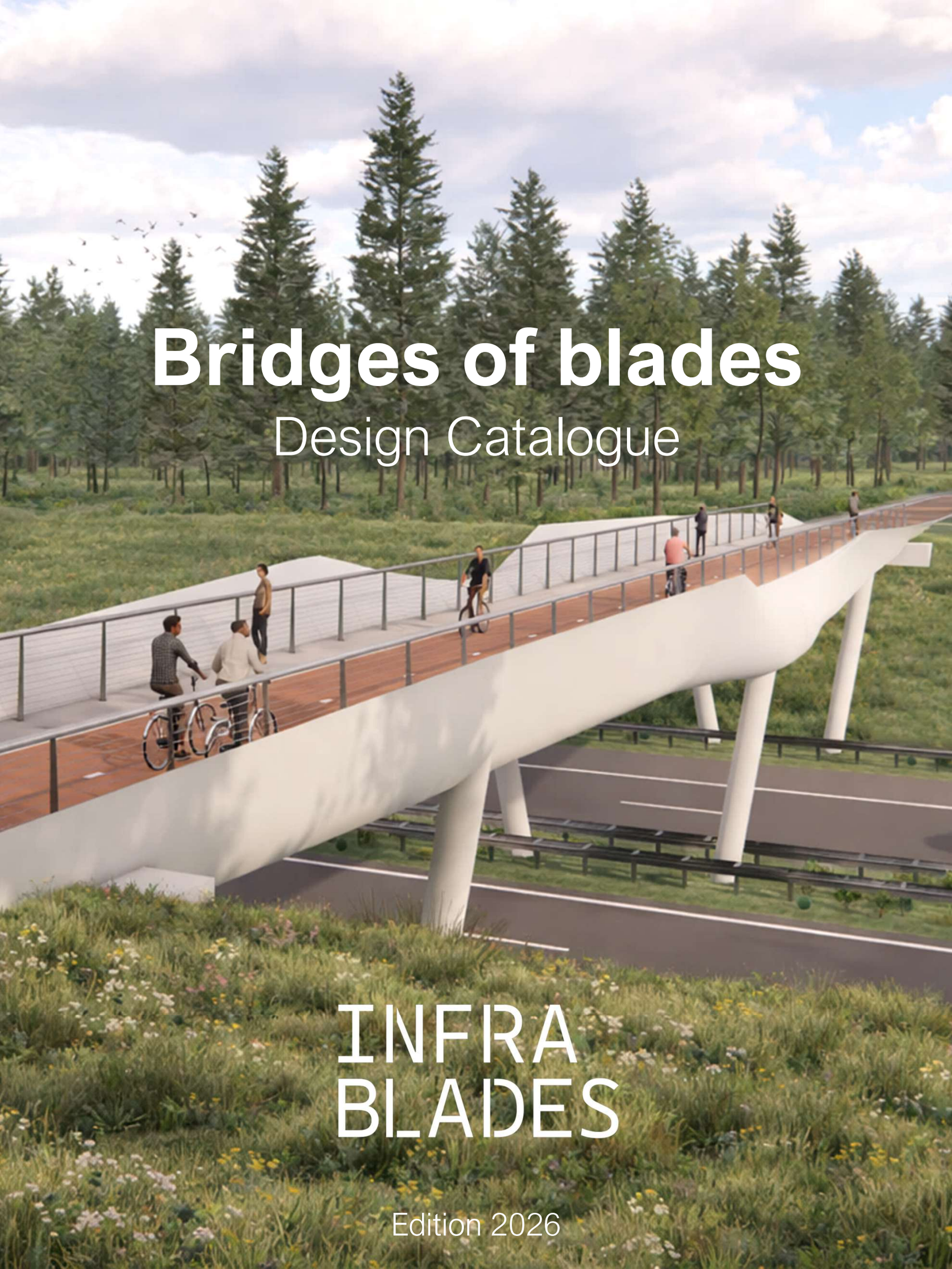


Bridges of blades

Design Catalogue

INFRA BLADES

Edition 2026

Introduction

Wind turbines are generally decommissioned after 20 to 25 years of use, mostly due to economic reasons. It is widely agreed that blades are often still in good condition at that point, but given their abundance, many end up being shredded. InfraBlades works to prevent wasting of these high-quality structural elements by repurposing them in civil engineering applications, like bridges.

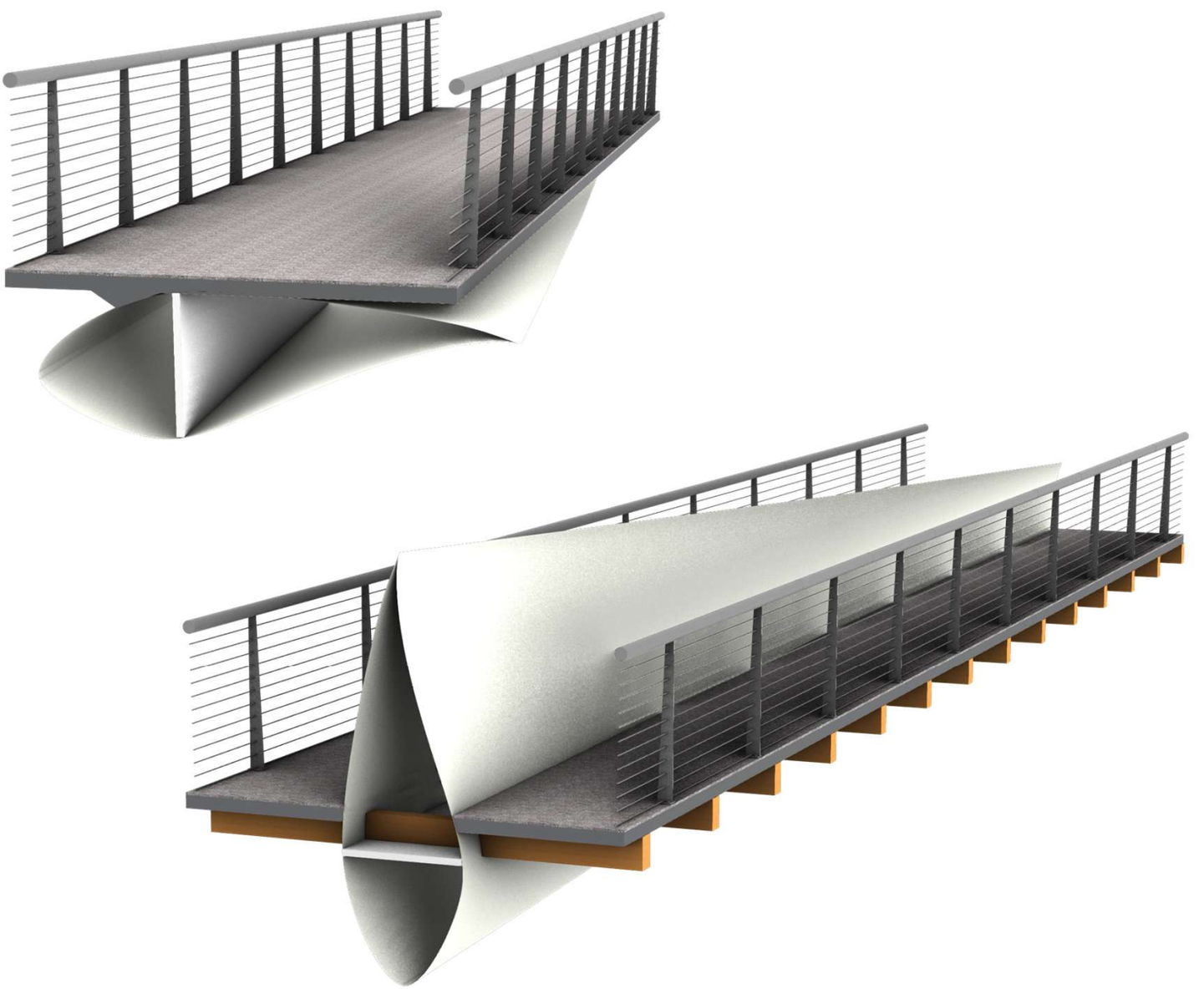
This catalogue presents concepts for various types of bridges where wind turbine blades form the main structural elements. InfraBlades is a Delft-based startup actively developing these *Bridges of blades* and is currently involved in the realisation of such bridges in the Netherlands.

We recognise the valuable work of designers and organizations – in particular the Re-Wind Network – whose earlier bridge designs have helped shape the field. This catalogue builds on those ideas while presenting our own approach and innovations. All visuals in this document are created by InfraBlades.

~ InfraBlades-team, July 2026

Mono-blade bridges

Bridges of blades can already be constructed using a single wind turbine blade. The visualisations show two popular designs: one where the blade is placed flat with a deck on top, and one where the blade is upright with a part of the deck on either side.



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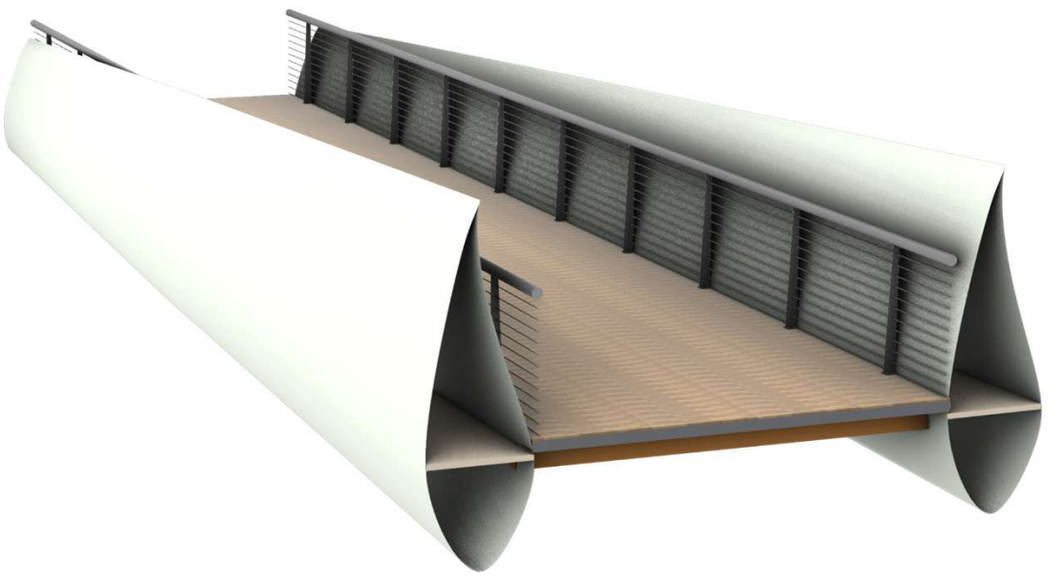
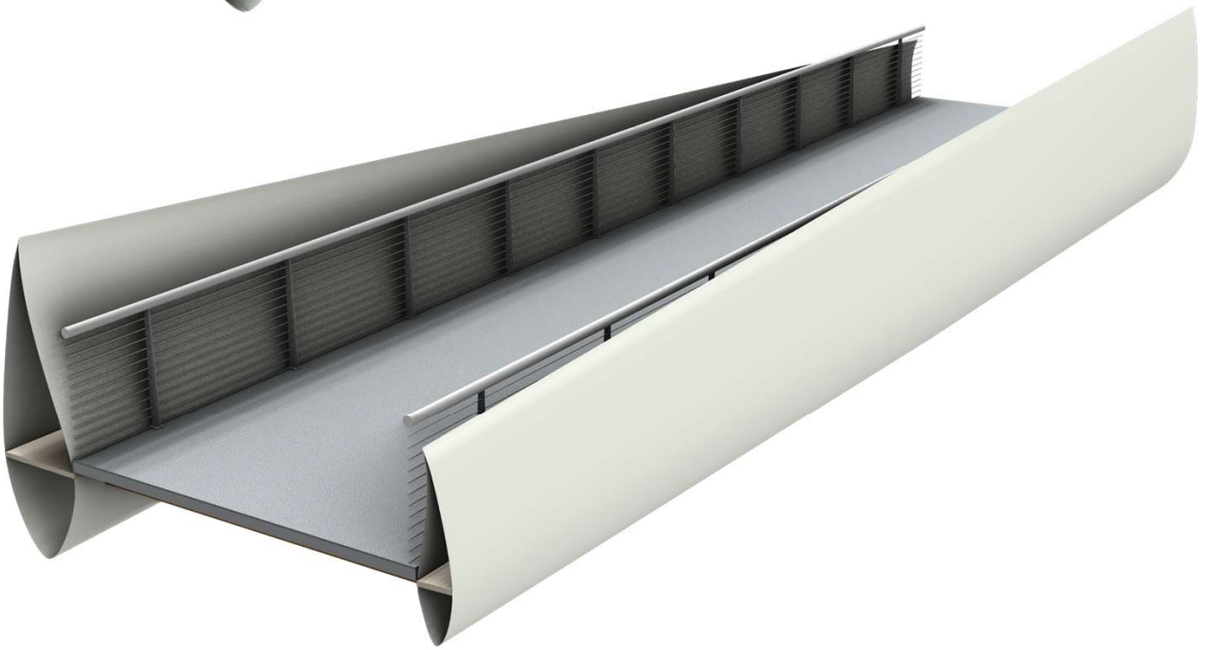
Double-blade bridges

Bridges of blades with two blades allow for wider bridge decks than single-blade bridges. From a technical point of view, the most logical design would be to have one blade at each side of the bridge. Many variants can be thought of.





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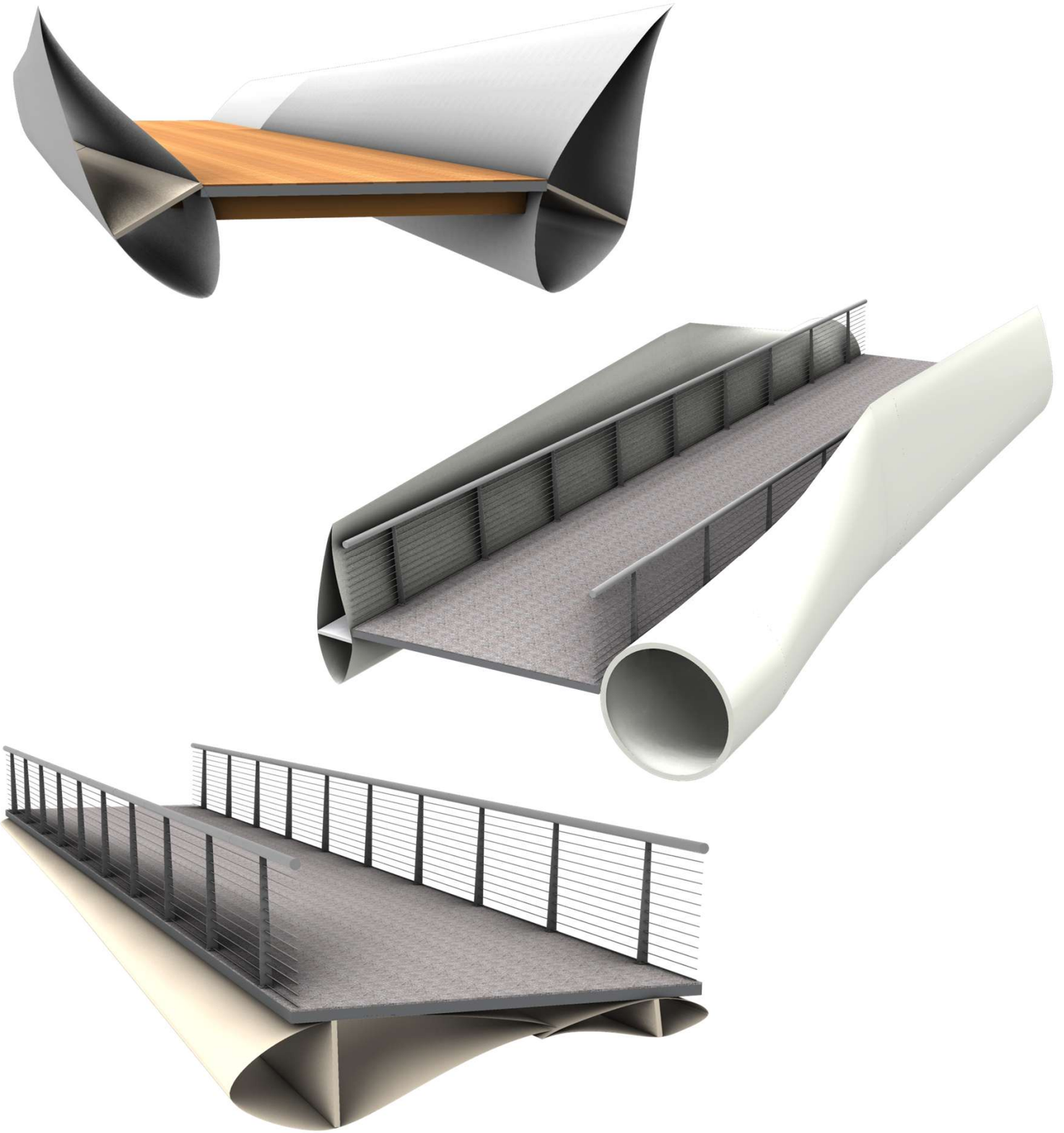
The blade orientation can be chosen based on the project-specific requirements regarding aesthetics, functionality and structural performance.



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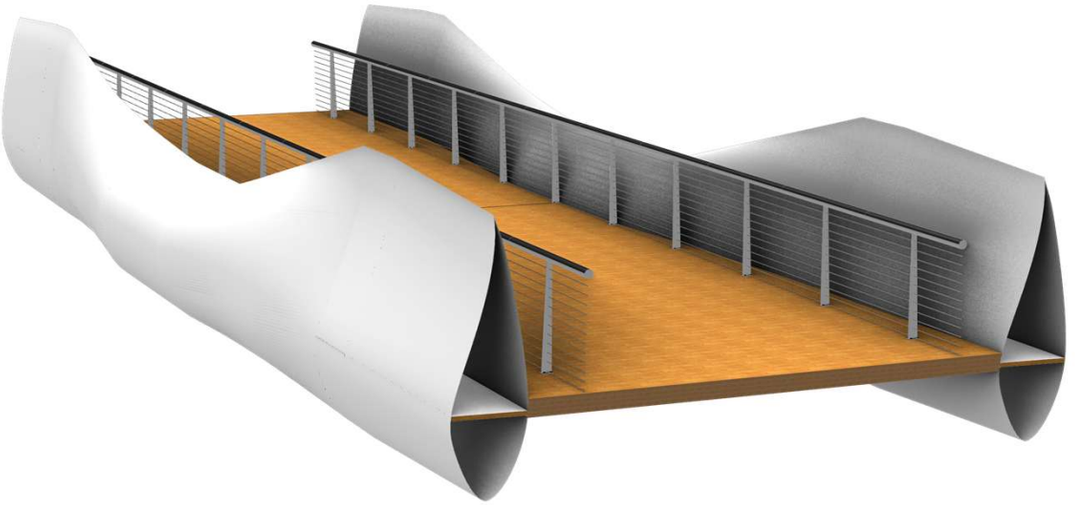
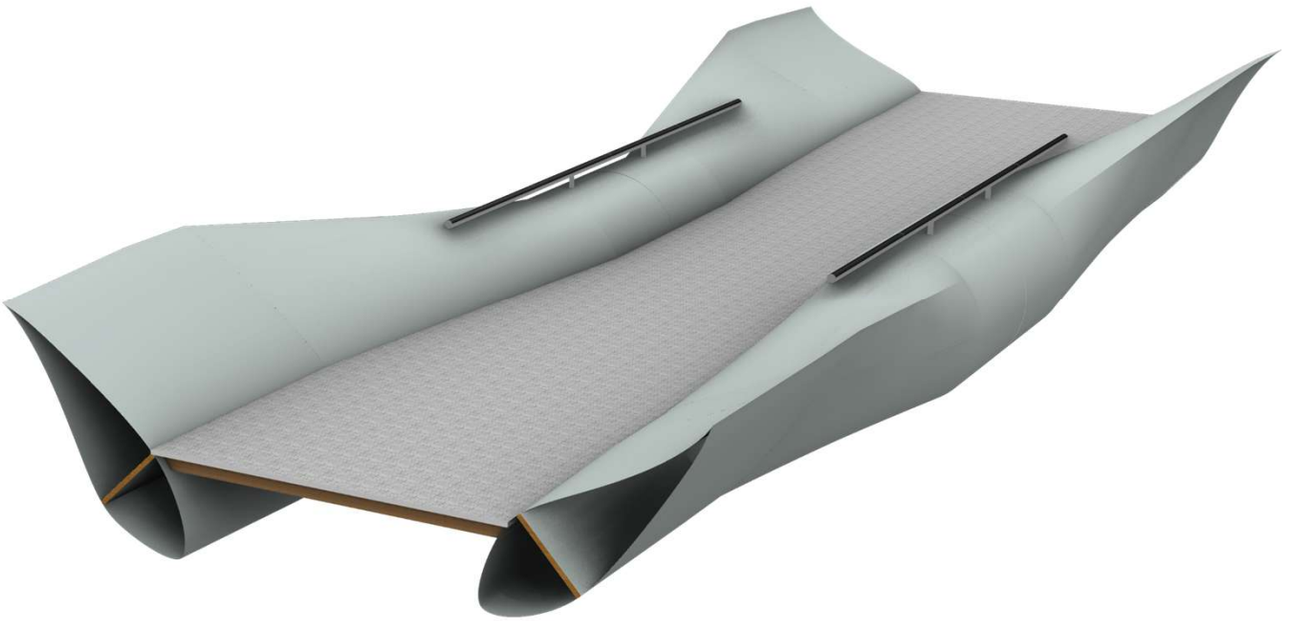
Multi-blade bridges (1)

To achieve larger spans, the roots of two blades can be interconnected. This results in stiffer and stronger girders.

The examples below show bridges made of four blade segments.





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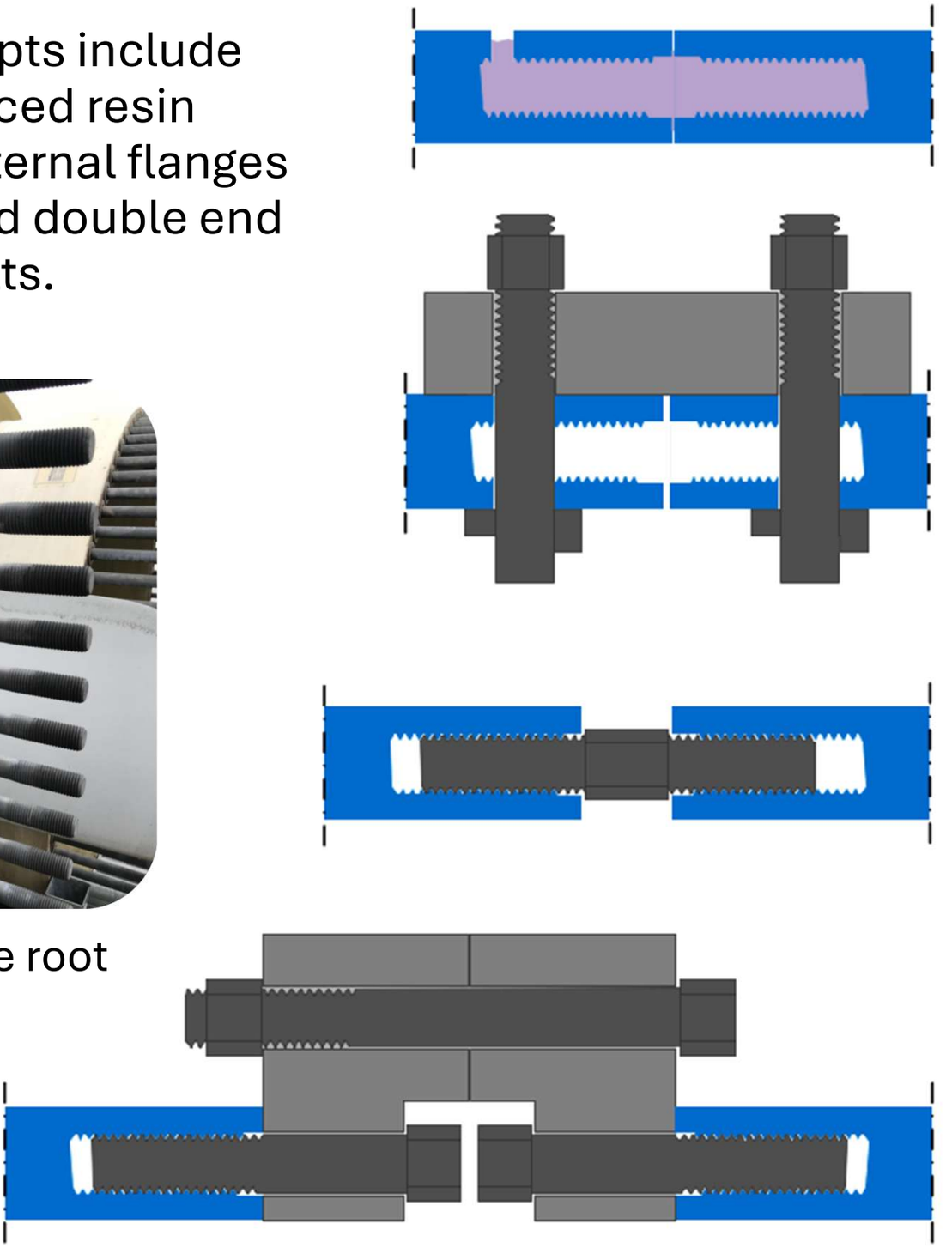
Connecting blade roots

There are various ways to connect two blades end-to-end, in order to create one long girder.

Some concepts include using reinforced resin injection, external flanges or plates, and double end threaded bolts.

↑ Actual blade root



Visuals from Kloeg (2024)

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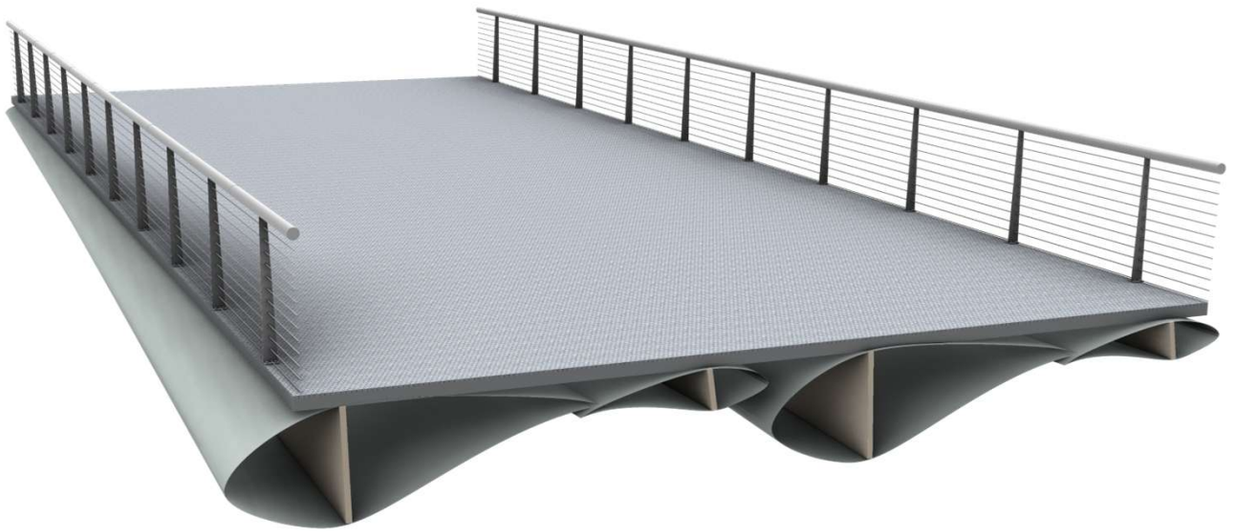
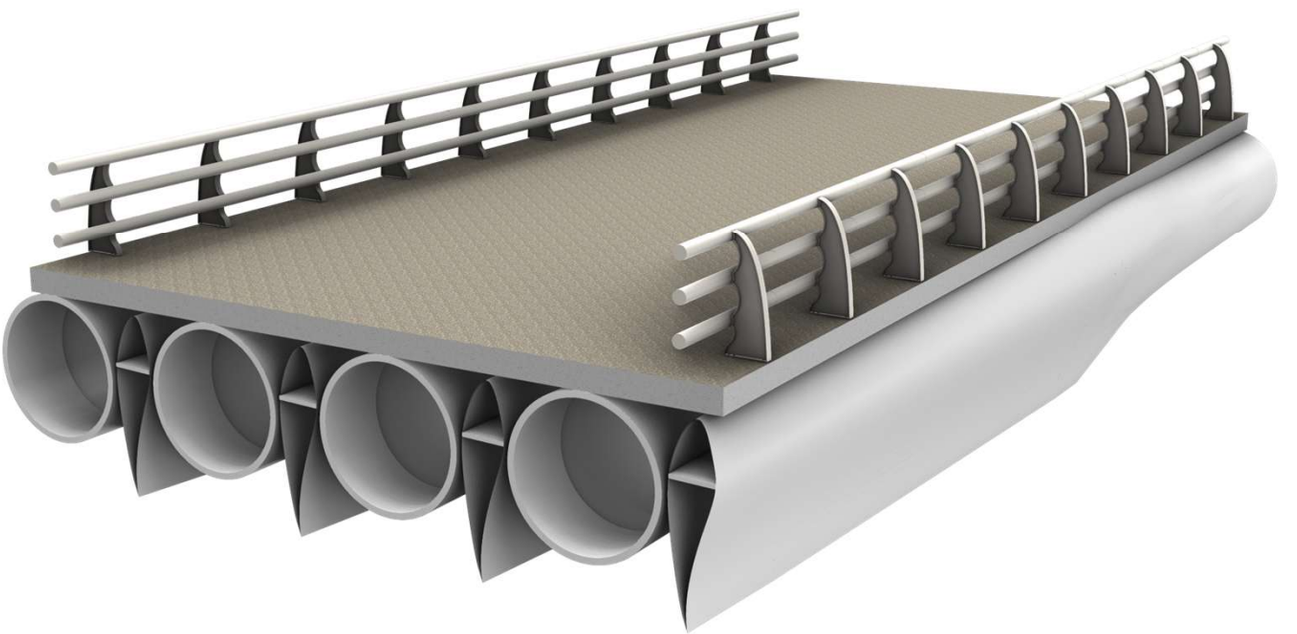
Multi-blade bridges (2)

Blades can also be stacked side-to-side to build a strong support structure below the deck. This also allows to build bridges of any width.





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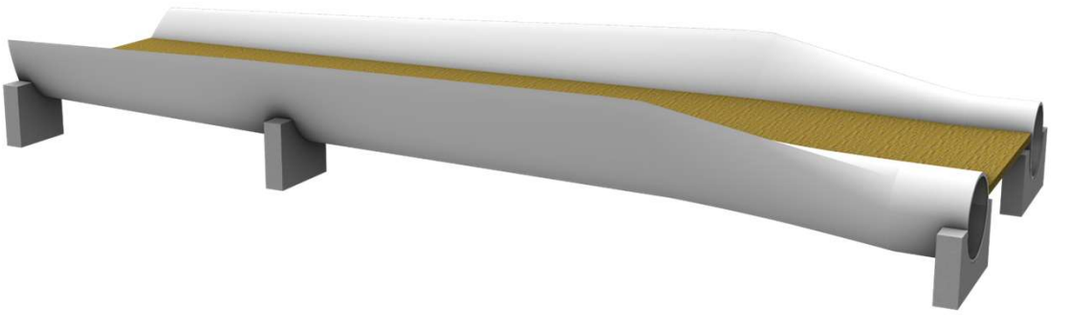
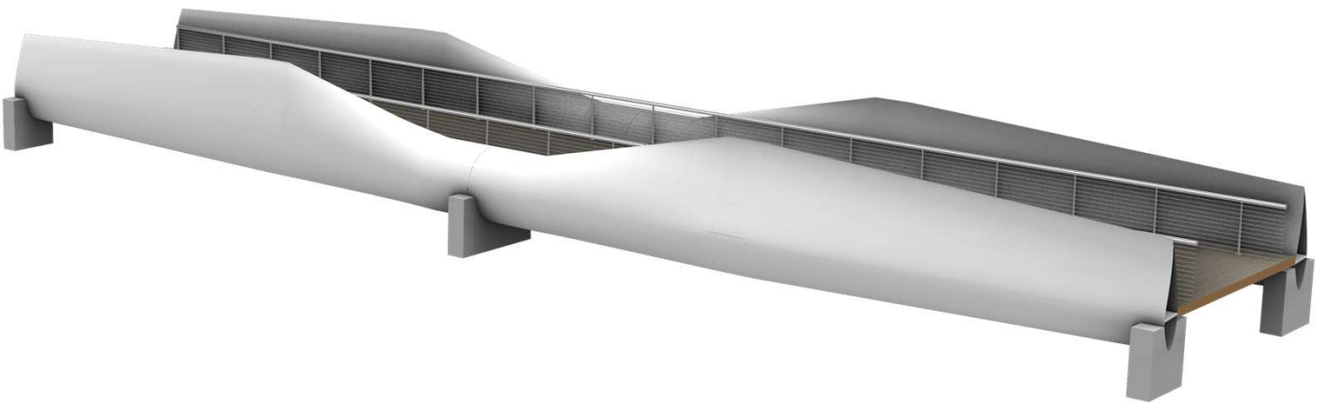
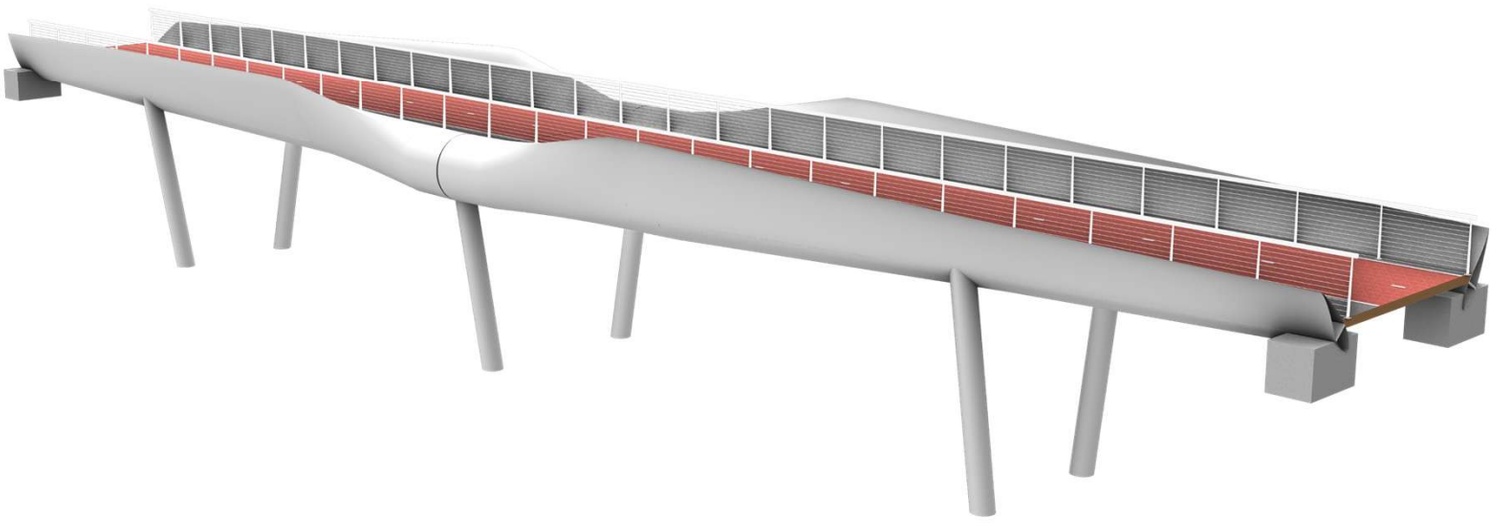
Multi-span bridges

Wind turbine blades are very well suited to create multi-span bridges because of their length. Having multiple spans can also work favourably for the bridge’s stiffness and loadbearing capacity.







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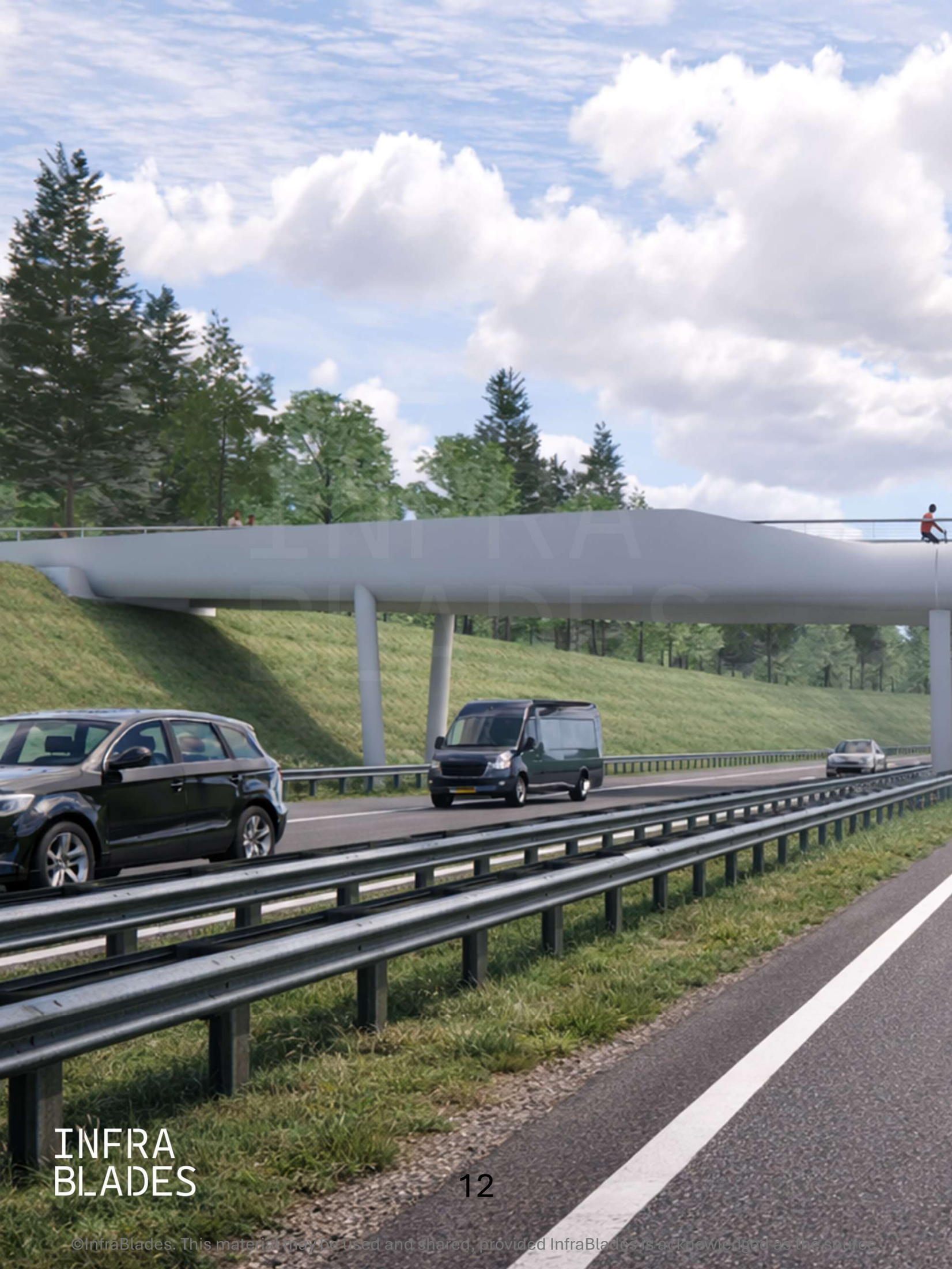

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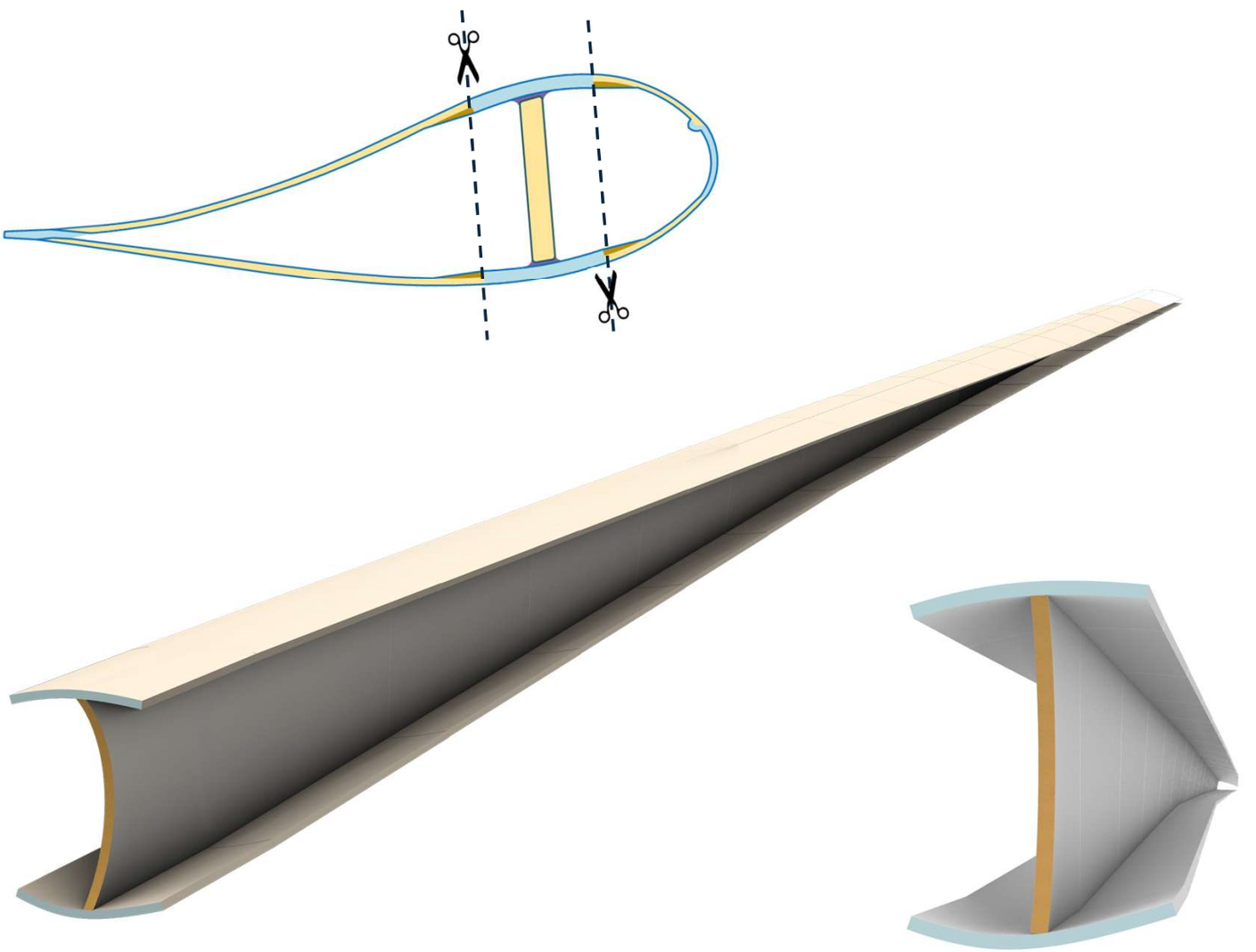
Beams cut from blades

An alternative design approach is to segment the blade longitudinally. For example, the *leading edge* and *trailing edge* of the blade can be cut off, leaving just an H-section or box section, depending on the internal geometry of the blade. In this way, a tapered, curved girder can be obtained.



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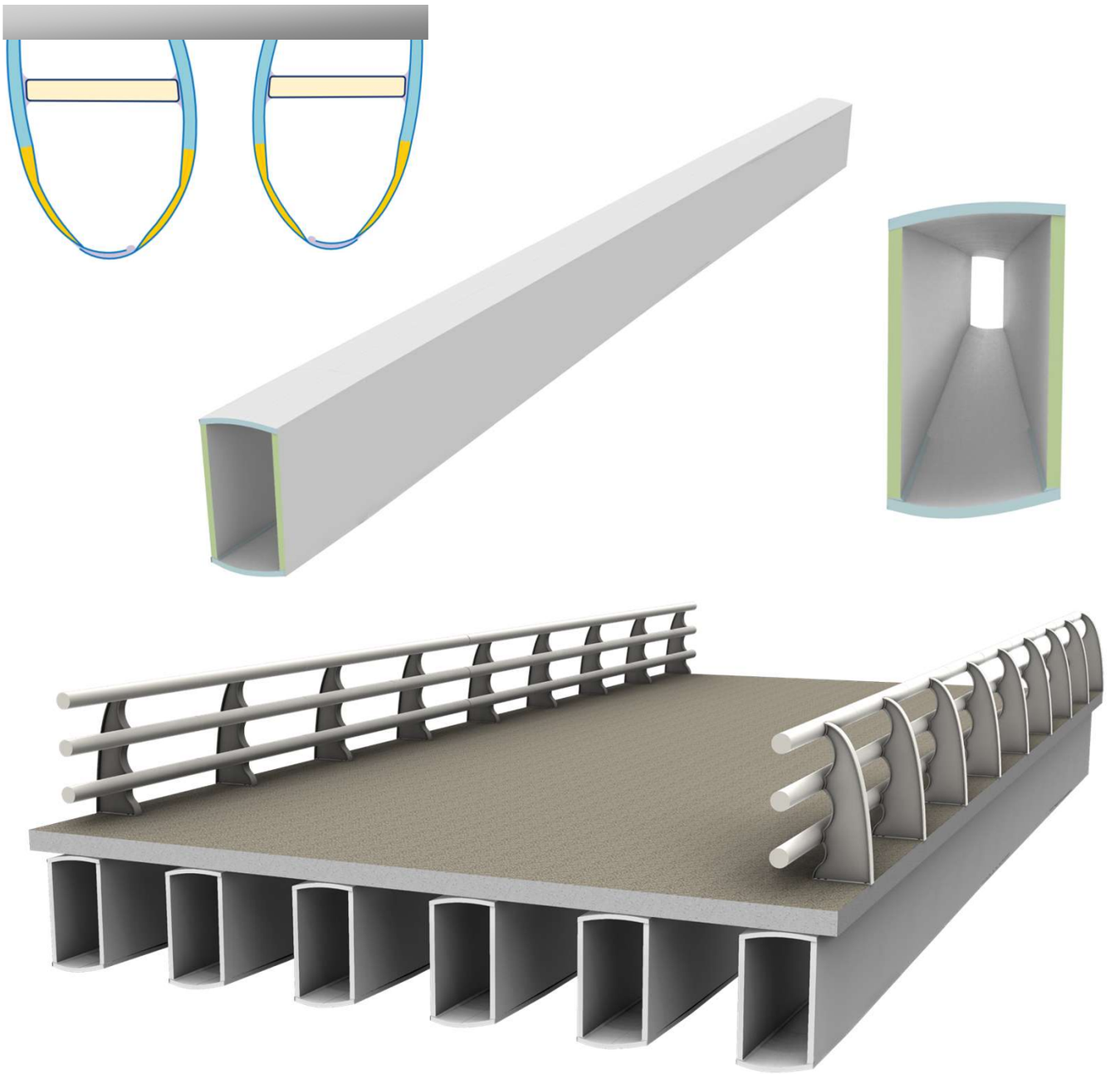
The sectioned blades can be used as is, but the *spar caps* can also be cut loose entirely, resulting in slightly twisted and tapered planks. These planks can be used to create new sections, like the box sections below made with new webs.



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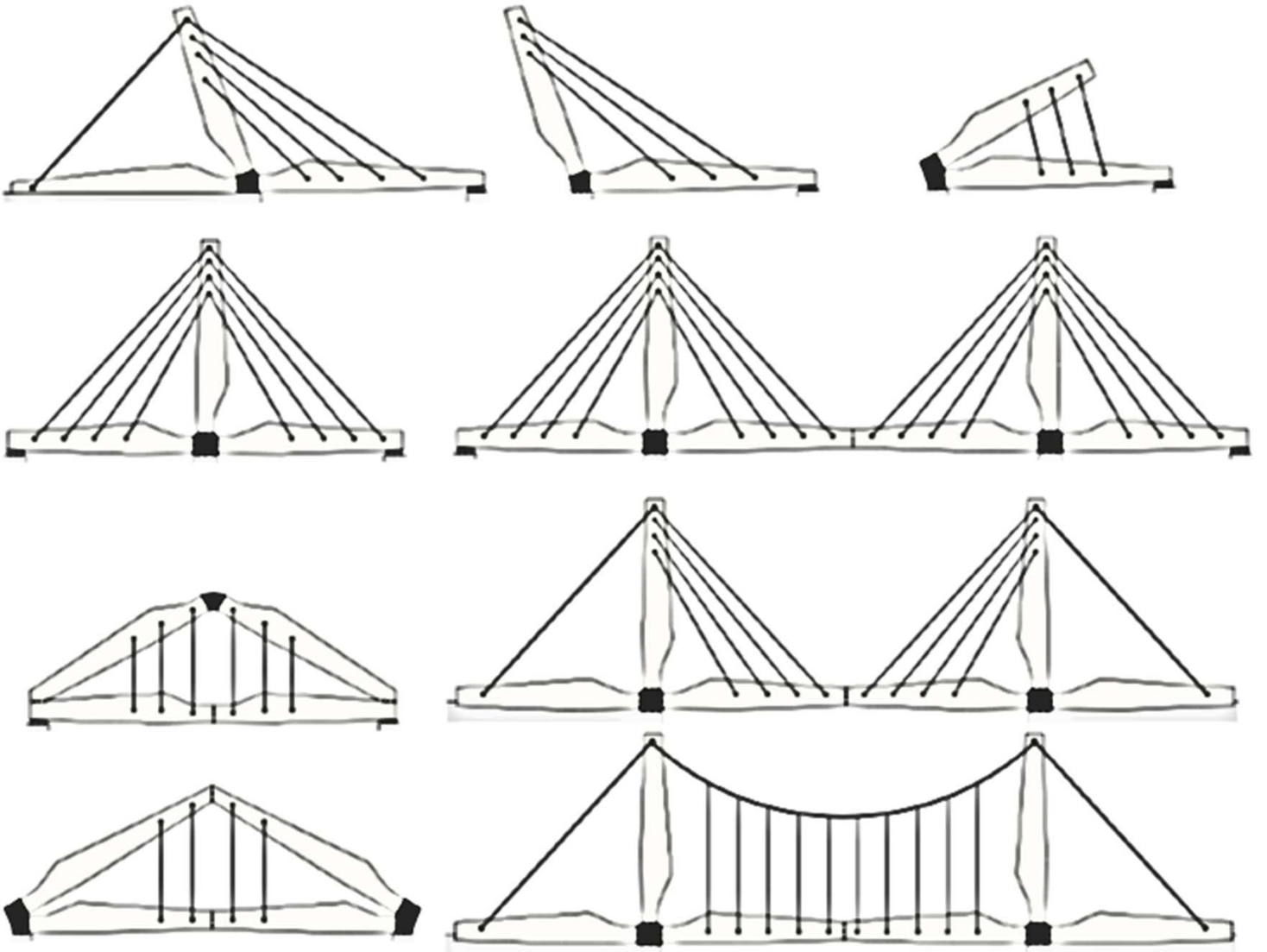
Cable-stayed bridges

Of course, many complex designs for *Bridges of blades* can be thought of, where the blades are not just used as girders to support the bridge deck, but are also used as columns or cantilevers to create cable-stayed bridges and suspension bridges.



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Other structural applications

InfraBlades has identified bridges as one of the most promising applications of used wind turbine blades, as bridges are also designed for long spans, large loads and use in an outer climate.

However, there are various other applications where blades can be used structurally, such as roof structures and sound and wind barriers.

More to come!

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Interesting related publications

Kloeg, B. (2024). Repurposing wind turbine blades as main structural elements in traffic bridges [Master Thesis at Delft University of Technology]. *https://resolver.tudelft.nl/uuid:0e03ee7d-0d18-485d-b828-3d9a73bb08a0*

Re-Wind (2022). Re-Wind Design Catalog 2nd Edition Fall/Autumn 2022. The Re-Wind Network. *https://www.re-wind.info/s/Re-Wind-Design-Catalog-Fall-2022-Nov-9-2022-low-res.pdf*

Mason, H. (2021). Anmet installs first recycled wind turbine blade-based pedestrian bridge. *https://compositesworld.com/news/anmet-installs-first-recycled-wind-turbine-blade-based-pedestrian-bridge*

Speksnijder, S. (2018). Reuse of wind turbine blades in a slow traffic bridge [Master Thesis at Delft University of Technology] *https://resolver.tudelft.nl/uuid:5af53410-1be0-43e0-9a6d-2e438b1865f9*

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