

W O O D



IN CONSTRUCTION

A N O P T I O N O R A N E C E S S I T Y





RIBA   
Royal Institute of  
British Architects

COAVN 

GOUDIE

A horizontal rectangular area with a dark, textured wood grain background. The wood grain is dark grey to black with wavy, organic patterns. The word "OBJECTIVES" is centered in white, bold, uppercase letters.

# OBJECTIVES

A close-up photograph of a hand holding a small, round seed between the thumb and index finger. The hand is positioned above a mound of dark, rich soil. The background is a soft, out-of-focus green, suggesting a garden setting. The lighting is natural, highlighting the texture of the skin and the soil.

OBJECTIVES

## WOOD AS A MAIN CONSTRUCTION ELEMENT



A close-up photograph of a hand watering a small green seedling in soil. The hand is positioned at the top right, with water dripping from the fingers onto the soil. The seedling is in the center, with several green leaves. The soil is dark and moist. The background is a soft, out-of-focus green.

OBJECTIVES

A NETWORK TO CULTIVATE  
THE WOOD CULTURE



WOOD SINCE THE ORIGINS



FIRST USES OF WOOD

A vertical flame graphic with a yellow and orange core, transitioning to red and blue at the top, positioned centrally behind the text.

WOOD SINCE THE ORIGINS

# FIRST USES OF WOOD

WOOD AND HUMANS ARE CONNECTED SINCE THE BEGINNING



# FIRST USES OF WOOD



# FIRST USES OF WOOD



# FIRST USES OF WOOD

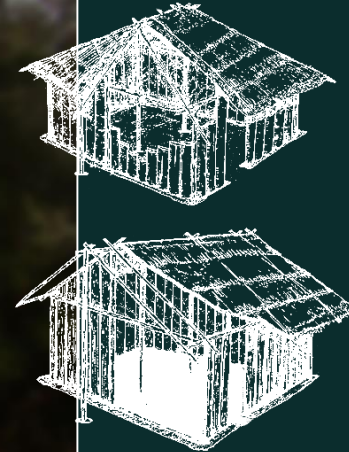


# FIRST USES OF WOOD



# FIRST USES OF WOOD

WOOD IS ONE OF THE LONGEST  
STANDING BUILDING MATERIALS IN  
EXISTENCE





NEOLITHIC  
LONGHOUSE  
MODEL

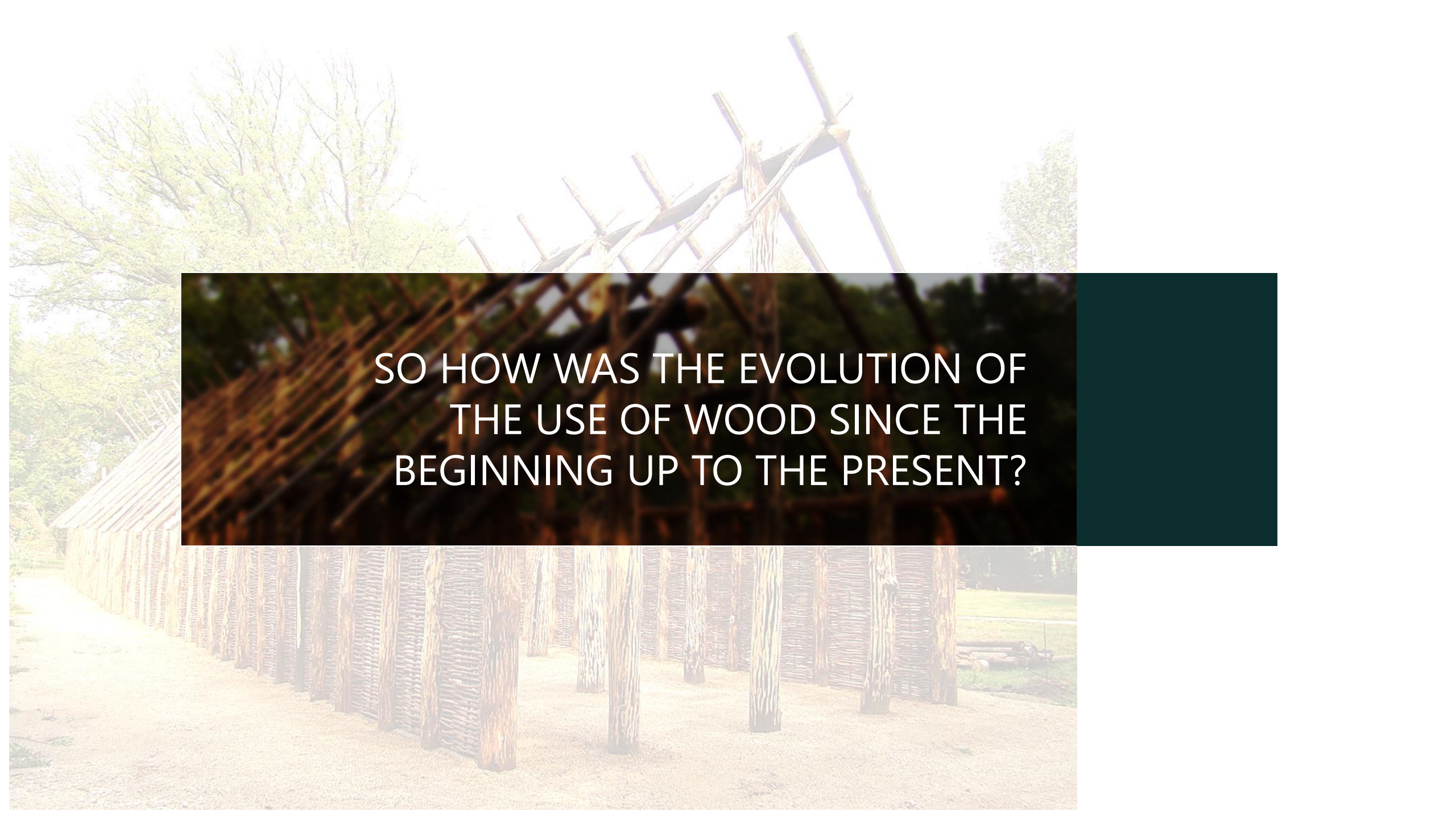
MUSEUM OF PREHISTORY  
URGESCHICHTEMUSEUM  
MAMUZ, AUSTRIA





NEOLITHIC  
LONGHOUSE  
MODEL

MUSEUM OF PREHISTORY  
URGESCHICHTEMUSEUM  
MAMUZ, AUSTRIA



SO HOW WAS THE EVOLUTION OF  
THE USE OF WOOD SINCE THE  
BEGINNING UP TO THE PRESENT?

WOOD THROUGH THE AGES



WOOD SINCE THE ORIGINS

# WOOD THROUGH THE AGES

STONE  
AGE

BRONZE  
AGE

IRON  
AGE

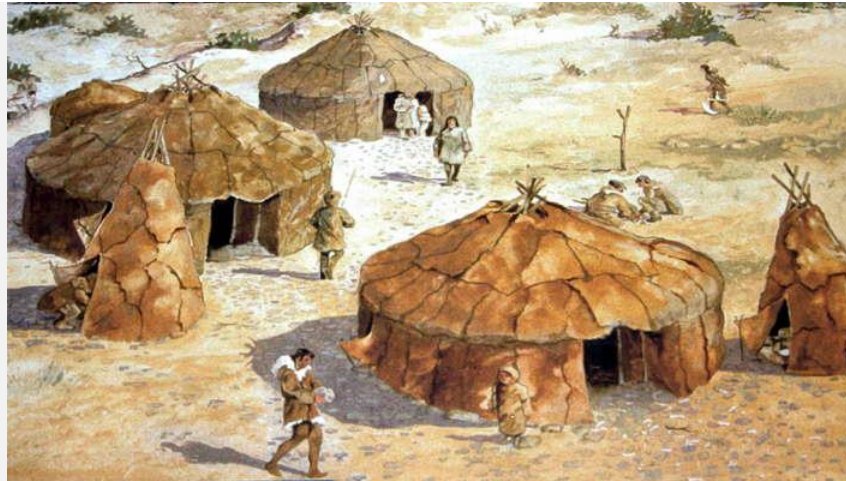
MIDDLE  
AGE

INDUSTRIAL  
REVOLUTION

?

# WOOD THROUGH THE AGES

## STONE AGE



source: landschaftsmuseum westerwald, hachenburg, germany

Image of the Magdalenian settlement in Gönnersdorf, 12 500 BP, RGZM special exhibition in Mainz 1975.

Traces of two small round tents, and three large, fur-covered dwellings, with a broad oval shape, similar to a yurt, were revealed with a diameter of 6 to 10 metres. They were coloured red on the inside and outside, and the floors were paved with slate.

The settlement was systematically excavated over an area of 650 square metres, and bones were found of mammoth, horse, bison, aurochs, reindeer, deer and arctic fox, as well as birds.

# WOOD THROUGH THE AGES

In 2560 BC  
Egypt had to  
strip every bit of  
forest and wood  
they could to  
build the  
pyramids of  
Giza, for levers  
and sledges.

BRONZE  
AGE

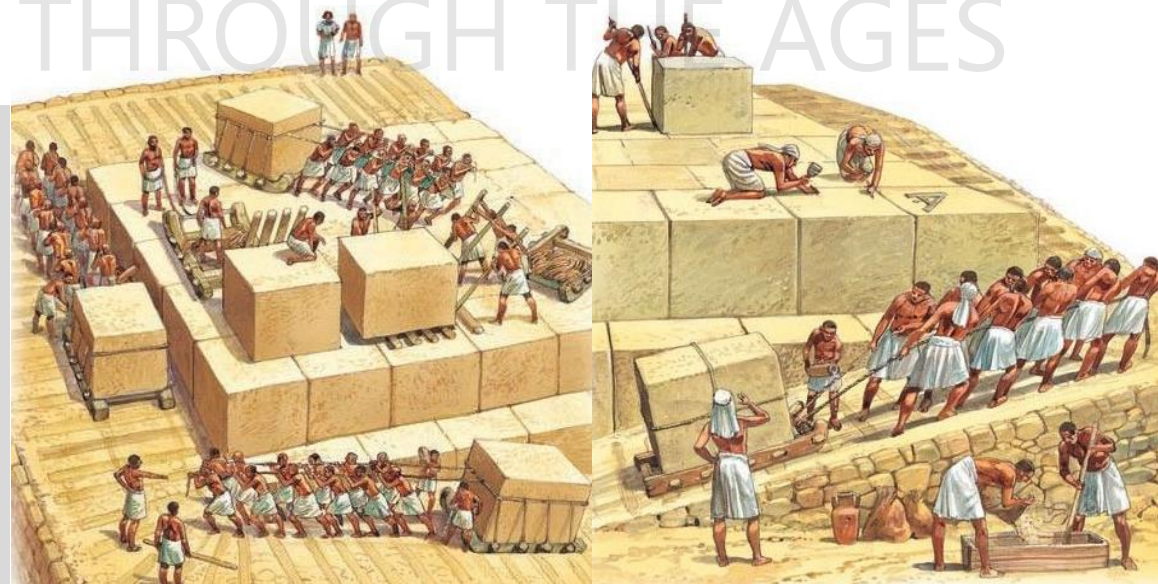


image source: <https://www.q-files.com/history/ancient-egypt/pyramids-how-they-were-built/>

# WOOD THROUGH THE AGES

During the Iron age the main building material was the mud-brick which still required the use of wood – the bricks were formed in wooden molds.

## IRON AGE



image source: <https://www.britisgmuseum.org>

# WOOD THROUGH THE AGES

## MIDDLE AGE

By the Middle Ages (476- 1500 AD) timber framing was reaching its heights with impressive structures such as the hammer-beam roof of Westminster Hall.





# WOOD THROUGH THE AGE

## MIDDLE AGE

In China, Temples were usually built with a timber frame on top of a stone base; in 782 AD was build the oldest wooden building in China, the Nanchan Temple.

# WOOD THROUGH THE AGES



INDUSTRIAL  
REVOLUTION





PRESENT  
AND  
FUTURE  
AGES

# FOREST ECONOMY




FOREST ECONOMY



REFOREST  
NOT DEFOREST

A photograph of a logging site. In the foreground, there are several large stacks of cut logs on a muddy, dark ground. A small puddle of water is visible in the lower right, reflecting the sky. In the background, a dense forest of tall evergreen trees stretches across a hillside under a cloudy, teal-tinted sky. A semi-transparent black rectangular box is overlaid in the center of the image, containing white text.

WOOD CONSTRUCTION INCREASE CLIMATE  
CHANGE BECAUSE IT DESTROYS FORESTS?

A close-up photograph of a baby with light brown hair and blue eyes, wearing a red dress with white polka dots and a pink scarf. The baby is holding a whole red tomato in its mouth. The background is blurred, showing a wooden chair and a white table. A semi-transparent black box with white text is overlaid on the right side of the image.

ASSOCIATING CONSTRUCTION WITH  
WOOD AND DESTRUCTION OF FORESTS  
IS SIMILAR TO SAYING THAT  
EATING TOMATOES DAMAGES  
THE EARTH

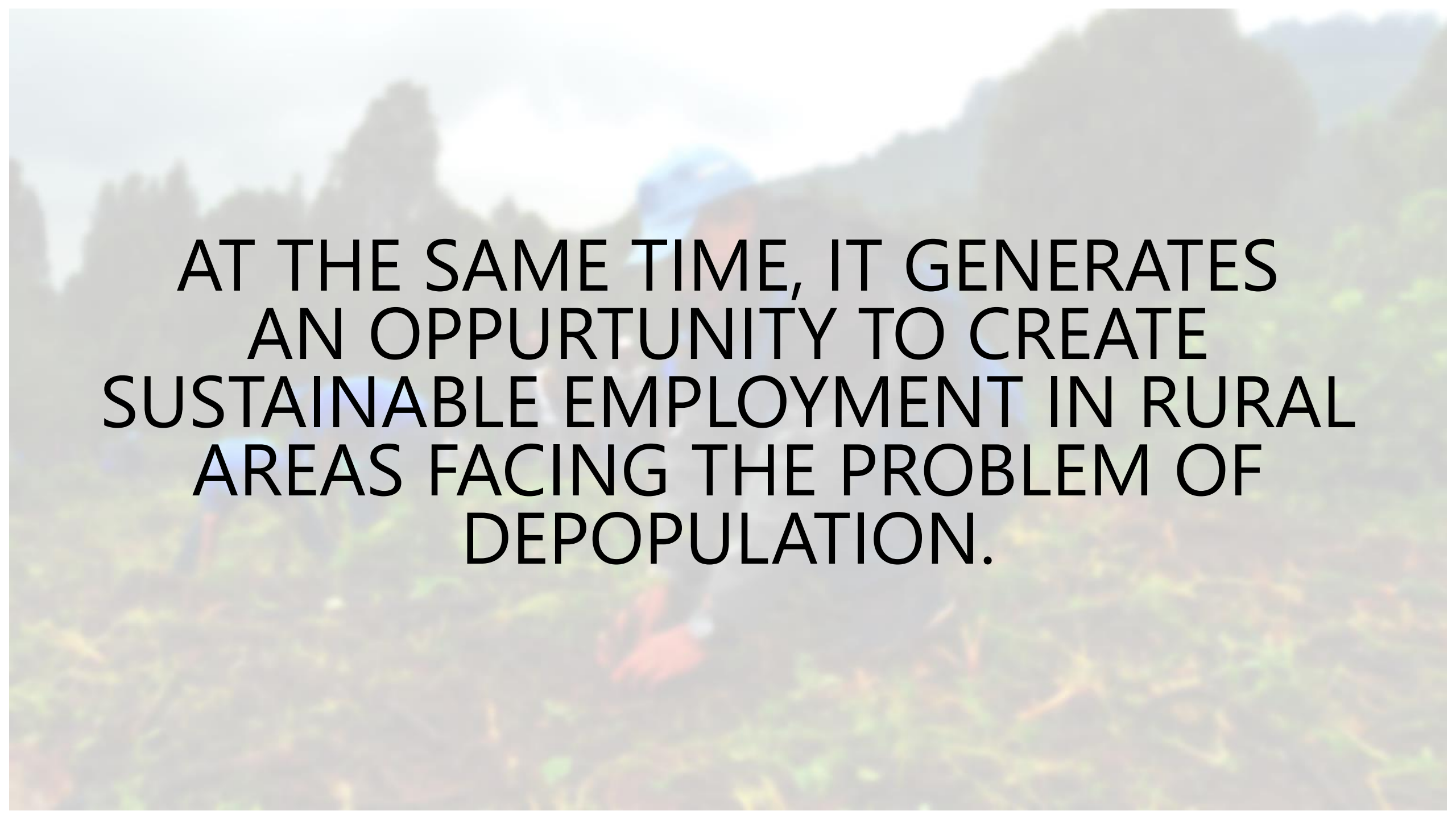
A man wearing a blue cap with the European Union flag, a dark jacket with blue accents, and blue overalls is crouching in a field, planting a small tree sapling. The field is covered with dry sticks and green plants. In the background, there are lush green trees and hills under a cloudy sky. Other people in blue clothing are visible in the distance.

## THE PROPER MANAGEMENT OF FORESTS IMPLIES THEIR R EPOPULATION



A person wearing a blue cap and dark clothing is working in a forest, possibly planting or tending to young trees. Another person in a blue shirt is visible in the background. The scene is set in a lush, green forest with a misty or overcast sky.

THE BEST GUARANTEE FOR FORESTS'  
CONSERVATION & RENOVATION IS THE  
ORDERLY MANAGEMENT AND THE USE  
OF THEIR RESOURCES.



AT THE SAME TIME, IT GENERATES  
AN OPPURTUNITY TO CREATE  
SUSTAINABLE EMPLOYMENT IN RURAL  
AREAS FACING THE PROBLEM OF  
DEPOPULATION.

FOREST ECONOMY



WOOD AGAINST  
CLIMATE CHANGE




CEMENT PRODUCTION ACCOUNTS FOR 6% OF  
CO2 EMISSIONS IN THE WORLD

A worker in a white protective suit and yellow helmet is operating machinery in a steel mill. Bright sparks are flying from the machinery, illuminating the scene. The worker is positioned on the left side of the frame, looking towards the right. The background shows a complex industrial structure with various pipes and beams.

WHILE STEEL PRODUCTION  
(HALF DESTINED FOR CONSTRUCTION)  
IS RESPONSIBLE FOR 8%



SHOULD THESE BE THE  
PILLARS ON WHICH THE  
TRANSFORMATION OF  
CITIES RESTS?

A photograph of a forest with sunlight filtering through the trees and a field of wildflowers in the foreground. The text is centered in the middle of the image.

WOOD IS THE ONLY MATERIAL WITH WHICH  
DESIGNERS CAN BUILD THAT GROWS WITH THE  
ENERGY OF THE SUN.

ONE CUBIC METER OF WOOD  
STORES ONE TON OF CARBON DIOXIDE

for the fight against climate change,  
wood provides two great solutions:

1

REDUCES CO<sub>2</sub>  
EMISSIONS

2

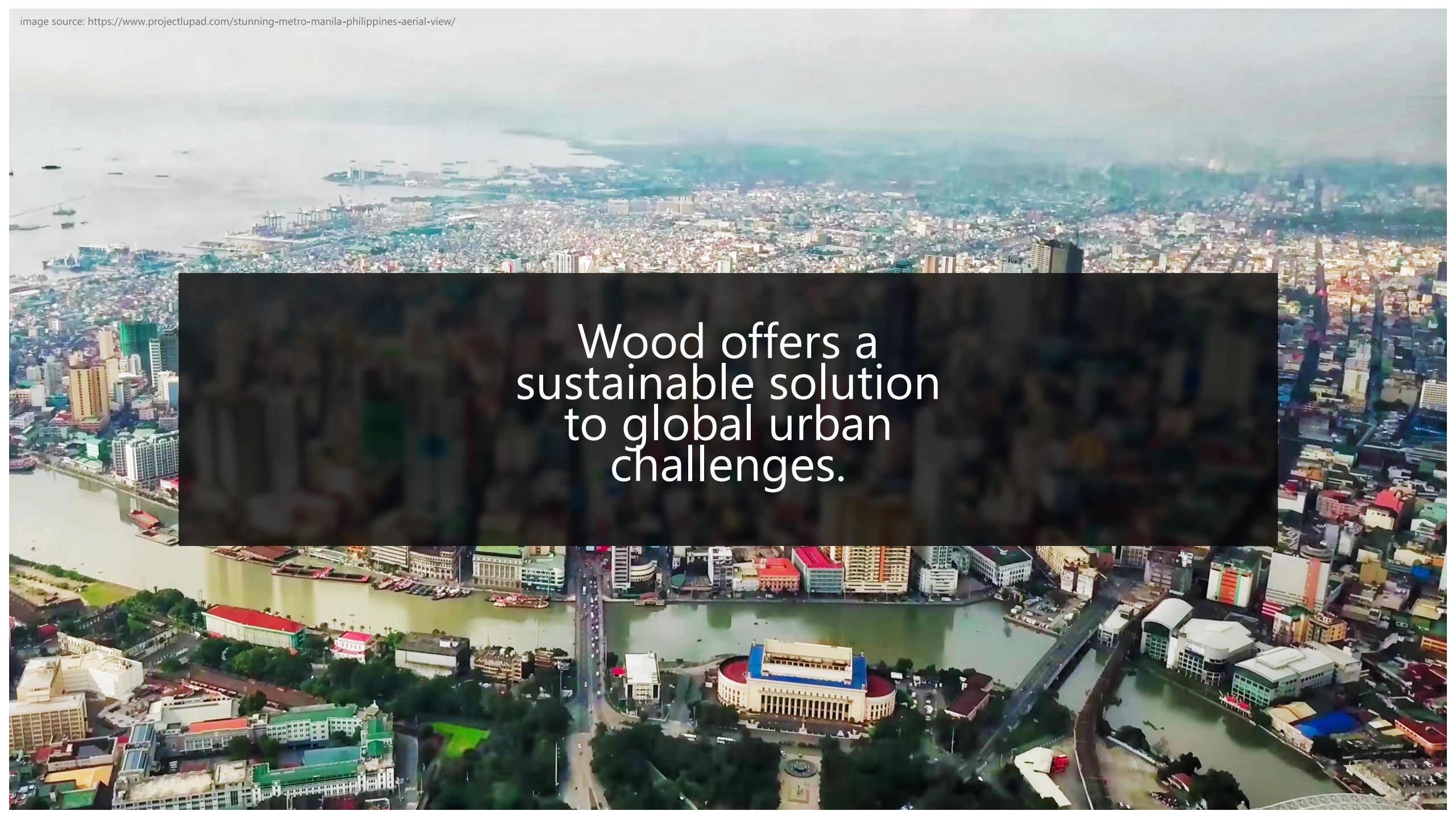
STORES &  
RETAINS CO<sub>2</sub>



Illustration by Sephiroth-Art at DeviantArt



Wood offers a sustainable solution to global urban challenges.





# World's Tallest Wooden Structure

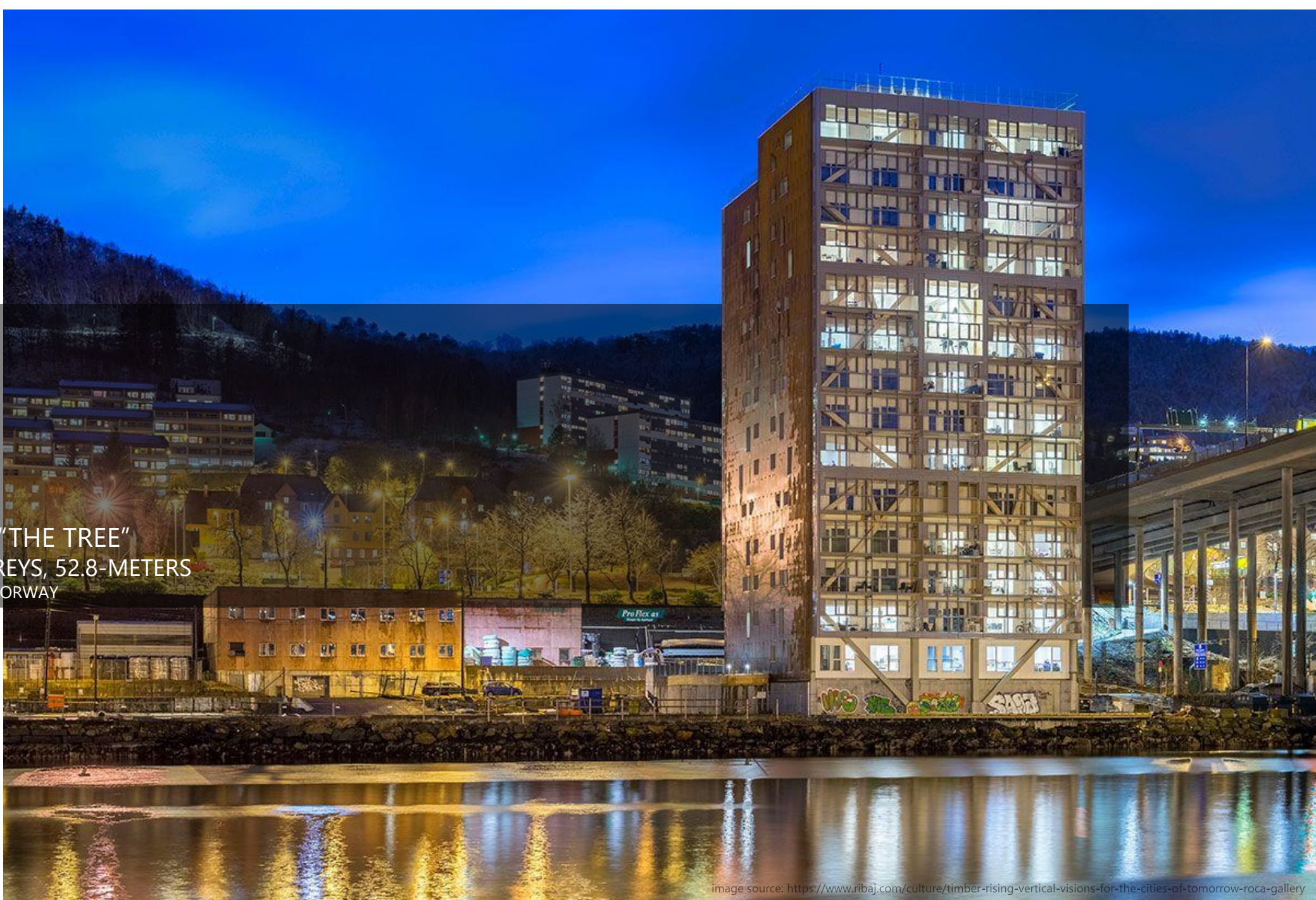
18 STOREYS, 85.4-METERS

MJØSA TOWER  
BRUMUNDDAL, NORWAY



BROCK COMMONS  
17 STOREYS, 53-METERS  
VANCOUVER, CANADA

TREET "THE TREE"  
14 STOREYS, 52.8-METERS  
BERGEN, NORWAY





THESE EXAMPLES SHOW THAT IT IS POSSIBLE TO  
BUILD LARGE STRUCTURES WITH WOOD &  
RESPOND TO THE MASSIVE POPULATION  
GROWTH





“

# THE EIGHT POINTS

EIGHT SOLID ARGUMENTS SUPPORT THE IDEA OF WHY WOOD IS A GREAT MATERIAL  
TO CONSIDER IN CONSTRUCTION.

it is estimated that the use of structural solutions for beams and partitions based on laminated and cross-laminated wood (CLT) grows at a rate of 15% annually.

THE EIGHTH POINTS



1



FIRE RESISTANT

1



Structural wood is extraordinarily resistant to fire, even more than steel or concrete.

WOOD STRUCTURES BURN, AT ABOUT 0.7MM PER MINUTE WHILE IN A FIRE, A METAL STRUCTURE BEGINS TO DEFORM AFTER 750 DEGREES CELCIUS, THE WOOD CONTINUES TO WORK WITHOUT DEFORMING OR MOVING.

2



QUICK & EASY  
INSTALLATION

2



Use of modular components make it easier and quicker to construct. Also, much healthier and more efficient construction process.



3

LOWER  
CARBON  
FOOTPRINT



3

Many materials leave a carbon footprint in the environment that contributes to climate warming. But with wood, the footprint is negative.



4

RESPECTING  
THE  
ENVIRONMENT



4

The manufacturing, transportation and use of concrete consume about 15% more energy than an identical process using wood.





5

ENERGY  
SAVING



5

Wood insulates 15 times more than concrete, 400 times more than steel, and 1,770 times more than aluminum.

ACOUSTICAL  
MATERIAL

6



The porosity and elasticity of this material give it incredible acoustic properties.

6



STRUCTURALLY  
STRONG



7

Studies confirm that the relationship between the strength & weight of structural wood is higher by 20% compared to other materials such as steel & cement.



7



DURABLE  
RENEWABLE &  
A HEALTHY  
MATERIAL



8



Even in the final phase of its life cycle, it can be used as fuel in substitution of other fossil materias. And the CO it will emit is the CO it absorbed from the atmosphere.



8



NEW AGE, NEW TECHNIQUES, NEW WOOD

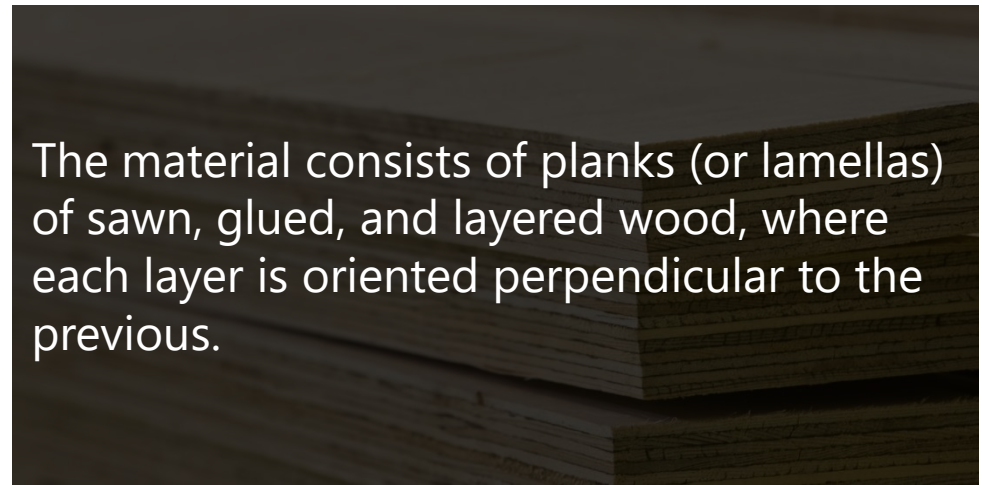
## LAMINATED VENEER LUMBER







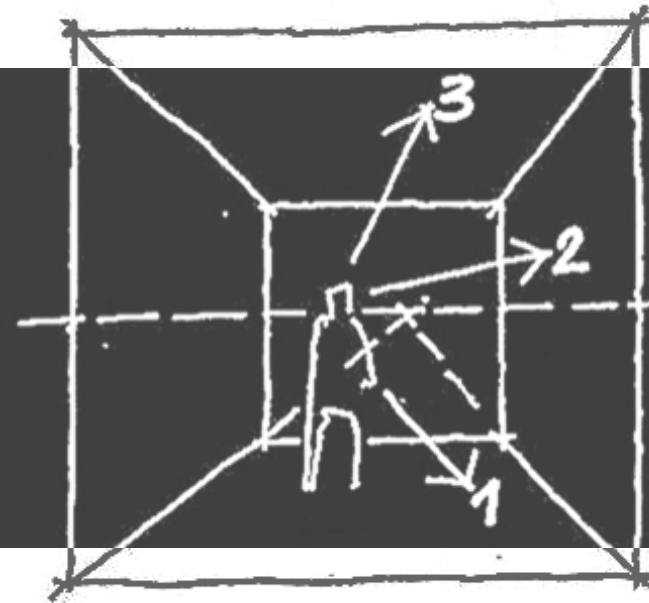
Popularized in Europe and gradually gaining attention in the rest of the world, Cross Laminated Timber (CLT) stands out for its strength, appearance, versatility, and sustainability.



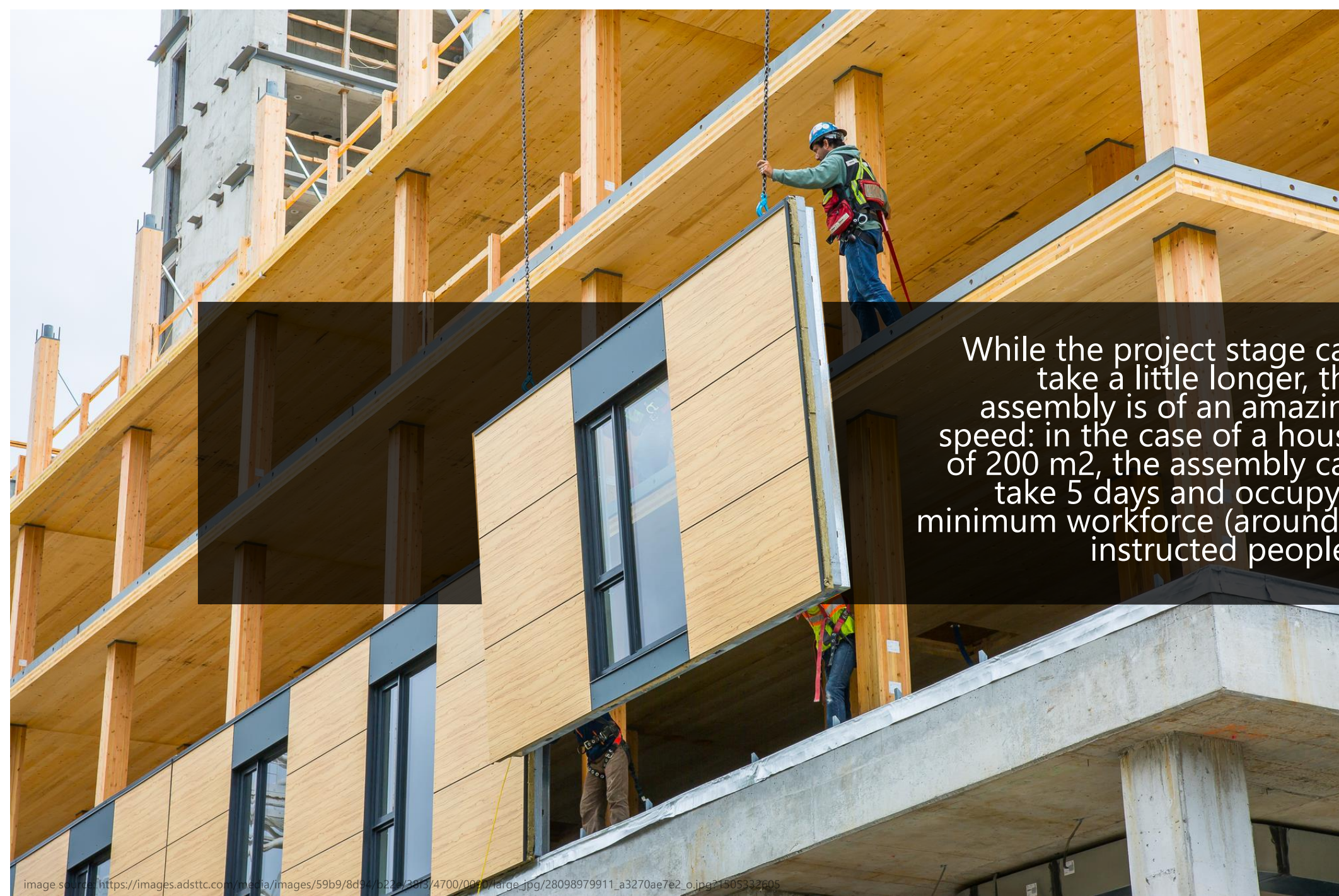


Most panels are between 8 to 10 feet (2.4 to 3 meters) wide, although some are 4 feet (1.2 meters), and they generally come in lengths of around 40 feet (12 meters).

The panels can function as walls, floors, furniture, ceilings, and roofs,







While the project stage can take a little longer, the assembly is of an amazing speed: in the case of a house of 200 m<sup>2</sup>, the assembly can take 5 days and occupy a minimum workforce (around 4 instructed people).

Perhaps in some years, the cities will be transformed based on the warmth and texture of the wood, also changing the way in which the design and construction are conceived.





A horizontal rectangular banner with a dark brown background featuring a wood grain pattern. The grain consists of concentric circles on the left side, transitioning into wavy, vertical lines on the right side. The text "USES OF WOOD" is centered in white, uppercase, sans-serif font.

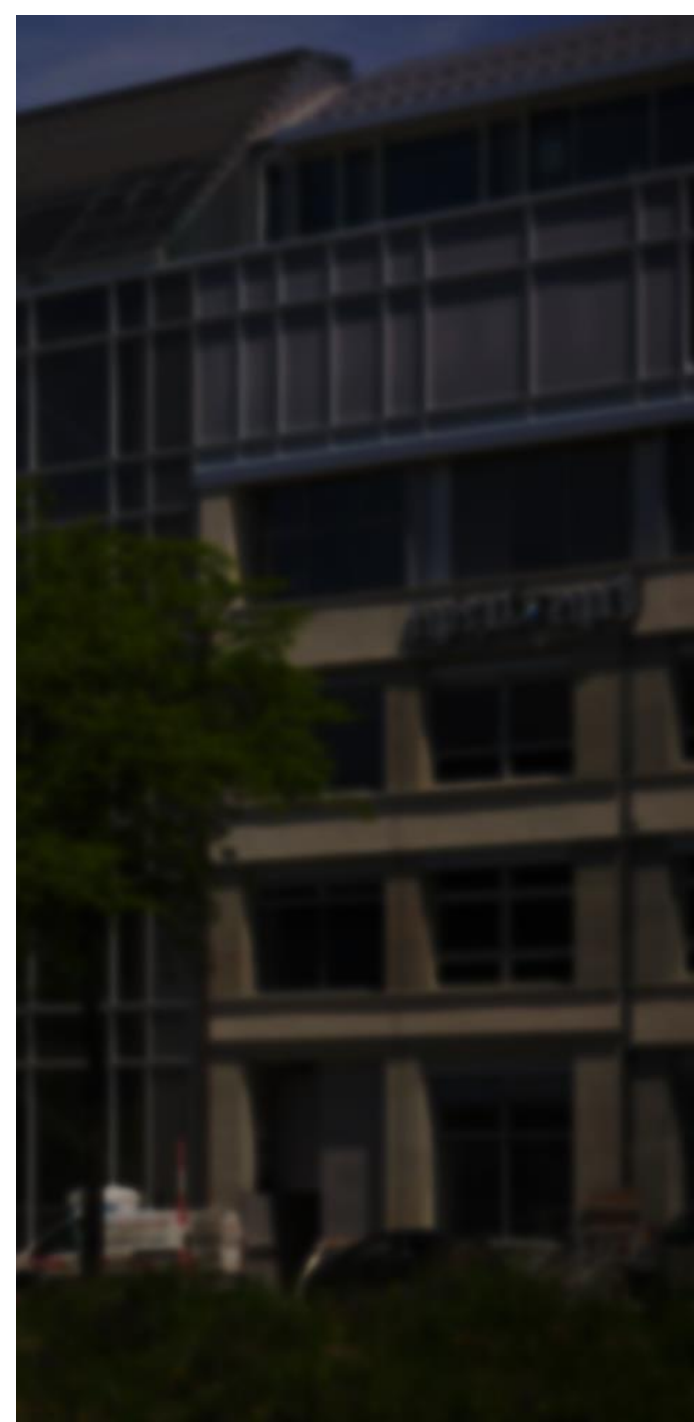
# USES OF WOOD



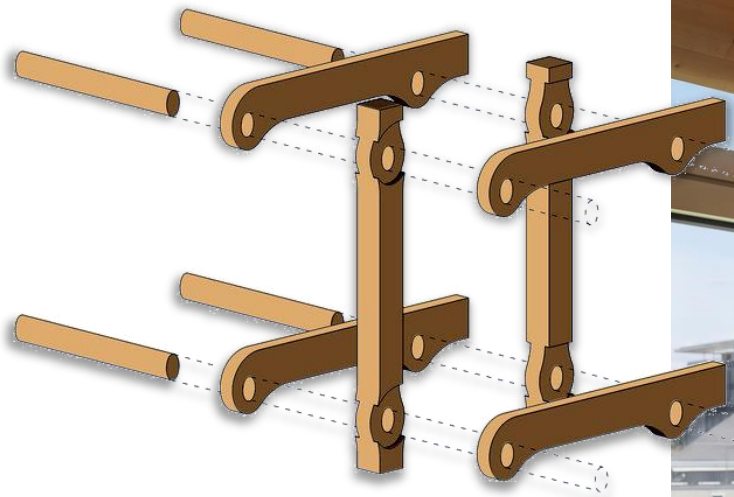
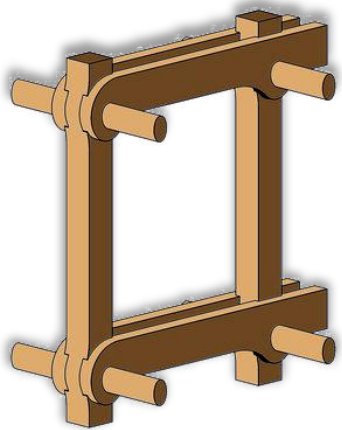


TAMEDIA OFFICE BUILDING  
SHIGERU BAN ARCHITECTS





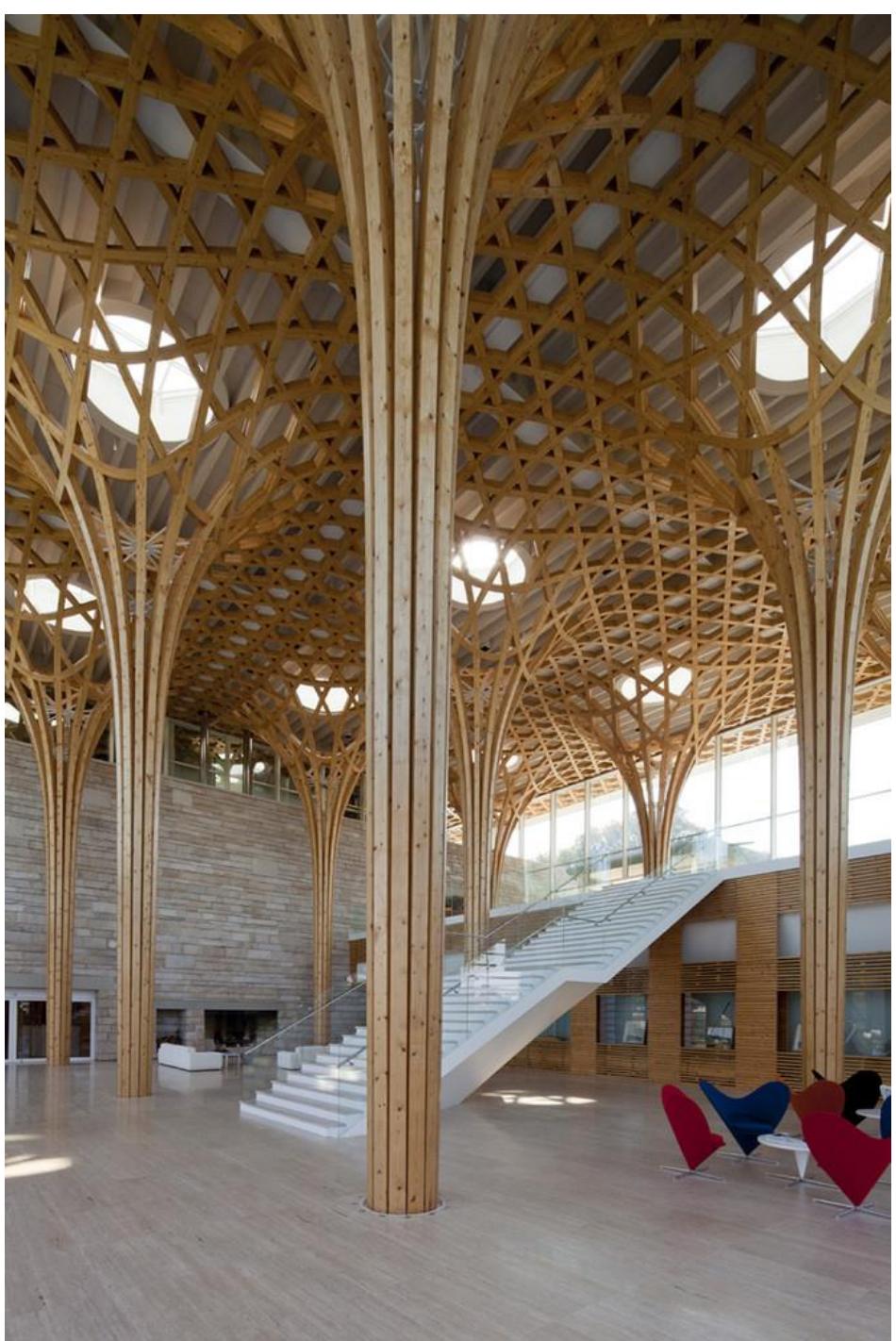
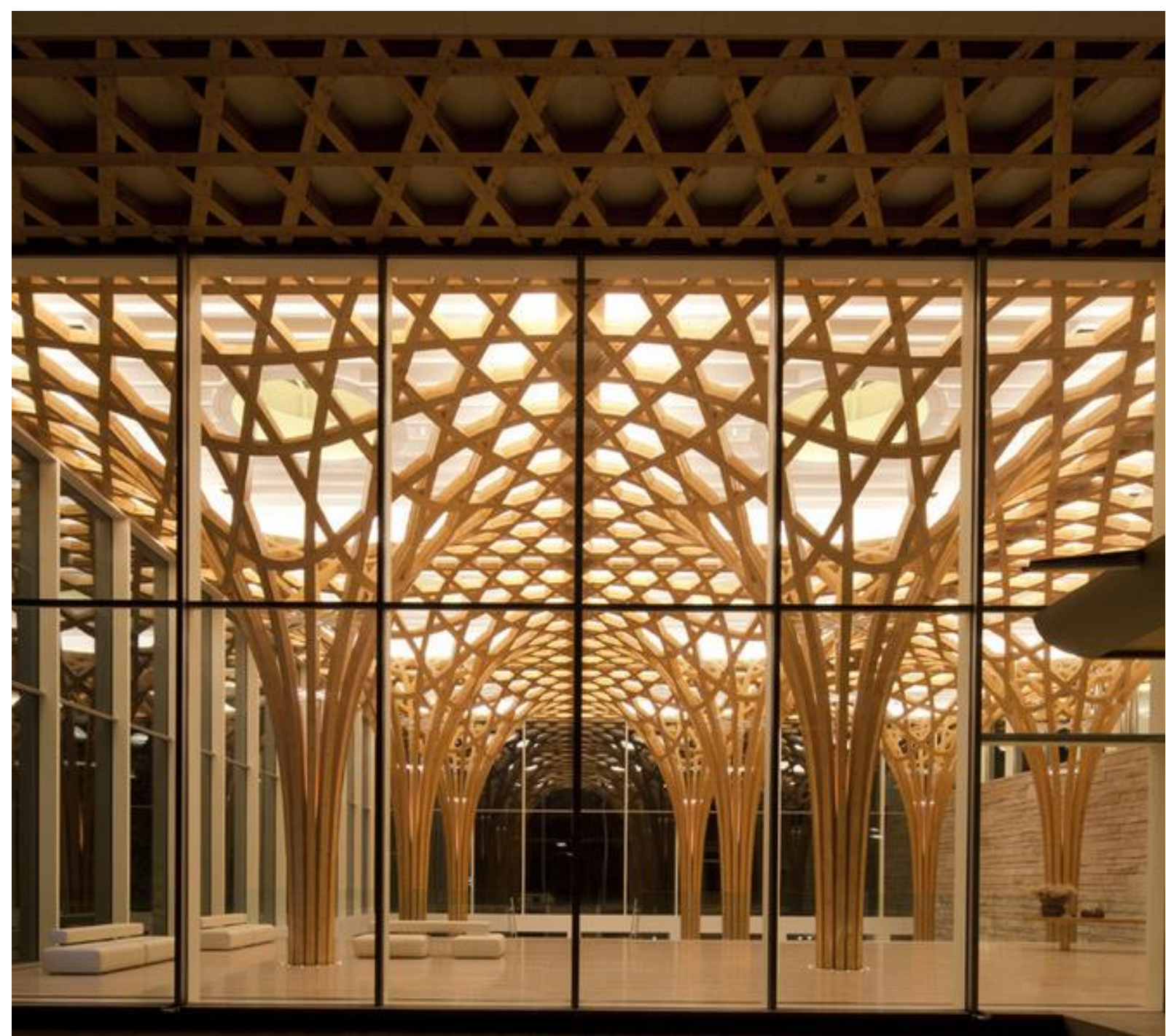


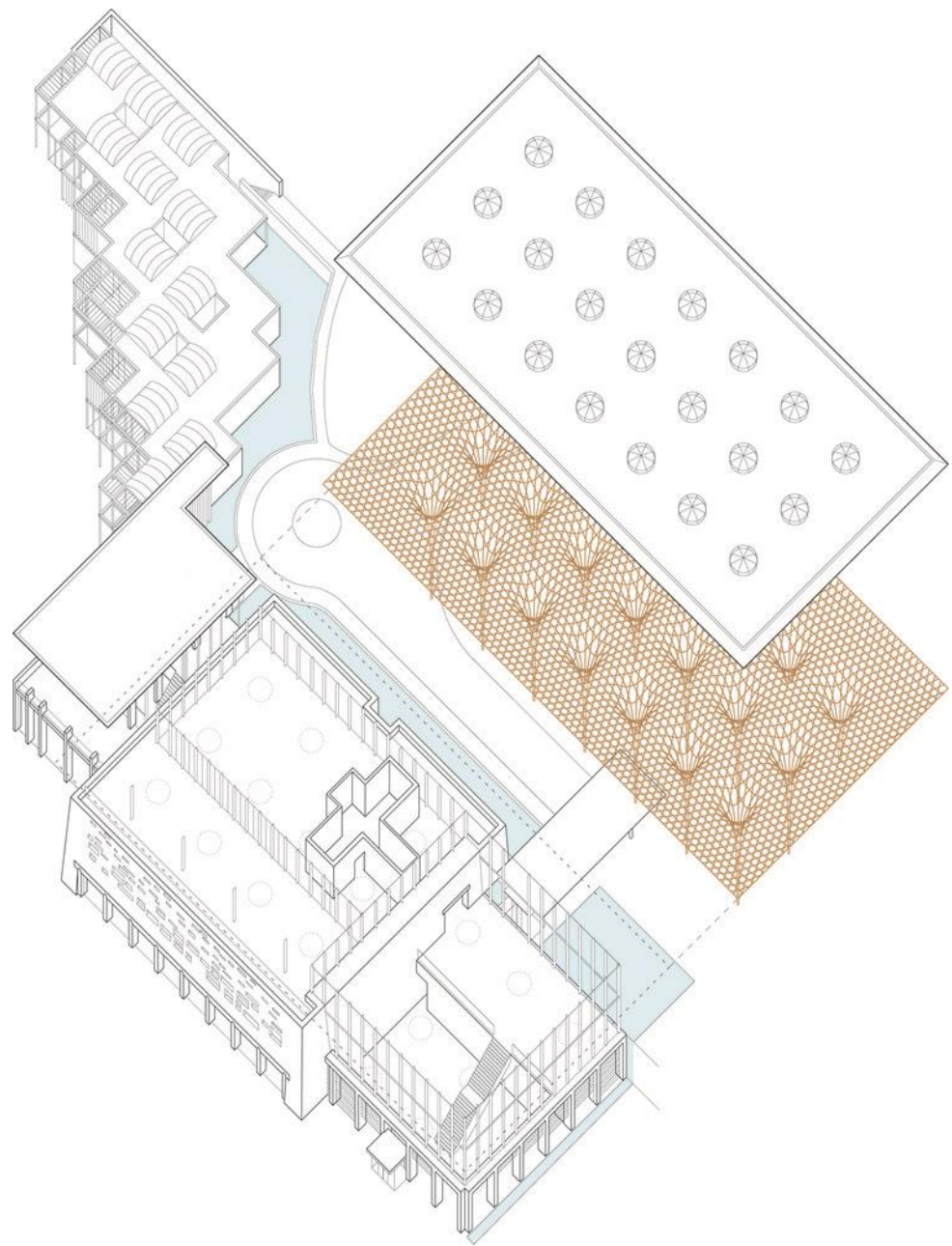
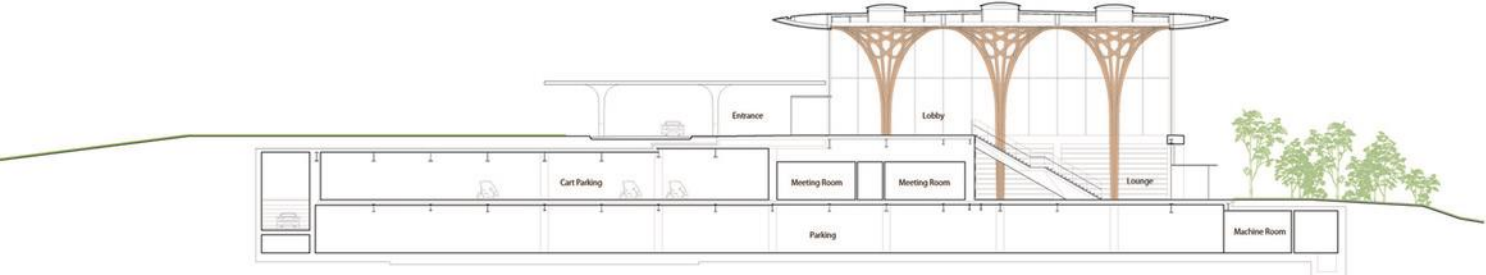


A nighttime photograph of a modern building, likely a clubhouse, with a large, dark, cantilevered roof. The building is illuminated from within, and the sky is a deep blue. A dark rectangular overlay is centered over the image, containing white text.

NINE BRIDGES COUNTRY CLUB  
SHIGERU BAN ARCHITECTS



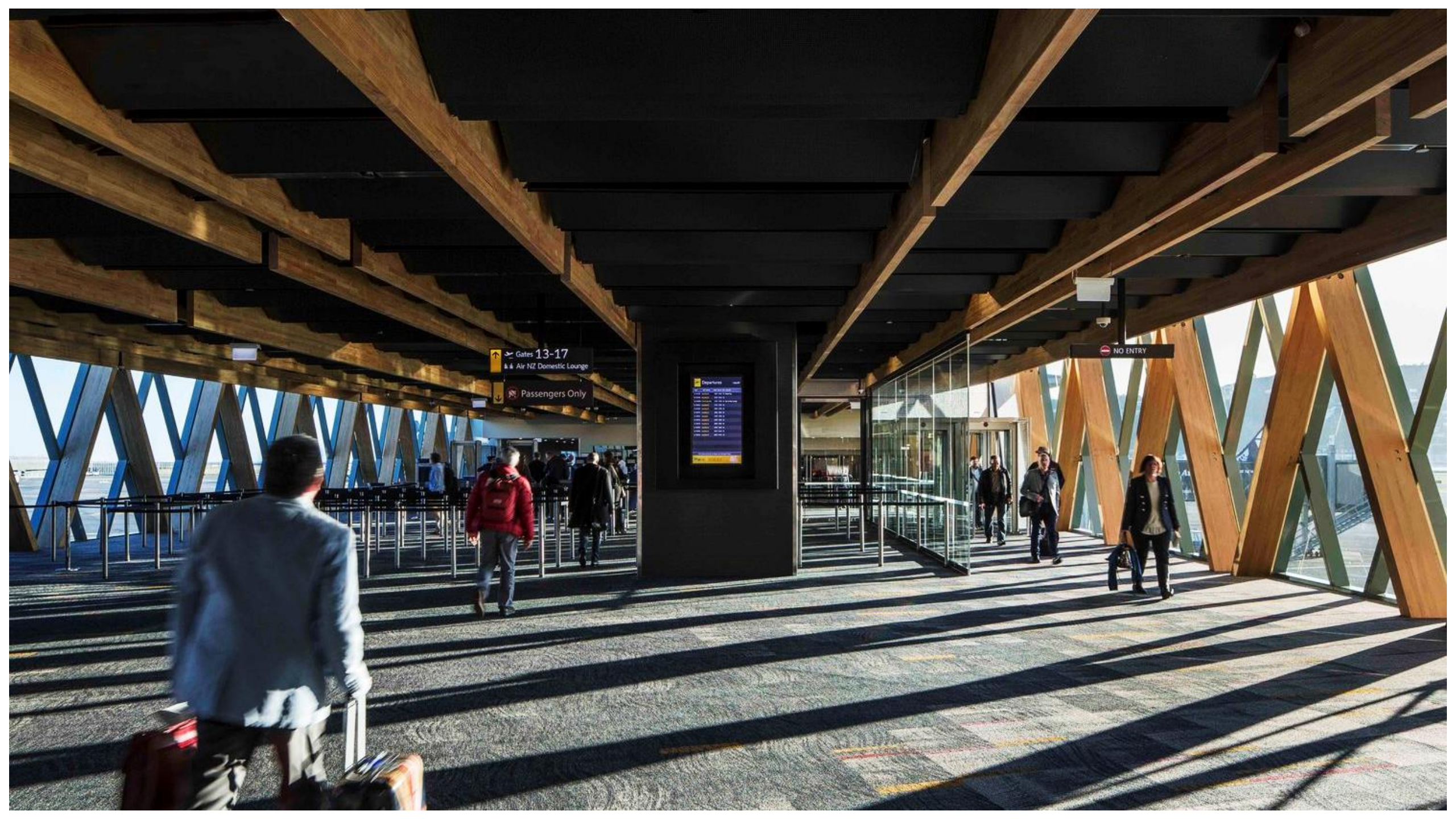






EXTENSION OF WELLINGTON AIRPORT  
WARREN AND MAHONEY ARCHITECTS



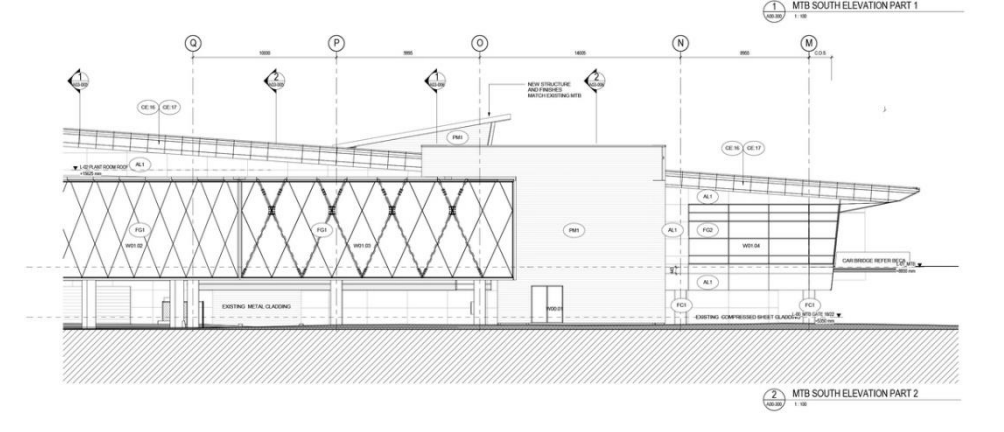
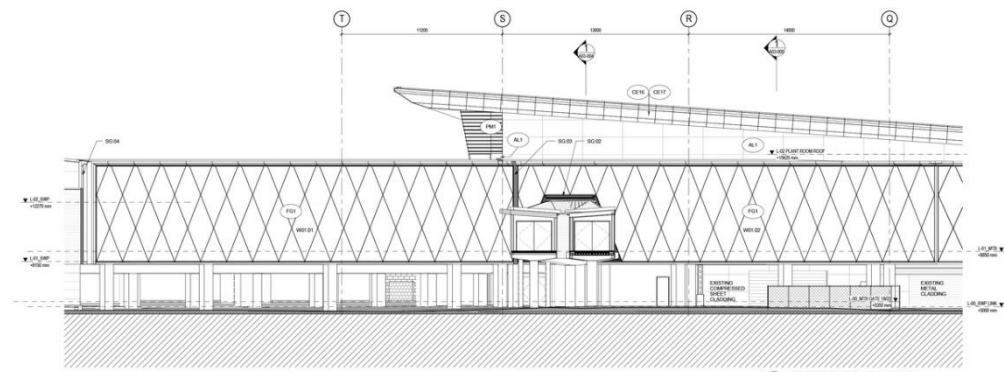
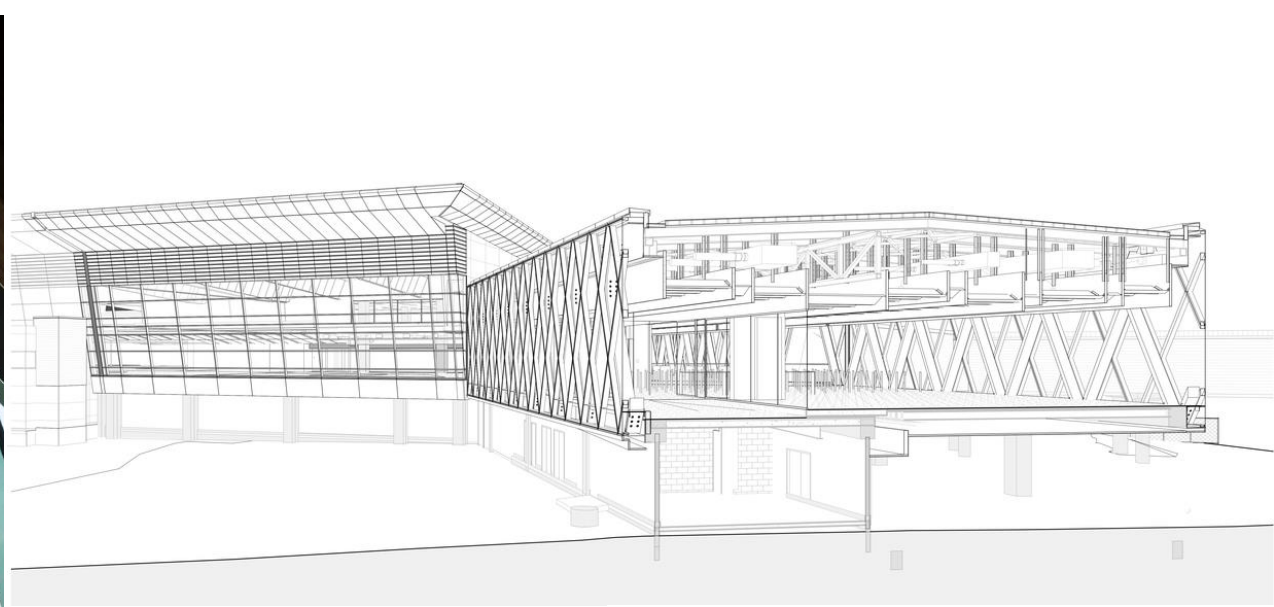


Gates 13-17  
Air NZ Domestic Lounge  
Passengers Only

Destination	Time	Status
London	10:00	On Time
Paris	10:30	Delayed
Amsterdam	11:00	On Time
Brussels	11:30	On Time
Frankfurt	12:00	On Time
Munich	12:30	On Time
Berlin	13:00	On Time
Stockholm	13:30	On Time
Copenhagen	14:00	On Time
Oslo	14:30	On Time
Stockholm	15:00	On Time
Copenhagen	15:30	On Time
Oslo	16:00	On Time
London	16:30	On Time
Paris	17:00	On Time
Amsterdam	17:30	On Time
Brussels	18:00	On Time
Frankfurt	18:30	On Time
Munich	19:00	On Time
Berlin	19:30	On Time
Stockholm	20:00	On Time
Copenhagen	20:30	On Time
Oslo	21:00	On Time

NO ENTRY





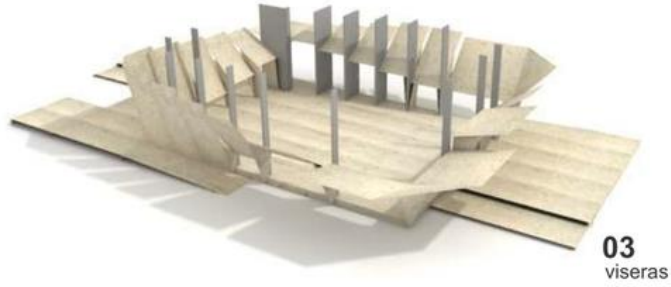


The image shows the exterior of the Endesa Pavilion, a modern building with a complex, angular facade made of light-colored wood. Several large, dark blue solar panels are mounted on the facade, arranged in a grid-like pattern. The building is set against a clear blue sky. In the background, a person in a blue shirt and dark shorts is standing on a flat surface, looking towards the building. The overall scene is bright and clear, suggesting a sunny day.

ENDESA PAVILION  
INSTITUTE FOR ADVANCED ARCHITECTURE OF CATALONIA



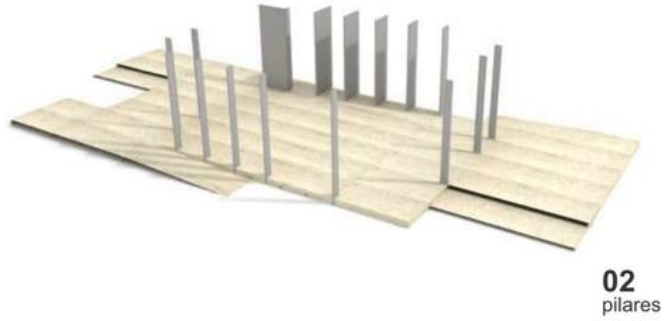




**03**  
viseras



**06**  
cubierta



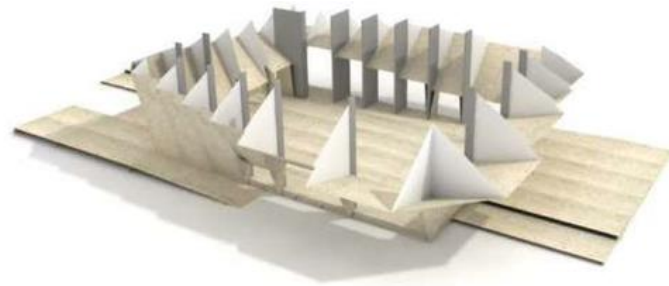
**02**  
pilares



**05**  
viseras






**01**  
base



**04**  
laterales

pavello **ENDESA**  
smart city BCN

fases de muntatge  
C 02

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un projecte de: 	diseny de: 	propietat de: 

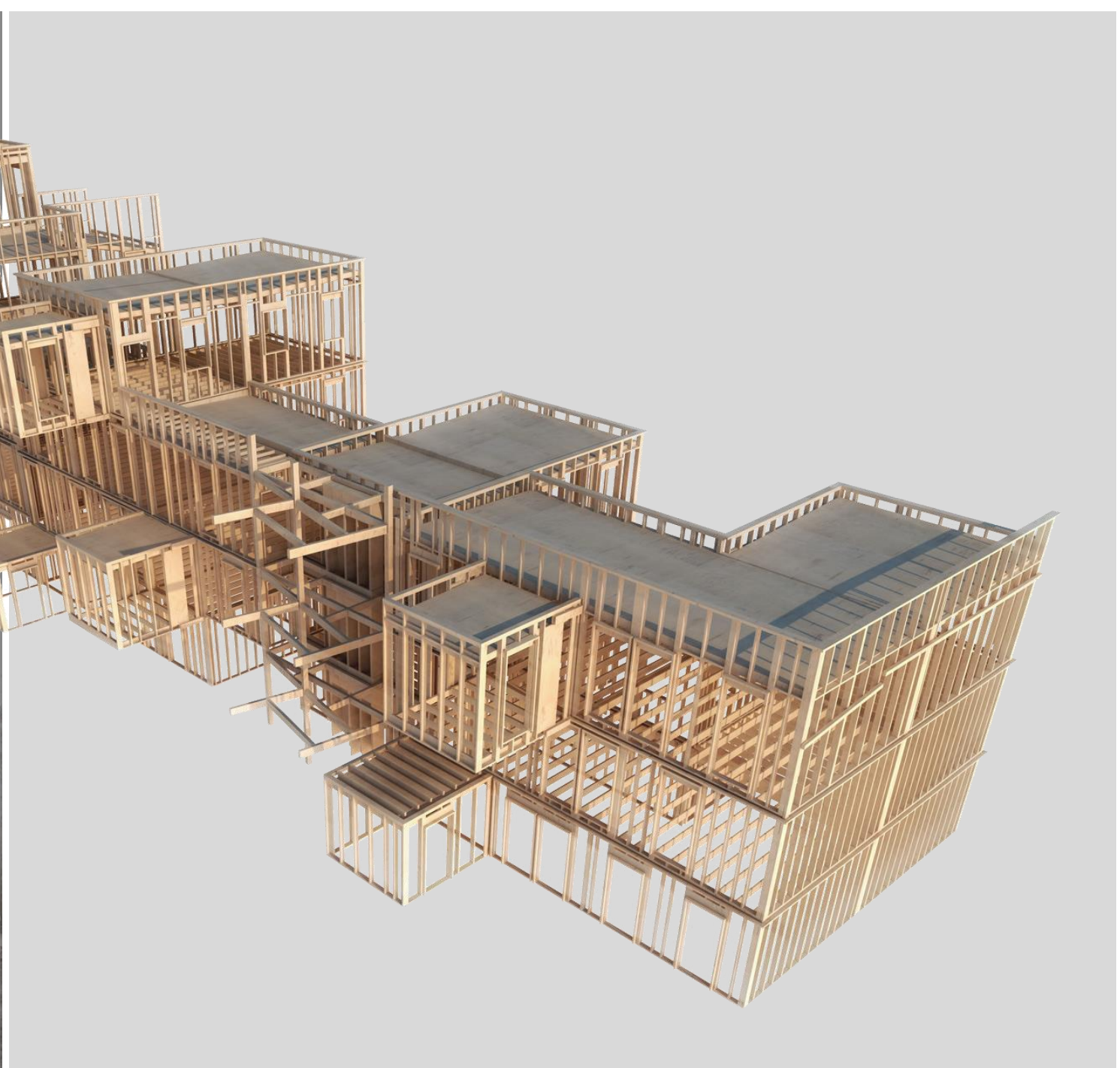


TETE IN L'AIR  
KOZ ARCHITECTES



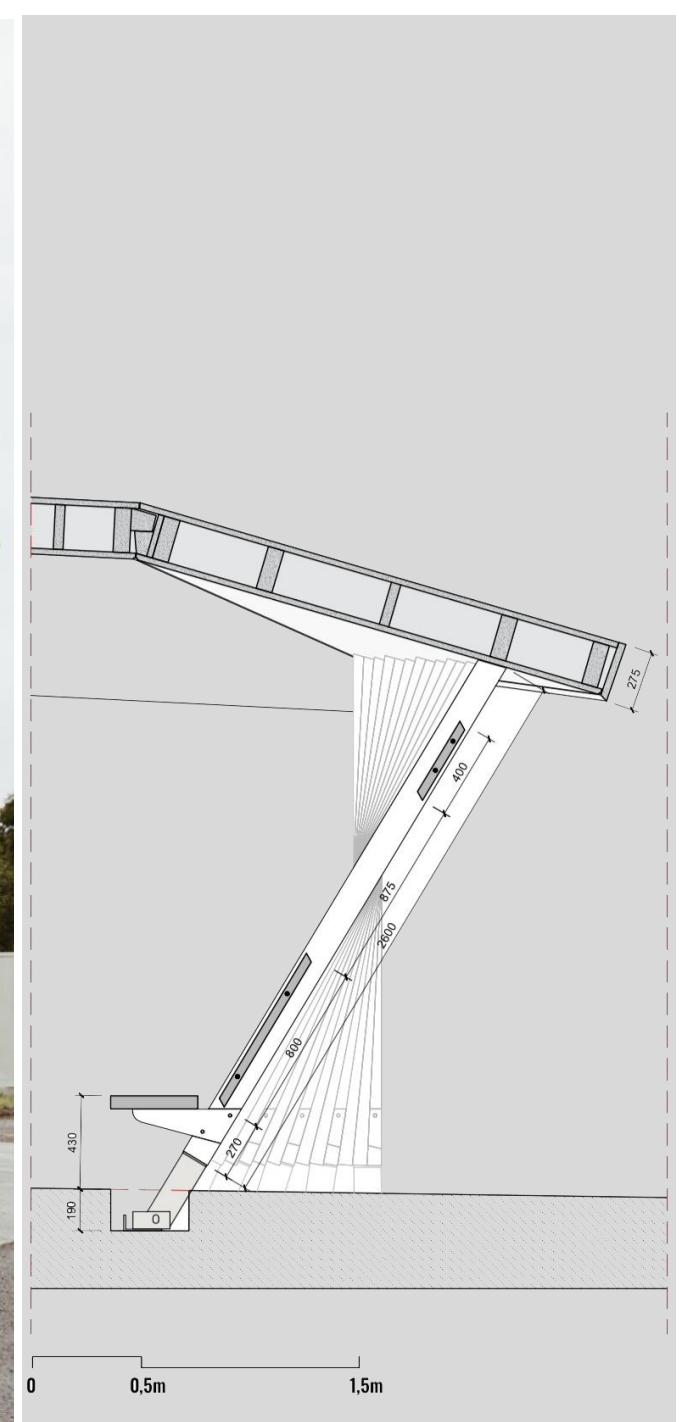


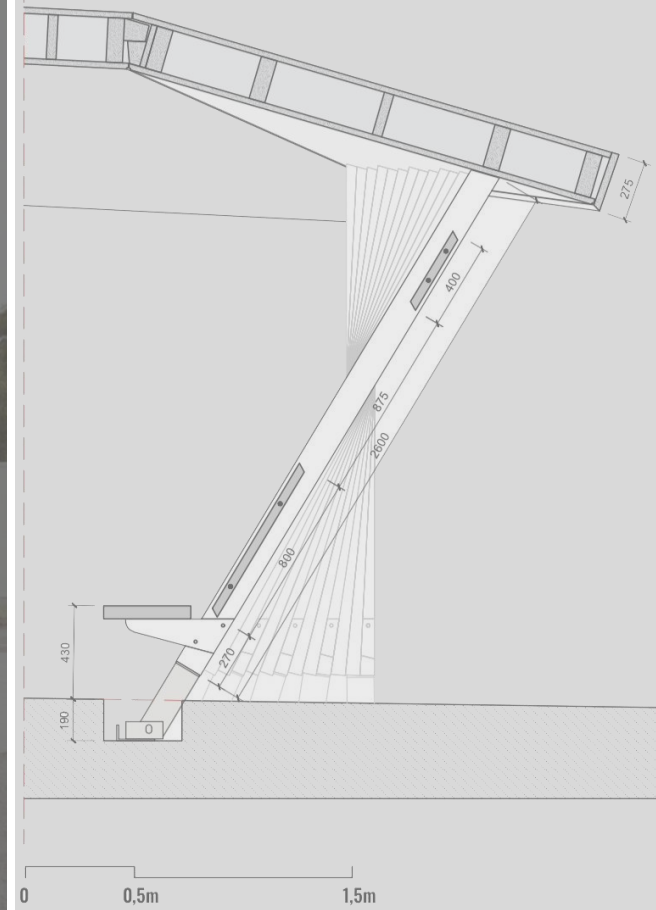


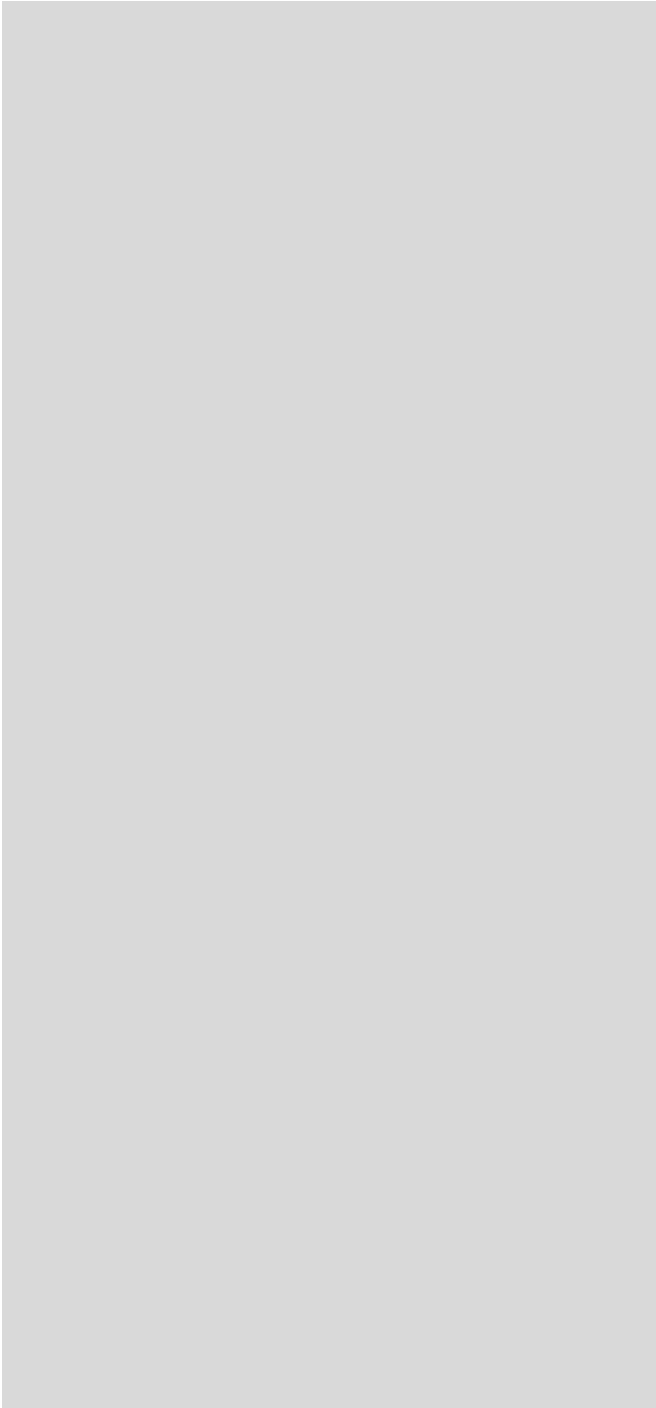
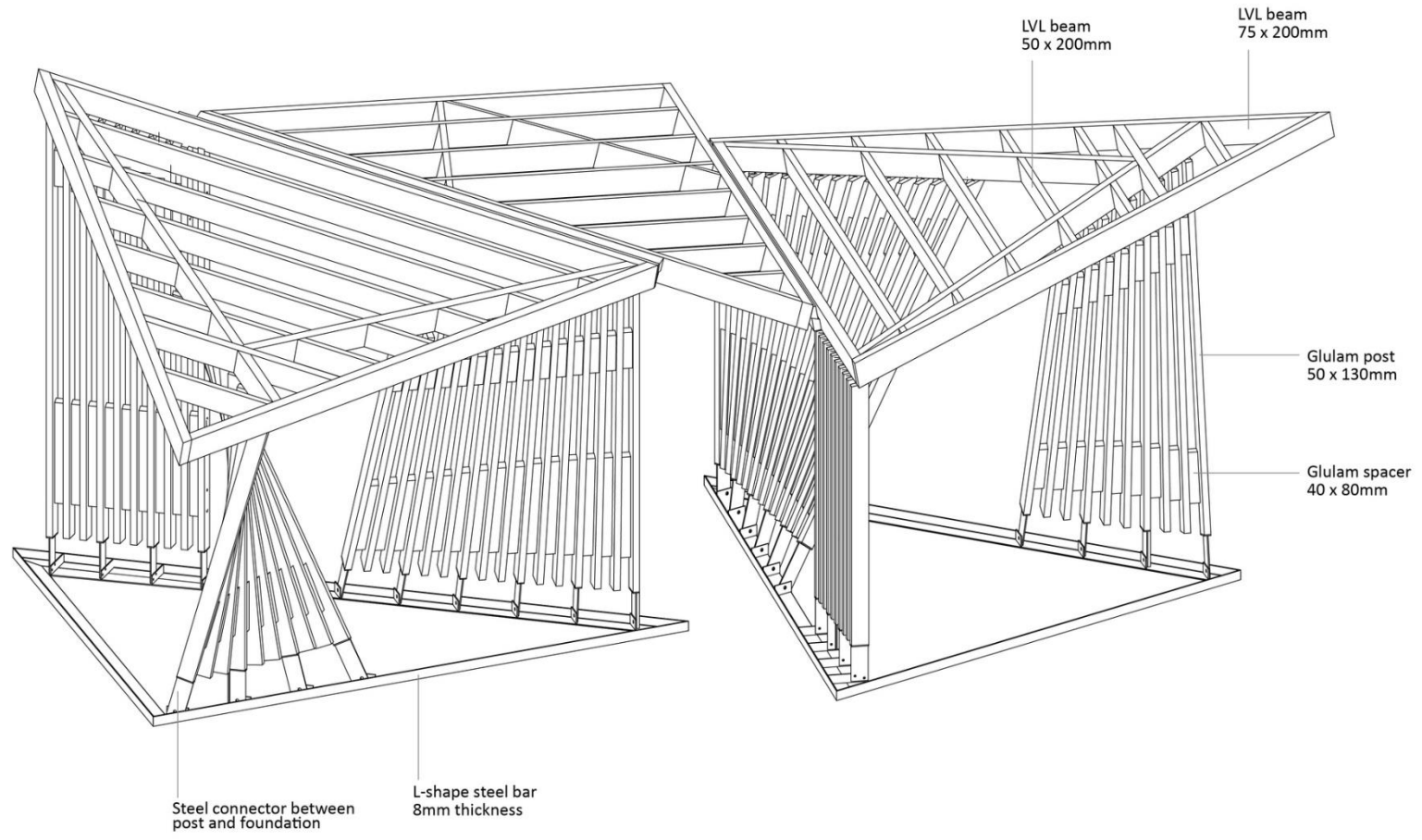




KOHTA TRAIN STATION  
AALTO UNIVERSITY WOOD PROGRAM









# INTERIORS



HOUSE ZILVAR  
ASGK DESIGN







Designed as a low energy house. The large timber-framed structure (2x4) is designed using KVH construction timber profiles while the outside wood cladding uses a **burn and stain** technique, for longer lasting life



(Credit: Daniel Shearing)



PUDASJÄRVI WOOD  
LUKKAROINEN ARCHITECTS



“

The structural walls are made of laminated log. Glulam is a stress-rated engineered wood beams of various shapes

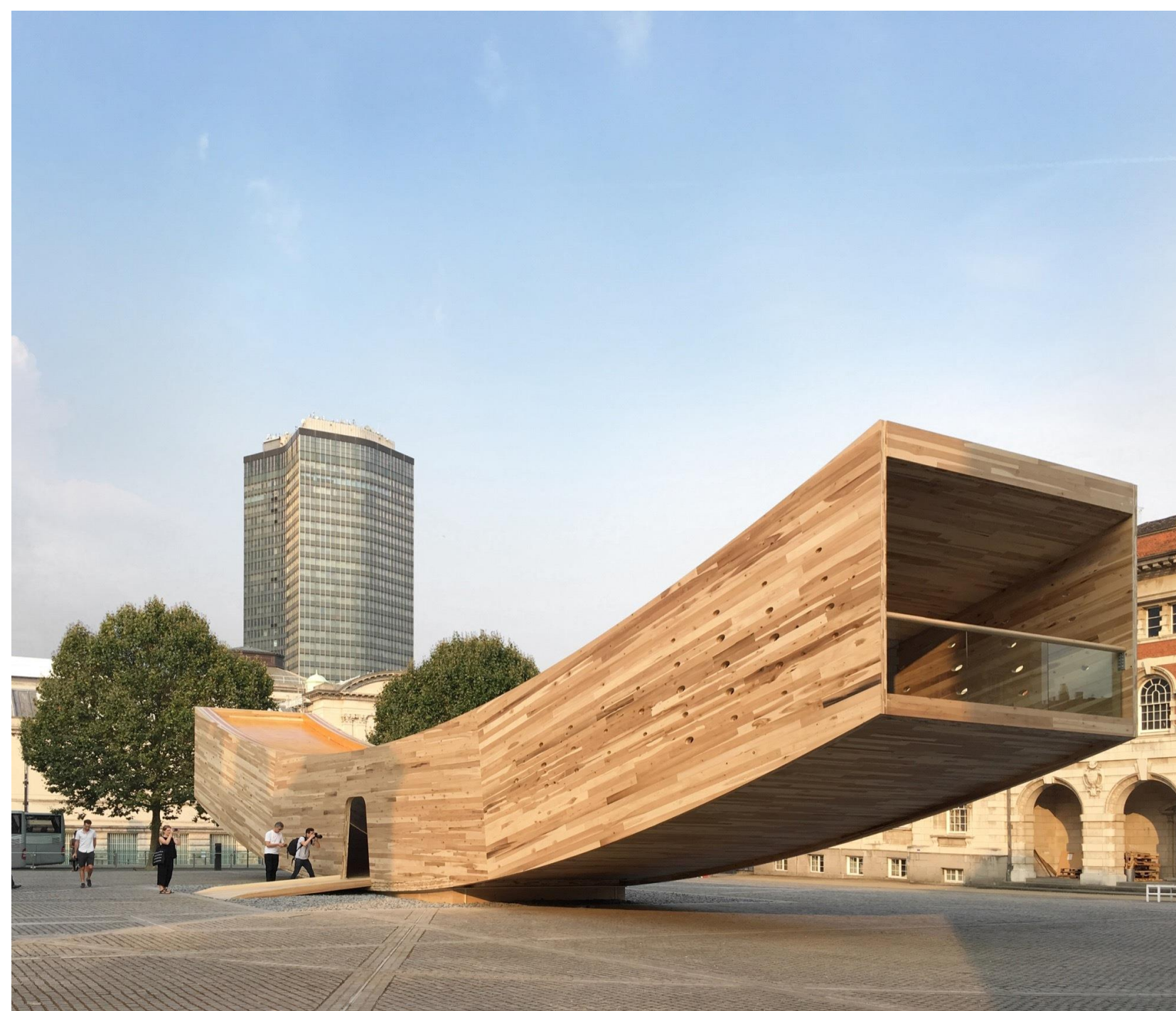
(Credit: Daniel Shearing)



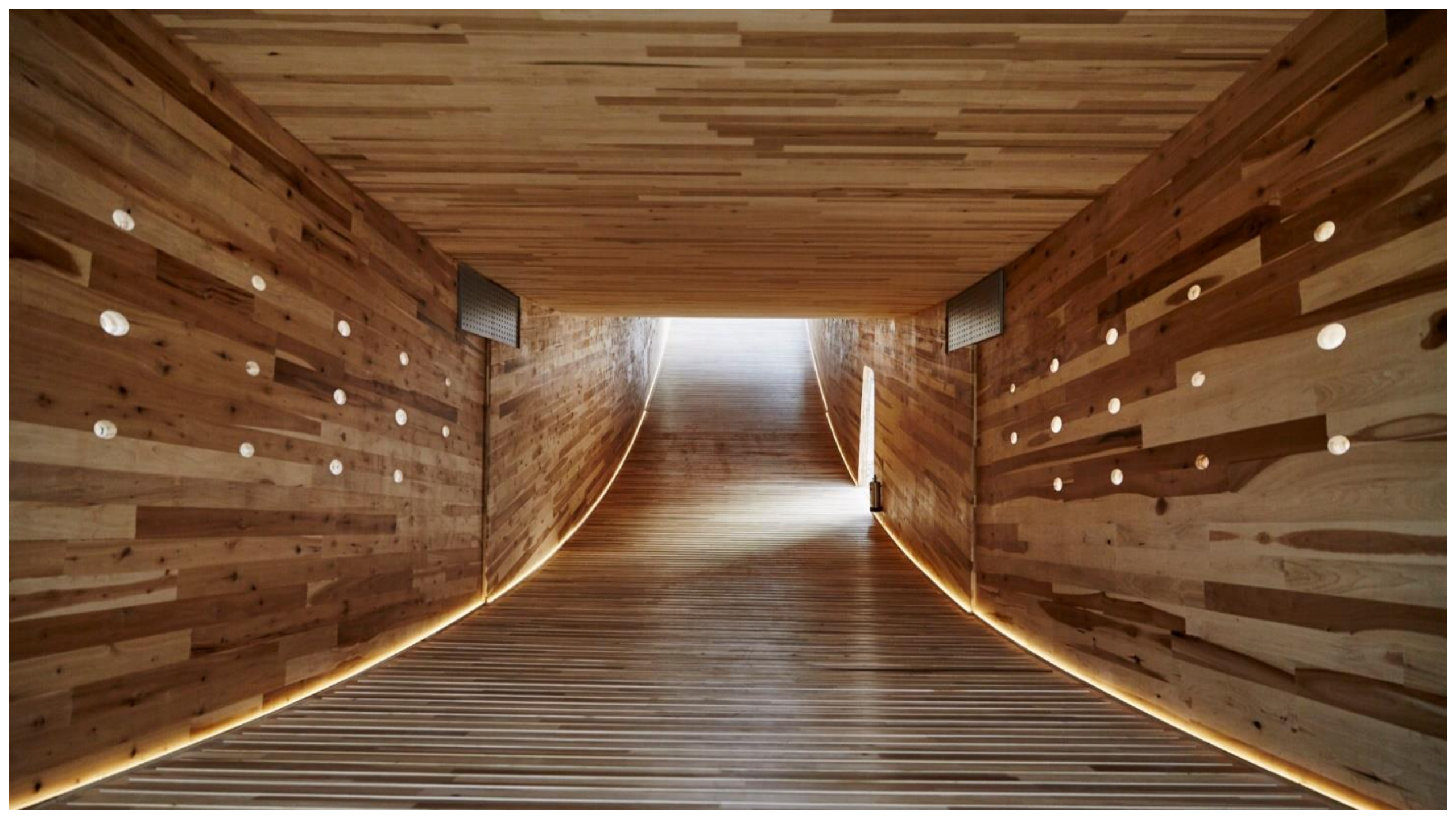
A large, curved wooden sculpture, possibly a boat hull or a stylized arch, is the central focus. It is made of light-colored wood planks and is positioned in a paved parking lot. In the background, a large, multi-story brick building with several windows and chimneys is visible. The sky is overcast and grey. The entire scene is framed by a dark grey semi-transparent rectangle that contains the title text.

THE SMILE  
ALISON BROOKS ARCHITECTS











The image is a composite architectural rendering. The top half shows a close-up, slightly blurred view of a modern skyscraper's facade, characterized by a grid of large glass windows and dark horizontal mullions. The bottom half shows a wide-angle view of the building's base, which is a multi-level, landscaped plaza. The plaza features a large, flat, light-colored roof structure supported by several tall, slender columns. The ground level is paved and includes green spaces with trees and shrubs. A few small figures of people are visible, providing a sense of scale. The overall lighting is soft, suggesting a late afternoon or early morning setting.

SKYSCRAPER FOR VANCOUVER  
PERKINS + WILL DESIGN





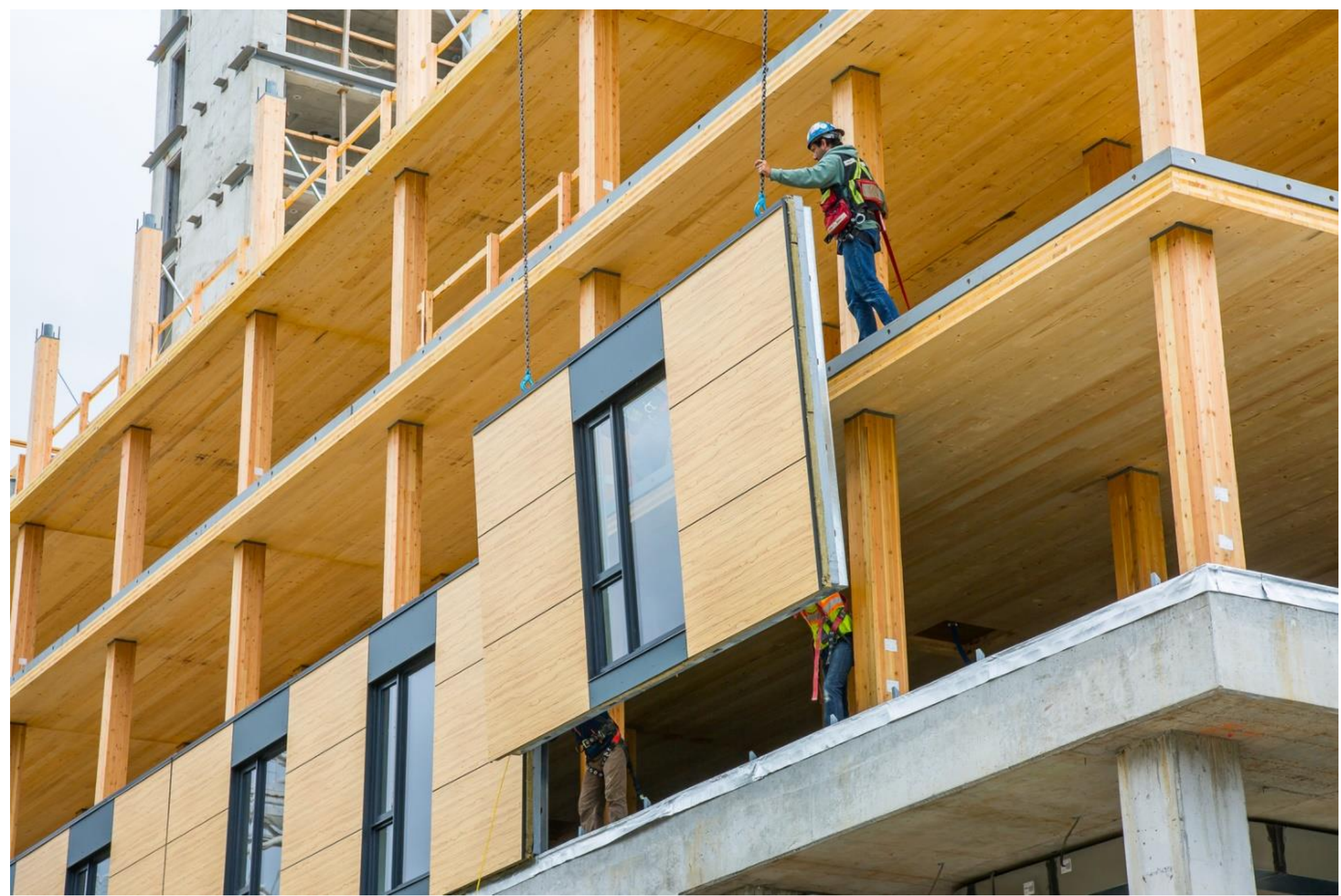
“Perkins + Will Design designed this 339,300 sq. ft. of total floor area development in Canada. The whole building will be predominantly made with CLT material including floor plates, structural columns and façade.”

(Credit: Daniel Shearing)

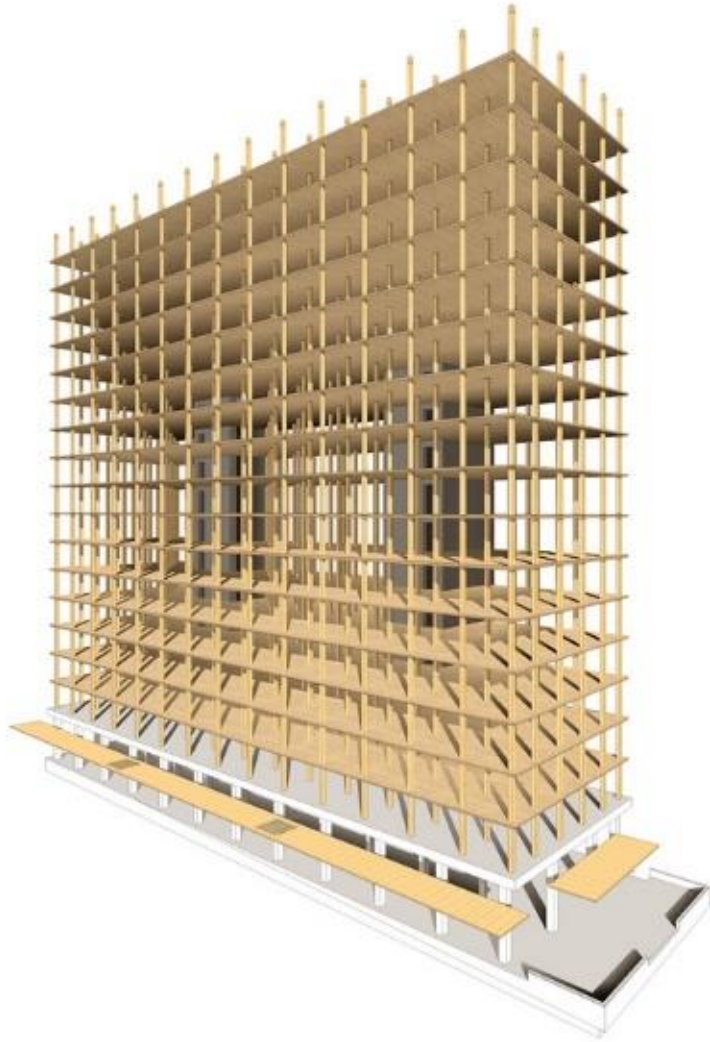
An aerial photograph of a modern high-rise apartment building with a glass facade and a blue-tinted sky. The building is surrounded by other residential structures and greenery. A dark semi-transparent rectangle is overlaid on the center of the image, containing white text.

VANCOUVER'S BROCK COMMONS  
ACTON OSTRY ARCHITECTS INC









hybrid mass timber and concrete core structure



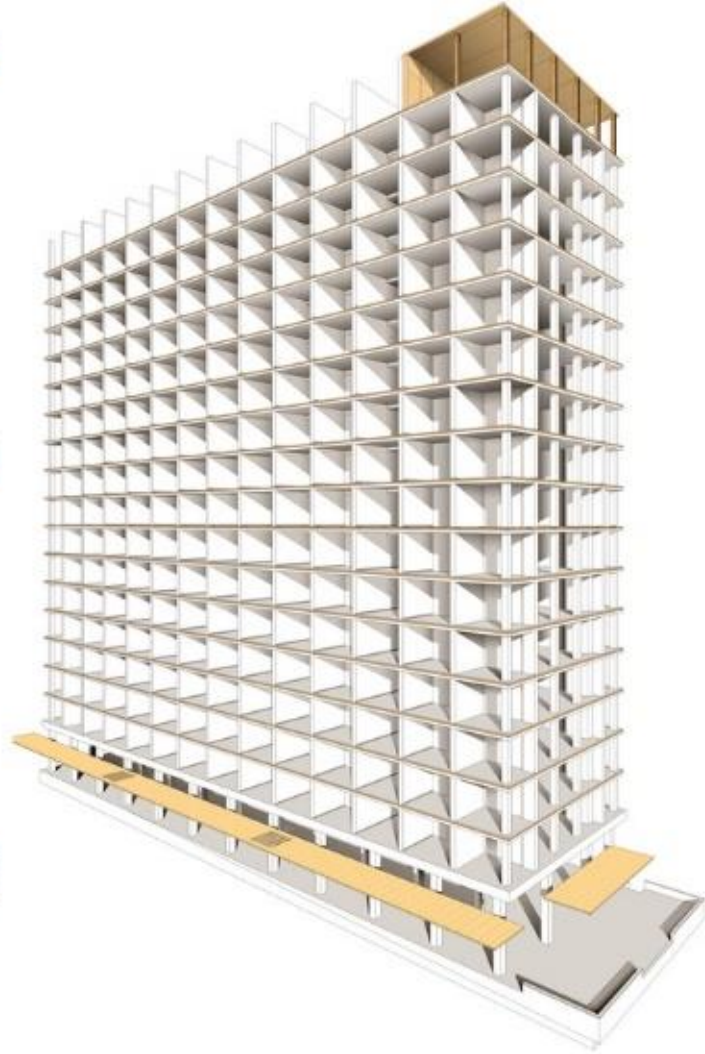
CLT floor slabs with glulam columns and steel connectors



partial encapsulation during construction



completed construction



encapsulated structure

hybrid structure and encapsulation



W O O D



I N C O N S T R U C T I O N

A N O P T I O N O R A N E C E S S I T Y



# WOOD IN CONSTRUCTION

A N O P T I O N O R A N E C E S S I T Y

GOUDIE



MATIMCO  
EST. 1964

*egoin*  
ZUREZKO ERAIKUNTZAK  
TIMBER CONSTRUCTION

habi©  
BASQUE HABITAT & CONTRACT CLUSTER

arch  daily