

Pont en bois

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Ing. dipl. EPFL

Les difficultés

- Système statique
 - Grande portée
- Revêtement
 - Platelage ou goudron
- Stabilisation:
 - Des mats
 - Du toit
- Charge ponctuelle
- Construction en extérieure – Durabilité

Inspiration

www.swiss-timber-bridges.ch

Les charges

- Charges SIA 261
 - Utiles (répartie et ponctuelle)
 - Vent
 - Garde corps
 - Impact de véhicule
 - Charges de stabilisation

Les classes d'humidité

- Classes d'humidité d'humidité 2
 - Partiellement protégé des intempéries ou exposé aux intempéries
 - Facteurs de réduction: η_w résistance 0.8 ;
 η_w Rigidité 0.9
 φ fluage 0.8

Classe d'emploi

- Classe 3 (pont ouvert) Classe 2 (pont couvert)

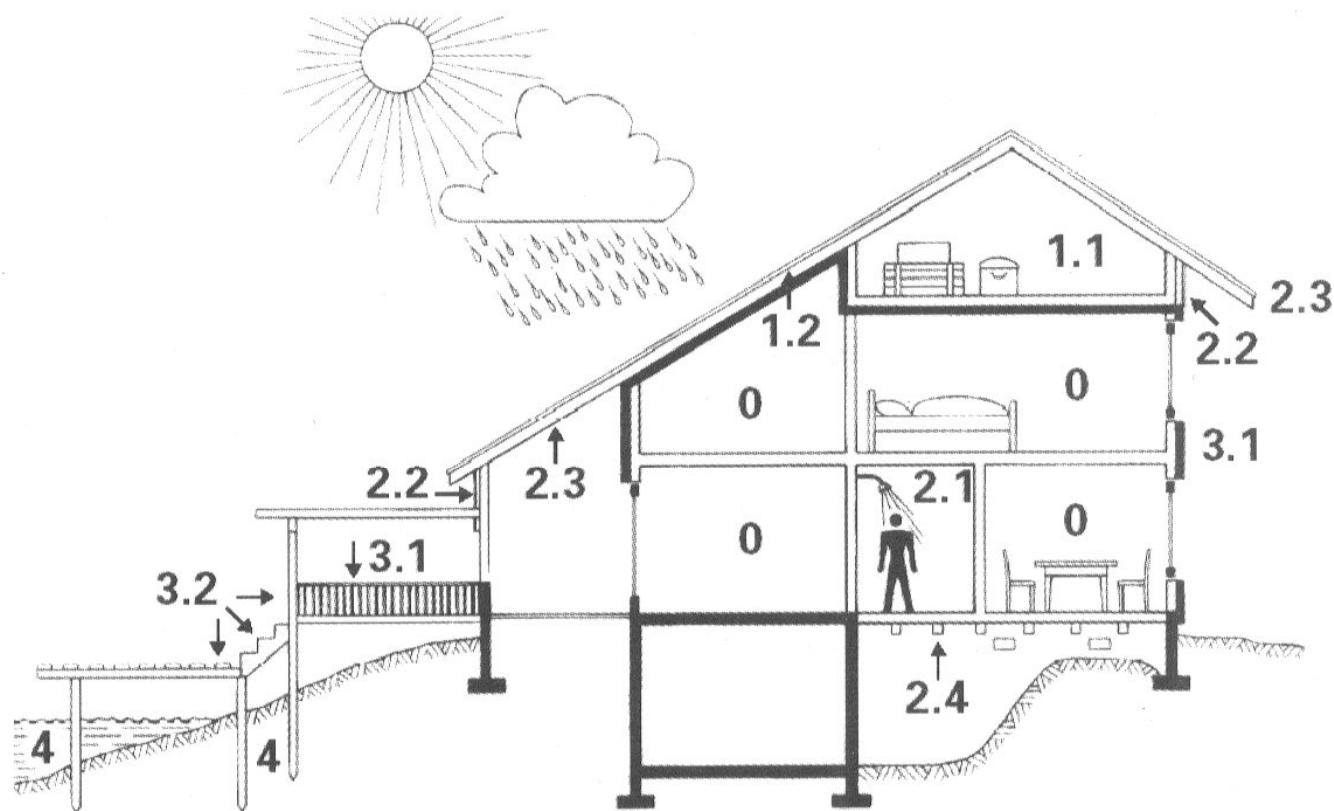


Fig. 2.25 Schéma des classes d'emploi en fonction de l'exposition.

Classe d'emploi

- Classe 3 (pont ouvert)
(selon SIA: classe 2)



- Classe 2 (pont couvert)



Revêtement

Revêtement

- Vers. 01 Poutraison avec lambrissage

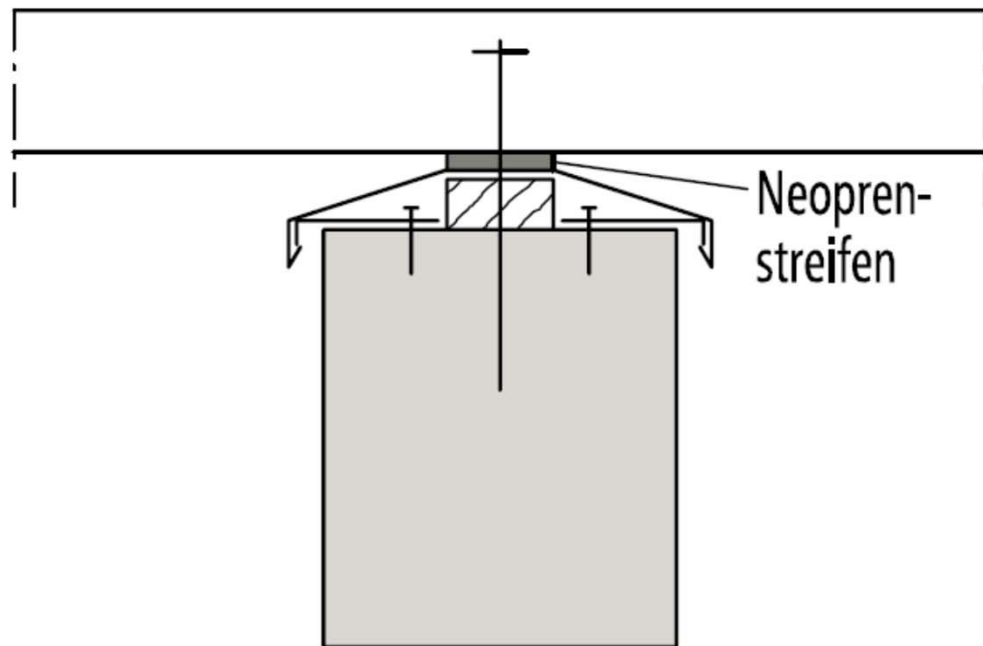


Bild 3.6 Auflagerholz mit Hinterlüftung bei einem breiten Träger

Revêtement

- Vers. 02 Etanchéité sur construction et lame de bois

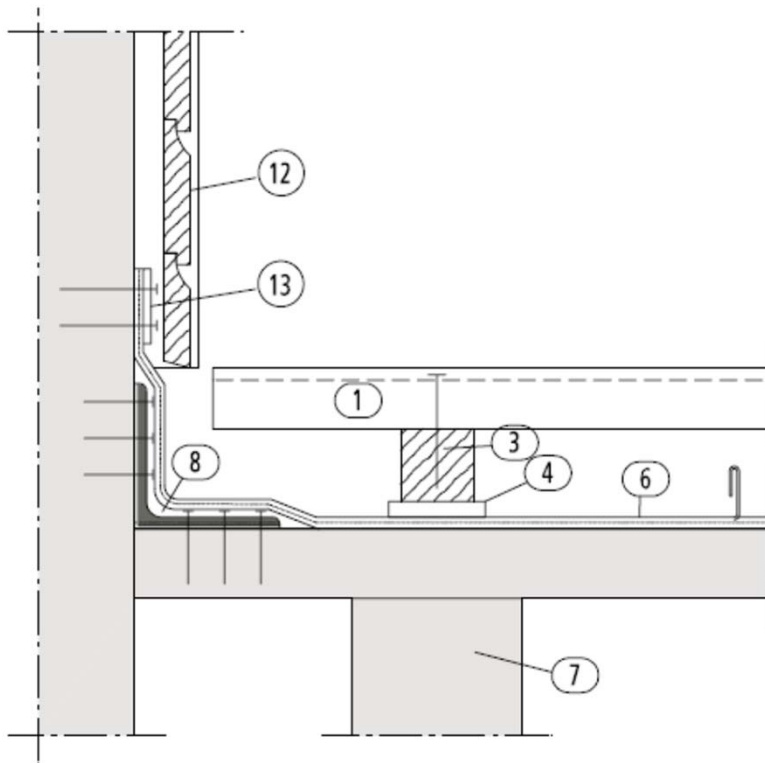
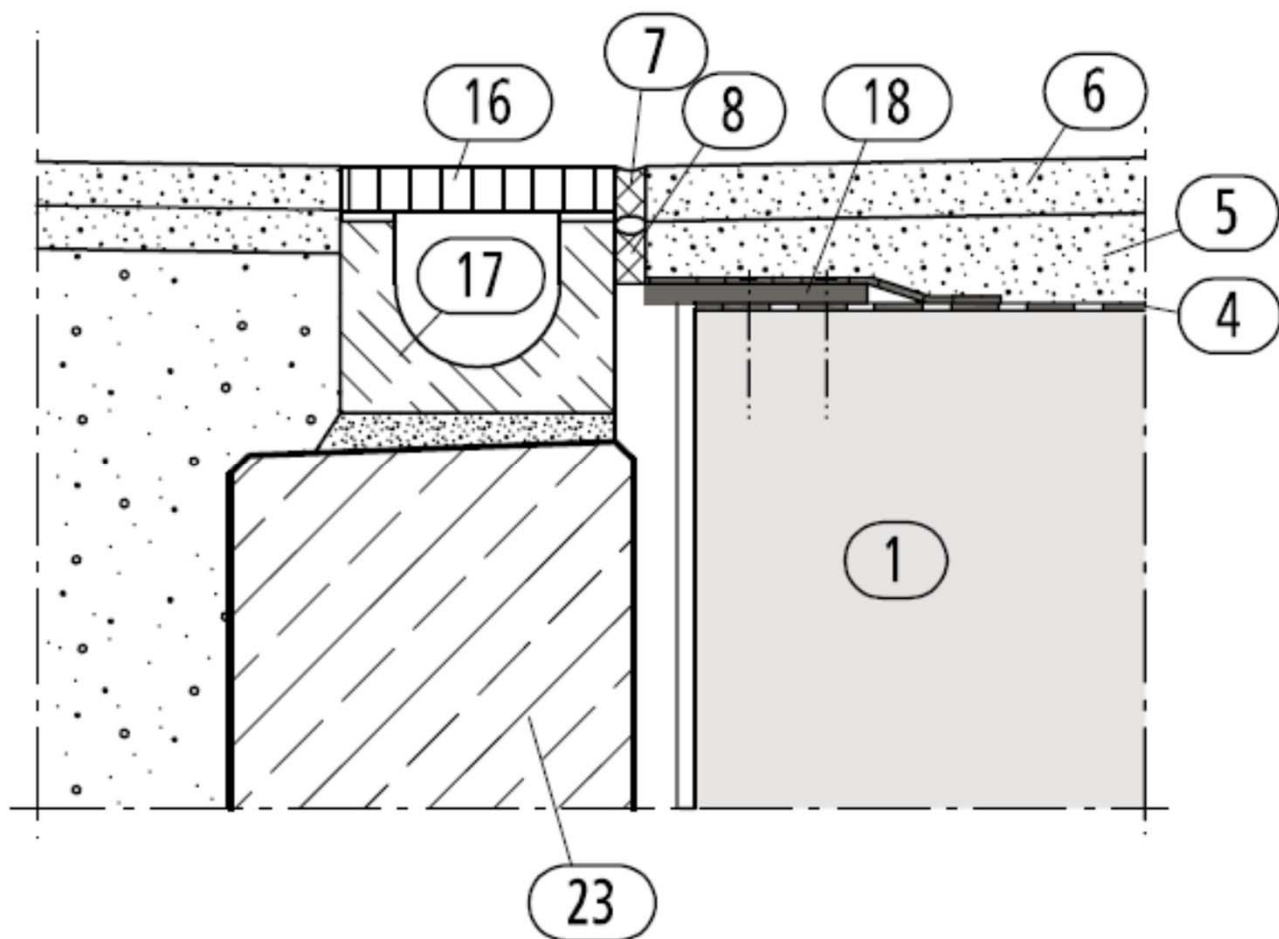


Bild 2.14 Detailschnitt Bohlenrost mit Blehabdichtung; Geh- und Radwegbrücke

- 1. Lame de bois
- 3. Lambourde
- 4. Appui ponctuel
- 6. Etanchéité double
- 7. Structure
- 8. Cornière structurelle
- 12. Lame de bois
- 13. Fixation avec liste

Revêtement

■ Vers. 03 Goudrons bicouches avec étanchéité



- 1. Construction
- 4. Etanchéité bitumineuse 2 couches
- 5.+6. Goudrons, 2 couches
- 7. Joint elastomer
- 8. Remplissage pour elastomer
- 16. Grille d'évacuation d'eau
- 17. Caniveau
- 18. Appui plaque métallique
- 23. Fondation béton

Revêtement

- Vers 04 bois-béton mixte
 - Goudrons, double couche
 - Etanchéité, double couche
 - Dalle béton 10-15cm
 - Structure bois

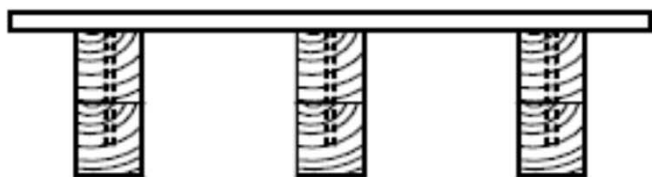
Systeme statique

Publication

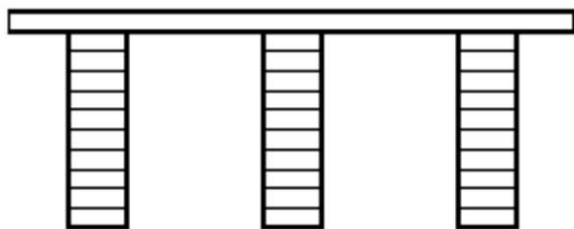
Forum construction en bois – Michael Flach

Les systèmes statiques

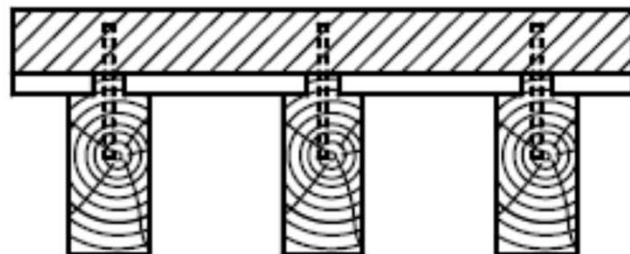
- Poutre en flexion - solivage



nervures en section reconstituée



nervures en BLC



nervures en bois massif pour plancher bois-béton connecté

Les systèmes statiques

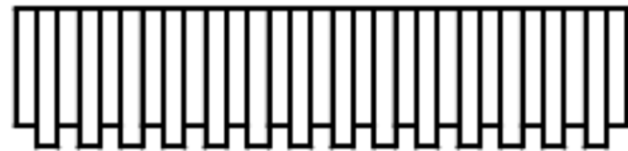
- Poutre en flexion – dalle pleine



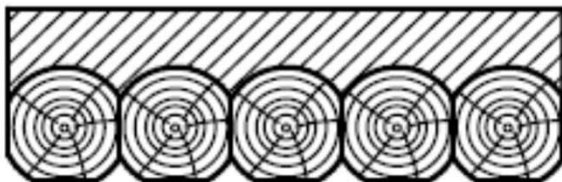
panneaux BLC recollés



panneaux lamellés croisés collés

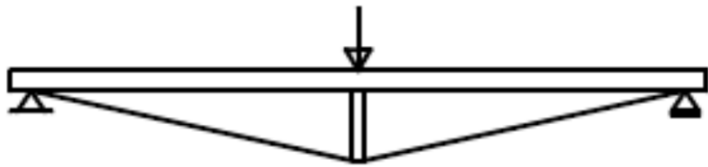


dalle massive en planches clouées

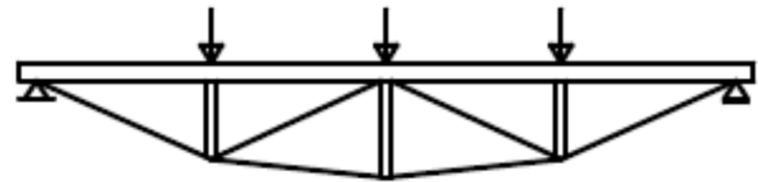


rondins bord à bord pour plancher bois - béton connect

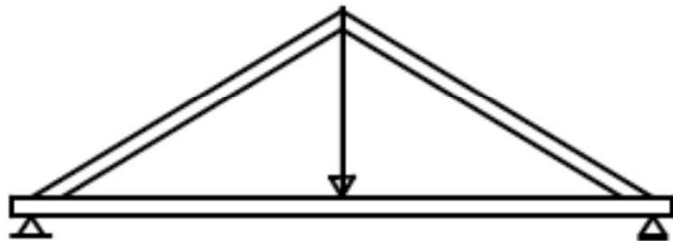
Poutre appuyée



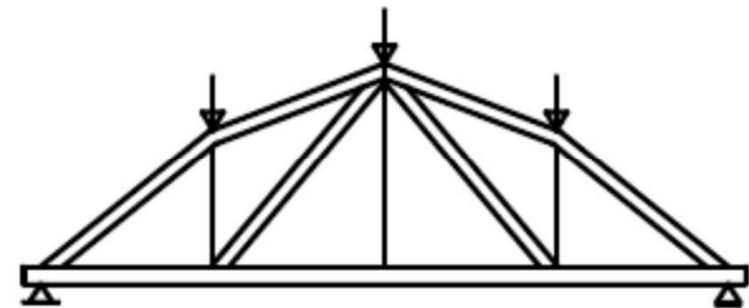
structure sous-tendue triangulaire



structure sous-tendue polygonale

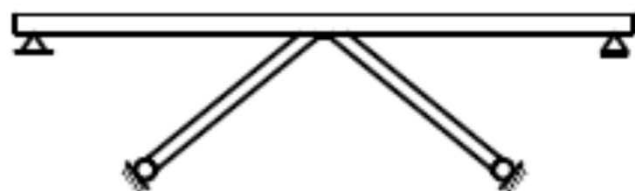


ferme triangulée

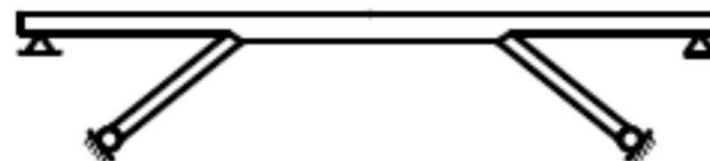


poutre treillis polygonal

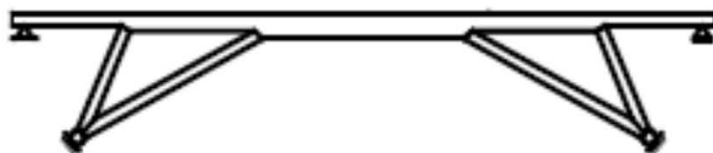
Système à béquille



deux travées à contrefiches



trois travées à contrefiches



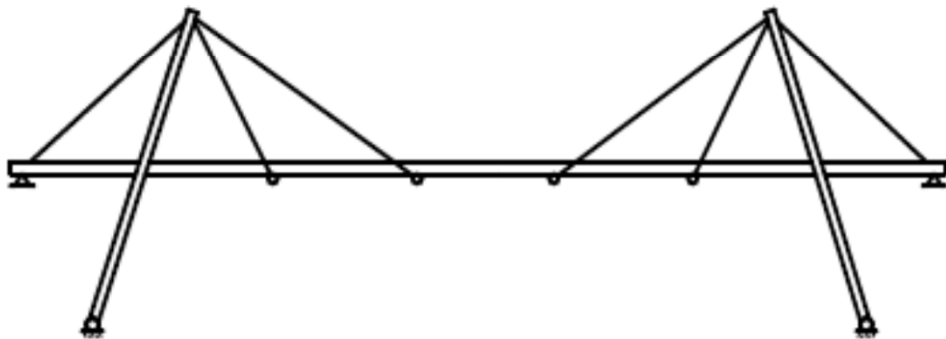
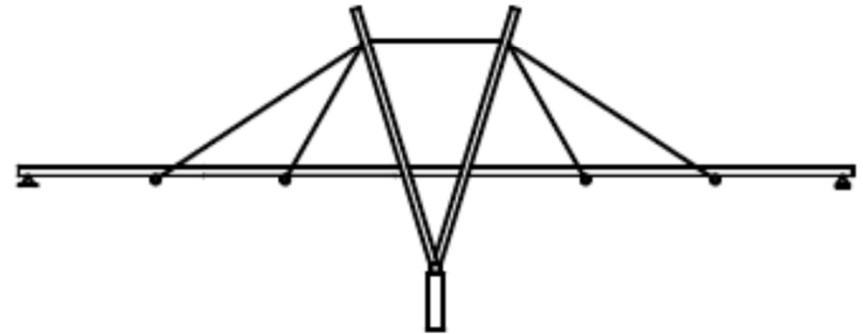
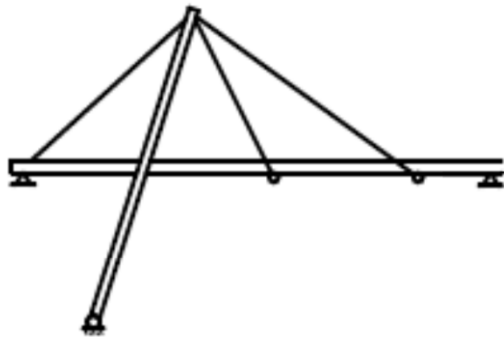
cinq travées à contrefiches en V



sept travées à contrefiches branchées

Haubanée

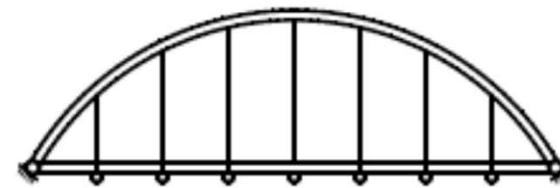
- Simple ou double



Les arcs



pont en arche



pont de type bowstring



pont suspendu en chaînette

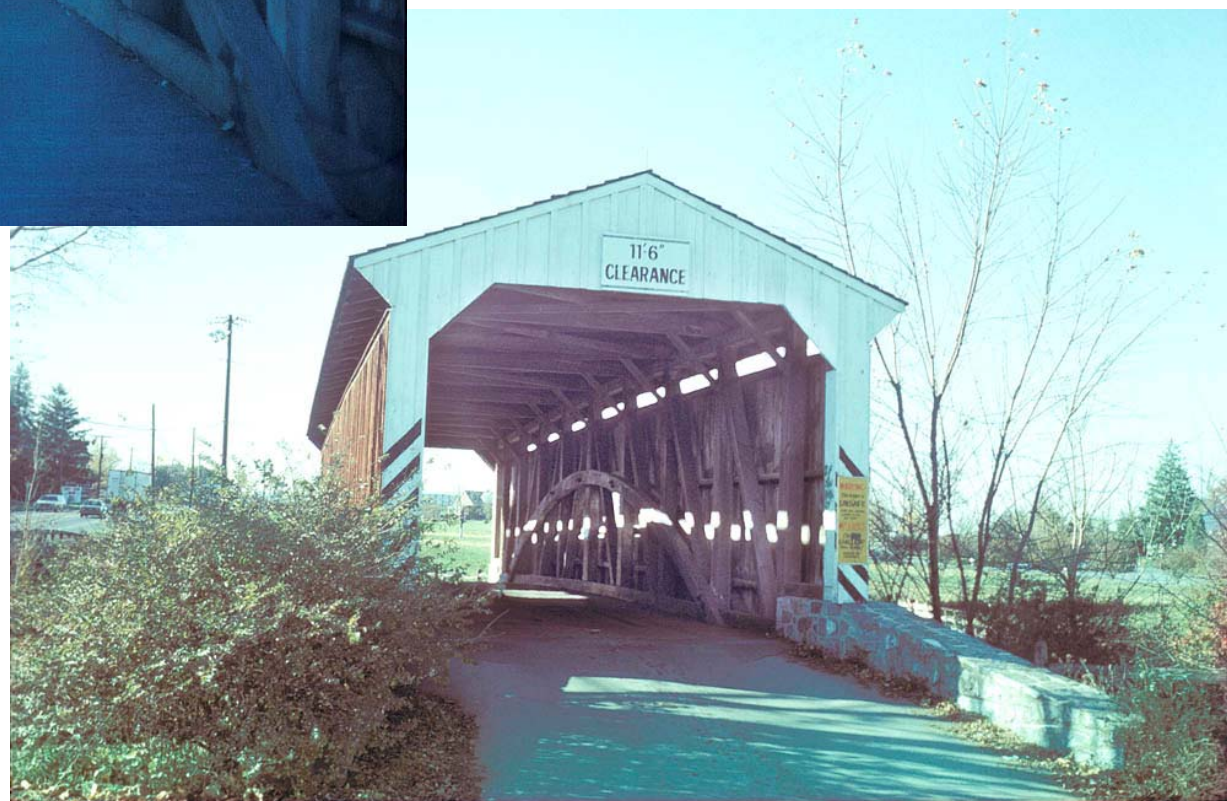
Quelques exemples

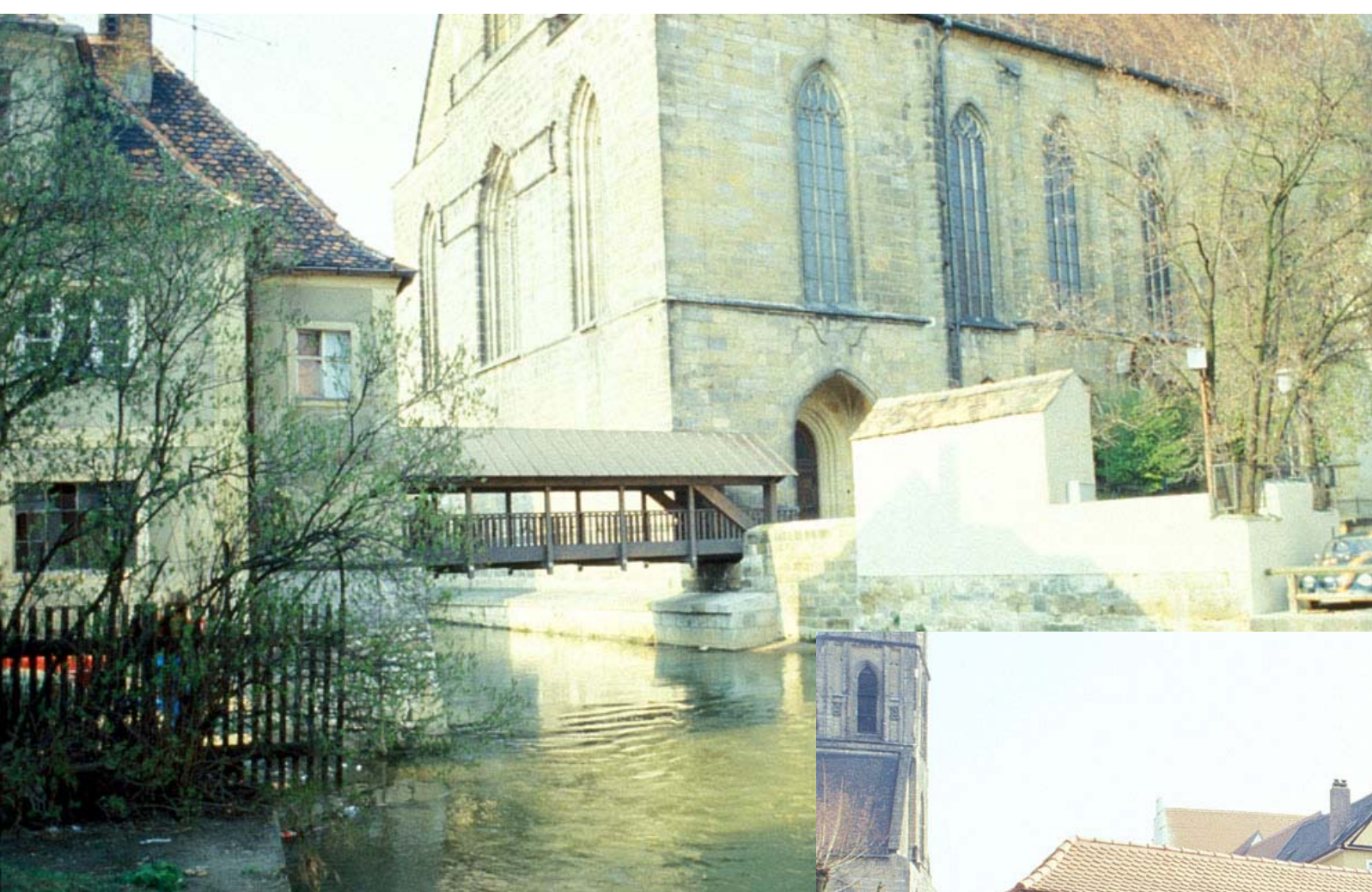
Eléments importants: 1 structure principale
 2 stabilisation

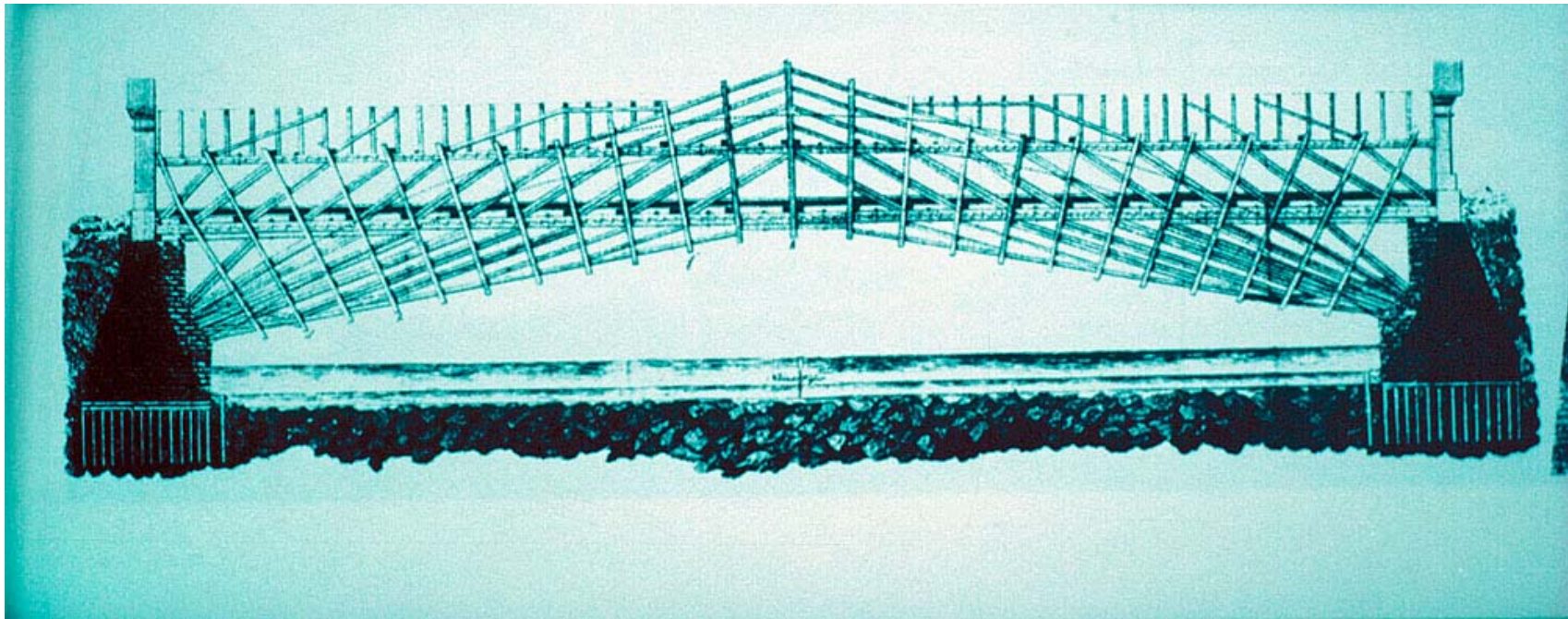












Hans Ulrich Grubenman



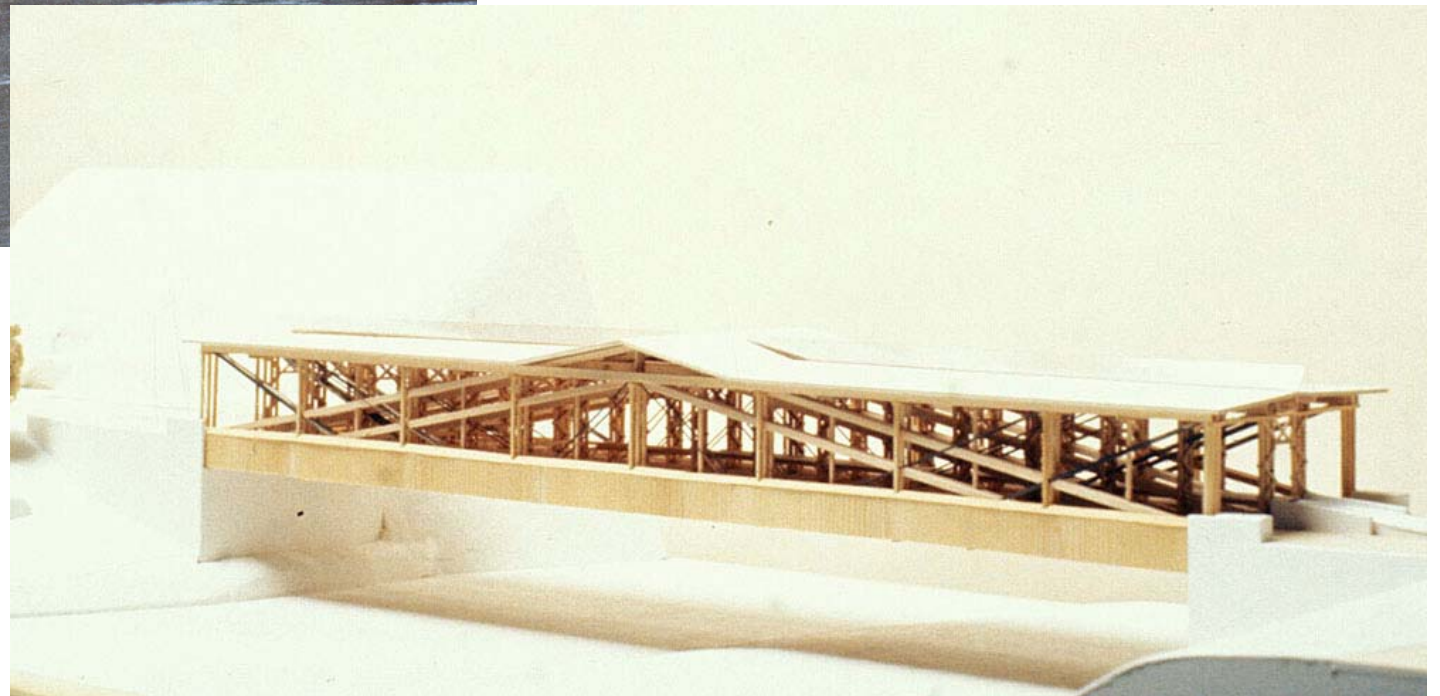
Source: wikipedia

- Charpentier Suisse
- Né en 1709 et mort en 1783
- A réalisé un projet de pont en bois à Schaffouse de 119m de portée

Pont de Schaffouse



Béquille





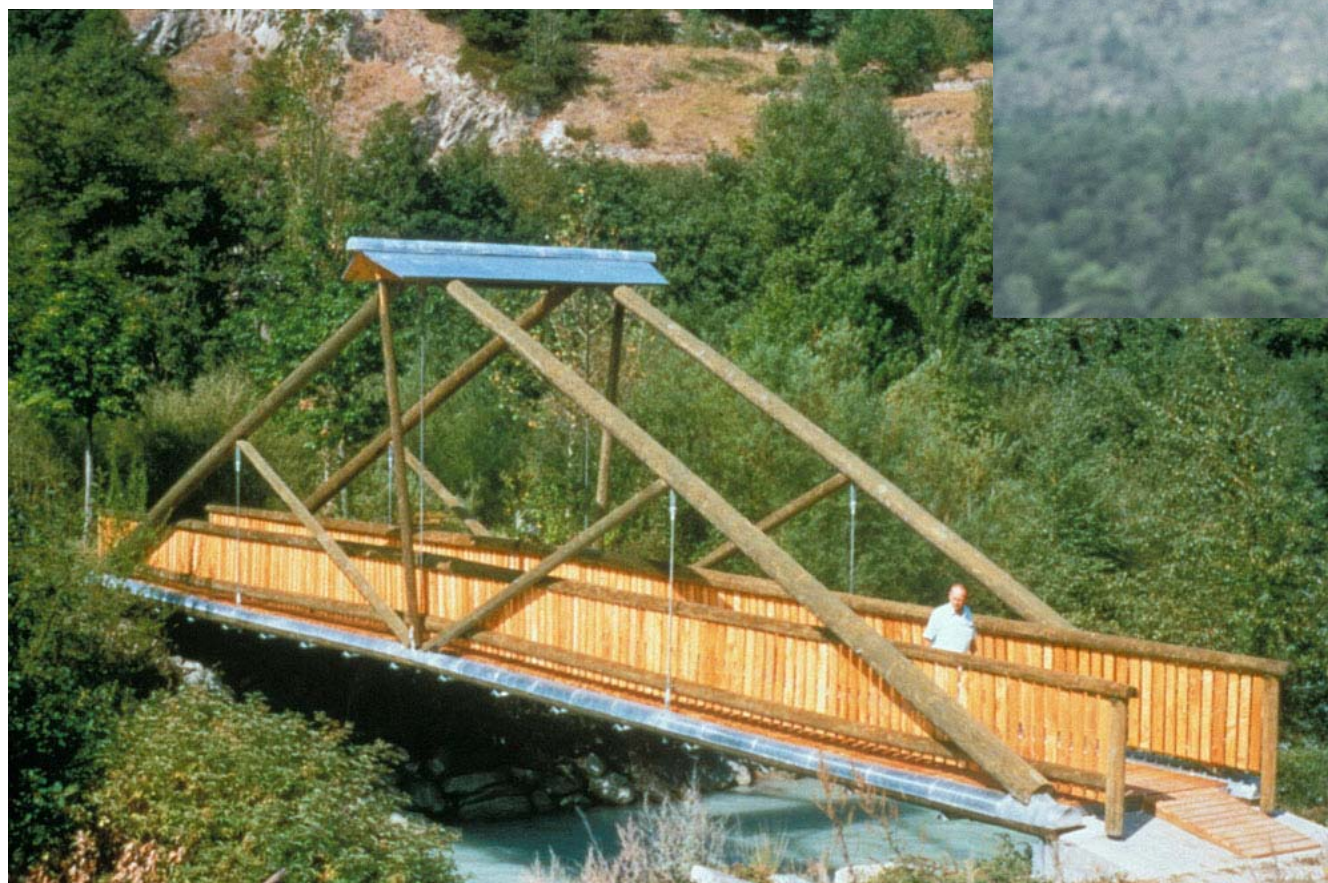
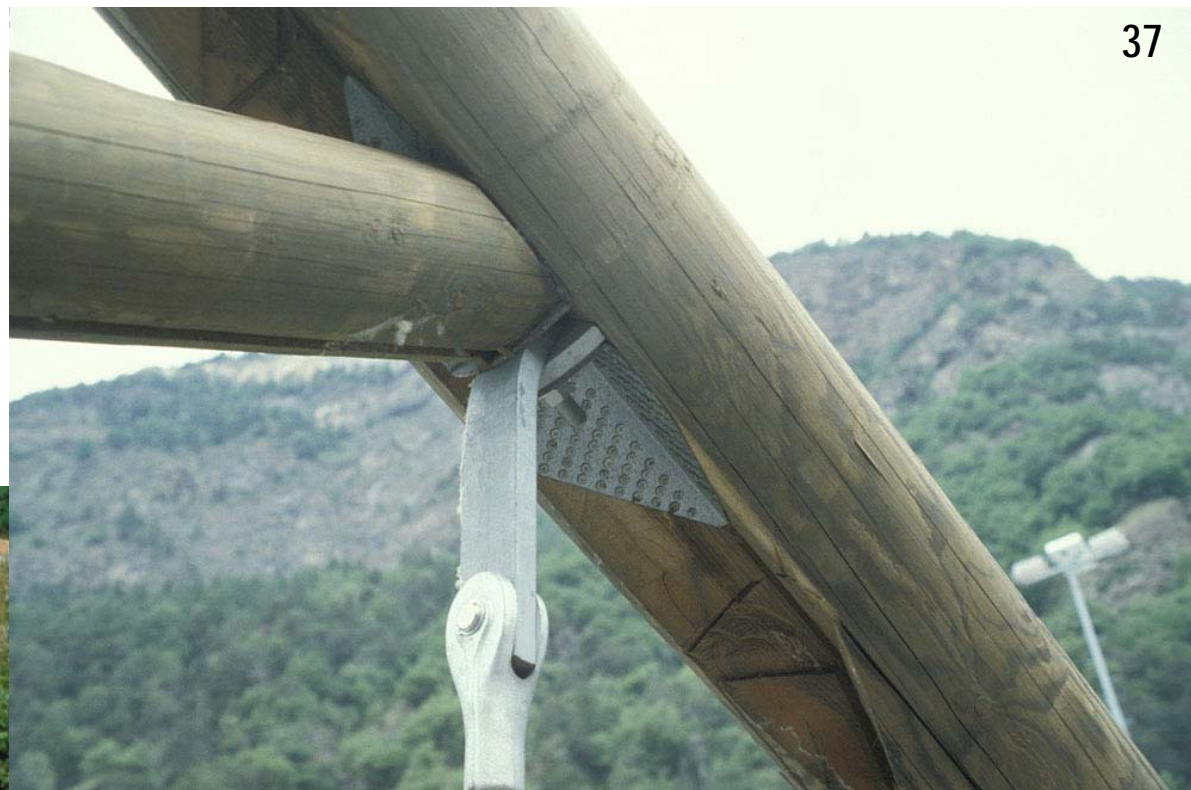


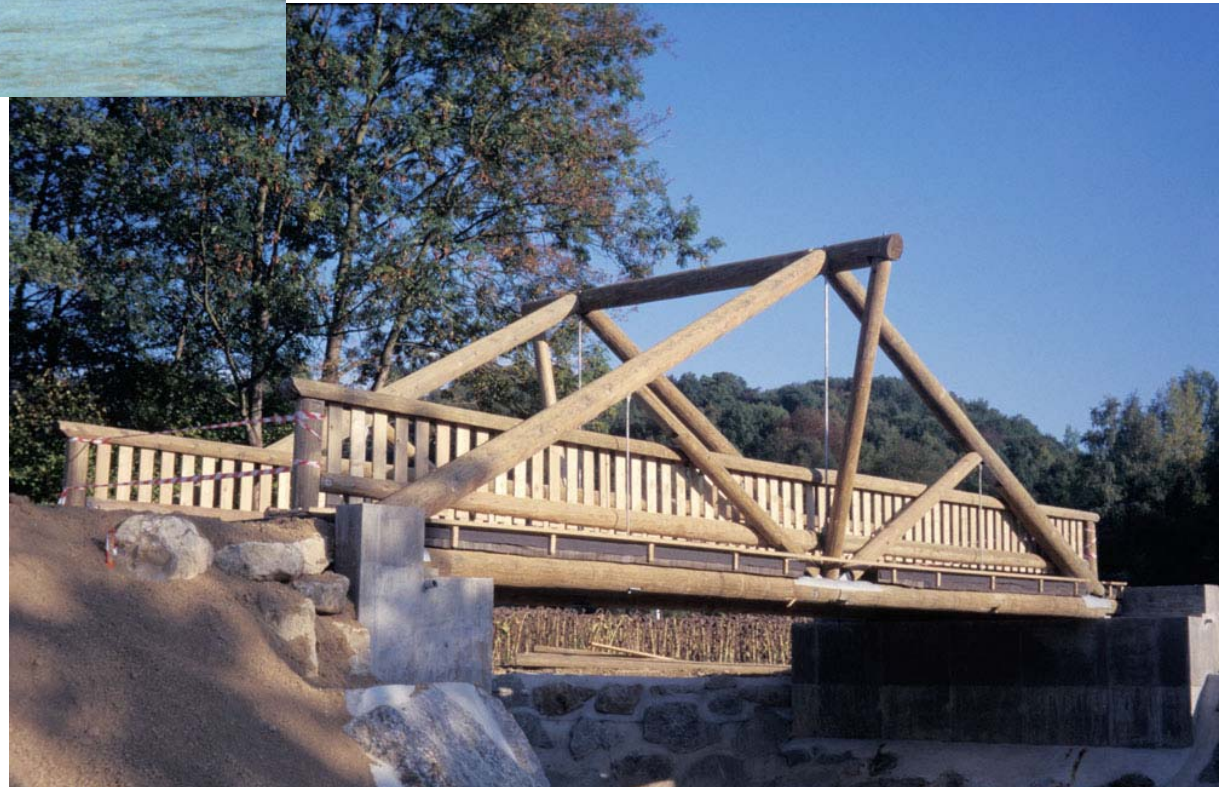




Poutre «suspendue»





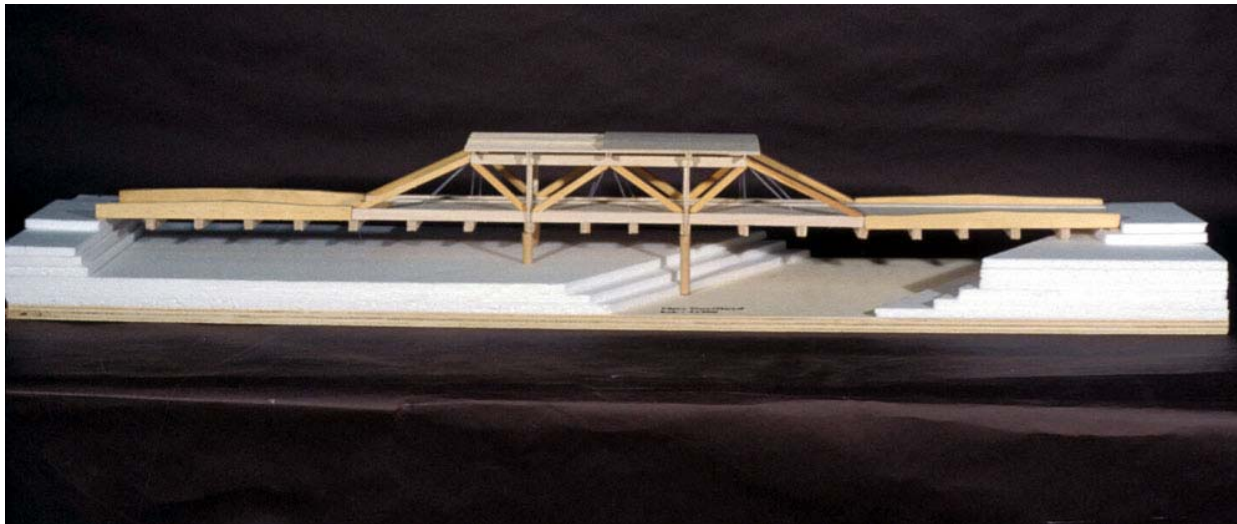




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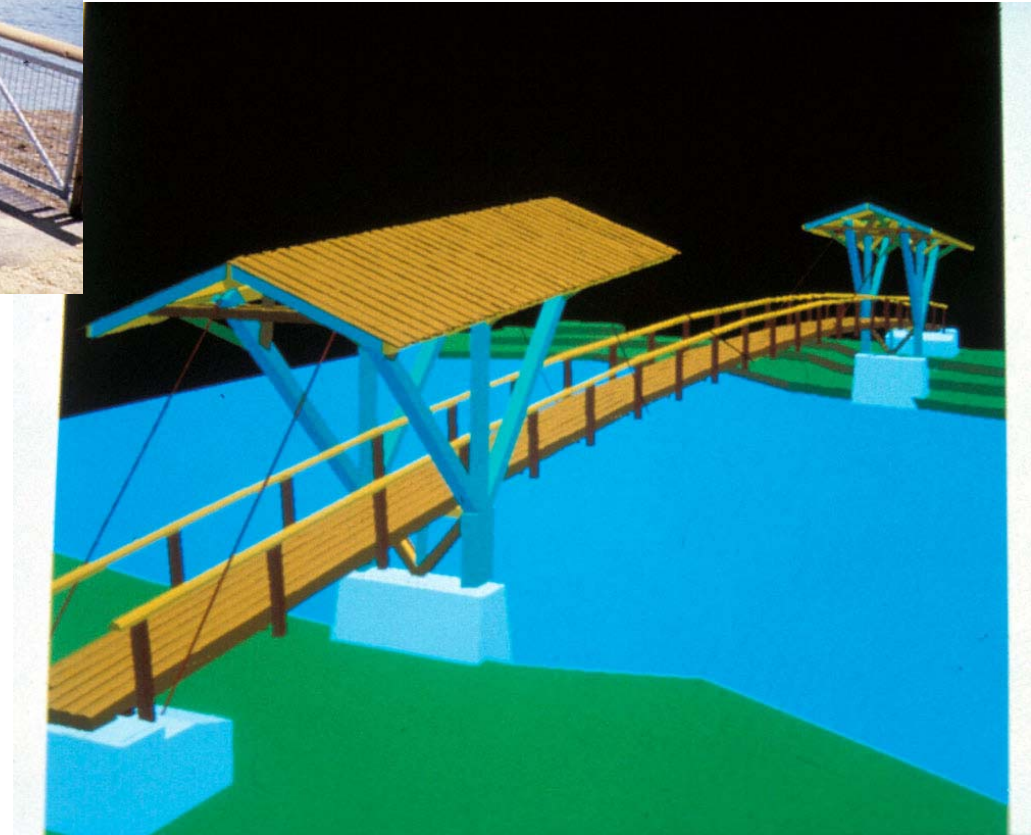


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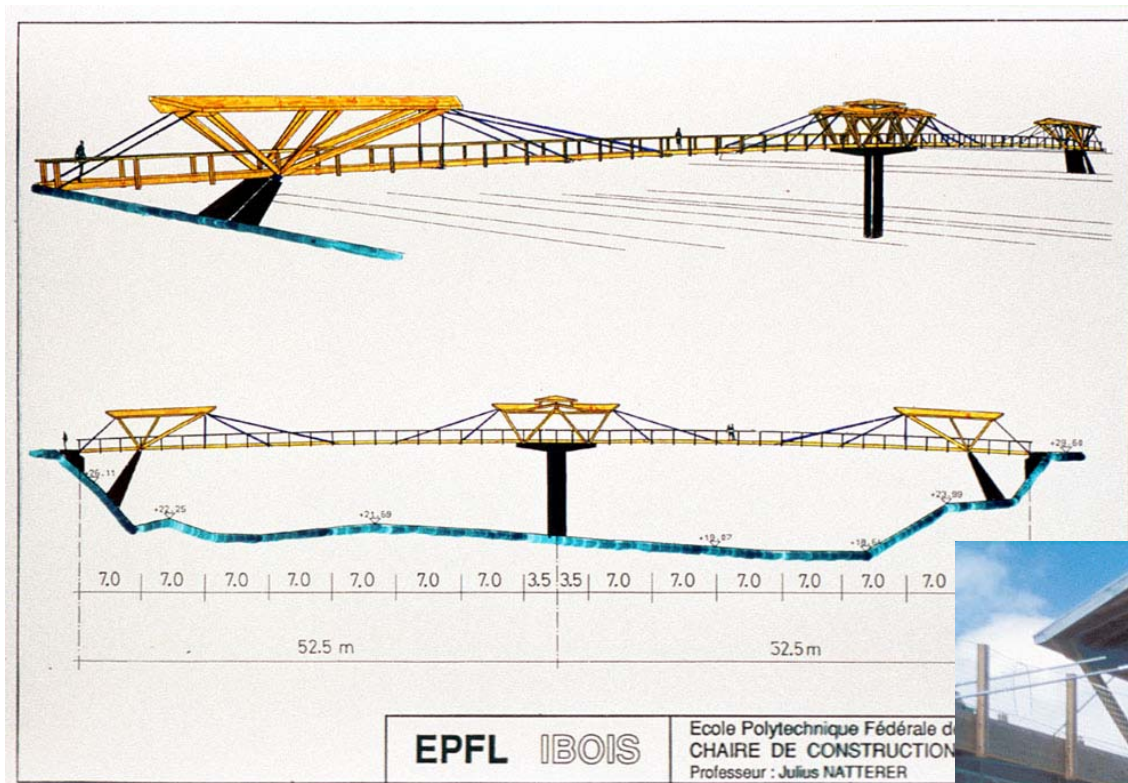


haubané



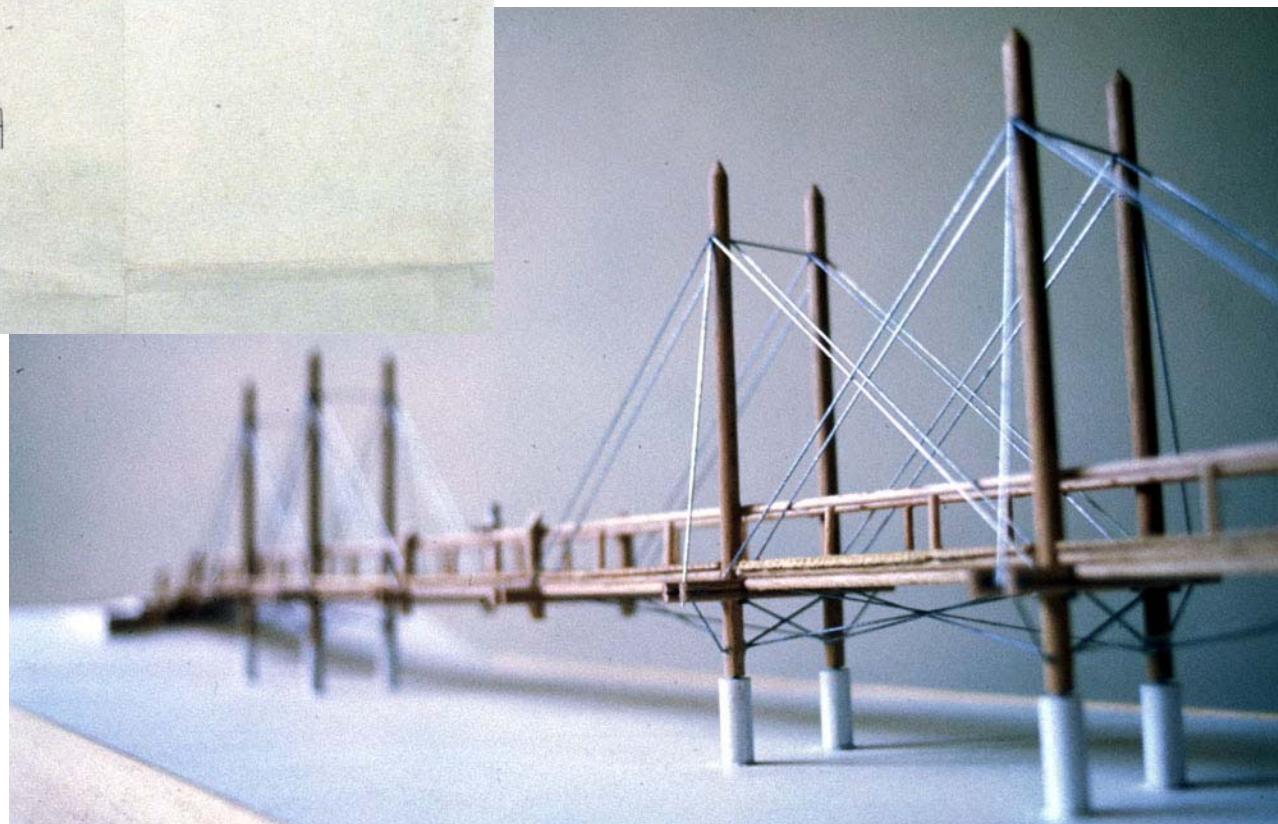
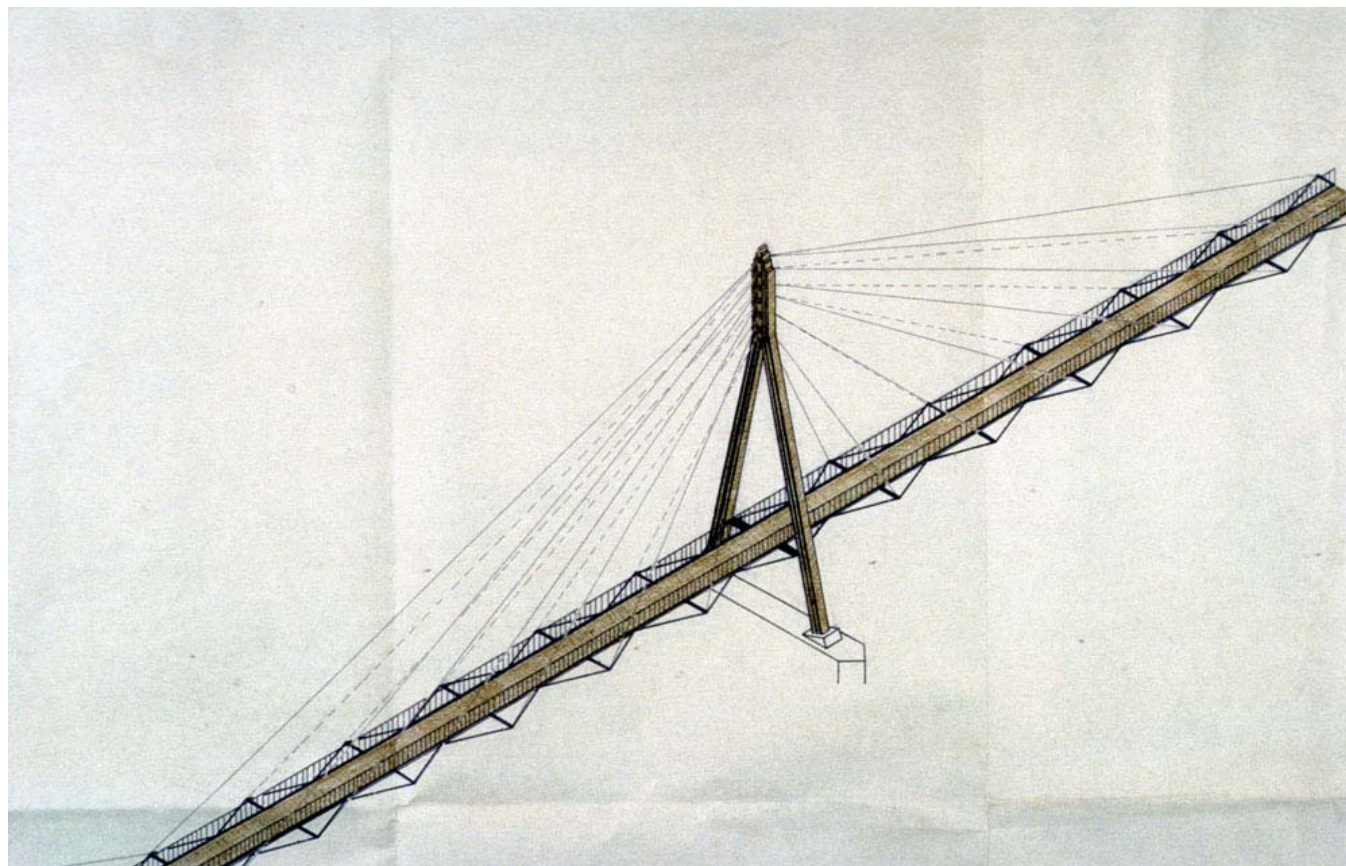


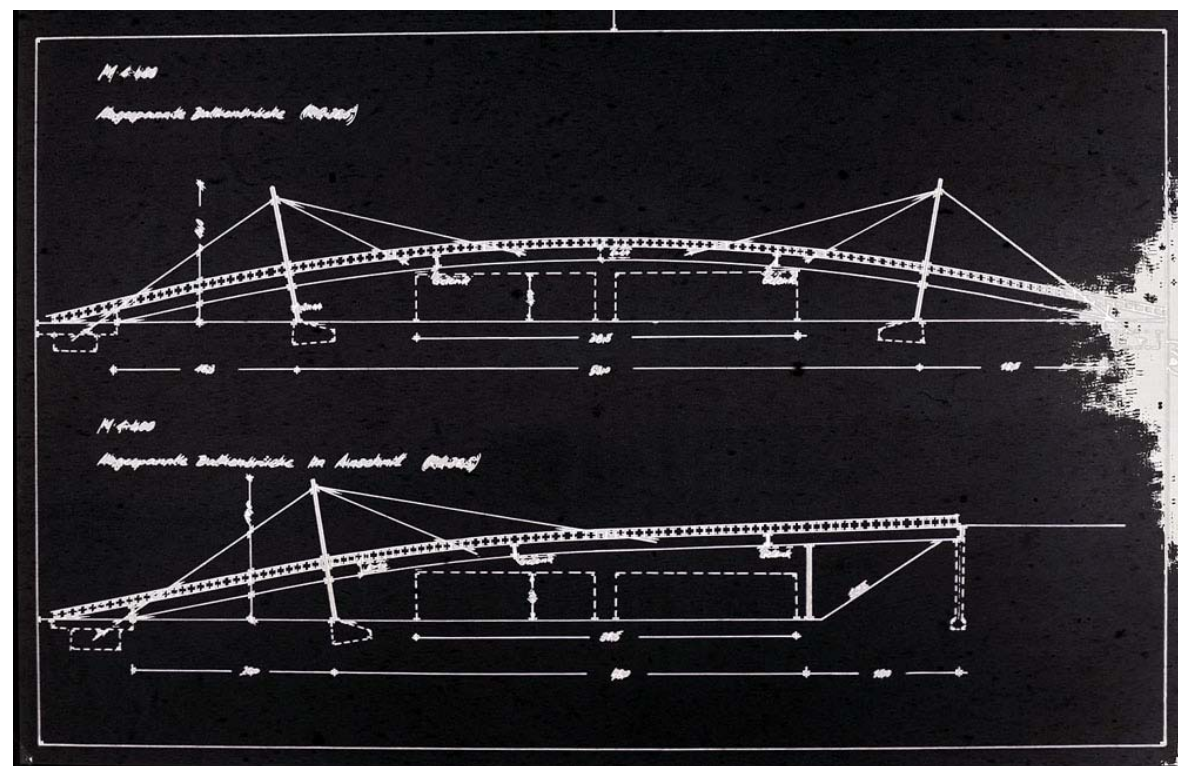
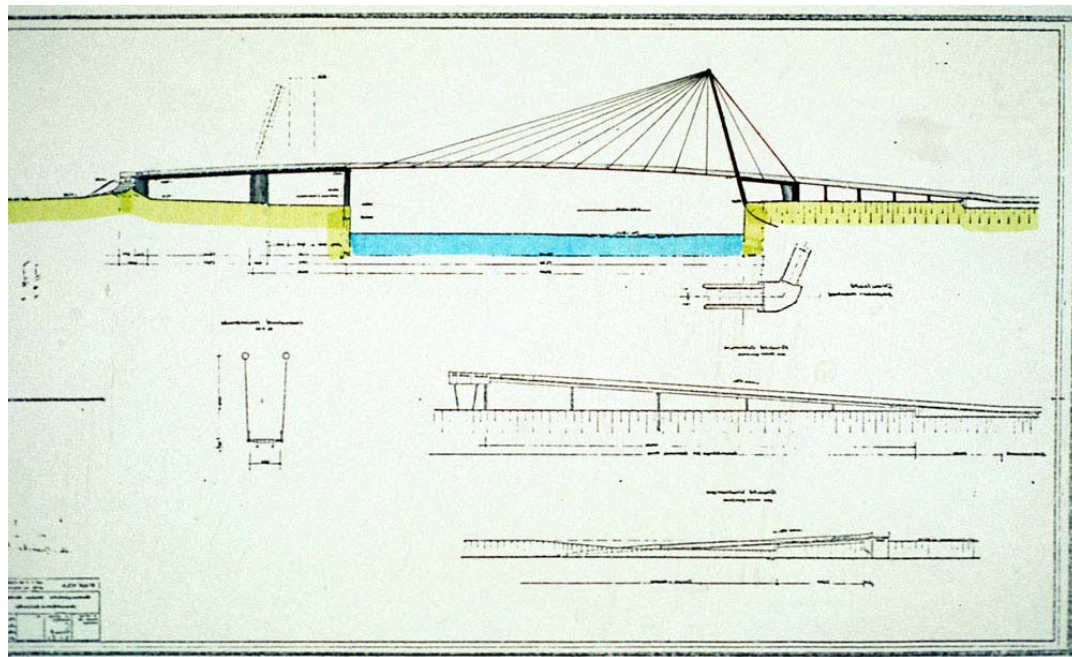




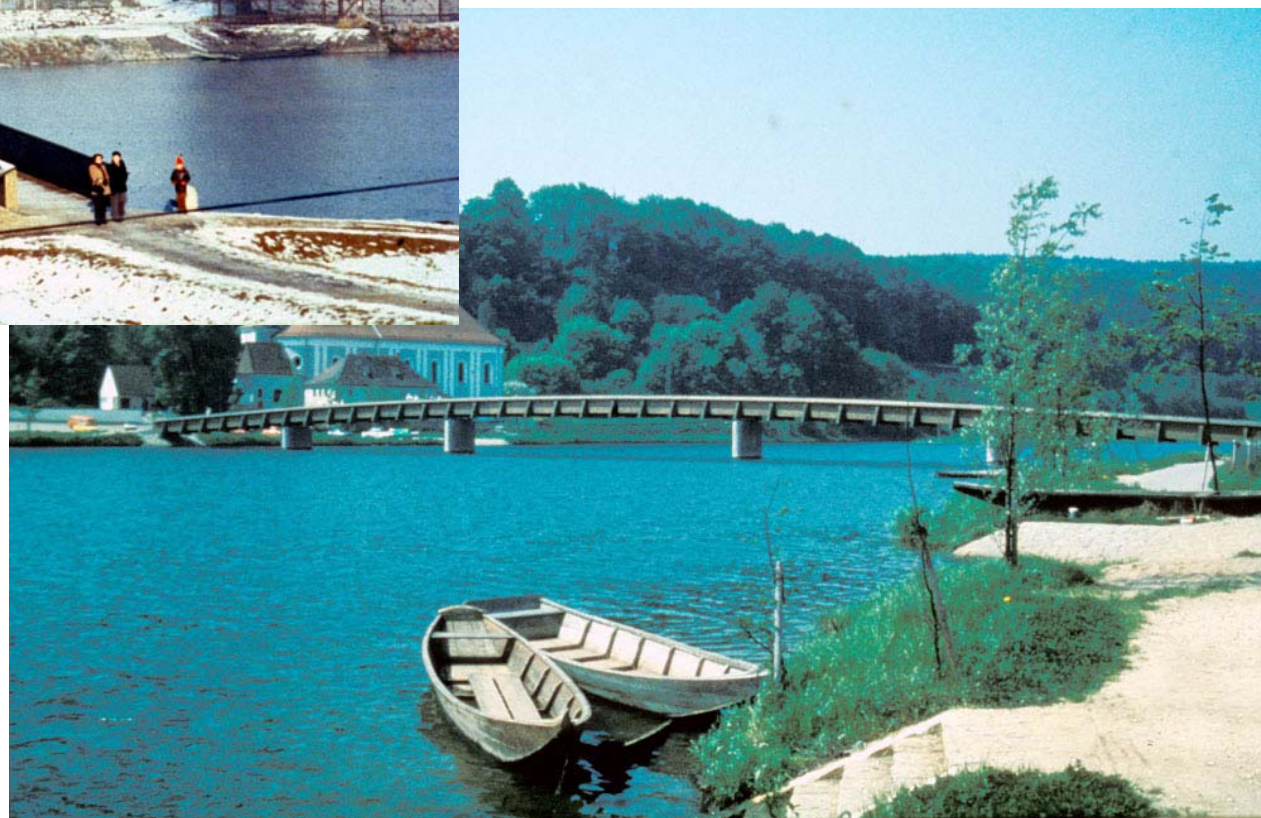








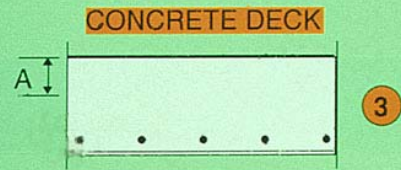
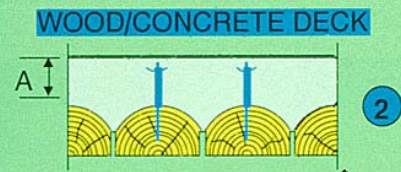
Pont poutre



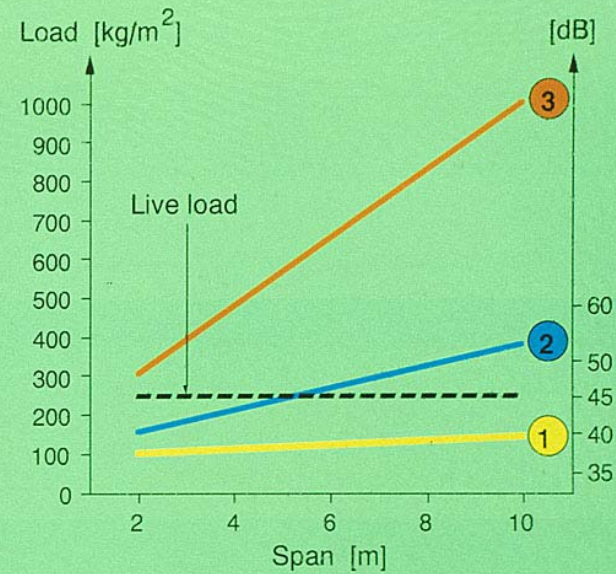




COMPARISON LIVE AND DEAD LOAD



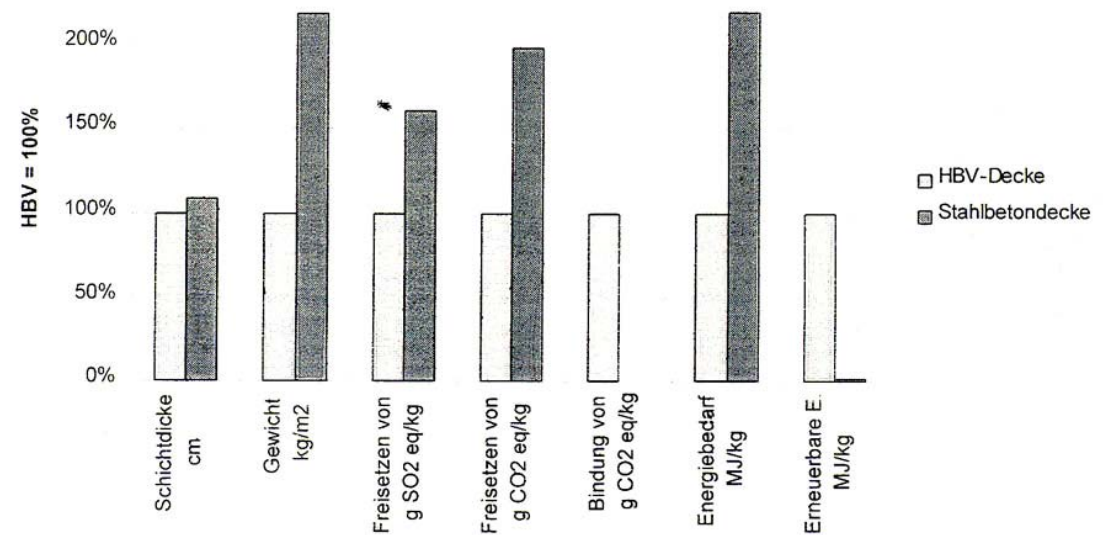
A : Compression zone

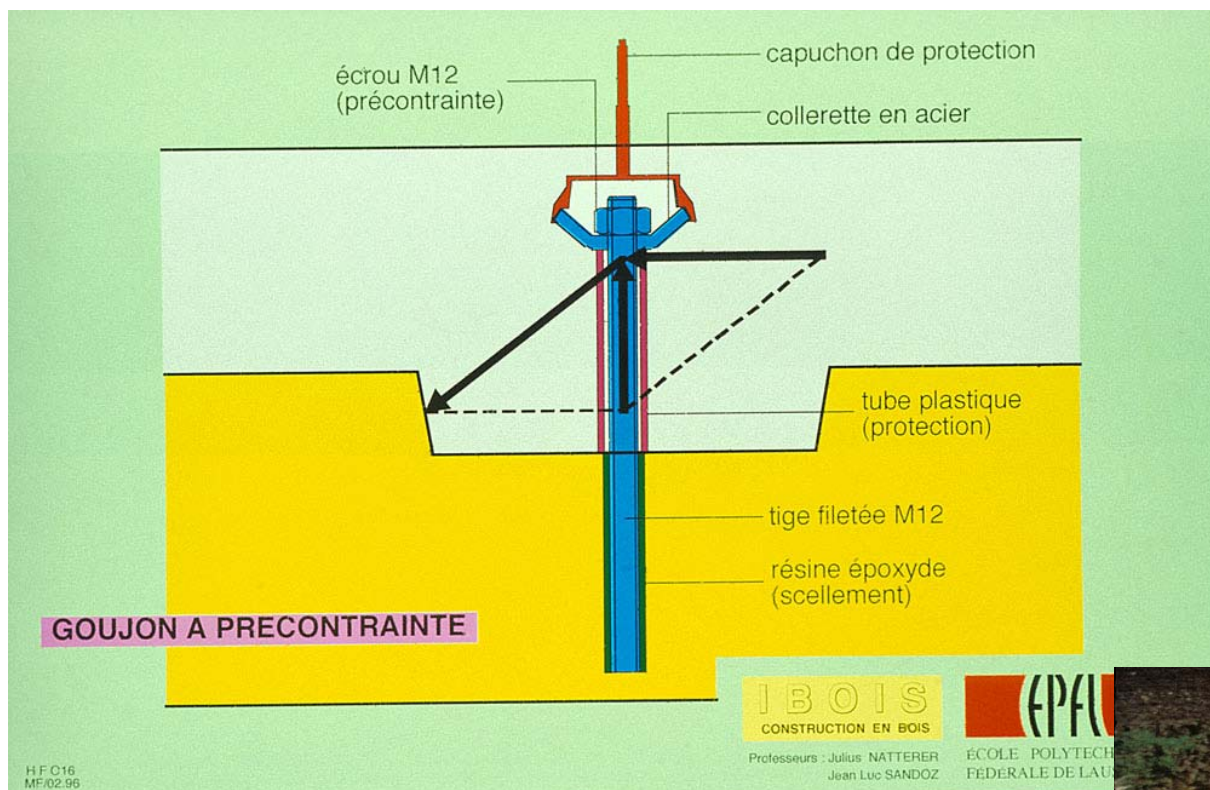


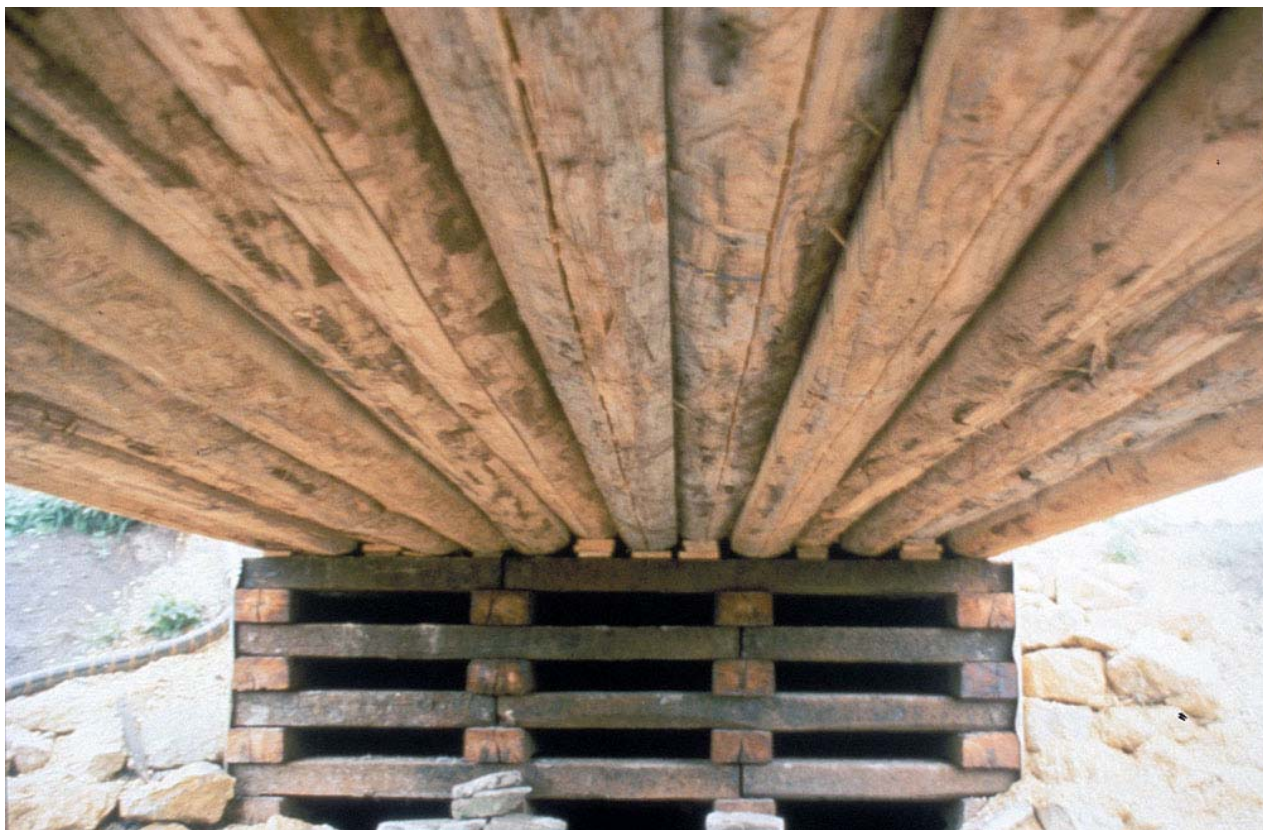
BOIS
CONSTRUCTION EN BOIS
Professeurs : Julius NATTERER
Jean Luc SANDOZ

EPFL
ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Prozentualer Vergleich nach SIA-D 0123











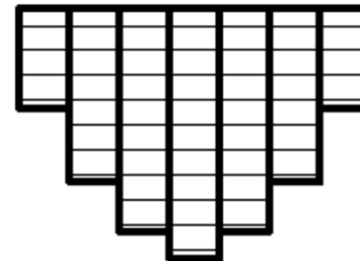
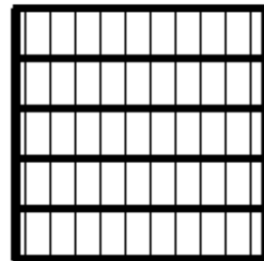
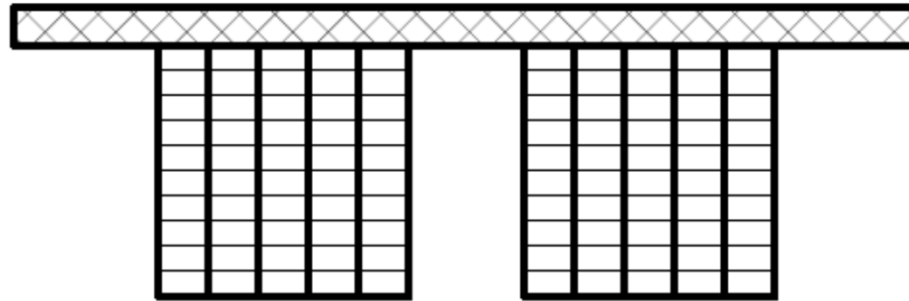


Schaffitzel holzbau

Blockverleimt

schaffitzel.de

Blockverleimt





Stuttgarter Holzbrücke in Weinstadt

63



Stuttgarter Holzbrücke in Weinstadt

64



Stuttgarter Holzbrücke in Weinstadt

65



Neckartenzlingen



Stuttgarter Holzbrücke



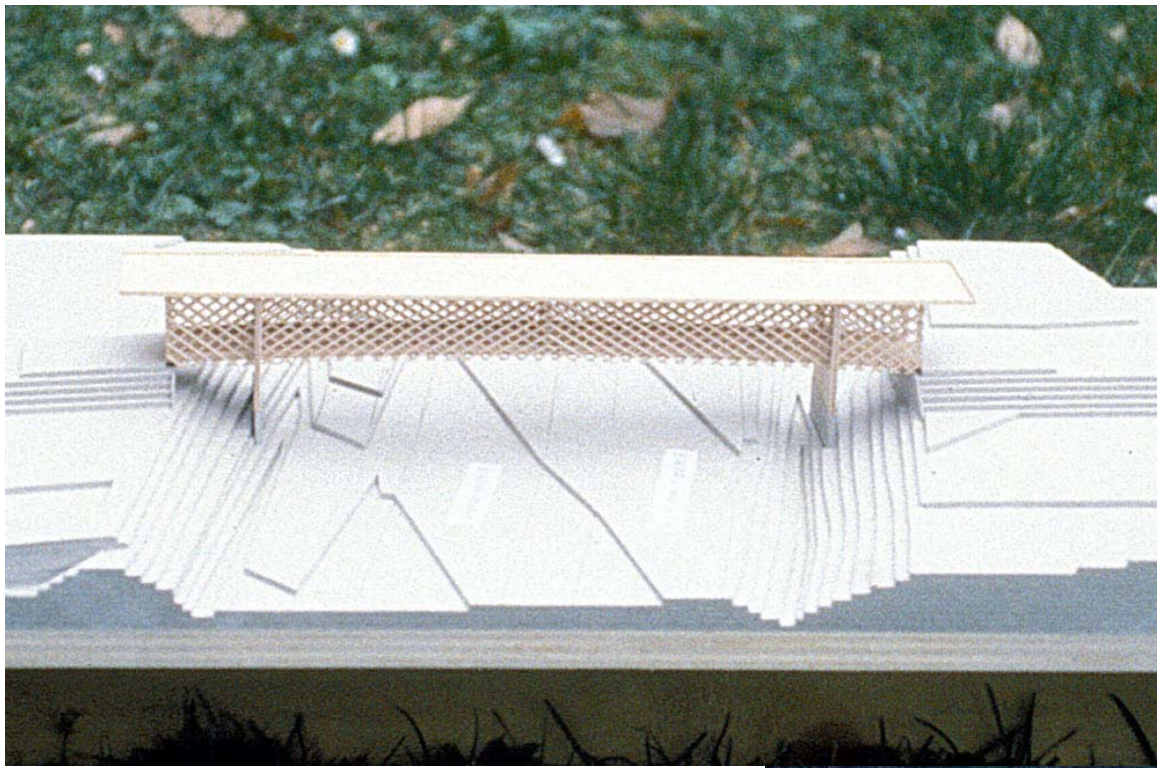
Bad Mergentheim



Bad Mergentheim



Treillis

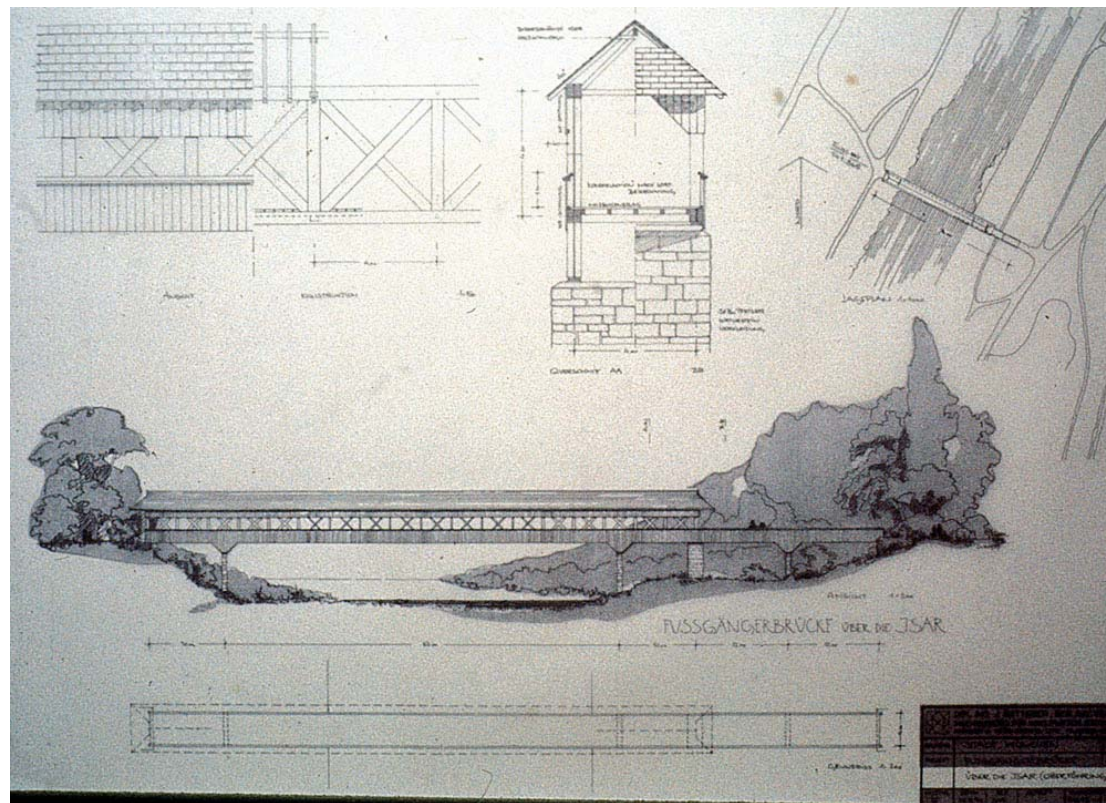


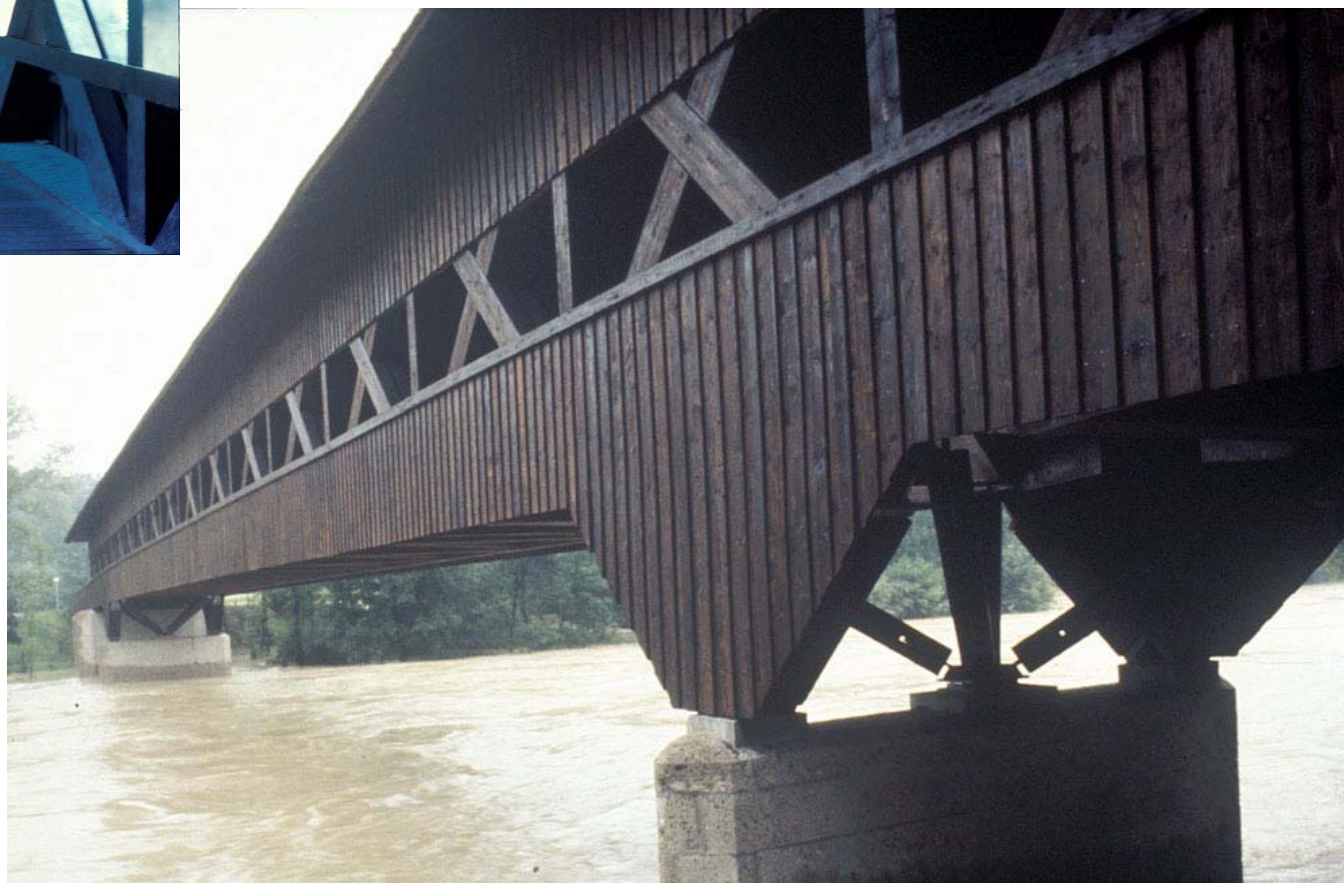










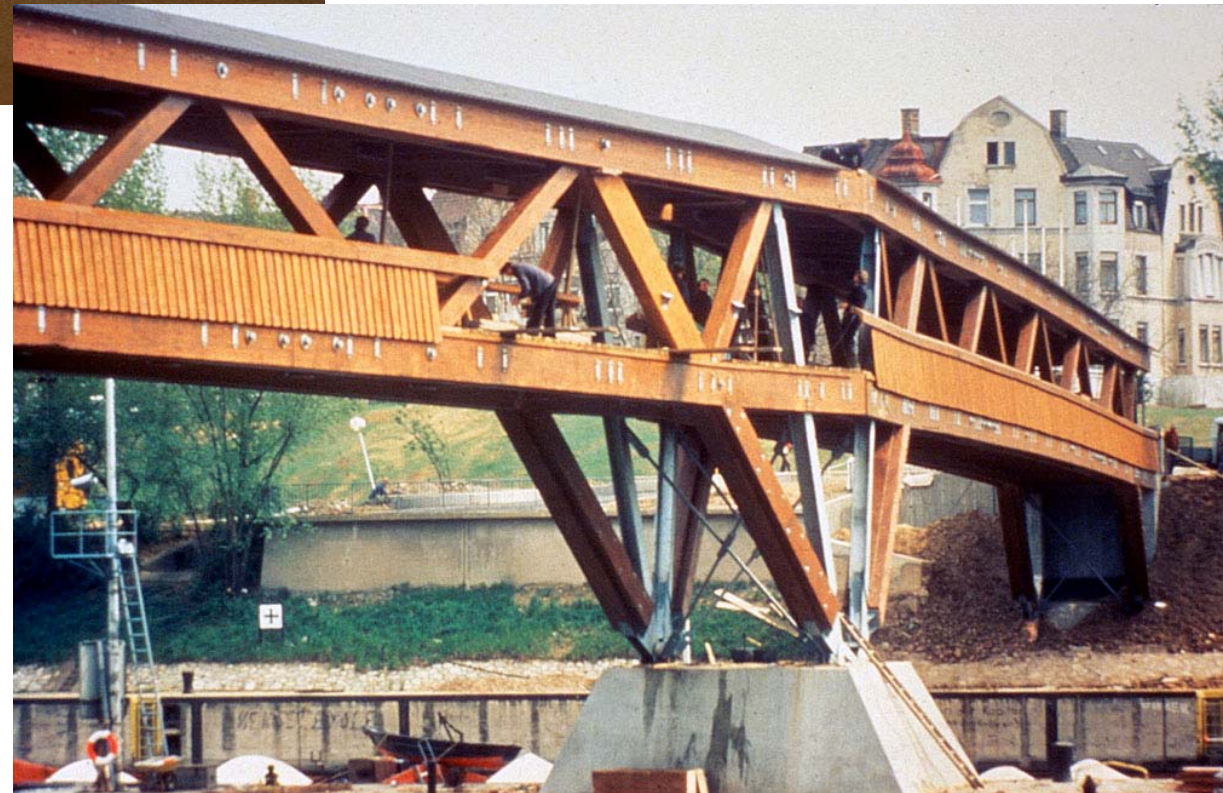




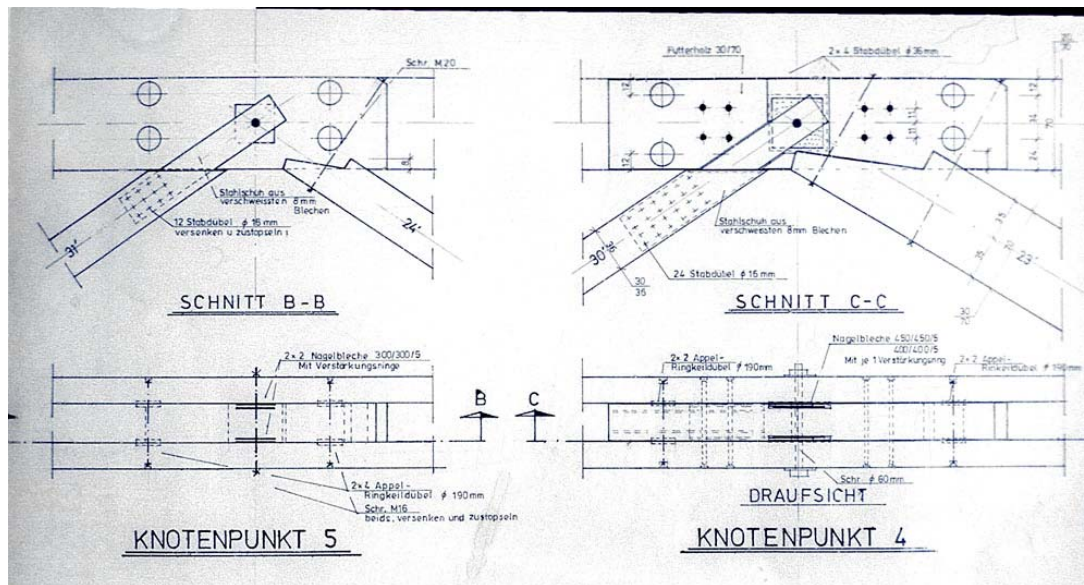


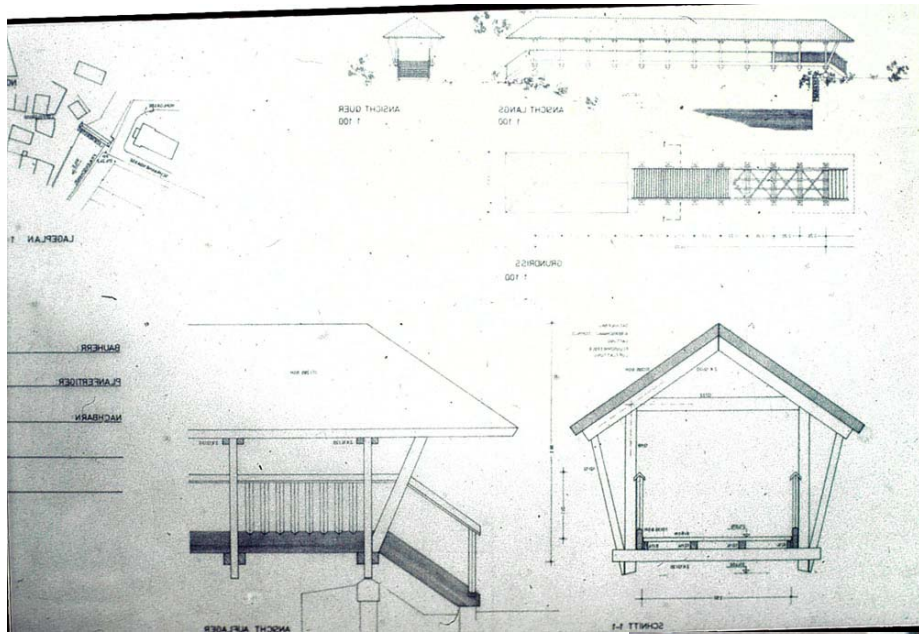


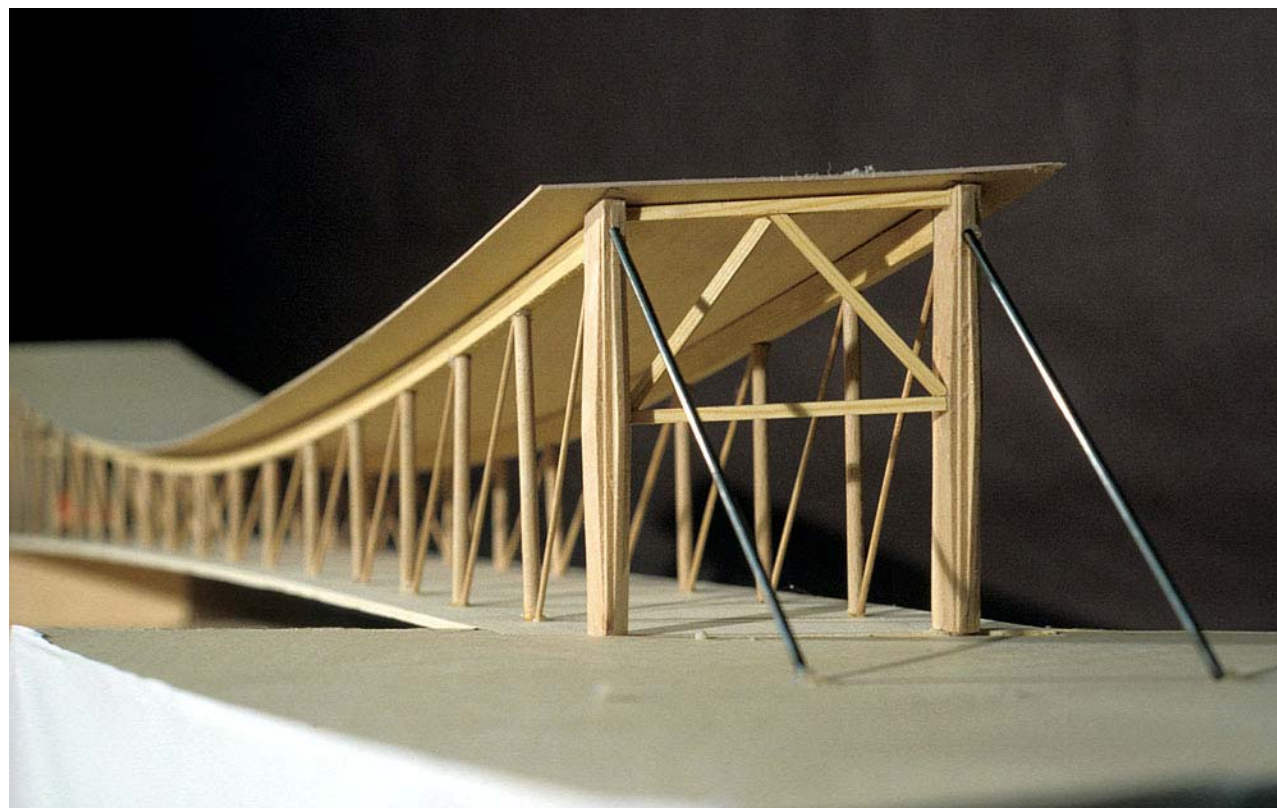


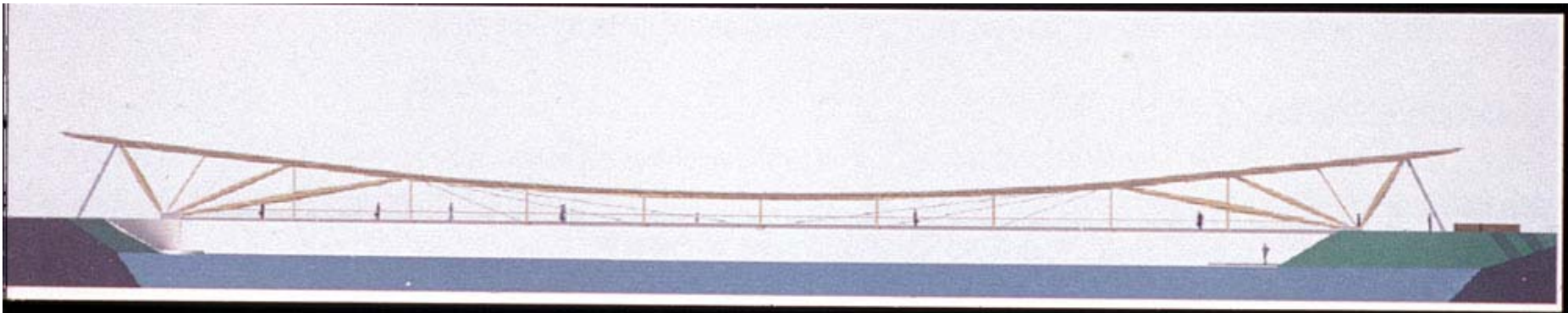


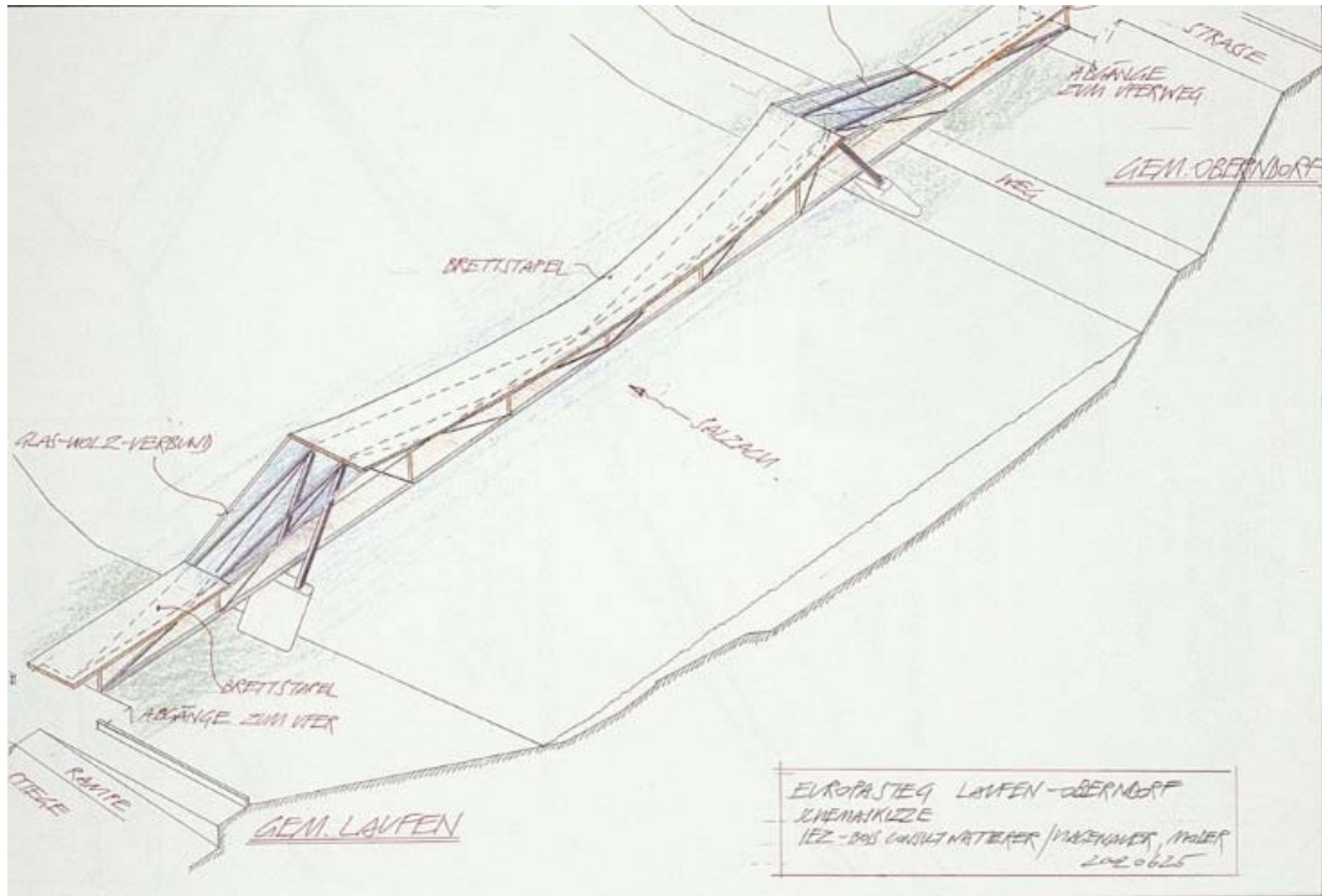












A éviter...







