

STUD FRAME ELEMENTS

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Advantages



Low material
and labor **costs**



Use less raw materials than
other building types and can
be considered to be **more**
sustainable.



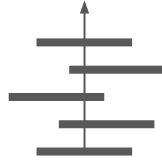
Ease and simplicity of
construction. Joints and
connections are highly
standardized, requiring low
skill.

Disadvantages



Rigid and inflexible **use of space.**

Large, open spans are not very possible due to structural restrictions.



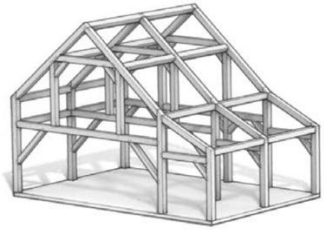
Restrictions to **building height**. Whether it is because of local building code, or because this systems works well for residential, more than 3 storey projects is quite difficult.



Hollow wall panels become more of a **fire safety** concern compared to solid engineered wood materials.

Overview of Wooden Stud Frame Construction

A Timeline



Timber
Frame

Large beams &
posts



Balloon
Frame

lightweight components, easily
shipped and simply joined.

Long sticks from foundation to roof



Platform
Frame

Shorter lengths of timber
Storey-by-storey
Solves problem of fire transfer

future



Accentuate
Industrialisation
Finished volumes

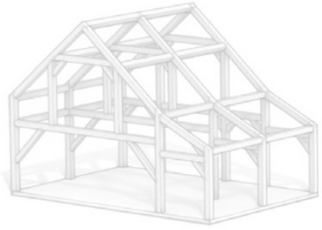


Parametric
System
Fabrication by
robots



Overview of Wooden Stud Frame Construction

A Timeline



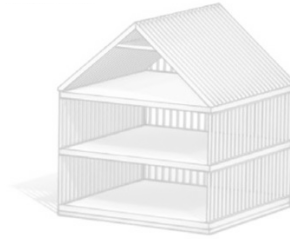
Needed a cheaper and faster way
To build houses



Balloon Frame

lightweight components, easily
shipped and simply joined.

Long sticks from foundation to roof



Platform Frame

Shorter lengths of timber
Storey-by-storey
Solves problem of fire transfer

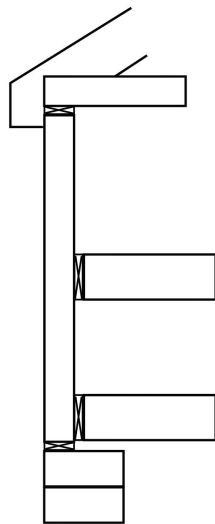
future



Accentuate
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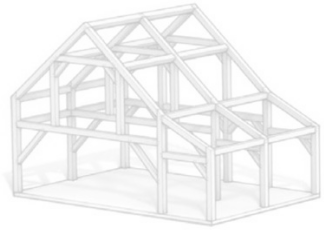


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Overview of Wooden Stud Frame Construction

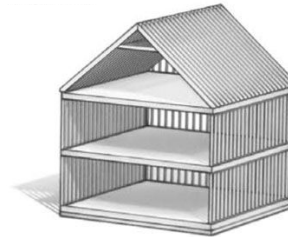
A Timeline



Needed a cheaper and faster way
To build houses



Issue with fire safety



Platform
Frame

Shorter lengths of timber
Storey-by-storey
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future



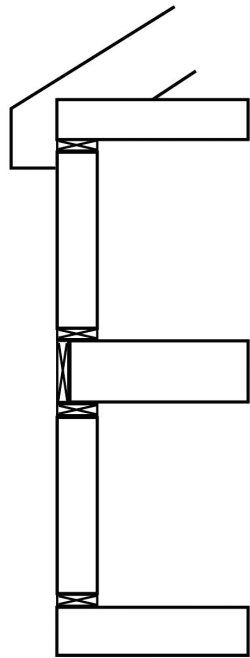
Accentuate
Industrialisation
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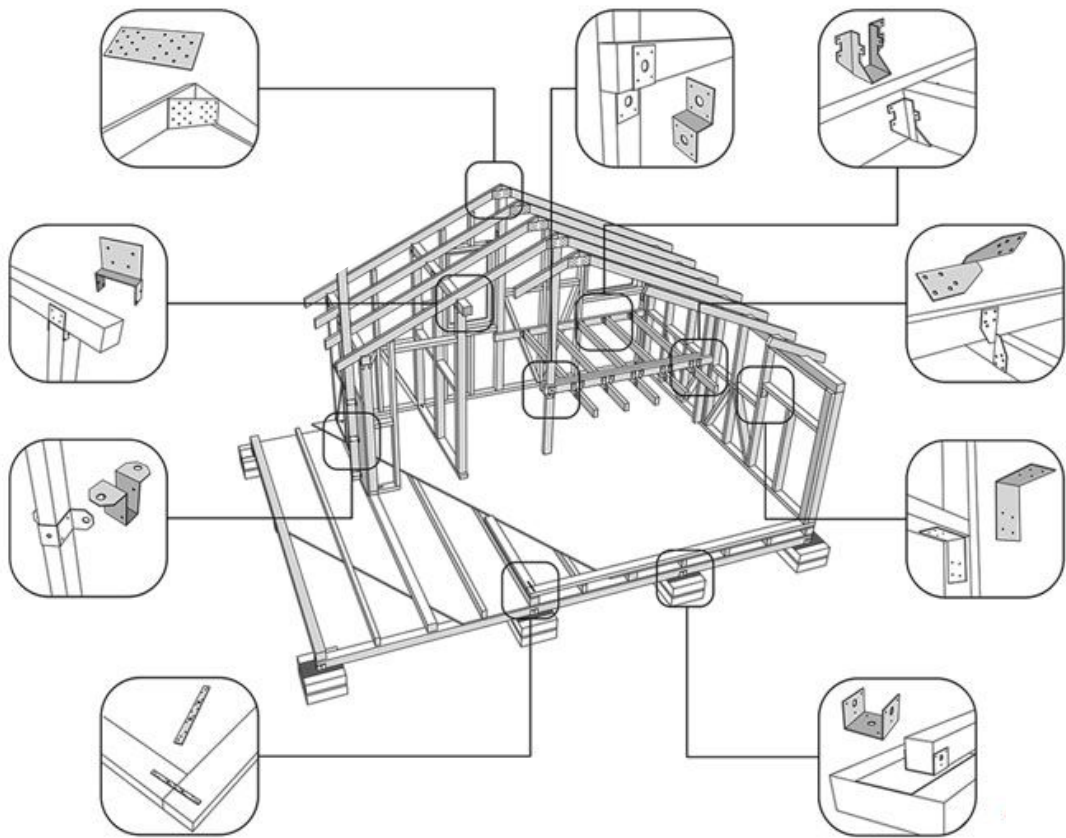


Parametric
System
Fabrication by
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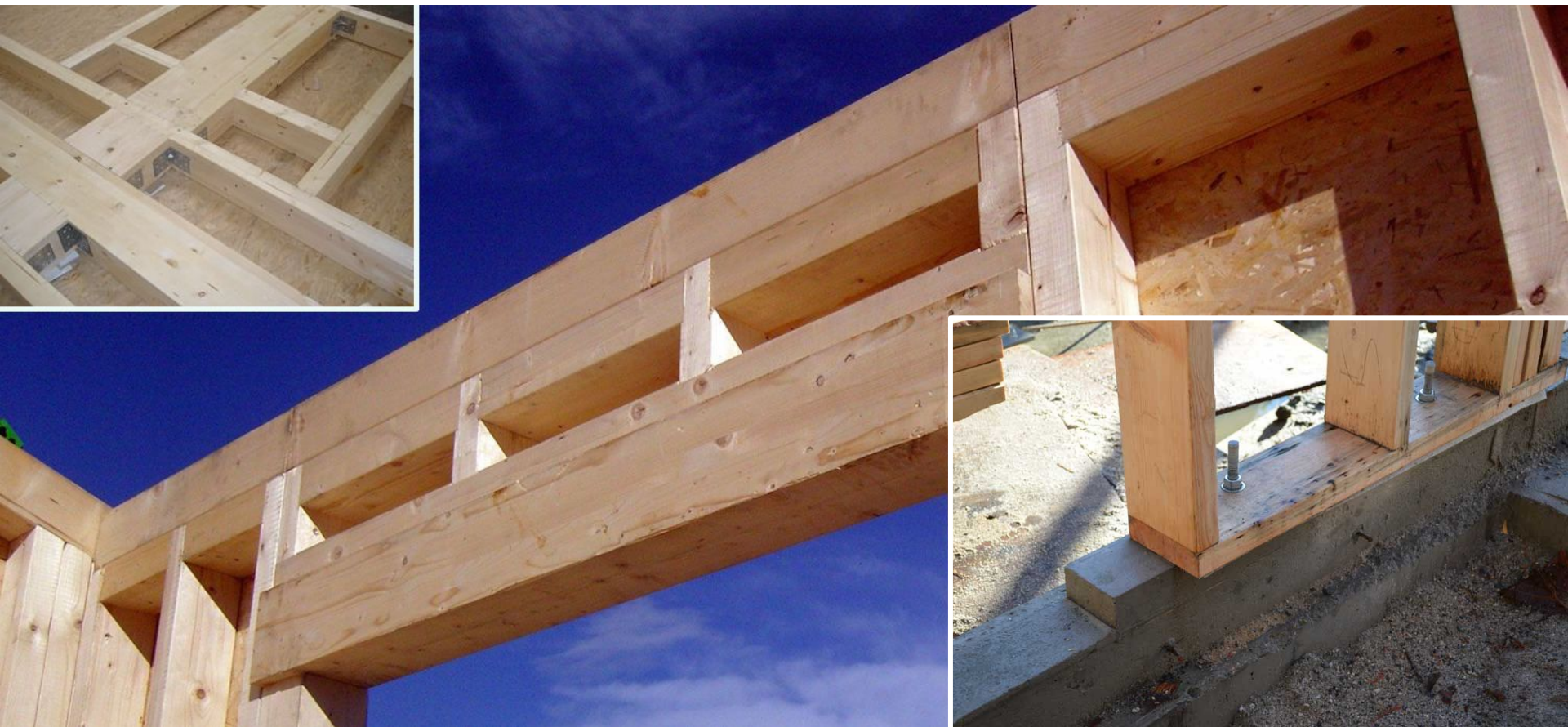


Dutchinny





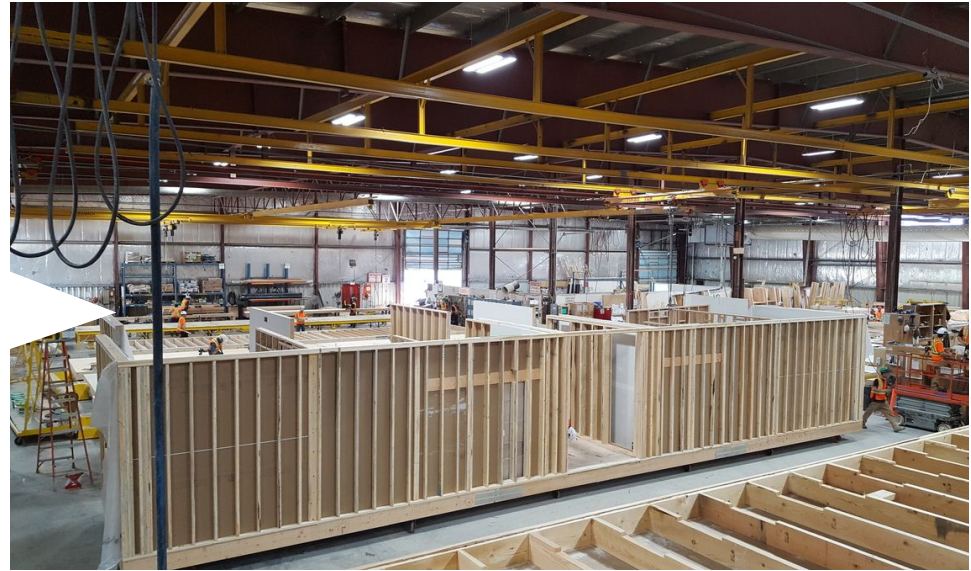
Small House Framing Connectors





Overview of Wooden Stud Frame Construction

Building process



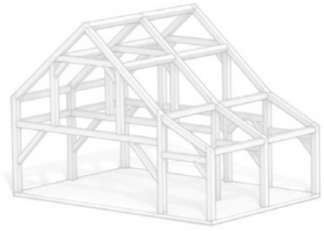
Overview of Wooden Stud Frame Construction Building process

Wood prefabrication as panels



Overview of Wooden Stud Frame Construction

A Timeline



Needed a cheaper and
faster way
To build houses

Issue with fire safety

Assembly on site -
needs weather
protection

future



Accentuate
Industrialisation
Finished volumes



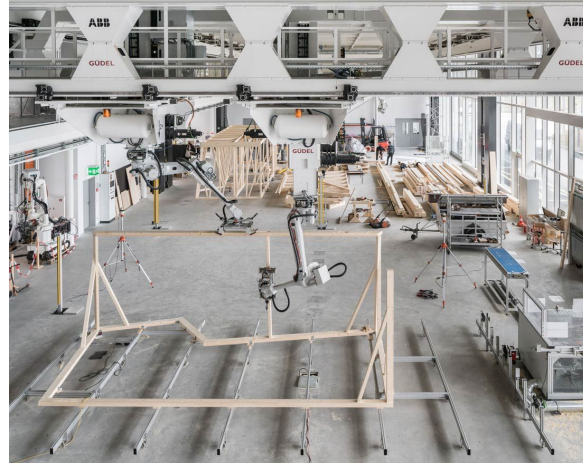
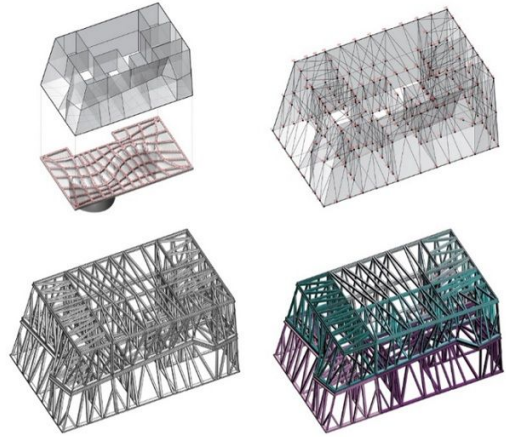
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Overview of Wooden Stud Frame Construction Building process

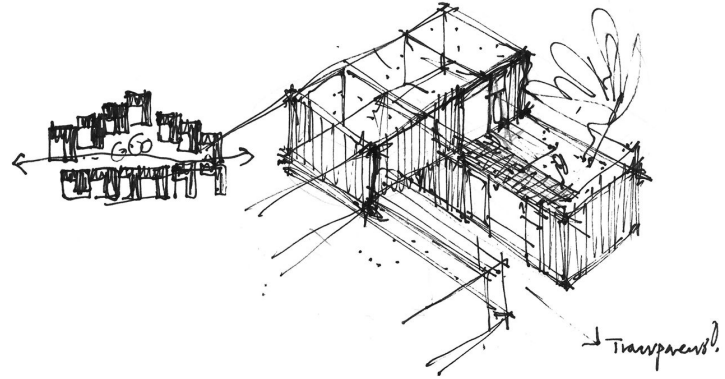
Wood prefabrication as modules



This form of construction is growing in popularity and is particularly well suited to buildings such as student residence, hotels, staff accommodation and in instances when site access is limited or in remote regions.







CASE STUDIES

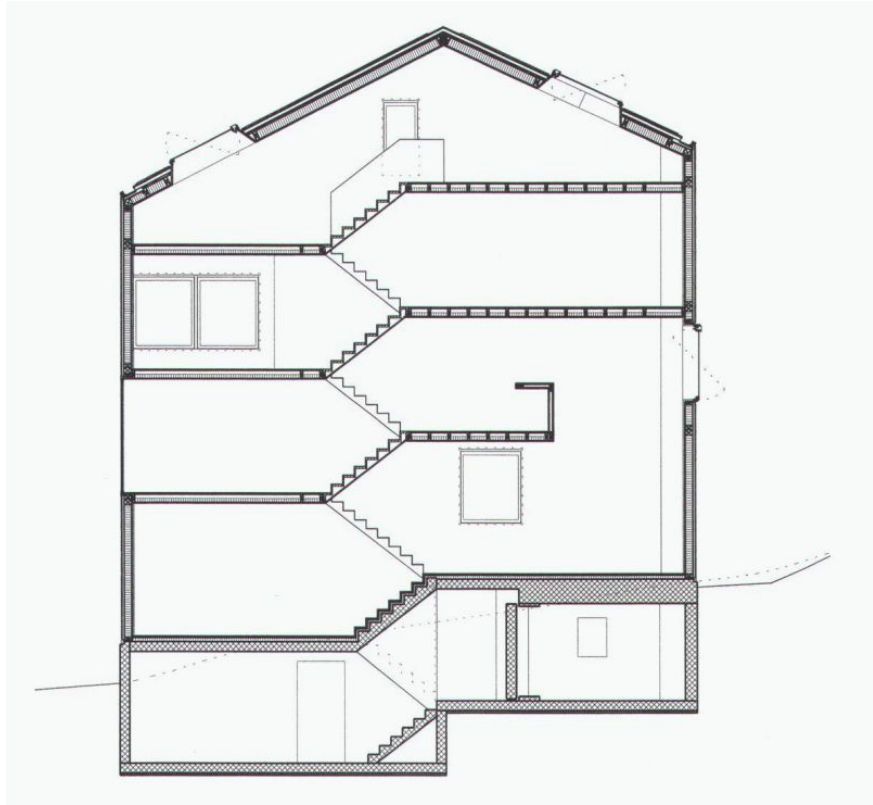
Haus Willimann

Bearth + Deplazes

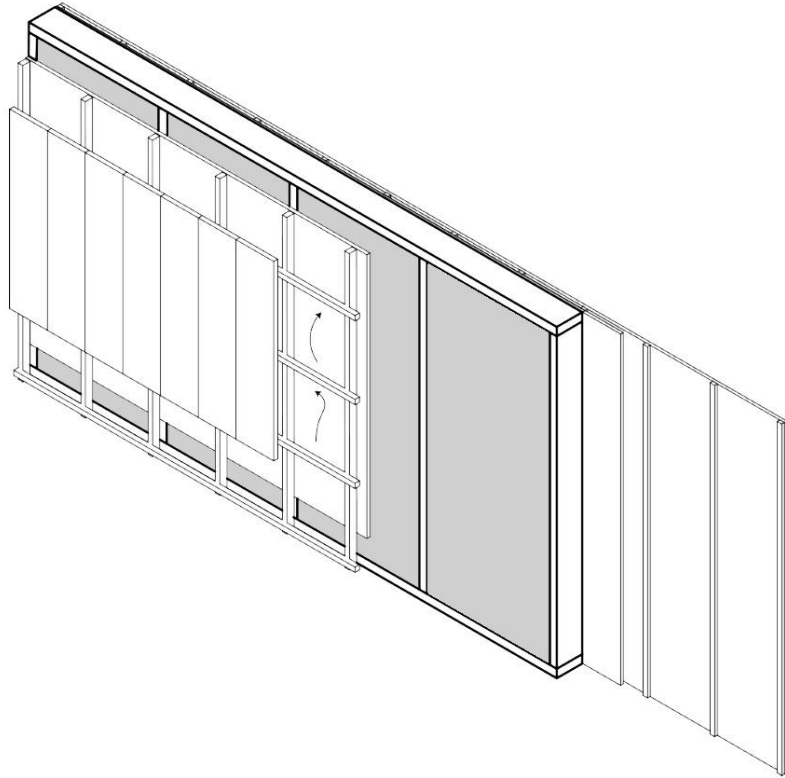
Prefabricated walls

- The house's timber frame was prefabricated in sections and standard windows, such as used for pitched roofs, were pre-fitted on both façades and roof.
- Quick assembly





Wall detail



sheathing 22 mm

battens 25 mm

counter-battening / ventilation 40 mm

Soft fiber board 18 mm

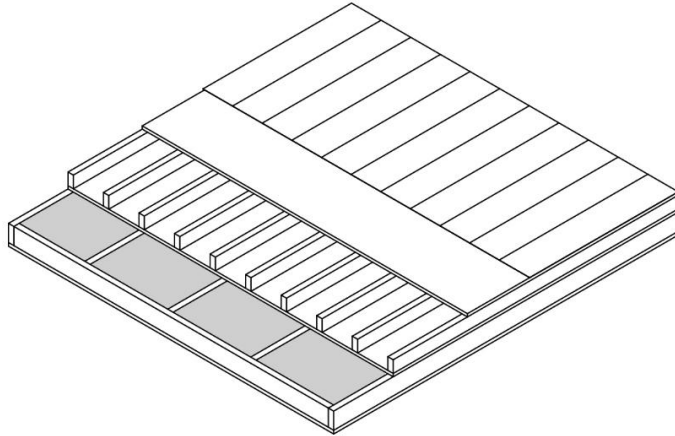
Wooden studs / thermal insulation 140 mm

OSB 3-layer board 15 mm

battens 15 mm

Internal panel 15 mm

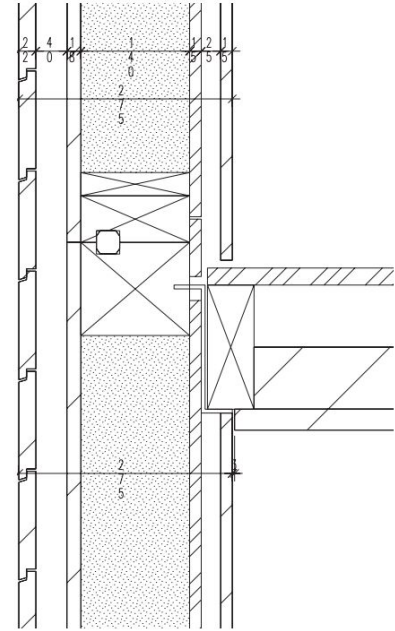
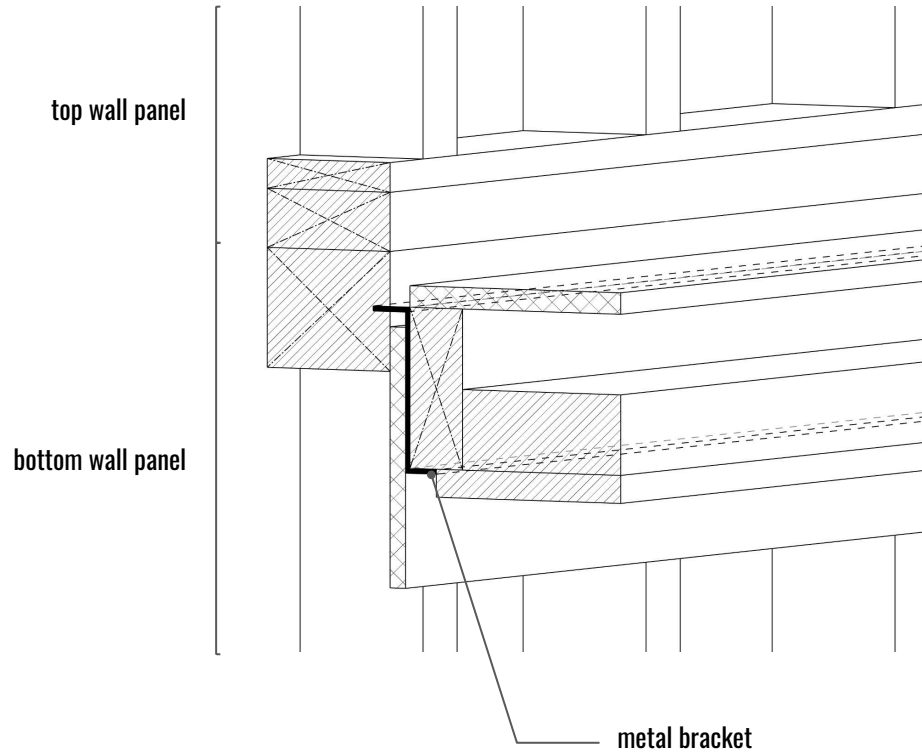
roof detail



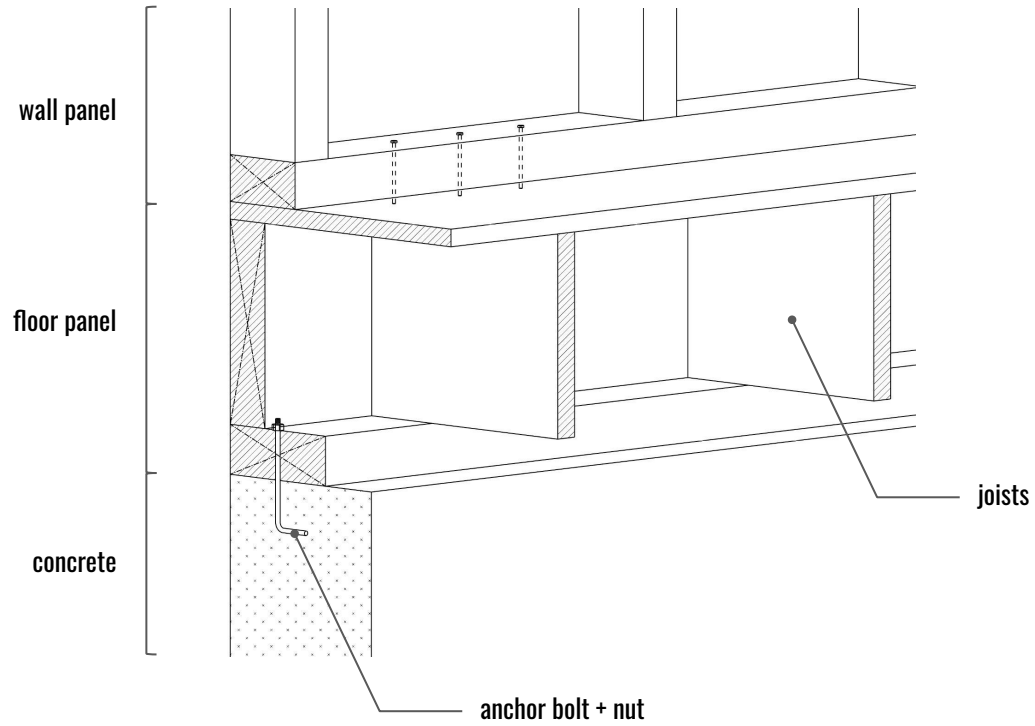
- standing seam zinc roofing 0.6 mm
- wood cladding 24 mm
- Battens / ventilation 100 mm
- Soft fiberboard 24 mm
- Wooden studs / thermal insulation 180 mm
- Internal panel 27 mm



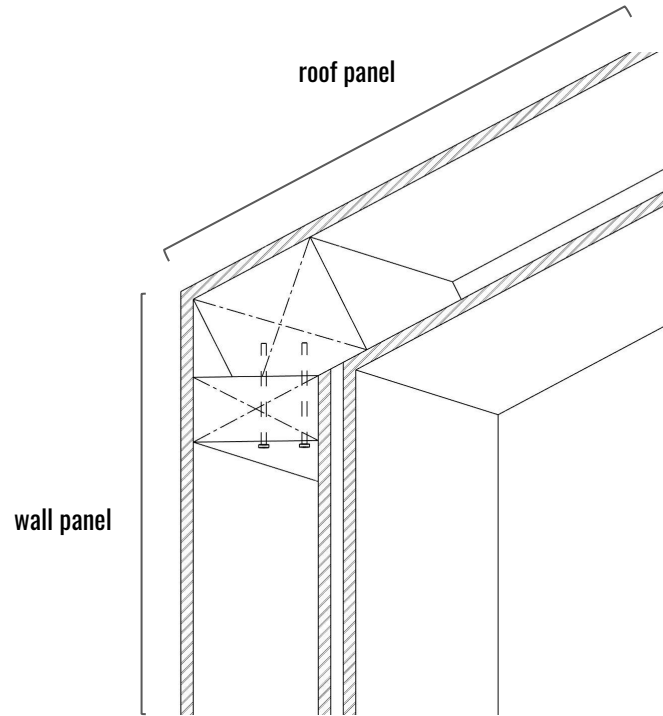
wall-platform connection detail



ground connection detail



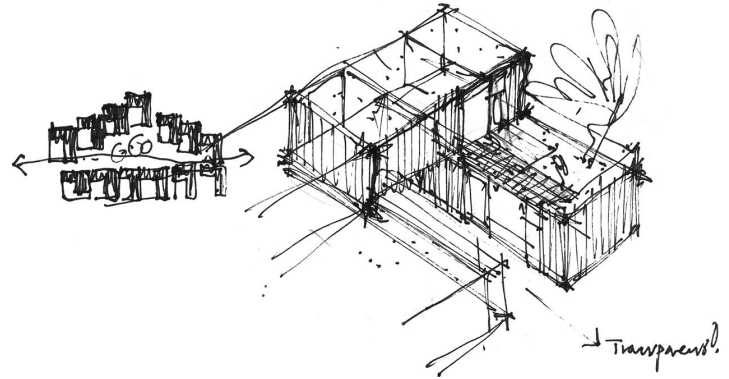
roof connection detail





Housing Development in Kvistgård

Architect:	Vandkunsten Architects
Location:	Kvistgård, Denmark
Year:	2008
Area:	75-150m ²
Scale of Project:	72 Units



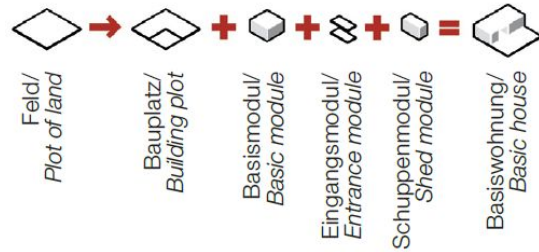
“Who cares what it costs, as long as it looks cheap?”

– Tegnestuen Vandkunsten

Morphology and Massing

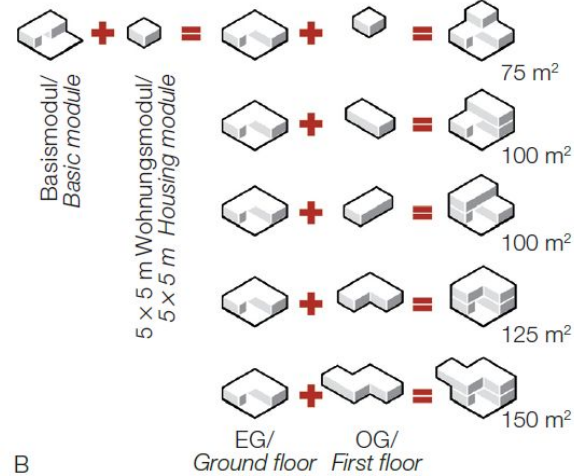
Each unit exists on a 5x5m grid with two type of modules allowing for five different layouts. The ground level layouts are fixed while the upper floor can be varied.

Wohnungen – Module/
Housing modules



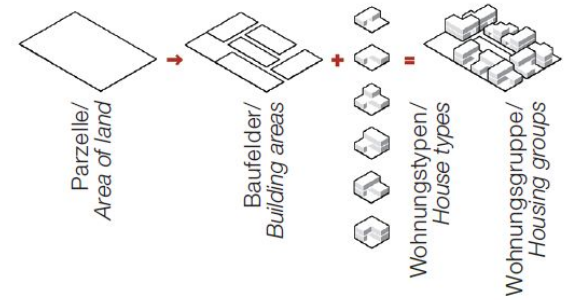
A

Wohnungen – Typen/
House types



B

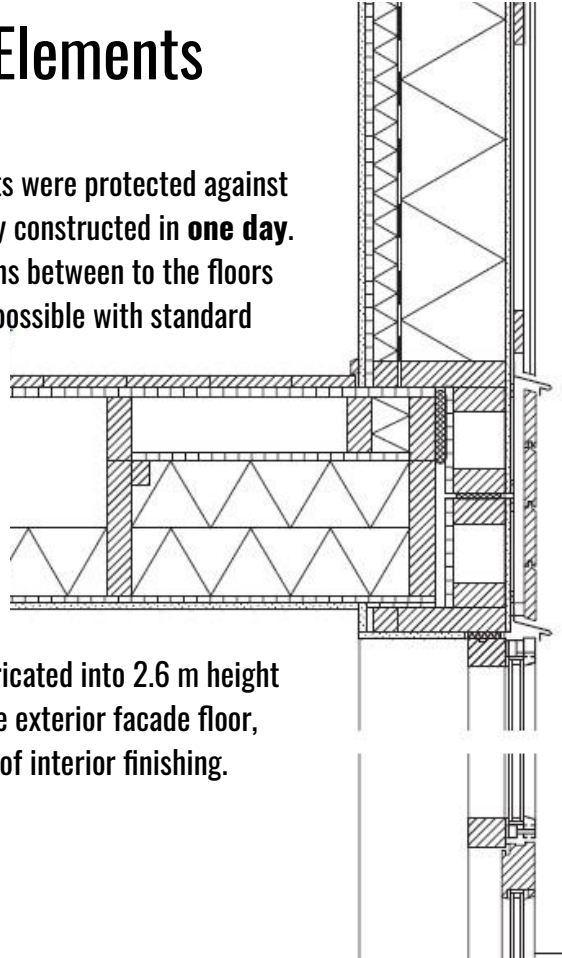
Wohnungen – Gruppen/
Housing groups



C

Prefabricated Wall Elements

To ensure that the prefabricated units were protected against the weather, each unit had to be fully constructed in **one day**. To make this possible, the connections between to the floors and facades were kept as simple as possible with standard steel L-brackets.



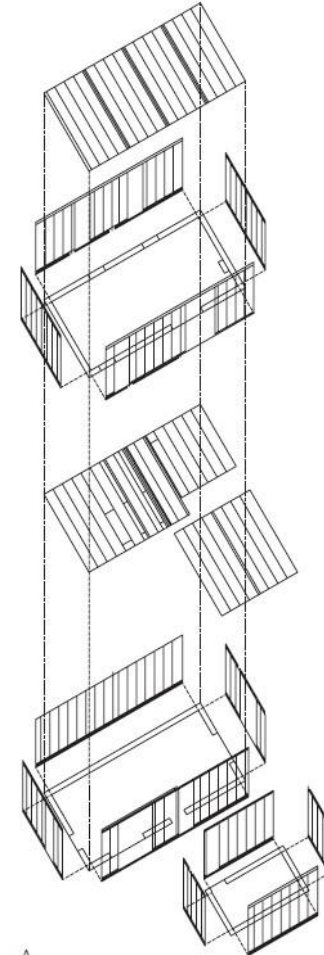
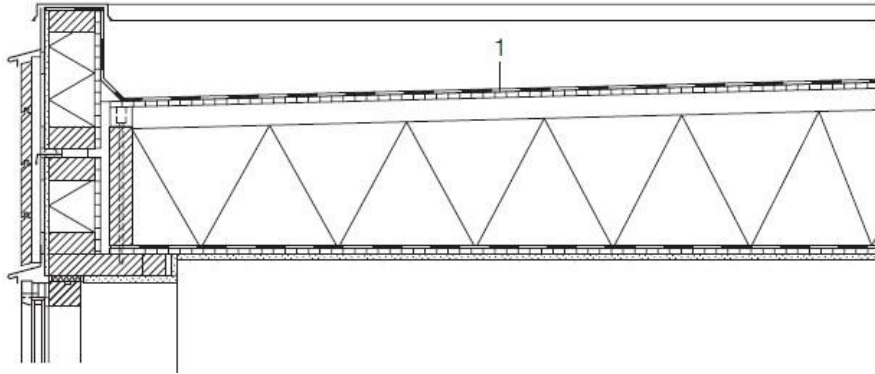
The wall panels were entirely prefabricated into 2.6 m height 'complete spatial cells' except for the exterior facade floor, exterior sealing, and a small amount of interior finishing.



Prefabricated Floor + Roof Elements

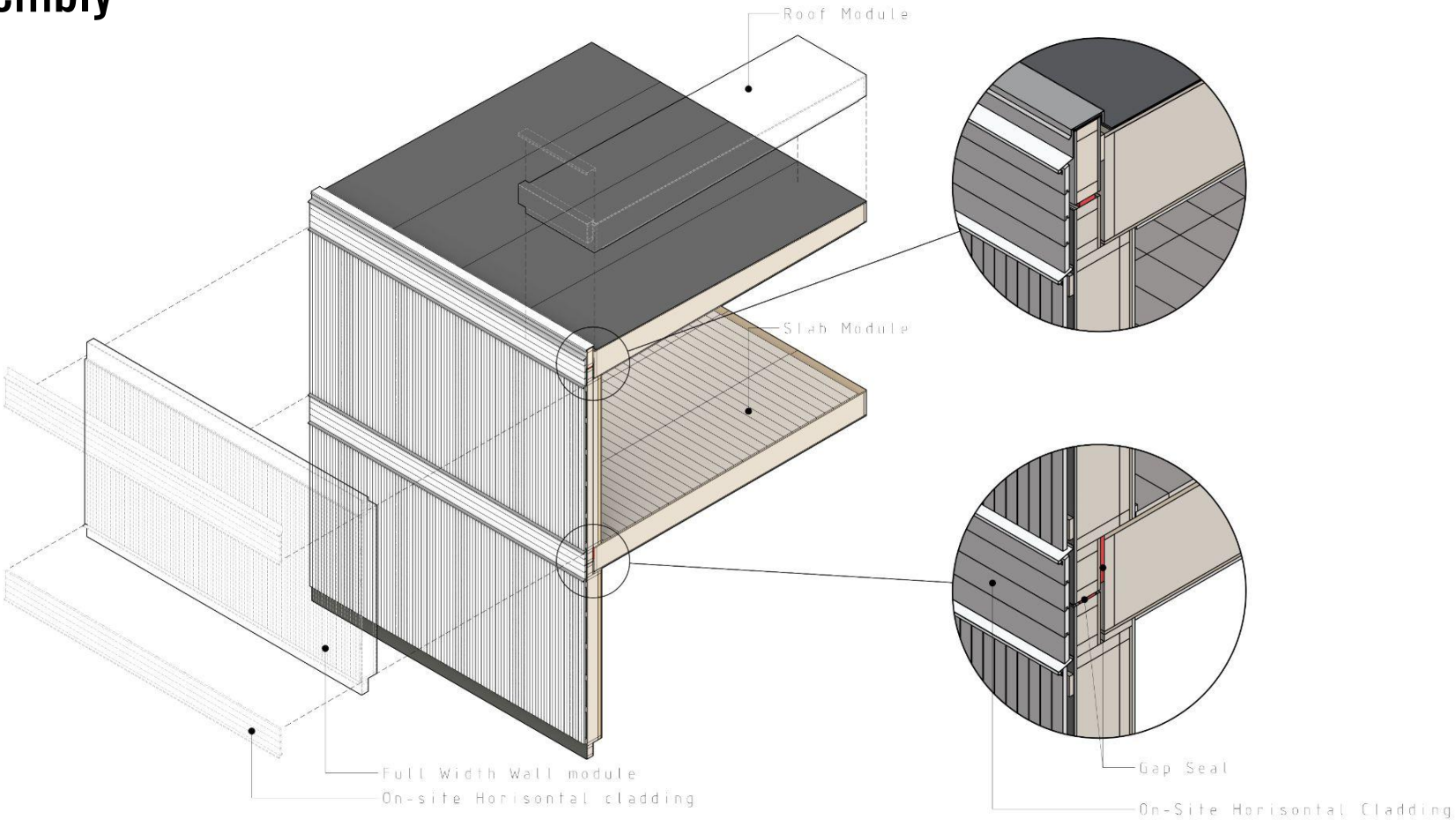
The floor and flat roof panels are 5 x 1.25m modules that were craned into place, building floor by floor. The final exterior facade and sealing details were done on-site.

Transportation guidelines required police escort because the units were larger than 3 x 3.6m.



A

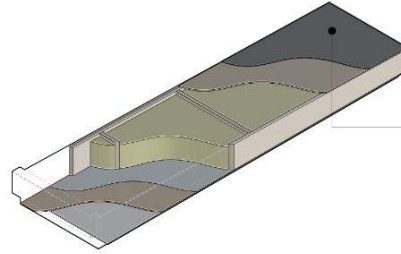
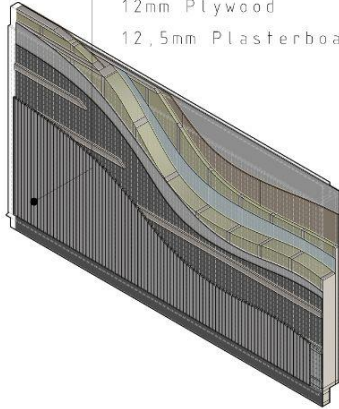
Assembly



Prefabricated Elements

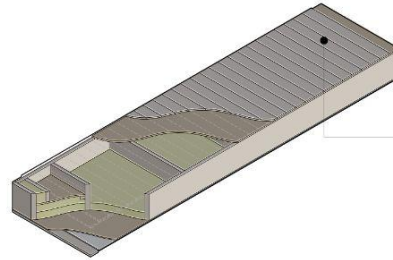
Wall Module

- 21mm Pine Boarding
- 19mm Battens
- 6mm Wood-Fibre Sheeting
- 9mm Plasterboard
- 45/195mm Studs
- Mineral Wool
- 0,15mm Vapor barrier
- 45/45 Battens
- Mineral Wool
- 12mm Plywood
- 12,5mm Plasterboard



Roof Module

- 5mm Bitumen
- 15mm Plywood
- 290-410/45 Studs
- Air
- 245-365mm Mineral Wool
- 0,15mm Vapor Barrier
- 12mm Plywood
- 12,5mm Plasterboard



Slab Module

- 19/150 Bambu Flooring
- 19mm Plywood
- 360/45 Studs
- Air
- 100mm Mineral Wool
- 12mm Plywood
- 12,5mm Plasterboard

9min59

AND..... THANK YOU.