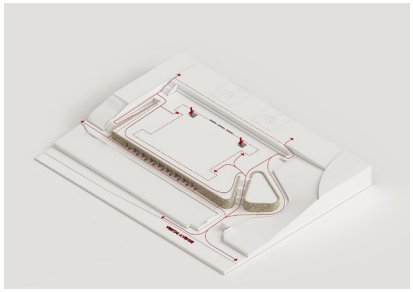
"A total of 2.000 m3 of wood is required for the construction of the arena, which equates to 1460 mature trees from certified, cultivated, sustainably managed forests, with the result that approximately 51 corresponding projects can be produced per day according to the growth rates of forests in Greece between 2000-2020."

FUNCTION I MASS TIMBER ARENA
LOCATION I ATHENS I GREECE
TYPE I SPORTS & RECREATION
SIZE I 4,000m^2

EXPECTED CONSTRUCTION PERIOD I 2025 - 2027

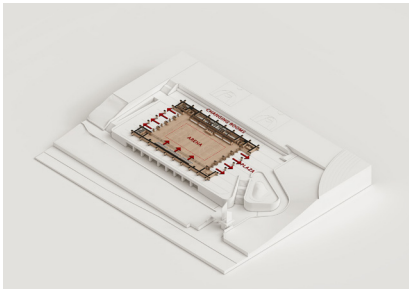
The architectural design for the **mass timber basketball arena** with a composite timber load bearing system were developed after being directly commissioned by the Galatsi Municipality as a special building requiring specialised technical know-how and related research in timber construction. The **challenge** of the architectural design is to create a **bioclimatic structural shell** that will ensure the building is permanently in the shade, that favours natural ventilation, cooling, and lighting, recycles water from the roof and shaped surfaces for irrigation, fosters collegiality, healthy competition and promotes the idea of "fair play," uses natural structural recyclable materials guided by the triple methodology of **sustainability principles**, enriches the existing Mediterranean flora of the Grove, and finally, it is integrated to the global network of sustainable constructions by minimising its **ecological footprint** while simultaneously increasing its positive impact on the environment.

The basic compositional principle derives from the fusion of the form and function of the construction system of the composite structural timber shell, which is conceptually linked to the **"kyathos,"** a form of ancient cup. Firstly, the new building rests on a podium base made of reinforced concrete for the areas below the final level of the court, leading to the pedestrian street; secondly, it is formed of **wood** products for the areas above the final level of the court, namely, glue laminated timber, plywood and cross-laminated timber. The wooden supporting body is organised around the perimeter of the indoor gymnasium in a rectangular framework measuring **45 meters in length and 30 meters in width**, with a reach of 5 meters. The roof is covered with special lightweight pieces of waterproof, recyclable, printable plastic polymer with high weather resistance.



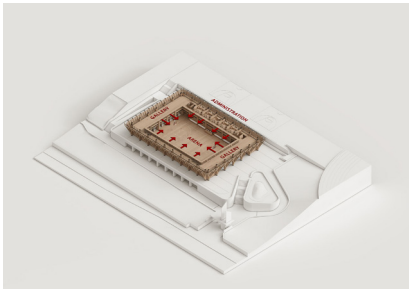
NEW TOPOGRAPHY

Retaining walls made of stone form the facade of the podium made of bare reinforced concrete, which incorporates the infrastructure of the supporting functions of the indoor gym facilities, while allowing direct access of the athletic club offices from the central pedestrian street.



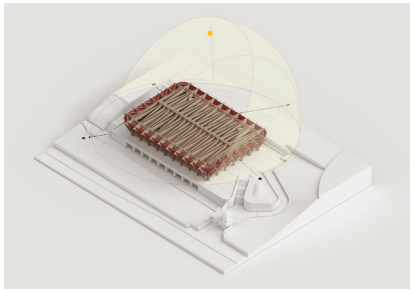
BASKETBALL ARENA

The main idea of the architectural design is to ensure direct visual and functional continuity between the basketball arena and the public square. The building shell allows for the diffusion of light and perceptually unifies the dense vegetation of the Grove around it.



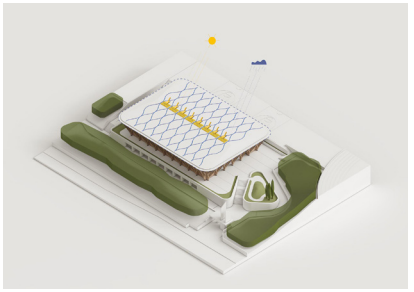
GALLERY I MEZZANINE

The gallery encloses the basketball court at the mezzanine level, while creating an interactive theatrical environment between spectators and athletes. The internal balcony functions as a setting for multiple activities, promoting the idea of “fair play”.



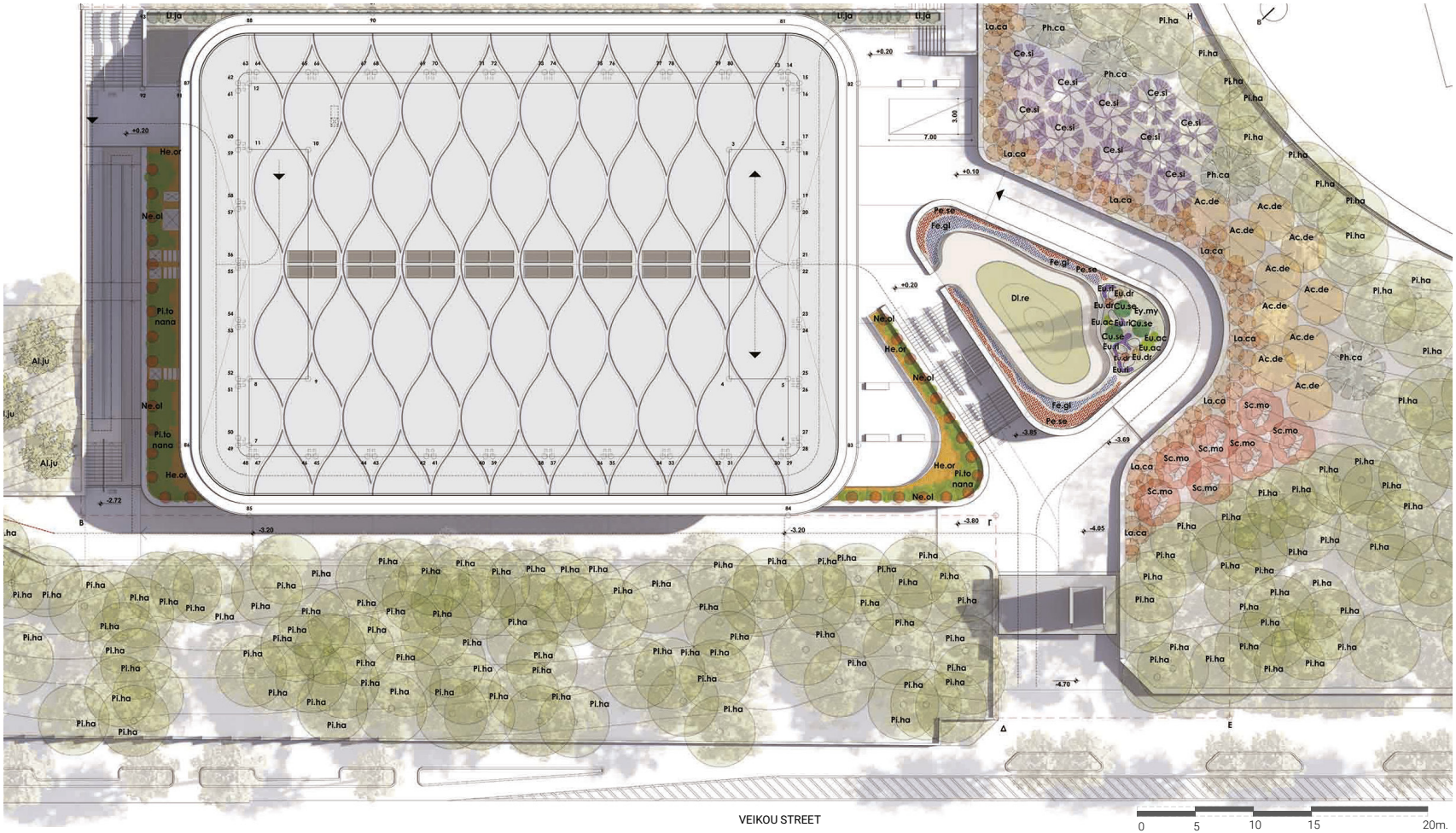
STRUCTURAL BIOCLIMATIC SHELL

The load-bearing structure made of glulam timber in combination with the bioclimatic shell of the facades places the building permanently in shade, ensuring its bioclimatic function, while enhancing the natural lighting, ventilation and cooling of the interior spaces around it.



SOLAR CANOPY & WATER MANAGEMENT

The roof canopy has panels to store solar energy for the production of hot water for use in the changing rooms. The water is recycled for irrigation of the surrounding area. The drainage channels are visualized through the shaping of the foliage.



VEGETATION LEGEND

DECIDUOUS TREES

Al.ju	*Albizia julibrisum*, Fabaceae 4.00-5.00m.
Ce.si	*Cercis siliquastrum*, Fabaceae 4.00-5.00m.

EVERGREEN TREES

Ac.de	*Acacia dealbata*, Fabaceae 4.00-5.00m.
Cu.se	*Cupressus sempervirens*, Cupressaceae 6-10m.
Pi.ha	*Pinus halepensis*, Pinaceae 8-12m.
Ph.ca	*Phoenix canariensis*, Arecaceae 6-12m.
Sc.mo	*Schinus mole*, Anacardiaceae 4-5m.

DECIDUOUS SHRUBS

Eu.ac	*Euphorbia acanthothamnos*, Euphorbiaceae 0.50 - 0.75m.
Eu.de	*Euphorbia dendroides*, Euphorbiaceae 1.00-1.50m.

EVERGREEN SHRUBS

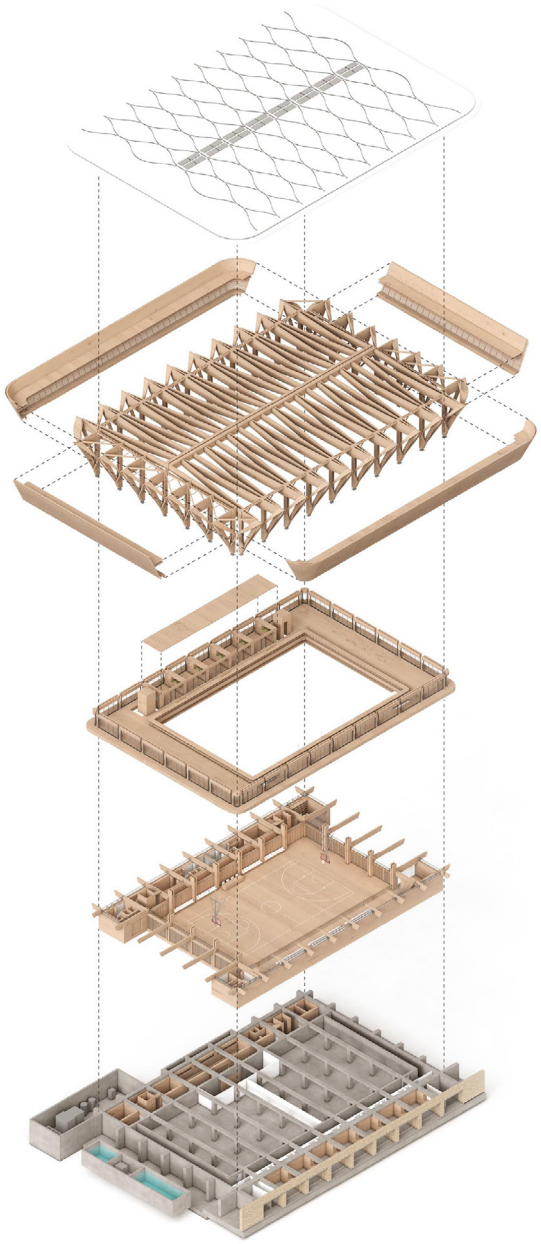
Lo.ja	*Ligustrum Japonicum*, Oleaceae 1.00-1.50m.
La.ca	*Lantana camara*, Verbenaceae 1.00m.
Ne.ol	*Nerium oleander*, Apocynaceae 1.00-1.50m.
Pi.to nana	*Pittosporum tobira*, Pittosporaceae (nana) 0.60m.

HERBACEOUS PLANTS

Eu.ri	*Euphorbia rigida*, Euphorbiaceae 0.20m.
Fe.gl	*Festuca glauca*, Poaceae 0.30m.
He.or	*Helichrysum orientale*, Asteraceae 0.40m.
Pe.se	*Pennisetum setaceum*, Poaceae 0.50-0.70m.

GROUND COVERS

Ee.my	*Euphorbia myrsinites*, Euphorbiaceae 0.05m.
Di.re	*Dichondra repens*, Convolvulaceae 0.05m.



SOLAR & WATER CANOPY

LEVEL 5 | ROOF

BIOCLIMATIC ENVELOPE

LEVEL 4 | STRUCTURAL SHELL

GALLERY

LEVEL 3 | MEZZANINE

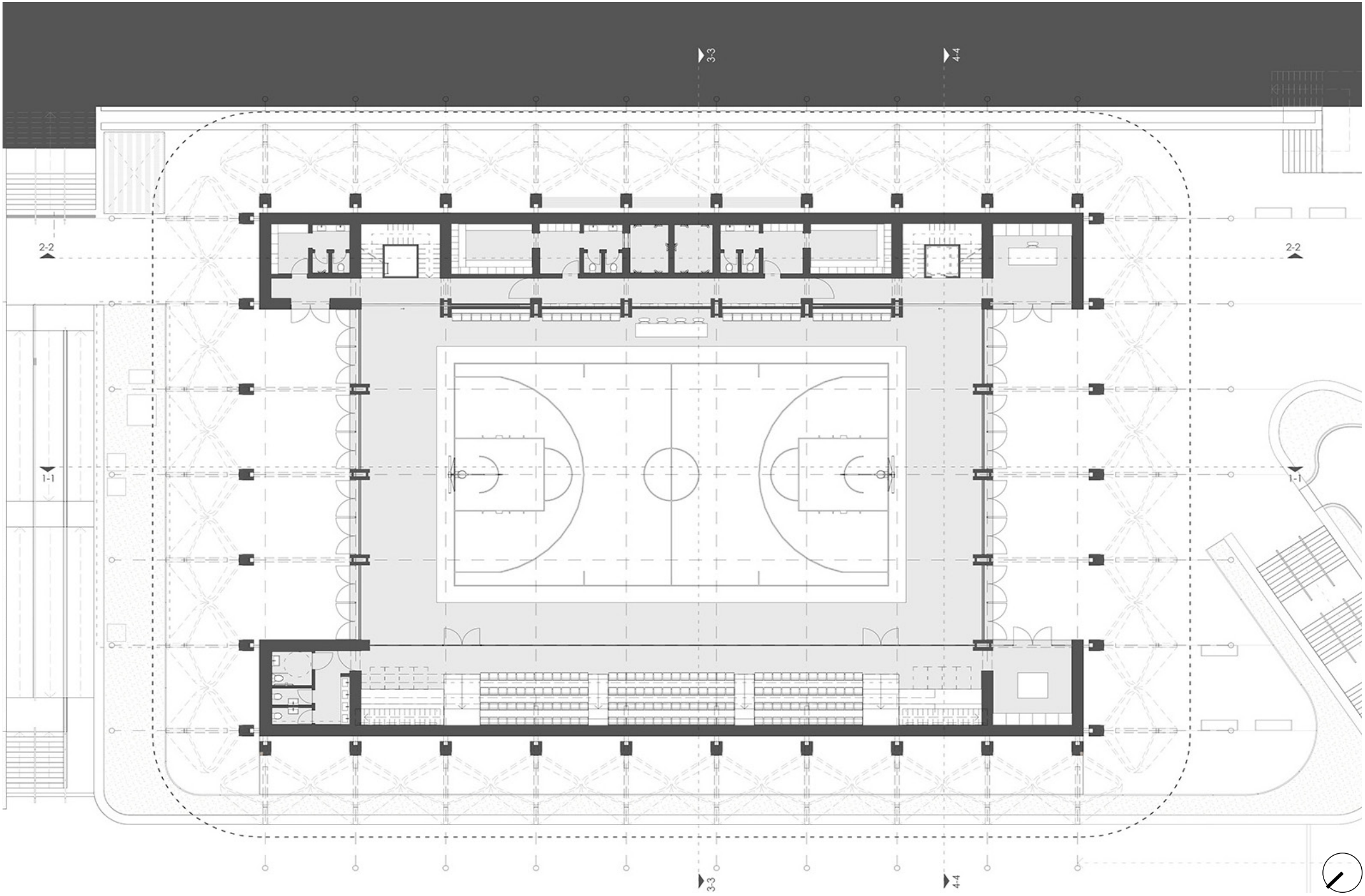
MASS TIMBER ARENA

LEVEL 2 | PLAZA

CONCRETE PODIUM

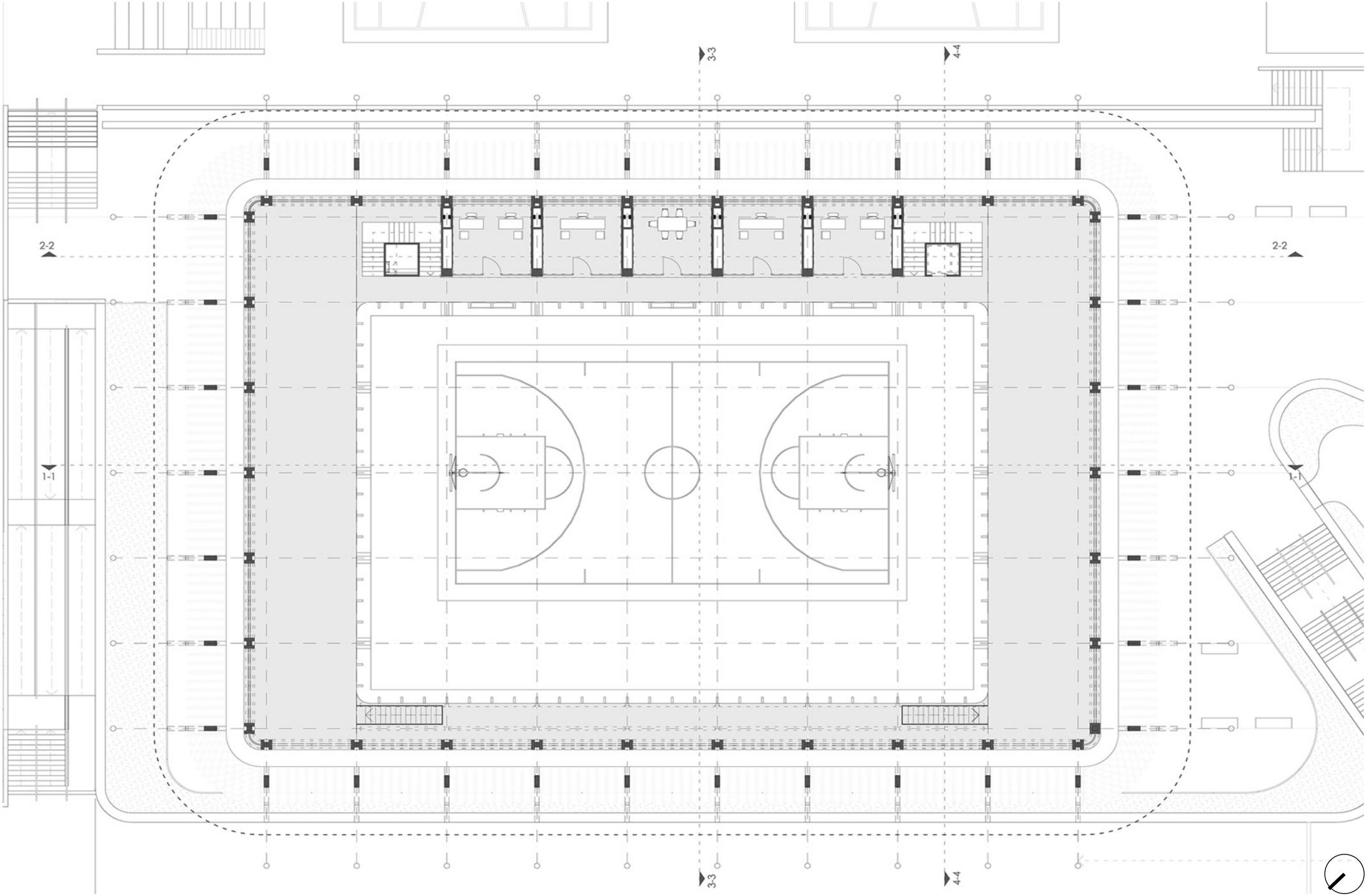
LEVEL 1 | PEDESTRIAN WALKWAY

CONSTRUCTIVE AXONOMETRIC DIAGRAM



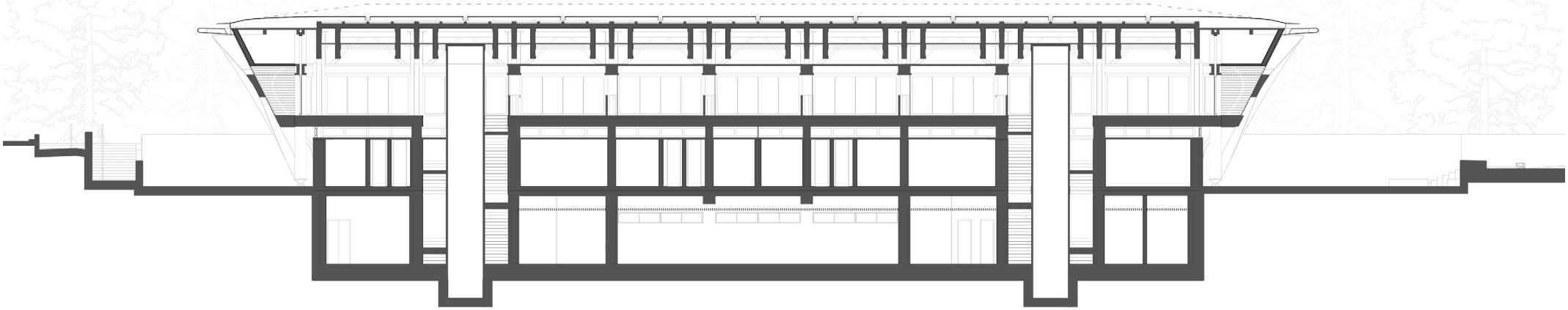
0 5 10 15 25m.

GROUND FLOOR I BASKETBALL COURT LEVEL

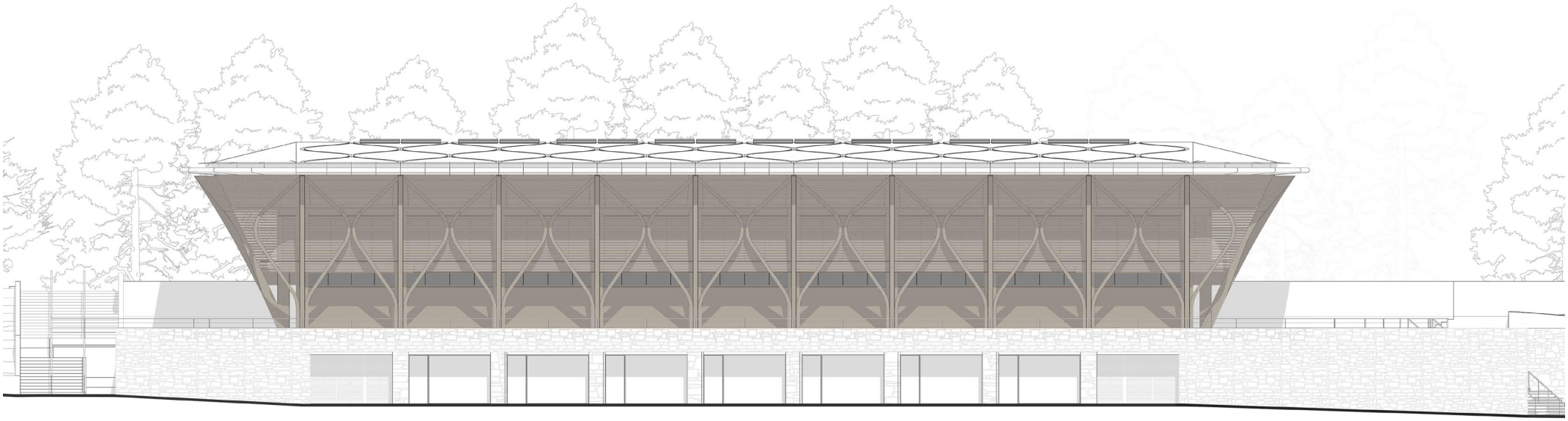


0 5 10 15 25m.

FIRST FLOOR I MEZZANINE LEVEL



LONGITUDINAL SECTION I 1-1



0 5 10 15 25m.

NORTH WEST ELEVATION I PEDESTRIAN ROAD

Tree Trunk

Diameter:
Avg from Base to Crown: 0.5m

Base: 0.75m
Crown: 0.25m

1 Tree approx.

Height: 30m

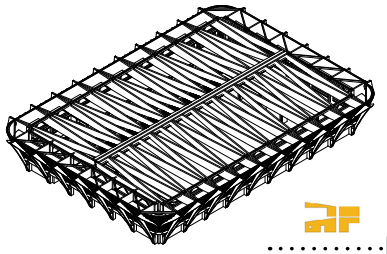
T. Volume: 3.9 m³
S. Lumber: 1.37 m³
Pulp: 1.37 m³

Trees harvested for Kyathos Basketball Arena

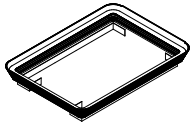
1,460 Trees
Sawn Lumber: 2,000 m³
Pulp: 2,000 m³

A total of 2,000 m³ of wood is required for the construction of the arena, which equates to 1,460 mature trees from certified, cultivated, sustainably managed forests. Approximately 51 equivalent projects can be produced per day according to the growth rates of forests in Greece between 2000 and 2020.

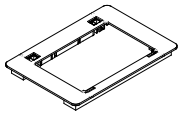
SUM
2,000 m³
(1,750 + 12% offcuts)



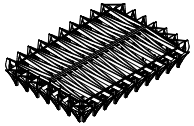
REUSE



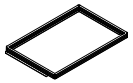
Envelope
100 m³



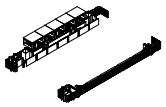
CLT
600 m³



GLULAM
700 m³

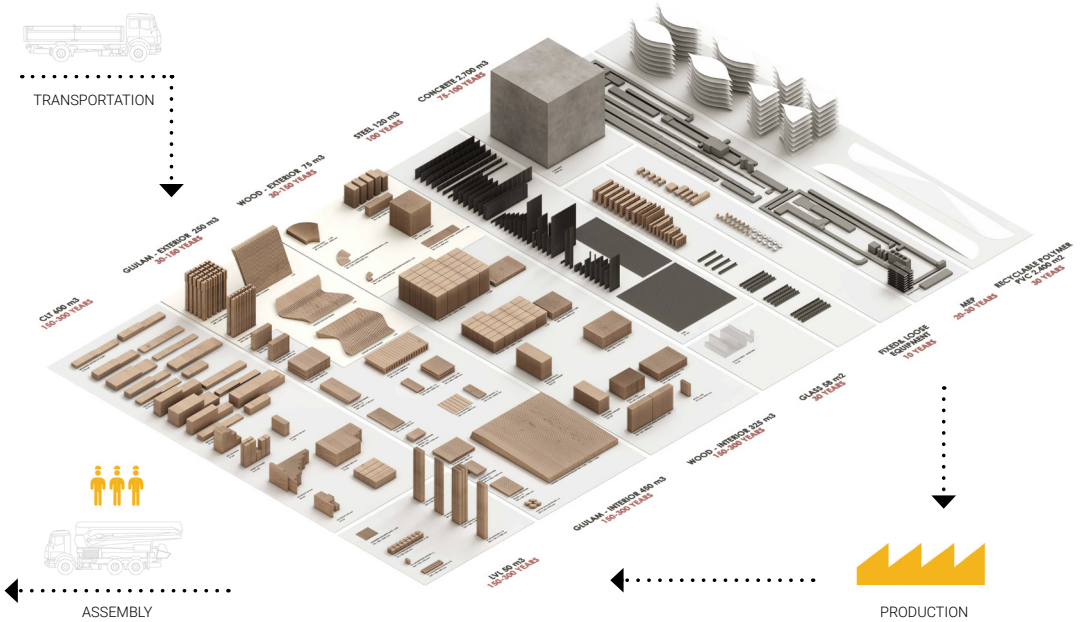


LVL
50 m³

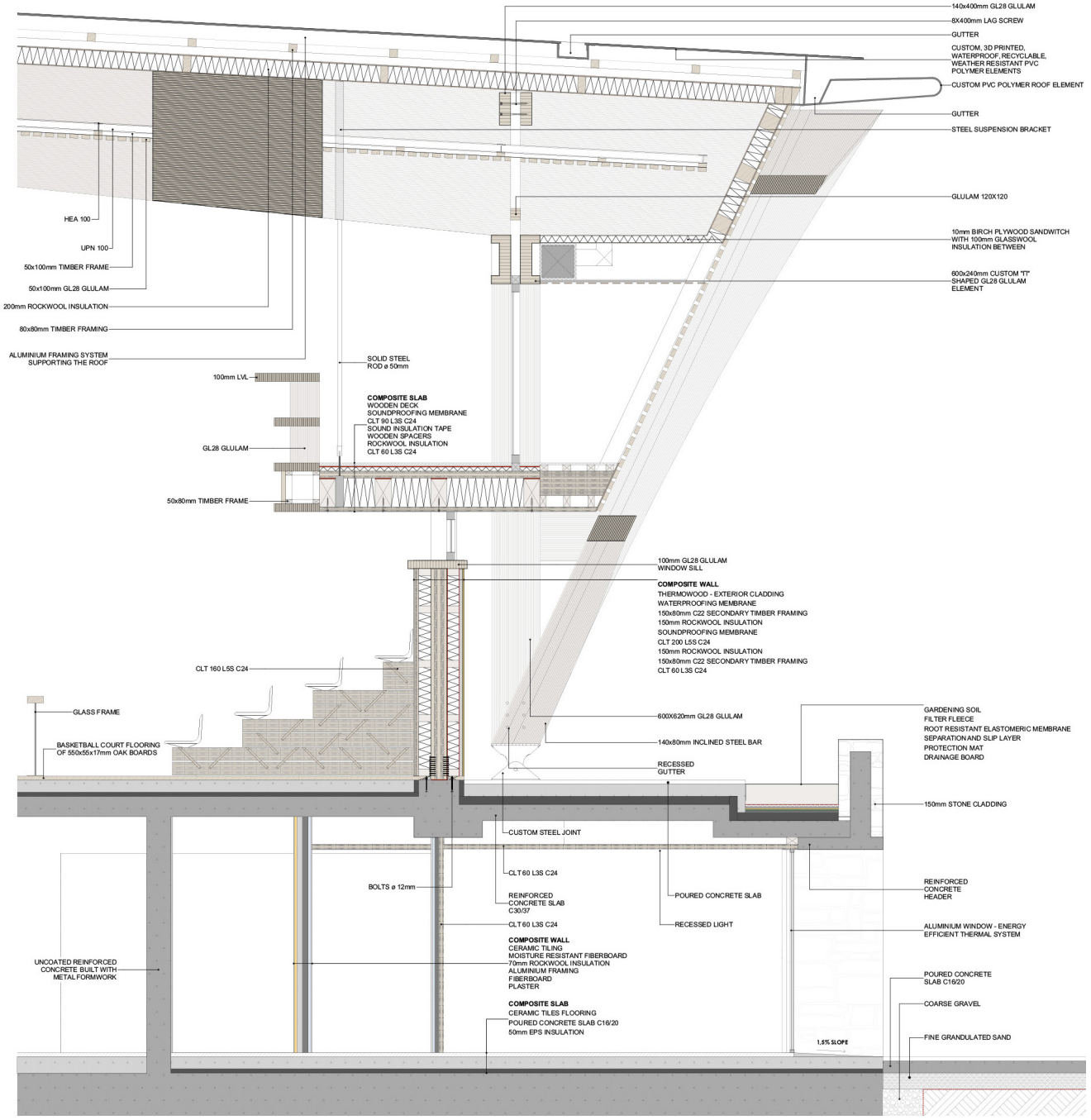


Interior
300 m³

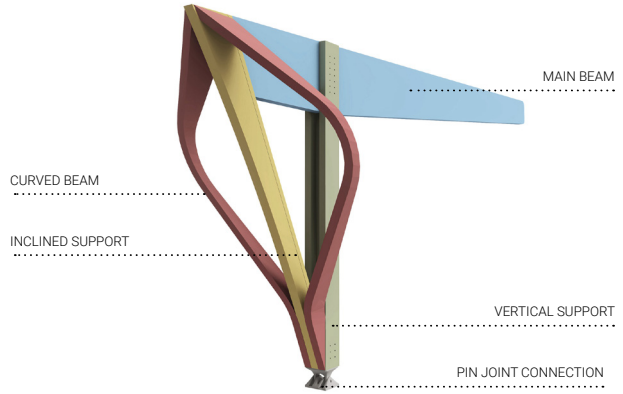
QUANTITATIVE ANALYSIS DIAGRAM



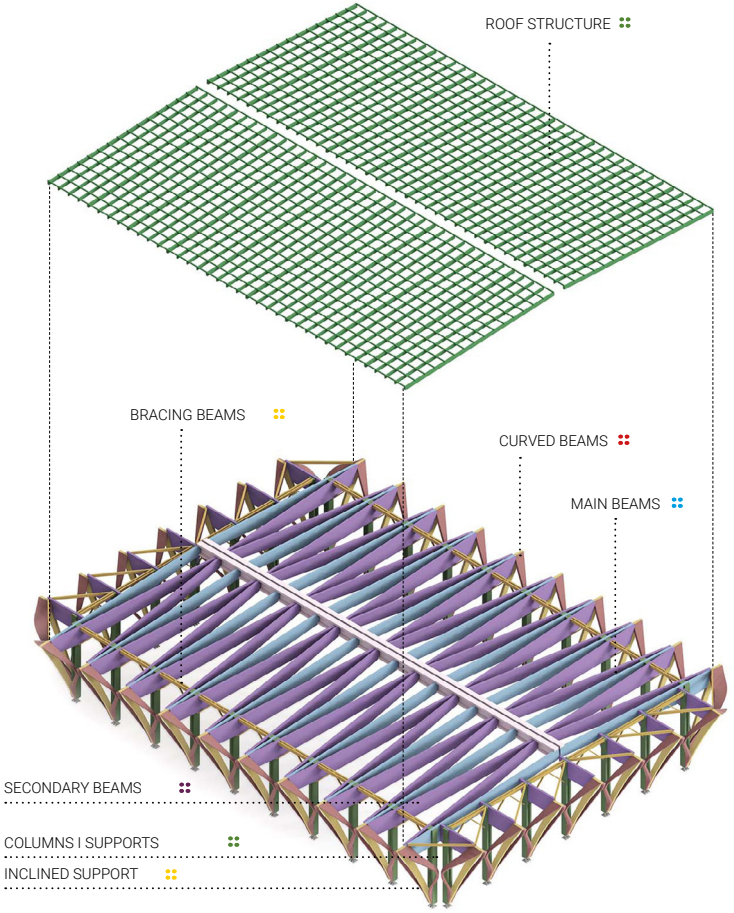
MATERIAL ECOLOGY DIAGRAM



CONSTRUCTIVE DETAILED SECTION



3D AXONOMETRIC STRUCTURAL SYSTEM



CONSTRUCTIVE STRUCTURAL ELEMENTS