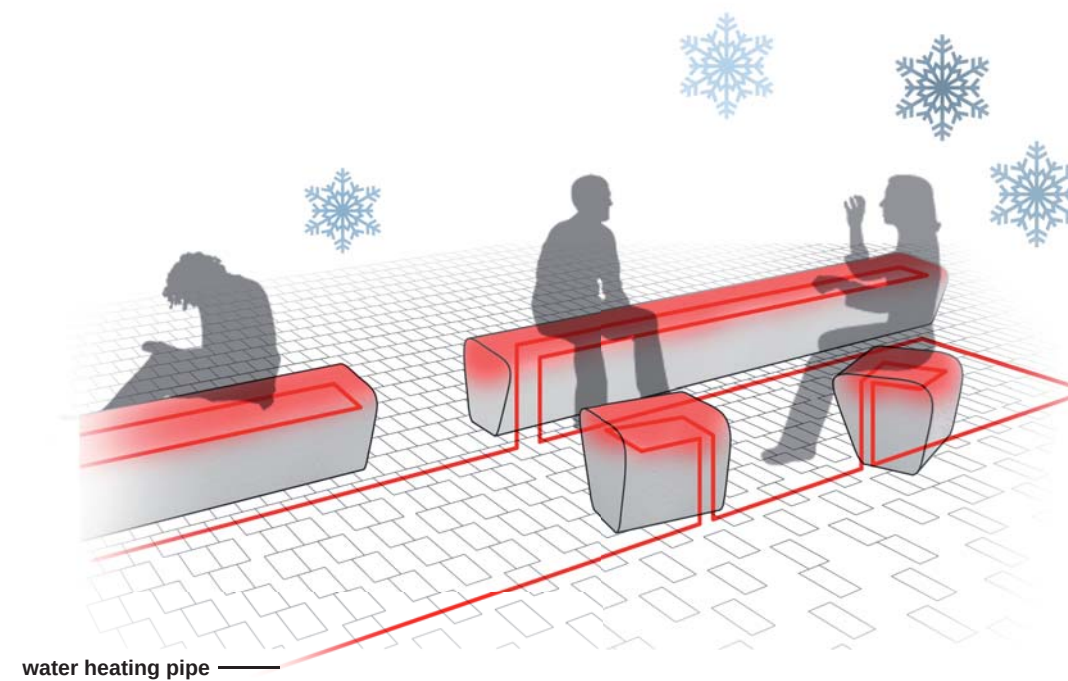
The mobility info boards are distributed in different places in the plaza for decentralized waiting. they inform on bus and metro timings.



CATALOGUE

The plaza will have a variety of furniture to enhance a variety of use. Some are fixed and some are flexible. The catalogue shows some possibilities for furniture.

The furniture will be mixed to achieve a variety of qualities in many zones, as an example the benches are partly under the umbrella and partly outside, if there is sun you can sit outside, if rain under the roof. The cafetable area is mixed with public benches pergolas trees to mix public with commercial.

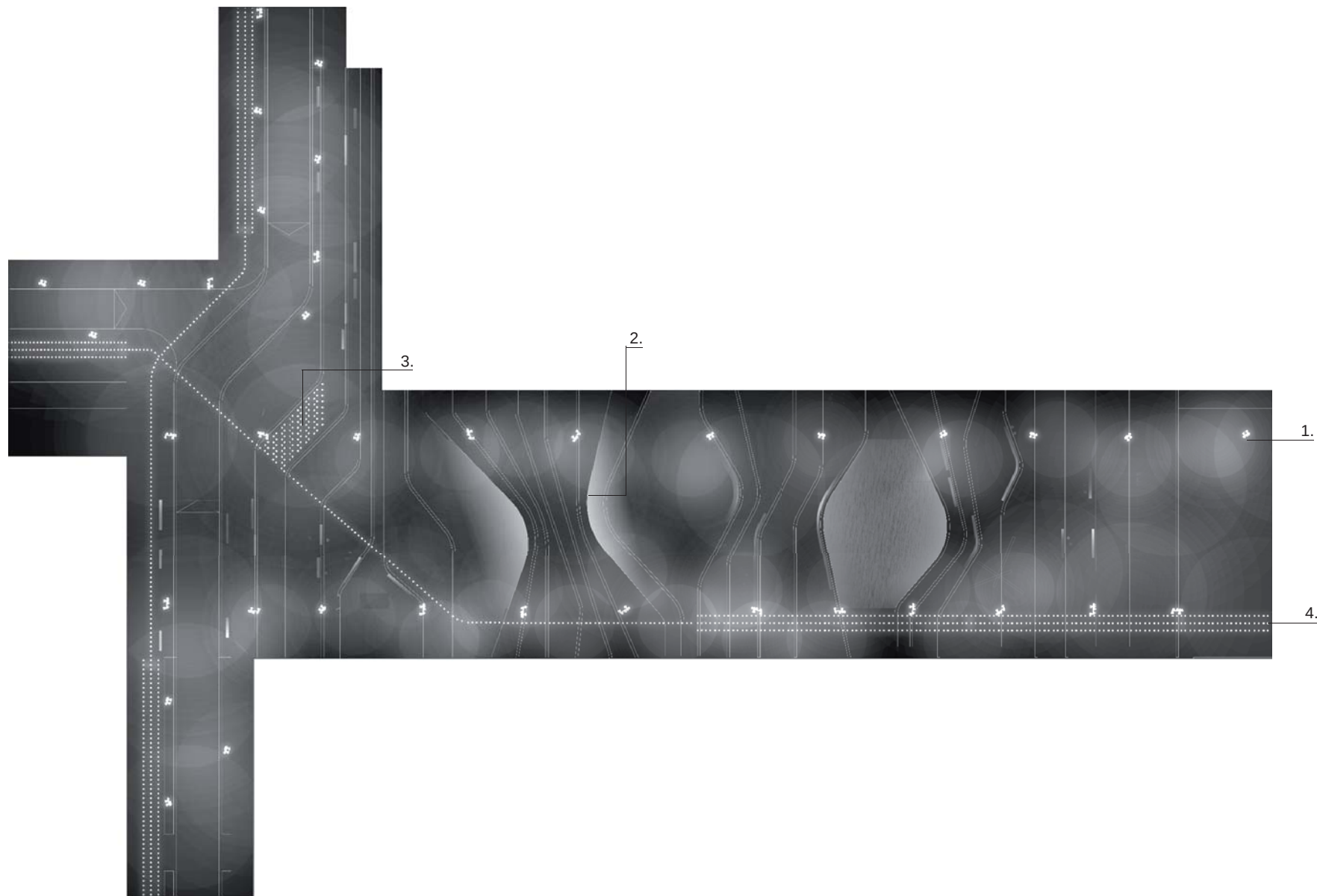


HOT BENCH

To keep the benches warm when its cold the waterheating circle of the plaza floor has some extra bends in order to circulate the same water through the benches.

The surface of the bench is a bit inclined to keep it dry.
The bench is made out of heat retaining material such as artificial stone.

The Hot bech is providing confort cold weather, understanding winter as an extreme weather condition Furuset offers cold benches.



LIGHT PLAN

The lighting concept is designed with the aim of providing safety and overview.

1.The streetlamps are organized in a regular pattern to ensure light for the whole plaza. The lamptype is individually adjustable to adapt to the place and create variation in ambience.

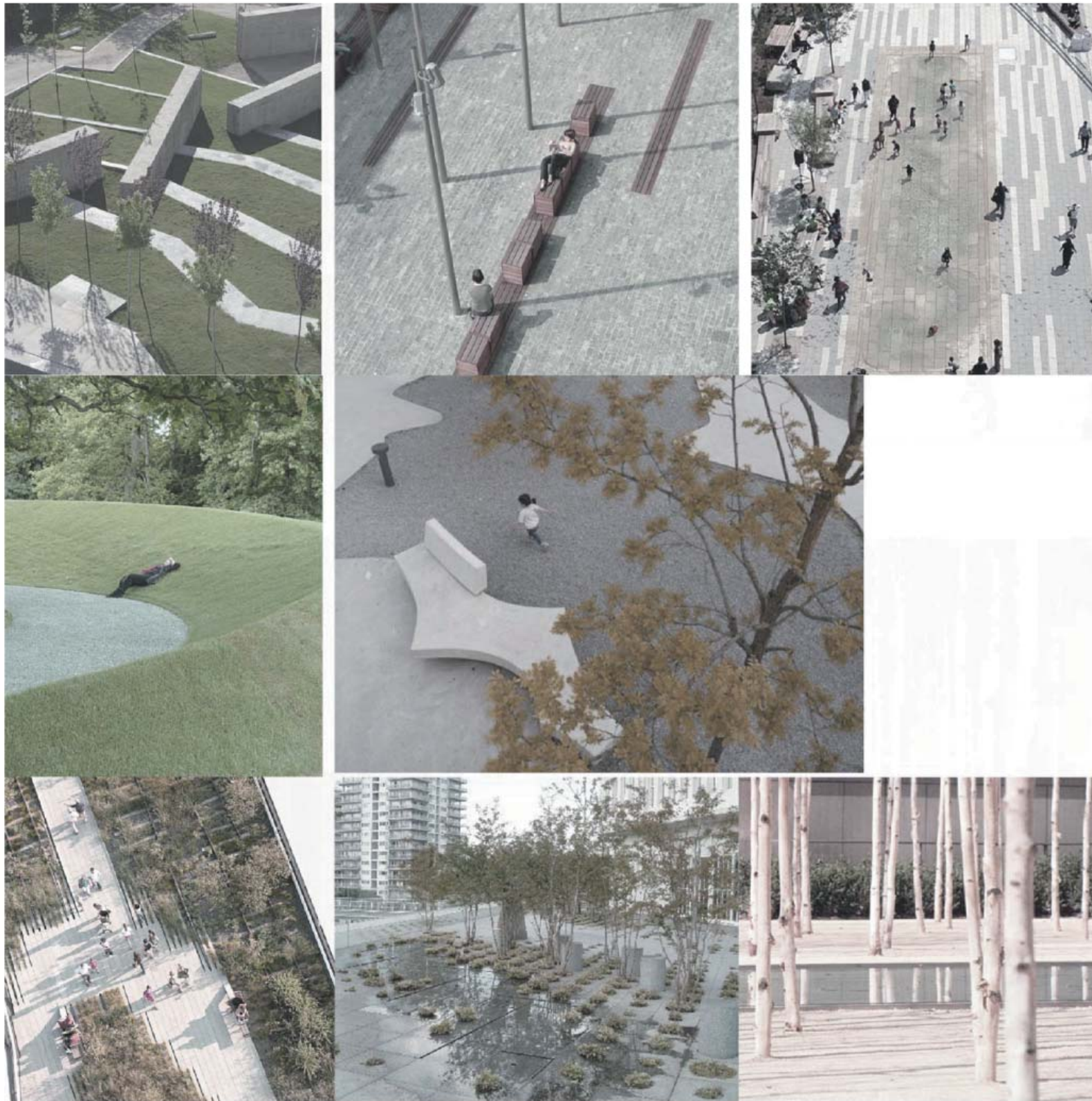
2.To highlight The Green mobility centre as a focal point it has its own lighting inside.

The pond/ skating rink has lights along its perimeter.

3.The light fountain has aleatory outlet - You never know where the water and light is coming next..

4.The lighting of the bicycle path is marked by lights in the plaza floor.

All the lighting will be LED and operates under sensor systems.



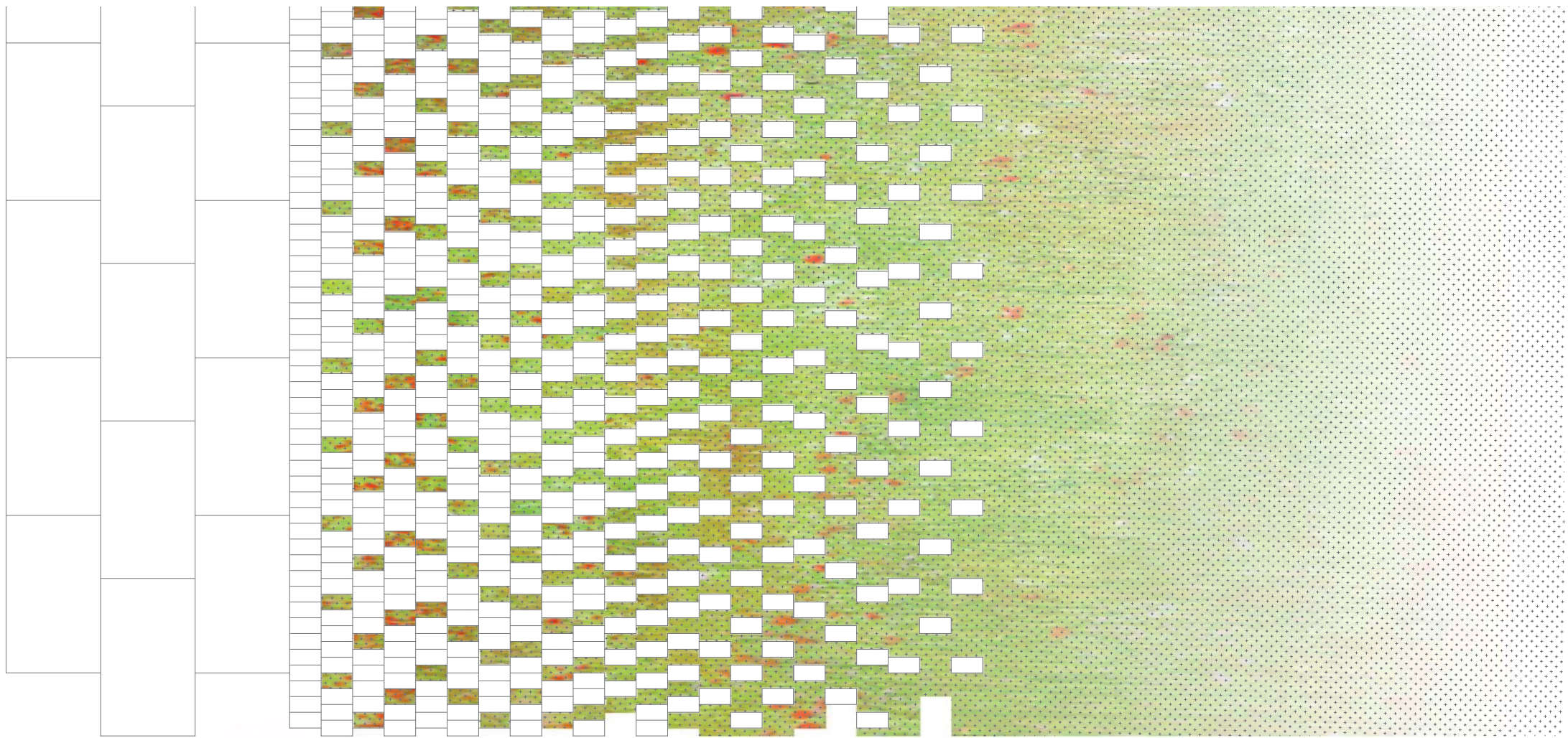
Clippings of references for material use on the flying carpet

MATERIALS

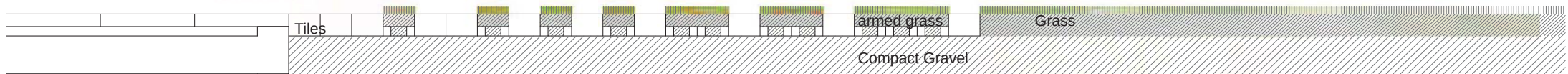
The plaza is understood as a landscape consisting of blue, green and gray which is organized as a gradient from green/ blue in the north to grey/urban green in the south. The water from the stream is brought up to the surface. The materials used should be functional, durable, low carbon, minimum maintenance and natural, as well as local.

The breaking up of the plaza surface into fragments makes it easy to adopt to the changing surroundings and functional demands.

If it ain't broken don't fix it: The existing trees are kept and the north south green continuity is established by a "forest". The underground parking house is upgraded to the new use. The proposal for the reform of the garage is adaptable to the technical realities of the existing construction. The physical changes will be minimal.



Typical plan Graded pavement



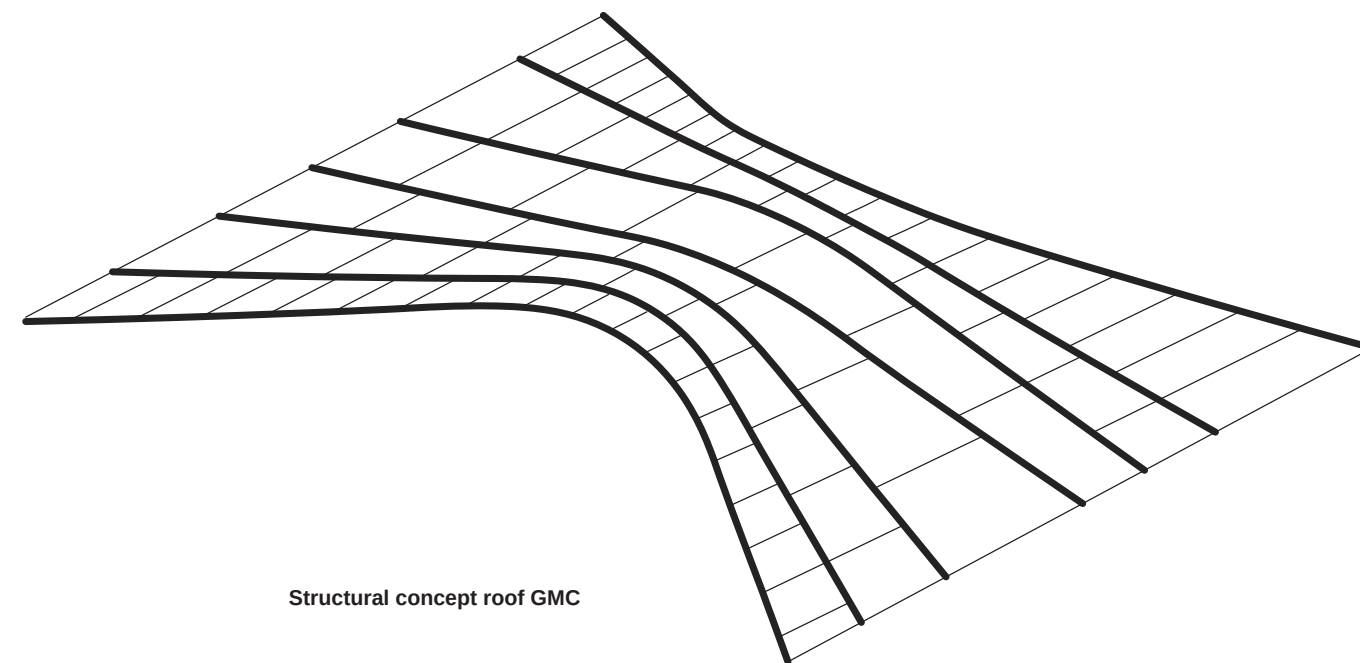
Section graded pavement



FROM GRAY TO GREEN

Green gradation to urban public space: The green from the forest blurs into the public open plaza in a gradual way that allows different natural and urban atmospheres.

Graded armed grass is used as a mediator between green and gray.

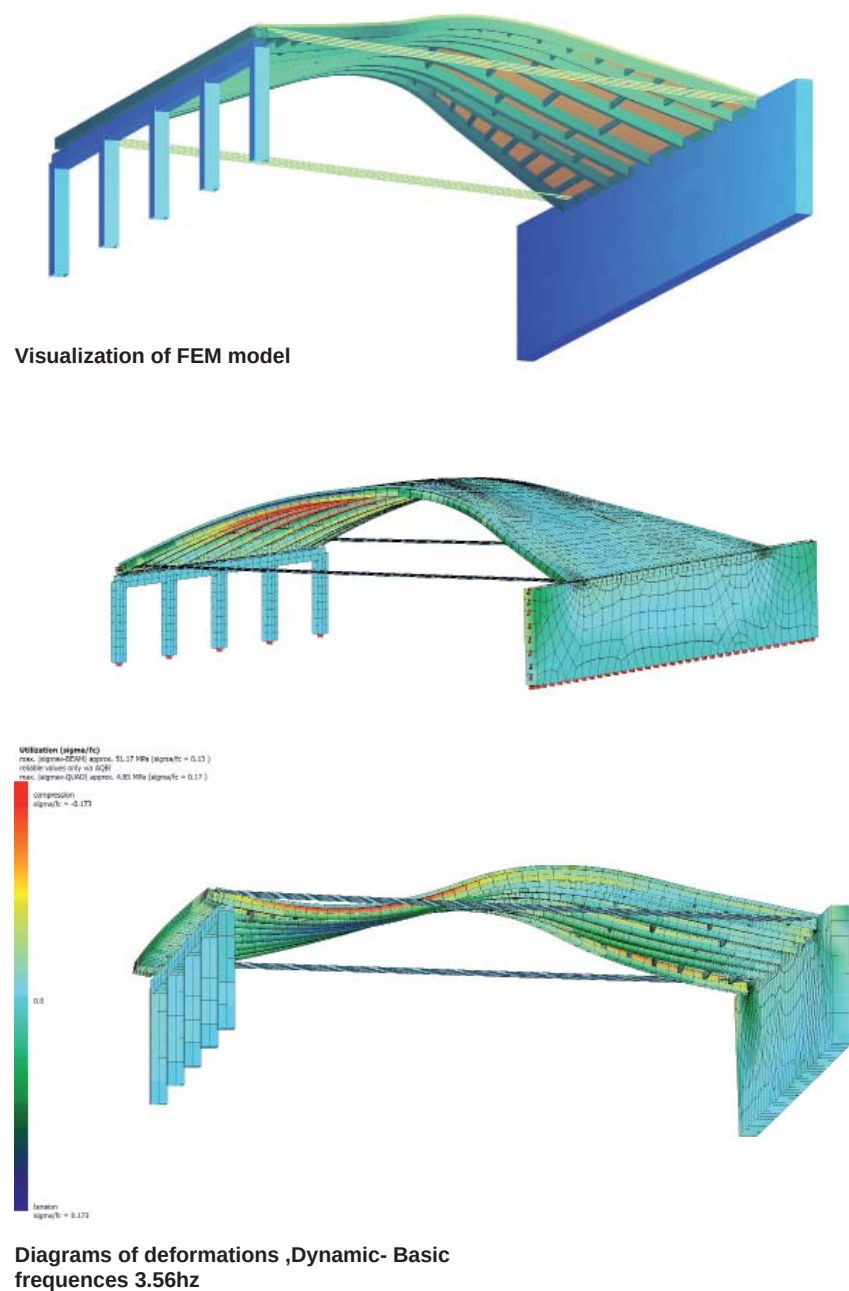


Structural concept roof GMC

STRUCTURE

The roof of the green mobility centre is a key element on the plaza. It is important that the roof is an elegant and attractive object. We have performed an analysis of the structure to secure that the proposal is buildable.

The roof structure follows the system established in the plaza pavements thus joining the expression of the roof and plaza floor.



STRUCTURAL ANALYSIS

The roof of the mobility centre is a composite steel-timber tied-arch structure. There are ten 27,5m long steel beams (500x400mm) below 160 mm timber plates. That the structure is 'composite' means that the timber structure of the deck is fixed to the steel beams, so that the steel and timber act together as one cross section, and by that reducing deflections and increasing strength. The depth of the construction can be reduced, becoming more slender. The fixing between the two materials is done using 'shear connectors' welded to the steel beams and then fixed to the timber. The main materials used are steel S355J2+N and timber, f.ex. CLT-panels.

The structural analysis of the bridge options are done in SOFISTIK finite element software. The members are modeled with realistic material properties and sections. Intermediate nodes along the lengths of the beams describe the behavior of the members under loading. Boundary conditions and support conditions are modeled for the individual members. The loads are applied as point, line, and area loads, which are then super-positioned as load combinations. The verification of members is done according to the requirements in the Eurocodes, including National Annexes for Norway, for strength, stability, dynamics and deflection.

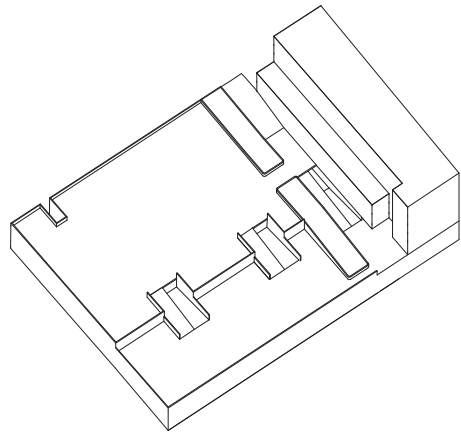
Vertical forces are transferred by the steel tied-arch to the bearings. In one end of the

structure it is fixed (connected with wall – no movement allowed), and at the opposite end it is free to move. Bearings stand on top of the columns below under each steel beam. At the end of supporting beams are installed (anchored) tie. The tie is hidden under the parking slab.

A preliminary sizing of elements has been conducted by comparing the maximum von Mises stress in all elements with their allowable stresses. Selected plots from the model show the maximum stresses of each member for all considered load case combinations. All stress levels are under the allowable limit of 300 MPa. Maximum deflection is 57,5 mm.

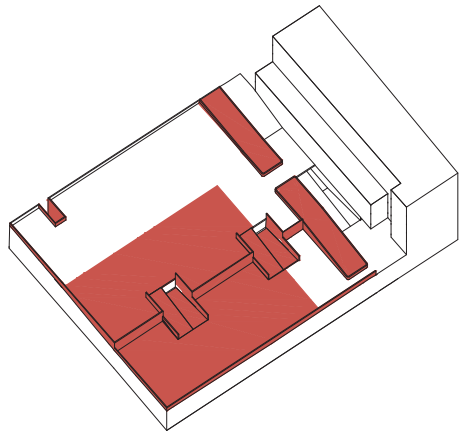
The fundamental frequencies of the bridge are evaluated according to the frequency criteria as presented in the international guideline. The fundamental frequency in a vertical mode is bigger than 3,0 Hz, in a lateral mode bigger than 1,3 Hz.

Installation of the bridge could be done without any additional temporary intermediate supports. Steel sections transported to site could be finally joined on site near the final localization, and then the steel beams with tie could be lifted in place with a crane. After that, we install wooden deck, rails, and the bridge/ roof is ready to use.



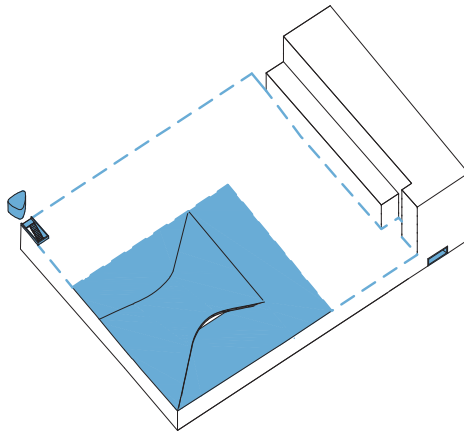
Existing parking garage Trygve Lies Plass.

The parking garage is in two floors with entrance ramps from the plaza, and parking on the roof generating a lot of circulation area for cars on plaza level.



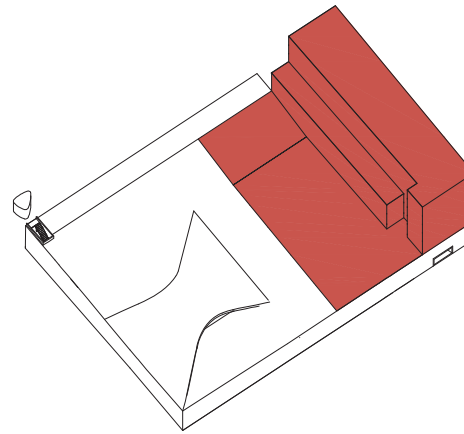
Demolition phase 1

- Demolition of existing parterre, stair and ramps on the upper floor.
- Demolition of part of today's roof of the parking.



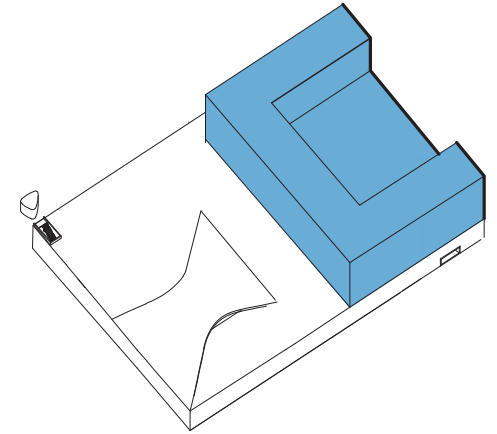
New Construction phase 1 Fully operational Green Mobility Hub

- Mobility hub roof and adjacent floors
- New tunnel to connect the Mobility hub to the T-bane.
- Staircase and elevator to bus stop.
- Slope over existing floor with light concrete.
- New entrance ramps for carparking behind the library.



Demolition phase 2

- Demolition of Community center
- Demolition of floor over extension
- *Option to keep community center and only demolish floor over extension



New construction phase 2

- New community center/ extension of the existing one.

TRANSFORMATION OF EXISTING PARKING GARAGE INTO GREEN MOBILITY HUB

Existing parking garage is transformed into the green mobility center. The idea is to re-use as much as possible of the building. The new constructions use the existing foundations of today's parking-garage and reinforce it where necessary.





The Nordic Buildt Challenge
Submission stage 2
Booklet Din A3
Projectname: FLYING CARPET

Credits:
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