

School complex Ort, Au-Wädenswil

2025



The design and atmosphere of this elementary school's expansion are defined by the use of wood: an innovative structural system featuring Vierendeel trusses spans the triple-purpose sports hall, creating open, versatile classrooms above it.

The project

A complex structural system has been constructed in the Au district of Wädenswil: In the new extension to the Ort Primary School, the use of wood has created both structural and aesthetic highlights. In collaboration with the architectural office horisberger wagen architekten gmbh, Zurich, a structural system featuring Vierendeel trusses was developed. Five floor-to-ceiling beams span the triple-purpose sports hall while simultaneously defining the spatial structure of the floor above, which is used for classroom instruction. The use of wooden Vierendeel trusses demonstrates how high structural requirements can be consistently met in timber construction.

The construction method

The triple-purpose gymnasium is spanned by a raised beam system with a 28-meter span, whose deliberate pre-curvature levels out under the ceiling's own weight. The roof load is transferred via 38-meter-span wooden Vierendeel trusses with upper and lower chords, as well as CLT shear panels. The force flow is ensured by specially developed wood-to-wood connections using shear cams.

The challenge

The biggest challenge lay in the design of the Vierendeel trusses in the timber structure: long spans, complex shear and tensile forces, and the combination of glulam and CLT had to be addressed with precision. Curved trusses, shear cams, and rigid joints were key factors in the project's success.



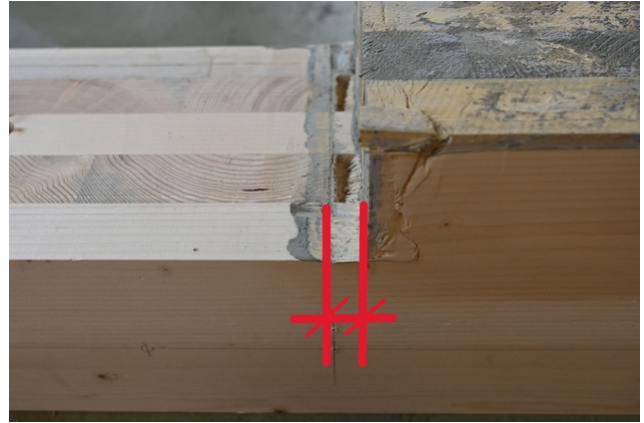
Interior view of the gymnasium during the shell construction phase



Milled pockets for accommodating the shear cams of the Vierendeel truss



Timber Frame Erecting: The floor plan is being erected above the gym



Ductile behavior of the CLT shear cam on the test specimen (during tests at ETH Zurich)

Construction Data

- Bar-shaped products: 858 m³
- Plate-shaped products: 6095 m²

Construction costs

- Total project cost: CHF 23 million
- BKP214: CHF 4 million

Services of Timbatec

- SIA Phase 31 Preliminary Design
- SIA Phase 32 Construction Project
- SIA Phase 41 Tendering and Bid Comparison
- SIA Phase 51 Construction design
- SIA Phase 52 Construction
- SIA Phase 53 Commissioning
- Specialized fire protection planning
- Fire Protection Quality Assurance QSS2
- Structural engineering and construction

Building owner

Stadt Wädenswil
8820 Wädenswil

Architect

horisberger wagen architekten gmbh
8045 Zürich

Client

horisberger wagen architekten gmbh
8045 Zürich

Timber construction

Egli Zimmerei AG
9621 Oberhelfenschwil

Civil engineer

Büeler Fischli Bauingenieure AG
8006 Zürich

General planner

ARGE horisberger wagen architekten gmbh, Zürich
sonderegger baurealisation ag, Rüti