



PO Project Posters

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PO Project Posters

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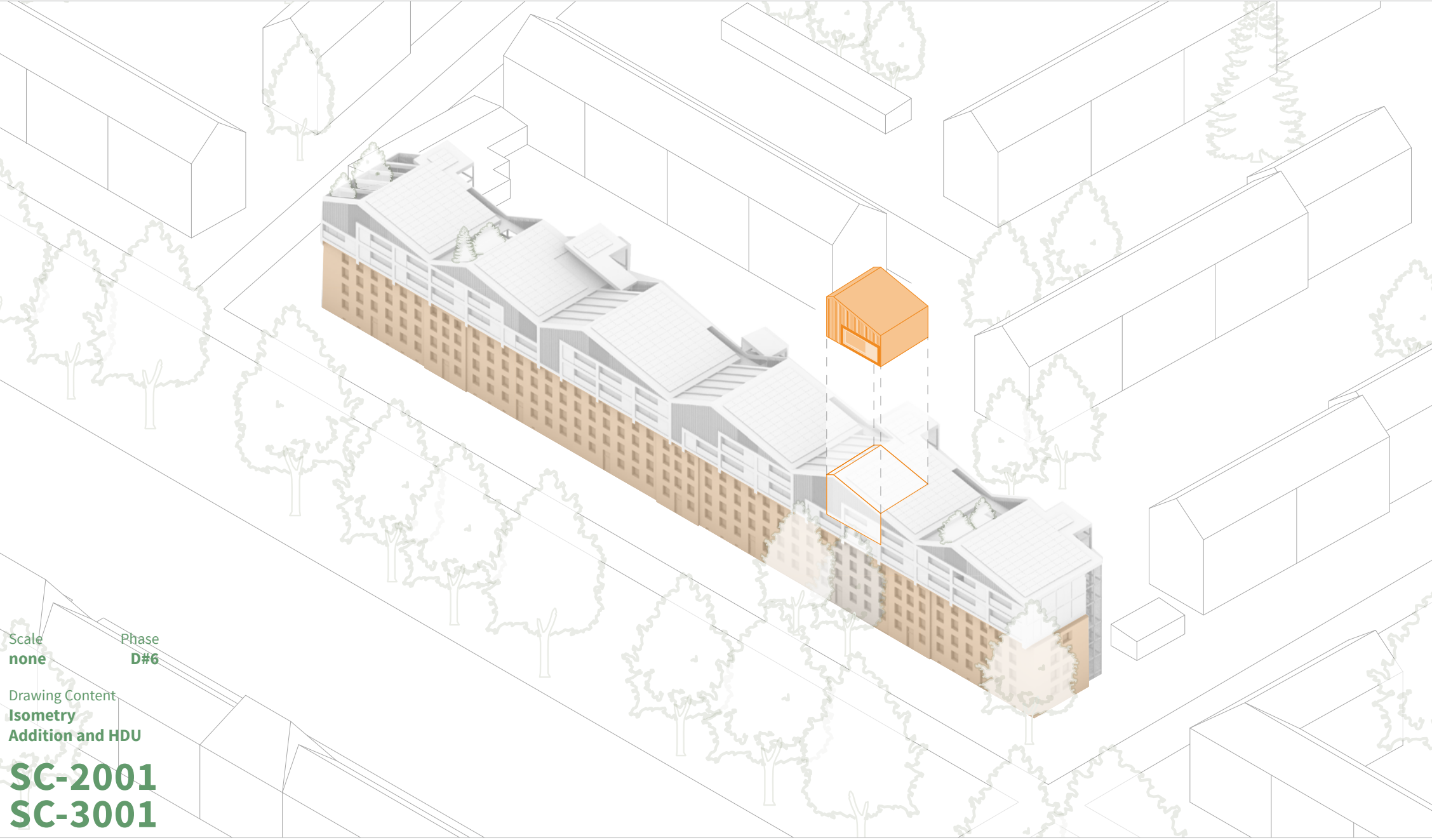
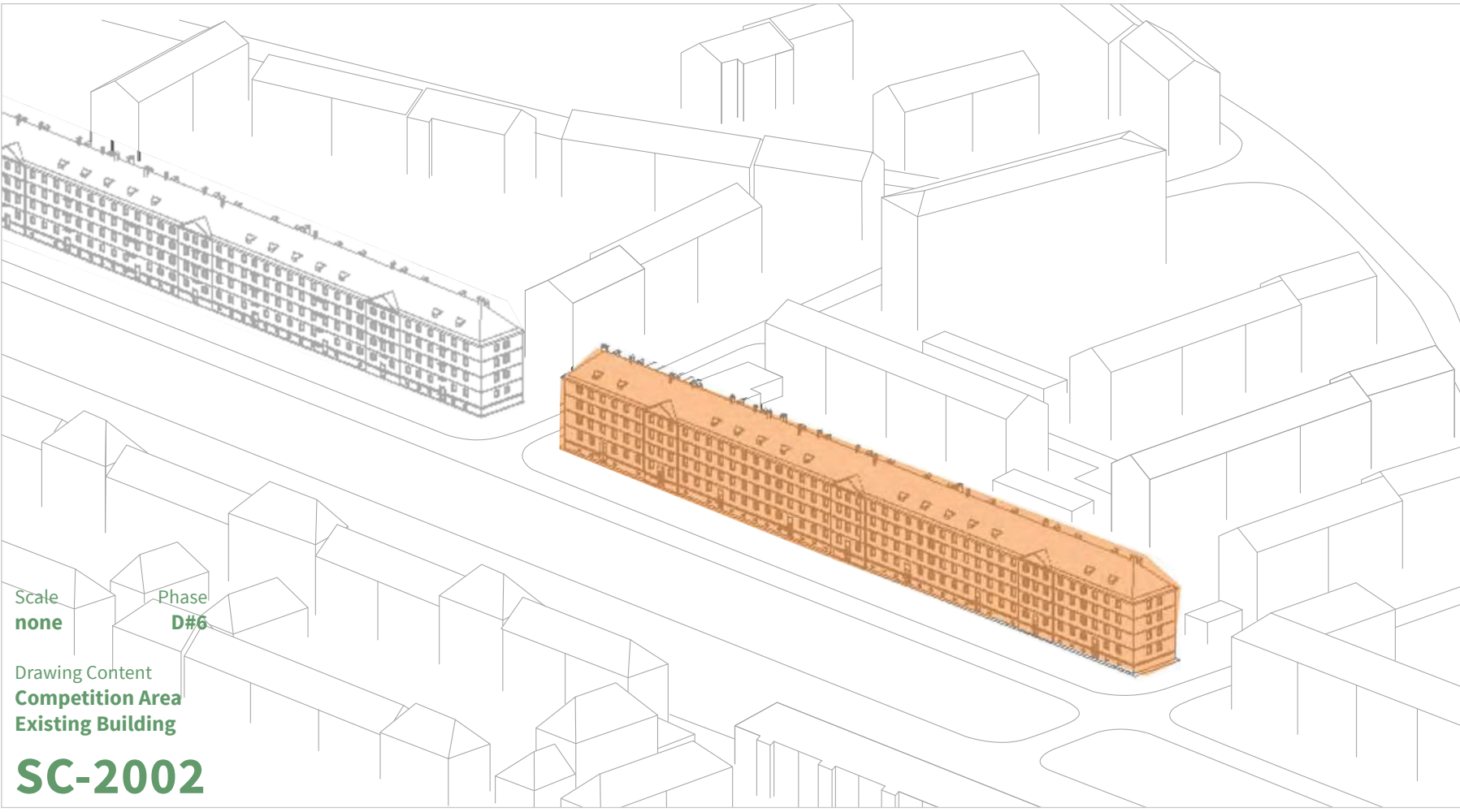
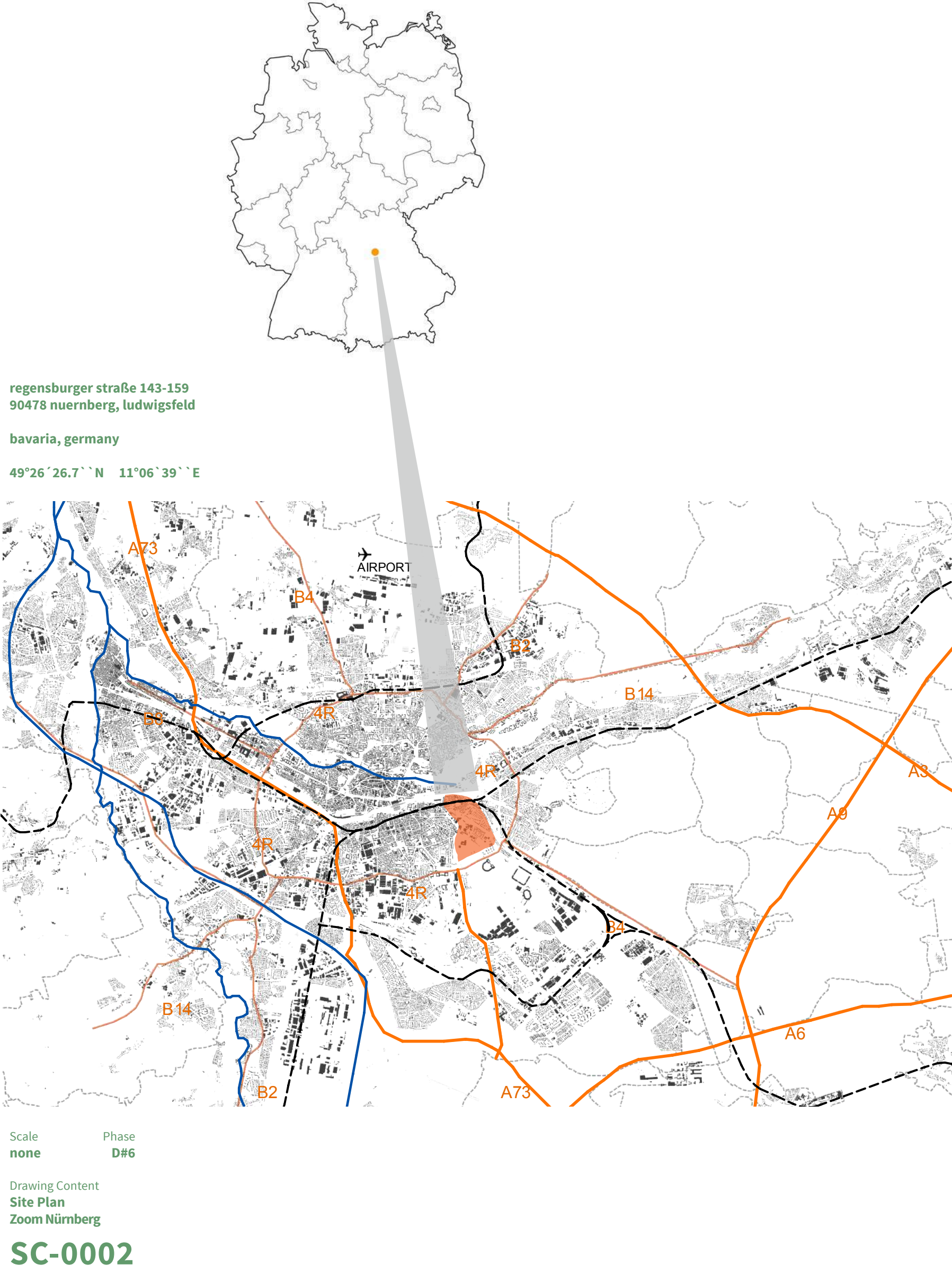
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Design Challenge – Site Integration

SDE 2021/22 addresses many of the current major challenges in the building sector of our time: climate change, environmental degradation, the extinction of species, resource scarcity, land degradation, and lack of affordable housing. We see the greatest potential for housing expansion in an urban context in „renovation & addition of storeys“ for buildings built between the 1950s to 1970s. This sustainable and affordable housing is to be built using modular timber construction that can be adapted to rapid changes in society. Communal areas, green spaces and attractive architecture represent a significant upgrade for the residents and the adjacent neighbourhood. It is not only accomplished by drawing ones attention to the „levelup“ system of modular timber construction and its new association with the city, but the architecture also highlights the issue of sustainability in the neighbourhood. The “levelup” system can be applied to almost all of the existing buildings in the neighbourhood and thus contributes to a sustainable transformation.

Ludwigsfeld, located in the south-eastern part of Nuremberg, is characterized by a heterogeneous population. The mixed nature of the district is also reflected in the architecture and elongated apartment blocks dominate the urban development. „levelup“ offers an innovative solution for identifying and upgrading such neighbourhoods without building on undeveloped ‘green’ spaces. To integrate the heterogeneous population in the neighbourhood into the overall architectural picture, an expressive, visionary architecture is to be created that consciously sets itself apart from the existing architecture of the surrounding development. The lack of perspectives and the create a diverse potential for positive, future-oriented urban development. The aim is to create added value for all residents. The design not only expands the usable living space of the existing building, but creates additional possibilities for high-quality spaces for leisure, culture, sport, and living.

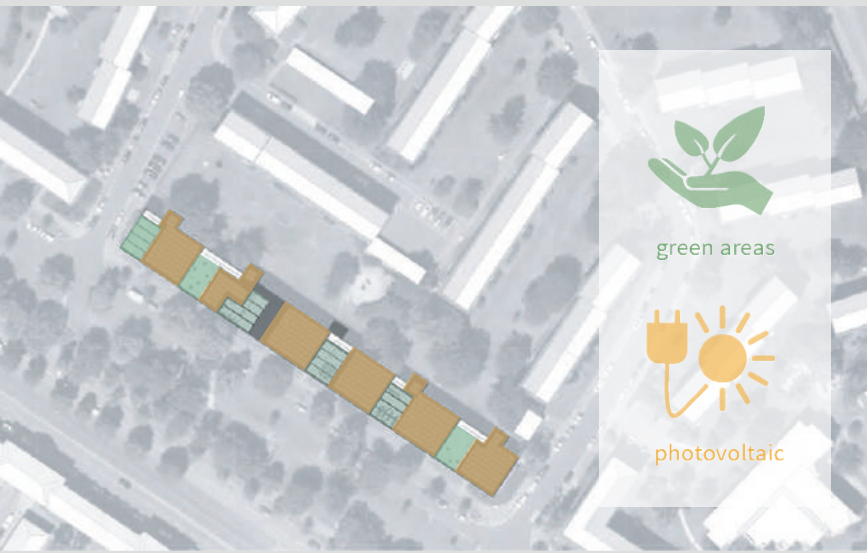


Housing expansion

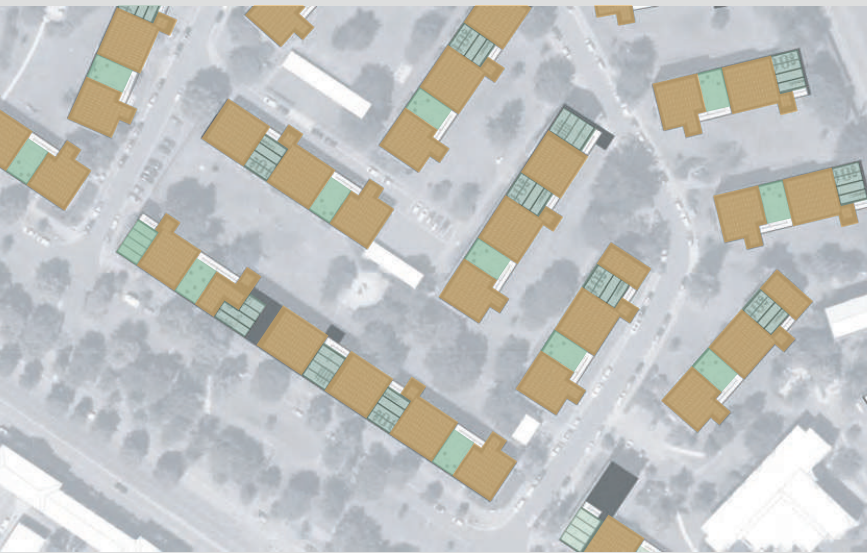
We present a system that can identify existing inefficient development structures in a future-oriented way. The special unique selling point is that the increase in density is achieved using a modular construction system that can be adapted to a large number of existing building constructed between the 1950s to the 1970s. The positive aspects of modularity and flexibility also extend to the actual living level and manifest themselves in a new centre of life. The additional stories create places and a breeding ground for a new generation of neighbourly coexistence.



Existing Building



Addition – levelup



Future Vision

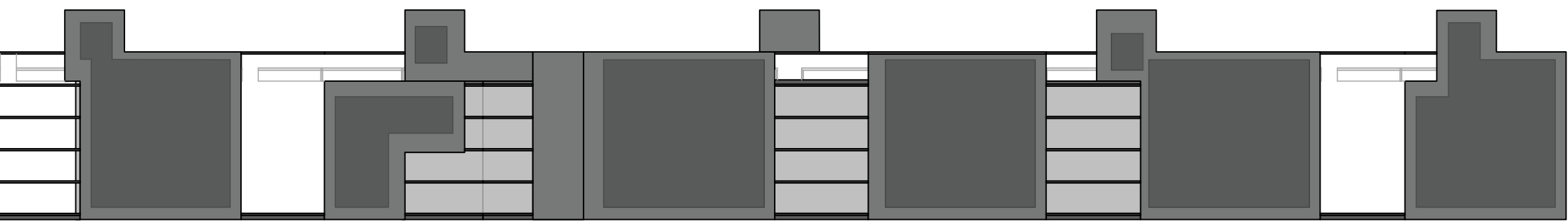
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Phase: D#6
Drawing Content: Site Plans
development

BD-1001

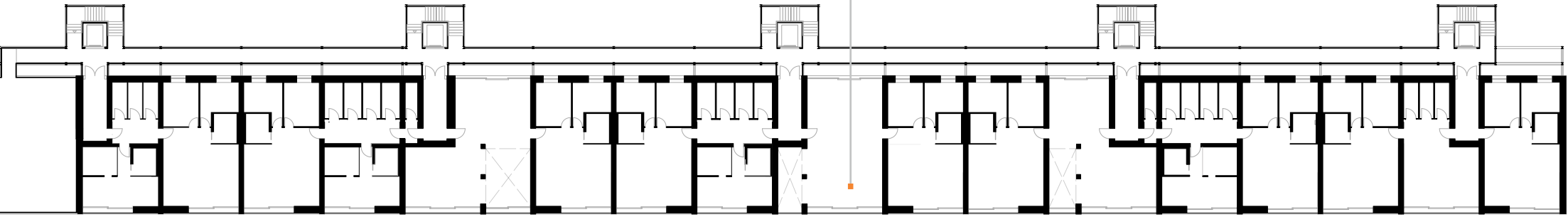
The levelup System

In addition to a forward-thinking and innovative architectural language, our team was primarily concerned with developing a system that could be adapted to existing buildings from the 1950s and 1970s. The „levelup“ system was developed in such a way that it can be flexibly adapted to recurring similar building characteristics of these building types, such as building widths between 9.0 - 10.50 meters, building lengths between 30 - 150 meters, structures built with reinforced-concrete ceilings, with load-bearing exterior walls, and a load-bearing interior wall. We see the innovation and the special unique selling point of our design in this modular adaptability. We chose a modular system consisting of wooden modules with the following dimensions: length 7.50 metres X width 2.95 m X height 3.10 m. The

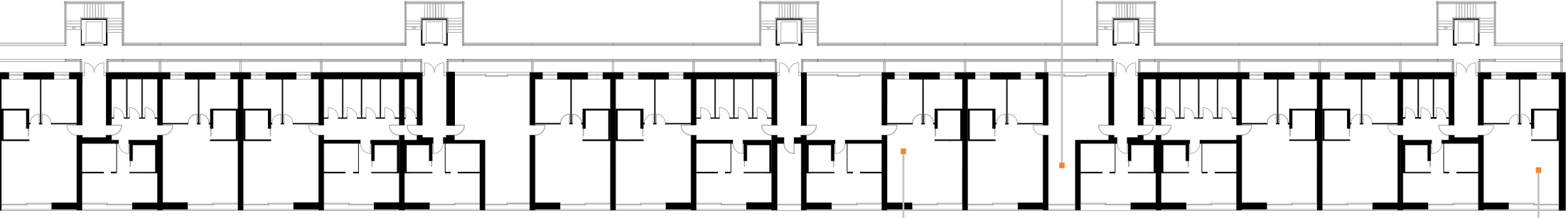
resulting dimensions are derived from current lorry transport sizes. The arrangement of the modules is subject to a strict grid, which can be adapted to numerous building, respectively. The staircases play a central role, as they represent both vertical and horizontal constraint points. The modules are arranged between the „immovable“ staircase cores in such a way that a maximum number of room cells can be placed between them in order to close off the gap to the staircases with a threshold. The distances between the existing staircase cores and the modular addition of storeys may vary slightly based on varying existing and newly installed geometries. These must be “bridged” using non-modular installations around the staircases; however, such connecting areas are to be kept to a minimum, as the goal is to build using modular, prefabricated units.



Roof supervision - addition



Level 2 - addition



Level 1 - addition

Scale

1:500

Phase

D#6

Scale

1:500

Phase

D#6

Drawing Contest

Roof Plan

of the Addition

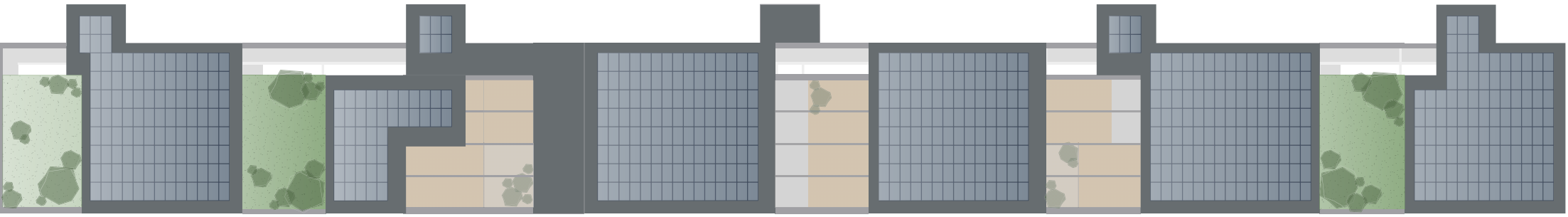
BD-1201

Drawing Contest

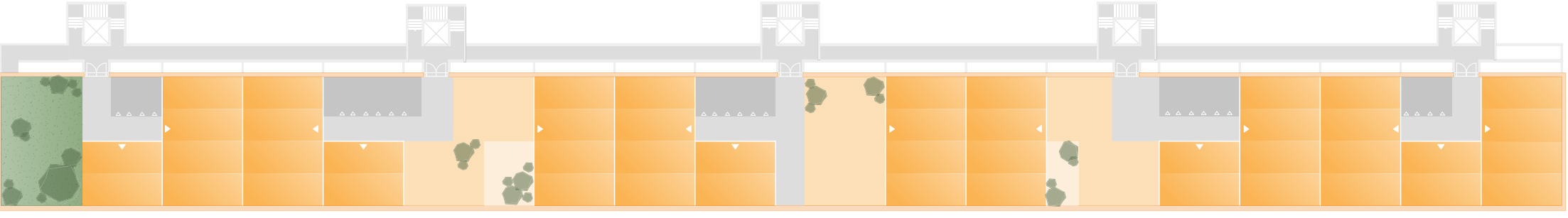
Floor Plans

of the Addition

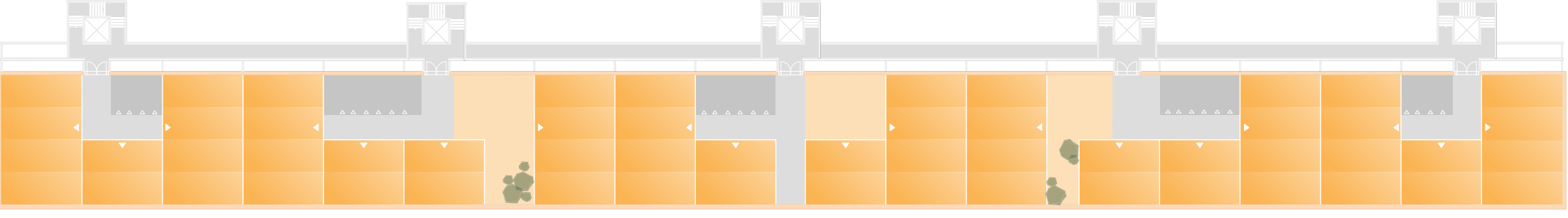
BD-1101



Roof supervision - addition



Level 2 - addition



Level 1 - addition

Scale

1:500

Phase

D#6

Scale

1:500

Phase

D#6

Drawing Content

Schematic Roof Plan

of the Addition

BD-1202

Drawing Content

Schematic Floor Plans

of the Addition

BD-1102



Scale

none

Phase

D#6

Drawing Content

Community Area

Level 2

BD-0003



Scale

none

Phase

D#6

Drawing Content

Community Area

Level 1

BD-0004



Scale

none

Phase

D#6

Drawing Content

Living Space

Kitchen Area

BD-0005



Scale

none

Phase

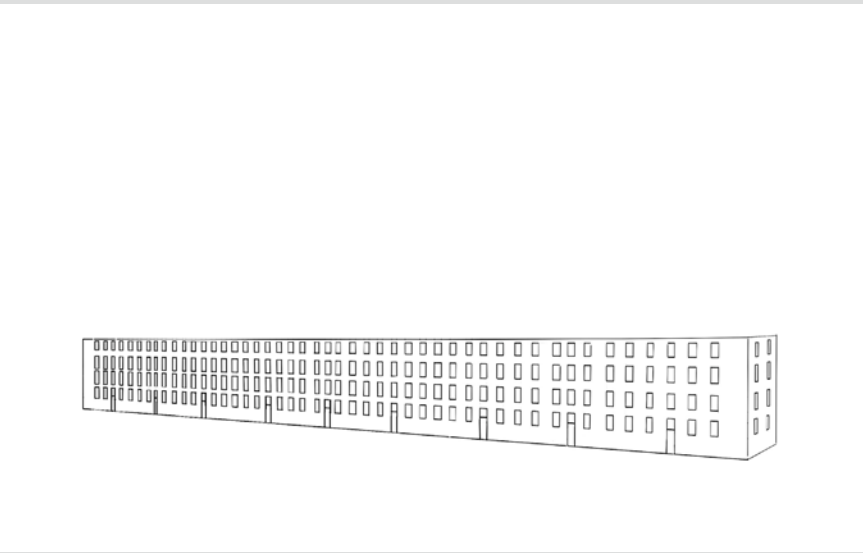
D#6

Drawing Content

Living Space

Entrance Area

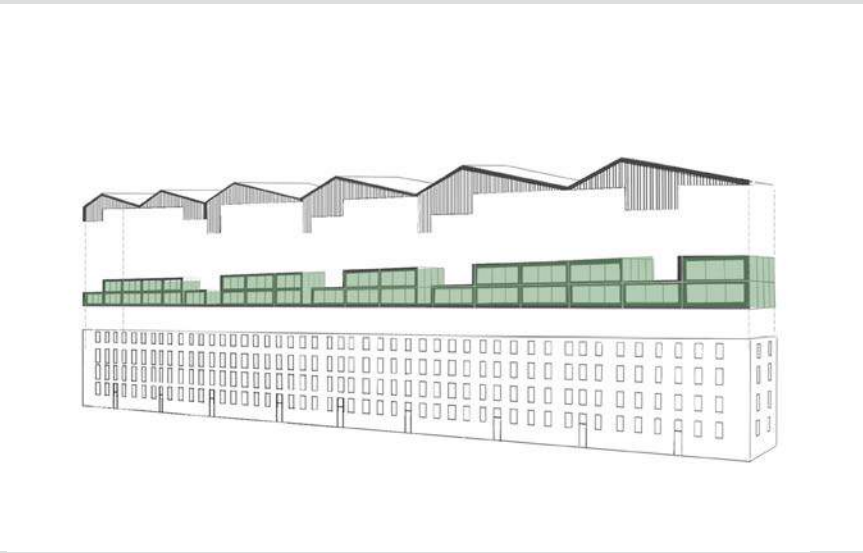
BD-0006



Preparation for extension



Modules and roof come separately

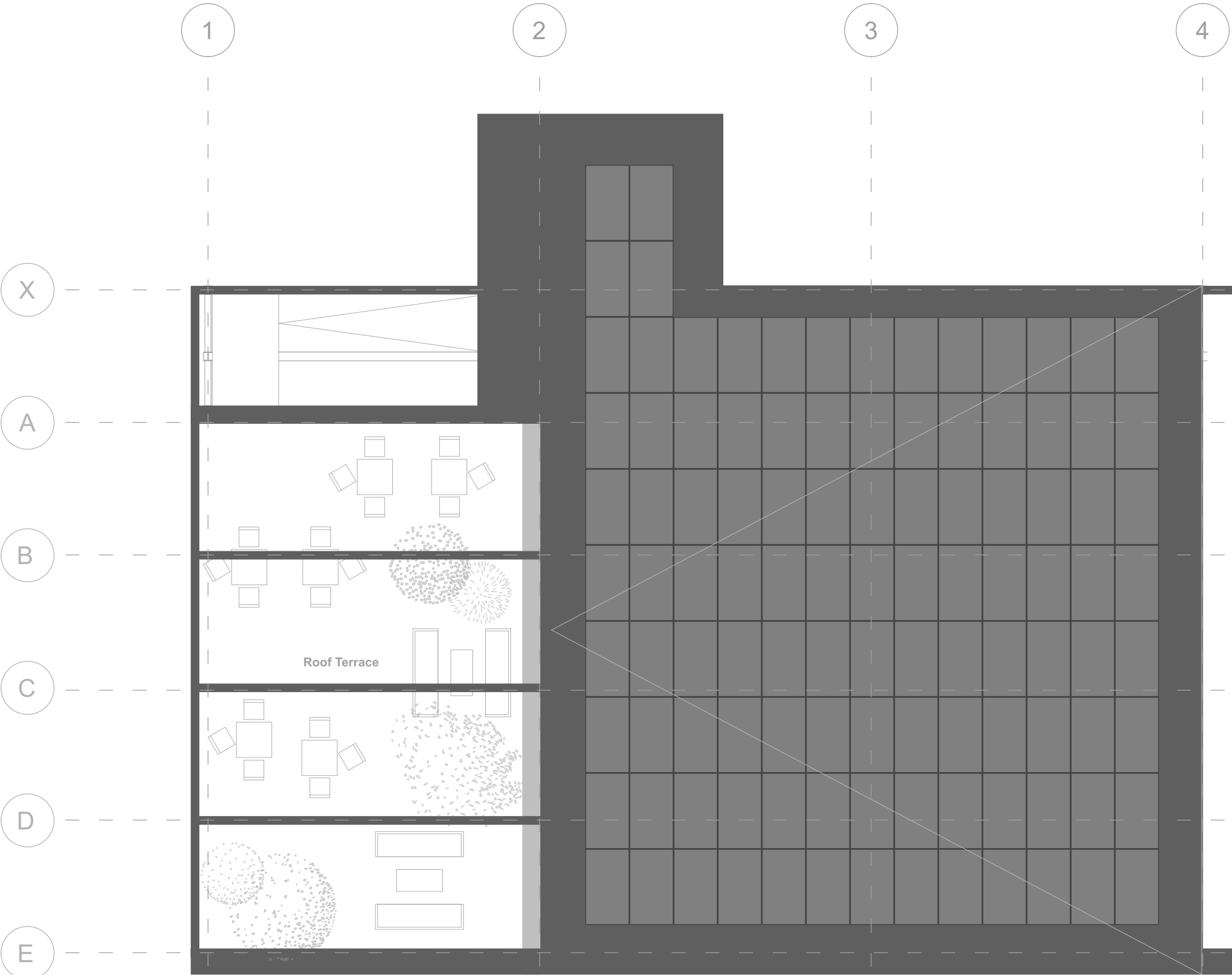
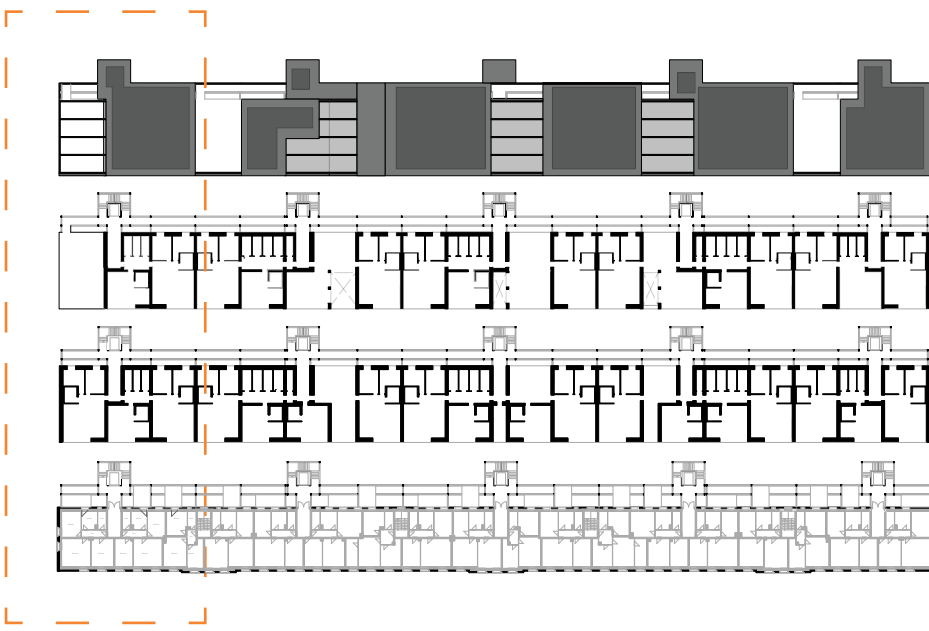


Modules are set up first

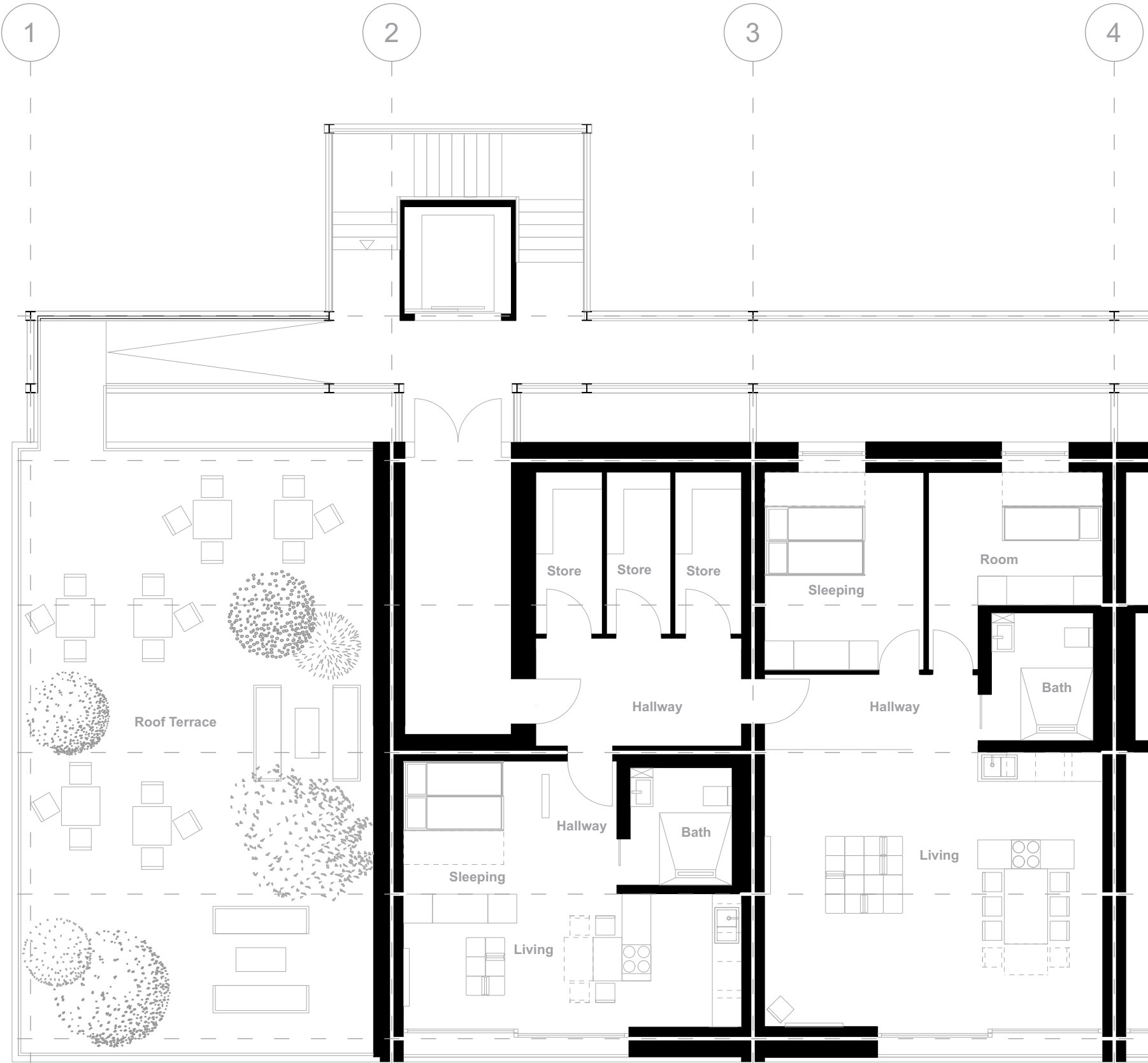
Floor and Roof Plans

The design aims to respond to the needs of the residents with innovative, economical, and small floor plans from which flexible architectural solutions can be developed. Diverse communal areas, a wide variety of green spaces, and attractive contemporary architecture represent a significant enhancement. Communal spaces result from the surplus areas that the grid brings with it, which means that they are always located near the staircases. All building residents are allowed to use these common spaces, which are intended to strengthen a sense of community and promote the connection between inhabitants. These communal spaces, some of which have two-story high fenestration, create visual connections between the storeys. By offering multifunctional spaces and communal roof areas, the building has the potential to become a new neighbourhood social hub.

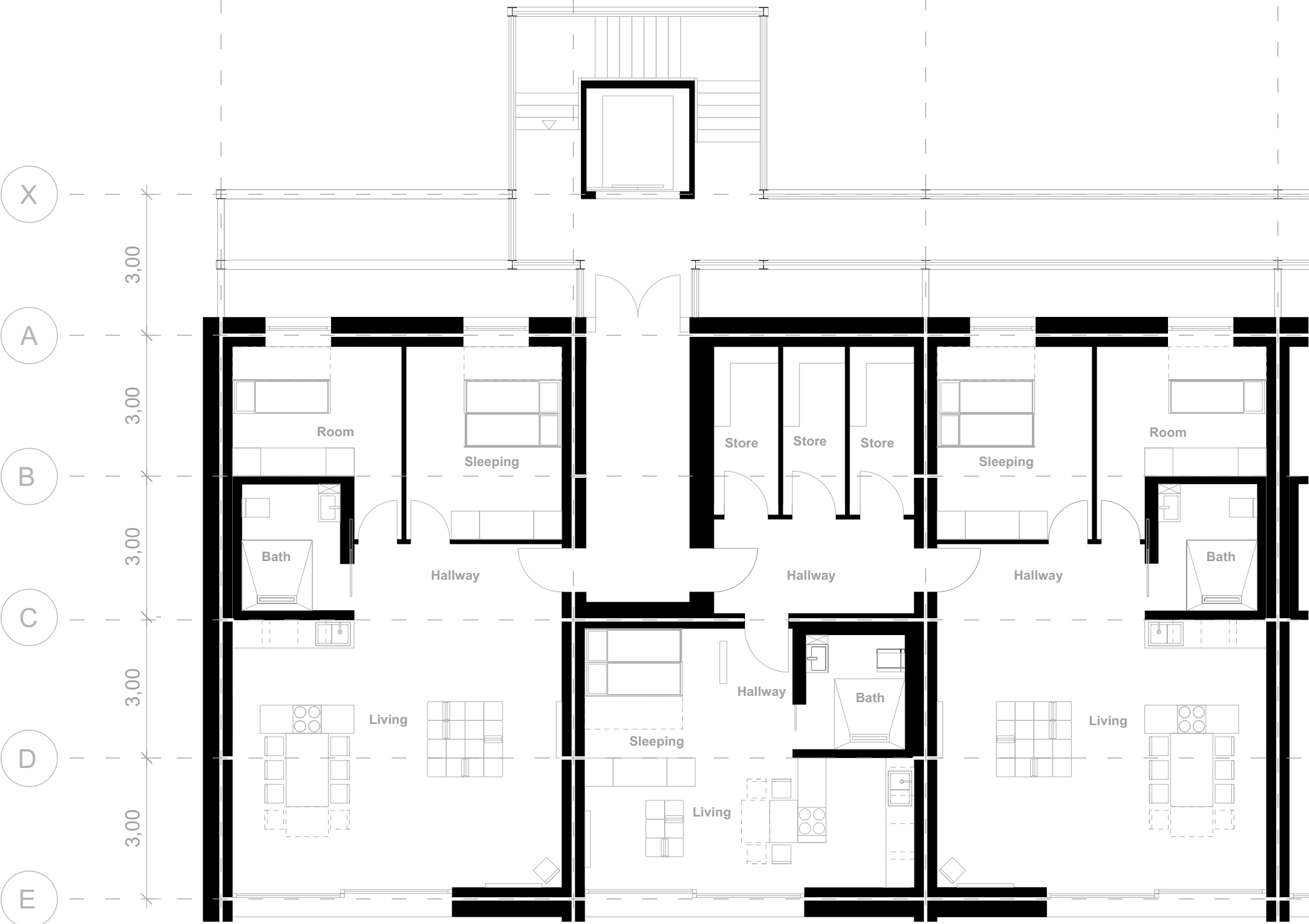
The flats in the addition of storeys are composed of two or four modules. This creates average flat sizes between 77.9m2 and 36.7m2. This offers different floor plan sizes, which provides the neighbourhood with a balanced number of small living spaces, for different constellations of people. Our goal is that everyone should be able to live in our addition of storeys, whether it be small families, pensioners, students, as well as physically impaired people. Accessibility offers many people new perspectives, and the interior spaces can also be adapted to their needs. The bathrooms and kitchens are arranged in such a way that their position utilizes pre-existing utility risers. This way, pipe lengths and shafts can be kept to a minimum. Separate storage rooms are provided for each flat on each floor, as there are no common basement or attic compartments available to the residents of the addition of storeys.



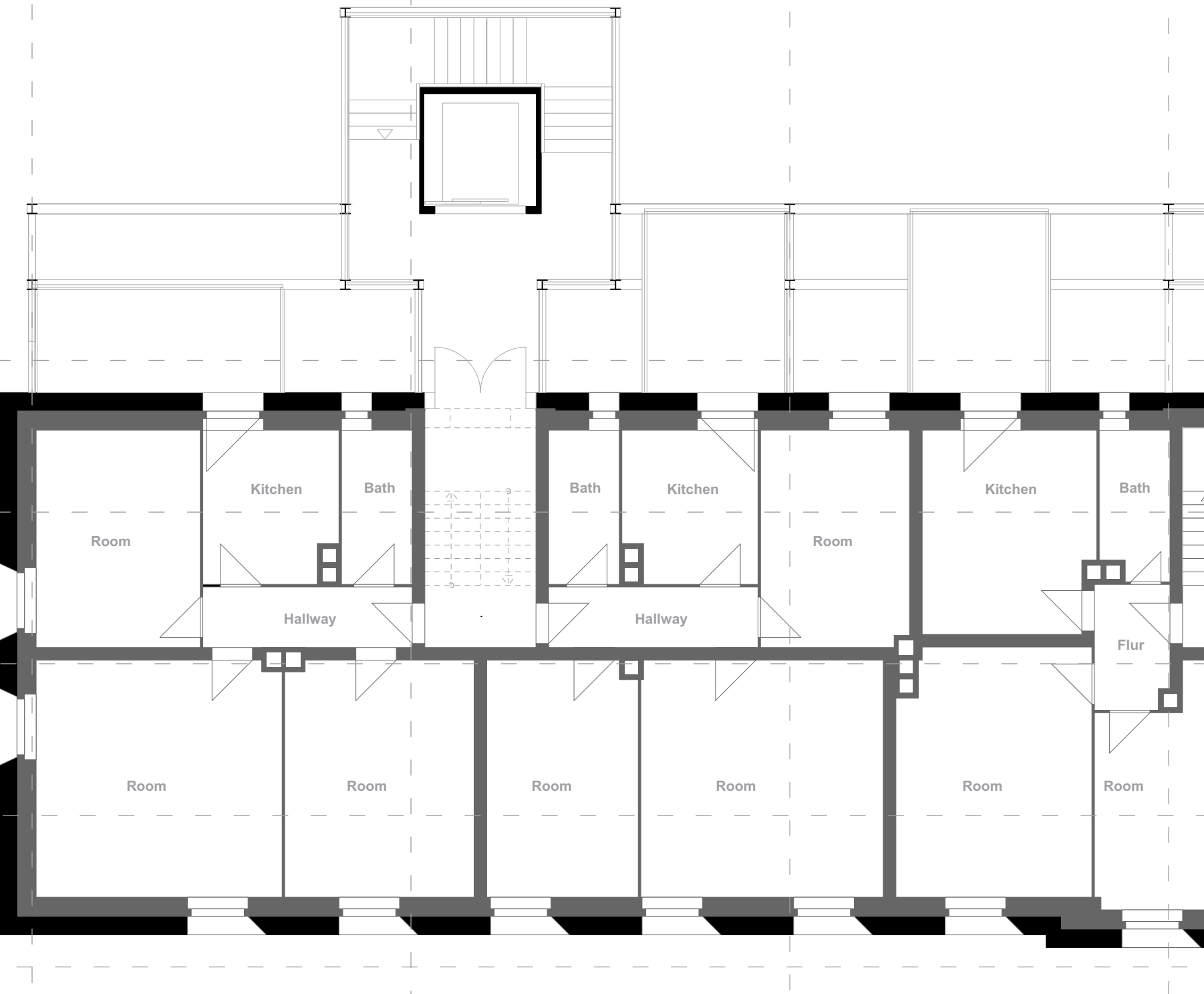
Roof supervision - Addition



Level 2 - Addition



Level 1 - Addition



Upper floor - Existing

Scale
1:100

Phase
D#6

Scale
1:100

Phase
D#6

Drawing Content
Roof Plan
of the addition

Drawing Content
Floor Plan
Level 1

BD-1203

BD-1103

Scale
1:100

Phase
D#6

Scale
1:100

Phase
D#6

Drawing Content
Floor Plan
Level 2

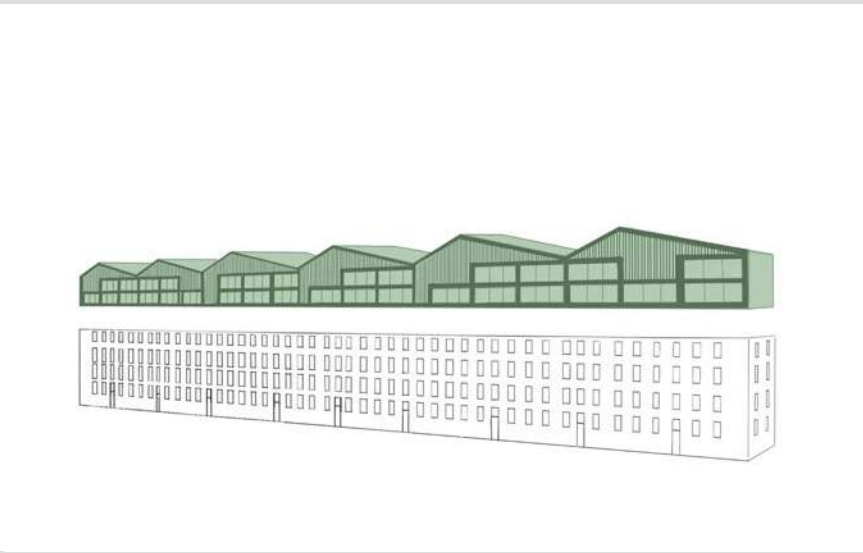
Drawing Content
Floor Plan
Existing Building

BD-1104

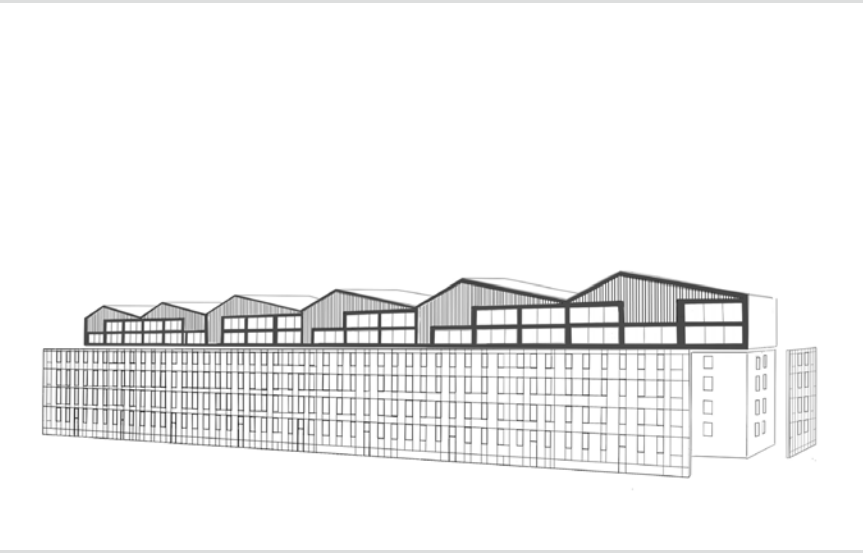
BD-1105



Then the roof is put on

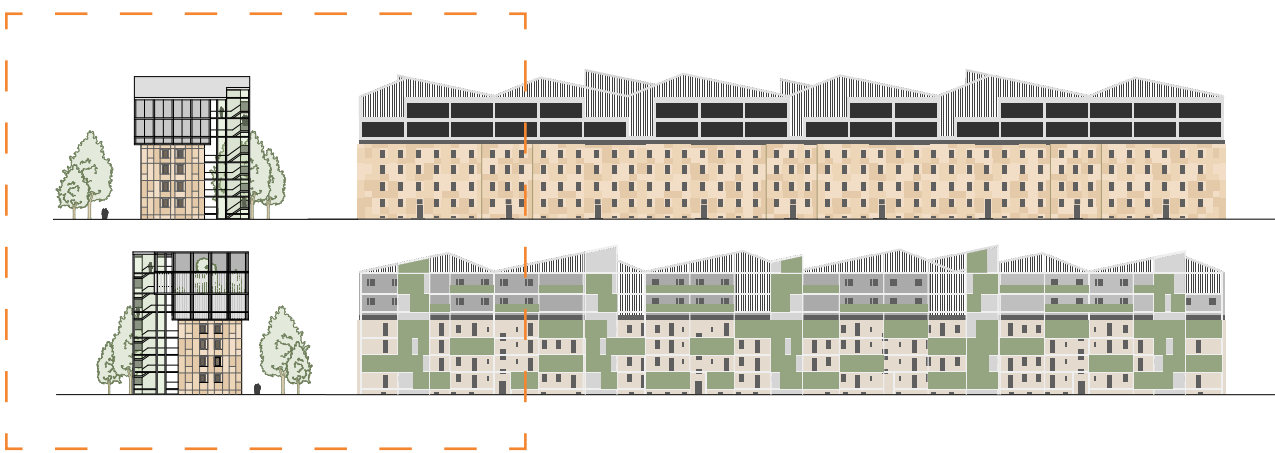


Now the extension is complete



Renovation facade for the existing building

Building Elevations



South-East

Scale 1:100 Phase D#6

Drawing Content Building Elevation South-East

BD-1301

North-West

Scale 1:100 Phase D#6

Drawing Content Building Elevation North-West

BD-1302

South-West

Scale 1:100 Phase D#6

Drawing Content Building Elevation South-West

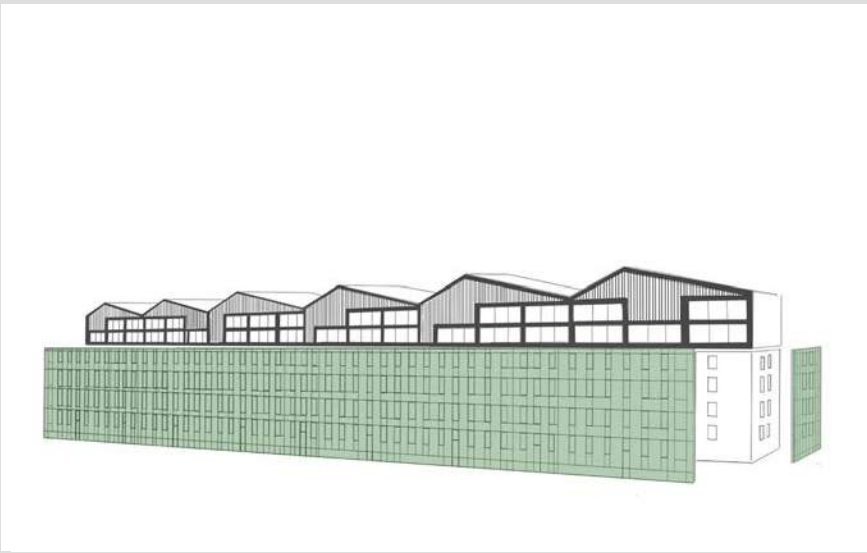
BD-1303

North-East

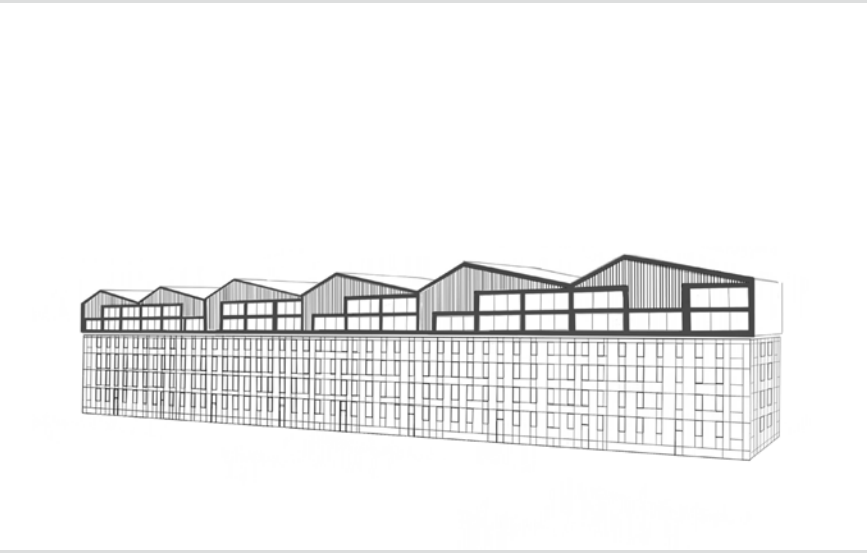
Scale 1:100 Phase D#6

Drawing Content Building Elevation North-East

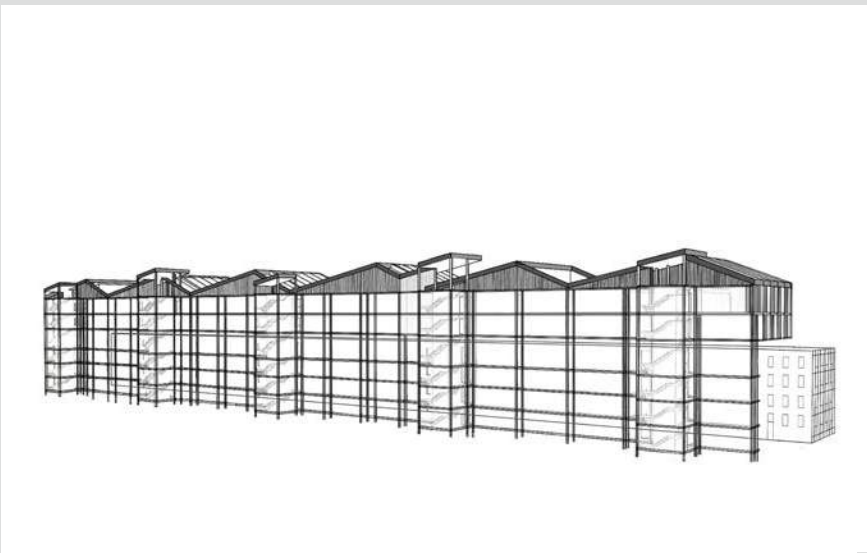
BD-1304



Facade contains PV modules and panel heating

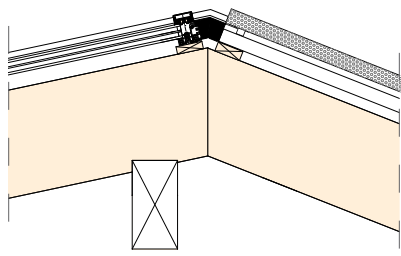
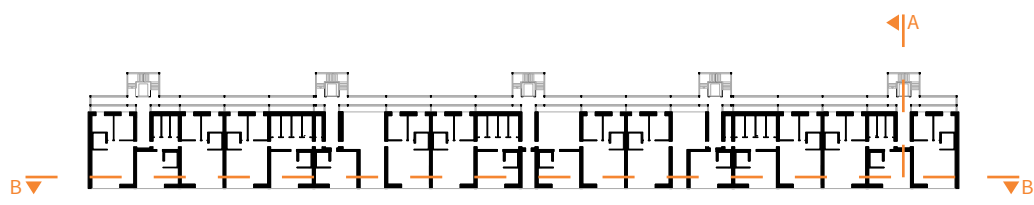


Street view with the addition



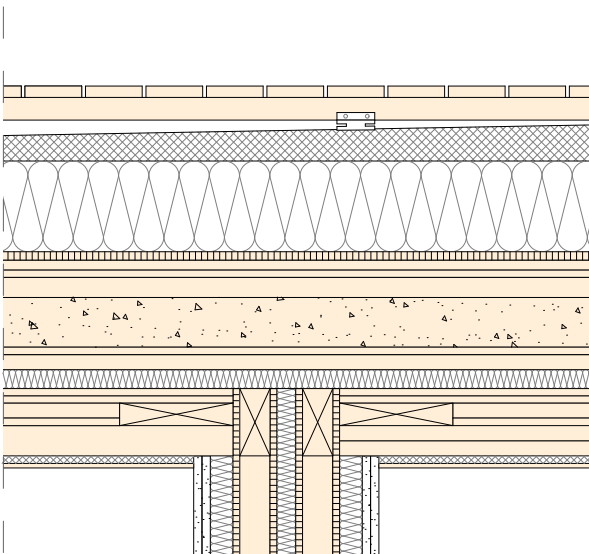
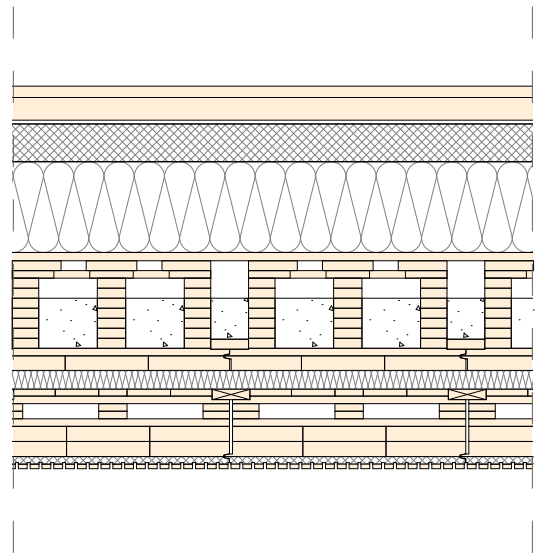
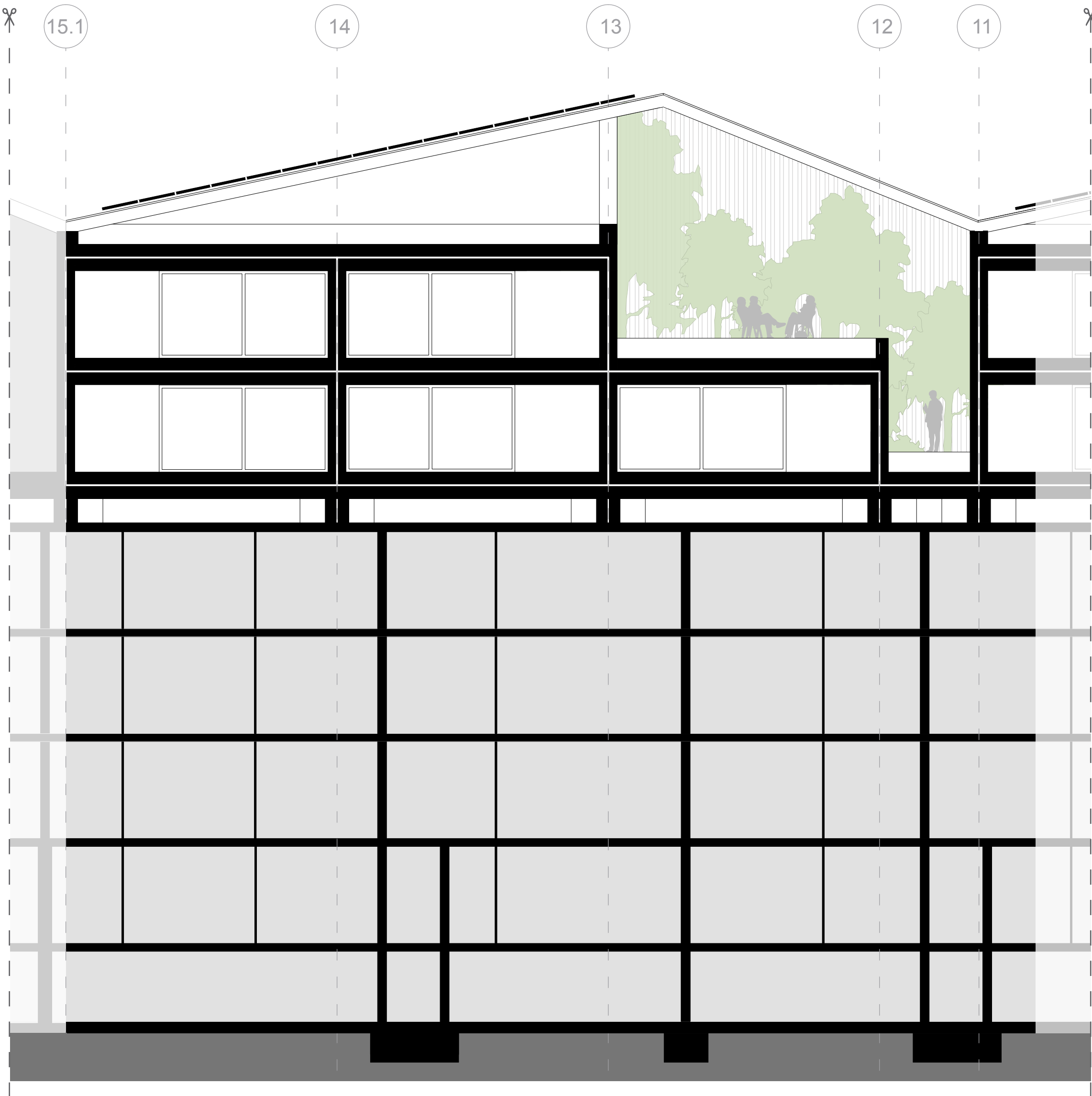
Garden view Installing the exoskeleton

Building Sections

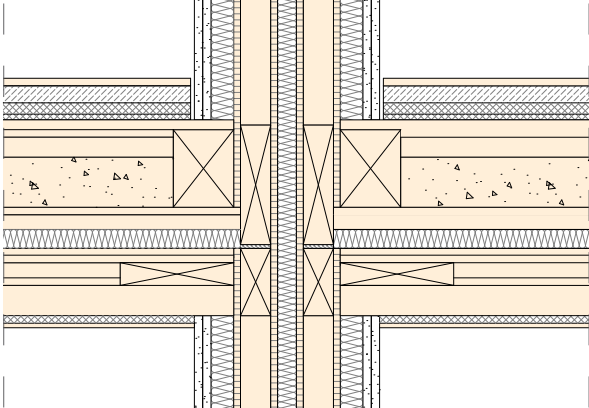
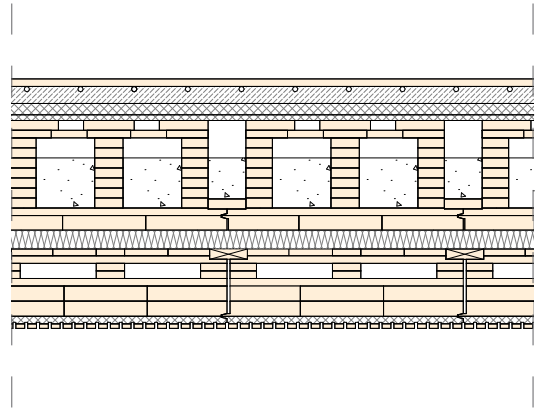


Ridge point
01 Glass roof
02 Transition
03 PVT module
04 Substructure
05 Sheet metal roof
06 Wooden construction
07 Truss
08 Beam

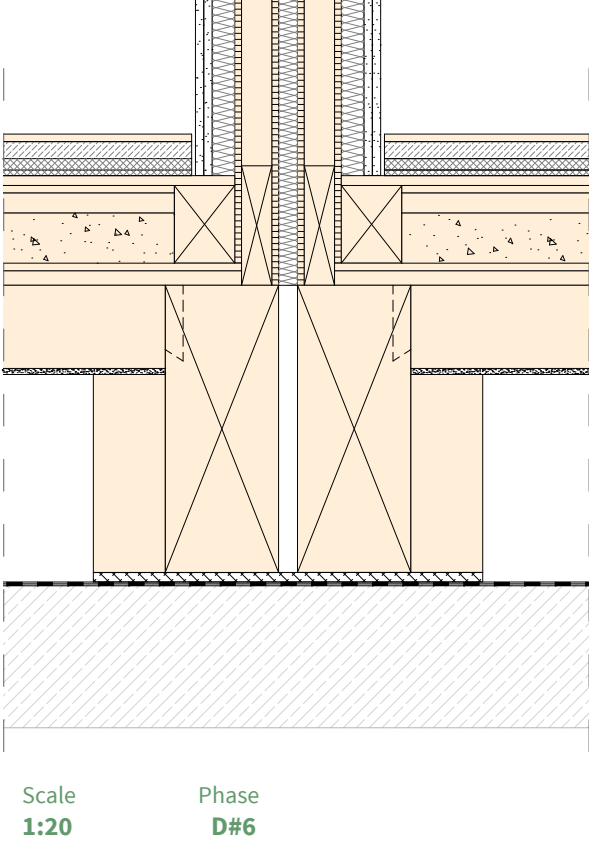
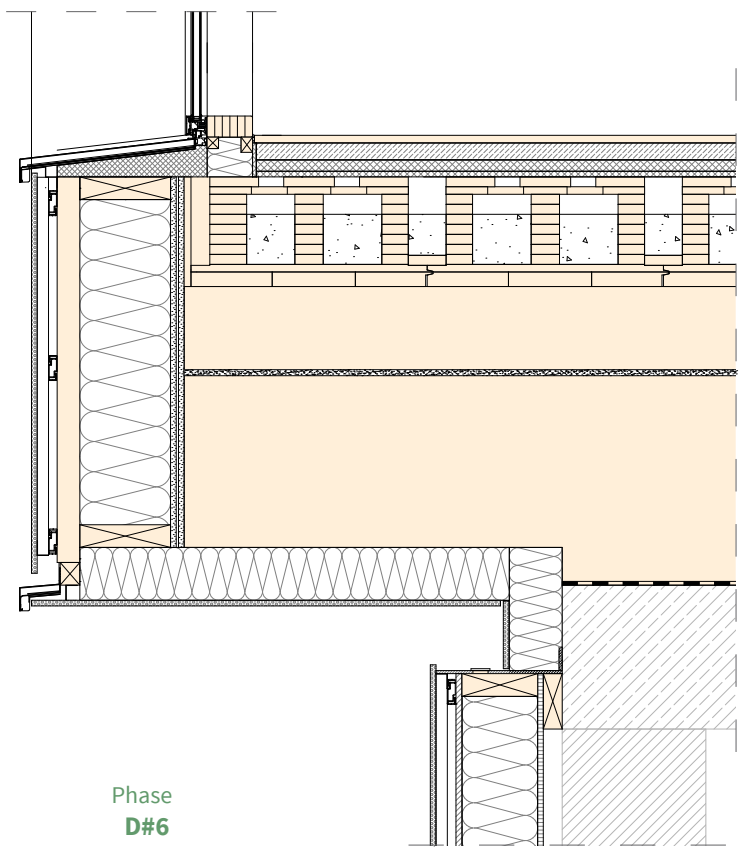
Scale 1:20 Phase D#6
Drawing Content
Ridge Point
of the Roof
BD-2001



Roof structure
01 Terrace covering with larch
02 Waterproofing wood protection
03 Substructure with larch
04 Adjustable feet
05 Slope insulation
06 Insulation pressure-resistant
07 Waterproofing
08 Spruce formwork
09 Ligno rib Q3 with shedding
10 Insulation / installation level
11 Ligno Block Q3 / Acoustics

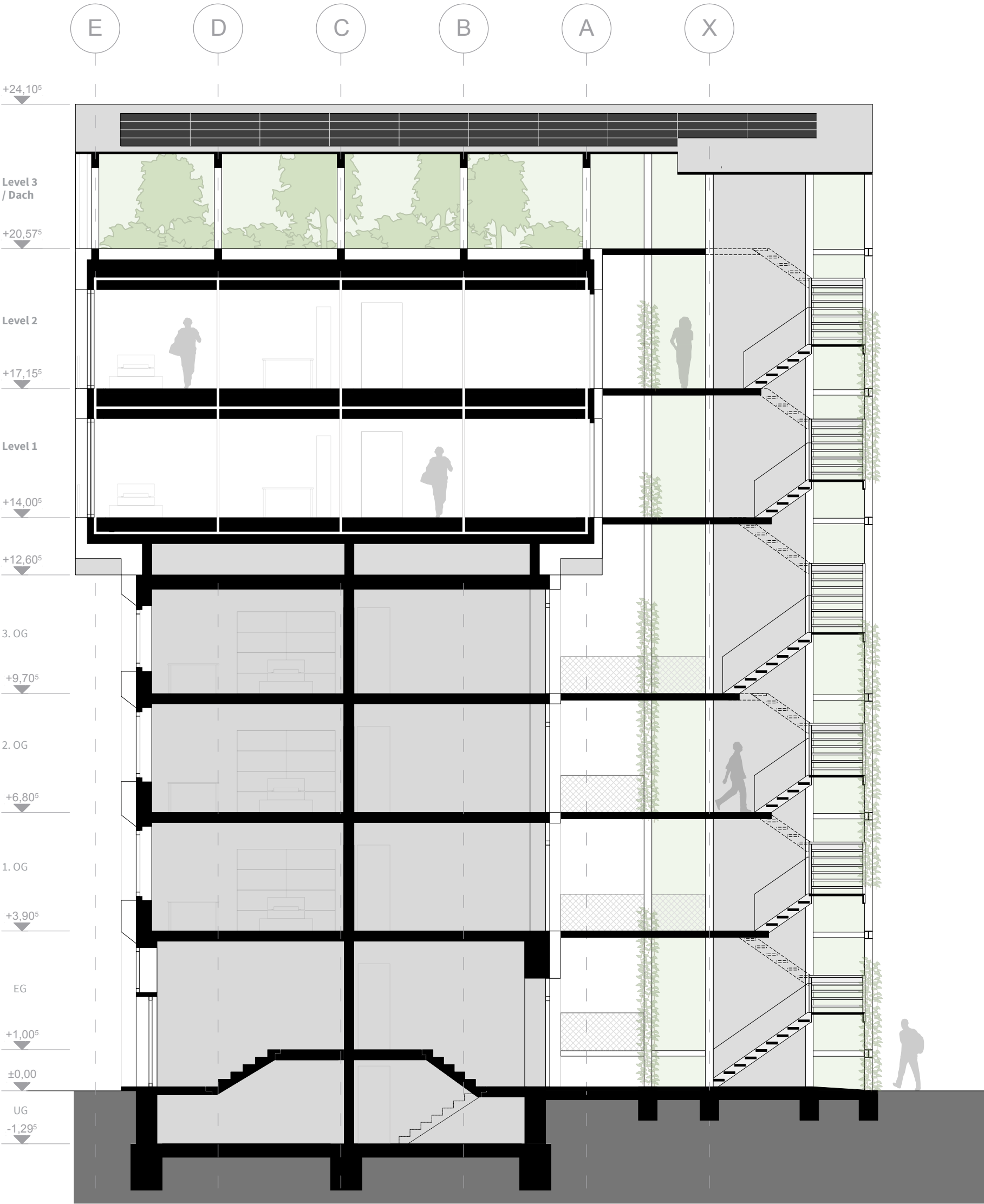


Intermediate floor structure
12 Wooden floorboards
13 Dry screed / Underfloor heating
14 Impact sound insulation
15 Pressure distribution plate
16 Waterproofing
17 Ligno Rippe Q3 with shedding
18 Insulation / installation level
19 Ligno Block Q3 / Acoustics



Wall construction
30 Clay building board 2x
31 Installation level
32 Spruce formwork diagonal
33 Spruce squared timber
34 Spruce formwork diagonal
35 Insulation

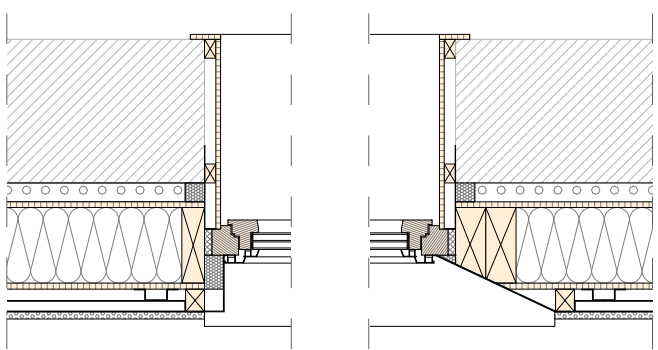
Floor structure
20 Wooden floorboards
21 Dry screed / Underfloor heating
22 Impact sound insulation
23 Pressure distribution plate
24 Waterproofing
25 Ligno rib Q3
26 Wooden beam / Insulation
27 Fiber cement board
28 Support widening
29 Hardwood beam



Scale 1:100 Phase D#6
Drawing Content
Building Section
B-B
BD-1401

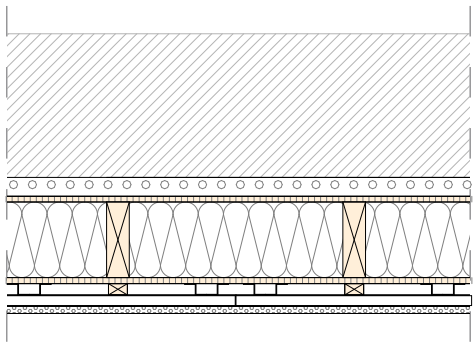
Scale 1:20 Phase D#6
Drawing Content
Cross Section
Module Structure
BD-2101

Scale 1:20 Phase D#6
Drawing Content
Vertical Section
Module Structure
BD-2102



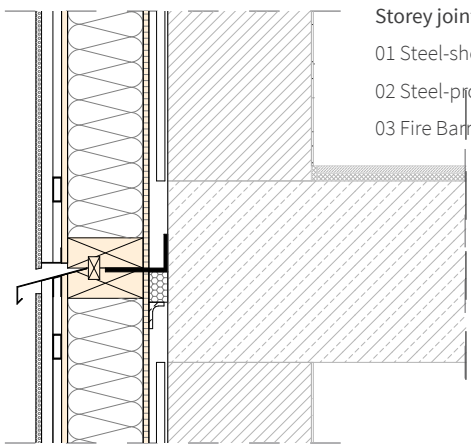
Window detail
01 Wooden window reveal
02 Substructure
03 Existing wall
04 Waterproofing
05 Fire barrier
06 Wood-aluminum window
07 Insulation
08 Soffit aluminium sheet

Scale 1:20 Phase D#6
Drawing Content
Horizontal Section
Window Detail
BD-2002

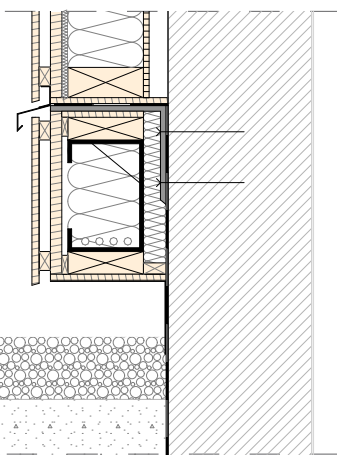


Renovation facade
01 Existing wall
02 Surface heating in insulation layer
03 ESB board
04 Wooden stud construction / insulation
05 Wood fiber board
06 U-shaped profile
07 Wood Battening
08 Photovoltaic module

Scale 1:20 Phase D#6
Drawing Content
Horizontal Section
Renovation Facade
BD-2003

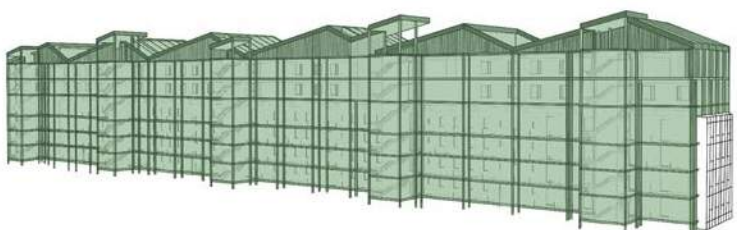


Storey joint with fire barrier
01 Steel-sheet
02 Steel-profile
03 Fire Barrier



Facade finish with cable duct
01 Sealing
02 Steel-angle
03 Sheet steel
04 Steel profile
05 Cable ducts in the construction
06 sheet steel
07 Gravel strip
08 End profile

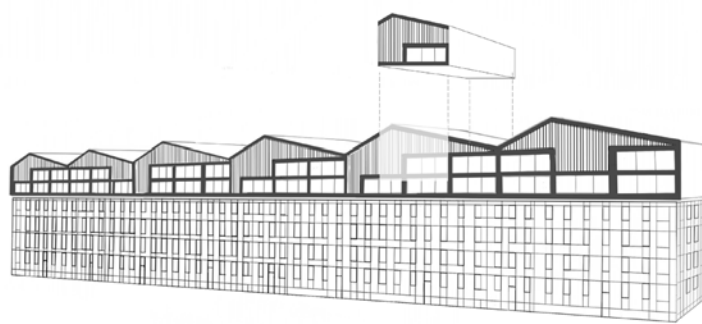
Scale 1:20 Phase D#6
Drawing Content
Vertical Section
Renovation Facade
BD-2004



Exoskeleton with stairs and lifts



Biodiversity roof and facade greening



Section of the HDU

