



SUSTAINIBILITY. HISTORY. TIMBER PROJECTS

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Architects
Engineers 4 Future

CO₂-Preisung



DAMN, I'M SICK!
I HAVE HUMANS

The climate

ONLY GO FURTHER

ACE UND DIE SAID ALSU PLANT HERA LINDWELT

MAKE A HEART WITH A RAINBOW STRIPES
NOT CO₂

THE PLANET IS HOTTER THAN MY GIRLFRIEND

SO SEVERE EVEN NERDS ARE HERE

NO PLAN B

SAVE MORE BEES
PLANT MORE TREES
CLEAN THE SEAS
THERE IS NO PLAN B

BENGER-HAUS

BUND OPTIK

Gabor

ZING

BEPL

positive proof of **Global Warming**



18th Century

1900

1950

1970

1980

1990

2006

credit: BDir Dipl.-Ing. Hans-Dieter Hegner
Bundesministerium für Verkehr, Bau und Stadtentwicklung





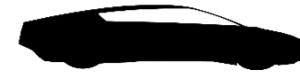
1930



85 seconds

0 – 100

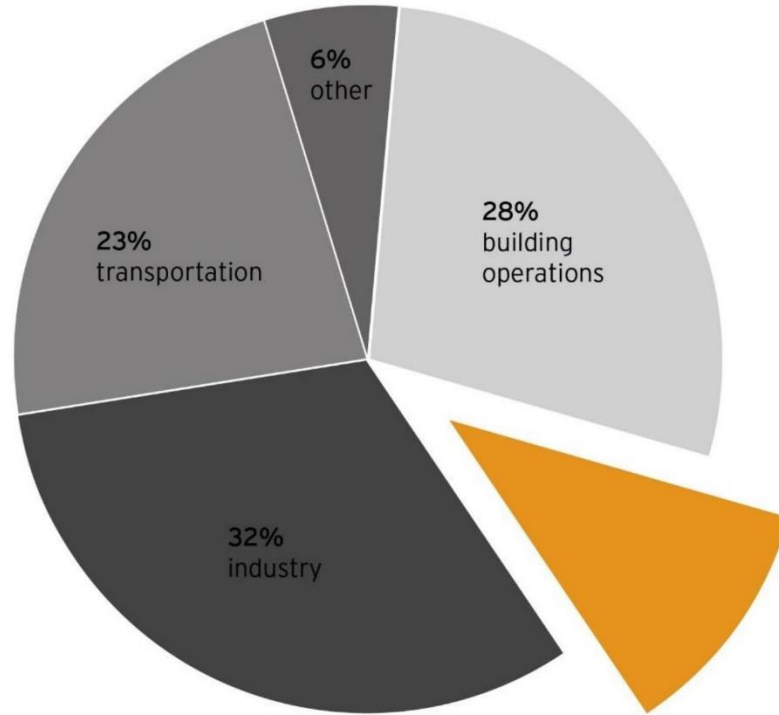
today



3,7 seconds

The building sector's contribution

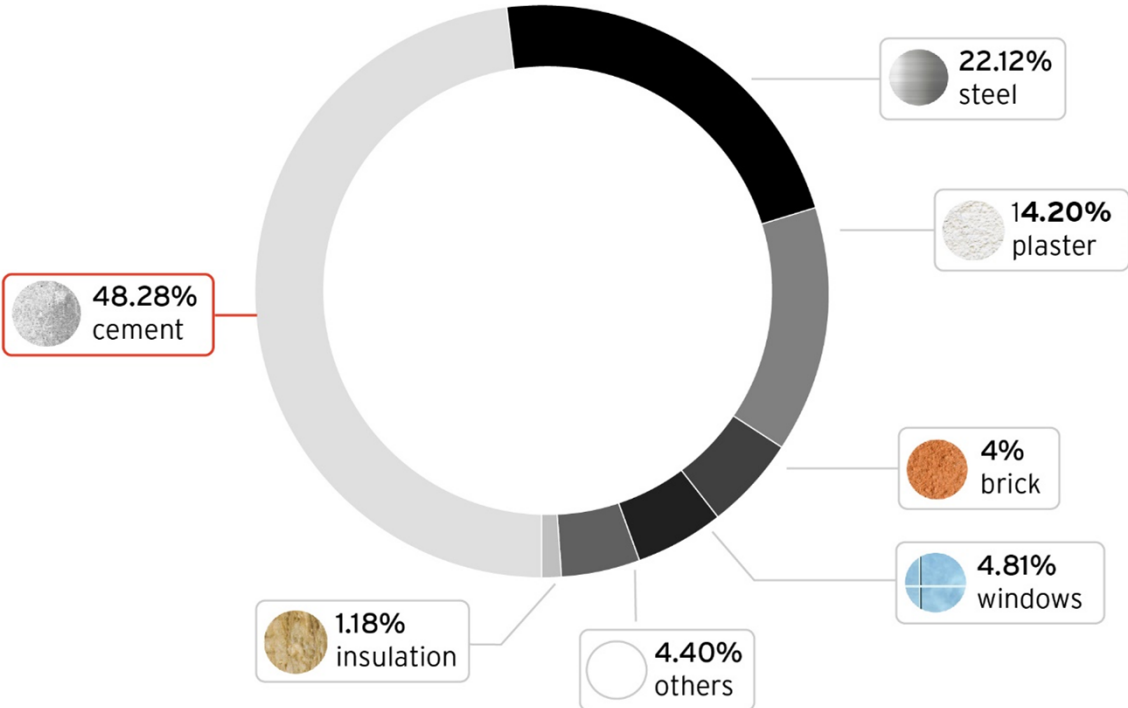
Global CO2 Emission by Sector



The building industry generates nearly 40% of annual global GHG emissions.

11%
building materials
& construction
(core and shell)

Comparison of the proportion of greenhouse gas emissions from different materials



Data source: ZhixingLuo; LiuYangiapingLiu; "Embodied carbon emissions of office building: A case study of China's 78 office buildings"; Xi'an University of Architecture and Technology, Shaanxi, China; 2015



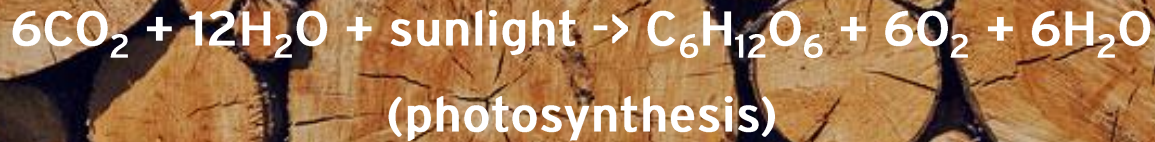
MORE IS MORE

emission of 1,6 ton CO₂ per 1 ton of steel



MORE IS LESS

1m³ timber stores about 1 ton CO₂





RE:THINK our habits and goals

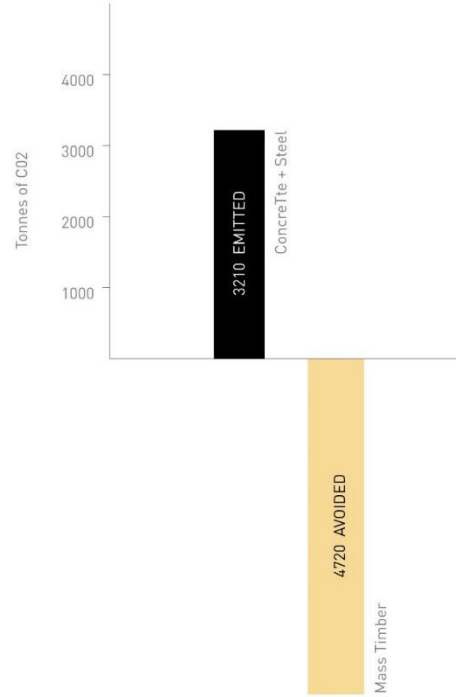
Carbon Sequestration

800 Mio tons of CO₂ are absorbed from the atmosphere by forest growth in the US every year.

Currently only around 10–45 Mio tons of CO₂ are stored/sequestered in timber buildings every year.



TYPICAL MIDRISE BUILDING CARBON EMISSIONS



source: timbercity.org







KITA SCHÖNE AUSSICHT, FRANKFURT



BIRK HEILMEYER UND FRENZEL, STUTTGART





CO2 Sequestering

STOREYS 2 HEIGHT 9 m TIMBER 345 m³

91 x 40,000 km x 95 g/km
= 345 t CO₂ emitted



91

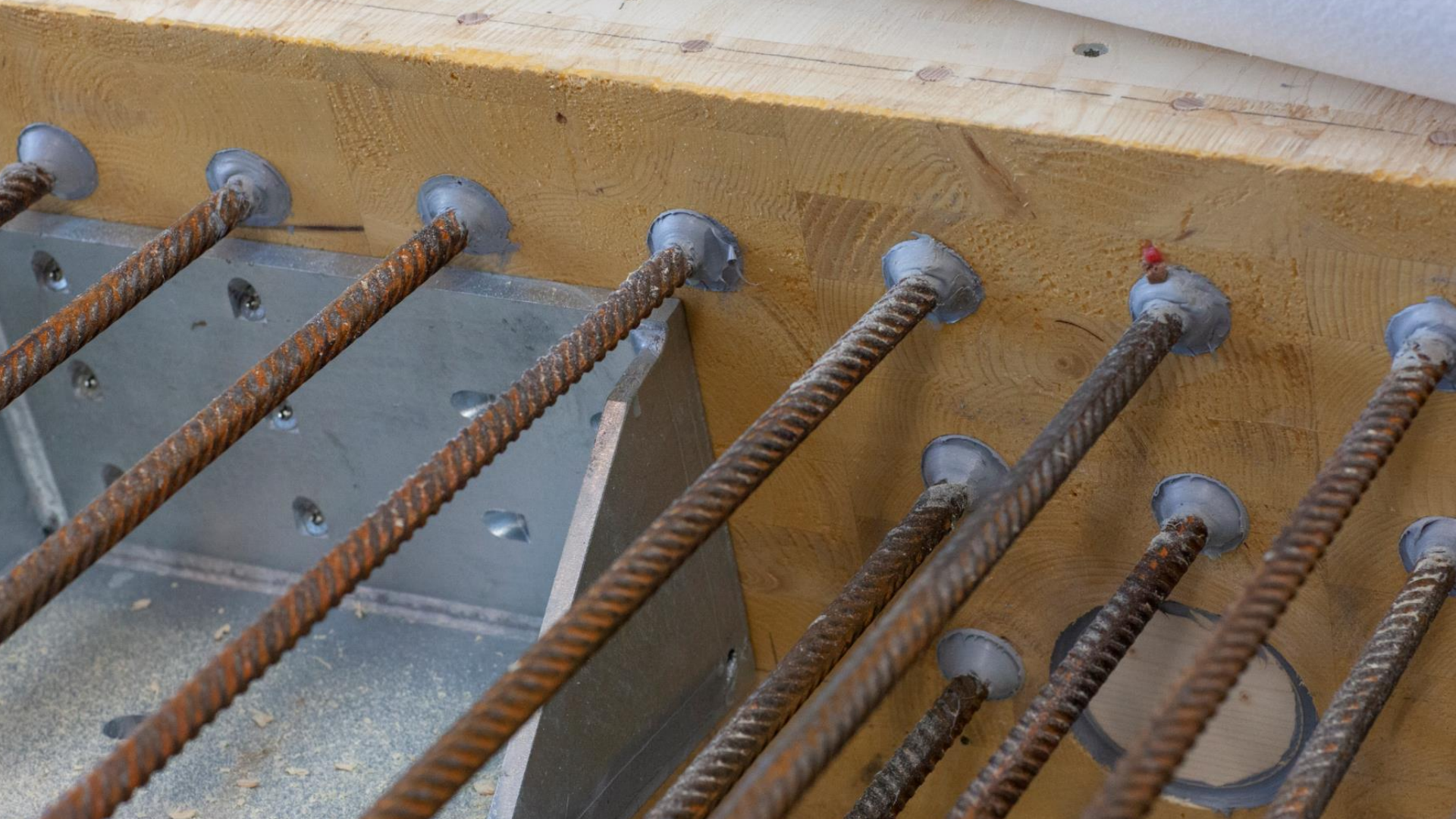
95 g/km
EU 2020

















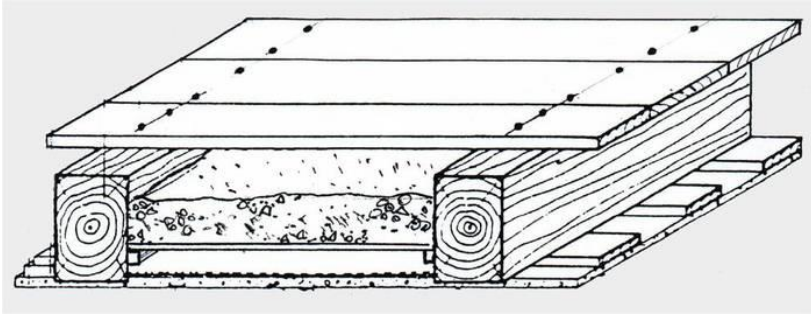
MULTY STORY TIMBER BUILDINGS

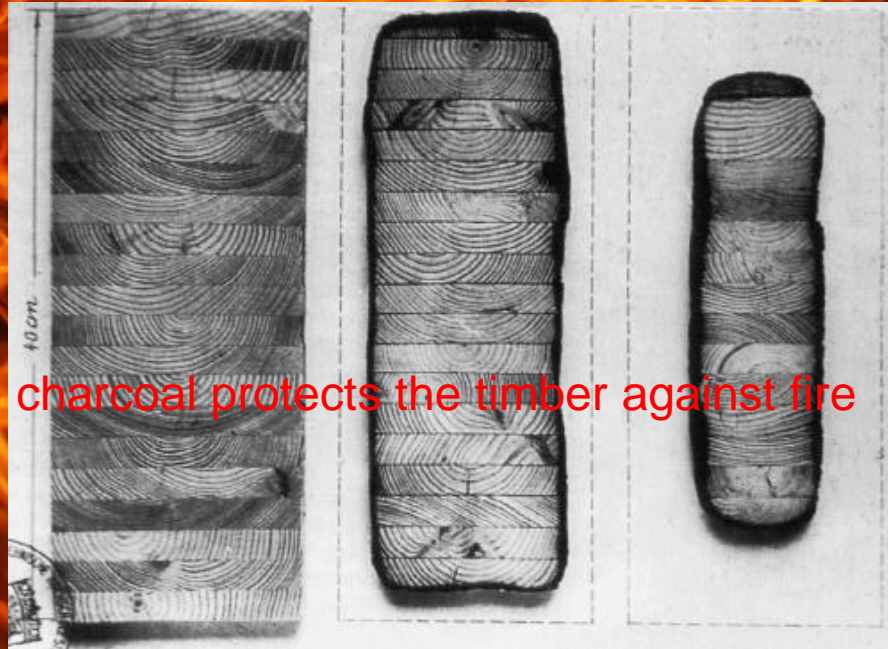
A SHORT HISTORY



half timbered houses 15th-18th century



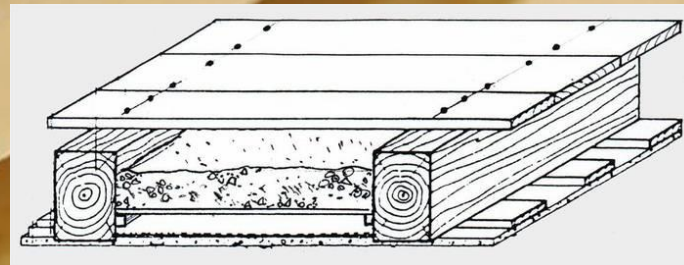




charcoal protects the timber against fire

21st century . mass timber

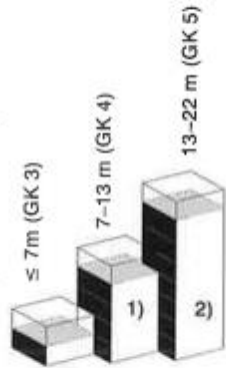
Rennaisance of timber buildings



Building regulation changed in many countries Ecological awareness among the population, clients and municipal administration favorit renewable materials

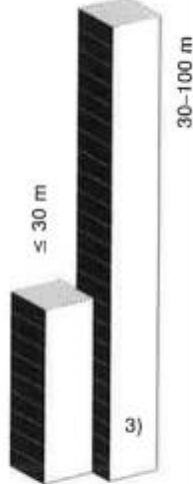
Ländervergleich:
So hoch darf man
mit Holz bauen.

Permitted heights for
timber building in
different countries



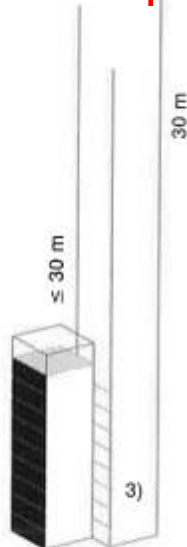
Deutschland
Germany

≤ 7 m	R 30
7-13 m	R 60, K ₂ 60
13-22 m	R 90 A2



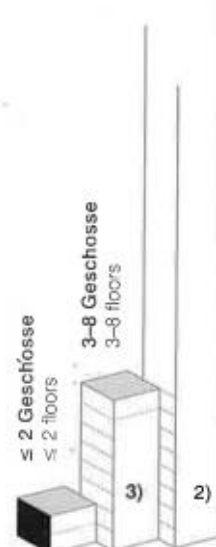
Schweiz
Switzerland

≤ 11 m	R 30 ⁴⁾
11-30 m	R 60 ⁴⁾
30-100 m	R 60 ⁴⁾



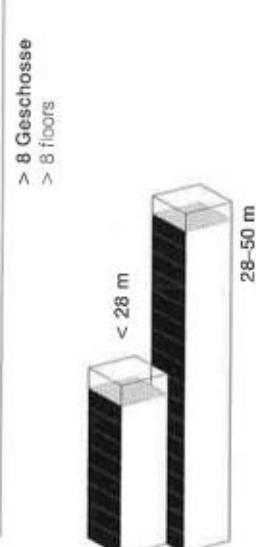
Großbritannien
UK

≤ 5 m	R 30
6-18 m	R 60
18-30 m	R 90 ⁵⁾
> 30 m	R 120



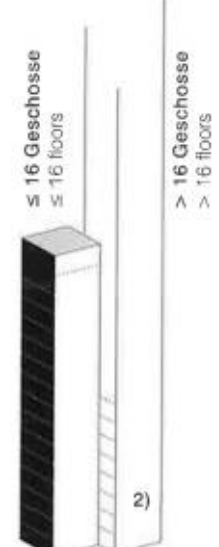
Finnland
Finland

1-2 m	R 30
3-8 m	R 60, K ₂ 10/K ₂ 30
> 8 m	R 120



Frankreich
France

< 28 m	R 60
28-50 m	R 90



Schweden
Sweden

≤ 4 m	R 60
5-15 m	R 90

Timber is looking up!

**OVER 44
TALL WOOD BUILDINGS
UNDERWAY OR HAVE BEEN
BUILT IN THE PAST 6 YEARS**



TERRACE HOUSE
Menlo Park, CA 1999
19 stories | 2020



HYPERION
Bordeaux, France
18 stories | 2020



MJÖSTÄRNET
Björnå, Norway
18 stories | 2019



LIGHTHOUSE JOENSUU
Joensuu, Finland
14 stories | 2019



TRAFALGAR PLACE
London, United Kingdom
17 stories | 2018



CURTAIN PLACE
London, United Kingdom
17 stories | 2018



T3
Minneapolis, United States
7 stories | 2016



JACK LONDON SQUARE PARCEL F2
Oakland, United States
8 stories | 2020



HOGO VIENNA
Vienna, Austria
24 stories | 2019



SUURSTOFFI BF1
Taub-Altenau, Switzerland
16 stories | 2019



SKAJO
Halle, Germany
16 stories | 2019



T3 WEST MIDTOWN
Atlanta, United States
7 stories | 2018



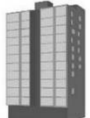
SUURSTOFFI 22
Basel-Rodersru, Switzerland
10 stories | 2018



MOHOLT 50/50
Tromsø, Norway
9 stories | 2018



HOTEL NAUTILUS PESARO
Pesaro, Italy
7 stories | 2016



TREET
Oslo, Norway
14 stories | 2015



ÎLOT BOIS ET BIOSOURCÉ
Ile de St-Jacques, France
11 stories | 2018



25 KING
Brisbane, Australia
15 stories | 2015



CARBON 12
Portland, United States
8 stories | 2015



ORIGINE CONDOS



PUUKUOKKA
Jyväskylä, Finland
8 stories | 2015



CUBE
London, United Kingdom
10 stories | 2015



WOOD INNOVATION & DESIGN CENTRE
Vancouver, Canada
8 stories | 2014



BROCK COMMONS TALLWOOD HOUSE
Vancouver, Canada
18 stories | 2017

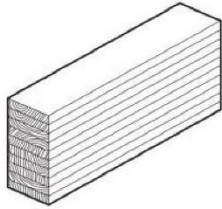


DALSTON LANE
London, United Kingdom
20 stories | 2017

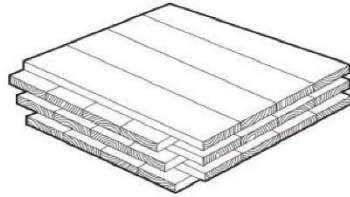
Source: thinkwood.com

Source: Knippers Helbig

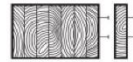
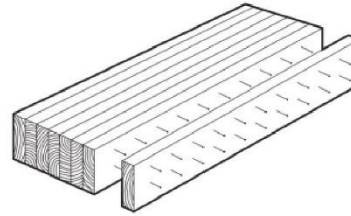
MASS TIMBER PRODUCTS



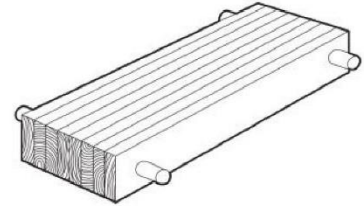
Glue Laminated
Timber



Cross Laminated
Timber

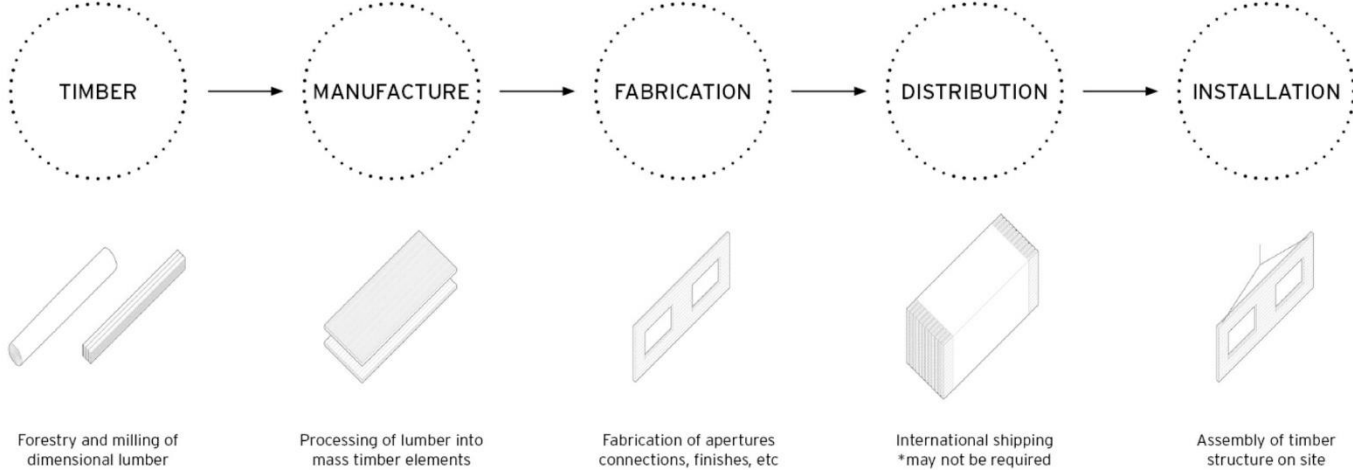


Nail Laminated
Timber

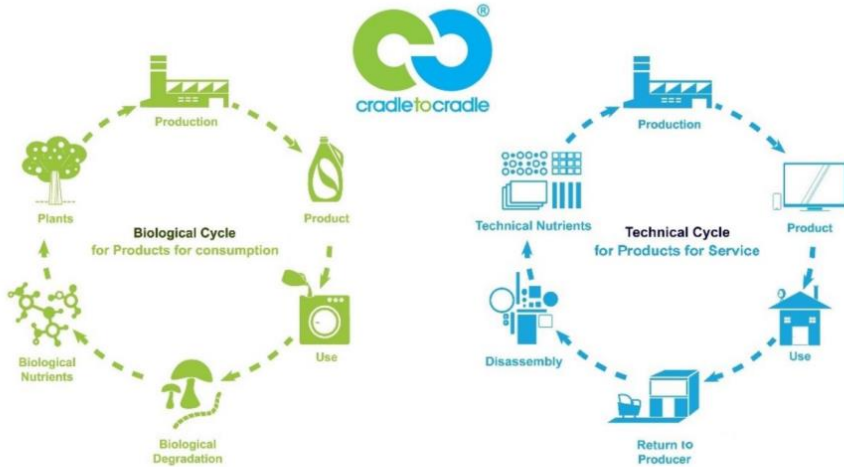


Dowel Laminated
Timber

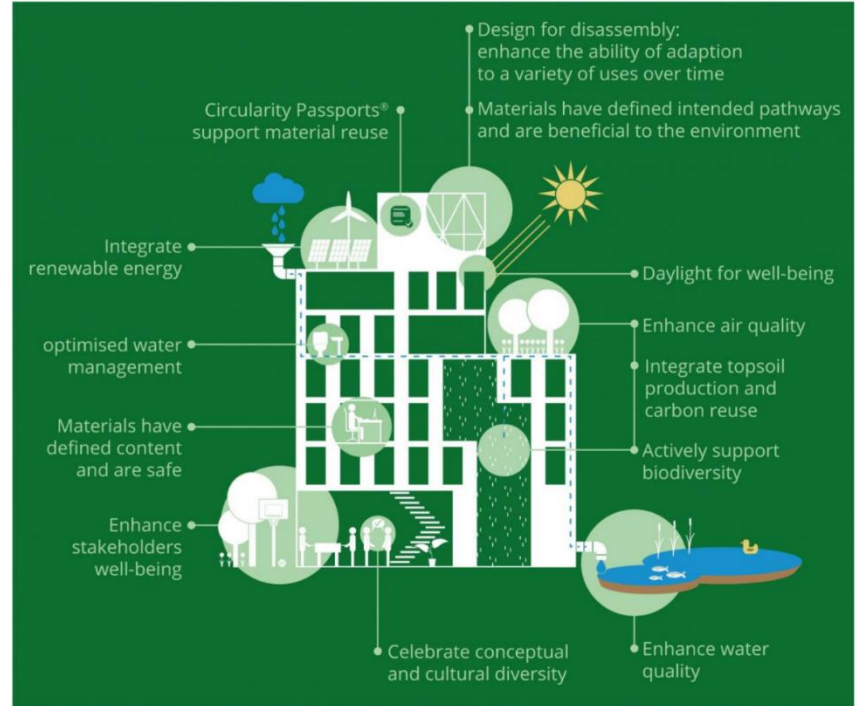
Timber manufacturing



THE CRADLE, DÜSSELDORF



HPP ARCHITEKTEN, DÜSSELDORF INTERBODEN



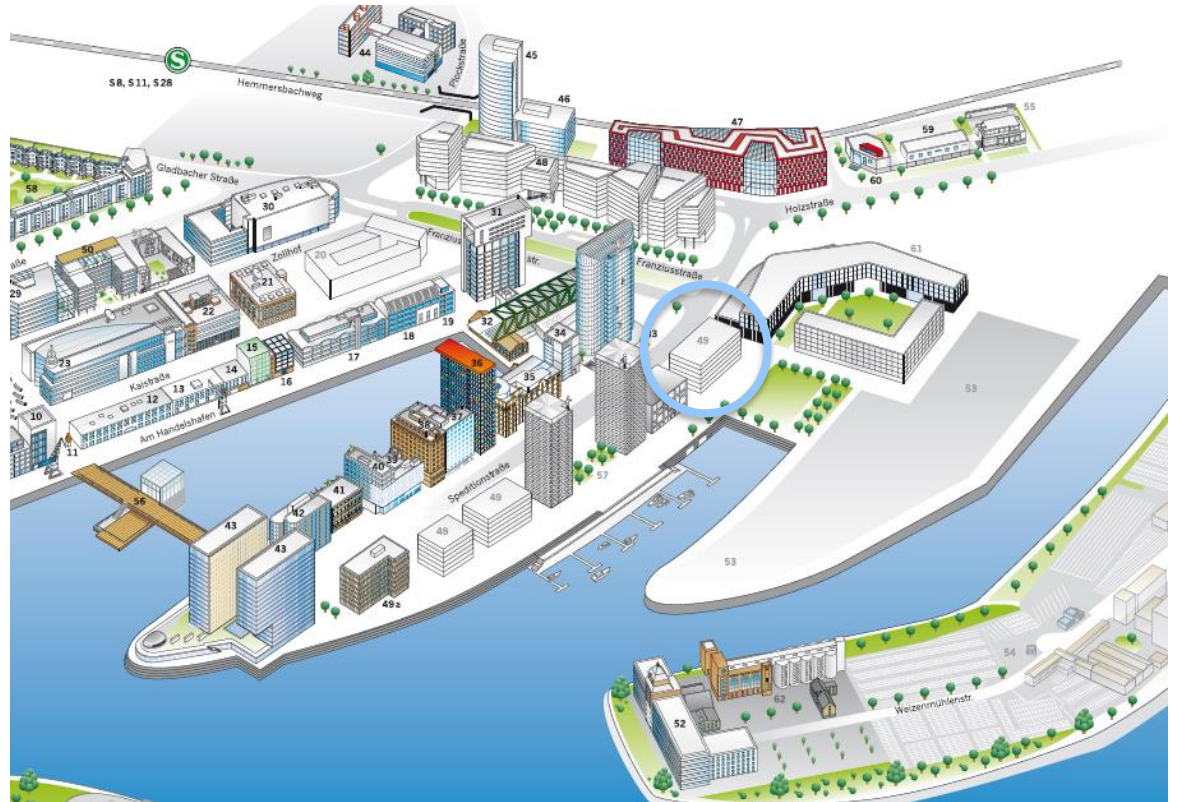
Cradle to Cradle® in the Built Environment
Design for a Beneficial Footprint



THE CRADLE, DÜSSELDORF

HPP ARCHITEKTEN, DÜSSELDORF
INTERBODEN

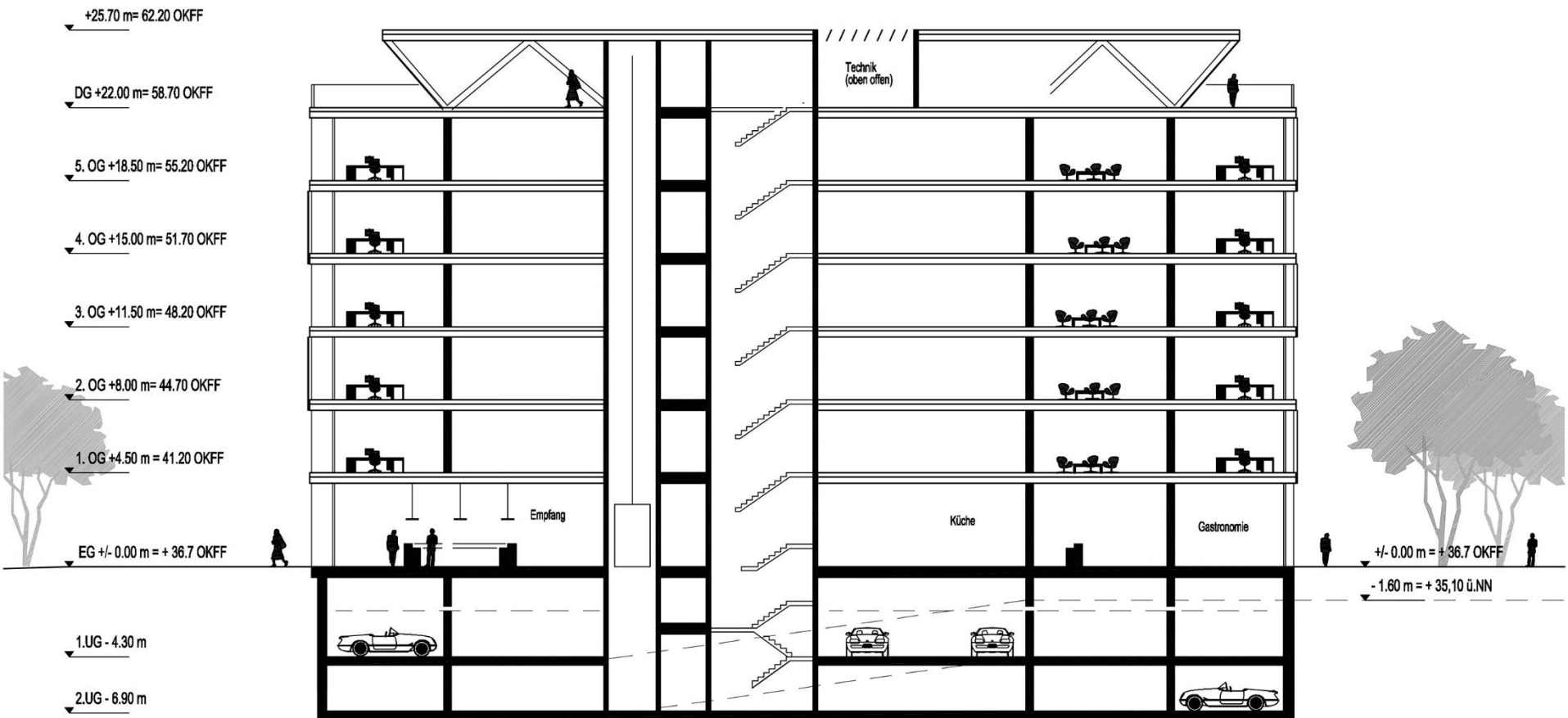


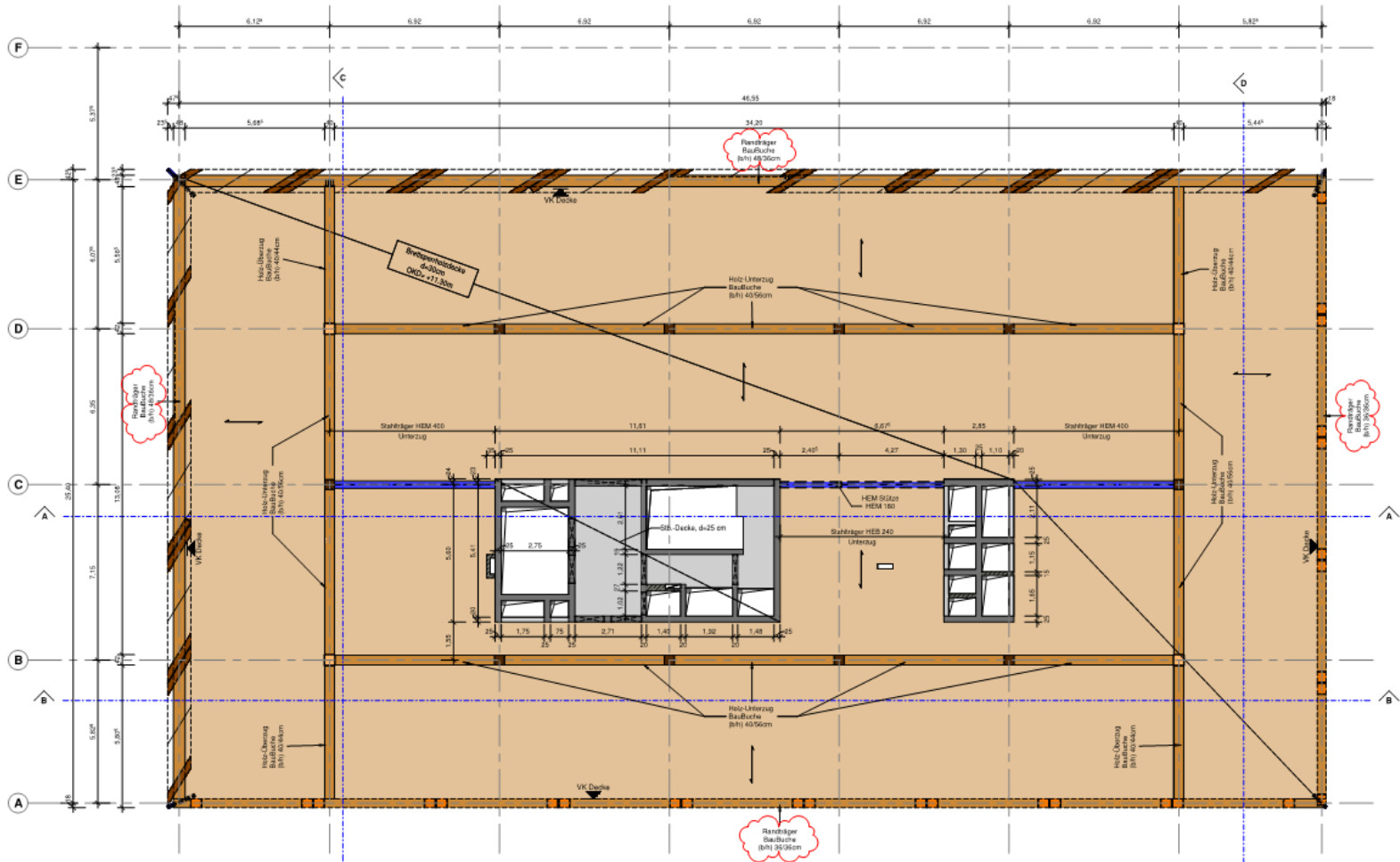


THE CRADLE, DÜSSELDORF

HPP ARCHITEKTEN, DÜSSELDORF
INTERBODEN





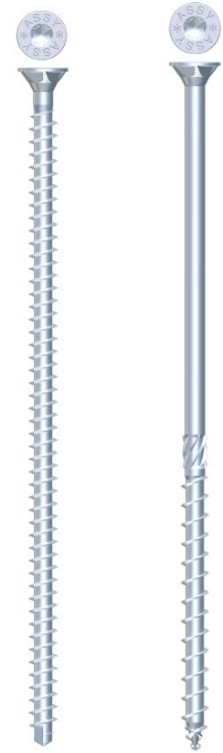




Timber

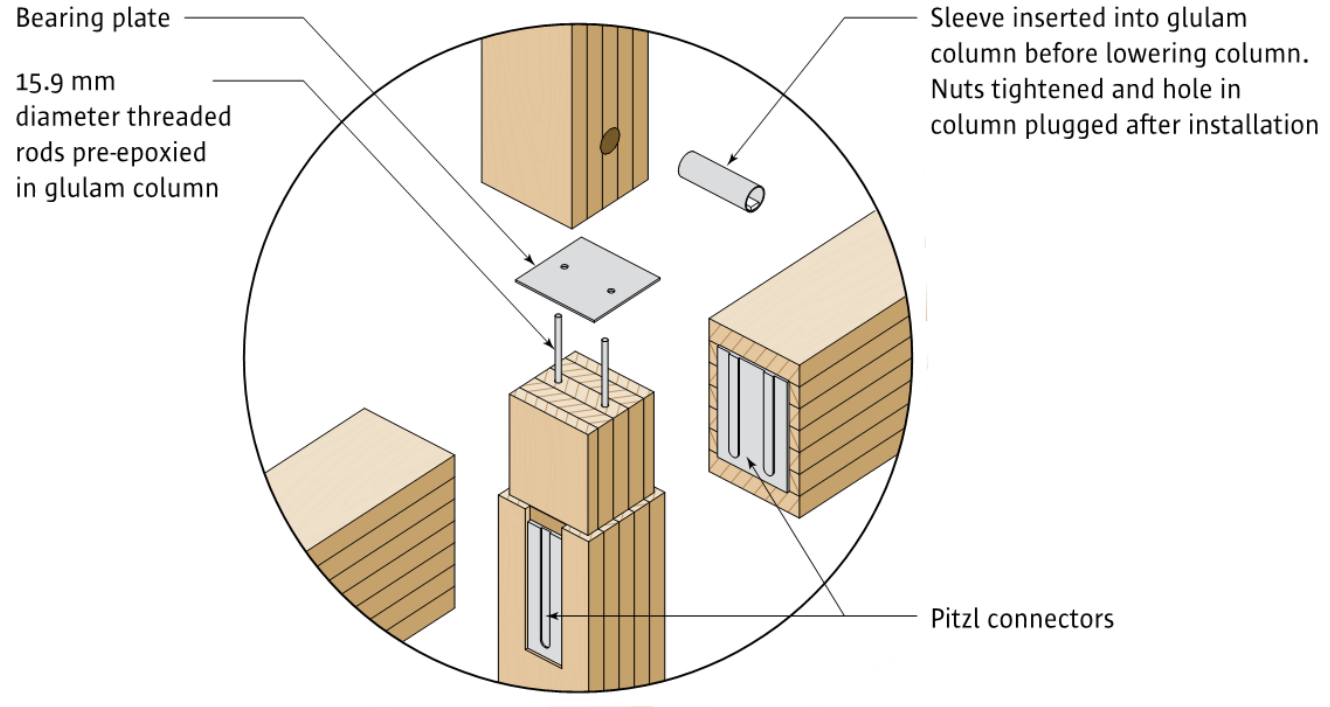
Detailing

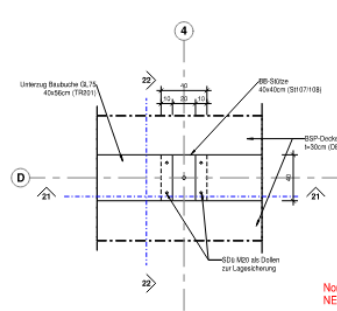
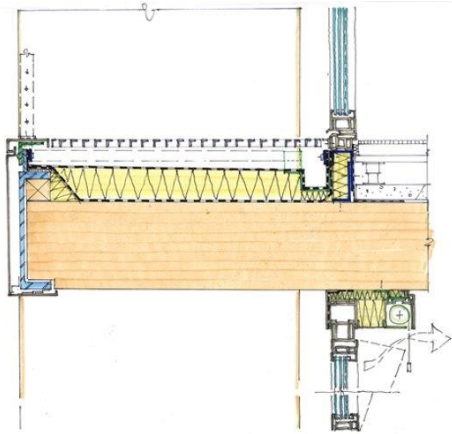
Self Tapping Screws



Off-The-Shelf Connections

Wood Innovation Design Centre, Michael Green Architecture

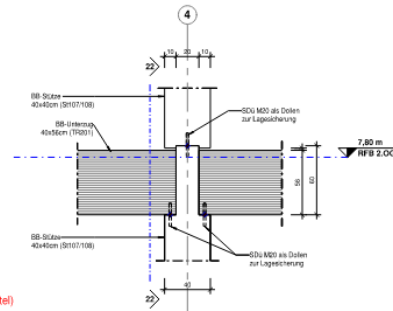




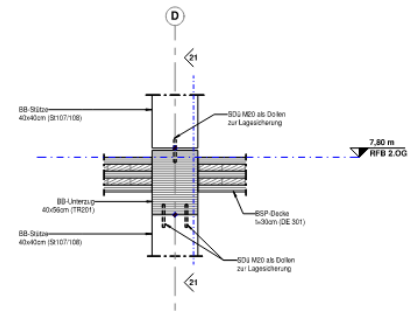
Detail 2.5 Grundriss
M 1 : 20

Normalkraft Stütze:
N_{ED} = 3010kN (mittel)

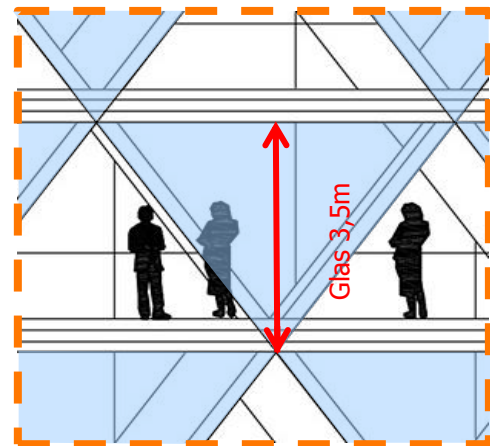
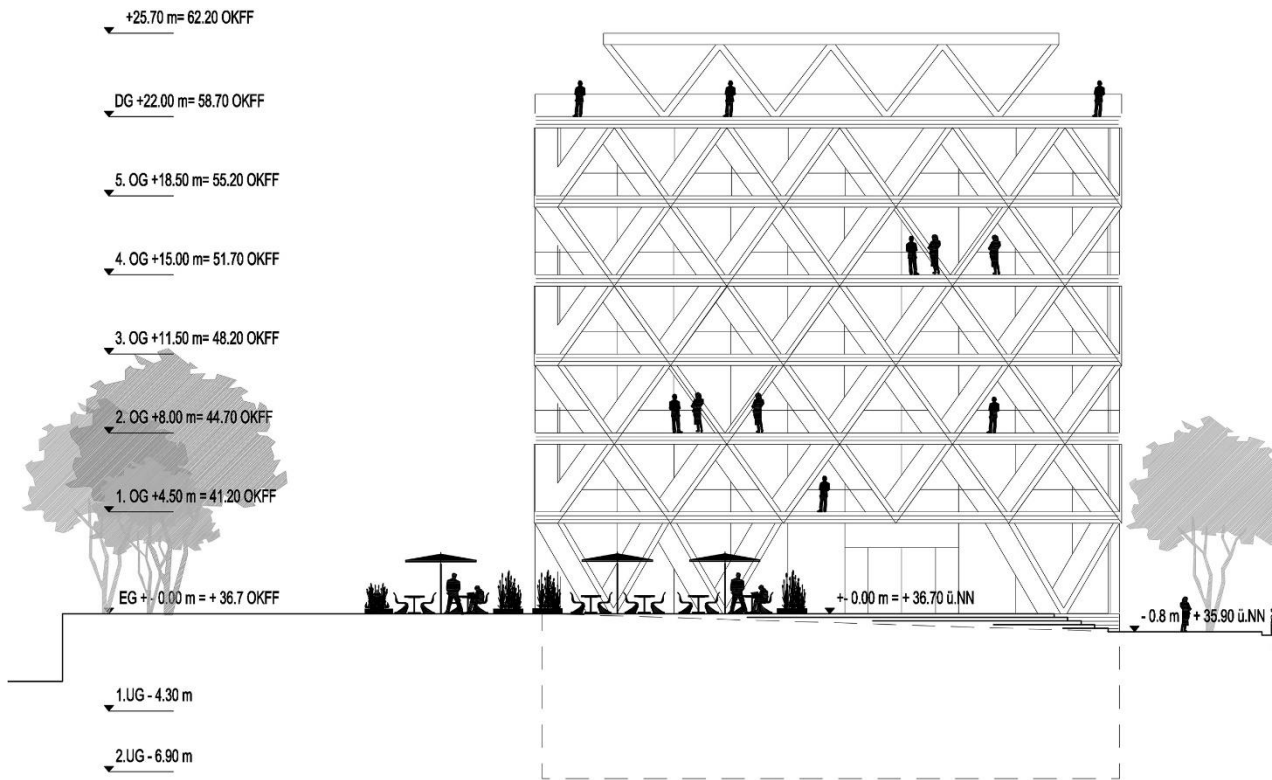
Auflagerkraft Unterzug:
g_k = 186 kN
q_k = 92 kN (mittel)



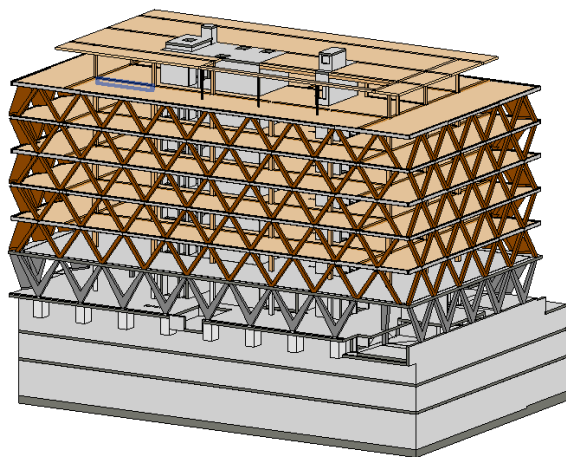
Detail 2.5 Schnitt 21-21
M 1 : 20



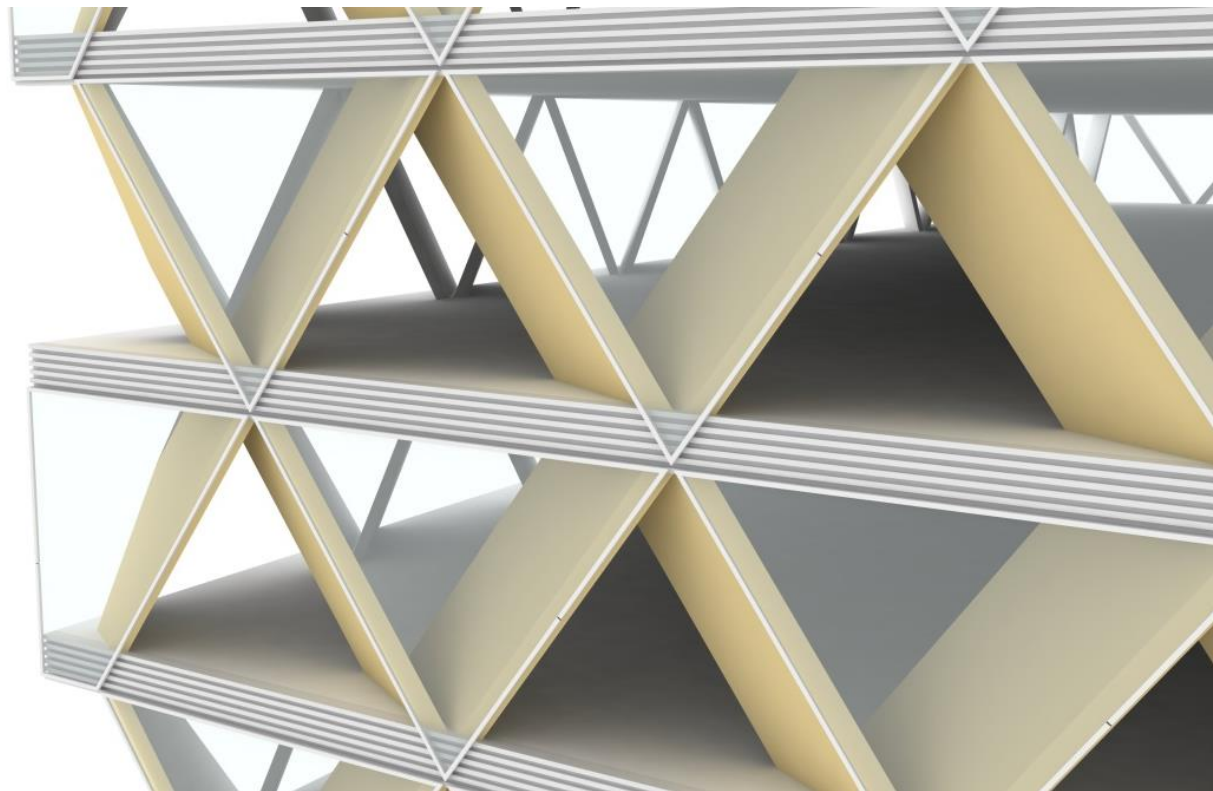
Detail 2.5 Schnitt 22-22
M 1 : 20



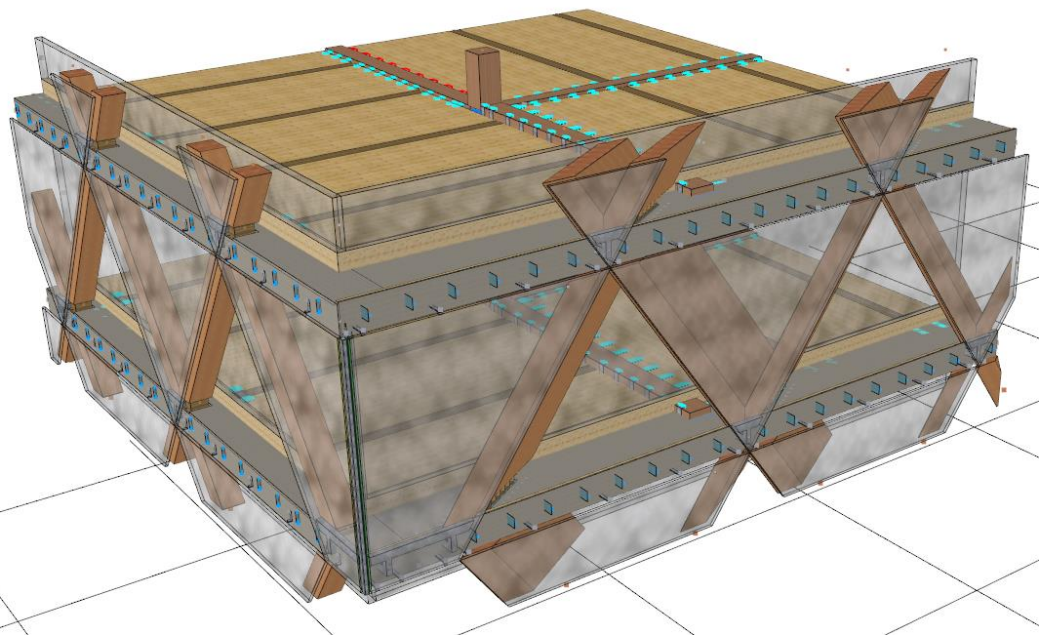
THE CRADLE, DÜSSELDORF



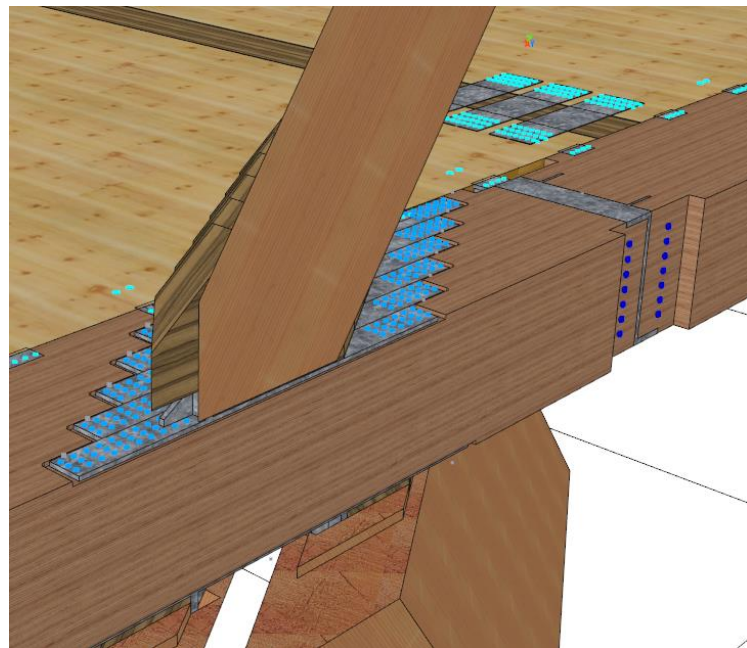
HPP ARCHITEKTEN, DÜSSELDORF
INTERBODEN



THE CRADLE, DÜSSELDORF



HPP ARCHITEKTEN, DÜSSELDORF
INTERBODEN







Timber

glue-free construction



Rote Wand | residential building

Stuttgart, Germany

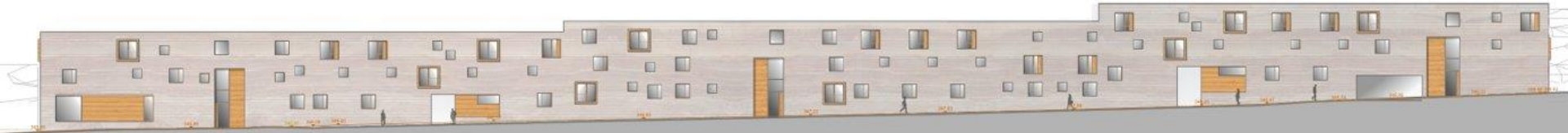
Architect Eble Messerschmidt Partners

Knippers Helbig

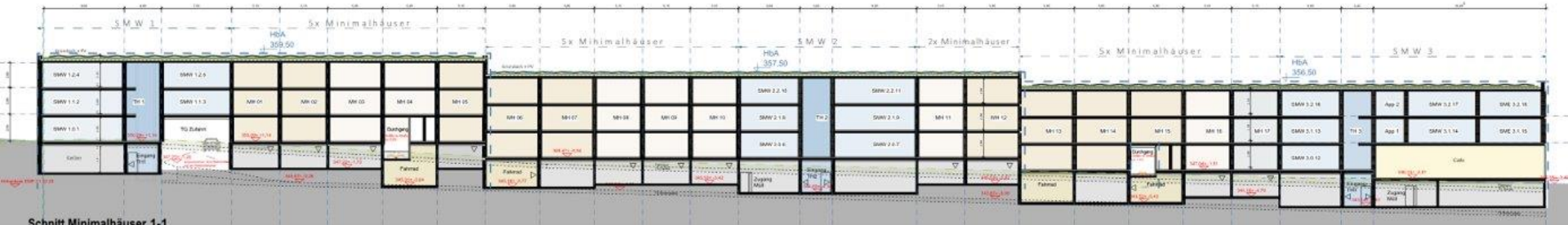
Rote Wand Location



Rote Wand



Ansicht Minimalhäuser Nord



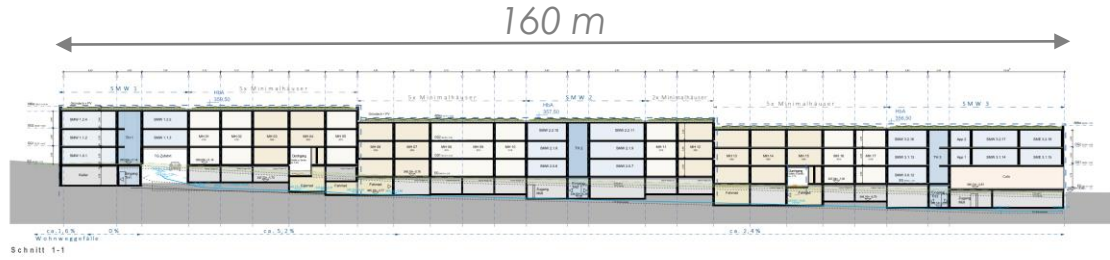
Schnitt Minimalhäuser 1-1



Ansicht Minimalhäuser Süd/ Schnitt 3-3 TG

Rote Wand

Status LP2



Second Floor



First Floor



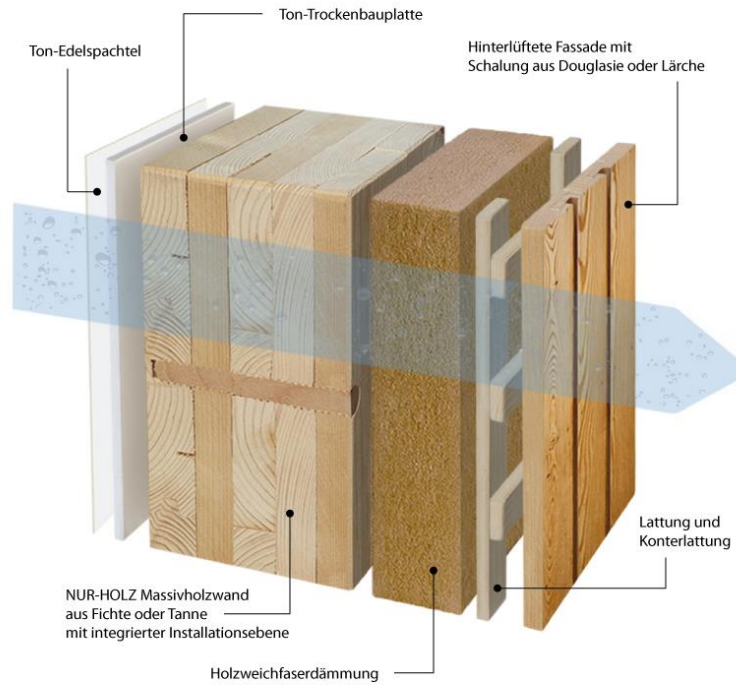
Basement



Ground Floor



Rote Wand



Visualisierung: © ecohome 4.2



Rote Wand

Structural design – Timber construction



ROMBACH
BRETTSTAPEL
100% FOR CONSTRUCTION PRODUCTIONS





Timber

Free form – bent wood



Department Store Peek & Cloppenburg

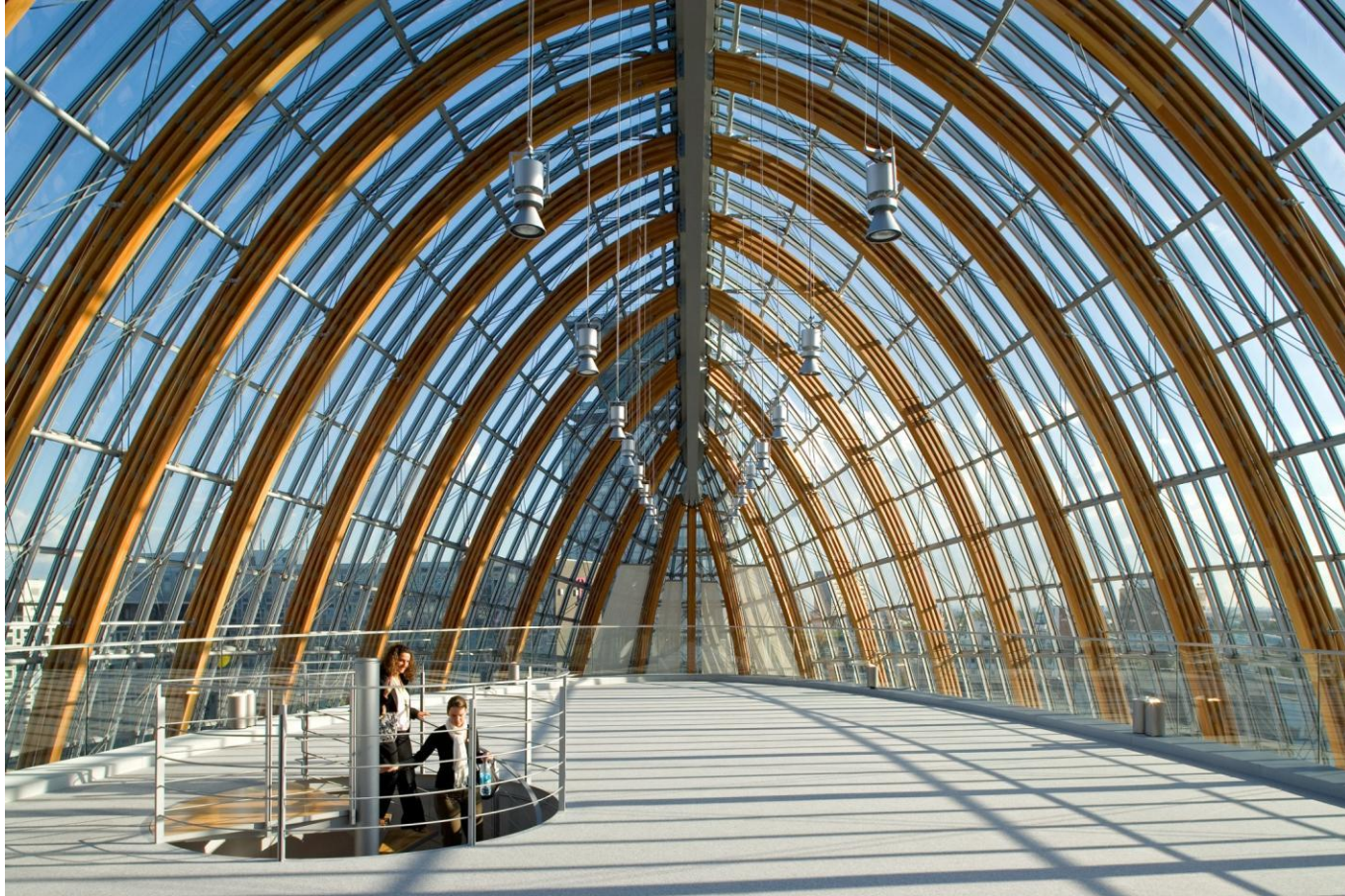
Cologne, Germany

Architect Renzo Piano



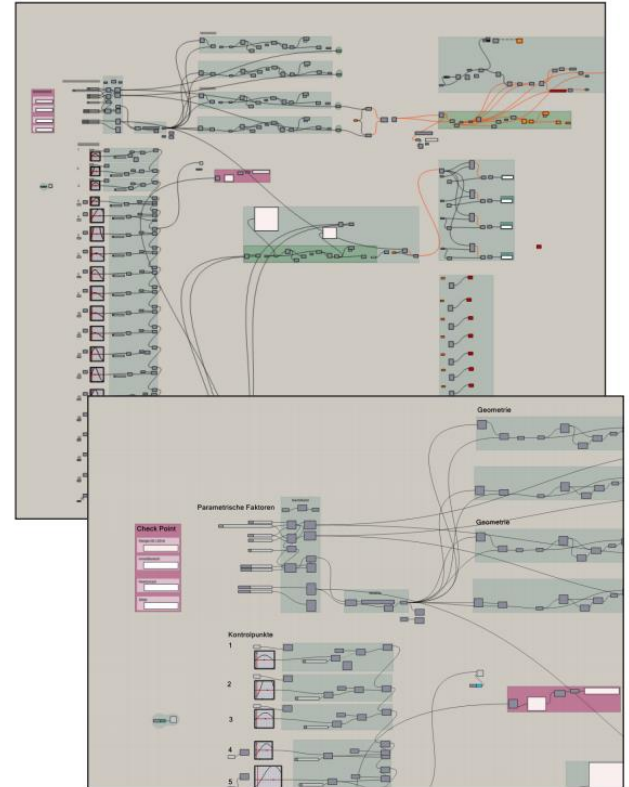
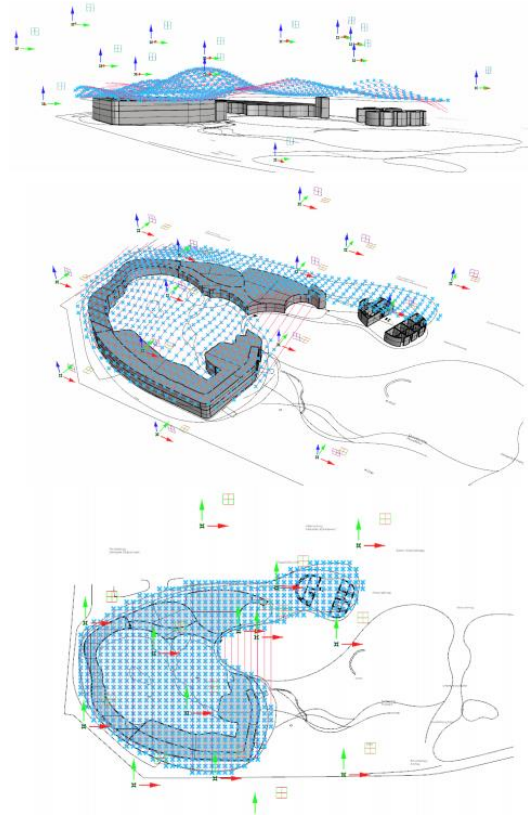
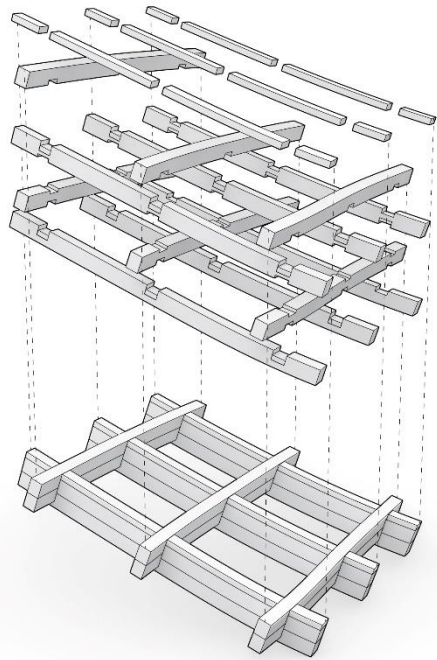






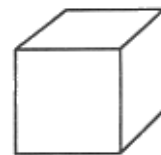




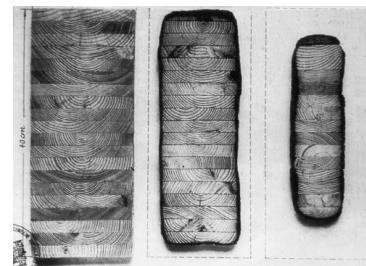




Why should you use wood?



1 m³ Holz (naß) wiegt 0,9 t



A close-up photograph of a young child with short, blonde hair and blue eyes. The child is holding a large, pink daisy flower to their nose, partially obscuring it. The child is wearing a blue t-shirt with a dark collar. The background is a plain, light-colored wall.

Thank you!