

# 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 extérieur – Durabilité

# Inspiration

[www.swiss-timber-bridges.ch](http://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:  $\eta_w$  résistance 0.8 ;  
 $\eta_w$  Rigidité 0.9  
 $\phi$  fluage 0.8

# Classe d'emploi

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

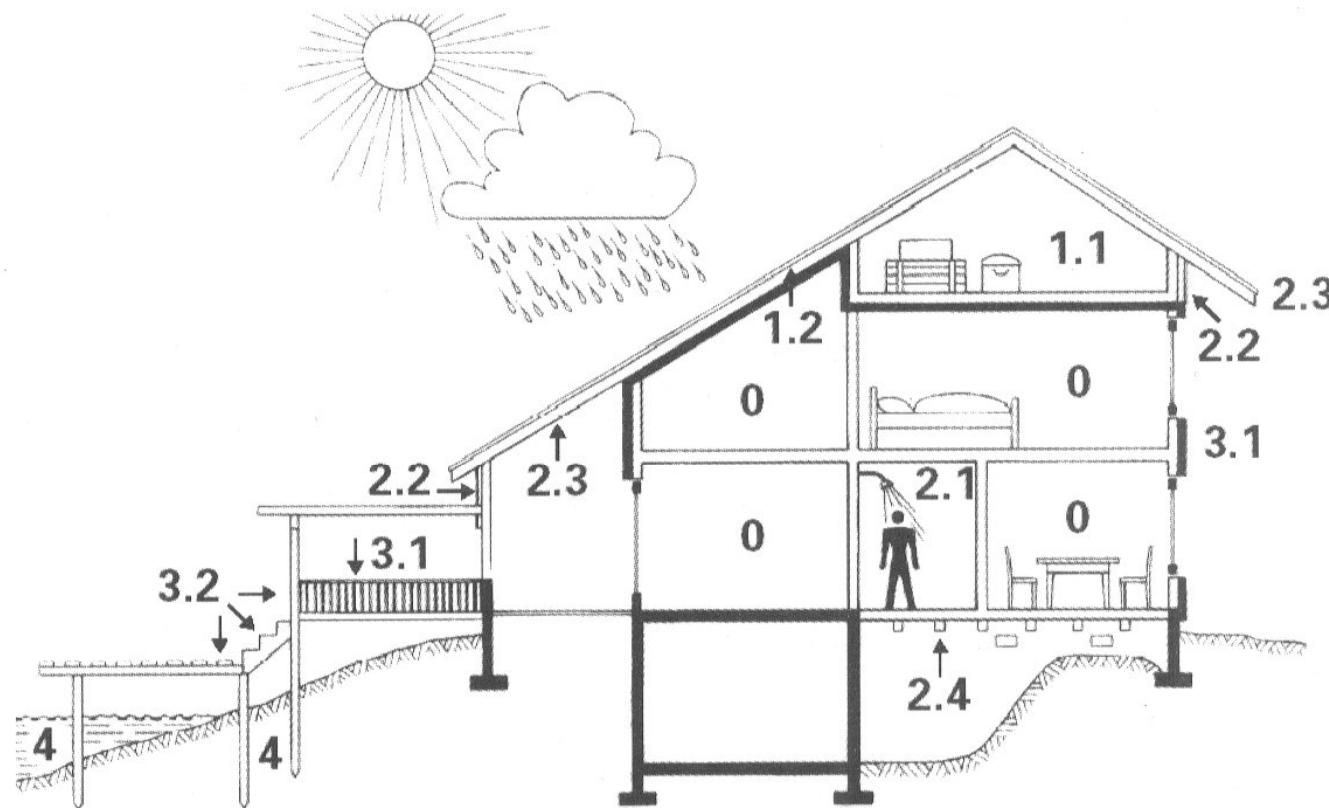


Fig. 2.25 Schéma des classes d'emploi en fonction de l'exposition.

# Classe d'emploi

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



- Classe 2 (pont couvert)



# Revêtement

# Revêtement

## ■ Vers. 01 Poutraison avec lambrissage

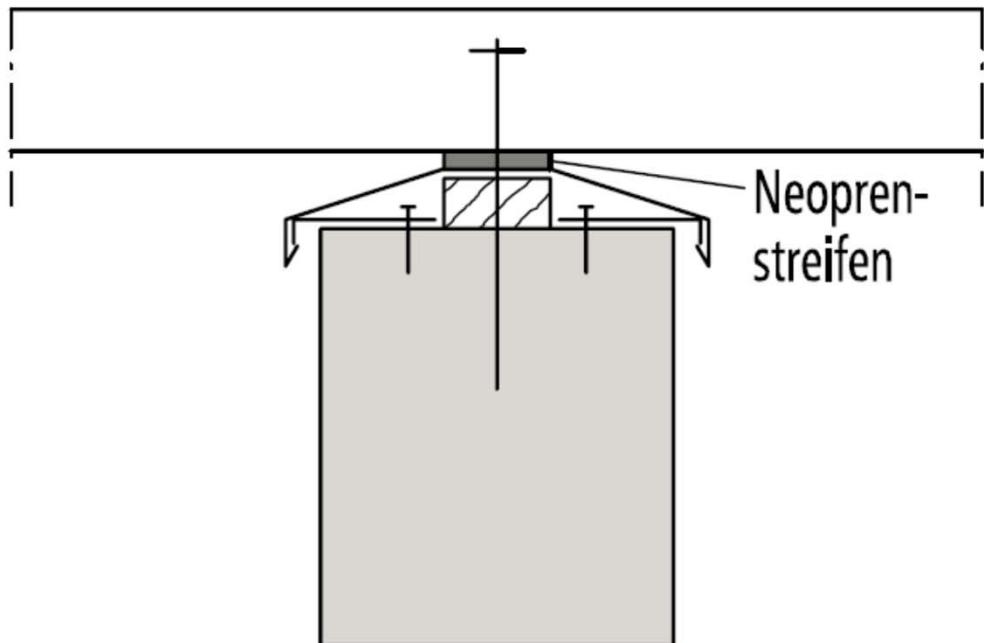
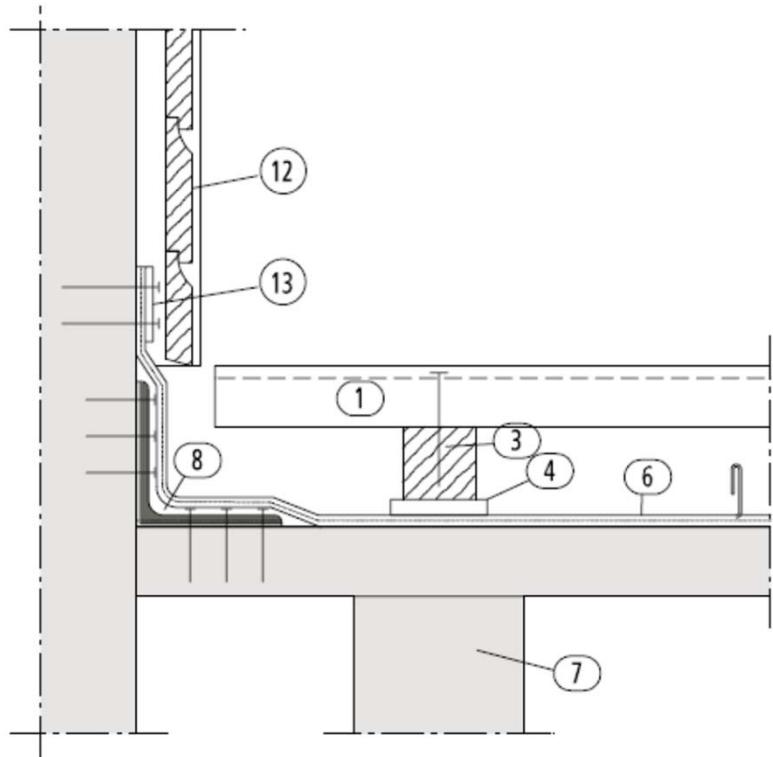


Bild 3.6 Auflagerholz mit Hinterlüftung bei einem breiten Träger

# Revêtement

## ■ Vers. 02 Etanchéité sur construction et lame de bois

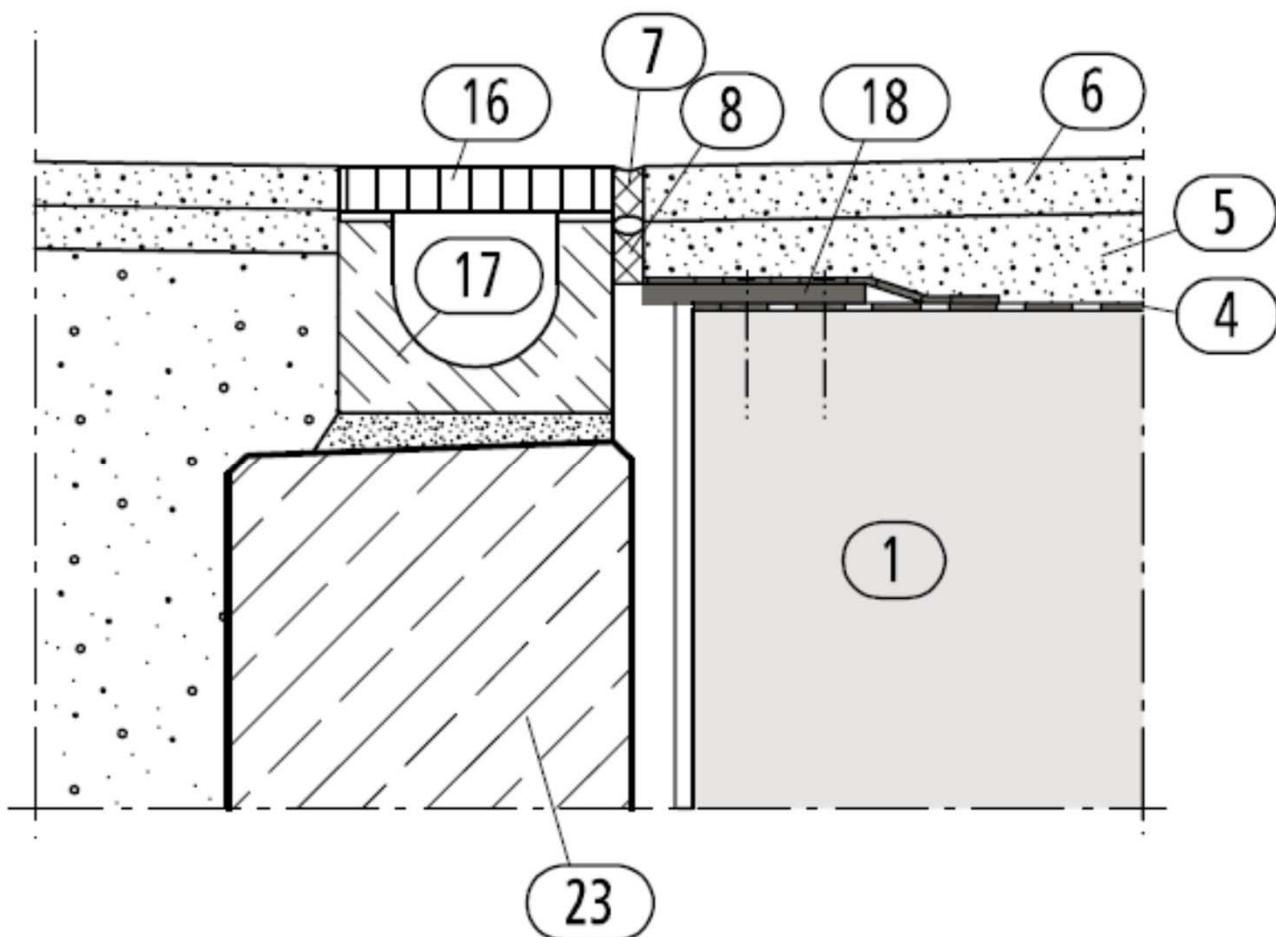


1. Lame de bois
3. Lambourde
4. Appui ponctuel
6. Etanchéité double
7. Structure
8. Cornière structurelle
12. Lame de bois
13. Fixation avec liste

Bild 2.14 Detailschnitt Bohlenrost mit Blechabdichtung; Geh- und Radwegbrücke

# 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

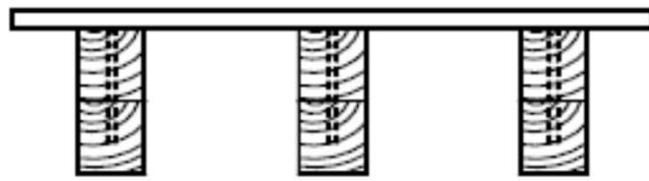
# Système statique

Publication

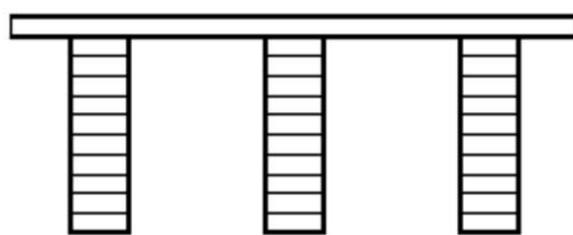
Forum construction en bois – Michael Flach

# Les systèmes statiques

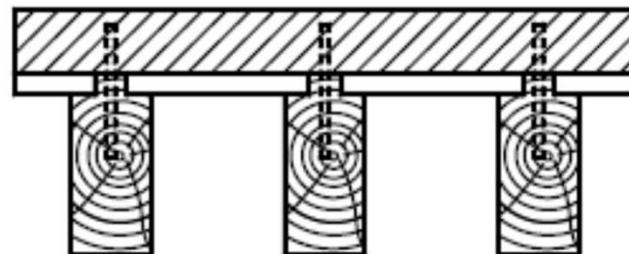
## ■ Poutre en flexion - solivage



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

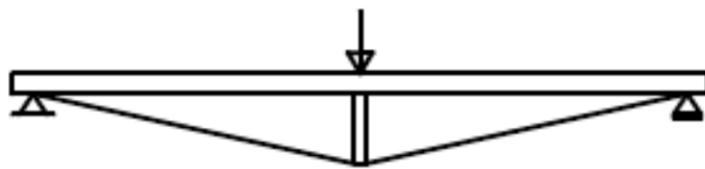


dalle massive en planches clouées

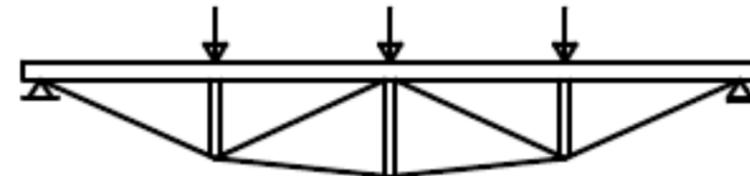


rondins bord à bord pour plancher bois - béton connect

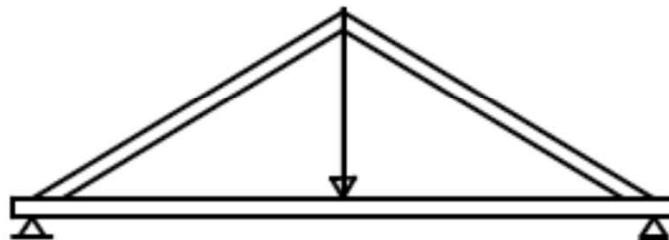
# Poutre appuyée



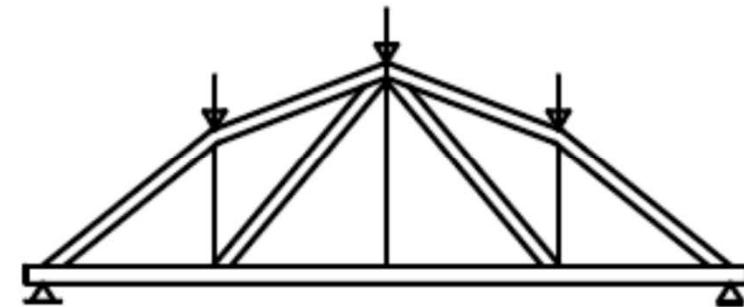
structure sous-tendue triangulaire



structure sous-tendue polygonale

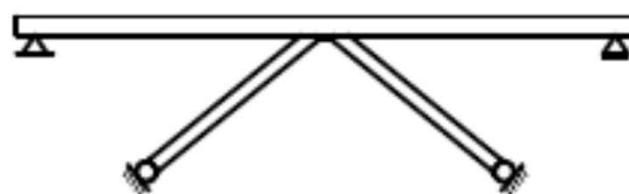


ferme triangulée

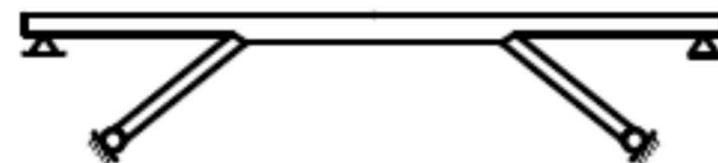


poutre treillis polygonal

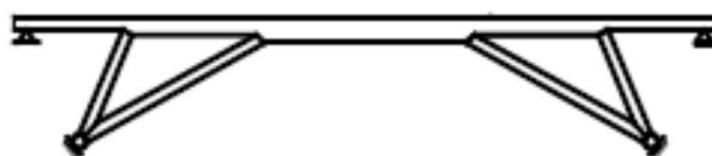
# Système à béquille



deux travées à contrefiches



trois travées à contrefiches



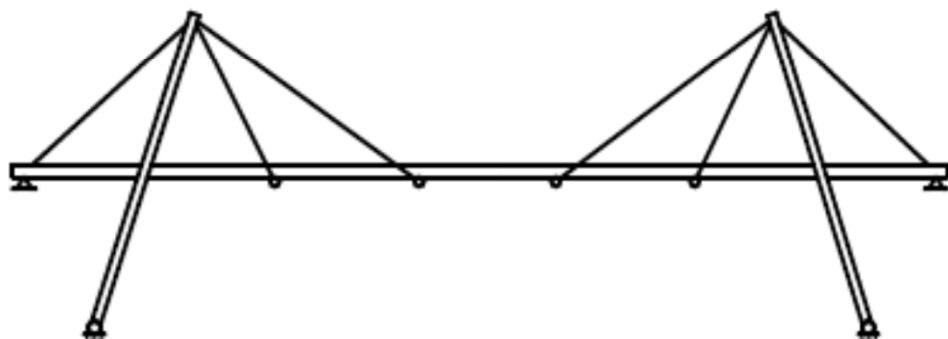
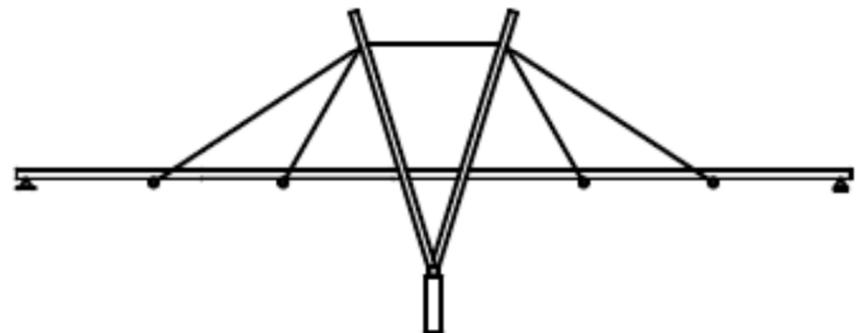
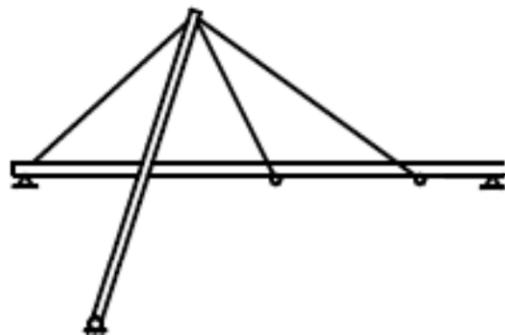
cinq travées à contrefiches en V



sept travées à contrefiches branchées

# Haubanée

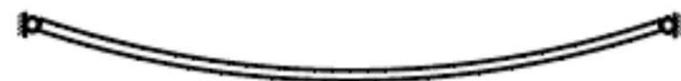
- Simple ou double



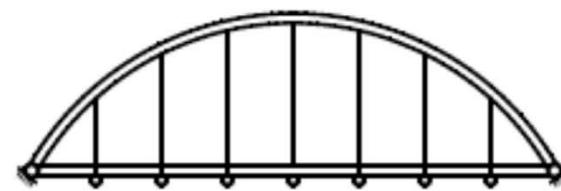
# Les arcs



pont en arche



pont suspendu en chaînette

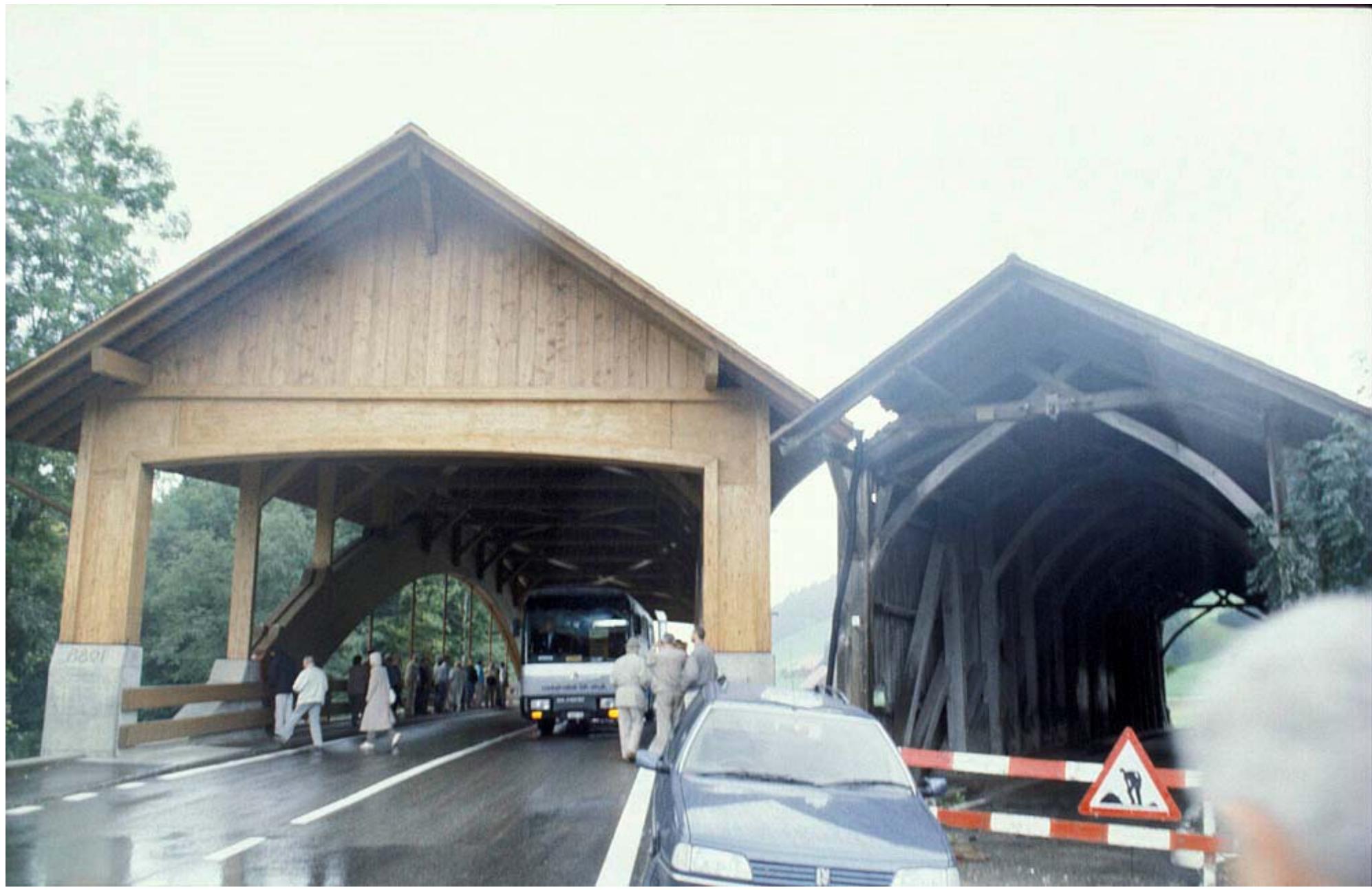


pont de type bowstring

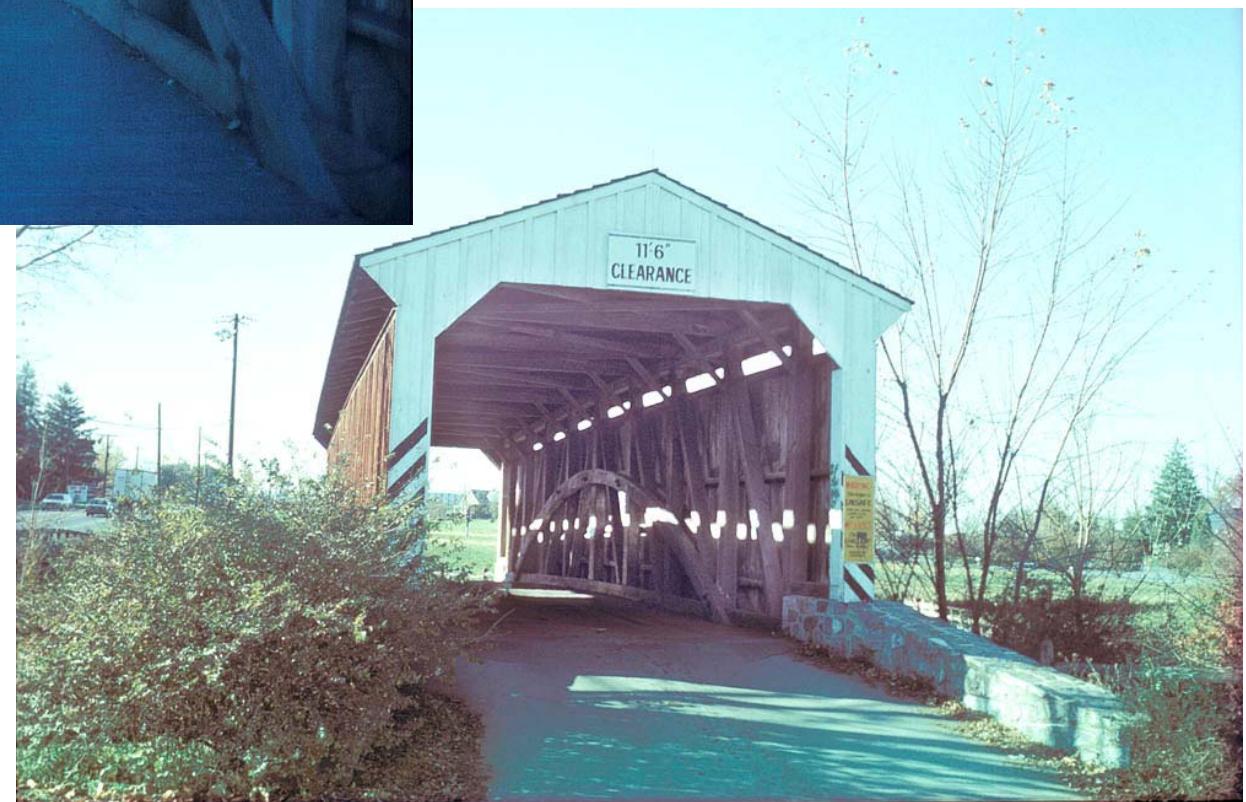
# Quelques exemples

Eléments importants: 1 structure principale  
2 stabilisation

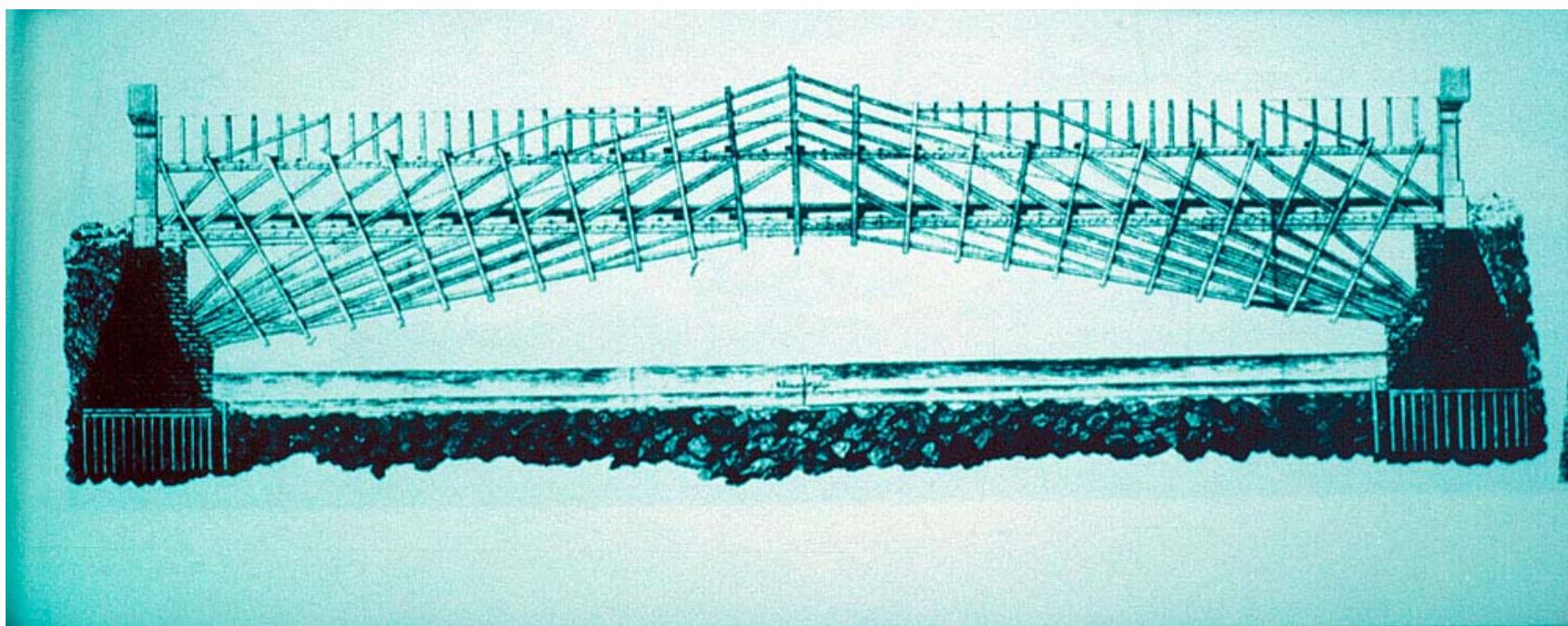












# Hans Ulrich Grubenmann

- Charpentier Suisse
- Né en 1709 et mort en 1783



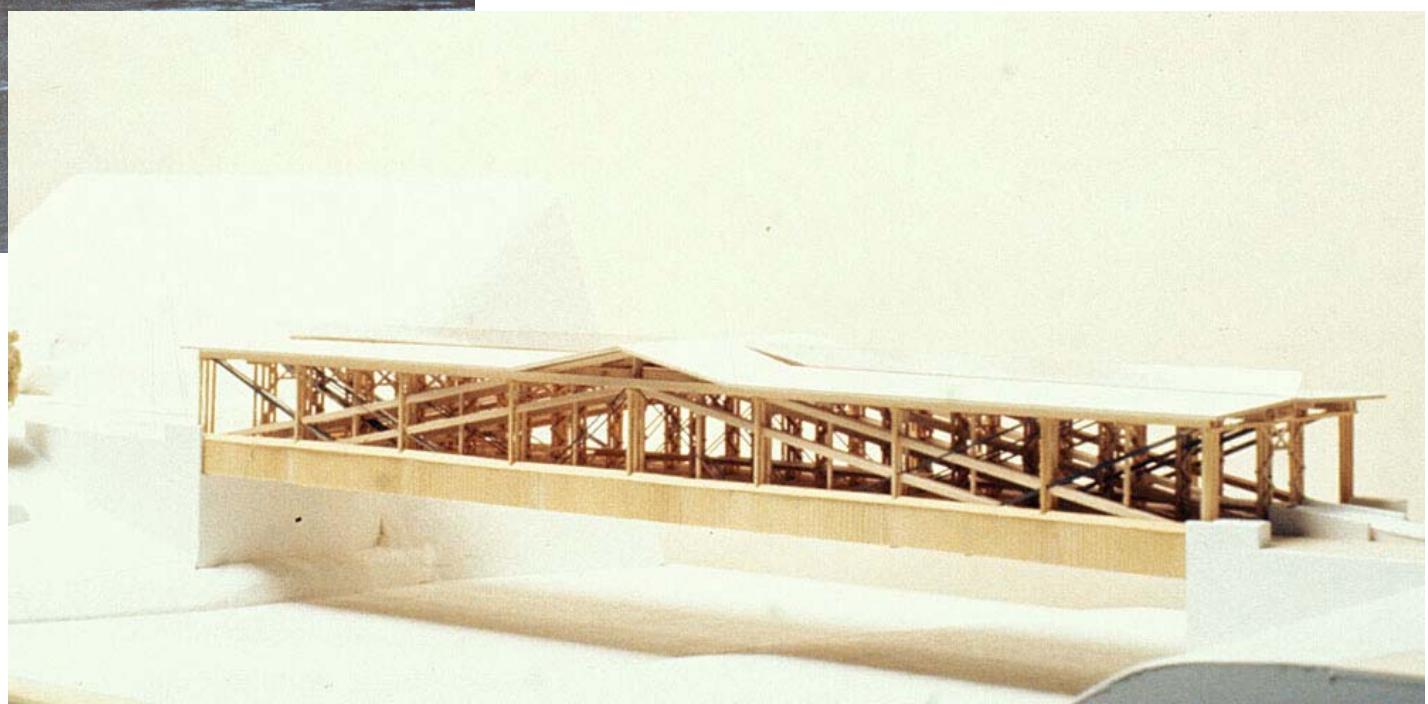
Source: wikipedia

- A réalisé un projet de pont en bois à Schaffouse de 119m de portée

# Pont de Schaffouse



# Béquille





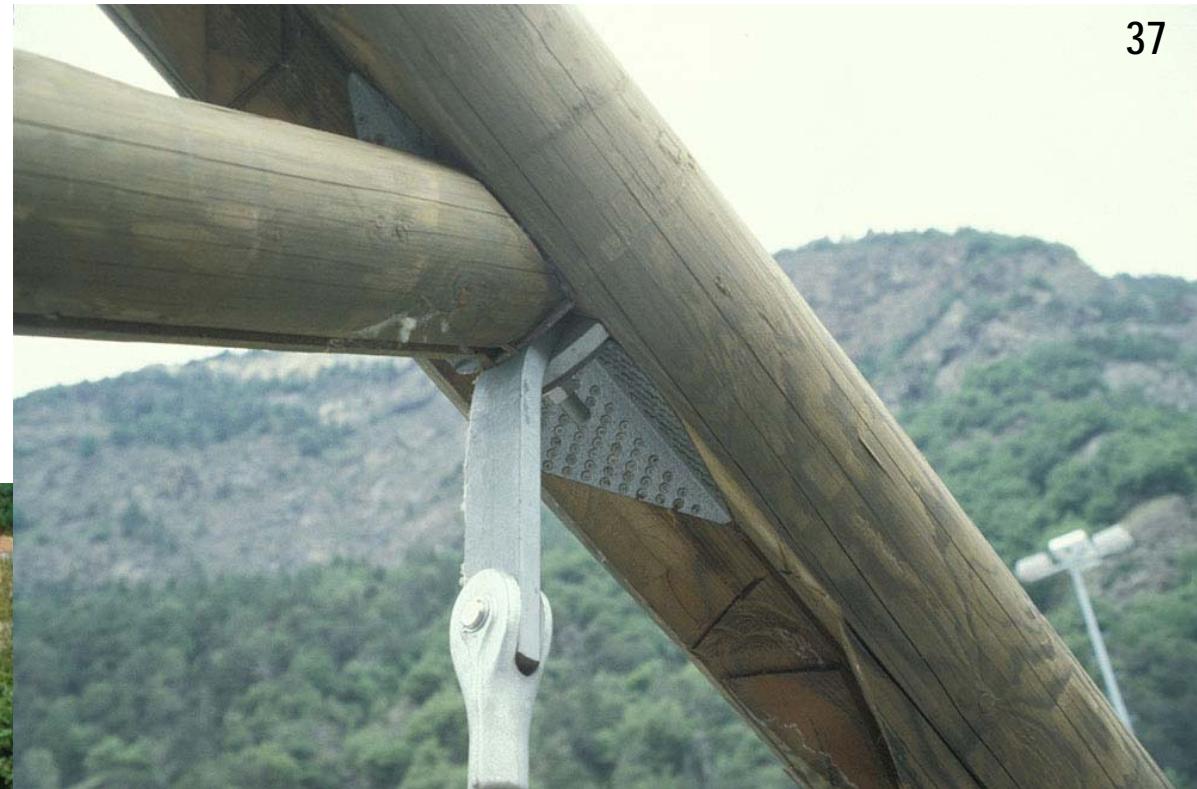


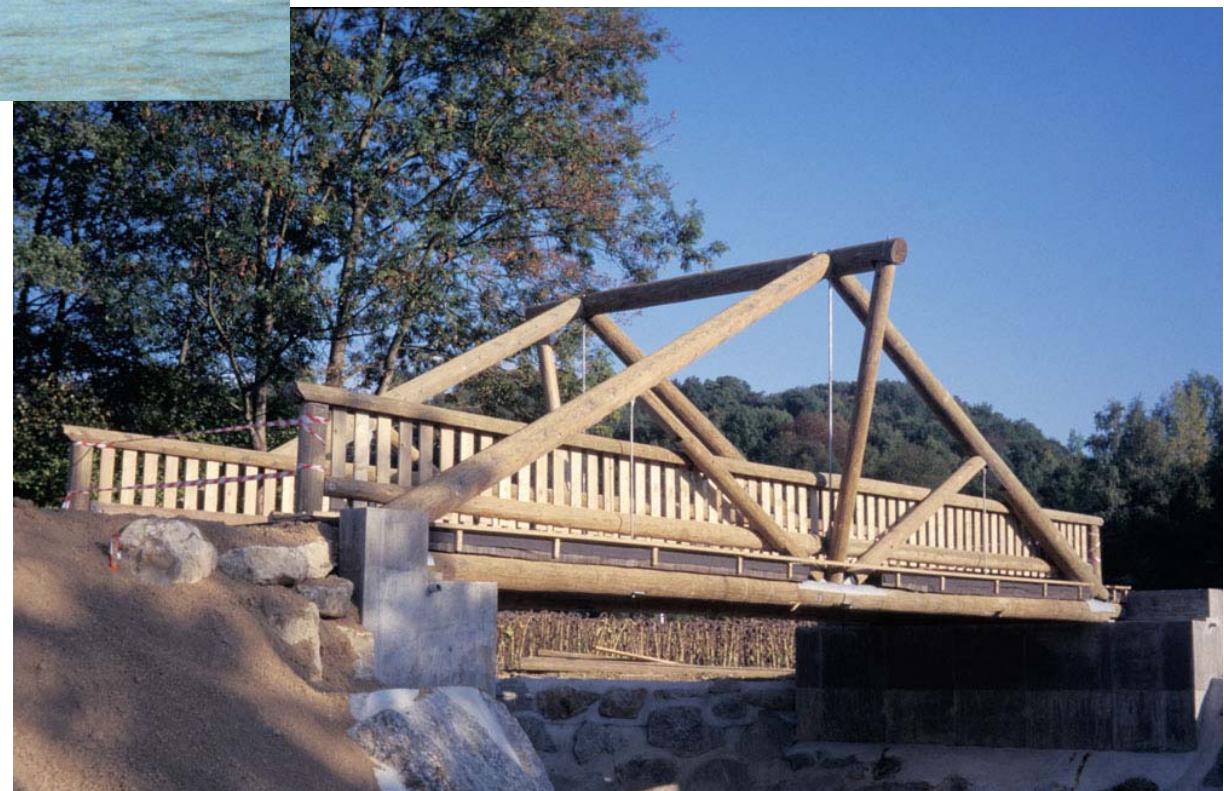




# Poutre «suspendue»









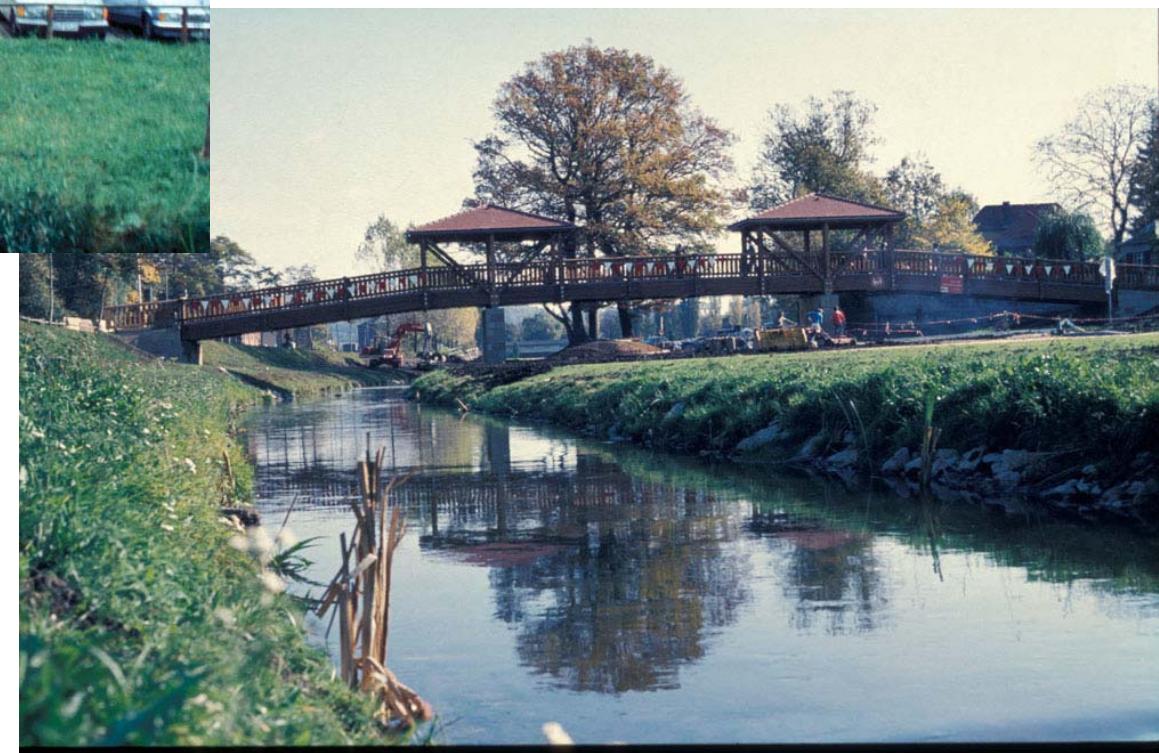
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[www.swiss-timber-bridges.ch](http://www.swiss-timber-bridges.ch)

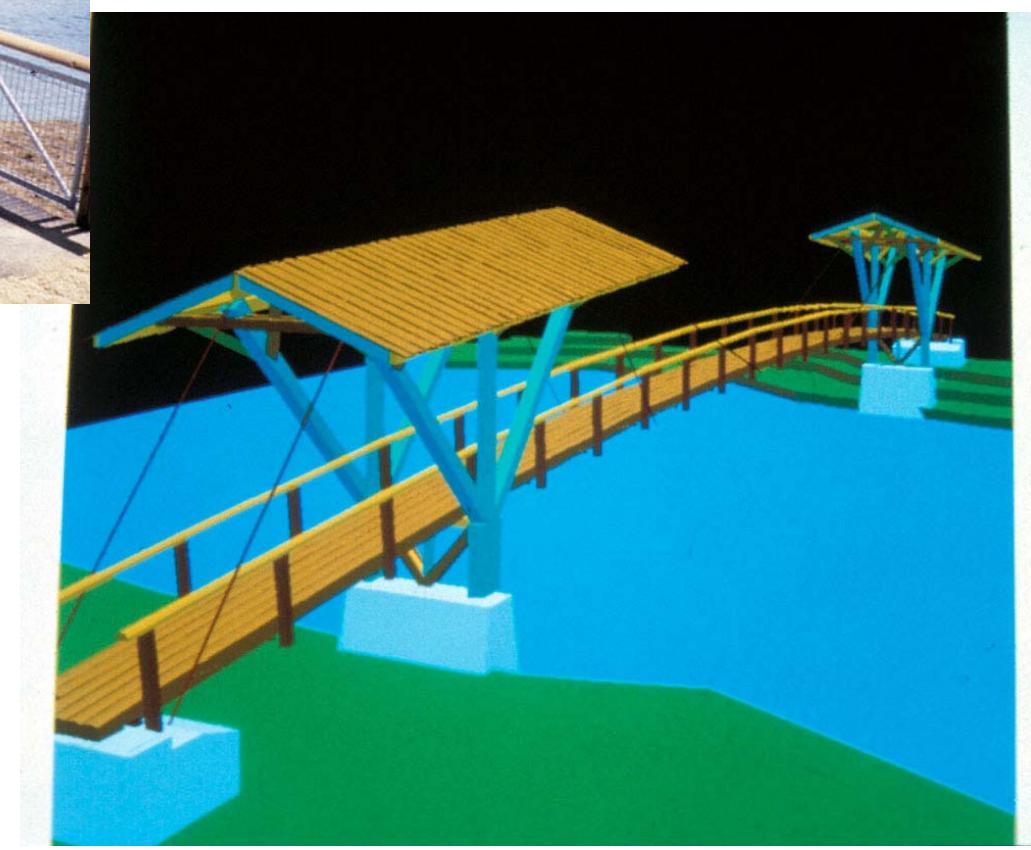


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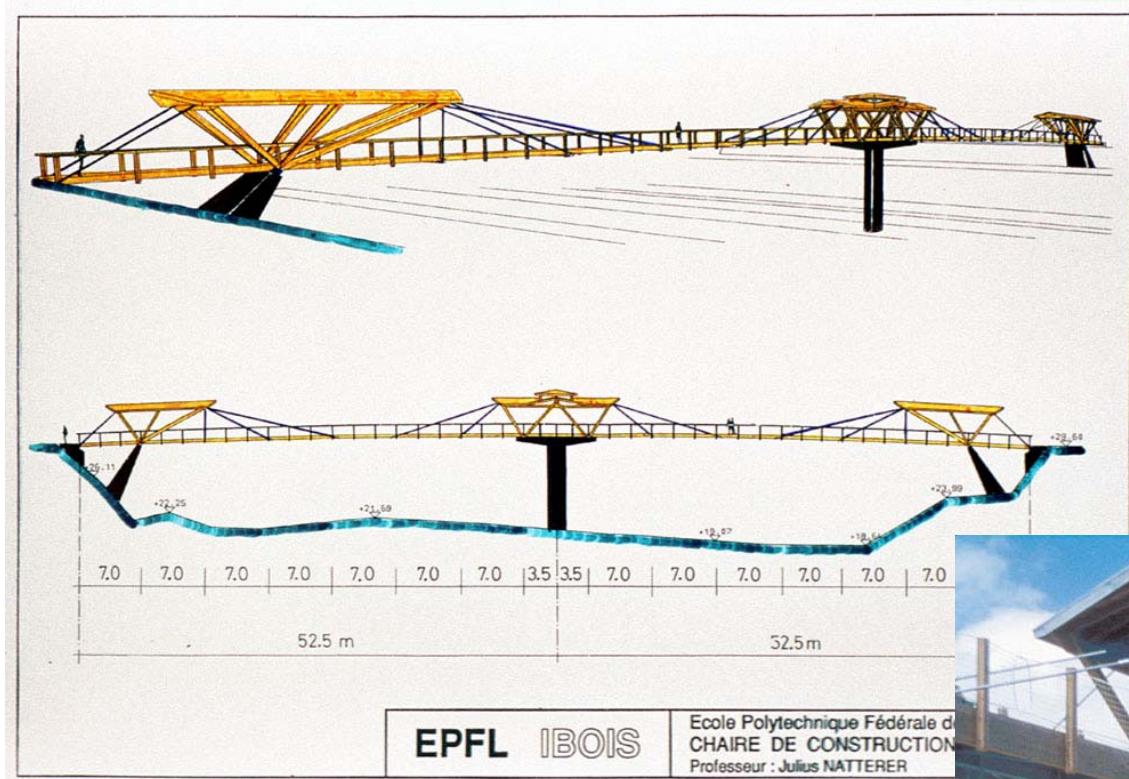


haubané



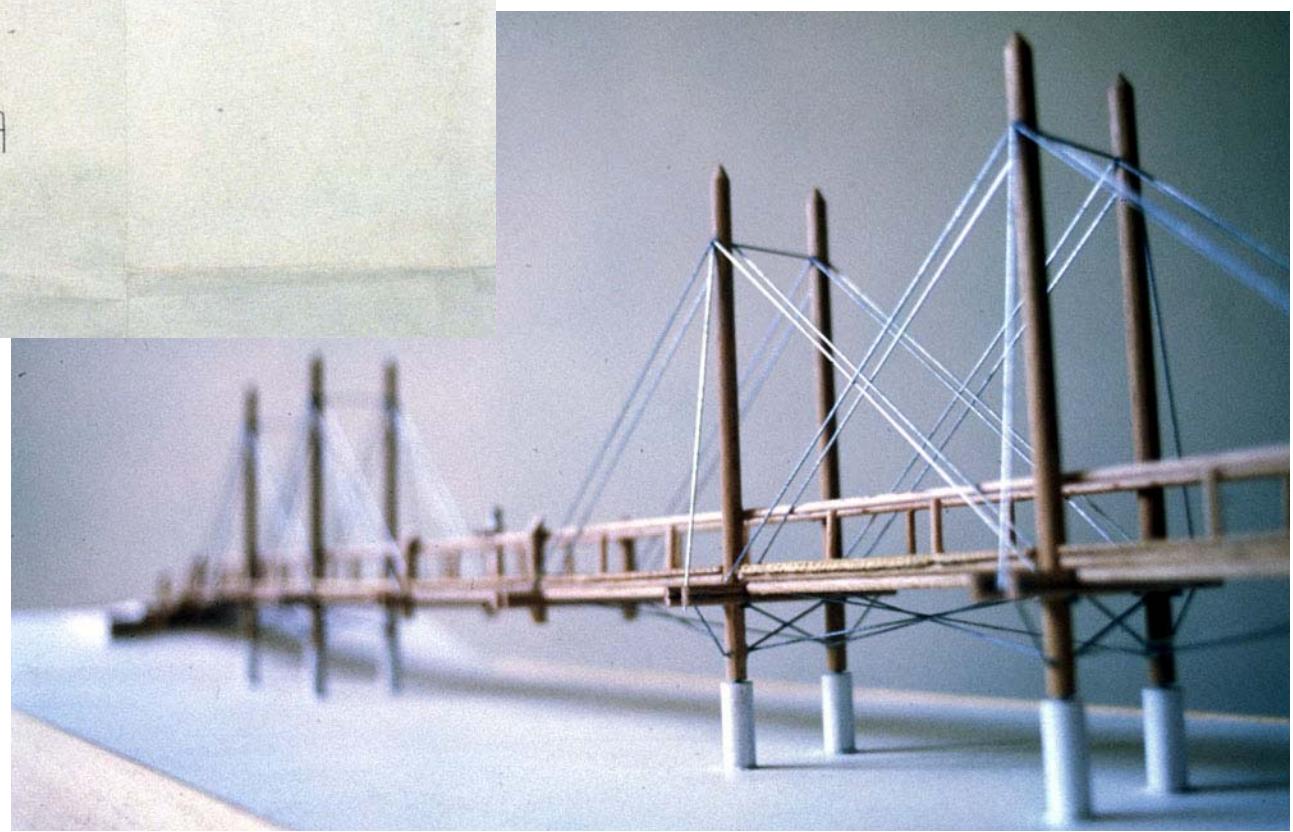
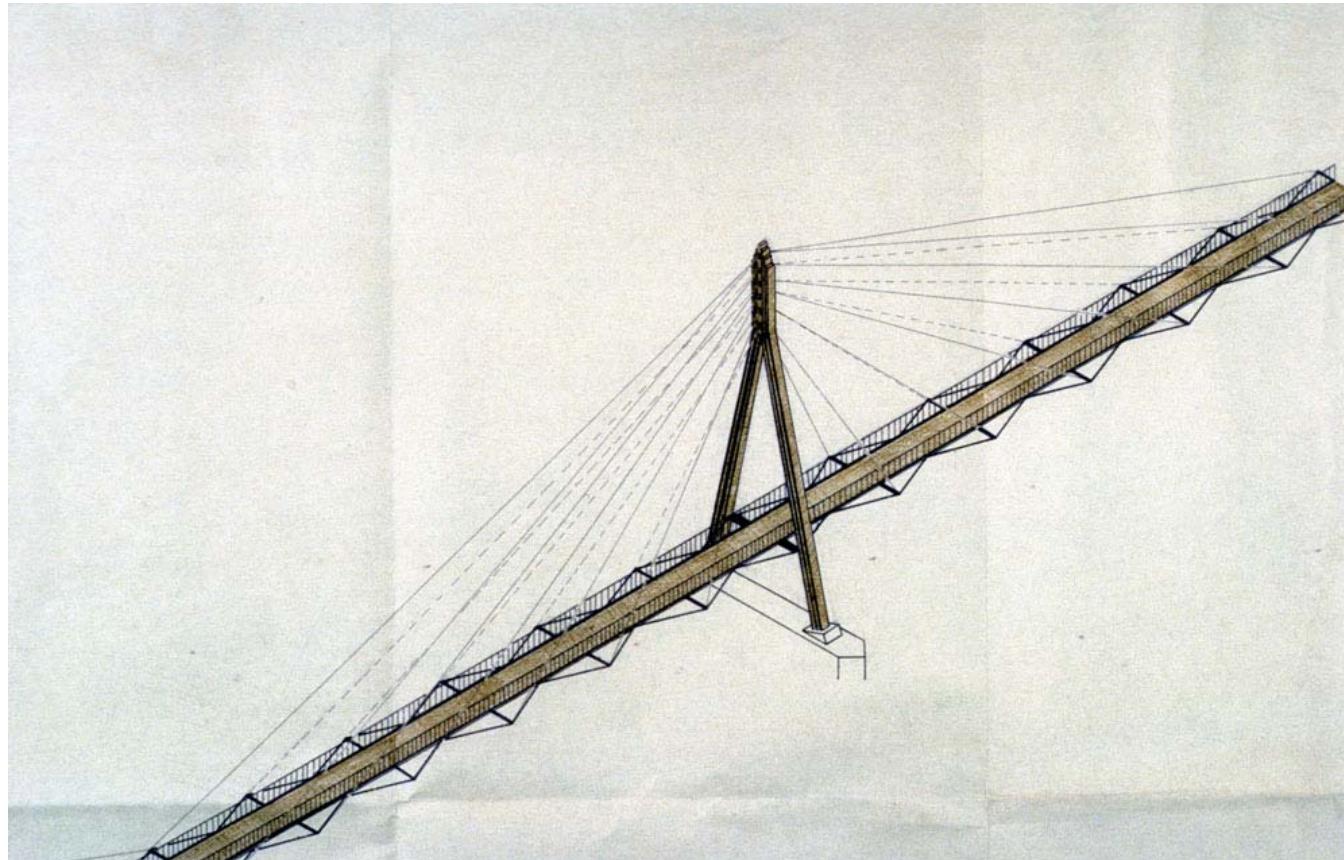


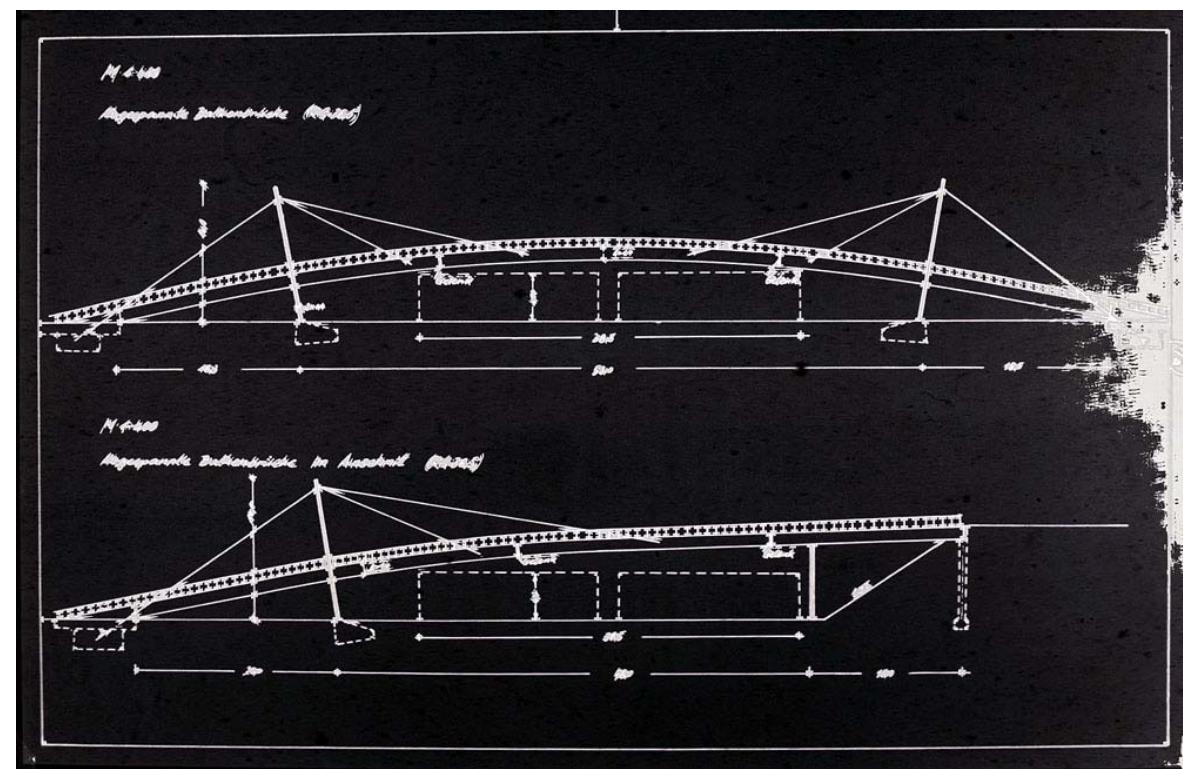
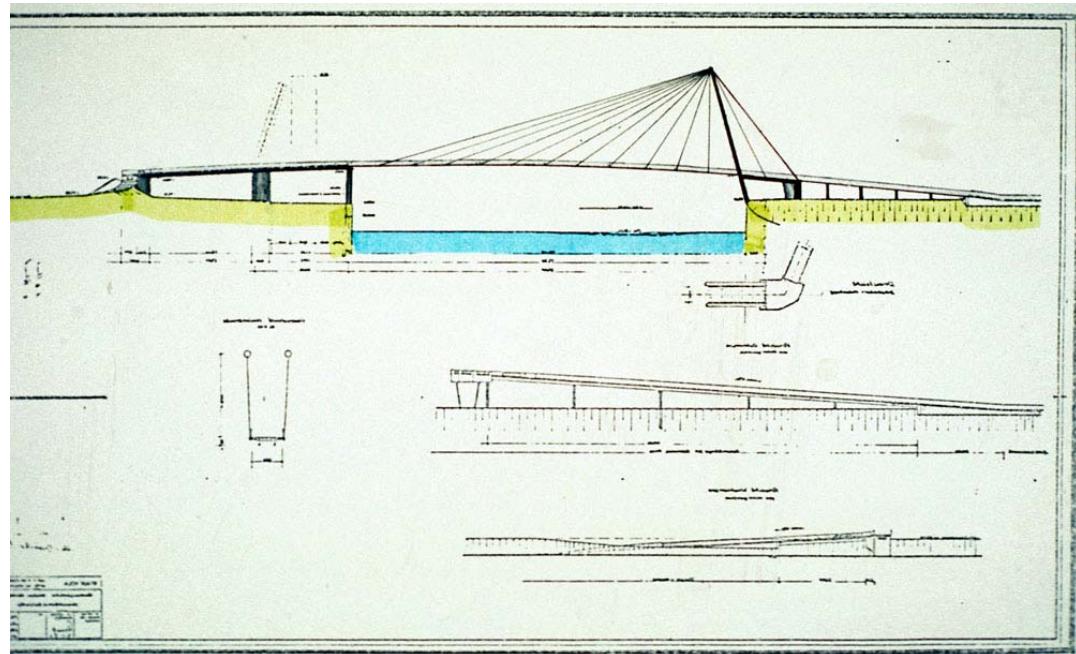




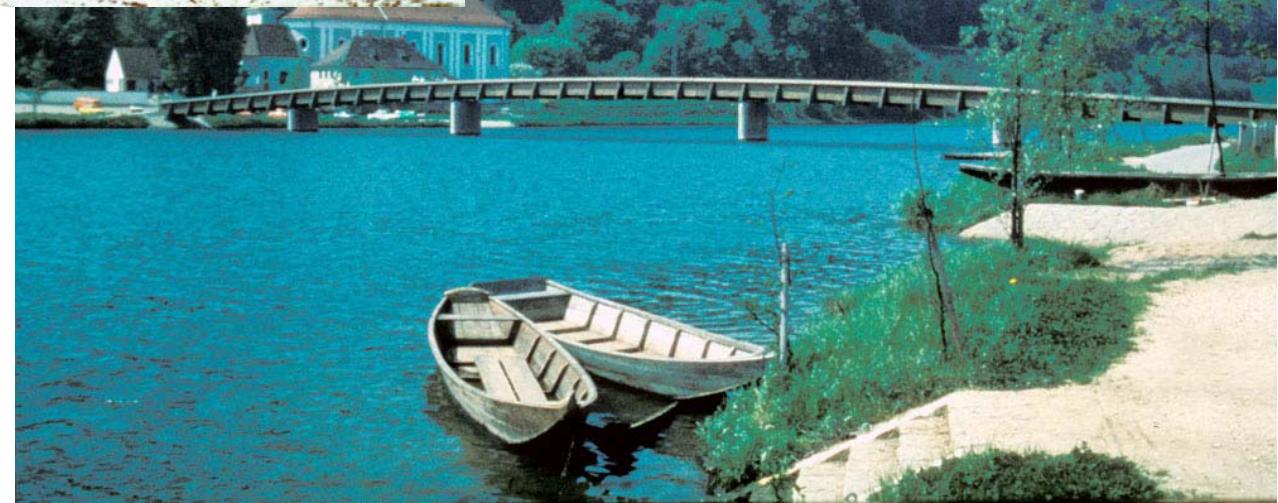








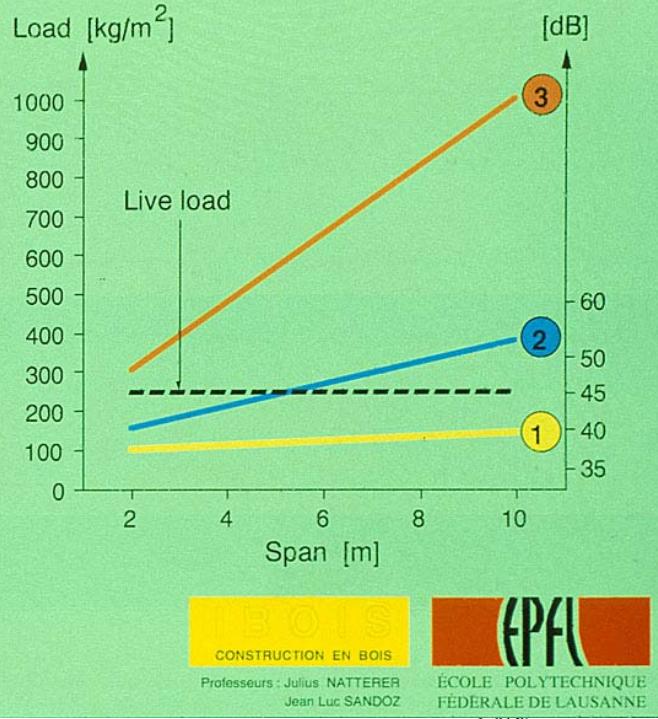
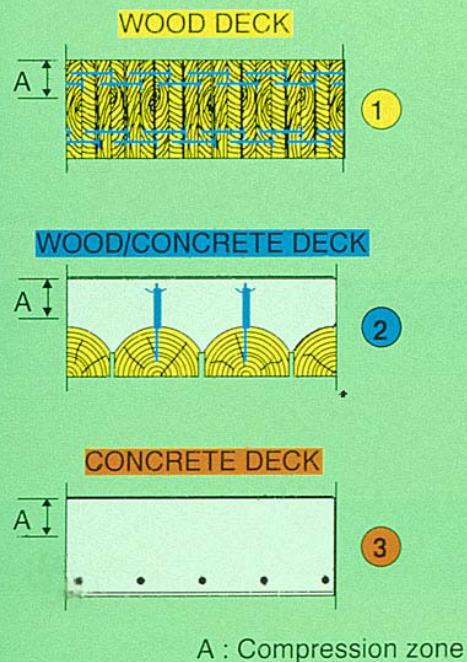
# Pont poutre



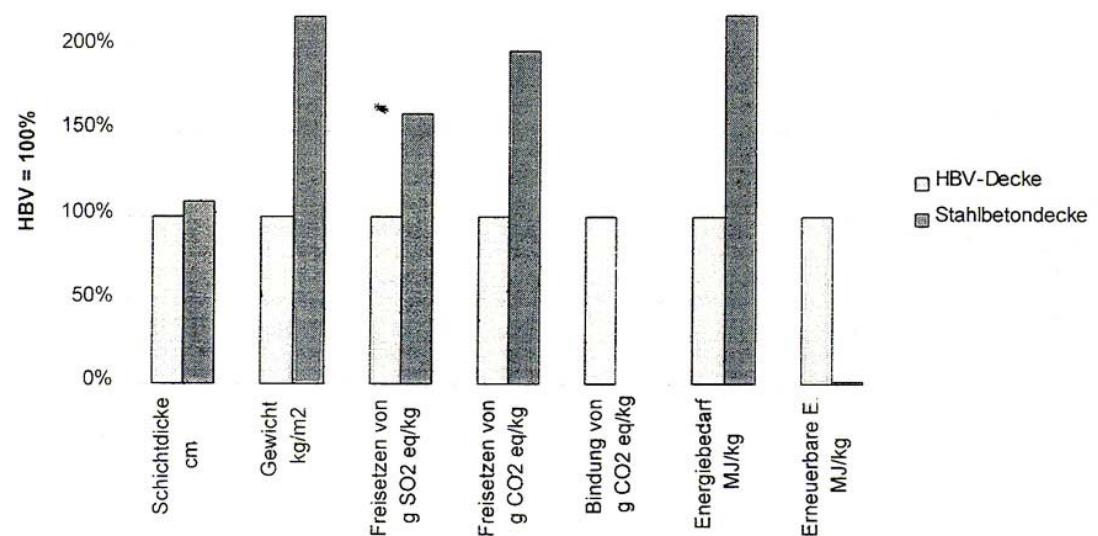


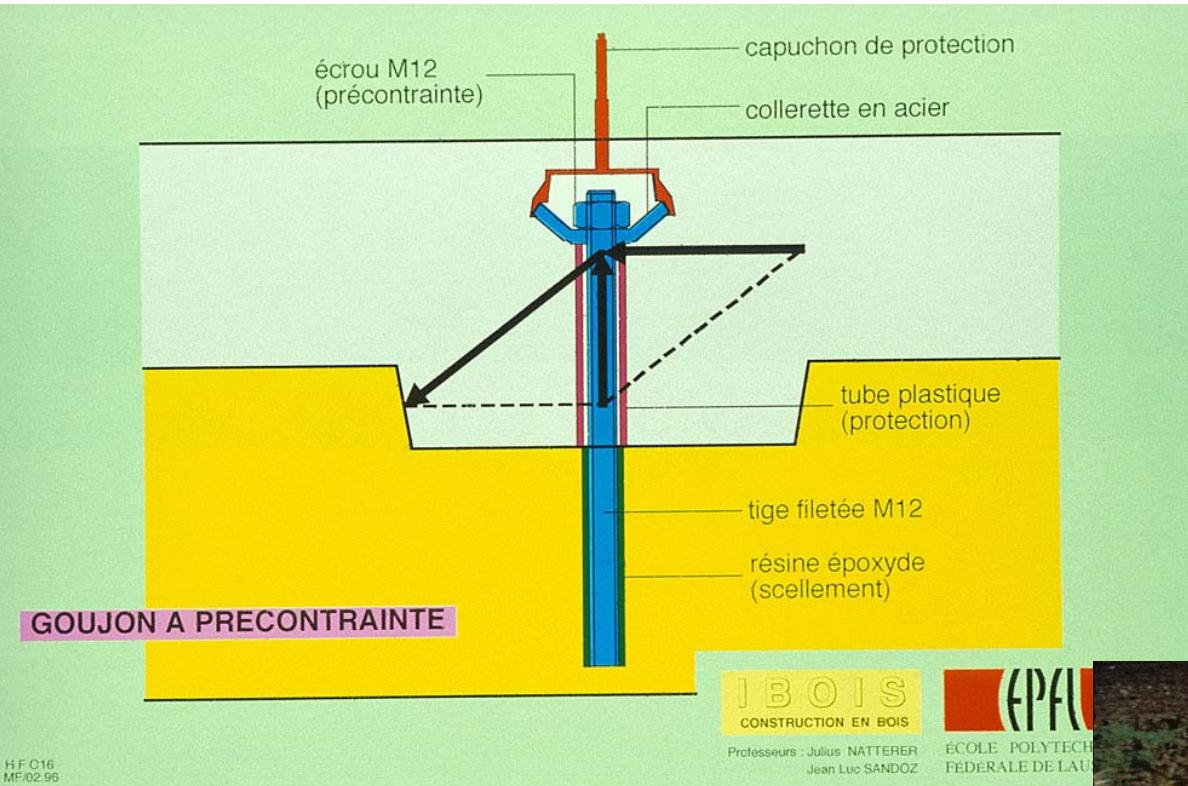


## COMPARISON LIVE AND DEAD LOAD



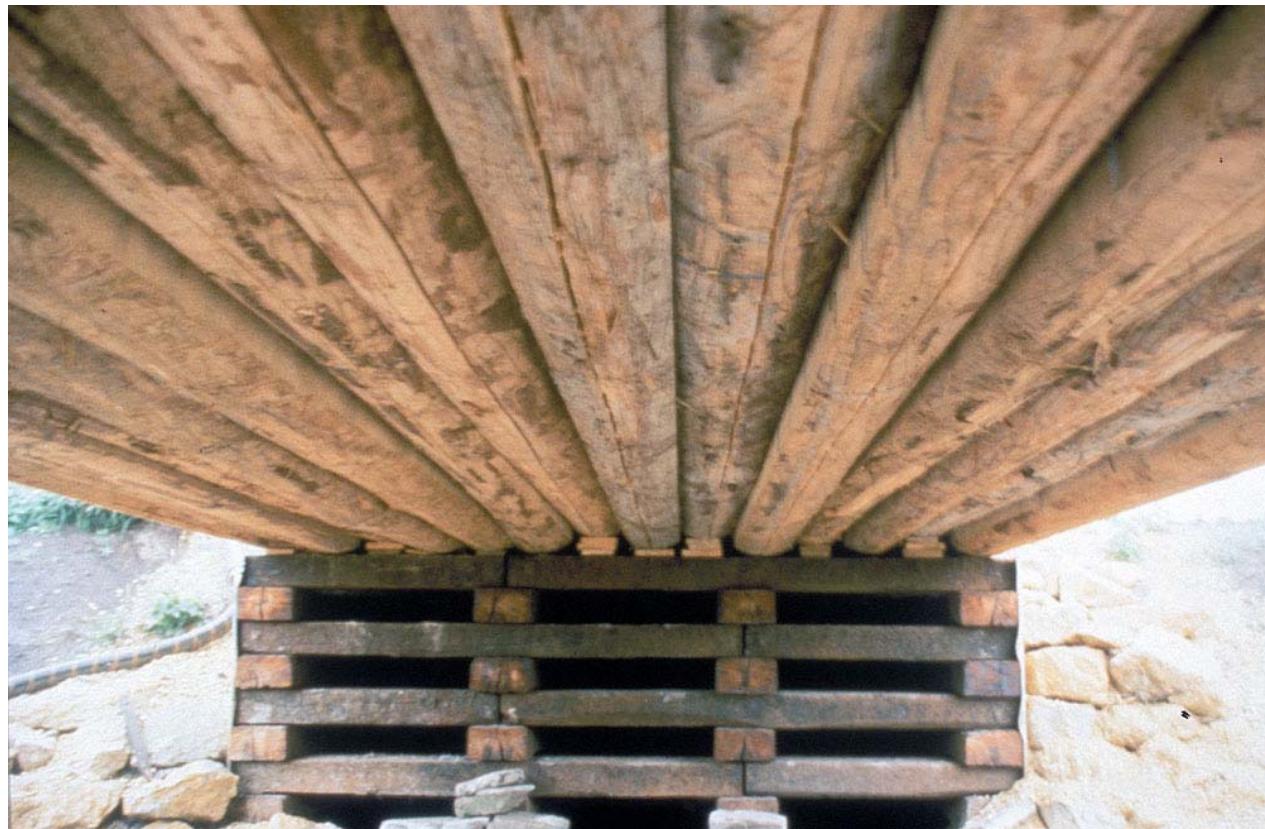
Prozentualer Vergleich nach SIA-D 0123



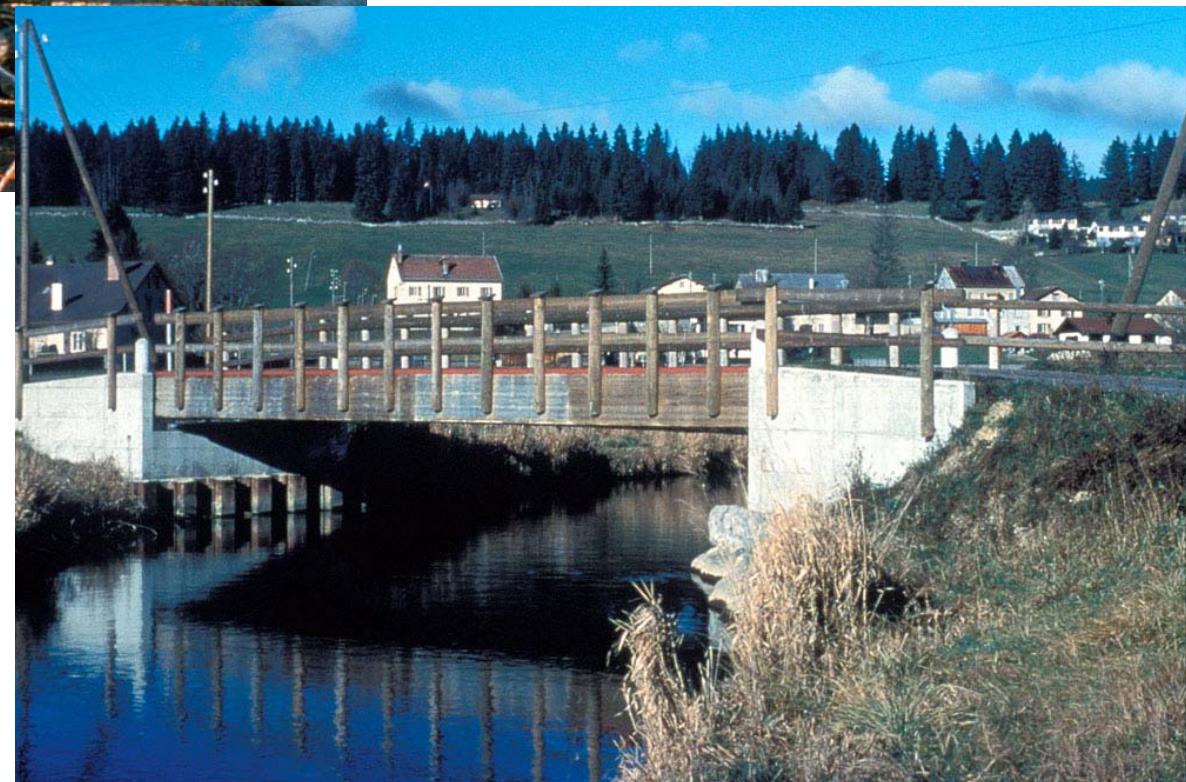
HFO16  
MF/02.96IBOIS  
CONSTRUCTION EN BOISProfesseurs : Julius NATTERER  
Jean Luc SANDOZ

EPFL

ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE







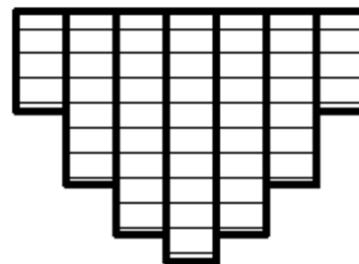
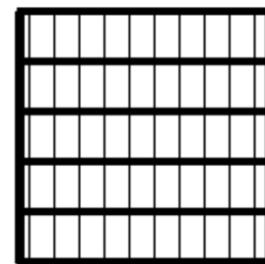
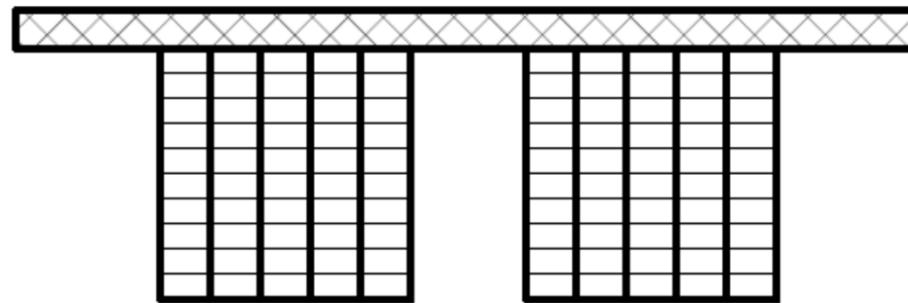


**Schaffitzel holzbau**

Blockverleimt

[schaffitzel.de](http://schaffitzel.de)

# Blockverleimt





# Stuttgarter Holzbrücke in Weinstadt

63



# Stuttgarter Holzbrücke in Weinstadt



# Stuttgarter Holzbrücke in Weinstadt



# Neckartenzlingen



# Stuttgarter Holzbrücke



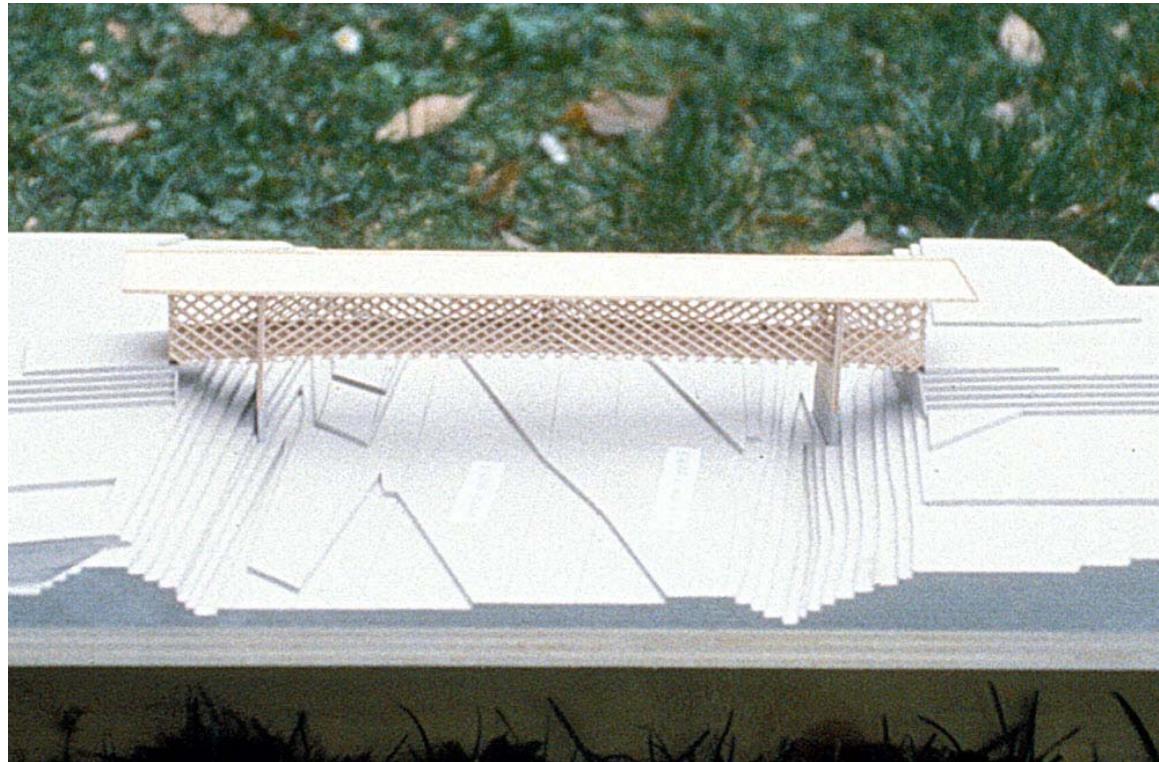
# Bad Mergentheim



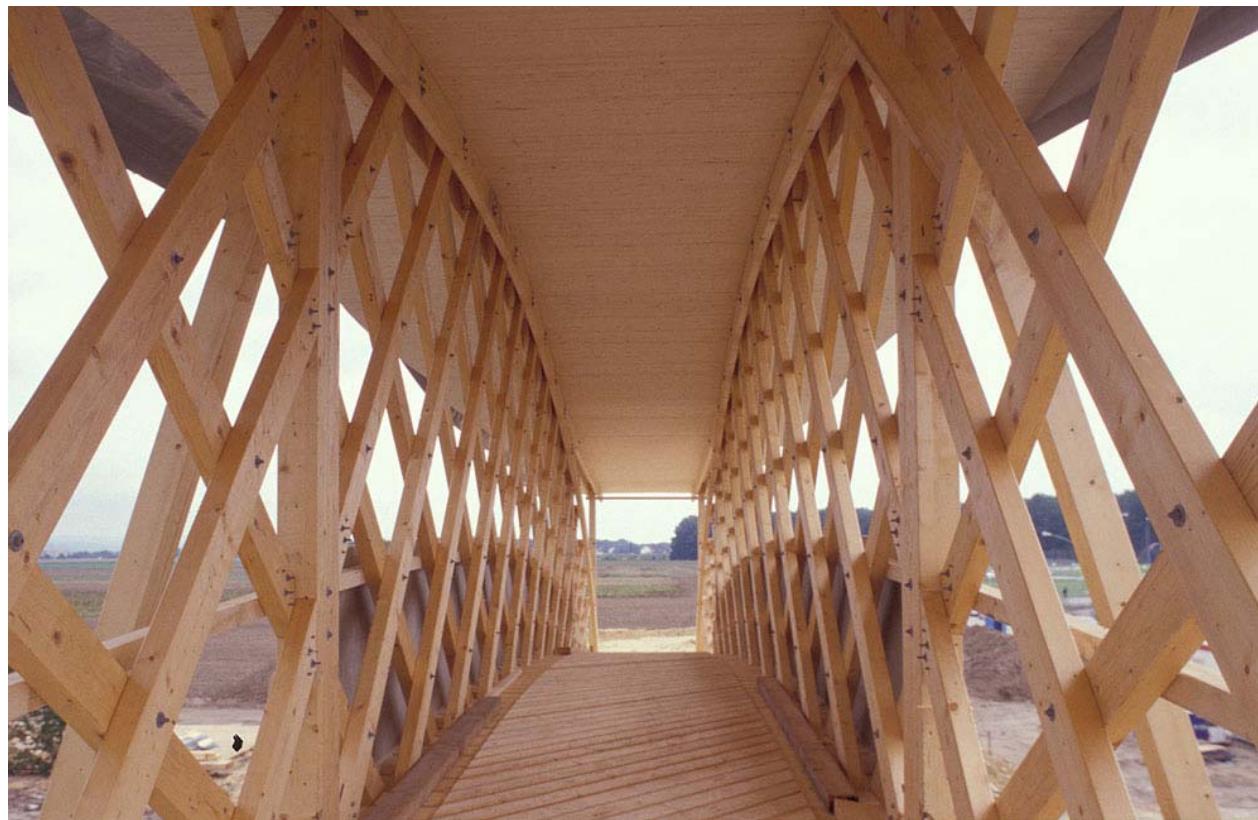
# Bad Mergentheim



# Trellis

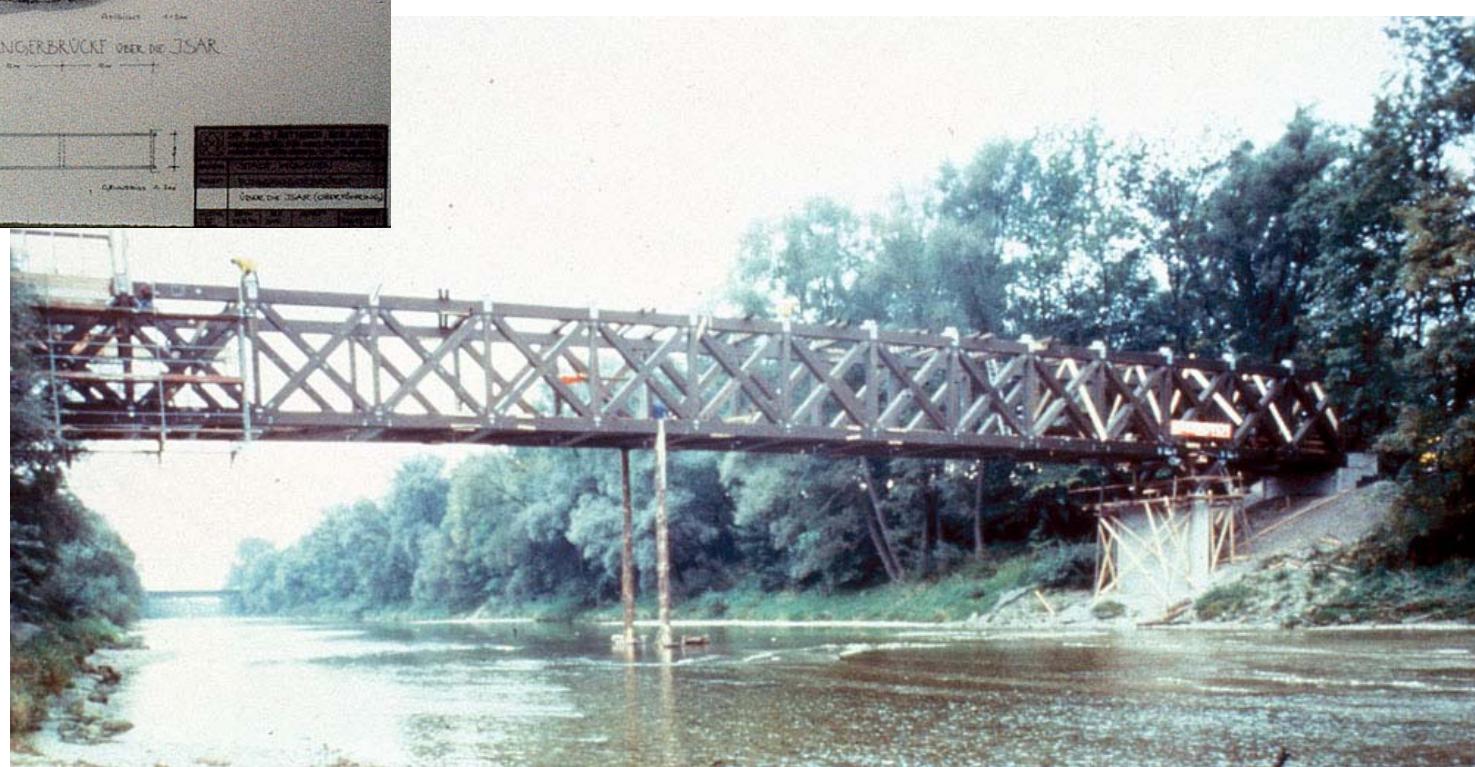
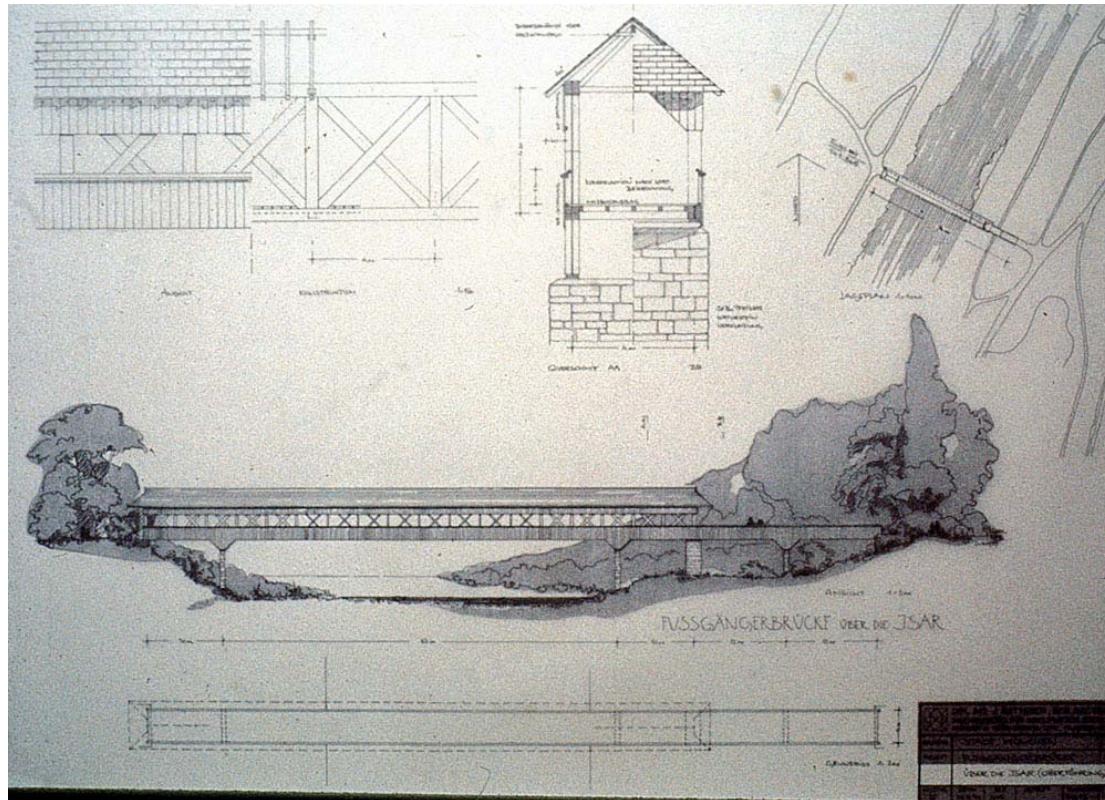


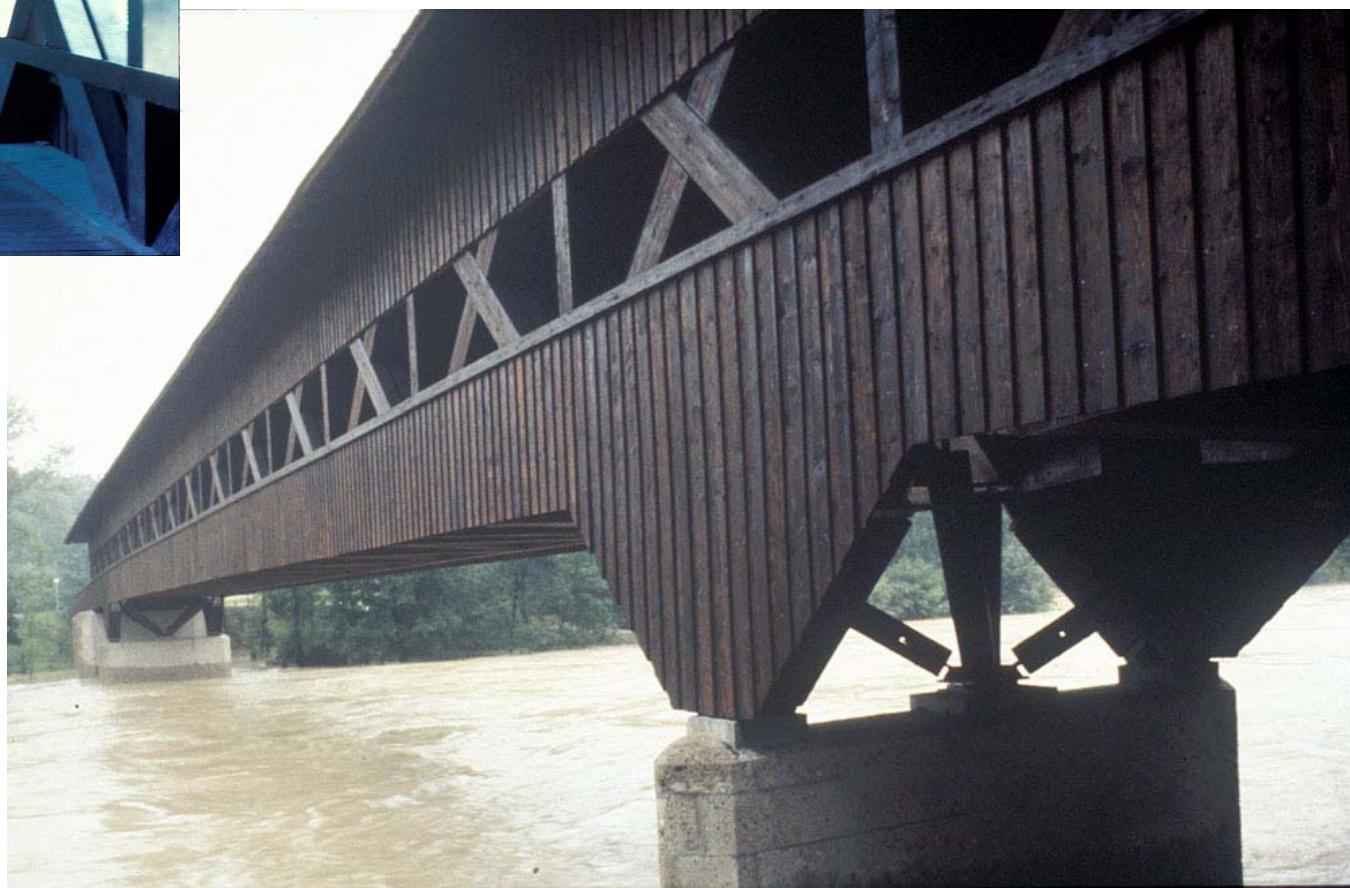






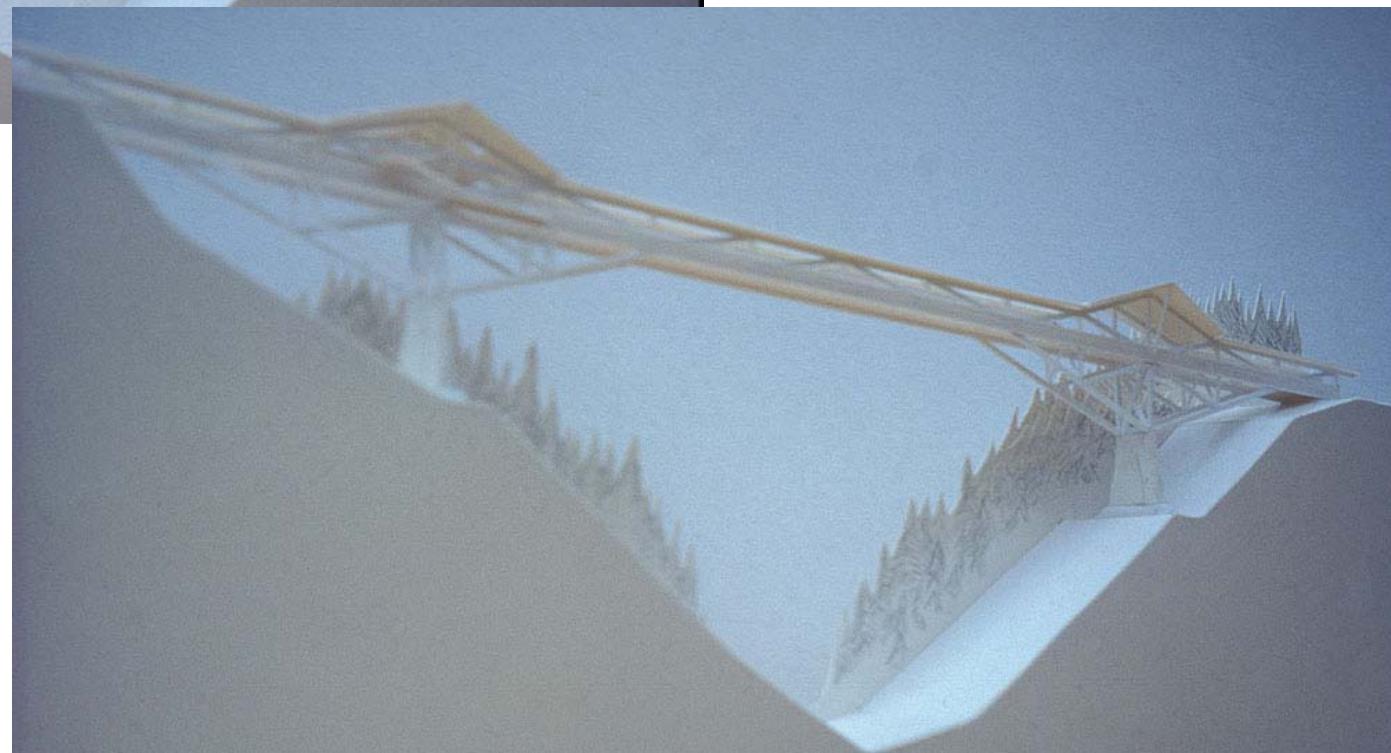




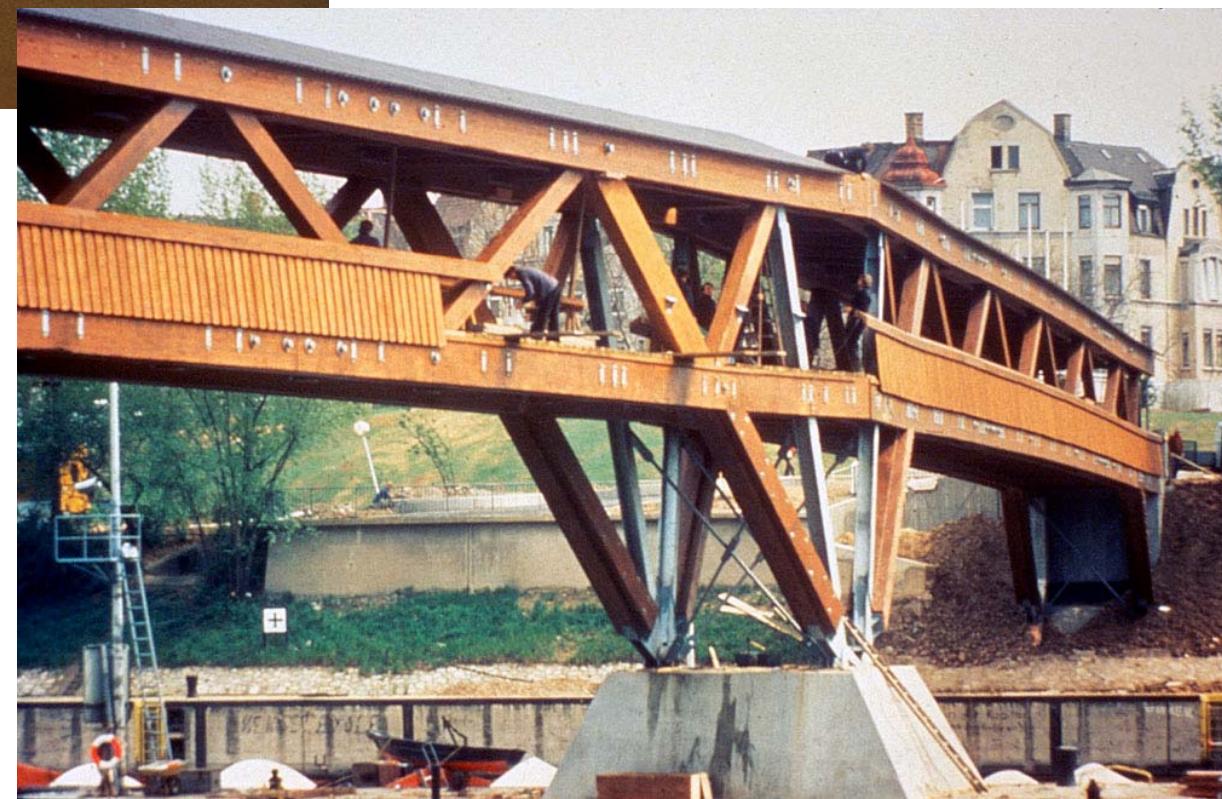




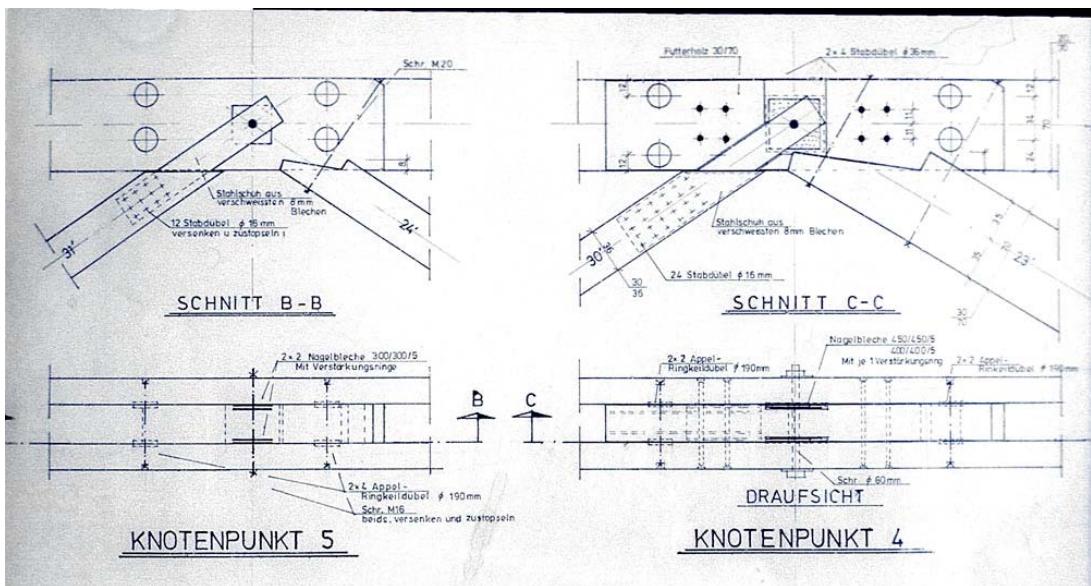


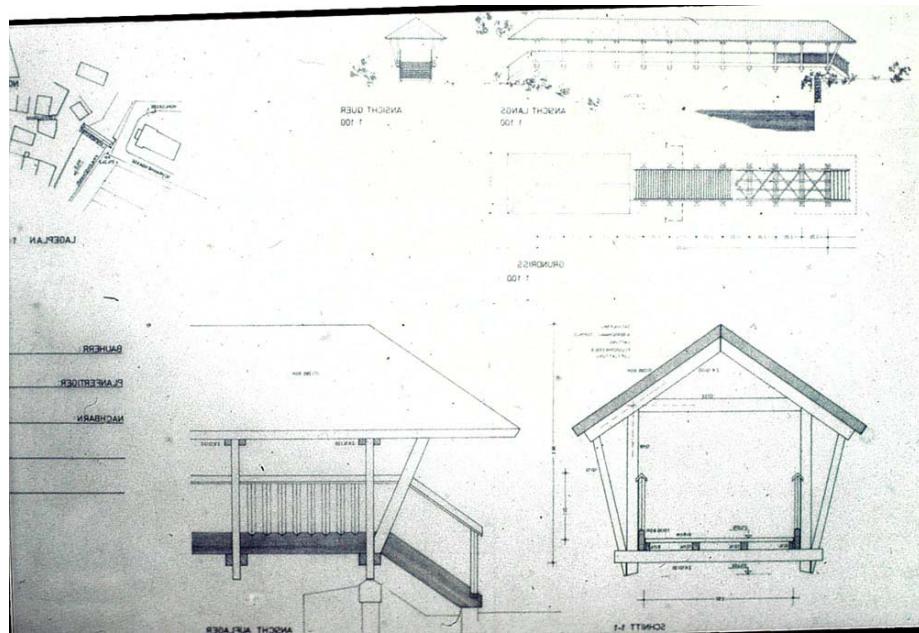


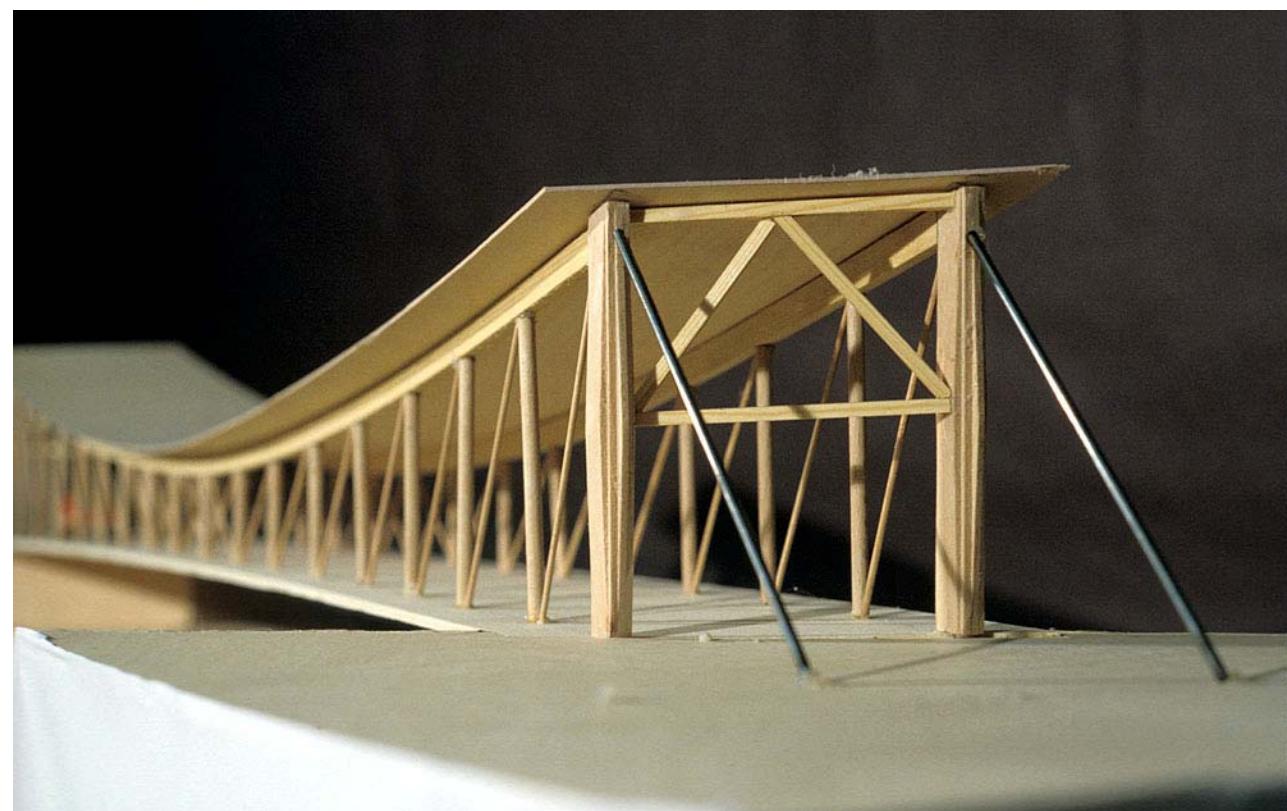
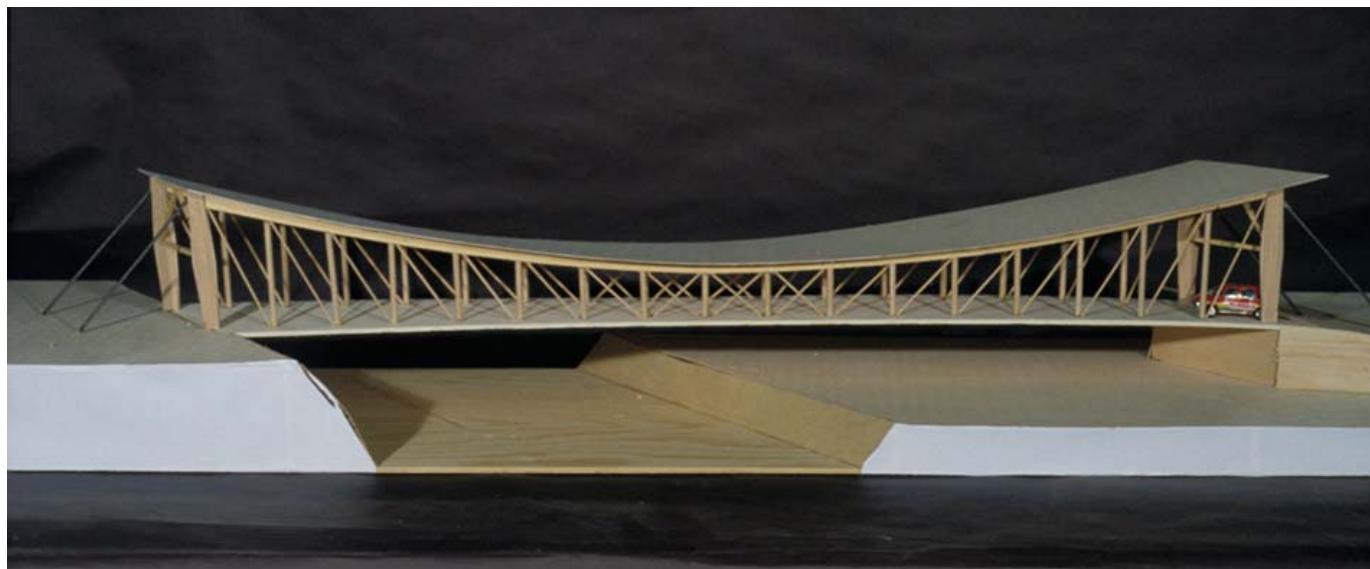


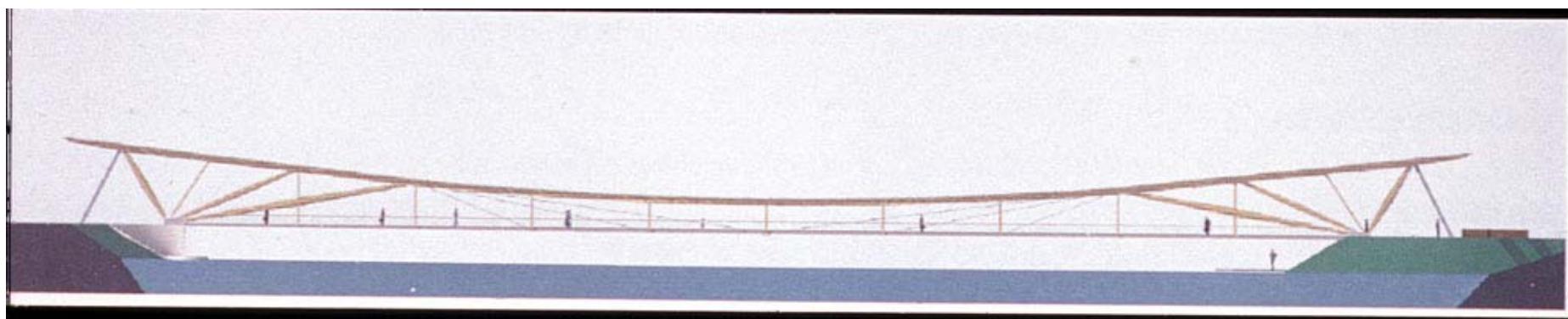
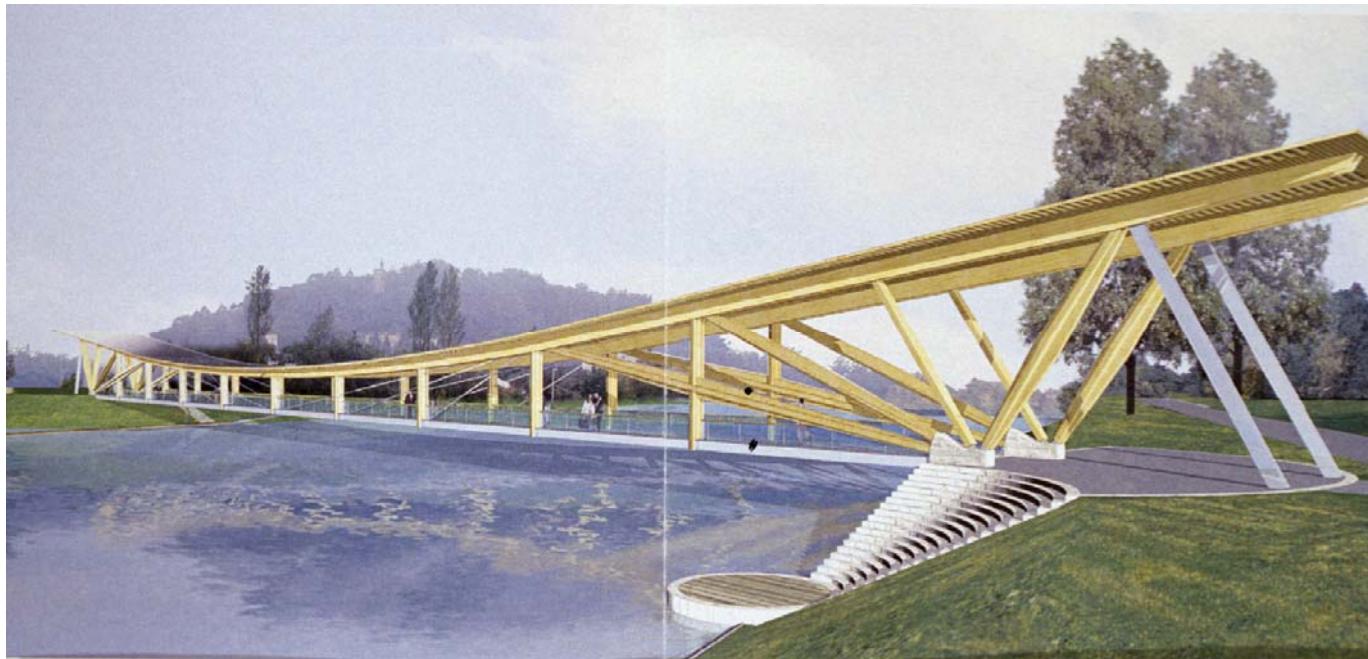


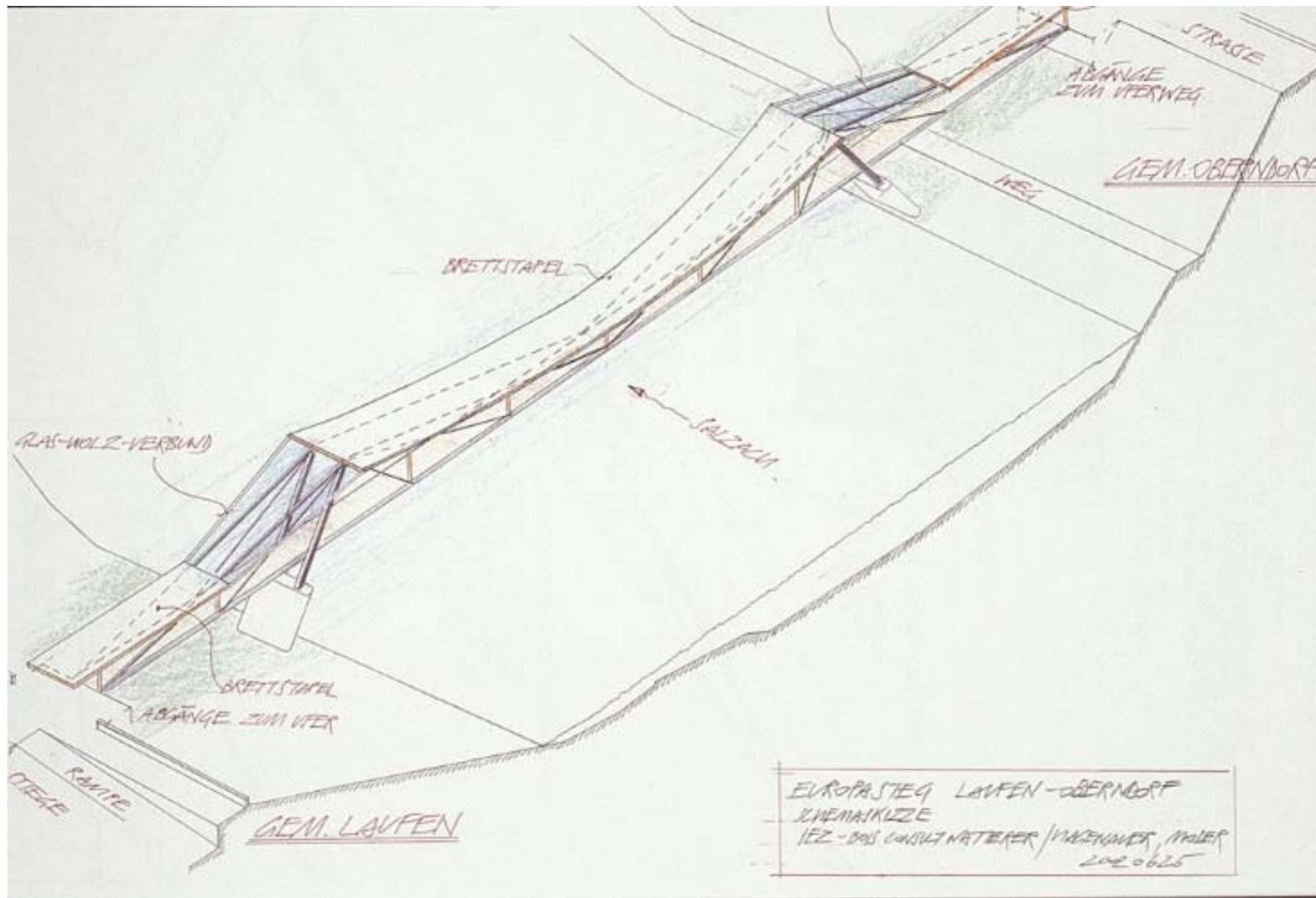












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