

PROJECT People's Pavilion

YEAR

2017

LOCATION

Eindhoven, Netherlands

USE

Public Assembly

CONSTRUCTION

New Construction

ARCHITECT

Bureau SLA, Overtreders W

ENGINEER

Arup

DEVELOPER

Dutch Design Foundation

BUILDER

Ham & Sybesma

SUPPLIER

Various (see references)

SPECIALISTS

New Horizon (Urban Mining
Advisor)

GROSS AREA

2,700 sq-ft

MEAN ROOF HEIGHT

26 ft

STORIES ABOVE GRADE

1

STORIES BELOW GRADE

0

RISK CATEGORY

II (all buildings and other
structures)

COST INFORMATION

Partially available

LCA INFORMATION

Unavailable



Credit: Filip Dujardin

MATERIALS	Precast concrete, Steel, Wood, Other	Precast concrete, Steel, Wood, Other	Precast concrete, Steel, Wood, Other
SYSTEMS	Columns, Floors, Roof, Walls, Bracing, Beams, Foundations, Envelope, Non-structural	Columns, Floors, Roof, Walls, Bracing, Beams, Foundations, Envelope, Non-structural	Columns, Floors, Roof, Walls, Bracing, Beams, Foundations, Envelope, Non-structural
SCALE	Whole-structure	Whole-structure	Whole-structure
	DfD	SCR	DECON
	Design for Disassembly	Structural Component Reuse	Deconstruction

SUMMARY

A fully deconstructable pavilion constructed for the nine-day long Dutch Design Week 2017 using entirely on loan structural elements which was fully salvaged at the end of the festival.

SUSTAINABILITY GOALS

Proof of concept for 100% borrowed material and 100% disassembly.

CIRCULAR ECONOMY STRATEGIES

All materials were either new materials borrowed temporarily for the pavilion installation, or sourced from recent local building deconstruction and household waste.

The structural system consisted of precast concrete columns with a deep wood truss spanning between them. The columns were made of 23 ft long prefab reinforced concrete foundation piles. Steel rods from a demolished office building were reused as cross bracing for the stability system in partnership with high-capacity ratchet straps. The wood trusses were formed of a novel deconstructable laminated timber beam system of chords and posts with cross-braced diagonal steel ties. Metal tie-down strap connections were used to friction laminate wood vertically and horizontally into larger composite bundles. This laminated strap system and the overall stability system required testing through several experiments in cooperation with the Technical University Eindhoven to validate its performance as safe and sufficiently reliable structure to withstand strong wind conditions. The use of temporary methods for the wood lamination and cross-bracing assembly allowed for full disassembly of the structure into its constituent borrowed wood elements at the end of the Design Week.

The glass roof was borrowed from a greenhouse supplier, while the glass lower façade was saved from a demolished office building. The lighting, heating, bar and other interior elements such as church pews were also borrowed. A full list of borrowed material sources is included on the Bureau SLA website project page. Over 9,000 colored plastic shingles recycled from PET bottles donated by local Eindhoven residents clad the pavilion.

KEY FINDINGS, RECOMMENDATIONS, AND LESSONS LEARNT

Design of the strap connections required assessment of atypical load paths and testing to validate the design. A lack of testing and industry guidance was encountered, highlighting the need for more designs of this type and documentation of findings. Following the project, the novel friction-lamination method for the wood structure has not been repeated on future projects - details of the technical testing at TU Eindhoven do not appear to be available.

Some sources refer to the wood as being roughcut unplaned pine felled in California - further lessons on the choice of source location and finishing method would be of interest.

FURTHER INFORMATION AND RESOURCES

<https://www.arup.com/en-us/projects/peoples-pavilion/>

<https://bureausla.nl/project/peoples-pavilion/?lang=en>

<https://www.archdaily.com/915977/peoples-pavilion-bureau-sla-plus-overtreders-w>

<https://www.dezeen.com/2017/10/27/peoples-pavilion-dutch-design-week-low-ecological-footprint-bureau-sla-overtreders-w/>

<https://www.tudelft.nl/en/architecture-and-the-built-environment/circular-design-atlas/peoples-pavilion>

https://filelist.tudelft.nl/BK/Onderzoek/Onderzoeksthemas/Circular_Built_Environment/Circular_Impuls_Initiative/Circular_Design_Atlas/Atlas_BES2023_Peoples_Pavilion.pdf

Full suppliers list: IJB groep, Lemmer wood, steel mats: Stiho group, Nieuwegein facade tiles: Govaerts, Hasselt (B) ground floor facade: Tetris, Amsterdam electrical wiring & lights: Elektroned glass roof: DEGO, Monster concrete flooring: Heezen, Eindhoven tensioning straps: Logistiek Concurrent containers for plastic waste: Van Happen, Eindhoven plastic washing/shredding: Morssinkhof, Haaksbergen church benches: Keizersgrachtkerk, Amsterdam

AVAILABLE QUANTITATIVE DATA

2700 SF, 12 concrete piles, 19 wooden frames, 350 tension straps, 9000 plastic tiles, cost of 270,000 EUR (~\$310,000), capacity of 200 seated/600 standing, 100% borrowed or salvaged material

ABOUT THE DATABASE

This case study has been prepared by the Structural Engineering Institute Sustainability Committee Circular Economy Work Group with the goal of sharing and promoting the excellent circular economy work that project teams are working on throughout North America and the world. Often it is hard to find information on how circular economy principles are implemented in practice; these circular economy case studies aim to better share information amongst the industry.

Some case studies have been prepared directly by a project team member, while others have been prepared based on available texts and publications. In the second case, the text descriptions are a summary of information available from other sources. These sources are referenced in the *Further information and resources* section.

While reasonable efforts have been made to ensure the information is representative and accurate, we cannot guarantee there are no errors. [Please contact the case study team](#) to provide additional information, suggest updates and amendments, or with any other questions. To submit a new case study to the database, [please use this submission form](#). Thank you!