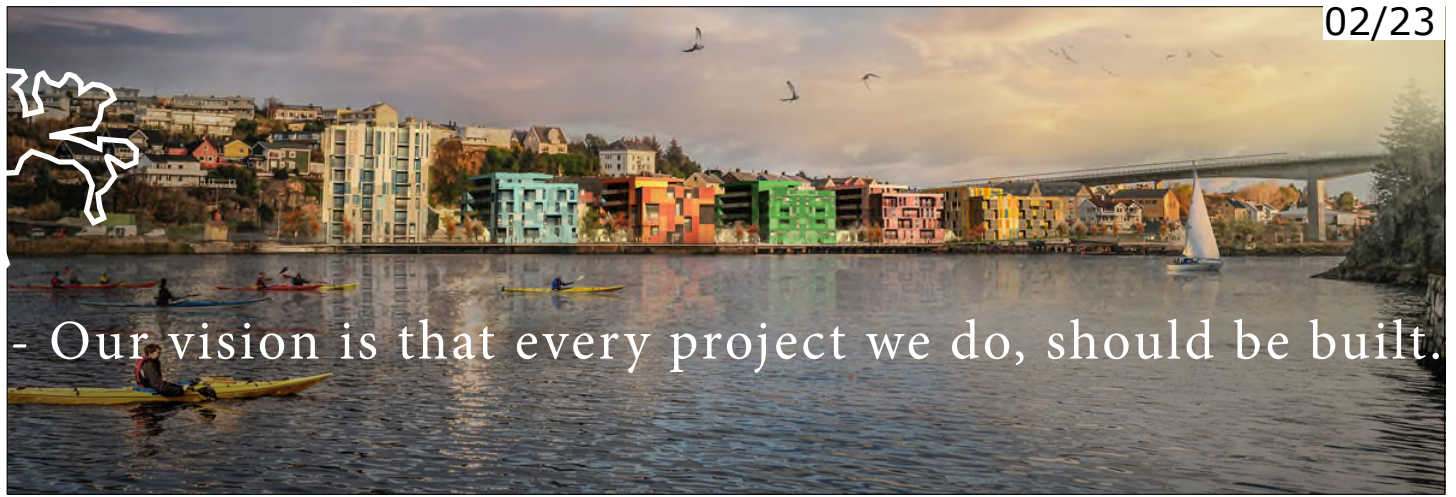




# MJØSTÅRNET

- The worlds tallest timber building

Øystein Elgsaas-Voll Arkitekter



A photograph of a dense forest with tall, thin trees. The ground is covered in a thick layer of green moss. The lighting is soft, suggesting a forest interior. The text is overlaid in the bottom right corner.

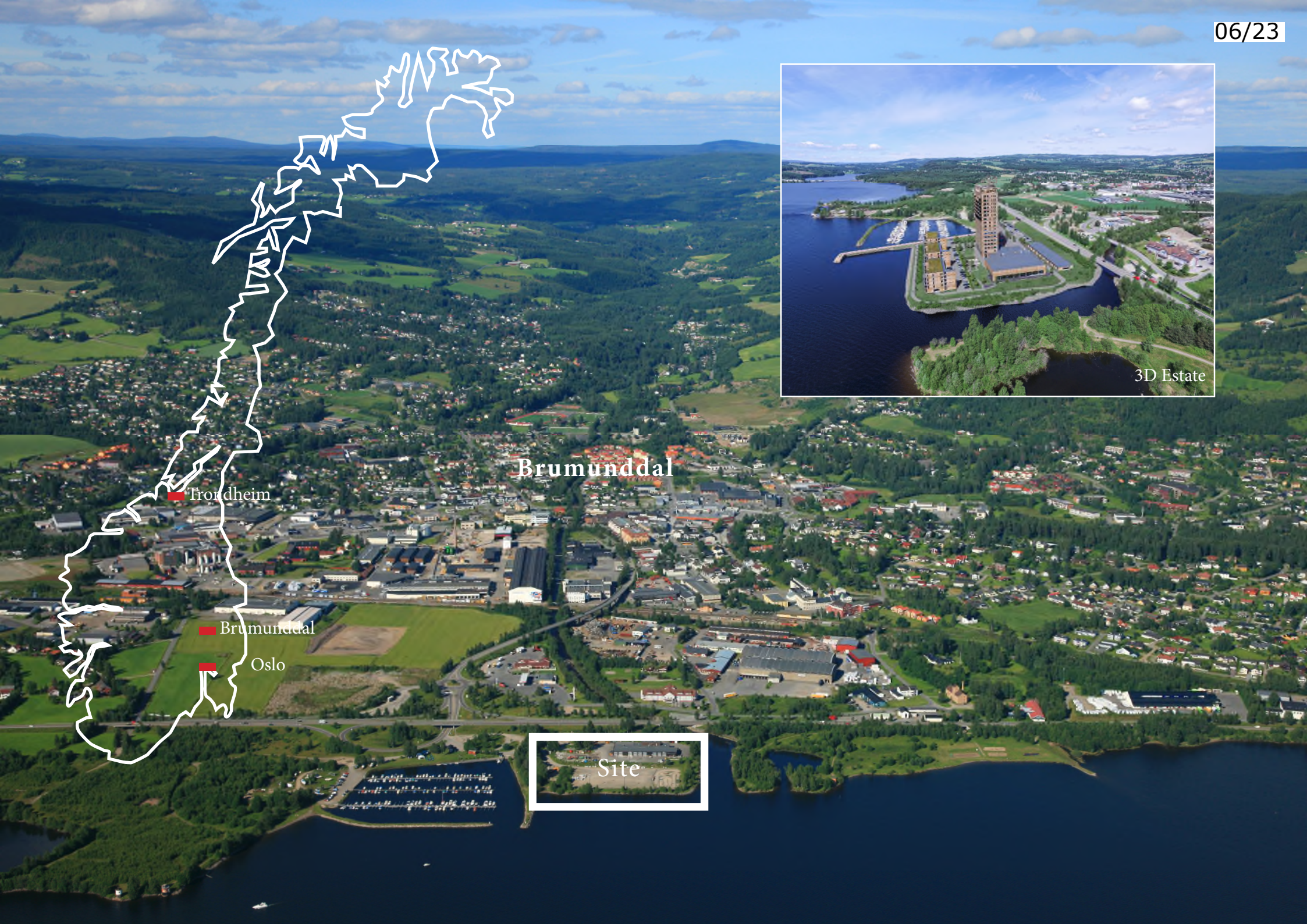
**“Wood is a natural renewable raw material and has a small negative impact on the environment”**

**“We have all a responsibility to find new ways of thinking. And not only thinking, but actually doing”**



**“We believe Mjøstårnet is an exciting example of a project where you can find new solutions to old questions”**





Brumunddal

Tromsheim

Brumunddal

Oslo

Site

3D Estate



Photo: Moelven Limtre



Photo: Moelven Limtre



07/23

Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre

85,4 m

# PROGRAM

Penthouse & Roof terrace

Apartments & Exhibition room

Apartments  
Floors 12-16

Hotel  
Floors 8-11

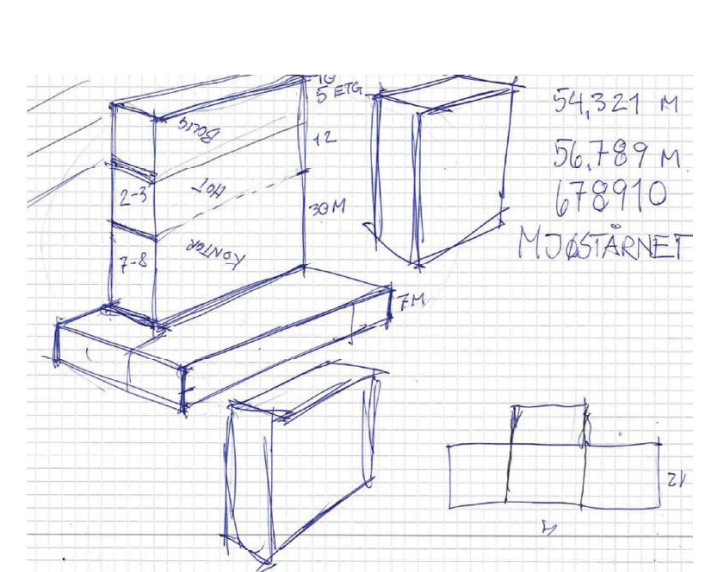
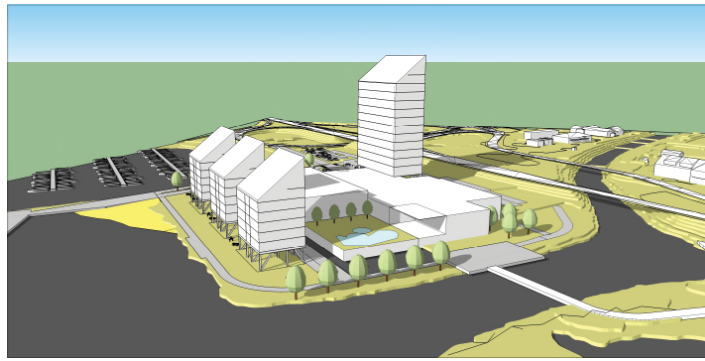
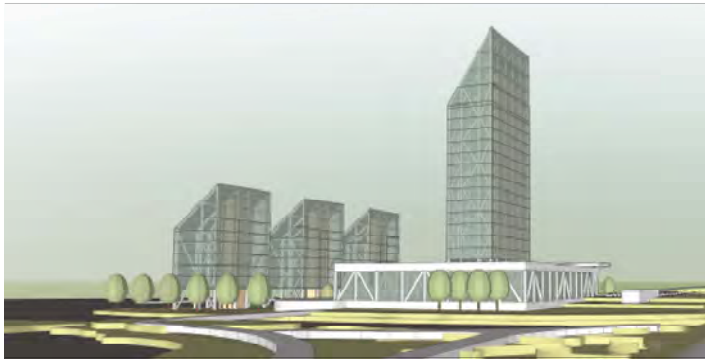
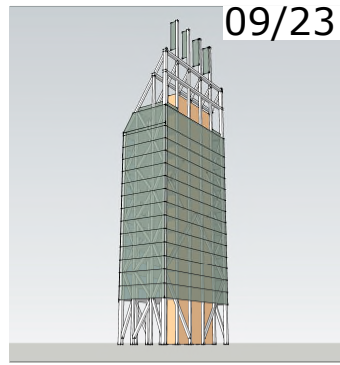
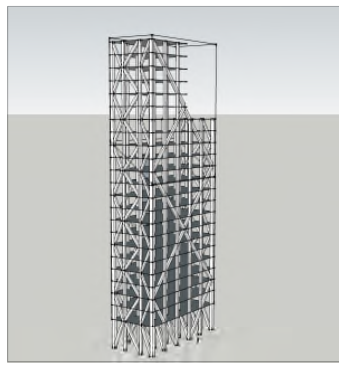
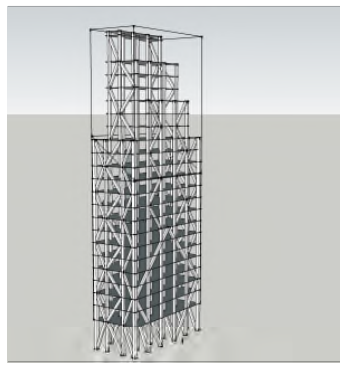
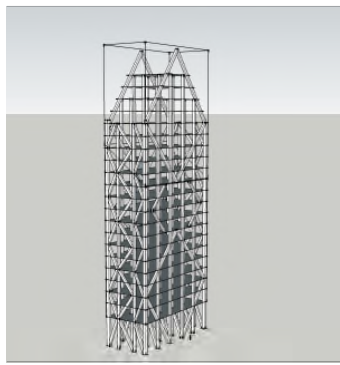
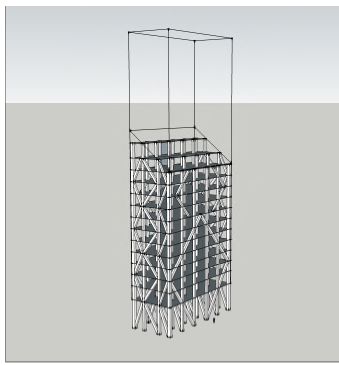
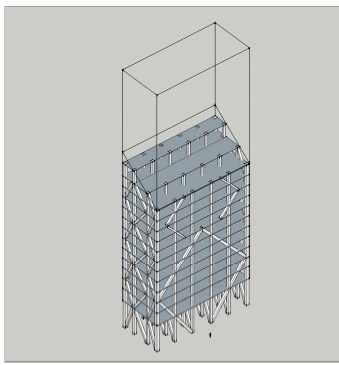
Office space  
Floors 3-7

Building service & Conference

Lobby, Reception & Restaurant

Public bath

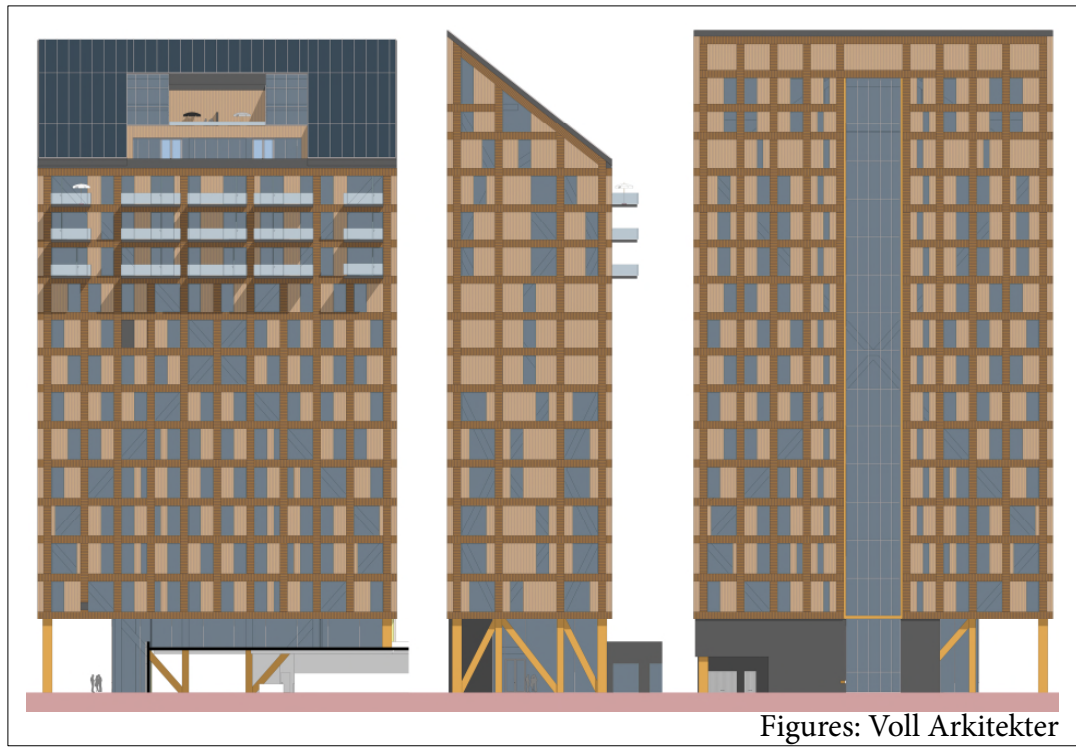
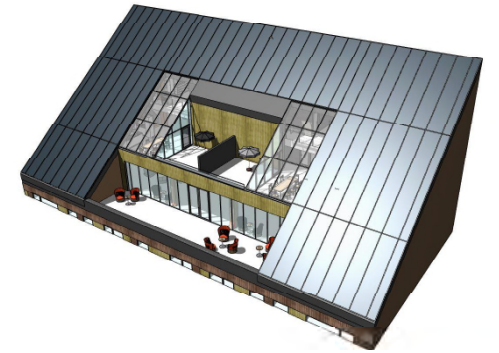




Fasade NORD

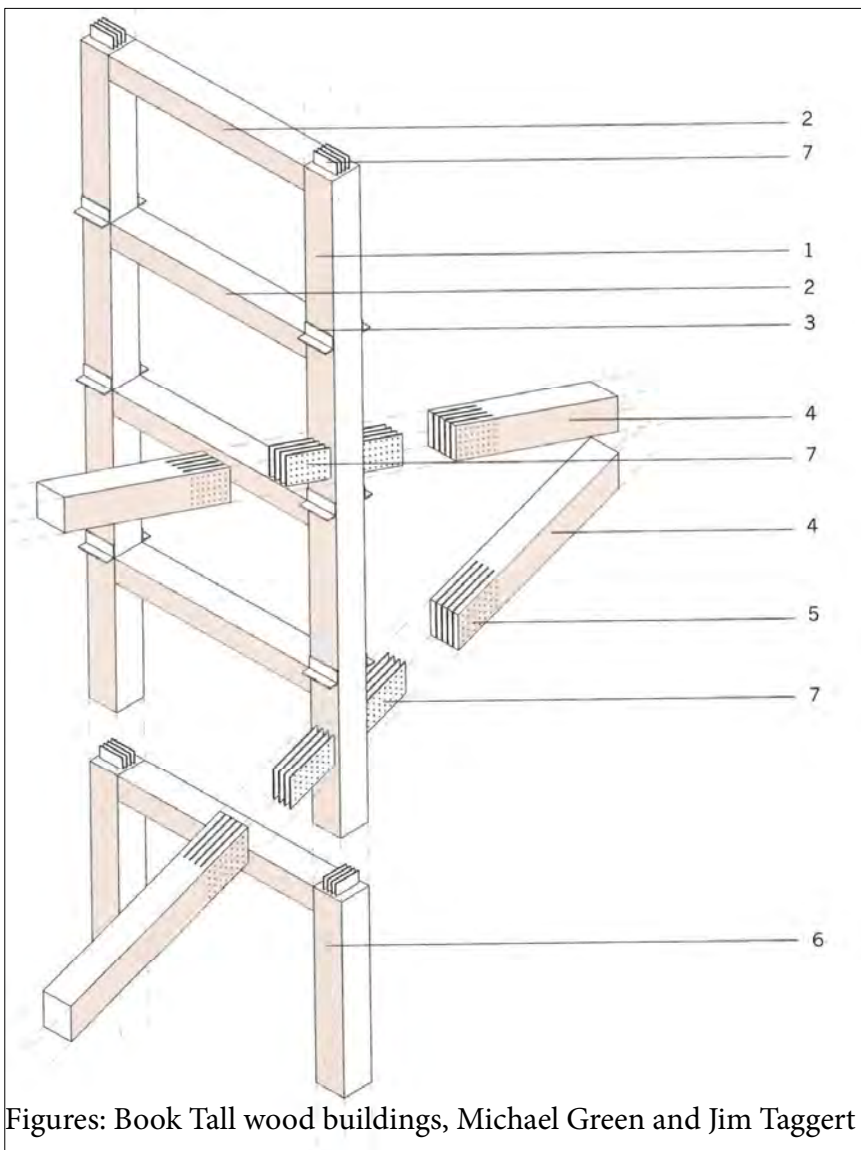
Fasade mot Mjøsa

First Sketch by the Builder



Figures: Voll Arkitekter

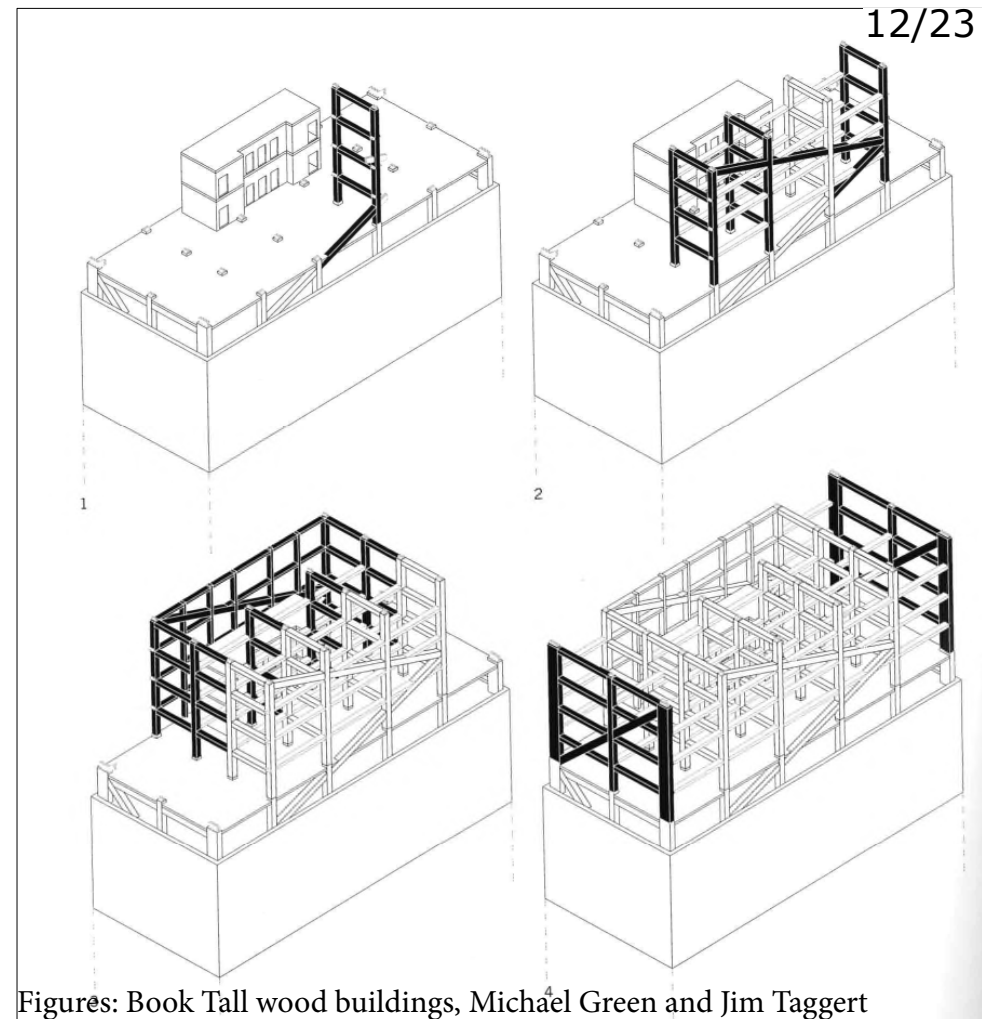




Figures: Book Tall wood buildings, Michael Green and Jim Taggart

The four-storey tall pre-assembled truss comprises the following components

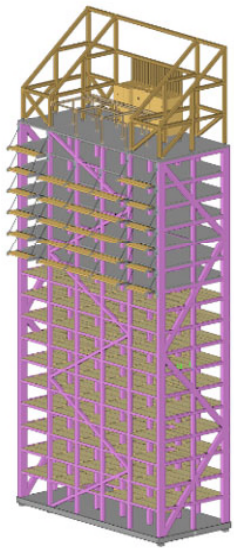
- 1) Glulam column
- 2) Glulam beam
- 3) Steel angle
- 4) Glulam cross bracing
- 5) Dowels
- 6) Truss below
- 7) Slotted-in steel plates.



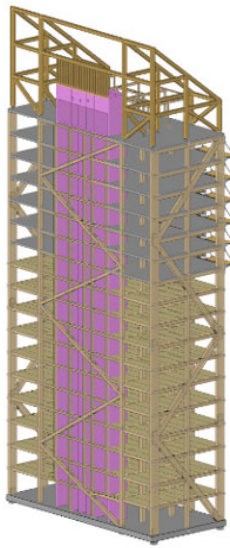
Figures: Book Tall wood buildings, Michael Green and Jim Taggart

- 1) Depending on its location, the pre-assembled truss may include the glulam brace and beams. The truss is placed and connected to the truss below starting on the front side of the core.
- 2) More trusses are placed and the cross bracing is extended as each truss is added. Remaining beams continue to be installed between the trusses.
- 3) Trusses installed on the side and back of the cores
- 4) The trusses for the buildings two short sides are installed last.

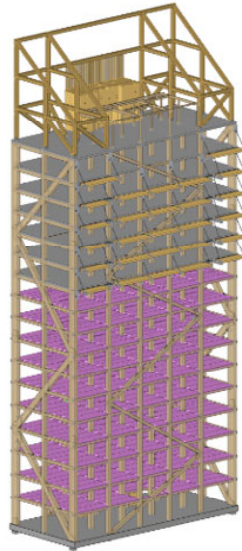
4. Actual volumes of structural components



Glulam  
1400 m<sup>3</sup>



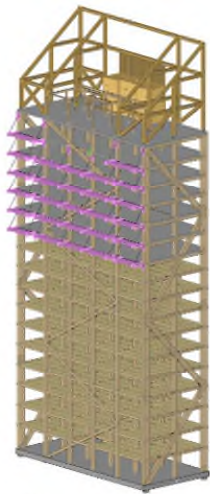
CLT  
450 m<sup>3</sup>



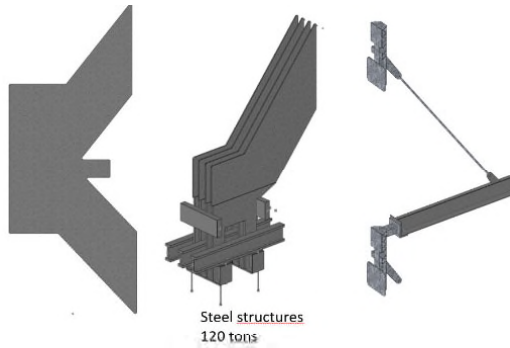
Trä8 floors / concrete slabs  
5250 m<sup>2</sup> / 3675 m<sup>2</sup>  
650 m<sup>3</sup> / 1100 m<sup>3</sup>



Pergola glulam  
100m<sup>3</sup>



CLT balconies  
85m<sup>3</sup>



Steel structures  
120 tons



Photo: Moelven Limtre



Photo: Moelven Limtre

Figure 8 Highlighted volumes used in the building's structure.

Please note that timber volumes used in exterior wall elements are not included



Figure 10 Step 1

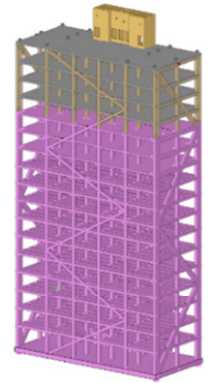


Figure 13 Step 4

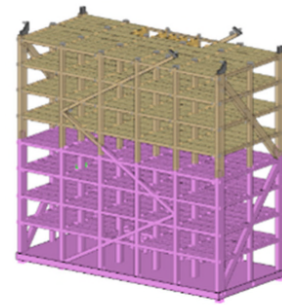


Figure 11 Step 2

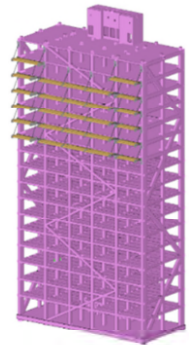
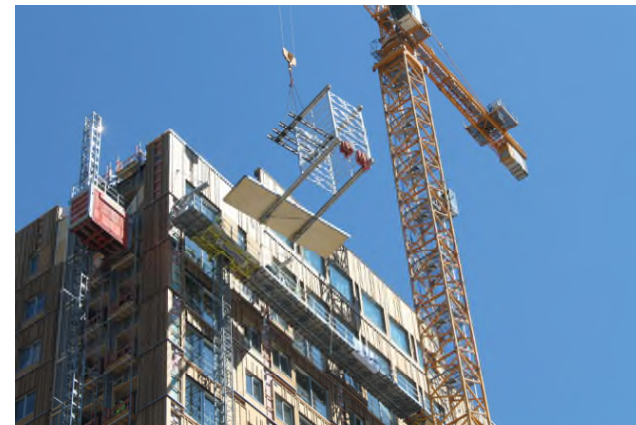


Figure 14 Step 5

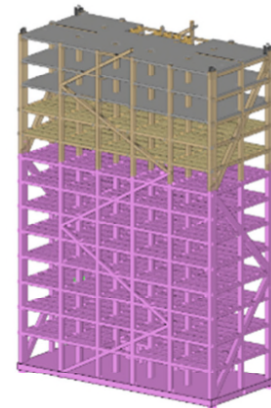


Figure 12 Step 3

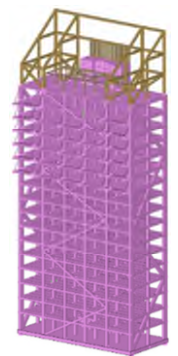


Figure 15 Step 6  
Figures: Moelven Limtre  
Photos: Moelven Limtre

Fast assembly. Only one year between the first glulam column and the last glulam beam on the top.

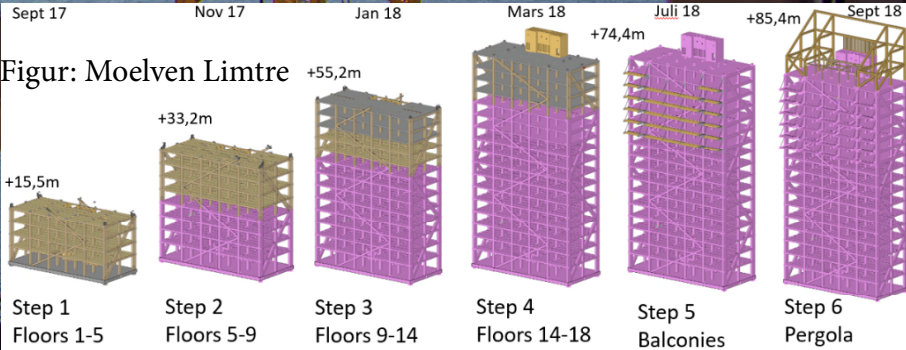




Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre



Photo: Moelven Limtre

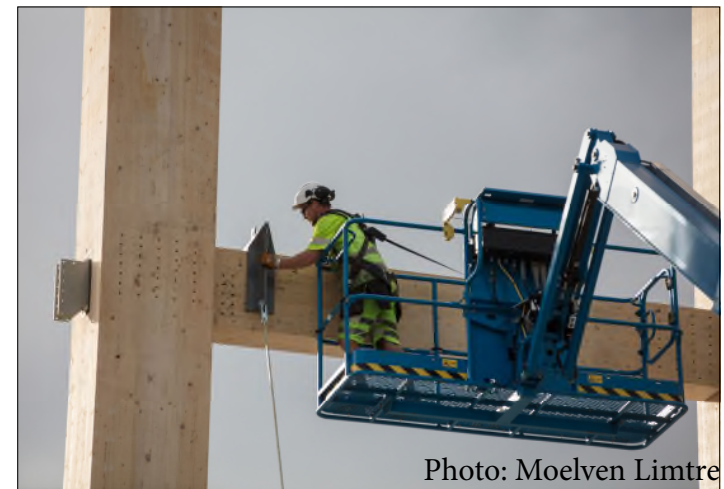
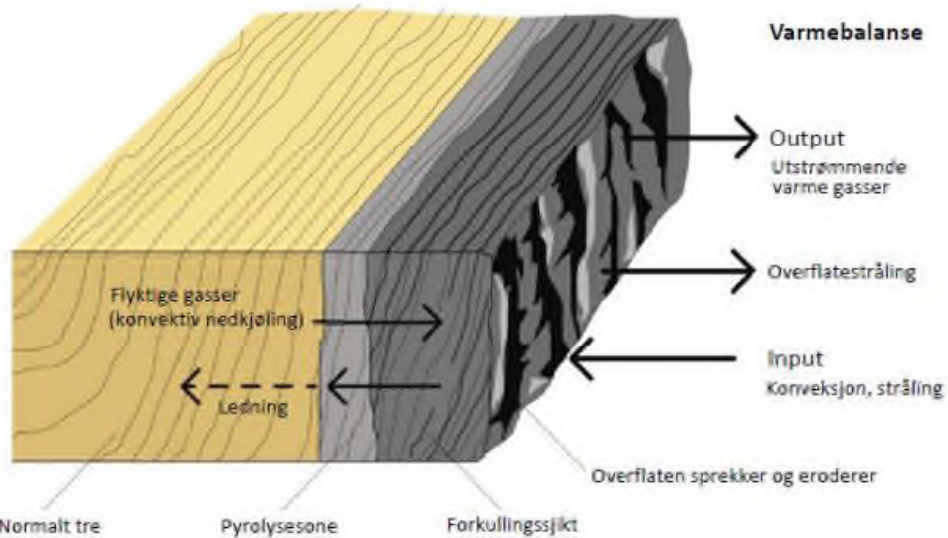


Photo: Moelven Limtre



- Wood is very predictable
- Fire development is slow
- Moderate smoke development
- Maintain both the carrying capacity and the stability in a fire much longer than other materials
- The tree will char and form a protective layer
- Large glulam columns will self-extinguish



Figur 2: Forkulling av treverk (illustrasjon: Limtreboka).

Figur: Sweco

# FIRE SAFETY

Photo: Ric

- Main loadbearing system designed to withstand 120 minutes of fire
- Designed to sustain the loss of the horizontal stiffness of one timber floor
- Carry the impact load of a timber deck falling down on the floor below.

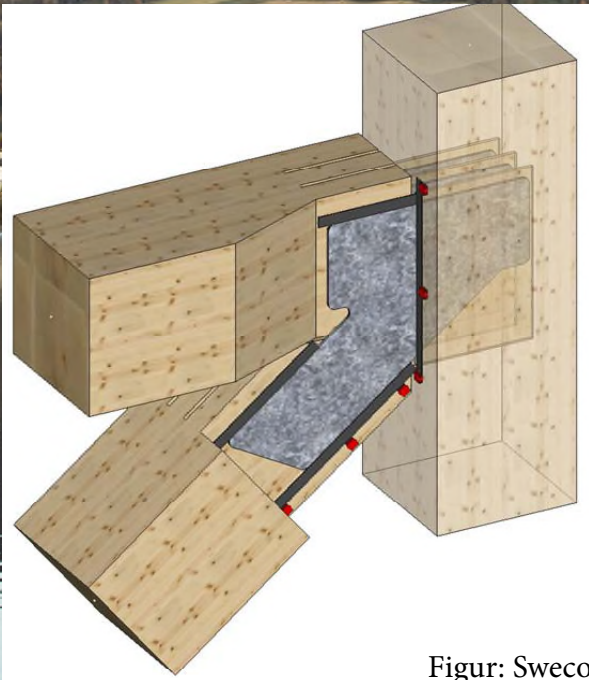


Photo: Sweco



Photo: Ricardo Foto

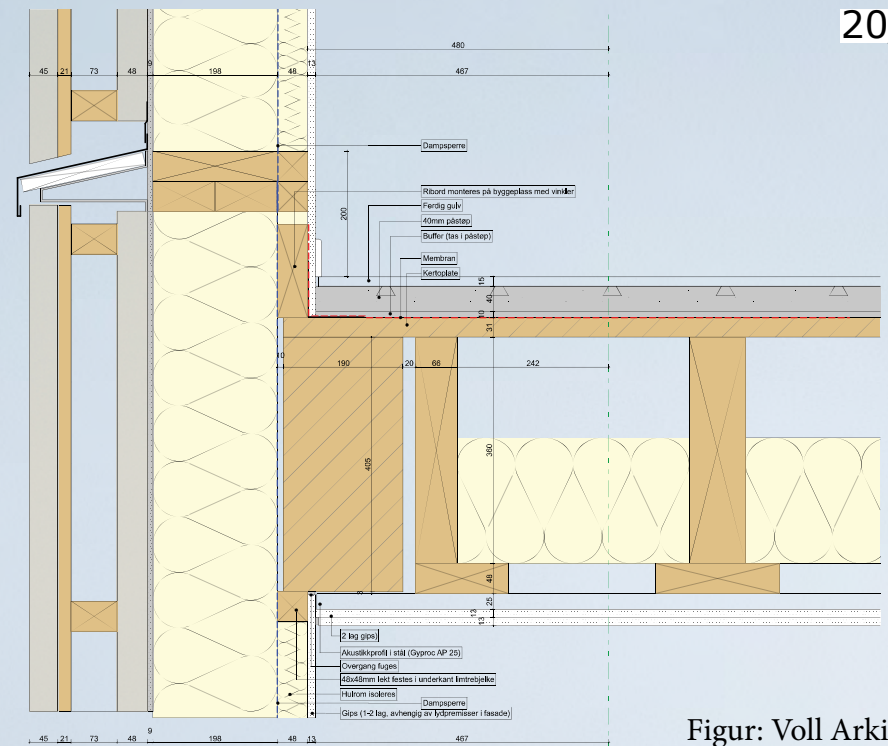
- Designed to withstand a complete fire
- Two separate sprinkler systems
- Seperate fire cells for each floor and function
- Control room
- Fire retardant painting
- platerboard on exposed walls in escape stairs
- Fire stops and fire strips



Figur: Sweco



- Prefabricated elements
- Fire impregnated cladding
- Fire impregnated structural timber
- Non combustibile insulation
- Cavity valves i the floor divisions.



Figur: Voll Arkitekter



Photo: Voll Arkitekter



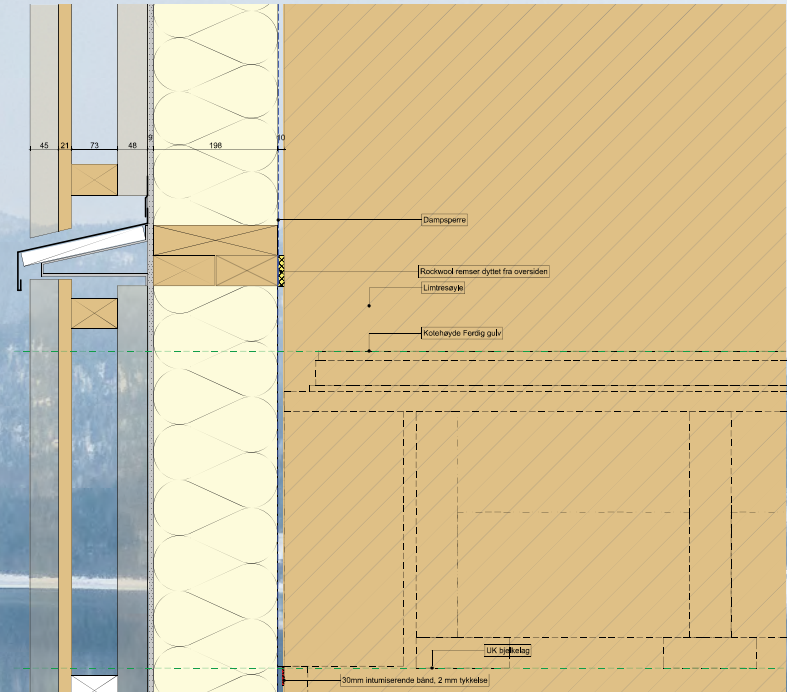
Photo: Voll Arkitekter



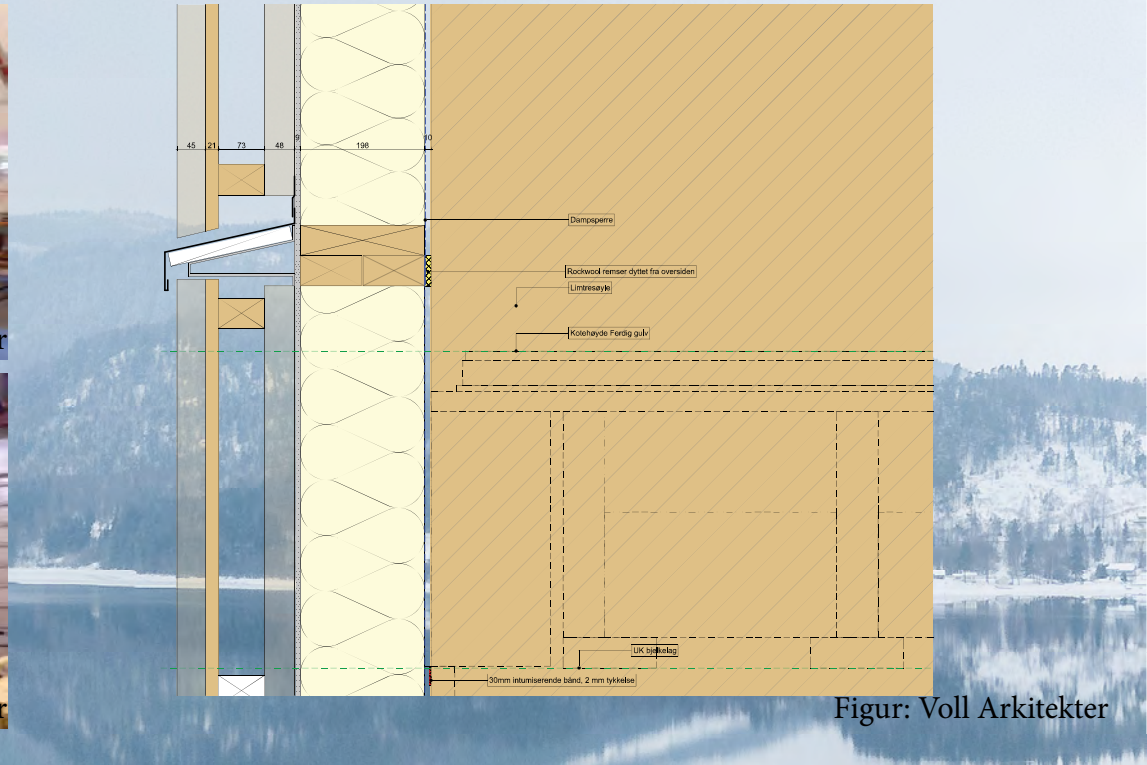
Photo: Voll Arkitekter



Photo: Voll Arkitekter



Figur: Voll Arkitekter

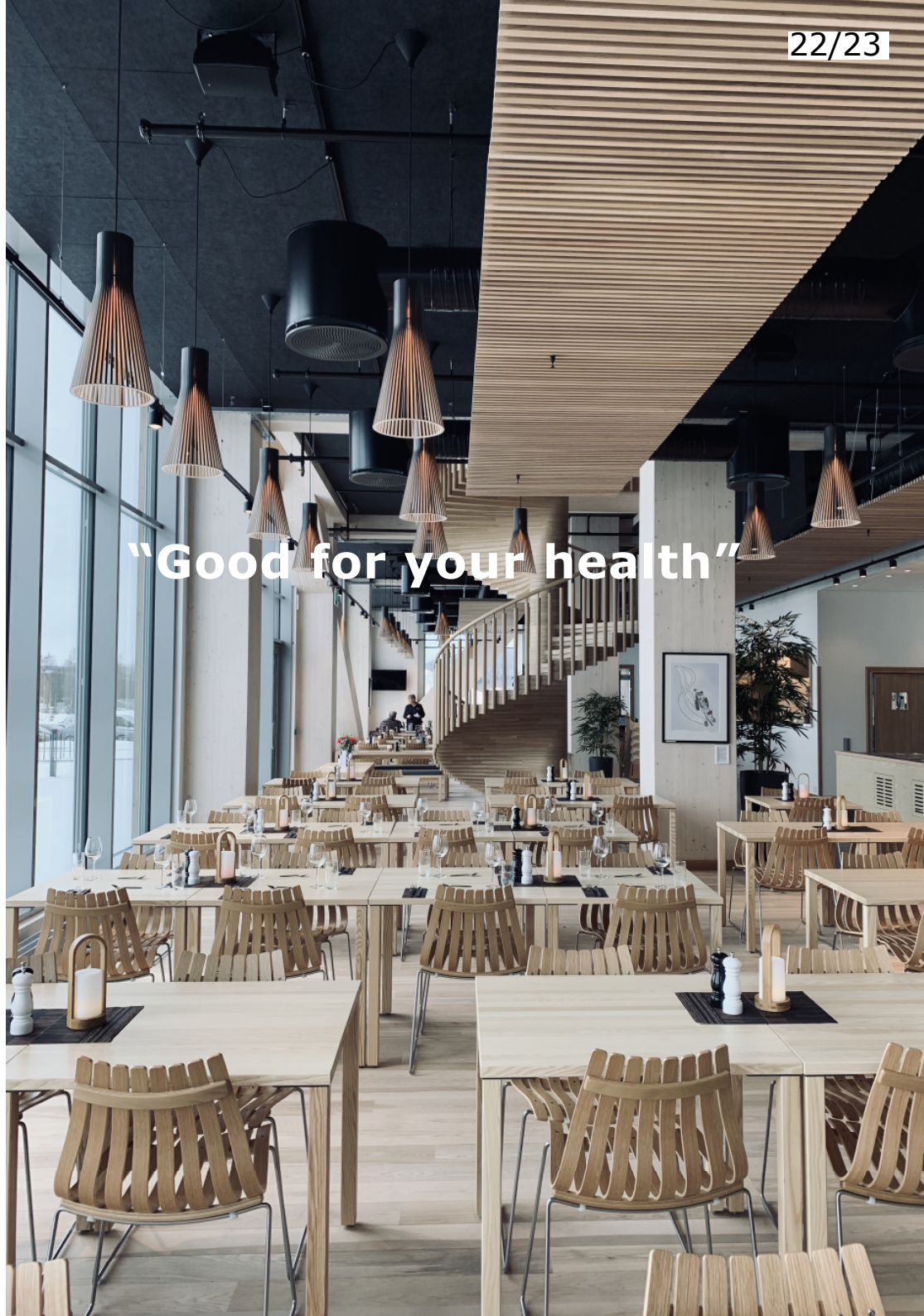
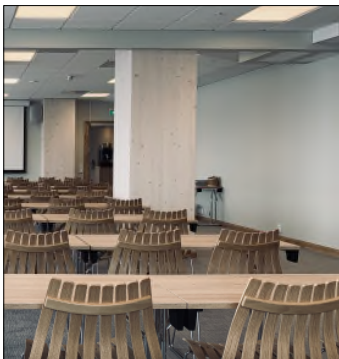




MJØSTÅRNET

WOOD  
HOTEL

**“One of the safest buildings along Mjøsa”**



"Good for your health"

**Sustainable wise, the most important aspect of this building is to show that it is possible to build large complex timber buildings, and in that fashion inspire others to do the same.**

