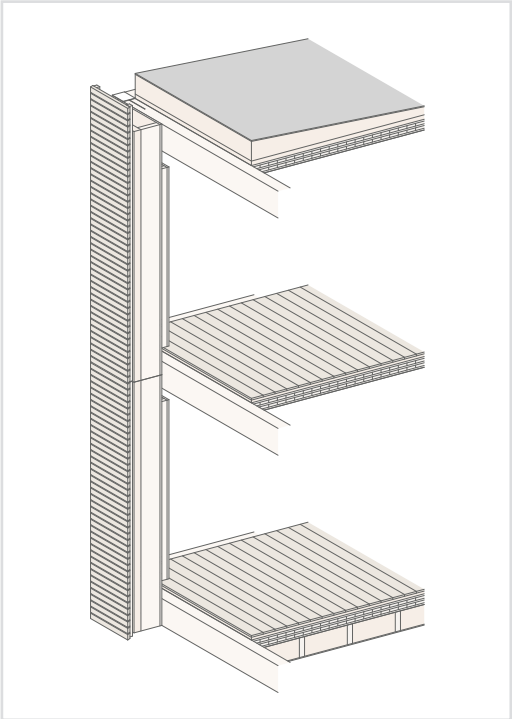
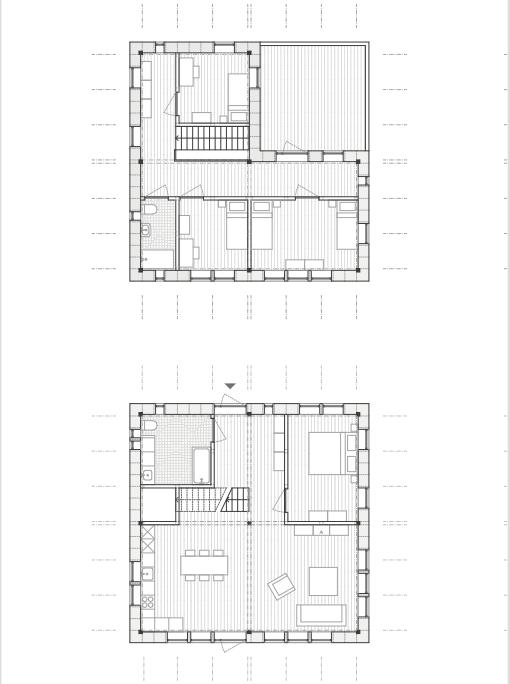
LÜTHI MATHILDE

SUSTAINABLE HOUSING CONSTRUCTION

- modular details and typology





BUILDING DESIGN FOR SUSTAINABILITY

Supervisor: Walter Unterrainer
Examiner: Paula Femenias
MT´21

This thesis aims to explore the potential of flexibility in housing to work out the problems around resources and waste from the construction industry. Their availability and their usage after a project are concerning. There can be many strategies to improve these issues; in this proposal, the focus intends to propose a building system for housing projects that could optimized material usage and building lifespan. Therefore, the proposal will explore two scales: layout design and technical drawings.

With these different approaches to explore, there will be various methods used to pursue this research. For the building layout, it will go through reports, references, and experimentation in the subjects of dimensions and modularity. For the building system, there is a preliminary phase of prospection and inventory of existing solutions, then with these results, it is possible to experiment while still doing some research to complete the design. These two parallel developments are then assembled and shown in a generic proposal.

During the process of this thesis research, many elements were learned about construction solutions and possible assembly methods. The main achievement is the design of the building system that is made of modules to allow a longer lifespan. There have been plenty of challenges as the possibilities of solutions were endless and complex to attain the goal of disassembly and adaptability. The final proposition is showing how those issues have been solved and arranged together. The building layout aspect was less challenging; however, it was still constrained to the dimensions of the construction. In the end, both aspects of the thesis are working in cohesion to pursue a longer lifespan.

Using concepts of adaptability, design for disassembly and modularity in cohesion with architectural reflections on materiality and dimensions has helped to propose a system that is flexible and durable over time. The overall project shows that there are many possibilities to solve resources and waste issues with simple and efficient designs.

Keywords: adaptability, disassembly, modularity, building system, layout.