

TIMBER BRIDGES – ADVANCING SUSTAINABLE STRUCTURAL DESIGN

Dag van de Constructeur 2026

INGENIEURBÜRO MIEBACH



Founded in 2005 by Frank Miebach, a graduate engineer (FH), Miebach Engineering specialises primarily in the design of timber bridges and timber structures using protected construction methods.

Working with this natural material is particularly important to us. We have set ourselves the goal of transforming the traditional building material of timber, in combination with other materials, into a contemporary form of expression. We see ourselves as a link between clients and contractors.

In addition to planning bridge and structural designs, we are involved in the executive committee of the Qualitätsgemeinschaft Holzbrückenbau e.V. (Quality Association for Timber Bridge Construction) to further establish durable, high-quality timber bridges.

We also participate in the DIN standards committee for EN 1995-2 on timber bridges.

Founded	April 2005
Owner	Frank Miebach, BEng (FH)
Staff	10 engineers

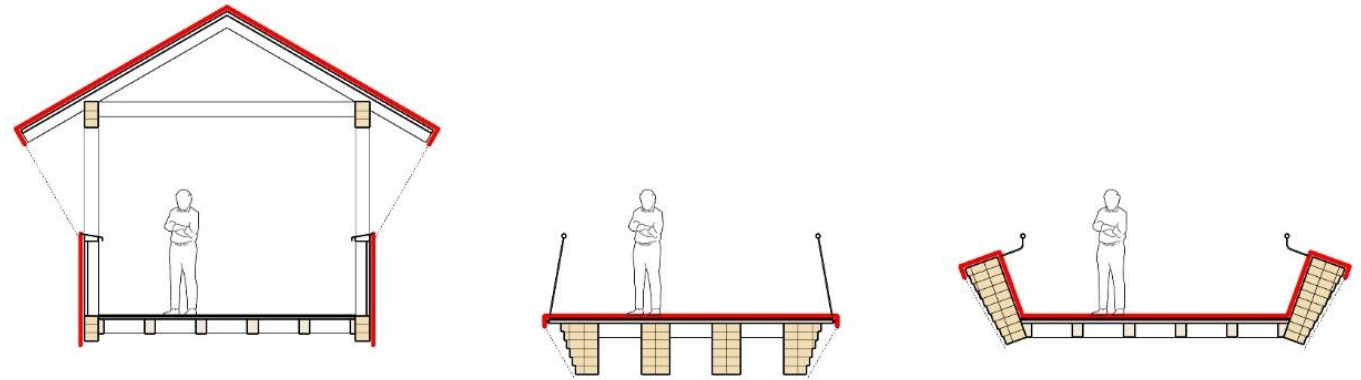
Key areas of expertise Design of timber structures and timber bridges in Central Europe; Board member of the Quality Association for Timber Bridges; Member of the DIN Standards Committee for Eurocode 5, Part 2 – Timber Bridges



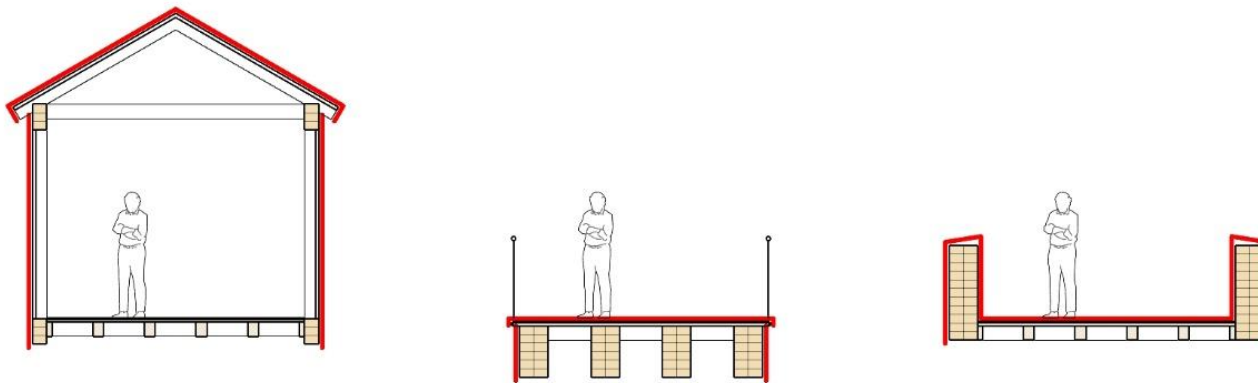




Truss Bridge Forbach, DE – built in 1778, 1954 refurbished



Protected Timber Bridges redeveloped



Protected Timber Bridges according to EC1995-2



Bridge Wernau from 1989, DE



DESIGN PHILOSOPHY - GLULAM



SHAPING BRIDGES



PEDESTRIAN CROSSING AALSMEER

with
WURCK Architects and Sweco

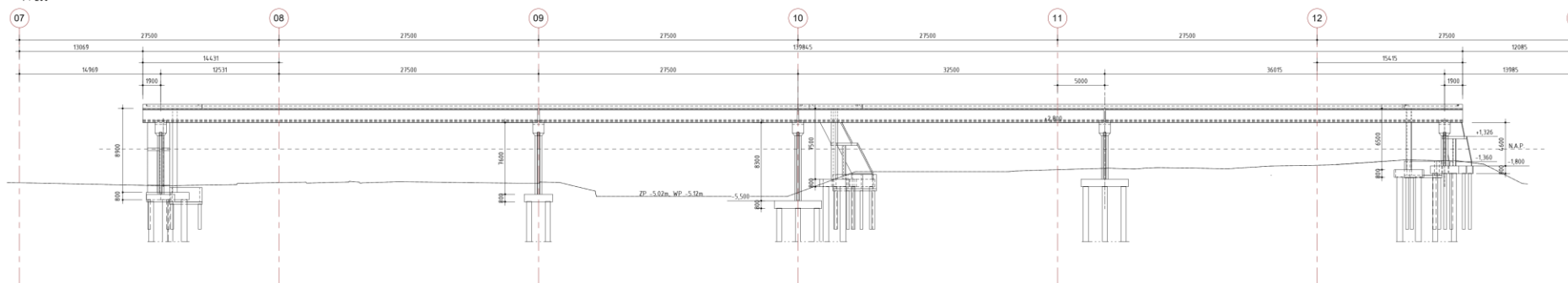
PEDESTRIAN CROSSING ALSMEER



PEDESTRIAN CROSSING ALSMEER

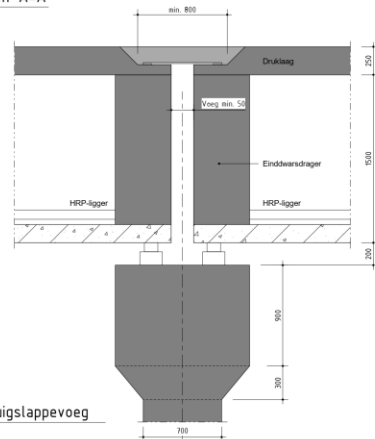
Dekniveau voetgangersbrug

1 : 200



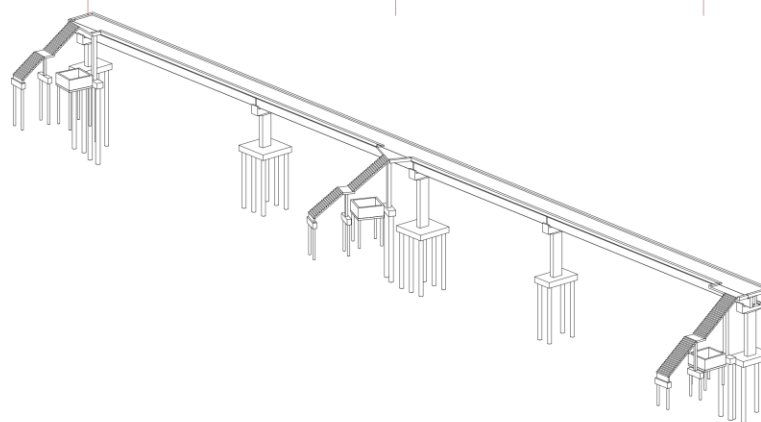
Aanzicht A-A

1 : 200

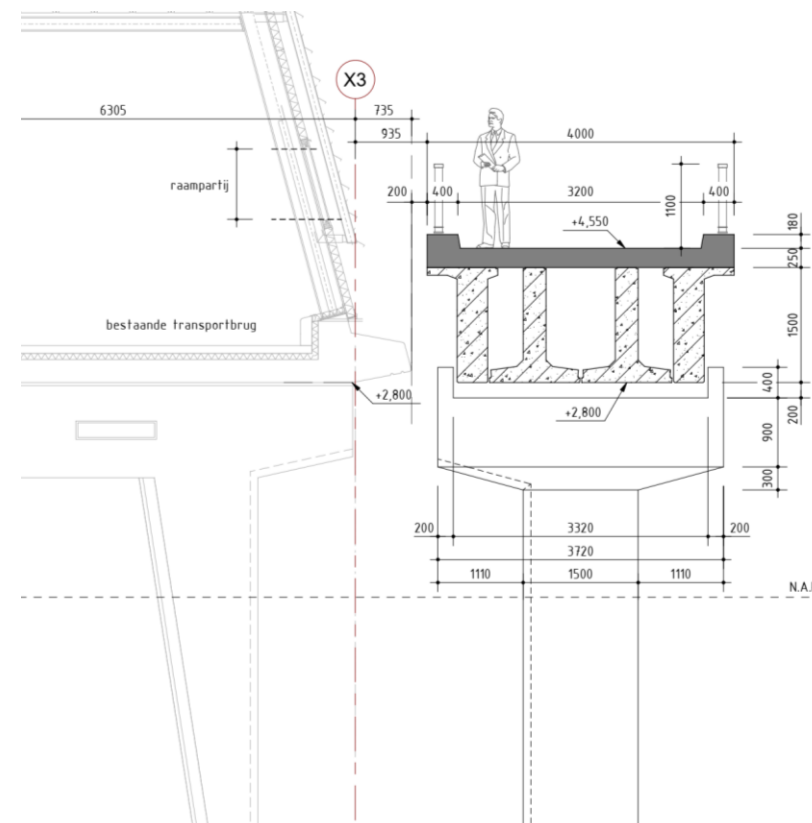


Detail buigslappevoeg

1 : 20

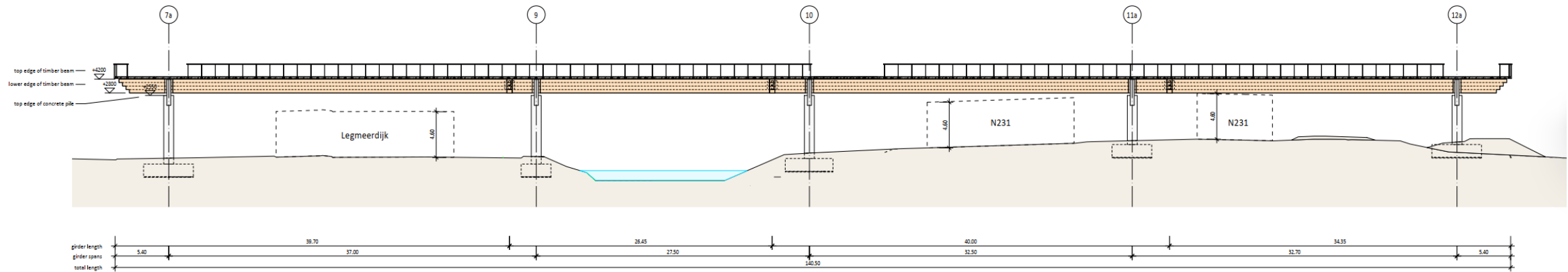


Isometrische view

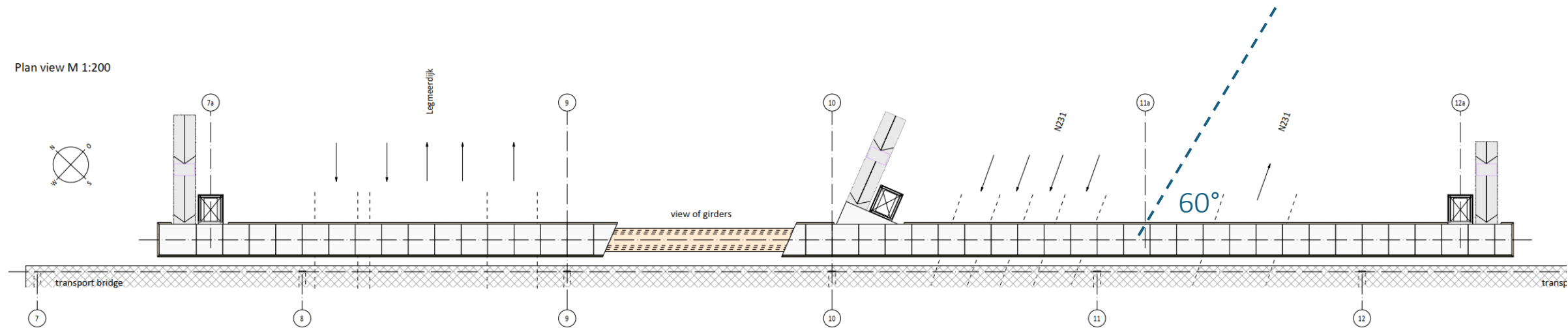


PEDESTRIAN CROSSING ALSMEER

Longitudinal section M 1:200

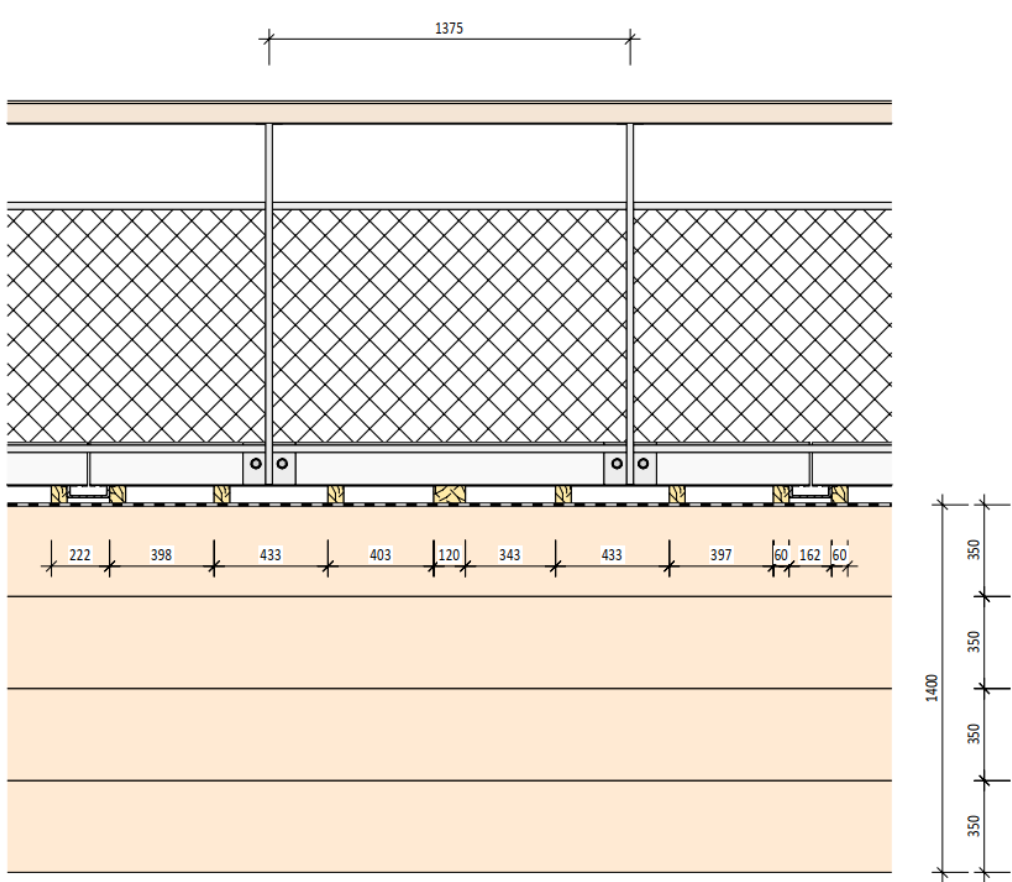


Plan view M 1:200

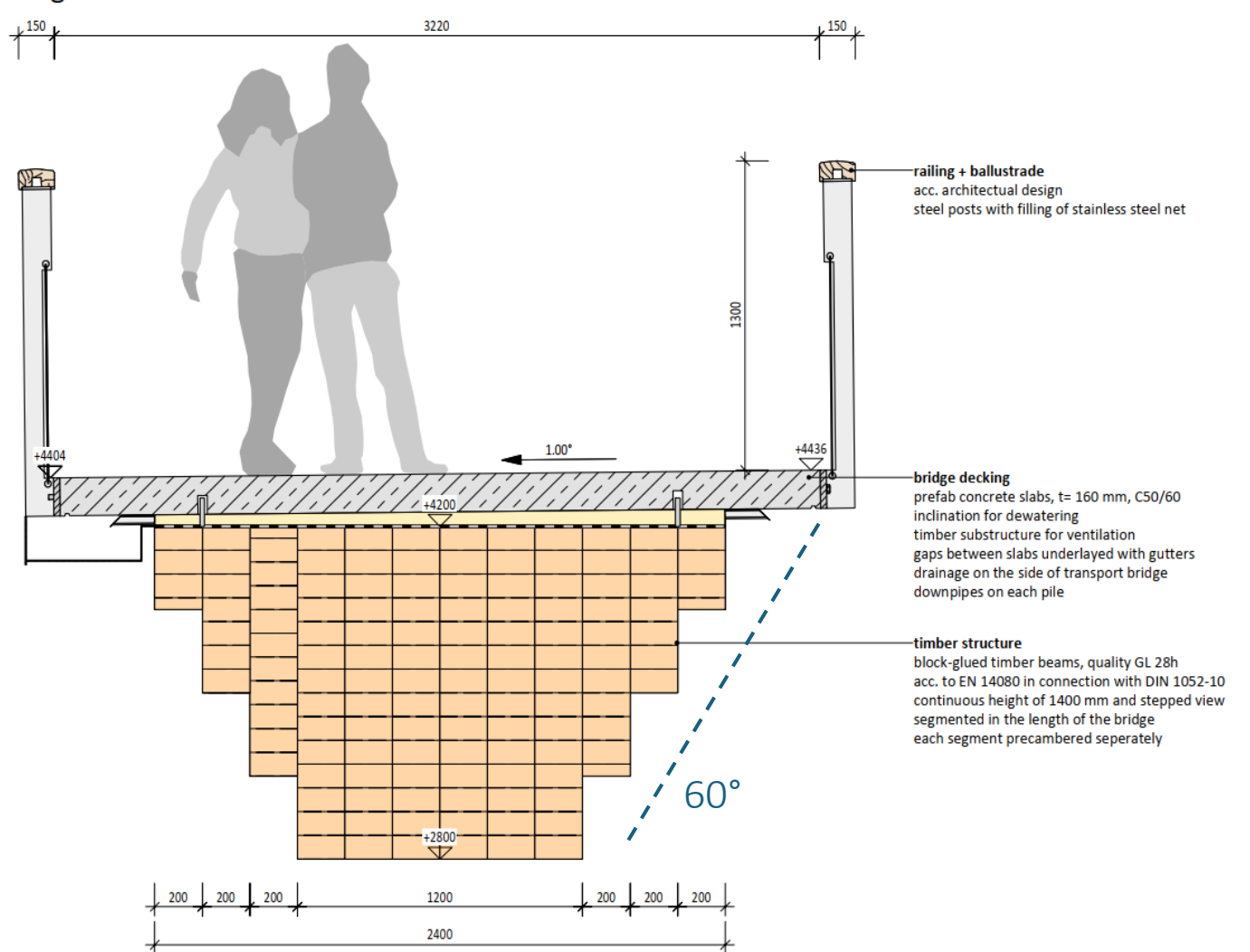


PEDESTRIAN CROSSING ALSMEER

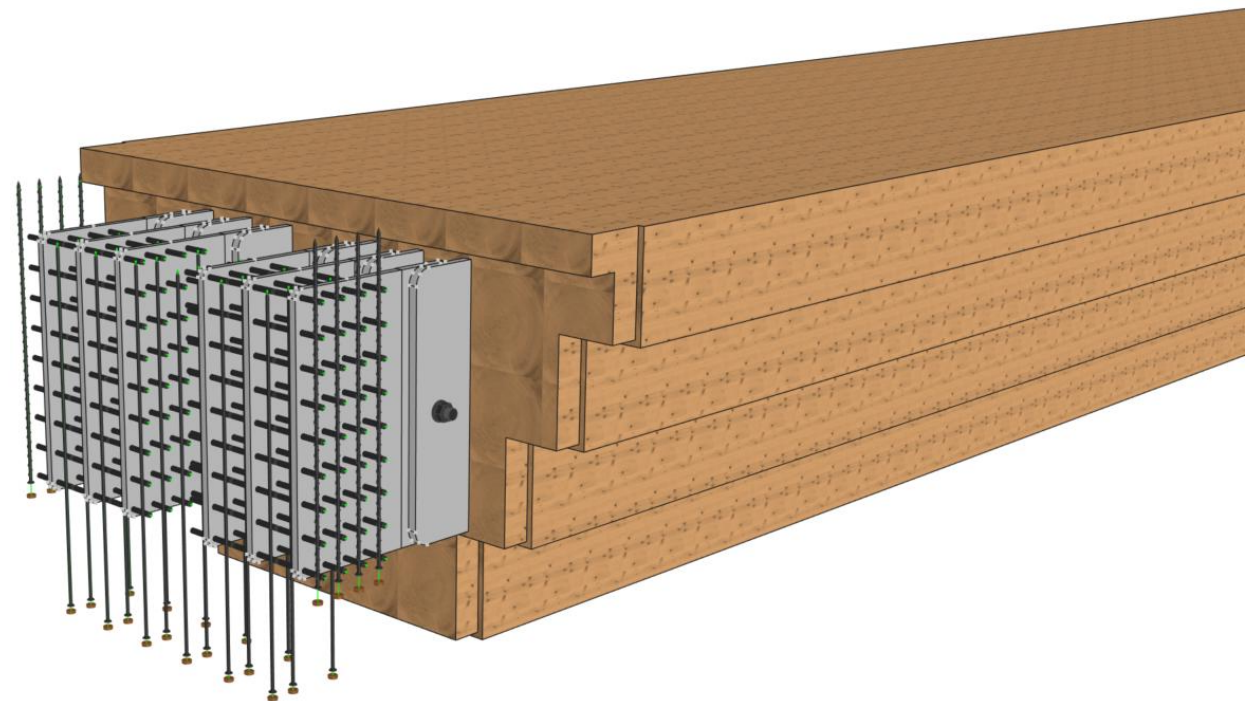
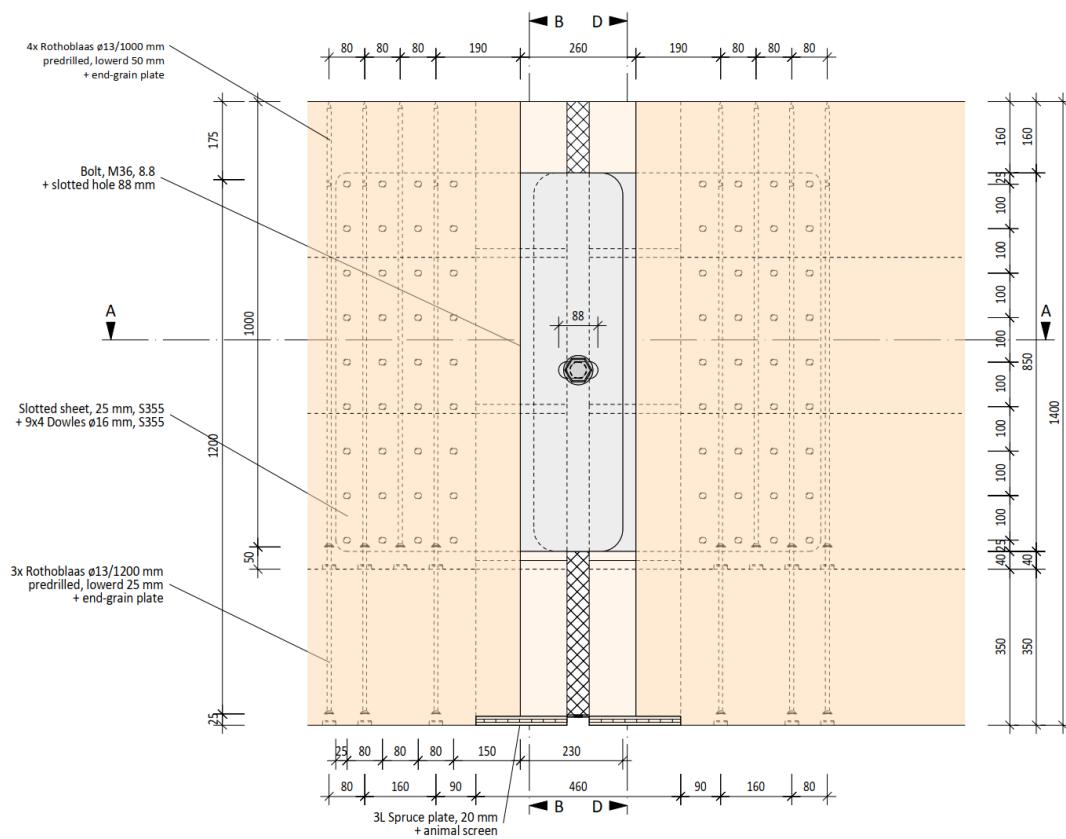
Regular longitudinal-section M 1:20



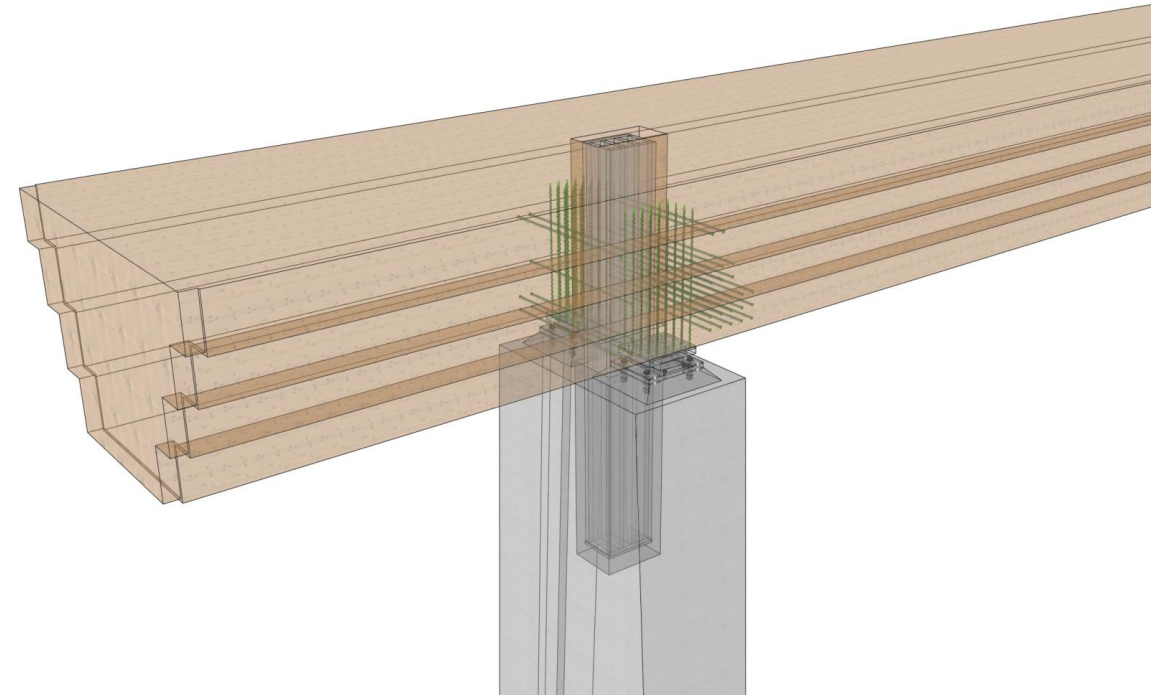
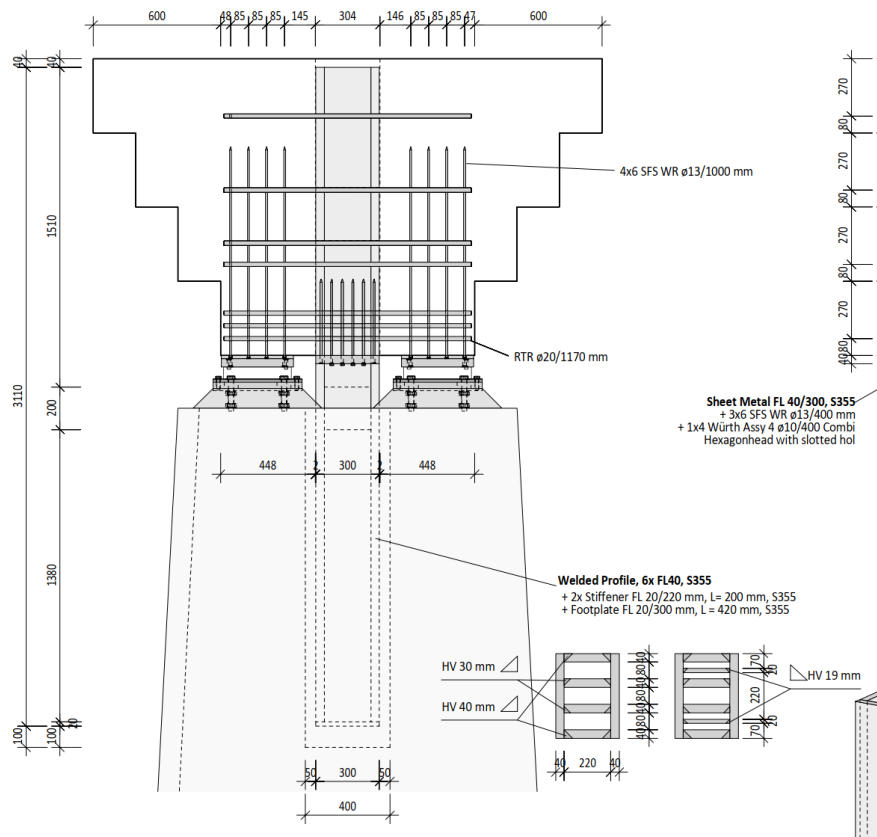
Regular cross-section M 1:20



PEDESTRIAN CROSSING ALSMEER



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PASSERELLE ZWOLLE

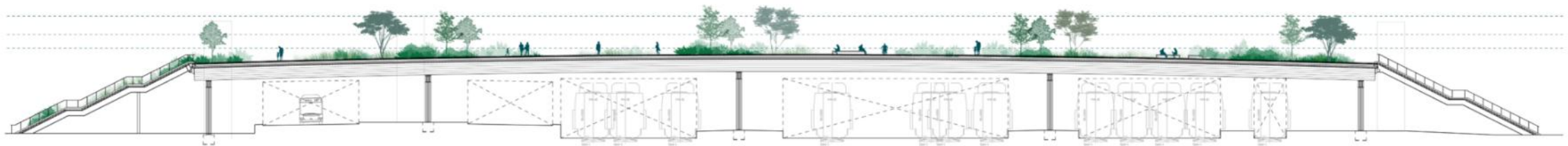
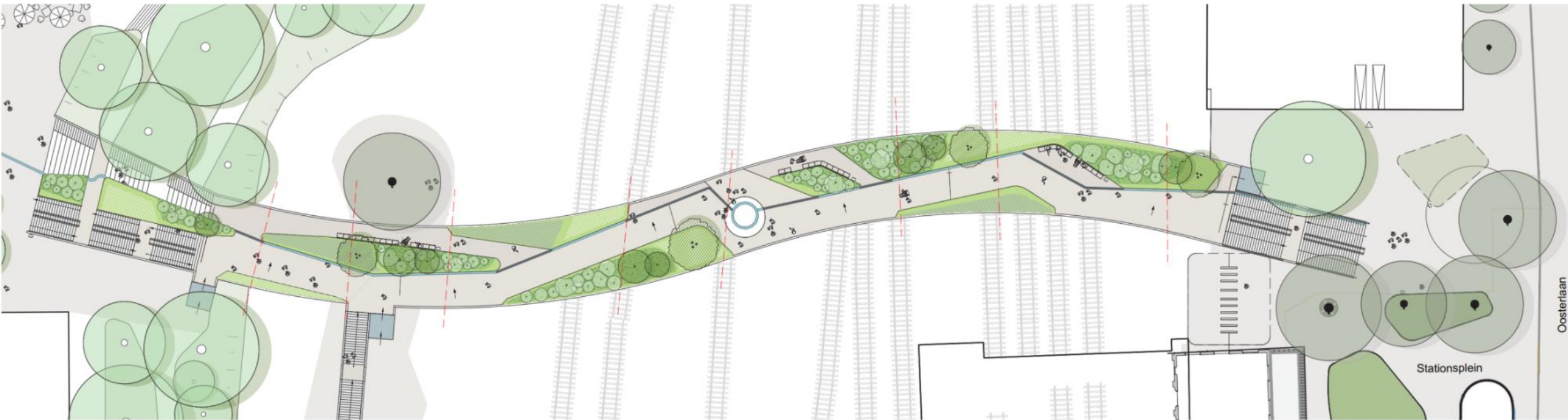
with

Karres en Brands & IPV Delft & Pontico

PASSERELLE ZWOLLE - AN ELEVATED STREET



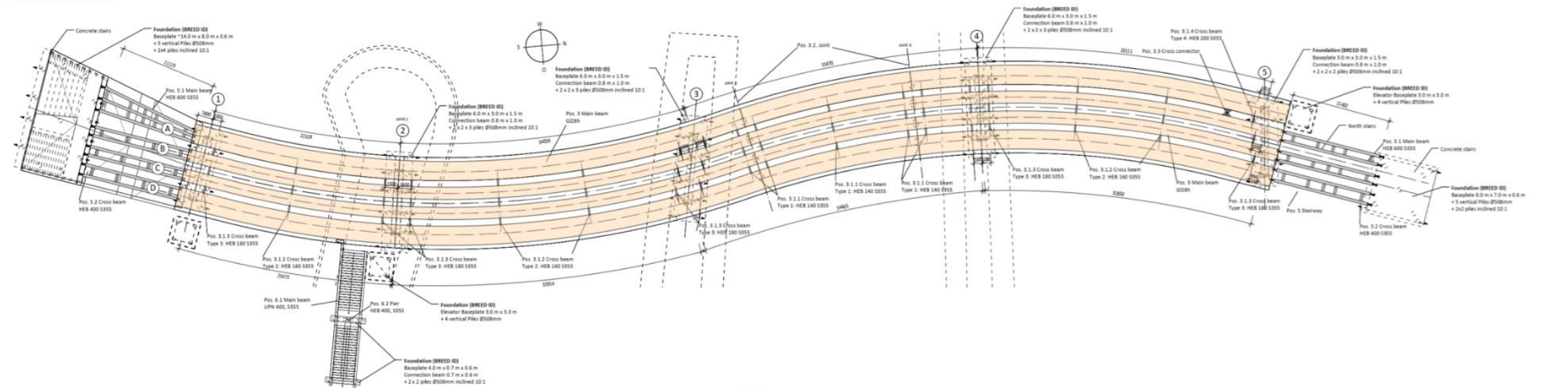
PASSERELLE ZWOLLE - AN ELEVATED STREET



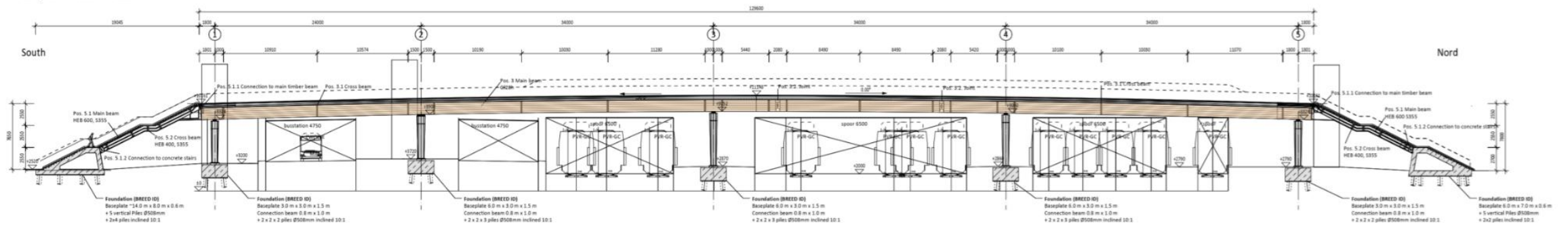
PASSERELLE ZWOLLE - AN ELEVATED STREET

Ground view S 1:200

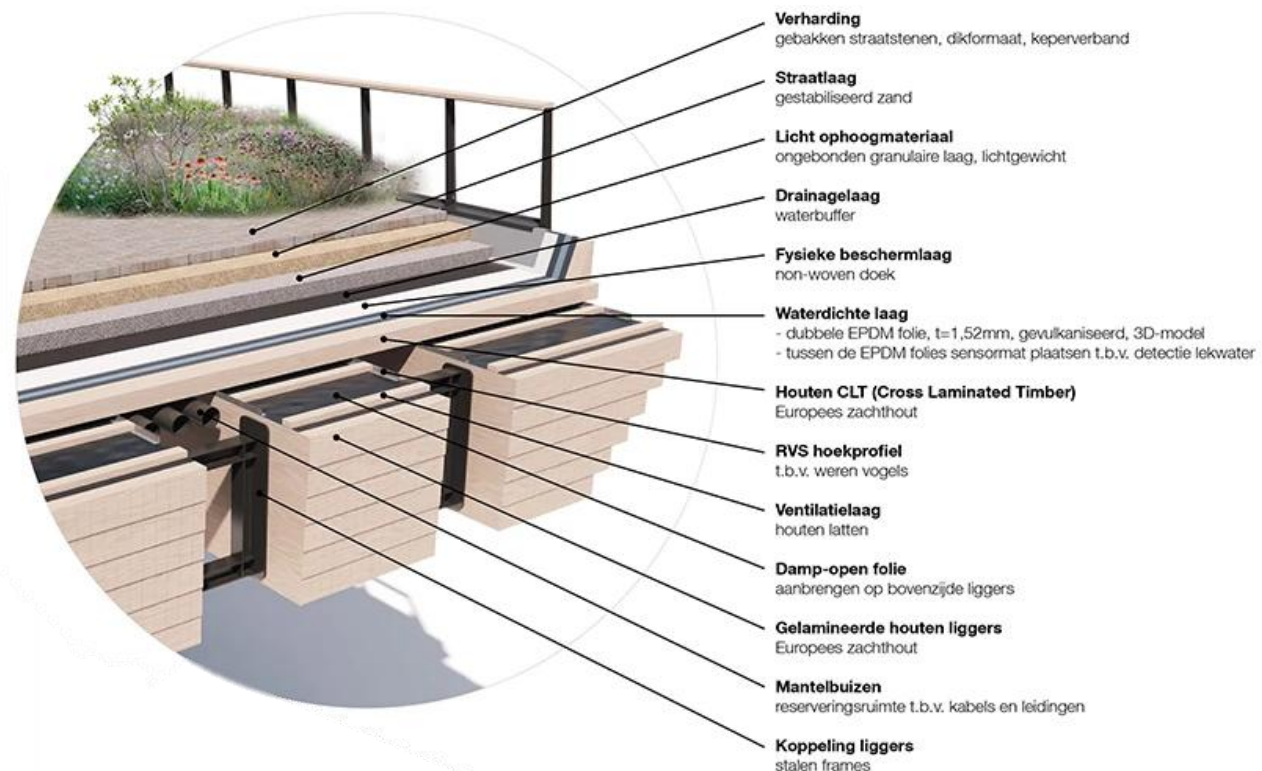
Position overview and foundations



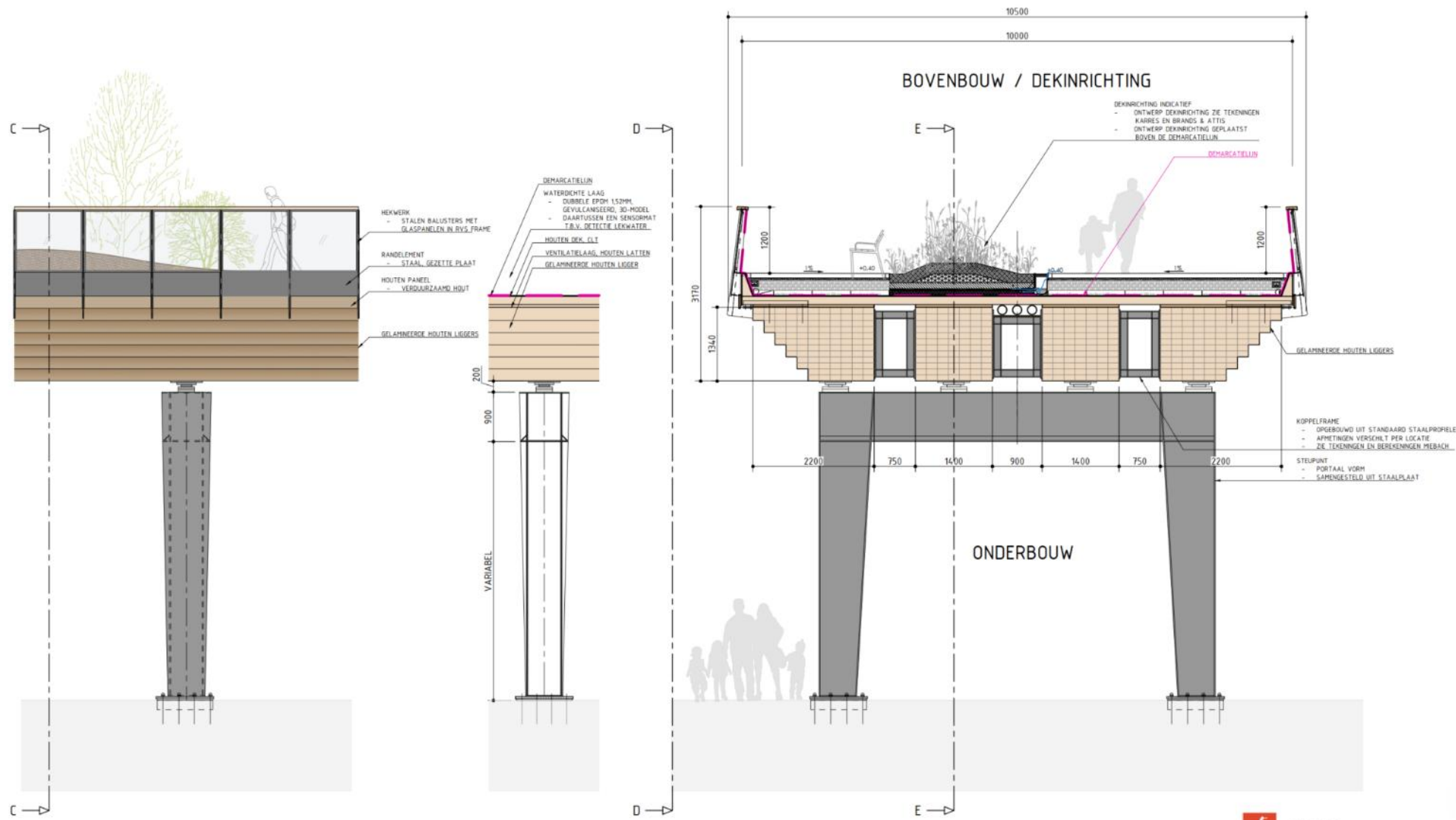
Longitudinal section S 1:200



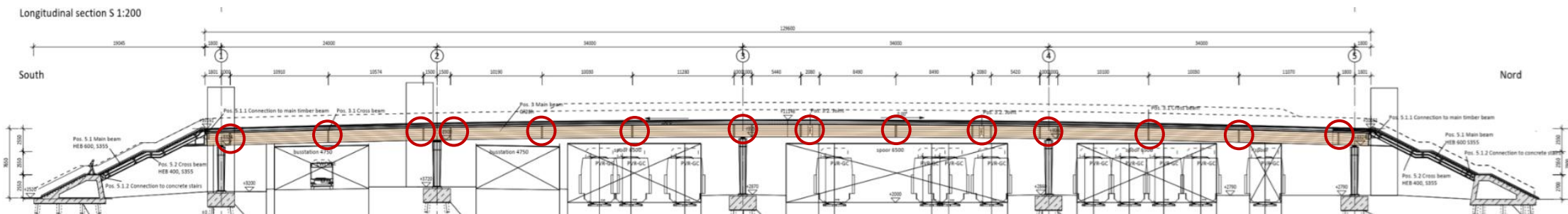
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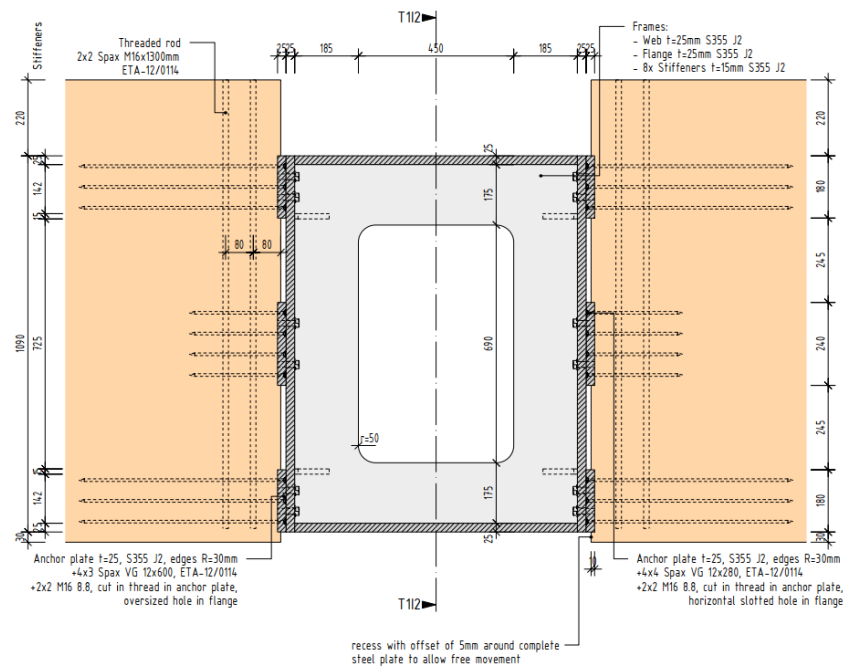


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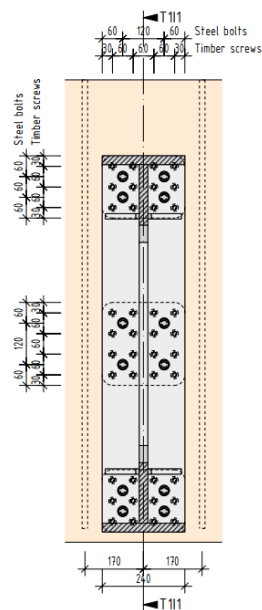


Detail Cross beam type 1 in S 1:10

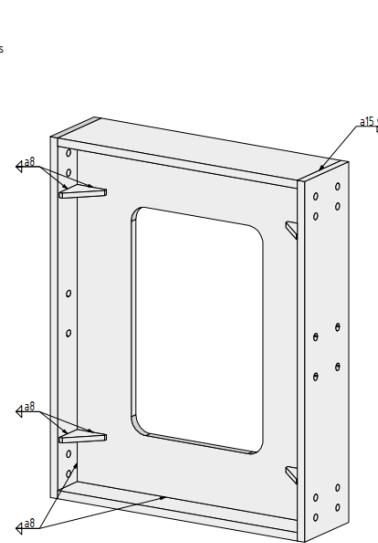
Section T111-T111



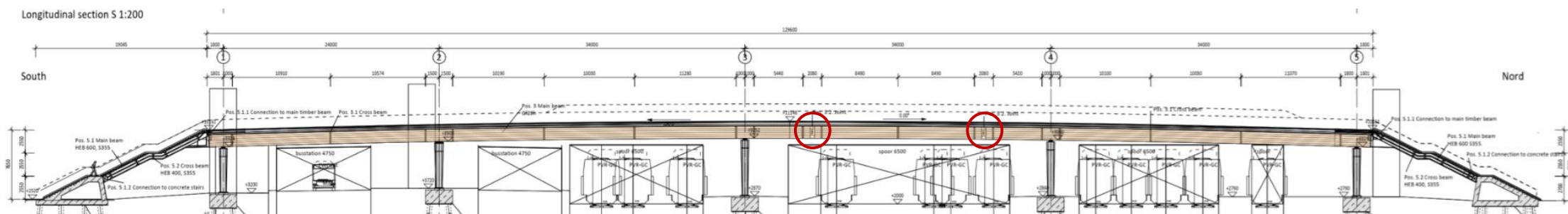
Section T112-T112



Isometry

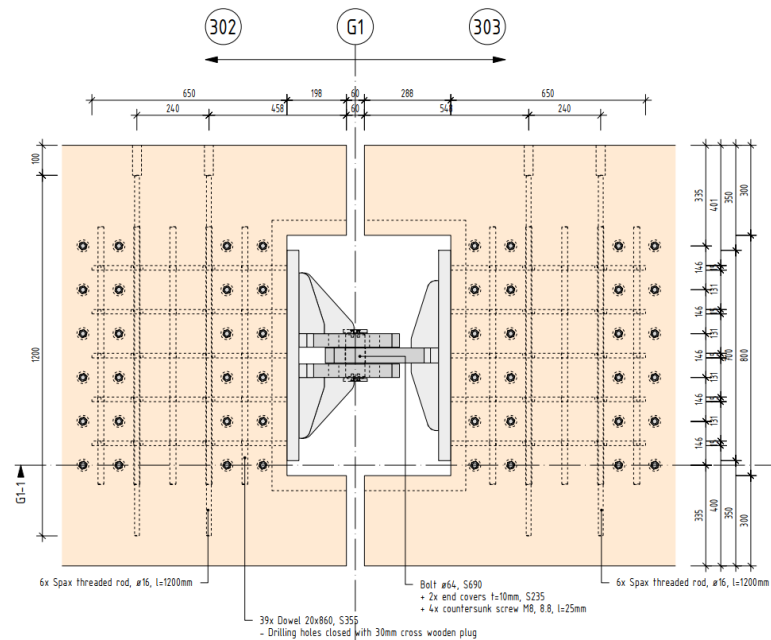


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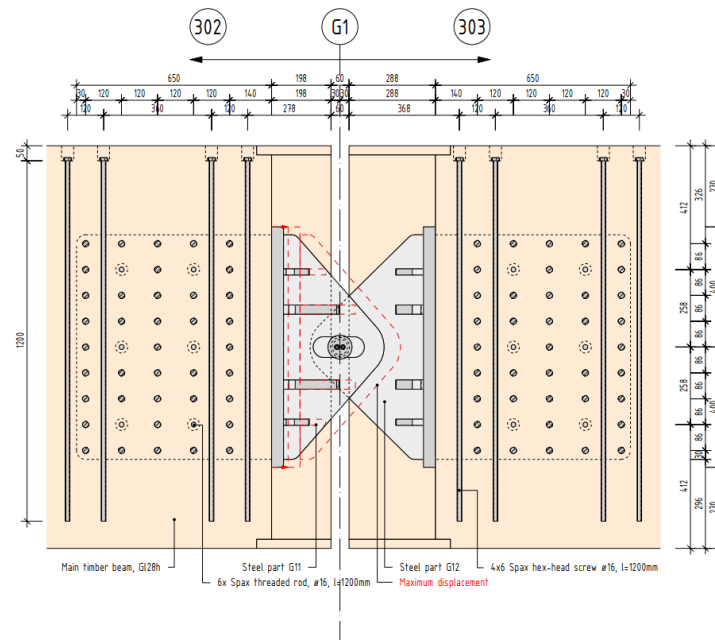


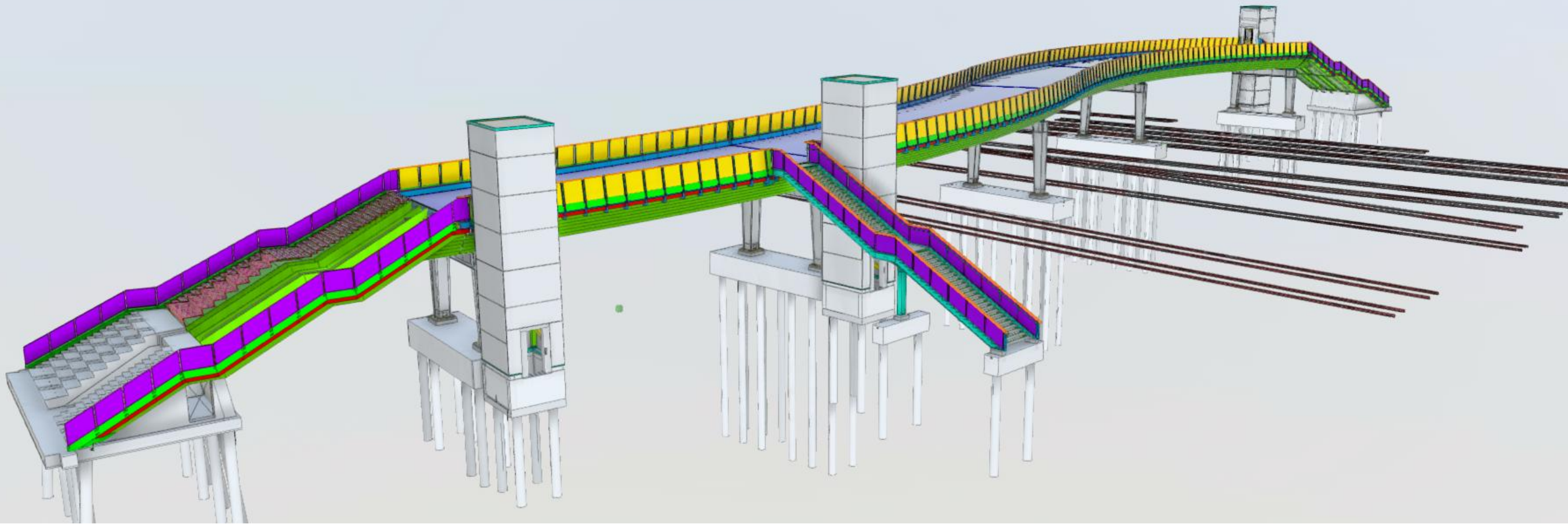
Gerber joint G1

Top view - Timber position (fire protection not shown) S1:10



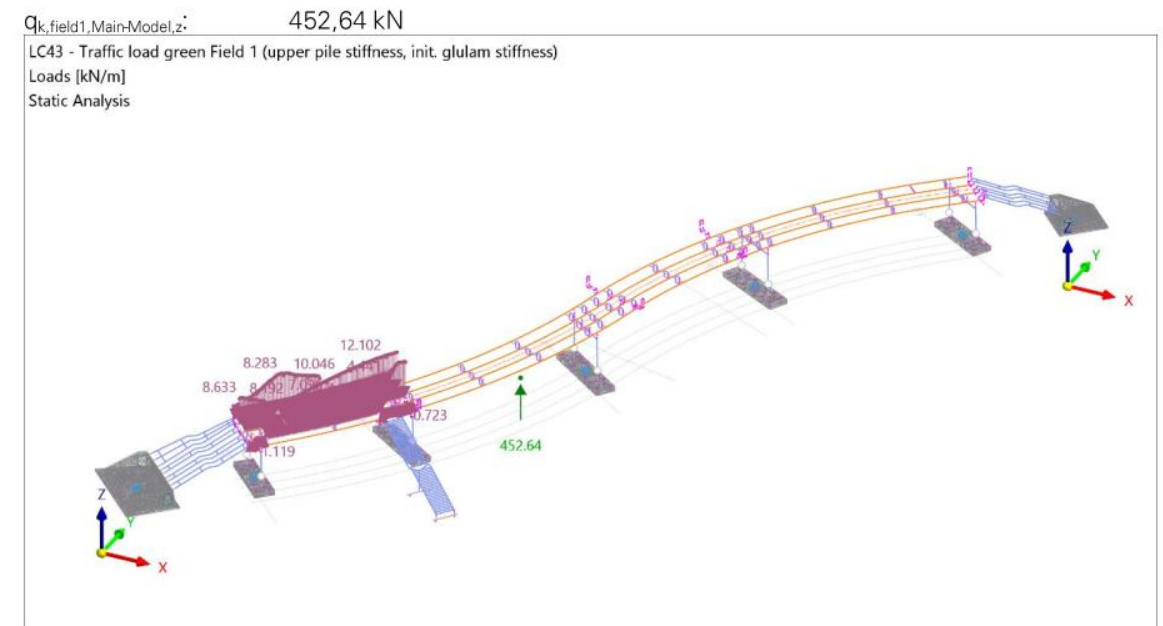
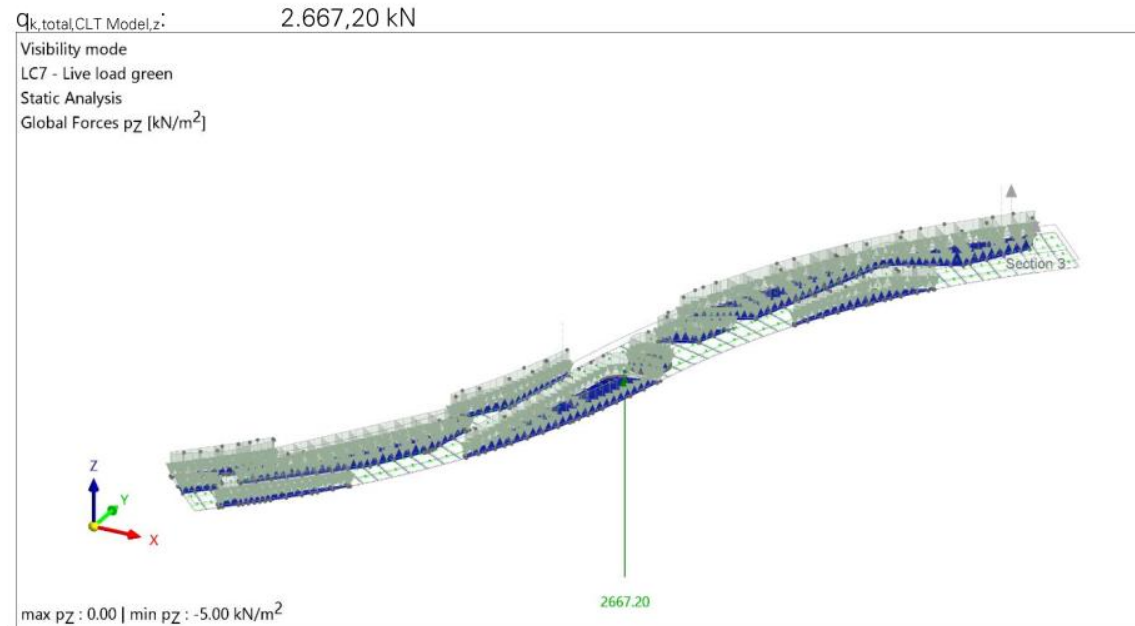
Side view G1-1 - Timber position (fire protection not shown) S1:10





PASSERELLE ZWOLLE - AN ELEVATED STREET

Comparison CLT-Model/Main-model, traffic loads on green area:

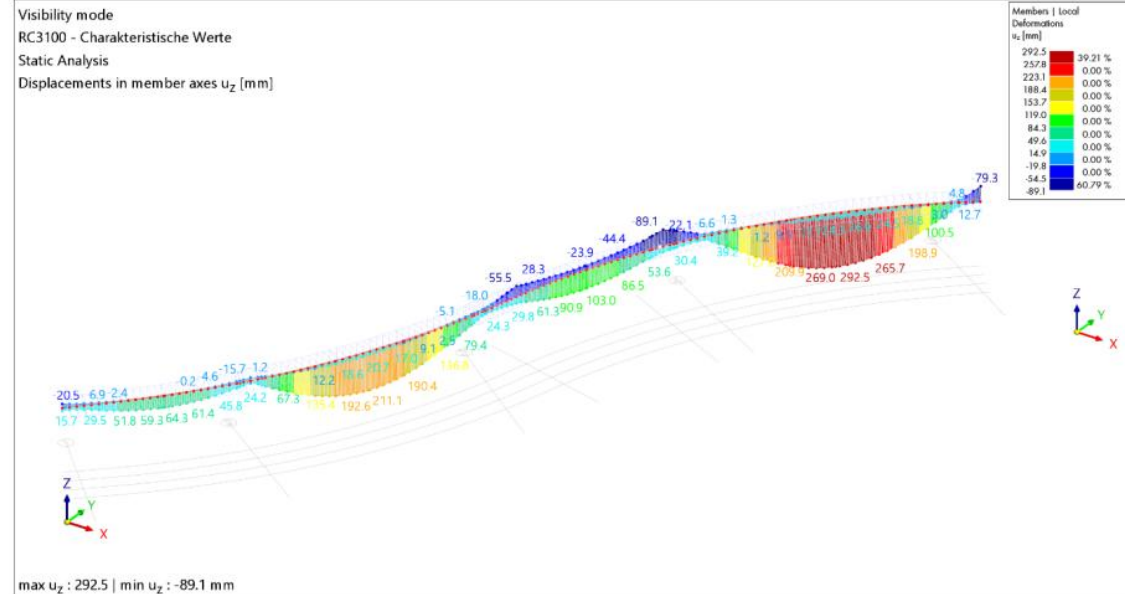


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Pos. 3.6 Deflection

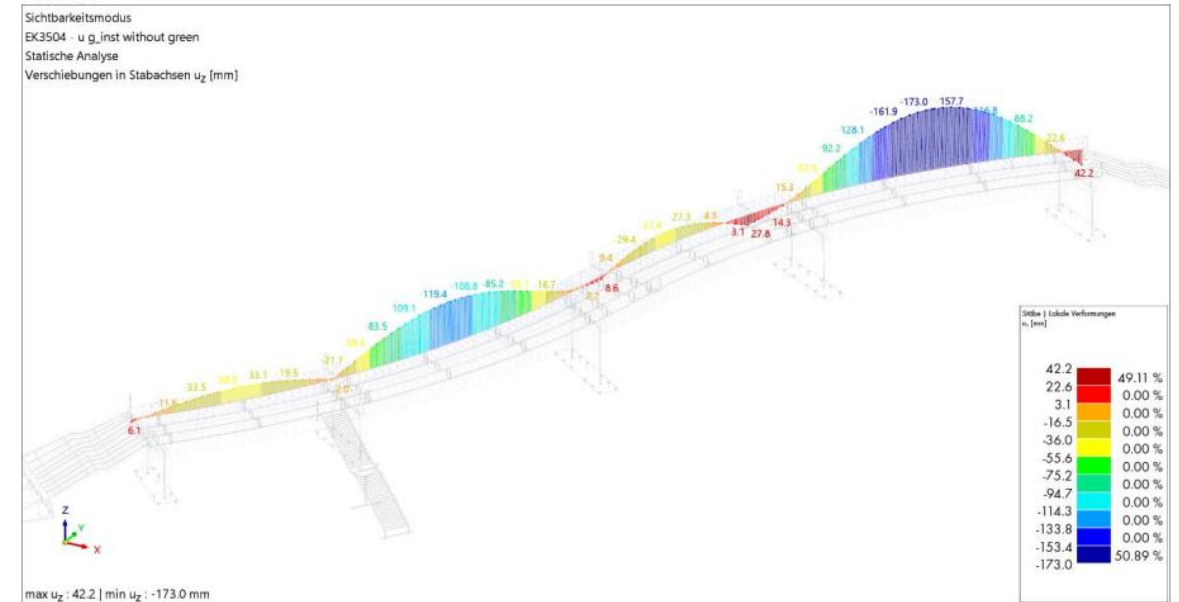
The deflection of the characteristic combinations including creeping effects were transferred to the CAD model to check the safety distances to the powerlines and other regulations.

Axis a



The deflection after mounting phase of D+V (Precamber + initial deflection due to dead load without substrate/plants/pavement).

Axis a:



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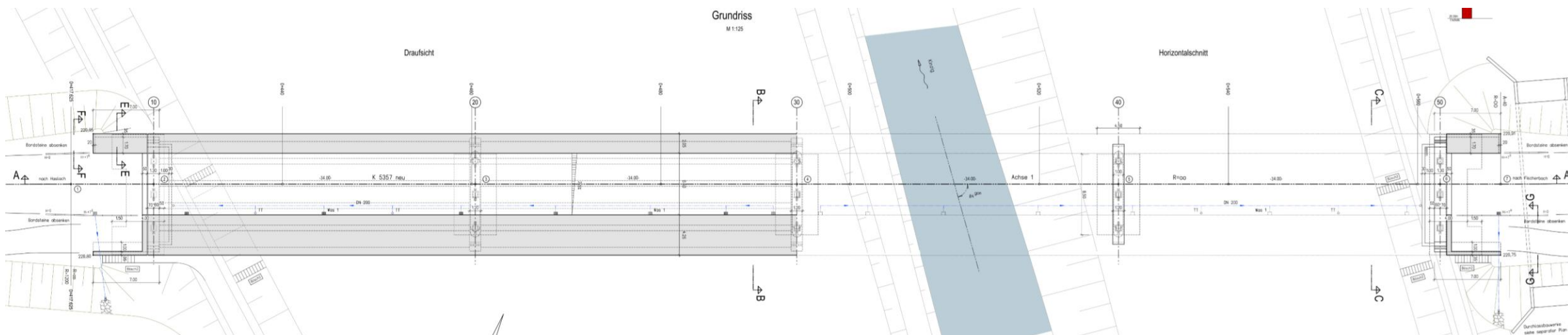
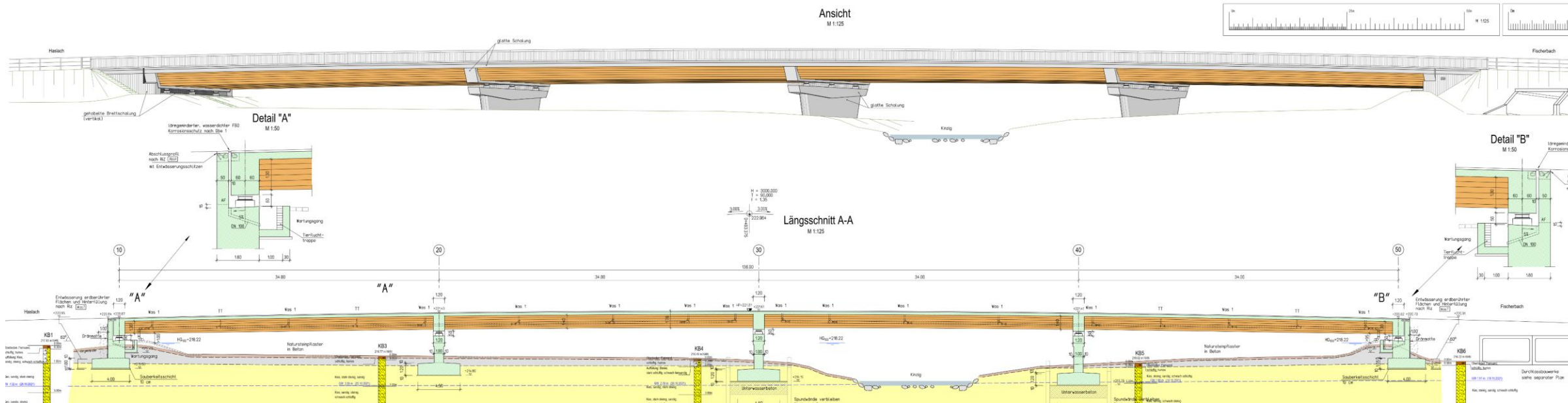
PASSERELLE ZWOLLE - AN ELEVATED STREET



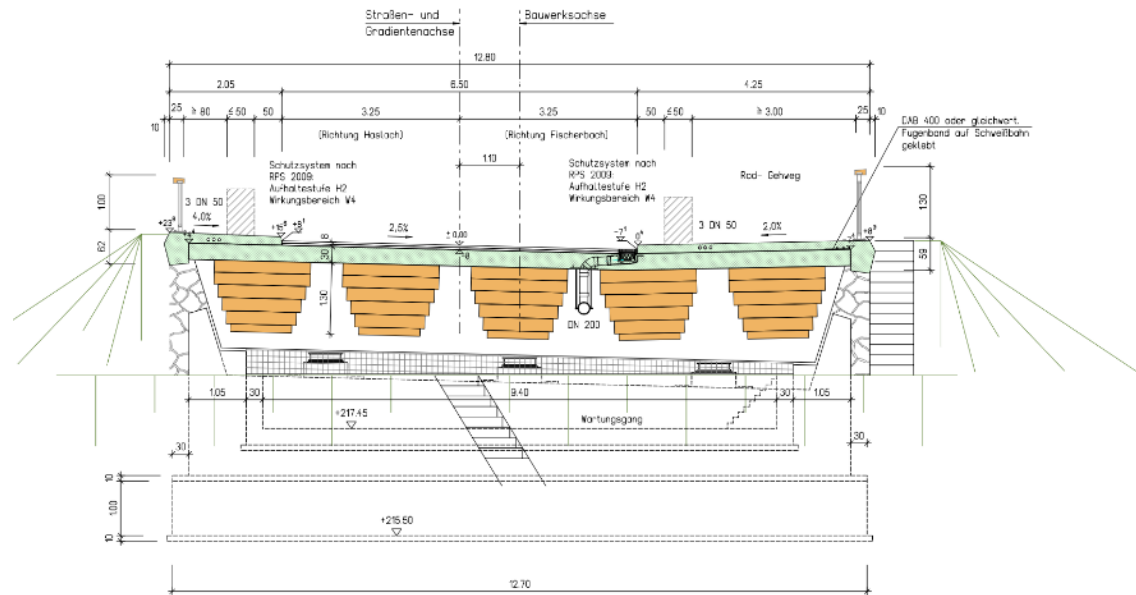
TCC BRIDGE HASLACH

with
RS Ingenieure

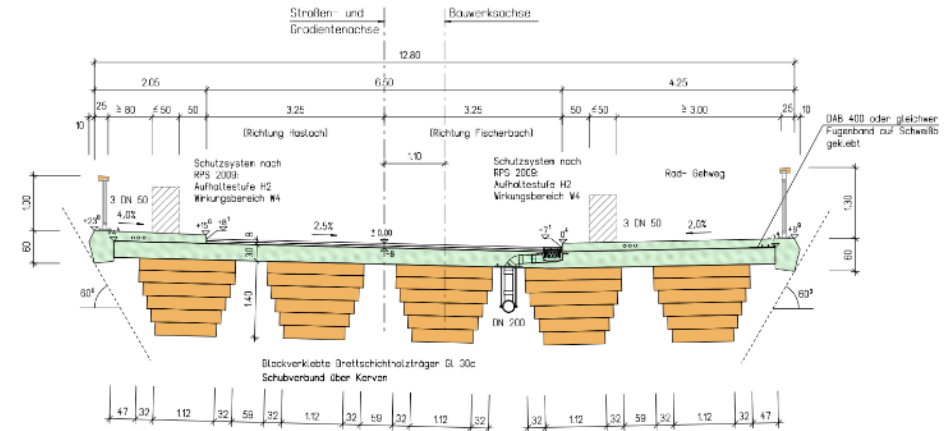
TCC BRIDGE HASLACH



Schnitt C-C
M 1:50

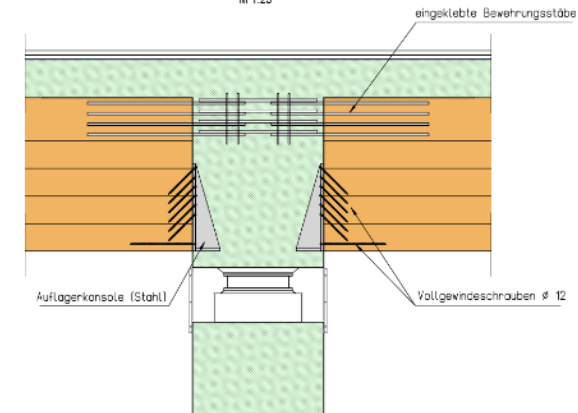


Regelquerschnitt
M 1:50

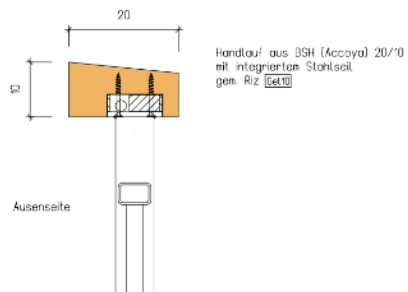


Regeldetail Anschluss Querträger

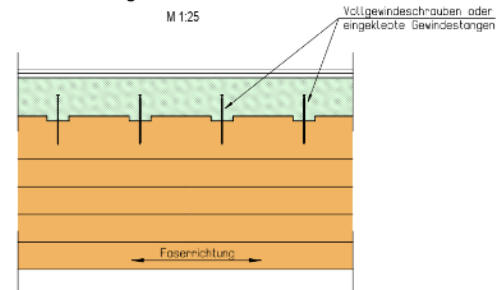
M 1:25

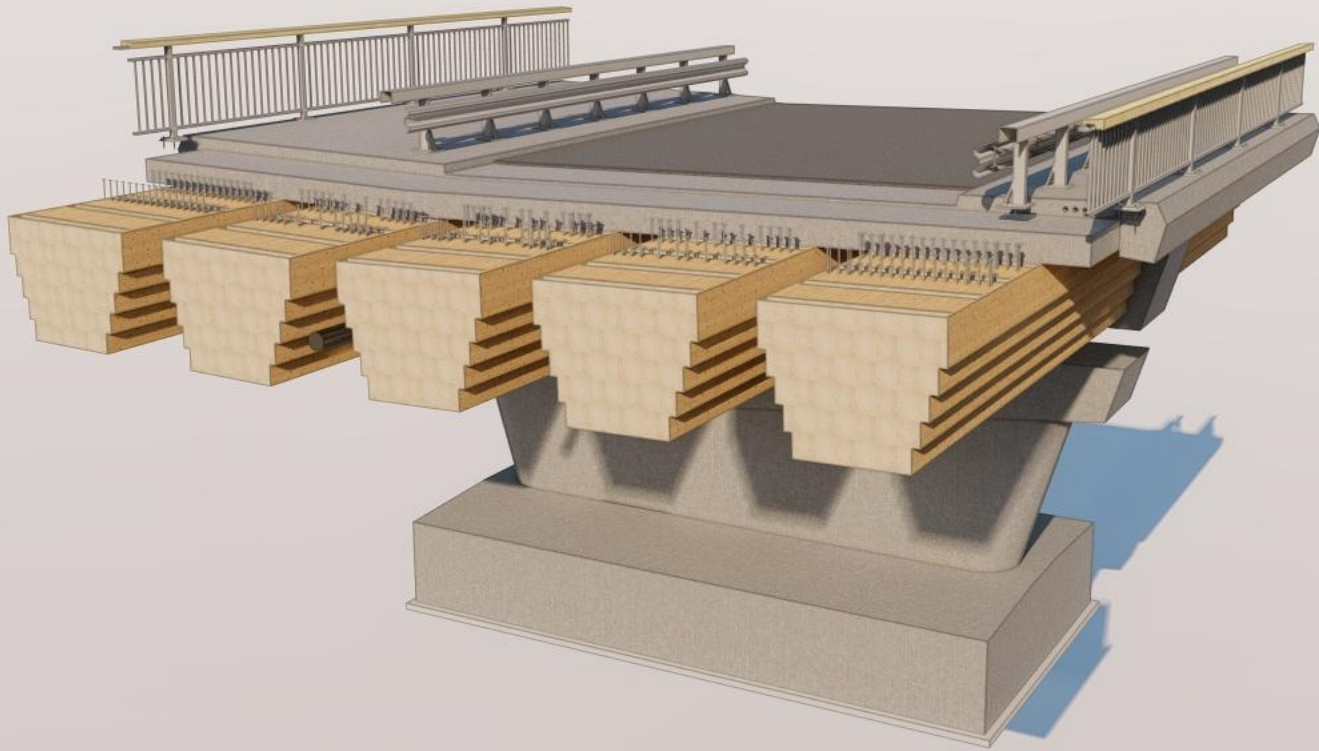


Detail Handlauf
M 1:5



Regeldetail Kernen
M 1:25





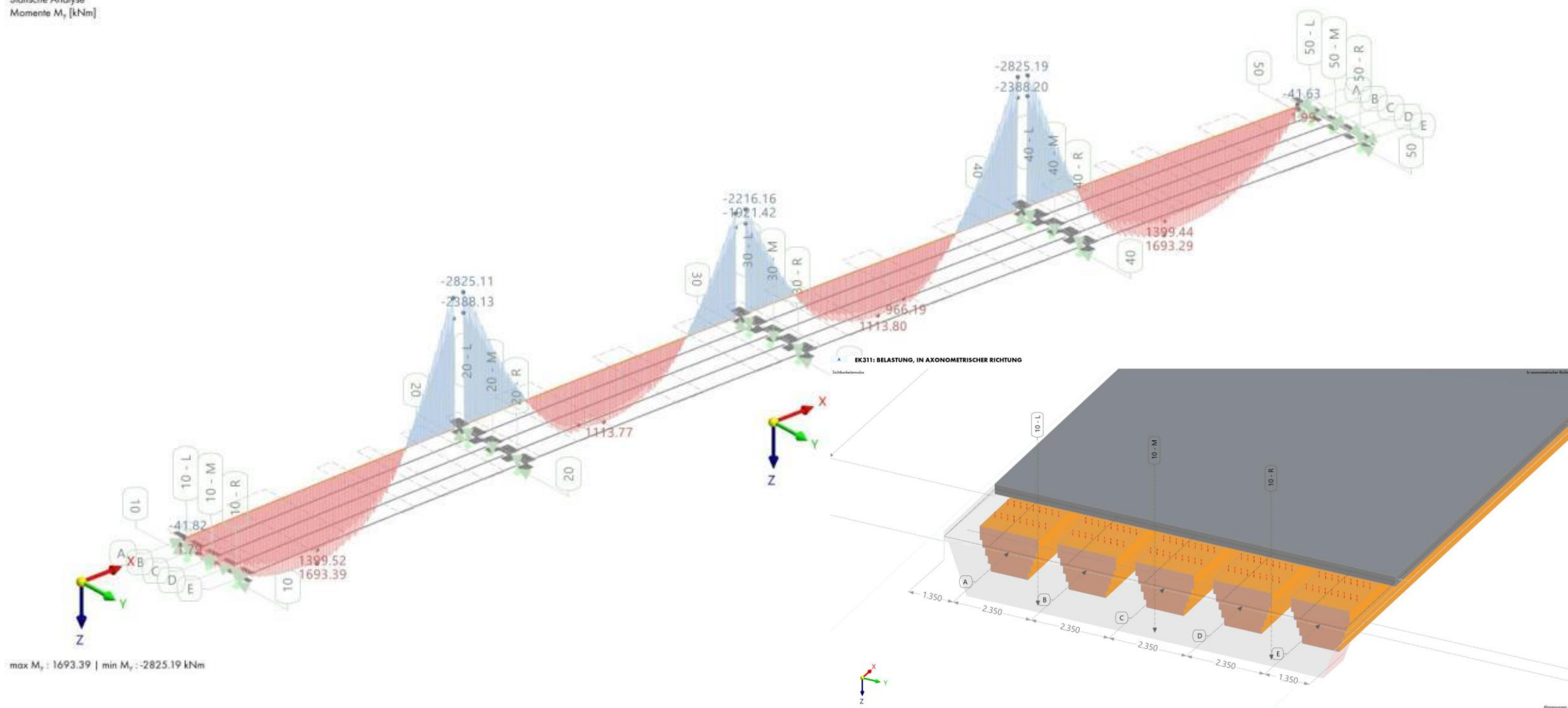
TCC BRIDGE HASLACH

EK466: ERGEBNISUMHÜLLENDE - MAX- UND MIN-WERTE, SCHNITTGRÖßEN M_y

Sichtbarkeitsmodus
EK466 - Übergabe Gk t=0 bis t=∞
Statische Analyse
Momente M_y [kNm]

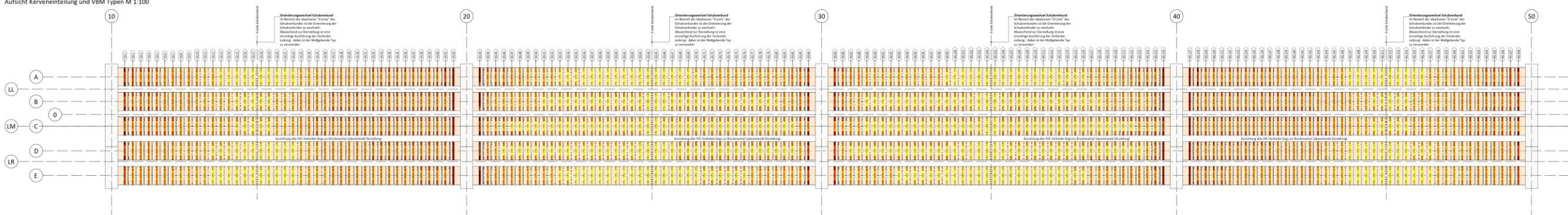
Statische Analyse

In axonometrischer Richtung



TCC BRIDGE HASLACH

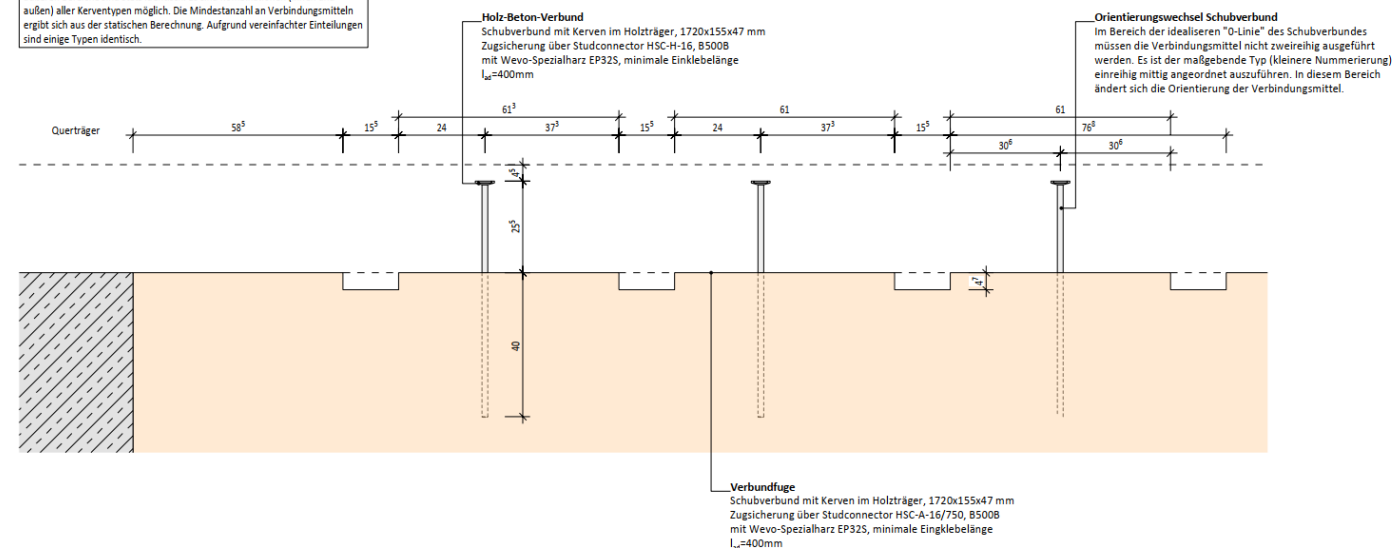
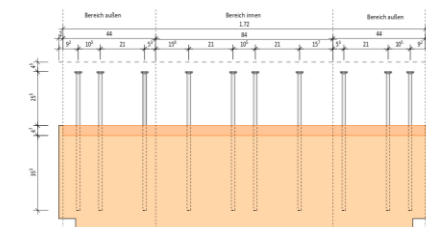
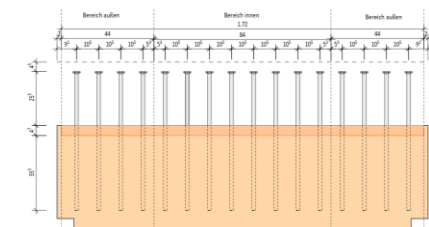
Aufsicht Kerveneinteilung und VBM Typen M 1:100



Kerven und Verbindungsmittel 1:10

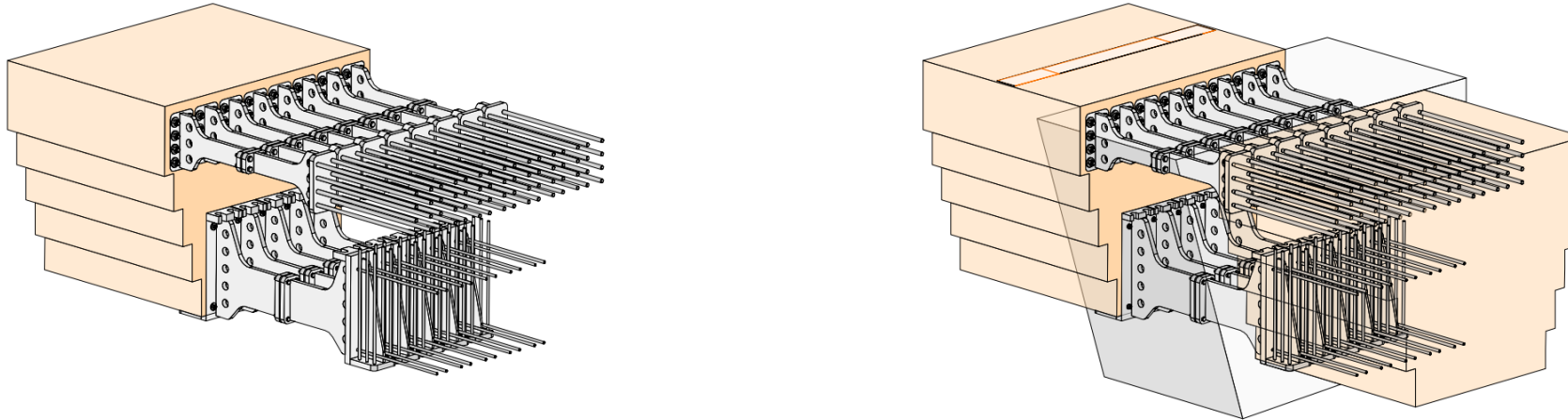
Regellängsschnitt

Erläuterung Kerventypen:
alle Kerven werden in innere und äußere Bereiche unterteilt. Die Typen der äußeren Bereiche sind stets identisch. Es sind Kombinationen (innen und außen) aller Kerventypen möglich. Die Mindestanzahl an Verbindungsmitteln ergibt sich aus der statischen Berechnung. Aufgrund vereinfachter Einteilungen sind einige Typen identisch.



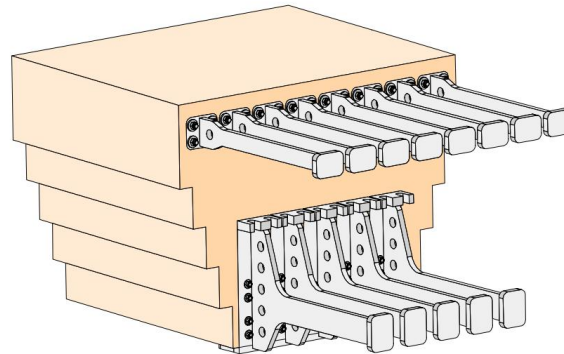
Detail Querträgeranschluss

Isometrische Darstellung



Detail Endquerträgeranschluss M 1:10

Perspektivische Darstellung



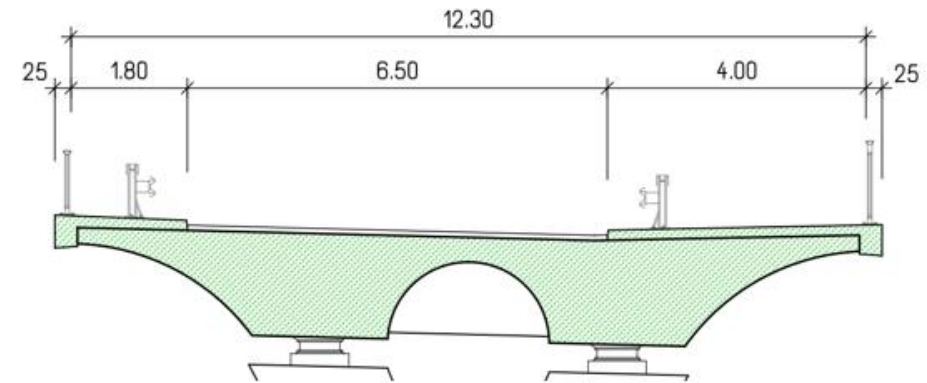
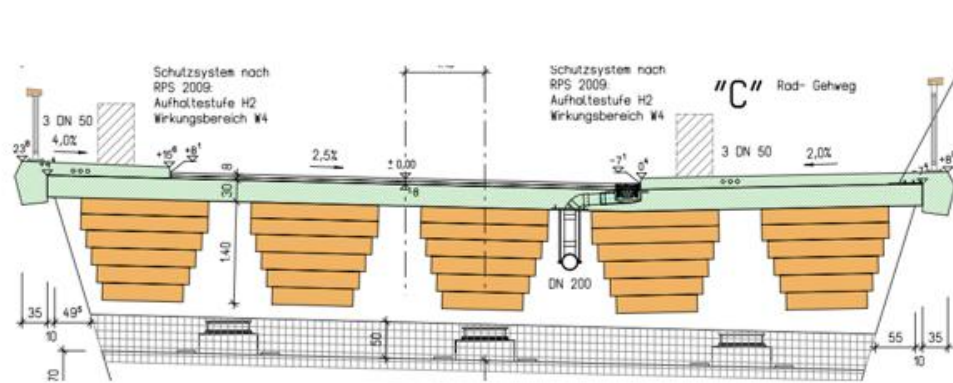


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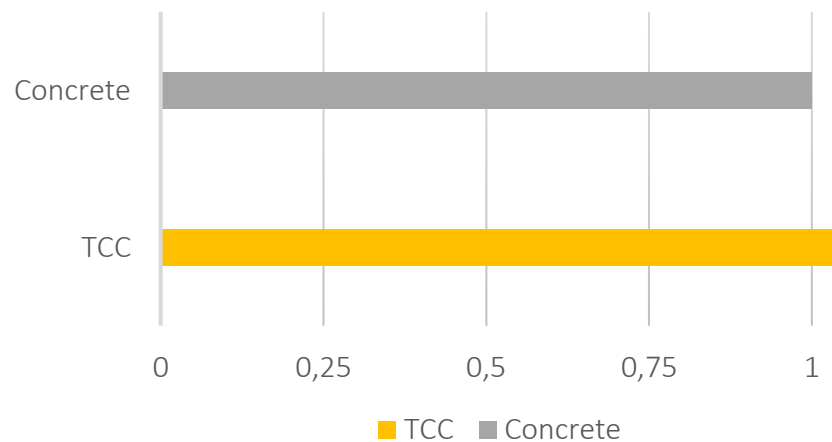


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BUILDING COSTS



3.600,- EUR/m²

3.800,- EUR/m² = 6% higher

Comparison of the GWP of different building materials

<u>Material System</u>	<u>GWP [kgCO₂-eq / m²]</u>	<u>Comparison with reinforced concrete</u>	<u>Note</u>
Reinforced concrete	550 – 600	100 %	Reference
Prestressed reinforced concrete	650 – 700	~ 110 - 120 % higher	Higher-grade concrete and prestressing steel
Steel	700 – 800	~ 125 – 140 % higher	High production energy costs, partial recycling credit
Timber	250 – 300	~ 45 – 55 % lower	PEFC-certified glulam
Timber – Concrete - Composite	350 – 400	~ 30 - 40 % lower	HBV ratio: max. 2/3 to 1/3

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WHATS NEXT IN THE NETHERLANDS?



ViaductBehout by Mobilis/IPV/IB-Miebach



Anthony Fokkerweg by Next Architects

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Holzbau und Holzbrückenbau
Haus Sülz 7
D-53797 Lohmar (Germany)

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