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NOT GREAT, NOT TERRIBLE

Sustainable, High-Performance Building Solutions in Wood (HiBiWood)

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Project code: 2020-1-LV01-KA203-077513



HAMK



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OUR PROJECT

- **Users:** young families or young people between 25-35 years
- **Extra rooms:** bicycle room, storage room, common space for all residents.
- **Outdoor space:** Basketball courts, green area for residents, playgrounds for kids.
- **Number of apartments:** 70 flats
- **Number of buildings:** 6
- **Construction class III:** 10,15 (3 floors)
- **Ratio:** 0,548



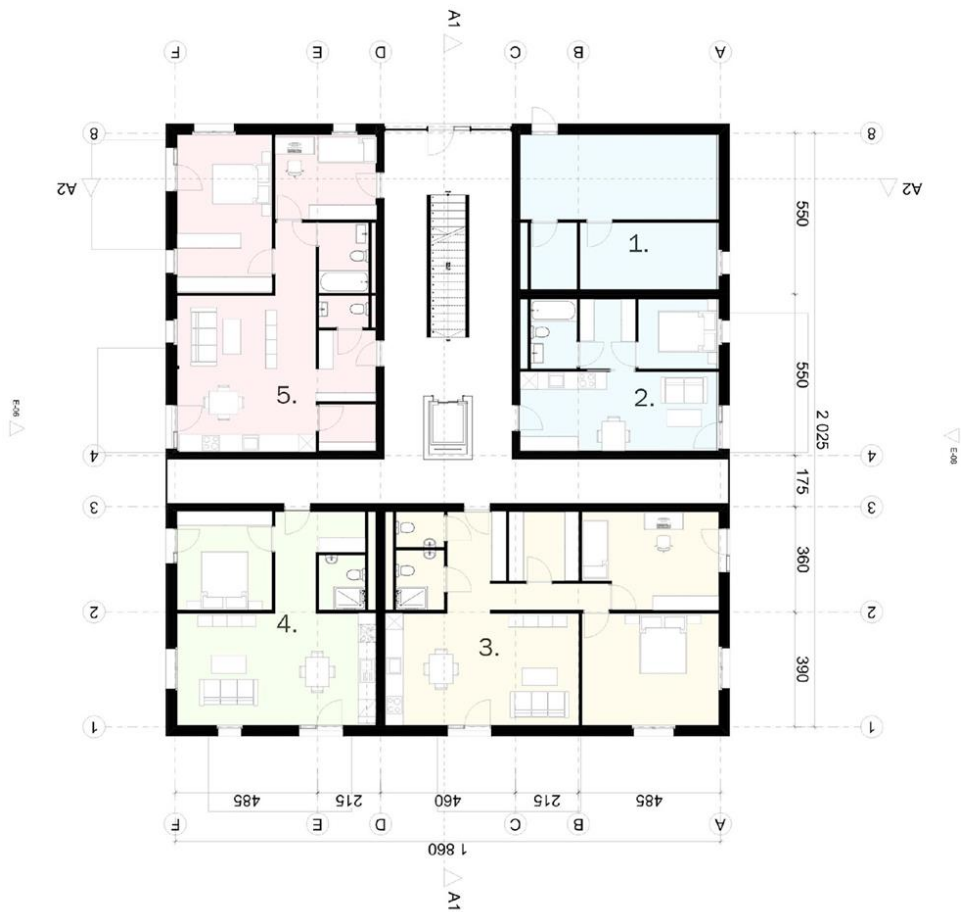


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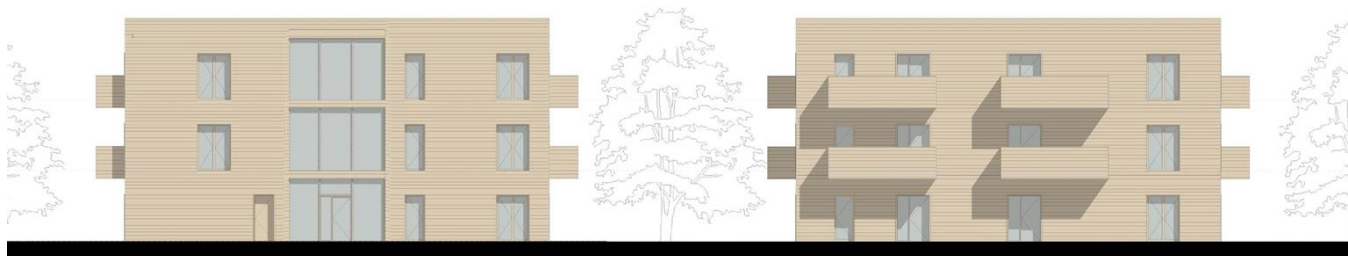


1. STORAGE/TECHNICAL ROOM	34,1M2
2. 2 BEDROOM APARTM.	34,1M2
3. 3 BEDROOM APARTM.	82,0M2
4. 2 BEDROOM APARTM.	48,1M2
5. 3 BEDROOM APARTM.	72,2M2

FLOOR PLANS



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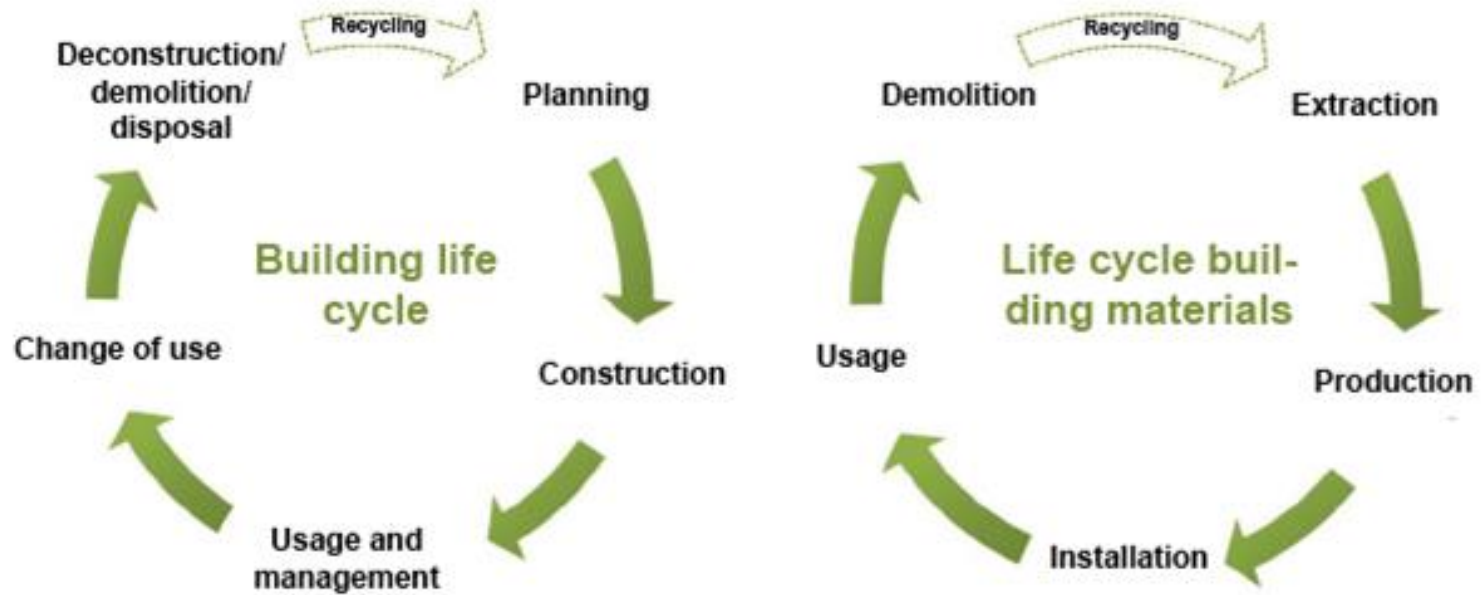


Sustainability concept:

1. **Temporary approach:** should be designed to meet the needs of its occupants for as long as required, changing needs or be easily dismantled, modular construction, prefabricated components
2. **Combinability:** combine the building with other structures or systems, efficiency and flexibility, easily integrate with solar panels, rainwater harvesting systems, or other sustainable technologies, reducing its environmental impact.
3. **Recyclability:** easily dismantled, wood used in other construction projects or recycled, reduces waste, extends the life cycle, helping to reduce environmental impact
4. **Deconstructability (dismantling):** easy to dismantle and remove, when it reaches the end of its useful life, can be easily separated and recycled

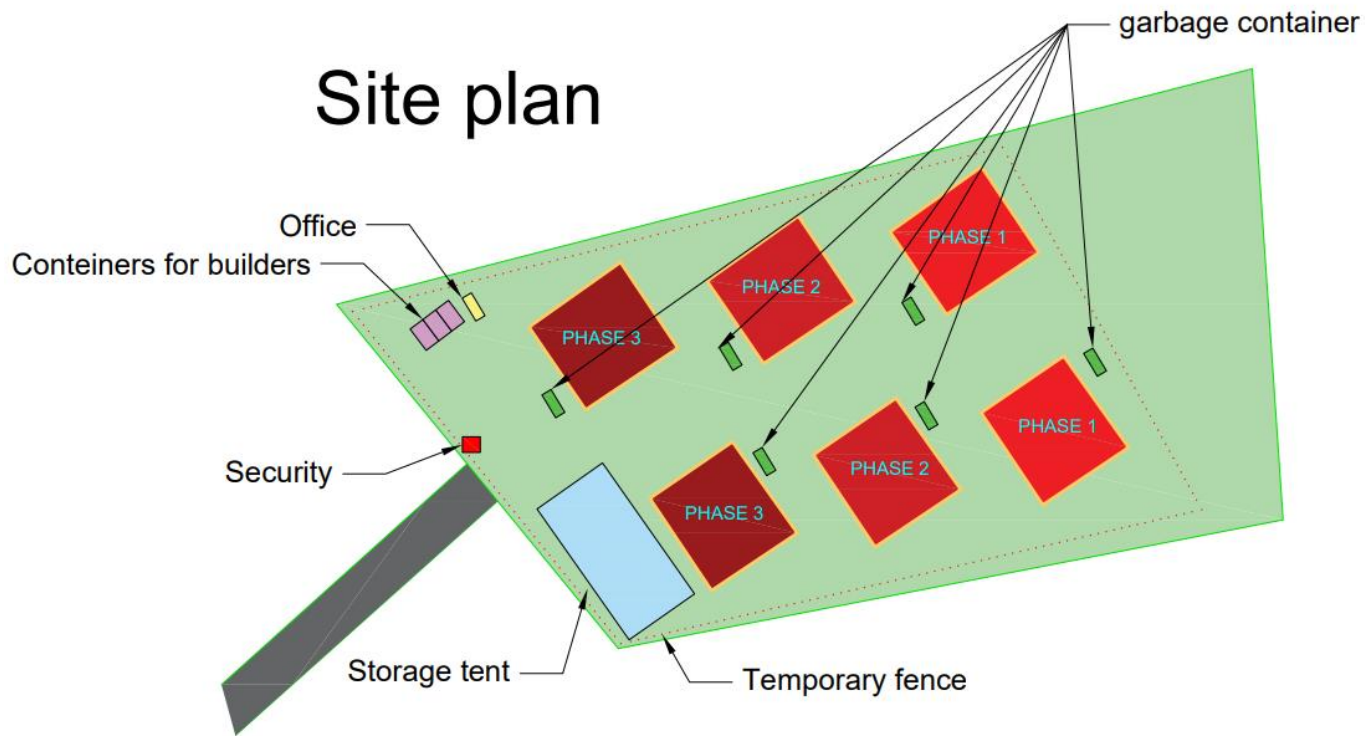


Cradle-to-Cradle Construction:





Site plan

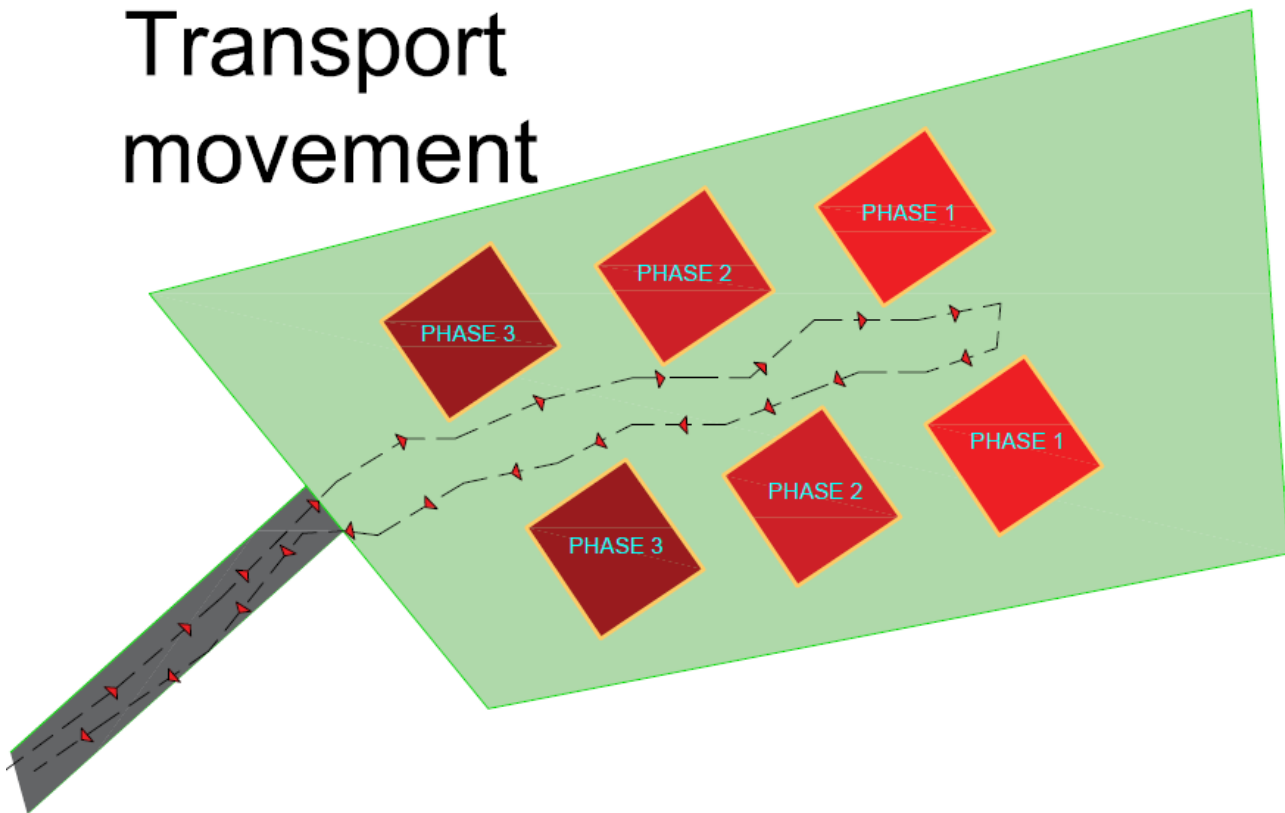




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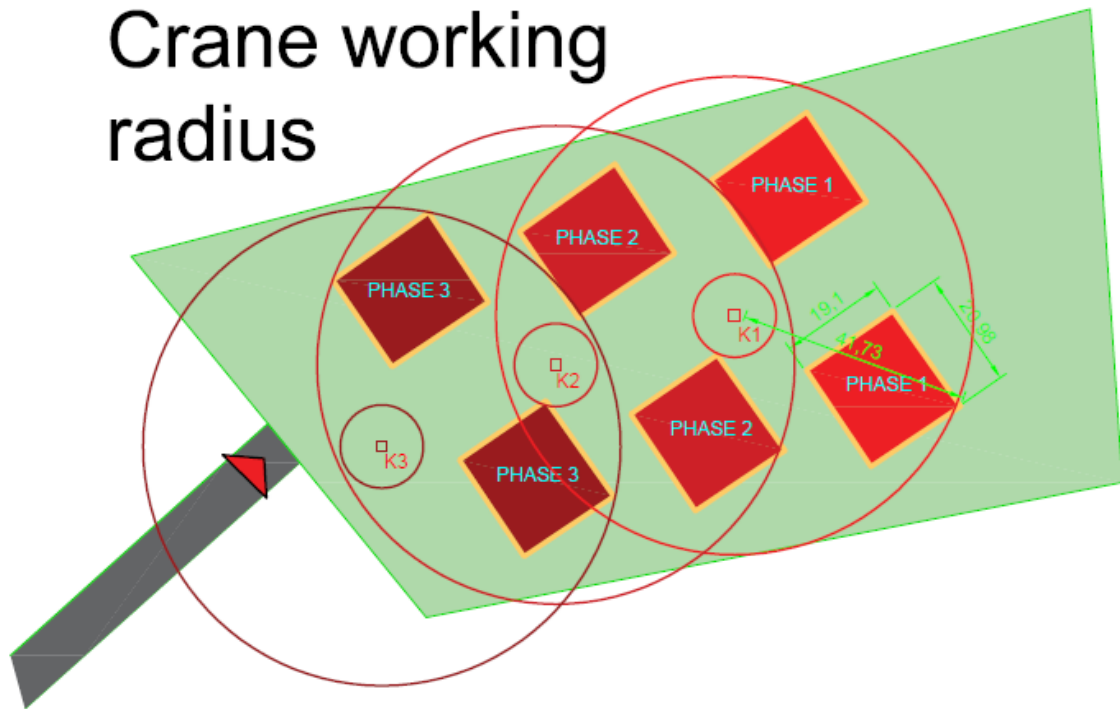
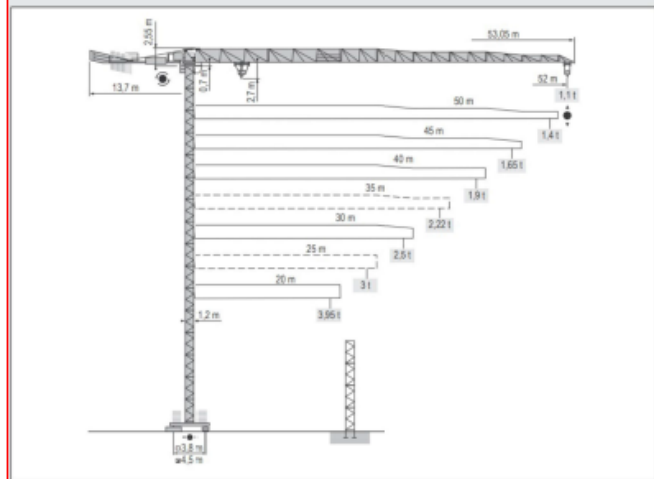
Transport movement





Crane working radius

52m City Crane





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Our partner in construction work

In order to carry out work efficiently, quickly and optimally, we need a partner who is able to deliver the required quantities and materials to our construction site on time. This company has agreed to meet the circumstances we need and help us achieve our goal.

This company will transport the materials we need by land - with its trucks.



Today, Hellmann Worldwide Logistics is represented by a Worldwide Network of 489 offices in 173 countries with more than 19,500 people. In 2021, the Hellmann Group achieved a turnover of around 4,07 billion euros with 12,348 employees.



Materials' volumes and their prices

Exact materials' volume			
Used material	Volume	Units	Price (€)
CLT 100mm Stora Enso	1280,76	m3	640380
CLT 120mm Stora Enso	763,92	m3	381960
CLT 140mm Stora Enso	488,46	m3	244230
Wood floor finish Rawood hopegles Terrace boards Gluds	9,9	m3	20859,5
Wood floor finish Solideco Ozols Classic	141,25	m3	131160,7
Wood texture fasade finish	84	m3	87761,1
Dry concrete Weber S 100	255,78	m3	76950
Moisture membrane Knauf Homeseal	14,76	m3	13931
Reinforced concrete C20/25	173,04	m3	43260
Polysteryn TENAPORS 100 EPS	216,3	m3	5746,4
Fireproof Knauf GKF 12.5mm	348,5	m3	116168
Phorestar Triplex	50,46	m3	134560
Moisture membrane Aquaflex roof	3,24	m3	30546
Polysteryn Tenapors 200 EPS	432,42	m3	6571,1
Bitumen Technonicol Bikroelast HKP40	13	m3	15165,5
Rock wool Isover board 220mm	767,58	m3	34825
Rock wool Isover Cavity wall board 32	256	m3	11160
Window 800x2100mm	108	pieces	30024
Window 1300x2100mm	72	pieces	21600
Window 1500x2100mm	30	pieces	10500
Door 1500x2100mm	120	pieces	72000
Door 900x2100mm	84	pieces	57120
Door 800mx2100mm	288	pieces	61228,8
		Together (€)	2247707,1

Quantities and prices are given for all six buildings.



Storage of materials and their protection from environmental factors

According to our plan, we have planned to store the delivered materials in a temporarily constructed building. Our aim is to buy metal warehouse frames and a tent, so that we can build protection for our materials and environmental factors do not damage the materials.

Weather protection		
There is option to buy Tent	Dimensions	Price
	20m x30m x15m (9000m3)	The estimated price for the warehouse and tent is about 20k euros.
Company		
'Partytent" - Delivering throughout Europe		

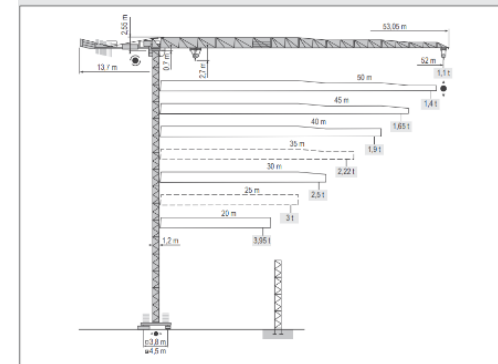


Additional equipment

In modern construction, people can use technology to make their work easier. We are no exception, so we plan to rent a strong crane that will help us lift heavy structures. Also, we need to rent garbage containers into which we will throw construction trashes.

Crane costs		
Crane - max tones	Model	Price/mont
LADYBIRD CRANE HIRE	MCT 88	15,000 to 25,000Eur per month.
Garbage containers' price		
	Model	Price/fully filled
Garbage containers	10m3	150Eur for fully filled container
Weather protection for building		
There is option to rent a Tent	Dimensions	Price
'Partytent"	15m x 20m x 20m	4000Eur per month

52m City Crane





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Construction process:

Dimensions of components during transportation

Company:	
https://www.storaenso.com/en/about-stora-enso/stora-enso-locations/brand-sawmill	
Company adress:	Stora Enso Bad St. Leonhard, Wisperndorf 4, 9462 Wisperndorf, Austrija
Building site:	Dammweg, 7551 Stegersbach, Austrija



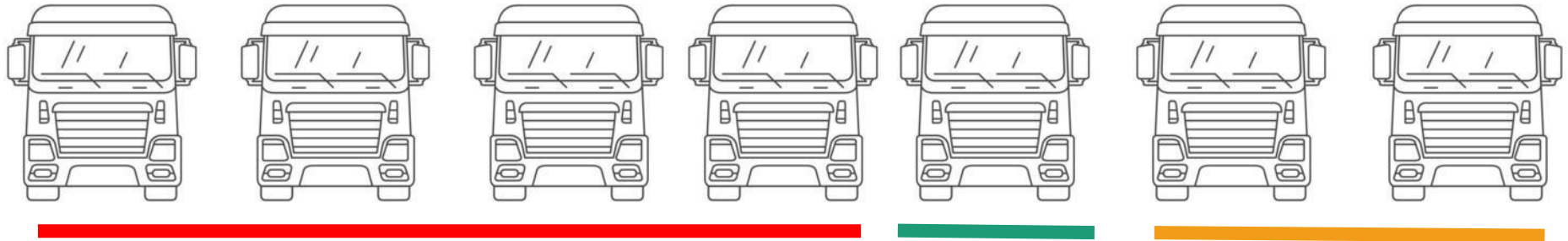
Price for 1 km - 1.3eur.	
Price for one truck:	183,30 €



storaenso



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Interior wall
prefab panels

External wall
prefab panels

Slab panels



Worker on site and prices

Workers on site in one house:	Price/hour
1 Worker for crane	62,24 €
2 Workers helping crane in site	17 - 21 Eur
2 Workers for floors	17 - 21 Eur
2 Workers for all connections	17 - 21 Eur
2 Electricians	21,22 €
1 Plumber	100,00 €
1 Construction inspector	33,00 €



Digital processes BIM



The screenshot displays the Autodesk Revit 2022 software interface. The main window shows a 3D wireframe model of a building structure, viewed from an isometric perspective. The interface includes a ribbon at the top with tabs for File, Architecture, Structure, Steel, Precast, Systems, Insert, Annotate, Analyze, Massing & Site, Collaborate, View, Manage, Add-Ins, and Modify. The Properties panel on the left shows the 3D View settings, including View Scale (1:100), Scale Value (1:100), Detail Level (Fine), and various visibility and display options. The Project Browser on the right shows the project hierarchy, including Views (all), Structural Plans, Floor Plans (Level 1 to Level 5), Site, Ceiling Plans (Level 1 to Level 5), 3D Views (3D), Elevations (Building Ele, East, North, South, West), Sections (Building Secti, Section 1, Section 2), Legends, and Schedules/Quantities (all, Door Schedule, Floor Material Balcon, Floor Material Ground fl, Floor Material Partition, Roof, Wall Material External). The status bar at the bottom indicates the current view is 1:100 and the main model is selected.

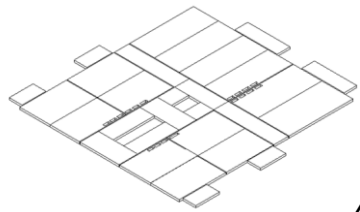


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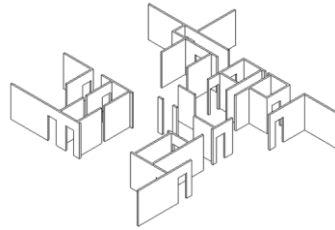
Assembly sequence



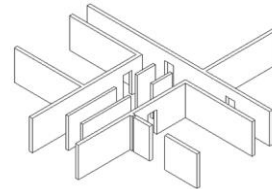
Finish



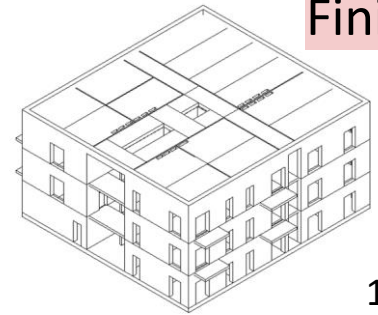
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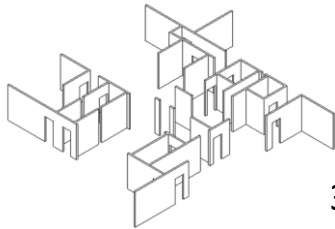
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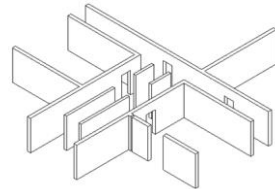
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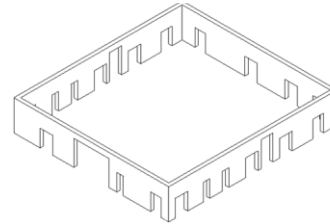
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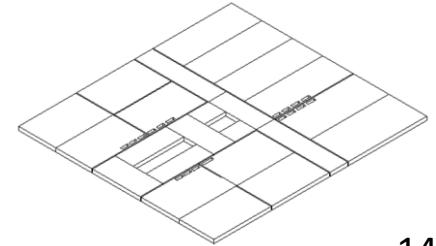
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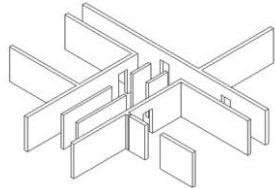
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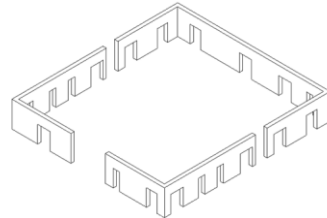
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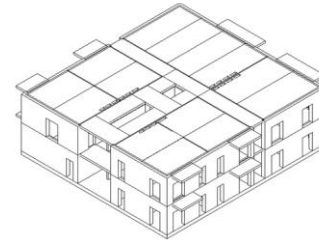
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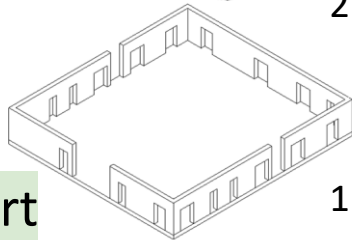
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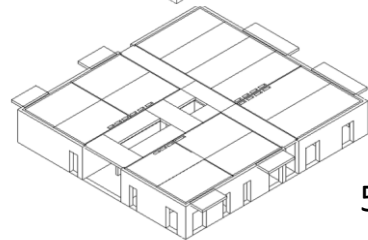
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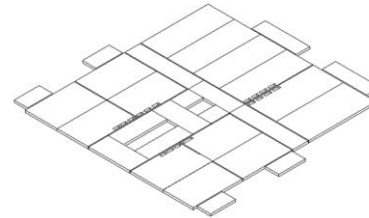
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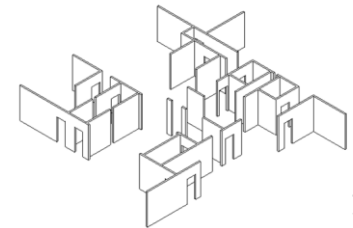
1.



5.



9.



13.

Start



Timetable:

Site preparation: 2 weeks

Clearing the site
Excavating the foundation
Laying the foundation



Installation of building envelope: 6 weeks

Delivery and installation of prefabricated CLT panels
Installation of windows and doors
Installation of roofing



Rough-in construction: 8 weeks

Electrical and plumbing rough-ins
Installation of HVAC systems
Installation of insulation



Interior and exterior finishes: 12 weeks

Installation of flooring
Installation of drywall and painting
Installation of cabinetry and countertops
Installation of exterior siding and landscaping



Final inspection and testing: 2 weeks

Final inspection of the building's structure, systems, and finishes
Testing of electrical, plumbing, and HVAC systems



Final touches and cleaning: 2 weeks

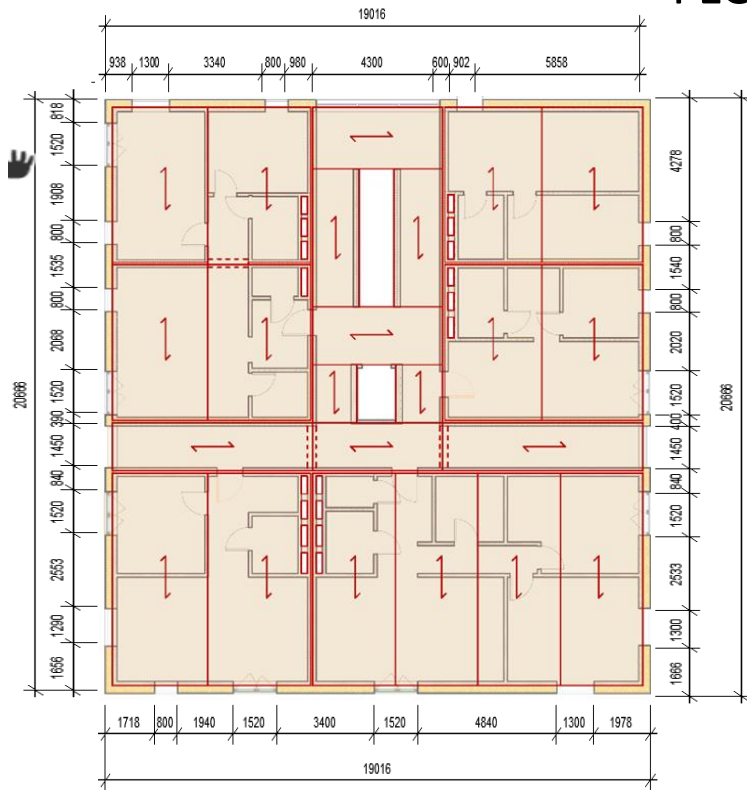
Touch-up work on finishes
Cleaning of the building and site

Total estimated construction time: 32 weeks (8 months)

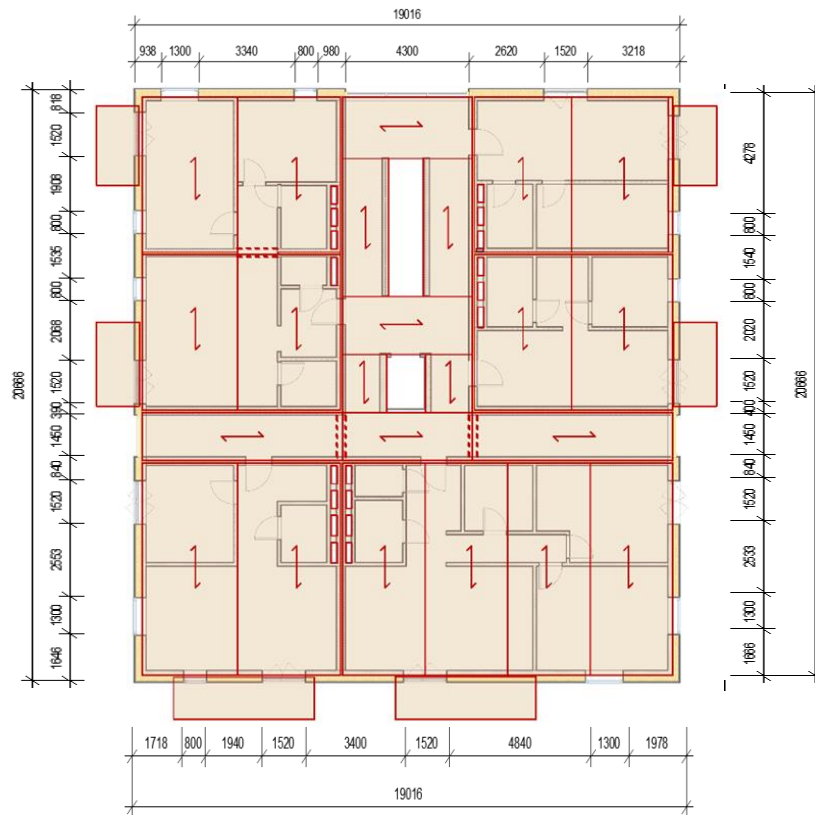


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CLT panels FLOOR SLABS



1st floor



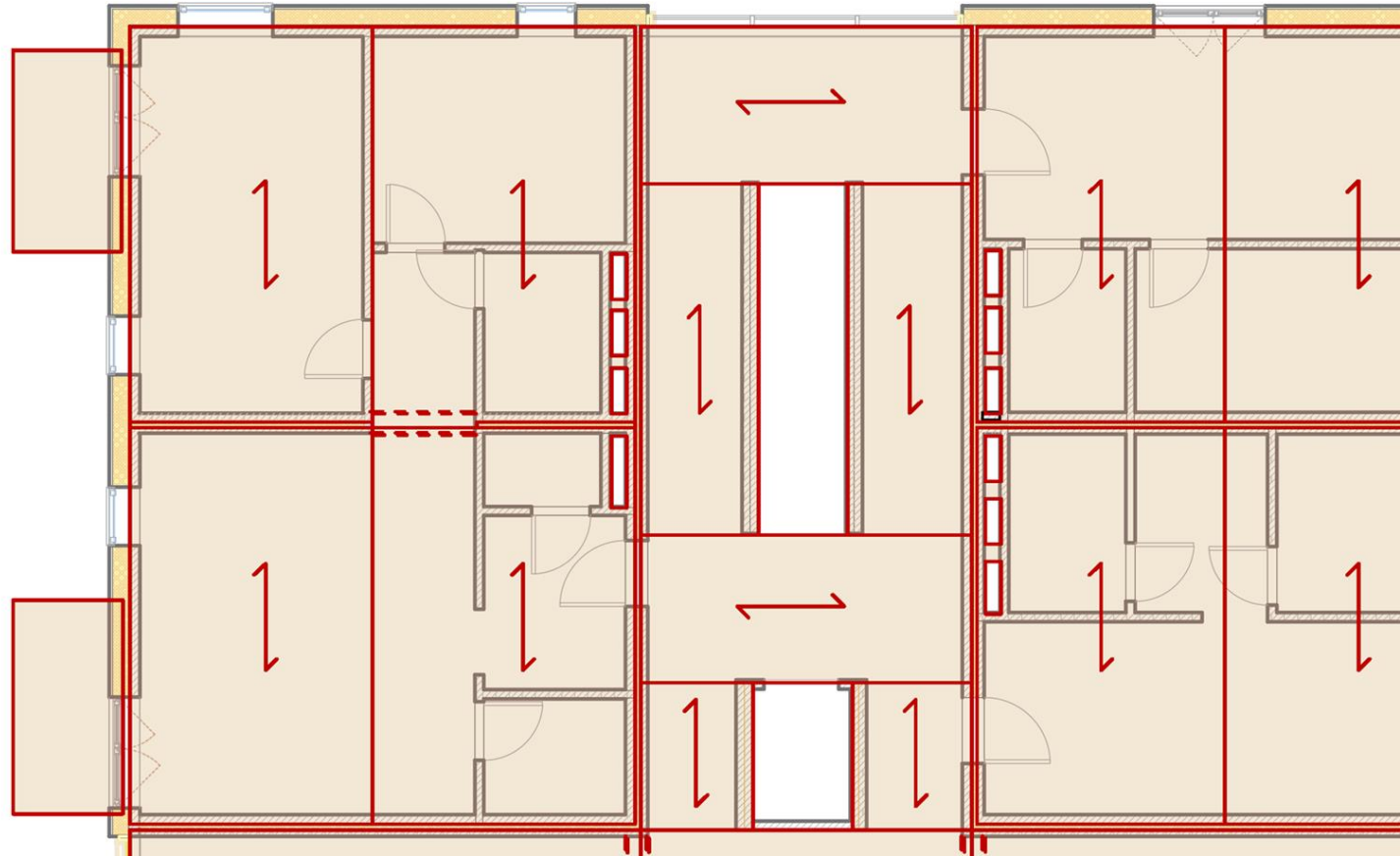
2nd and 3rd floor



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CLT panels FLOOR SLABS



close up



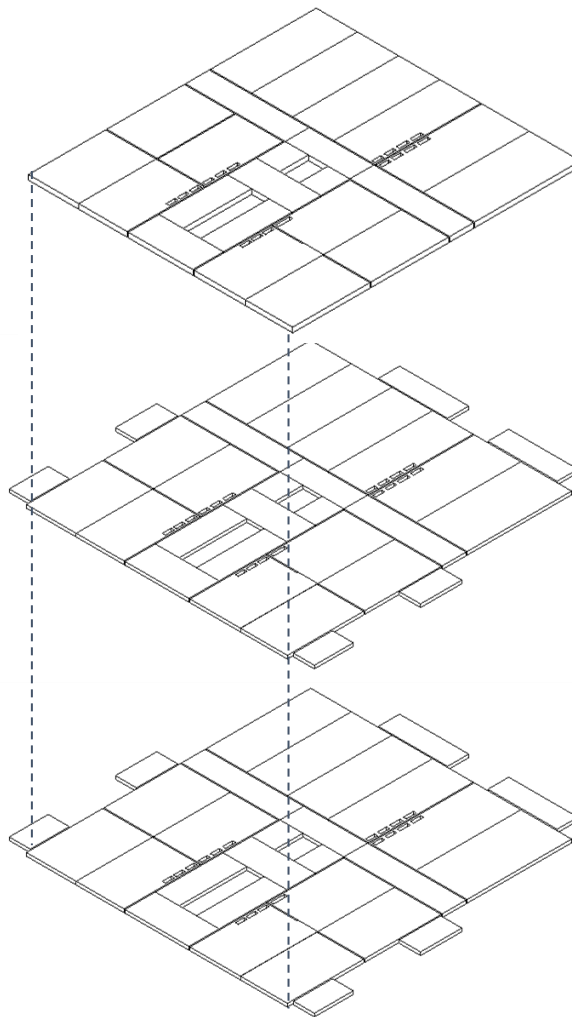
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roof level

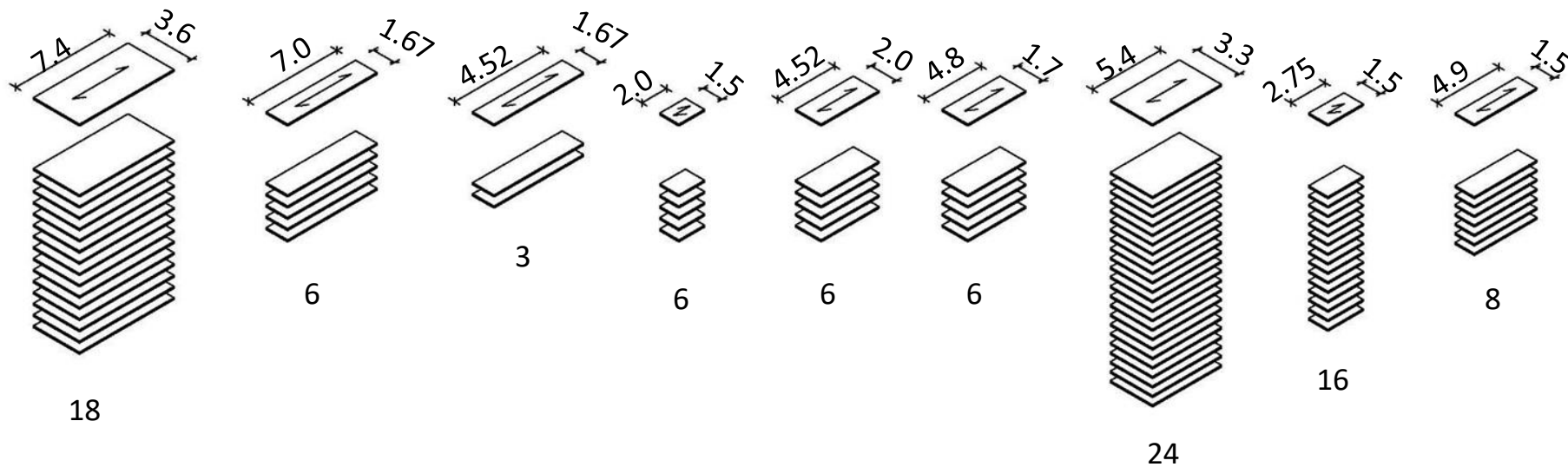
2nd middle level

1st middle level



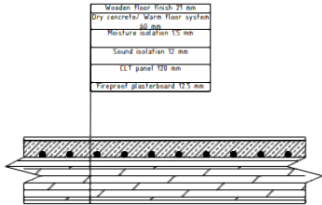


CLT floor slabs

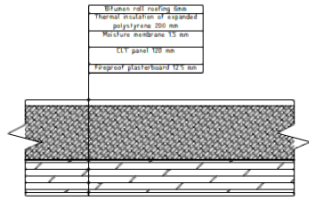


Together 93 slabs



Partition floor	Minimum requirements		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	-	55 (dB)	REI 60
 <p> Wooden floor finish 21 mm Dry concrete/slope floor system 80 mm Moisture insulation 15 mm Sound insulation 10 mm CLT panel 100 mm Fireproof plasterboard 12.5 mm </p>	Existing value		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	-	57(dB)	REI 90
Used materials			
Fireproof plasterboard - KNAUF GKF 12.5x1200x2600mm CLT panel - Stora Enso 120 mm Sound insulation - PhoneStar® Triplex Moisture membrane - Knauf Insulation Homeseal Dry concrete - Weber S 100 Wood floor finish - Solideco Ozols Classic			

- Notes:
- 1) Dimensions are given in mm;
 - 2) All references to the companies of the manufacturers of materials and products indicated in the construction project indicate only the level of quality and service of these products and equipment;
 - 3) Replacement of equipment and materials specified in the specifications is possible with other analogous equipment and materials;

Roof	Minimum requirements		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	0,2 ⁴	-	REI 60
 <p> Bitumen roll roofing 4mm Thermal insulation of expanded polystyrene 200 mm Moisture membrane 1.5 mm CLT panel 100 mm Fireproof plasterboard 12.5 mm </p>	Existing value		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	0,14 ⁴	-	REI 90
Used materials			
Fireproof plasterboard - KNAUF GKF 12.5x1200x2600mm CLT panel - Stora Enso 120 mm Moisture membrane - AQUAFLEX ROOF Thermal insulation of expanded polystyrene - TENAPORS EPS 200 Bitumen roll roofing - TECHNINICOL Bikroelast HKP 4.0			



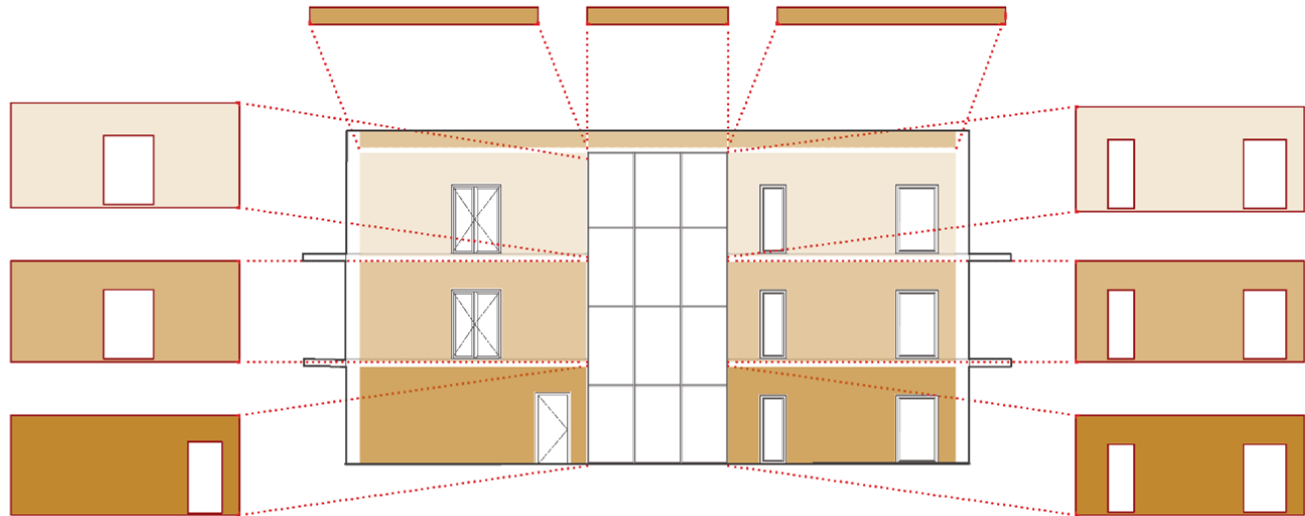
CLT panels EXTERIOR WALLS

ATTICS

3rd FLOOR

2nd FLOOR

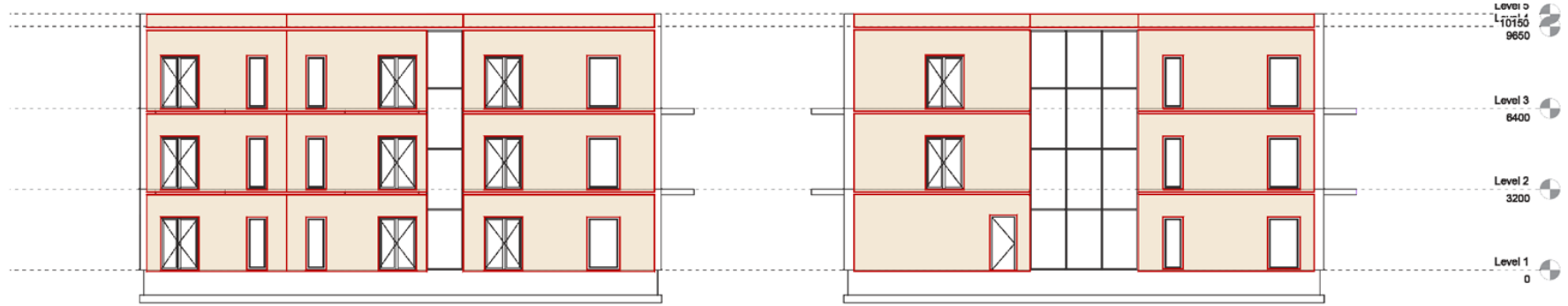
1st FLOOR





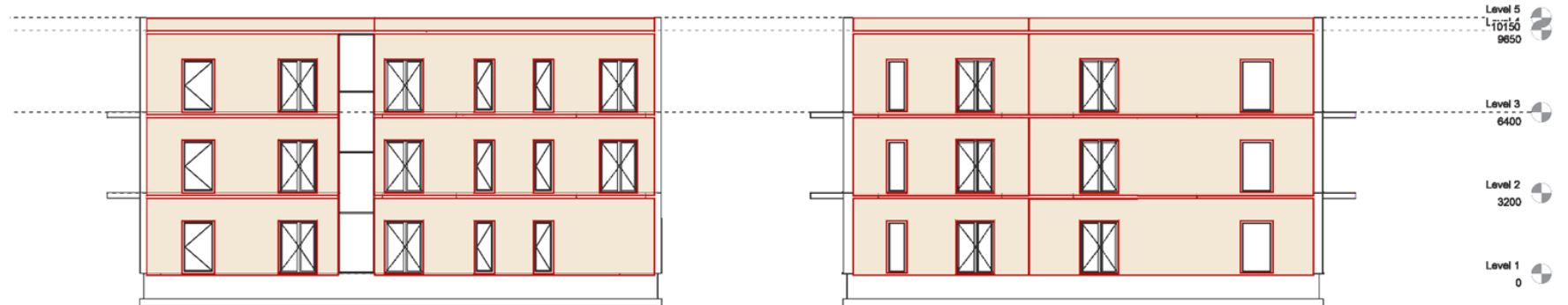
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CLT panels EXTERIOR WALLS



west elevation

north elevation



east elevation

south elevation



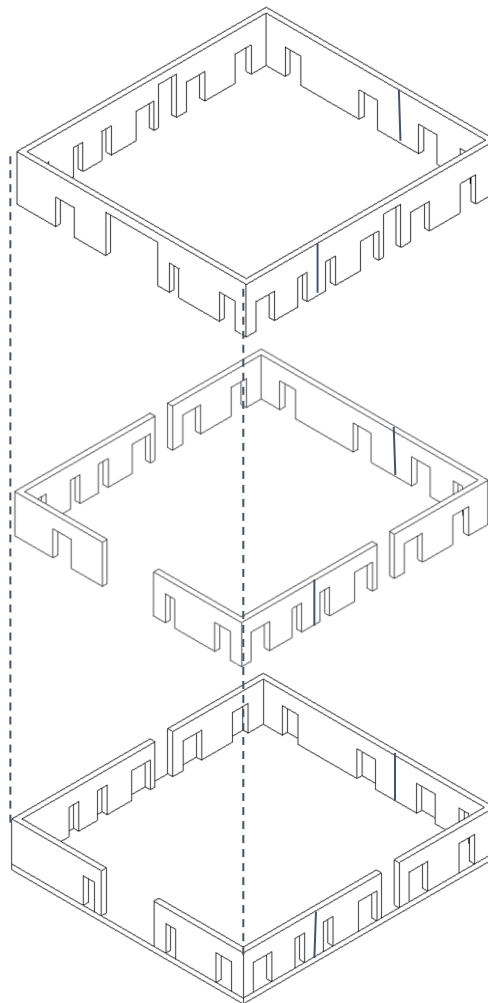
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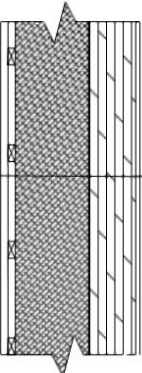
3rd storey

2nd storey

1st storey



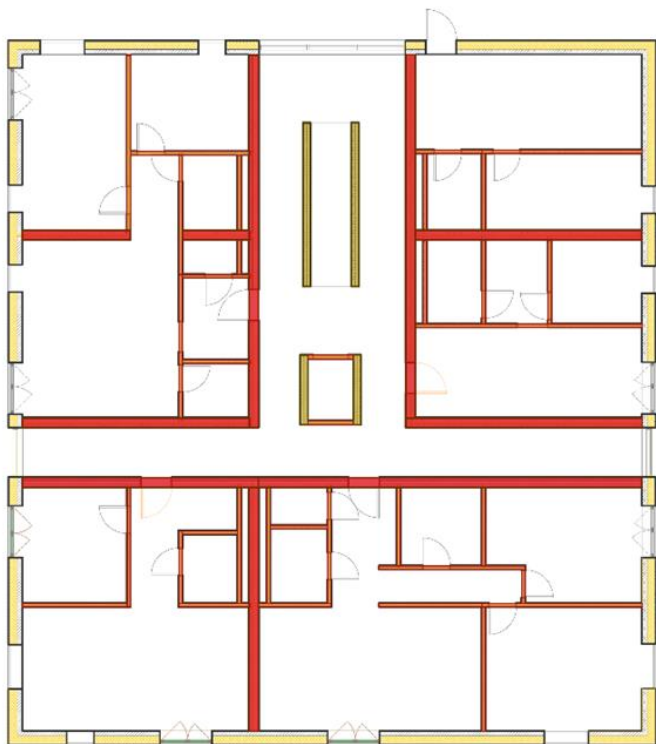


External wall	Minimum requirements								
	U value W/m ² K	Acustics Rw+Ctr	Fire resistance						
 <table border="1" data-bbox="826 329 973 428"><tr><td>Wood texture facade finish 22 mm</td></tr><tr><td>Air gap</td></tr><tr><td>Rock wool thermal insulation 220 mm</td></tr><tr><td>Moisture membrane 15 mm</td></tr><tr><td>CLT panel 140 mm</td></tr><tr><td>Fireproof plasterboard 12.5 mm</td></tr></table>	Wood texture facade finish 22 mm	Air gap	Rock wool thermal insulation 220 mm	Moisture membrane 15 mm	CLT panel 140 mm	Fireproof plasterboard 12.5 mm	0,24 ⁴	40 (dB)	REI 60
	Wood texture facade finish 22 mm								
	Air gap								
	Rock wool thermal insulation 220 mm								
Moisture membrane 15 mm									
CLT panel 140 mm									
Fireproof plasterboard 12.5 mm									
Existing value									
U value W/m ² K	Acustics Rw+Ctr	Fire resistance							
0,14 ⁴	46 (dB)	REI 90							
Used materials									
Fireproof plasterboard - KNAUF GKF 12.5x1200x2600mm									
CLT panel - Stora Enso 140 mm									
Moisture membrane - Knauf Insulation Homeseal									
Rock wool thermal insulation - ISOVER PLUS+ Board									

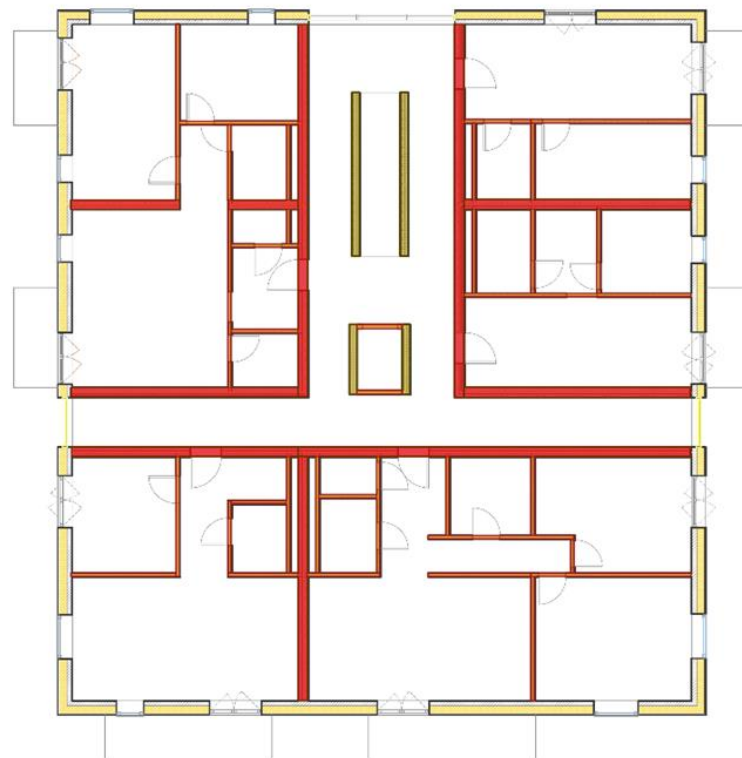


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CLT panels INTERIOR WALLS



1st floor



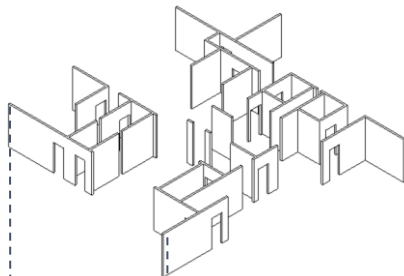
2nd and 3rd floor



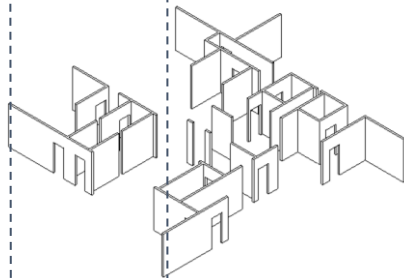
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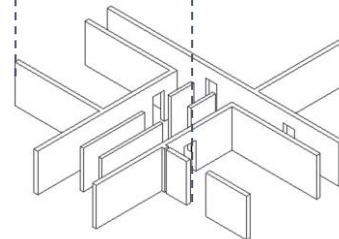
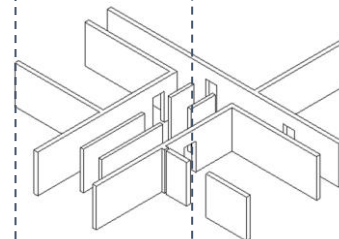
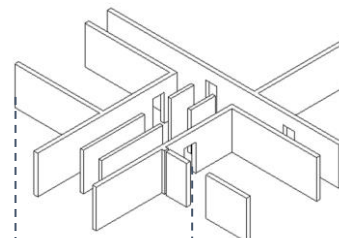
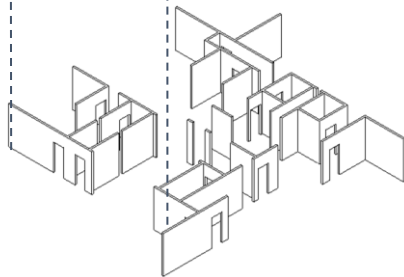
3rd storey



2nd storey



1st storey



Load bearing Walls



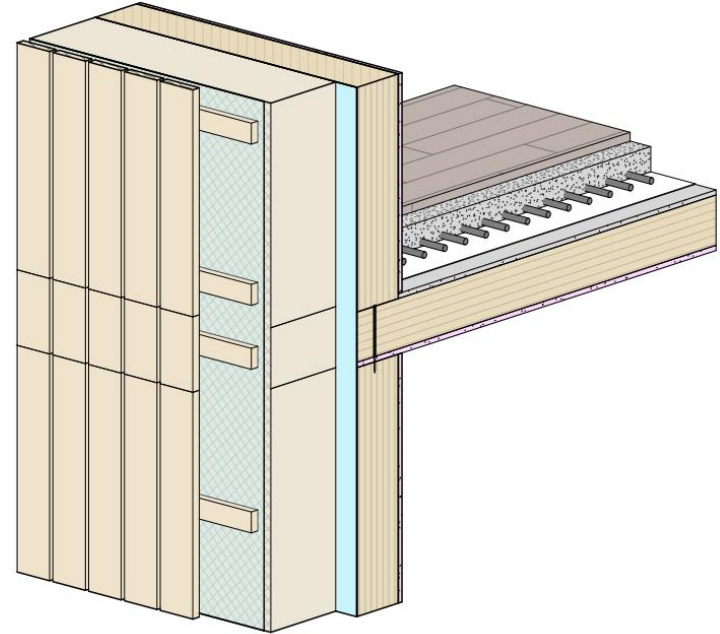
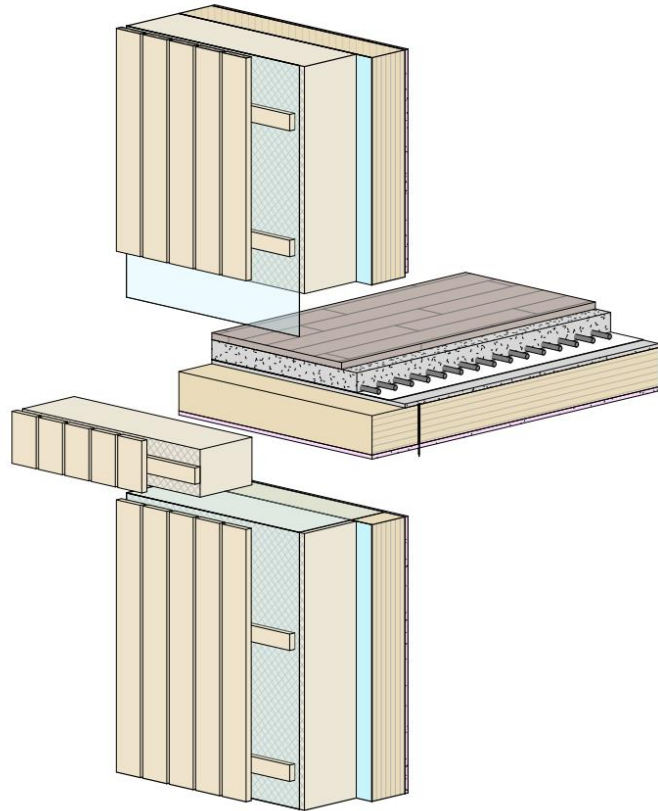
Party wall	Minimum requirements		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	-	55 (dB)	REI 60
	Existing value		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	-	63 (dB)	REI 90
Used materials			
Fireproof plasterboard - KNAUF GKf 12.5x1200x2600mm			
CLT panel - Stora Enso 100 mm			
Rock wool isolation - ISOVER Cavity Wall Board 32			
CLT panel - Stora Enso 100 mm			
Fireproof plasterboard - KNAUF GKf 12.5x1200x2600mm			
<small>Notes:</small> 1) Dimensions are given in mm; 2) All references to the companies of the manufacturers of materials and products indicated in the construction project indicate only the level of quality and service of these products and equipment; 3) Replacement of equipment and materials specified in the specifications is possible with other analogous equipment and materials.			

Staircase/ Internal wall	Minimum requirements		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	-	30 (dB)	REI 60
	Existing value		
	U value W/m ² K	Acoustics Rw+Ctr	Fire resistance
	-	37 (dB)	REI 90
Used materials			
Fireproof plasterboard - KNAUF GKf 12.5x1200x2600mm			
CLT panel - Stora Enso 100 mm			



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Prefabricated Elements





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connections



Connection material details



Material details - Rothoblaas (or equivalent)		
Drawings		Purpose
		Beam connections; Floor panel connections
		Wall panel and floor panel connections
		Beam to wall connections
		Floor panel to wall panel connections
		Floor panel to wall panel connections
		Floor panel to wall panel connections



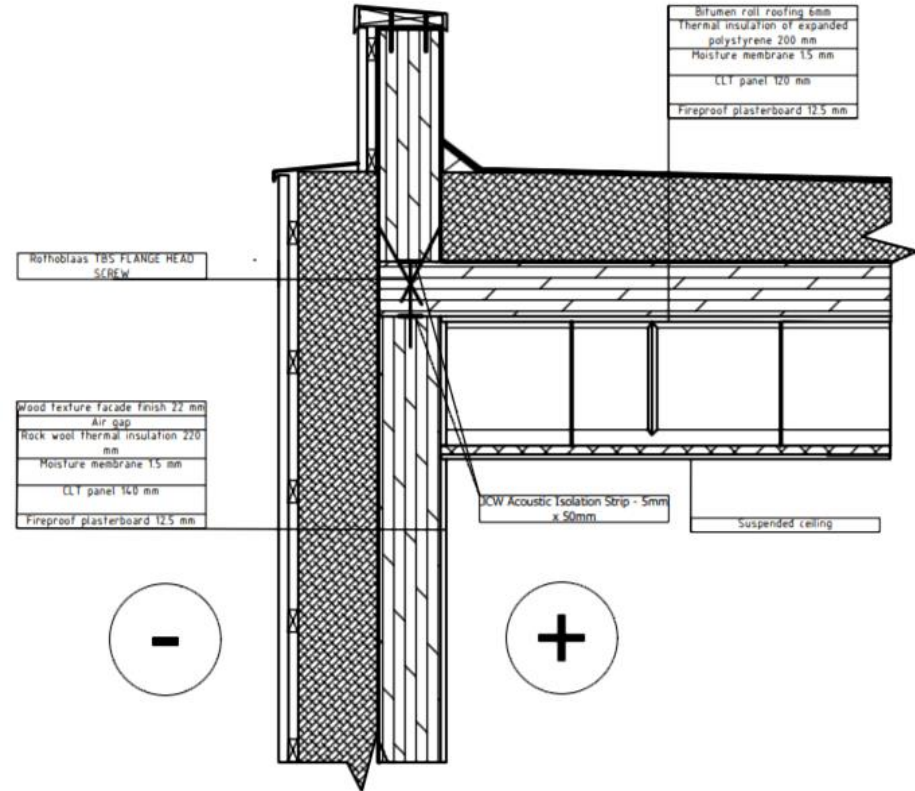
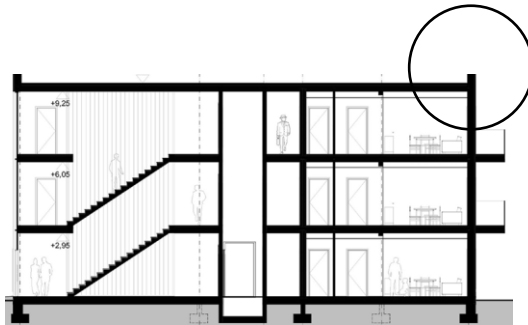


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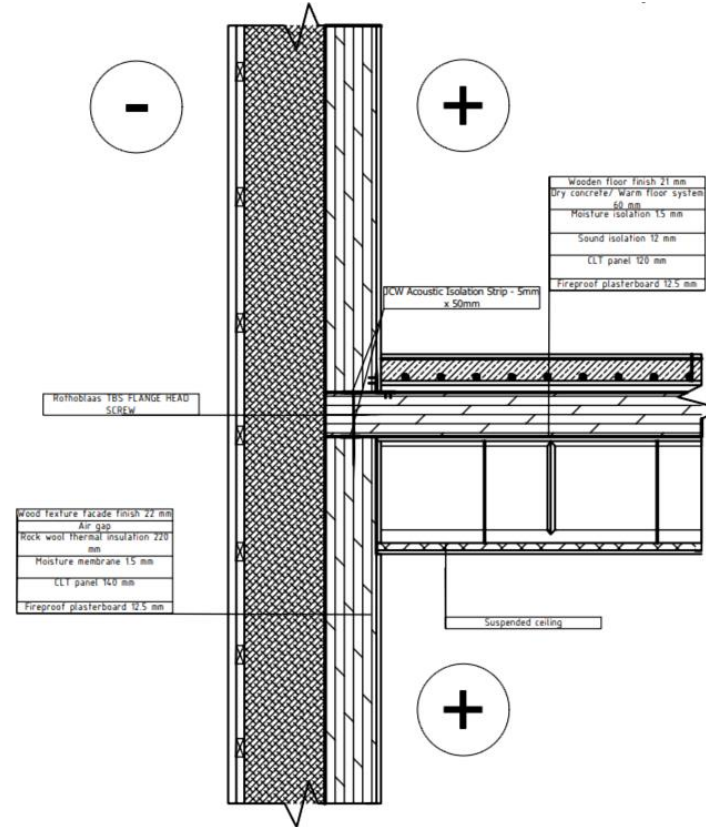
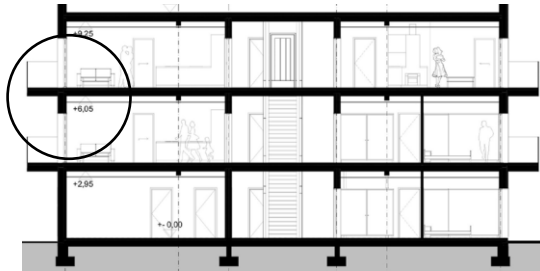


Roof/ External wall connection



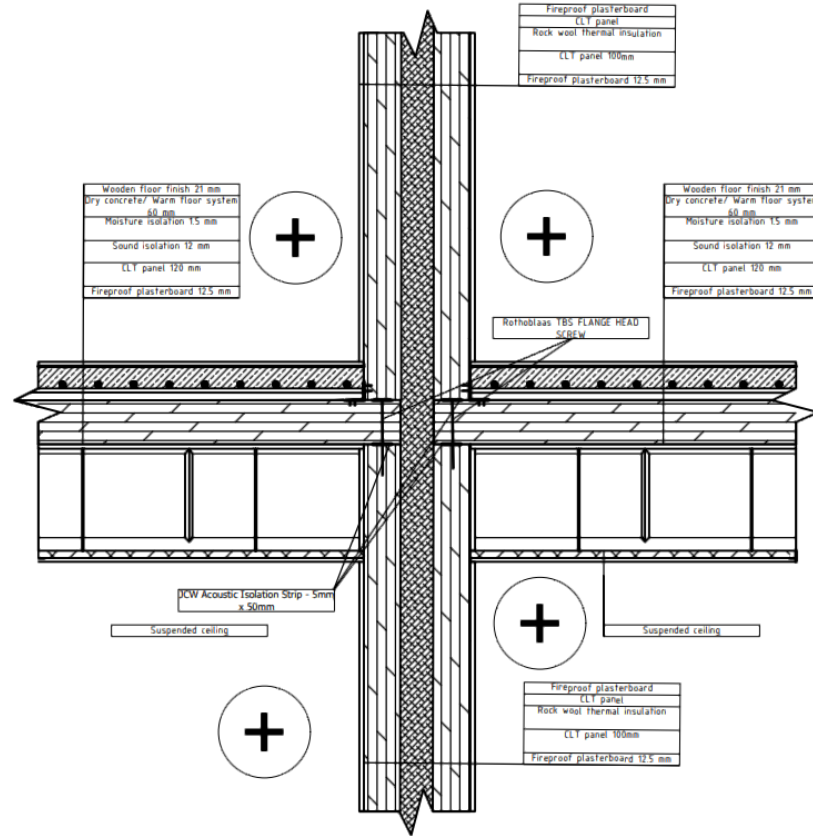
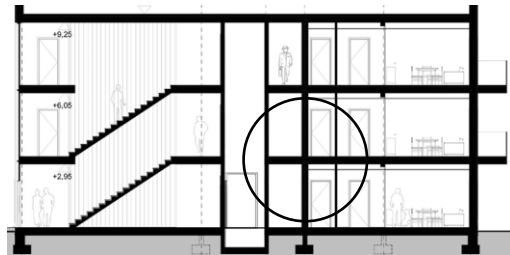


External wall/ partition floor connection



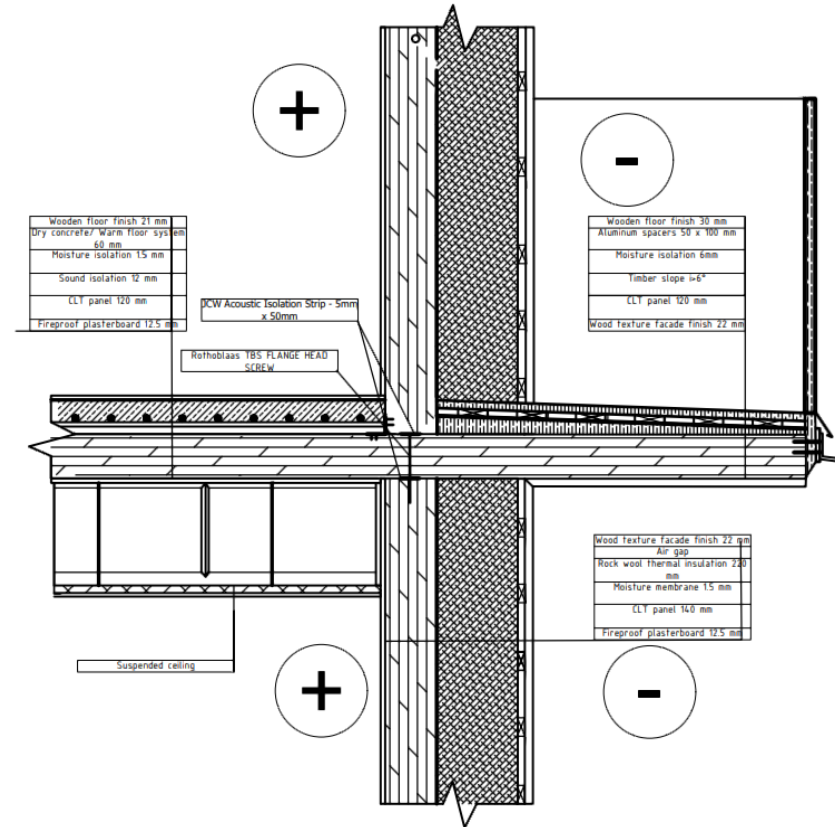
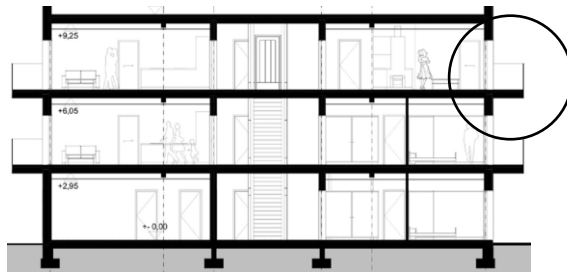


Party wall/ partition floor connection



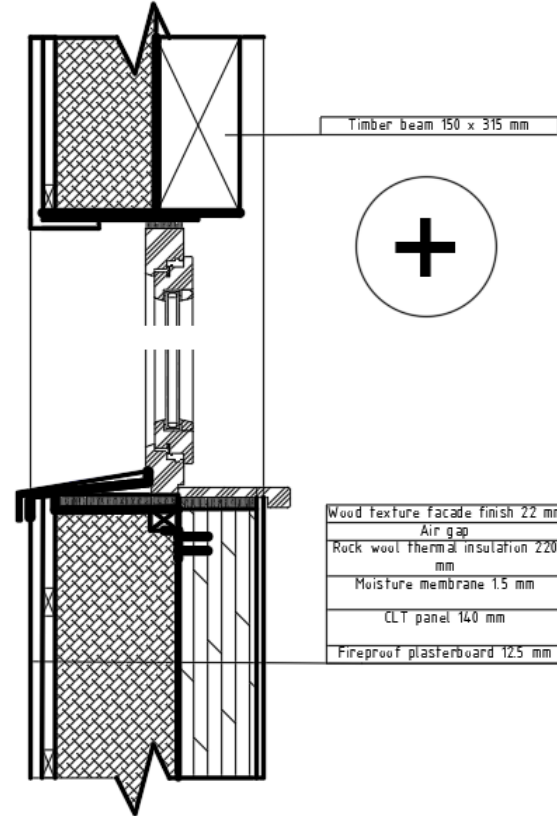
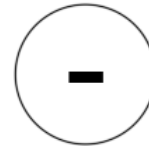
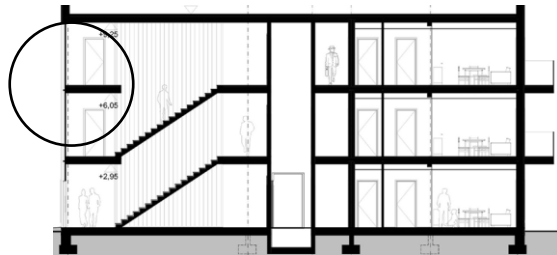


External wall/ Balcony connection





Window fixing

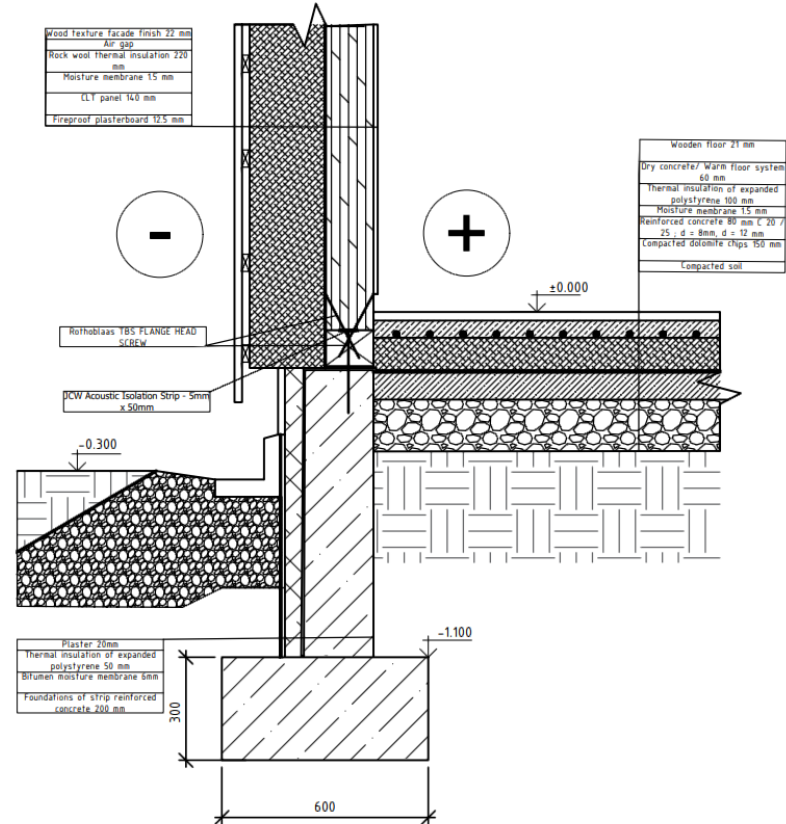
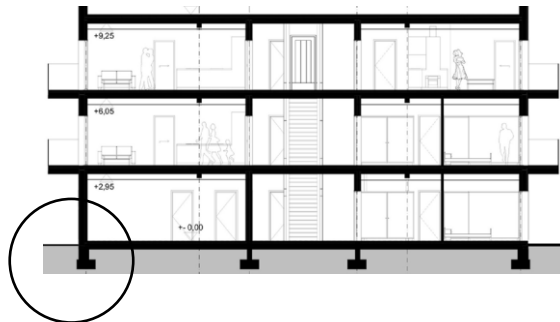




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External wall/ ground floor connection





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Dankeschön
Paldies
Ačiū
Dziękuję

...for your attention <3



Hi Bi
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