

Lutz Sparowitz – Wildbrücke Völkermarkt aus der „rückblickenden“ Sicht des planenden Ingenieurs

Dr. Michael Reichel,
König und Heunisch, Leipzig



Erste Herangehensweisen beim Konstruieren mit UHFB



Gewicht der Träger (kg/m)

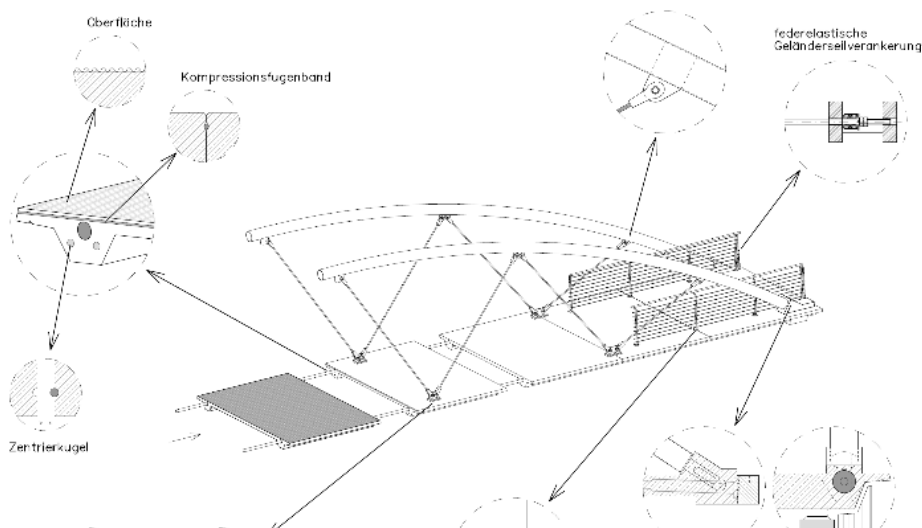
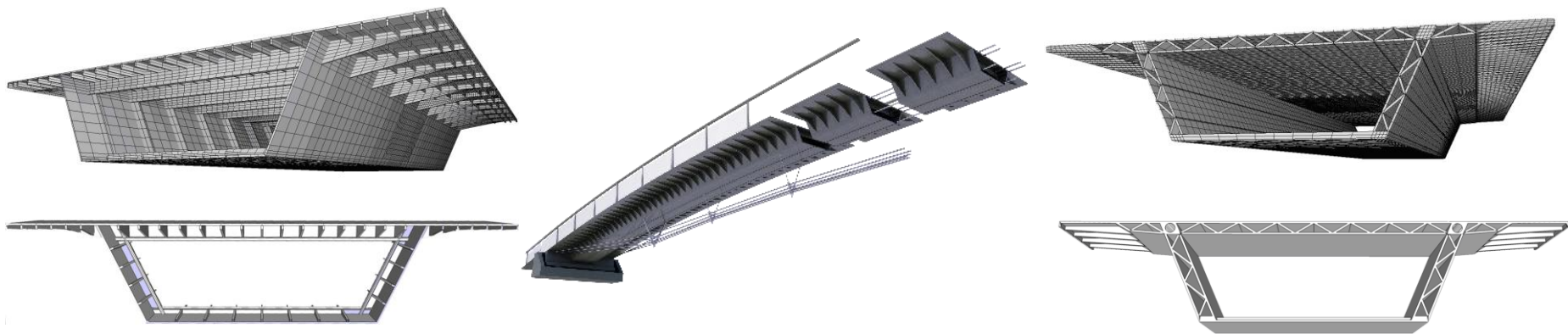
112

530

467

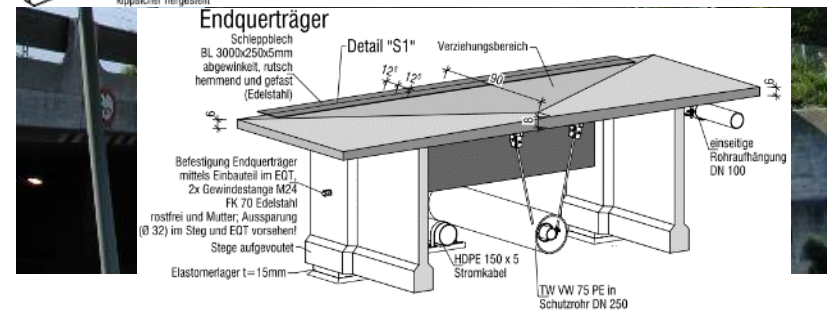
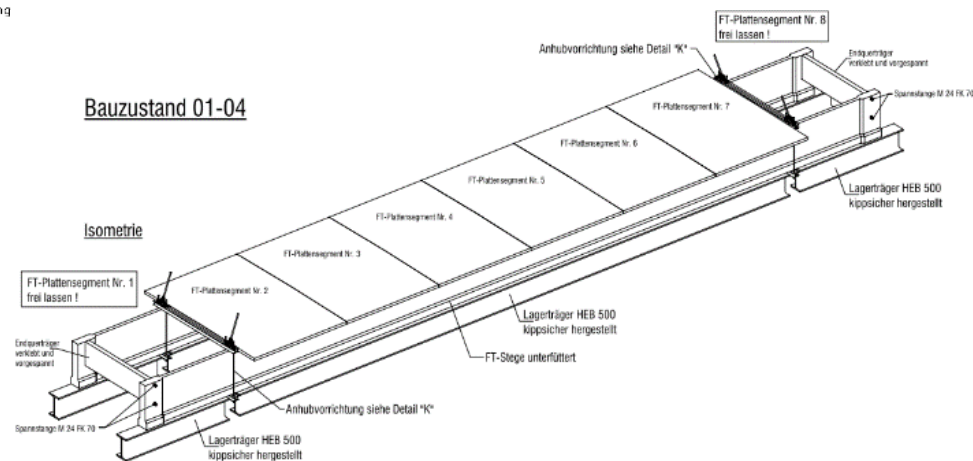
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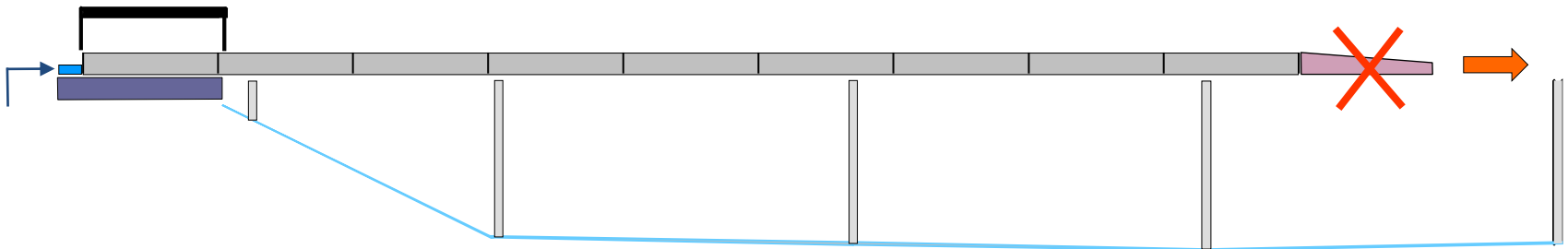




Bauzustand 01-04

Isometrie

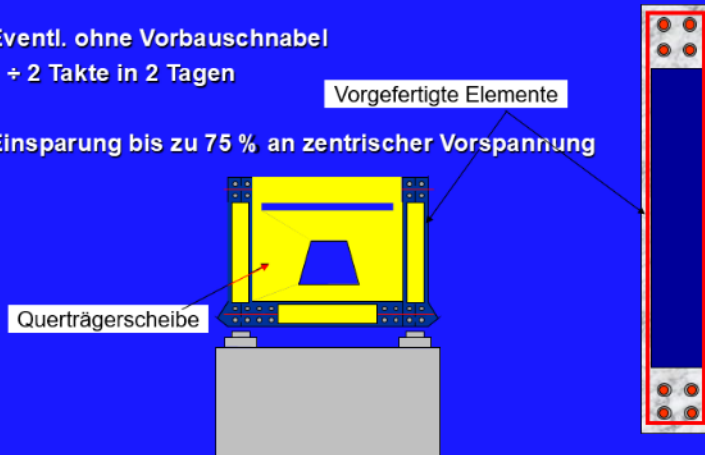




Verschub eines minimal nötigen Querschnittes

- Eventl. ohne Vorbauschnabel
- 1 ÷ 2 Takte in 2 Tagen

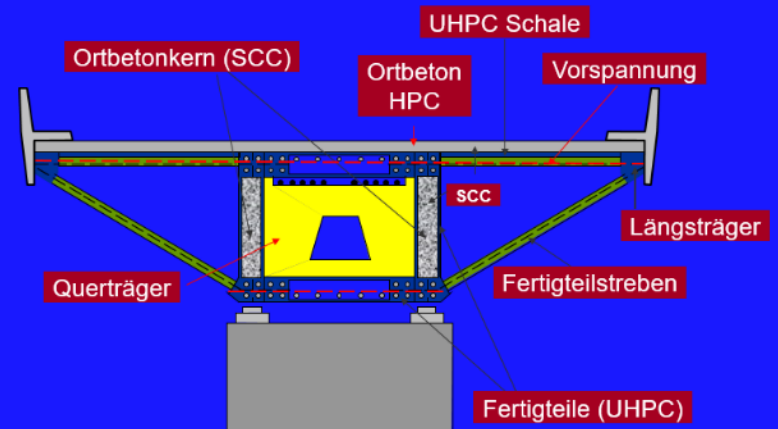
- Einsparung bis zu 75 % an zentraler Vorspannung

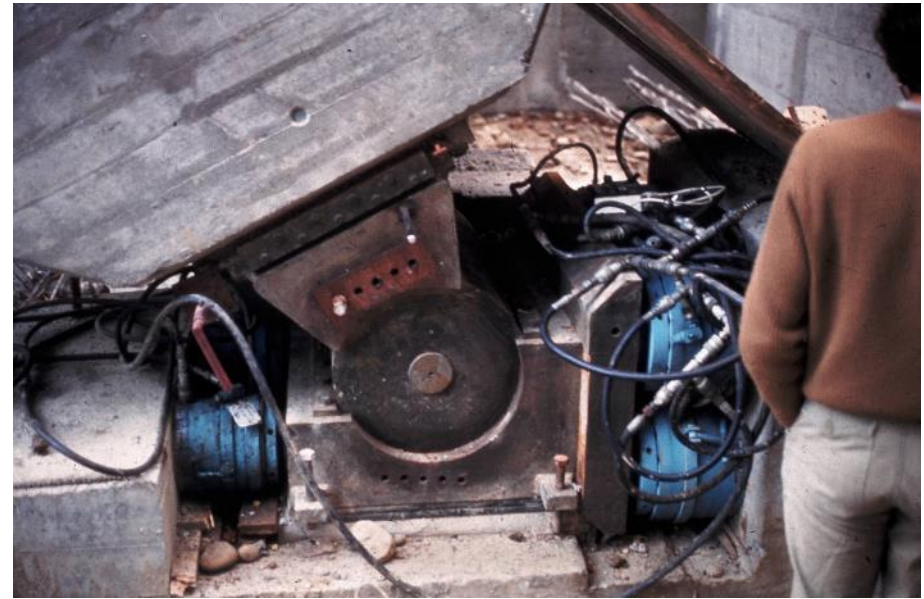


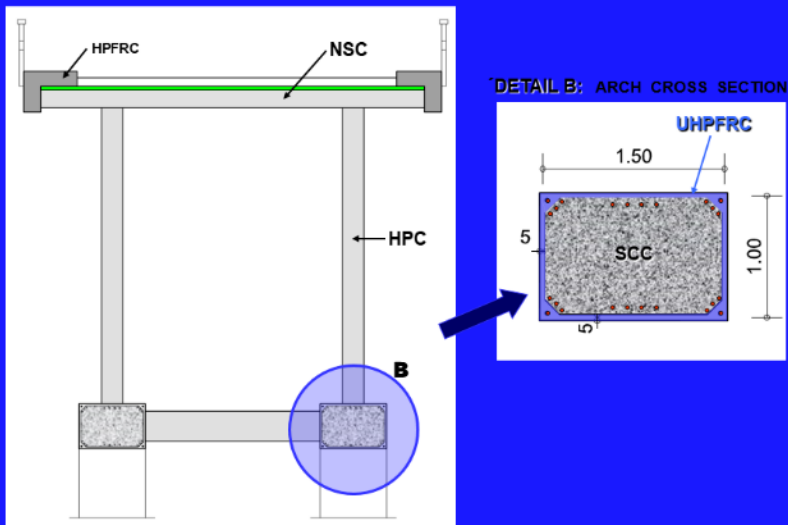
Endzustand: nachträglich ergänzter Querschnitt

Modifiziertes Taktschiebeverfahren

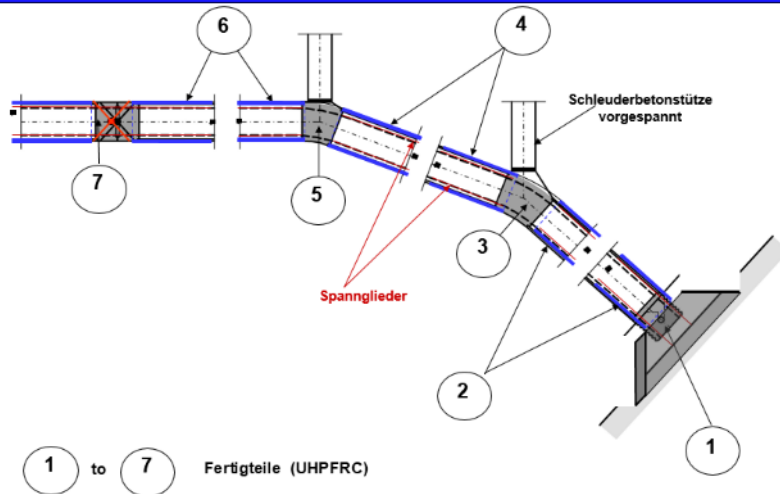
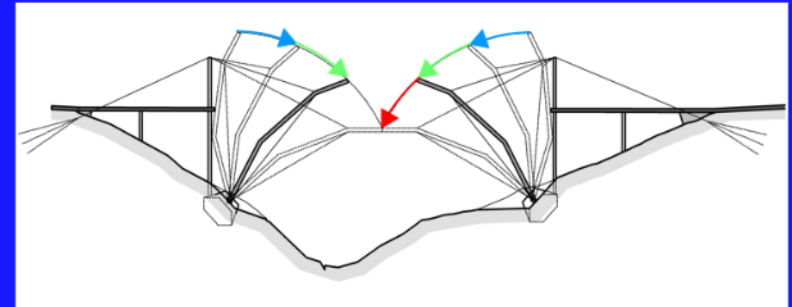
Verbundverhalten zwischen verschiedenen Betonen



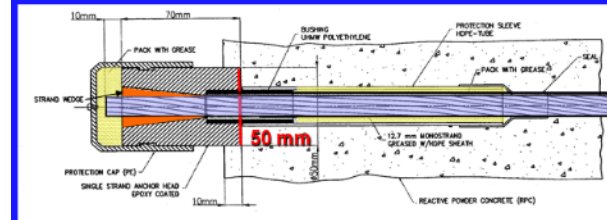




Einklappen der Bögen

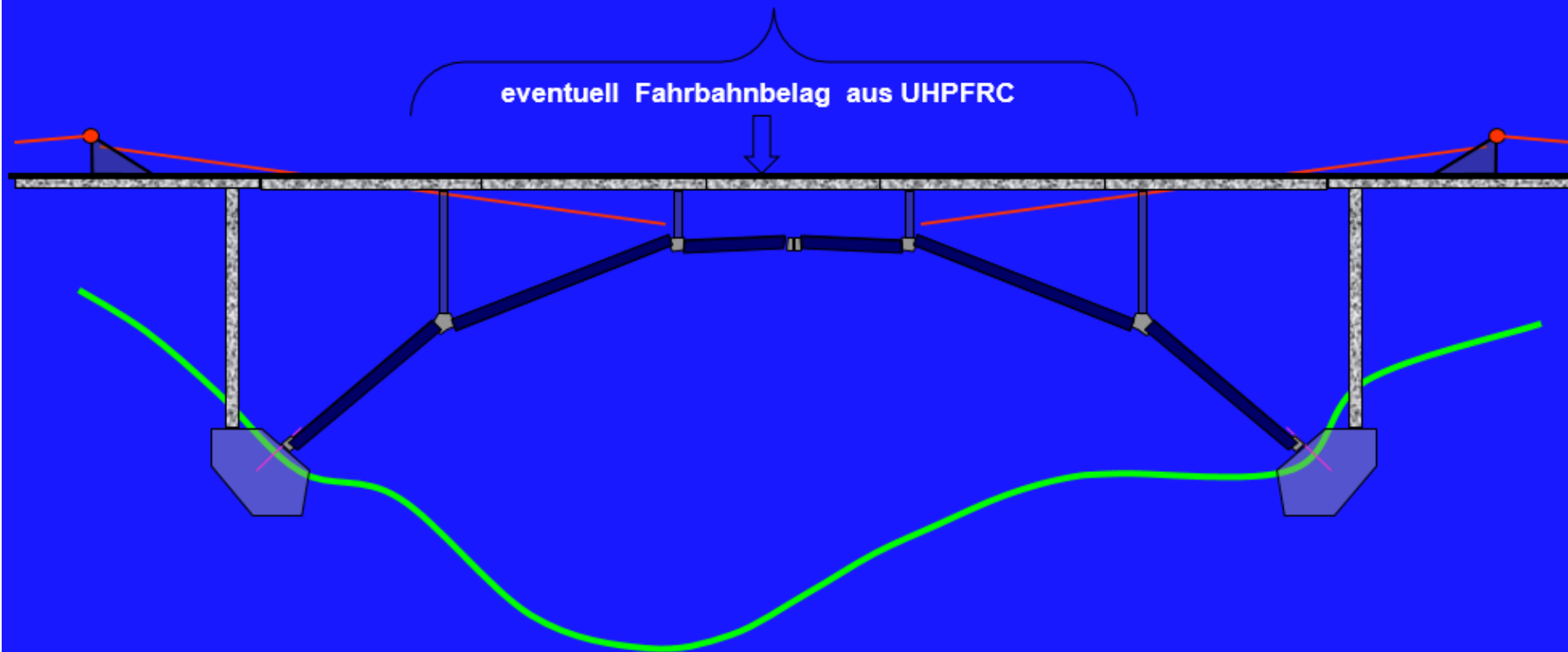


Ankersysteme UHPC



Vorspannung mit nachträglichen oder ohne Verbund
Kleinere Lisenen und Umlenksättel bei UHPC/UHPFRC
Segmenten mit verbesserter Dauerhaftigkeit

SCHLEUDERBETON – FERTIGTEILSTÜTZEN (HPC)



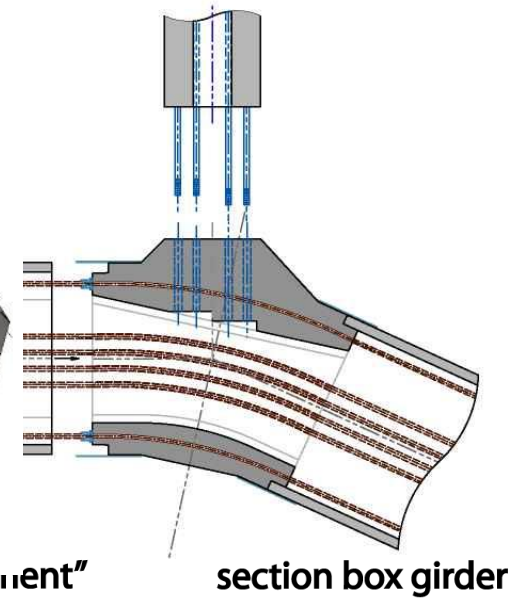
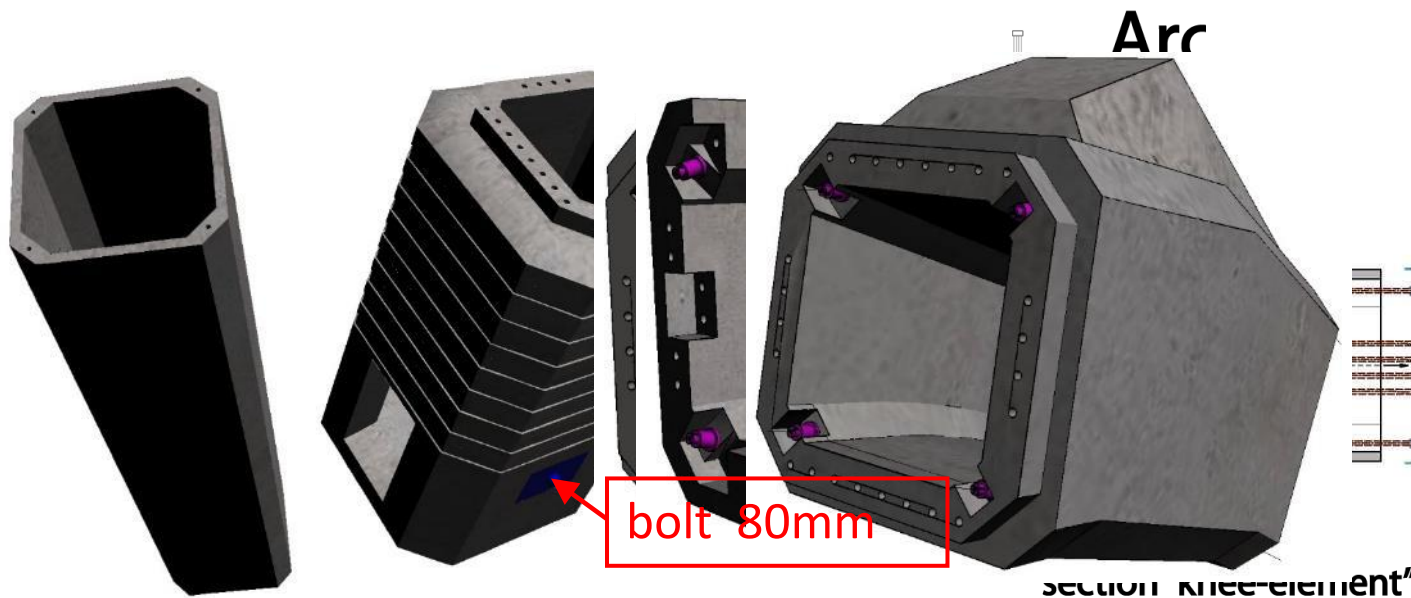
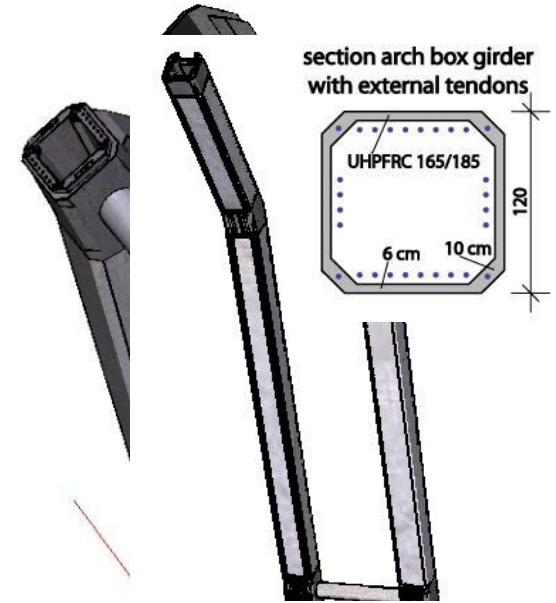
TECHNISCHE UNIVERSITÄT GRAZ

Fachbereich
Ingenieurbaukunst
Institut für Betonbau

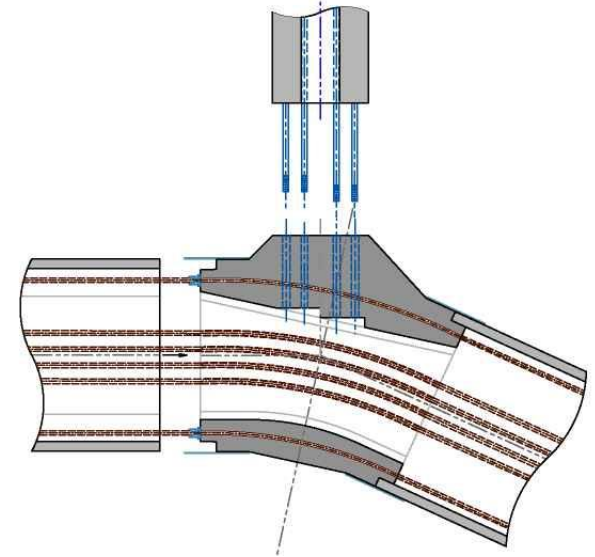
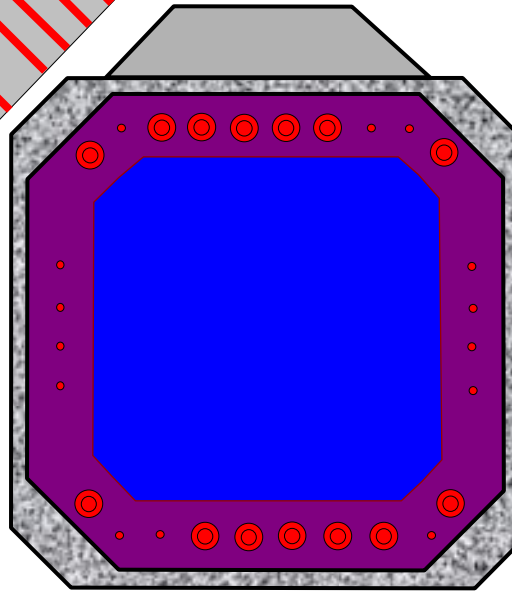
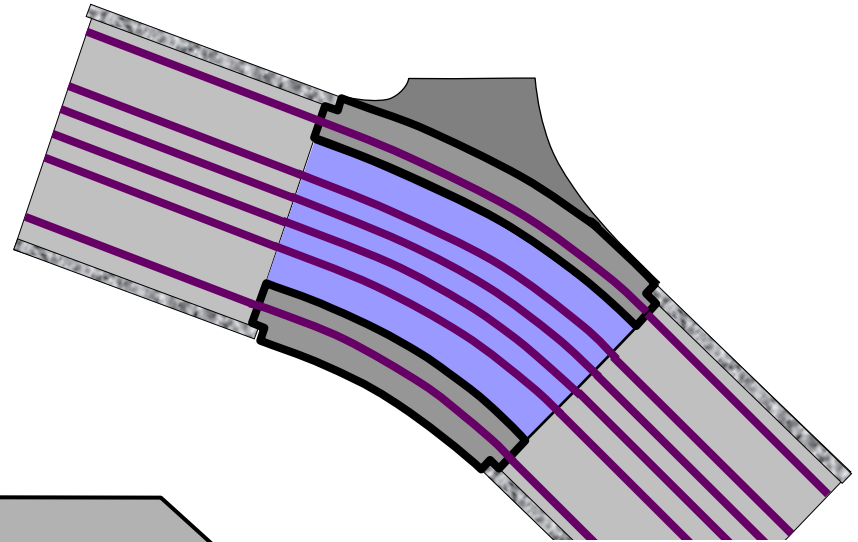
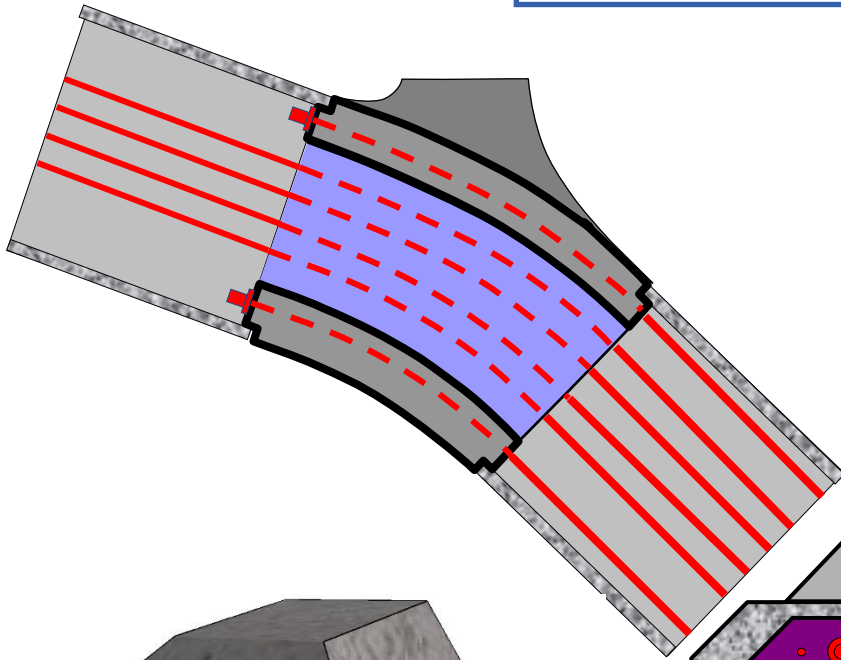


26

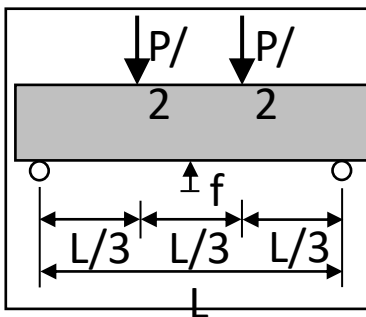
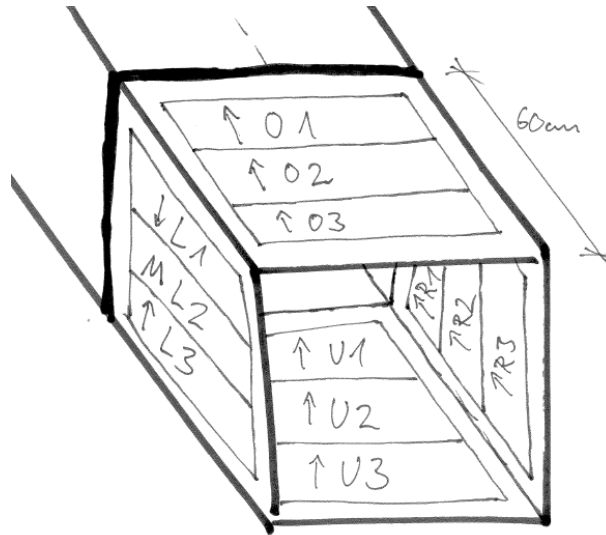
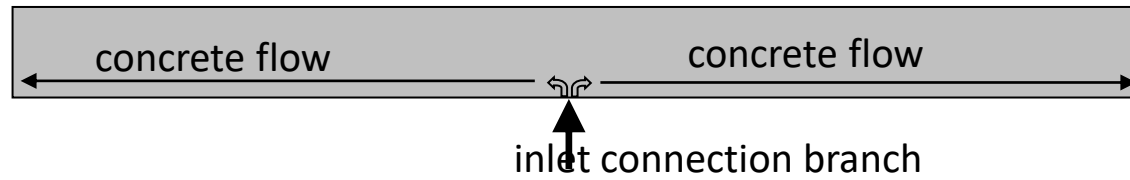
Bogenmontage und Fertigteilsegmente



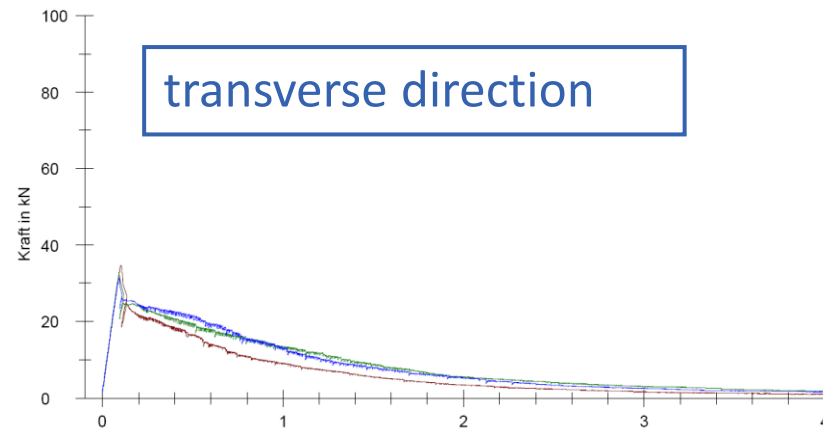
Funktion der Knieelemente



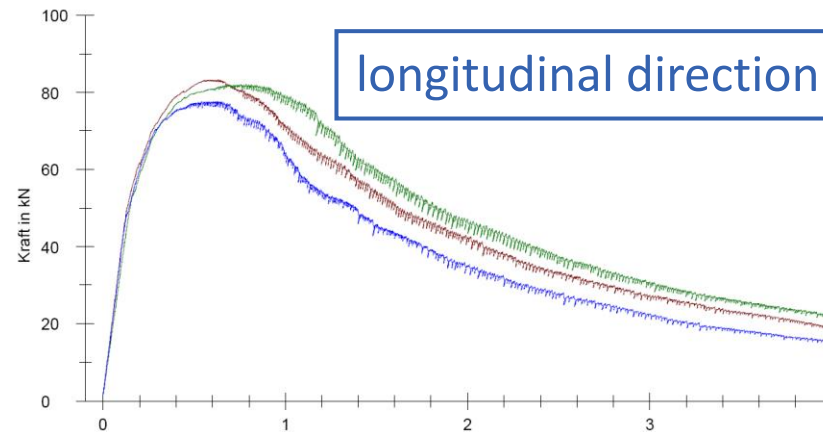
Betonage - Faserorientierung



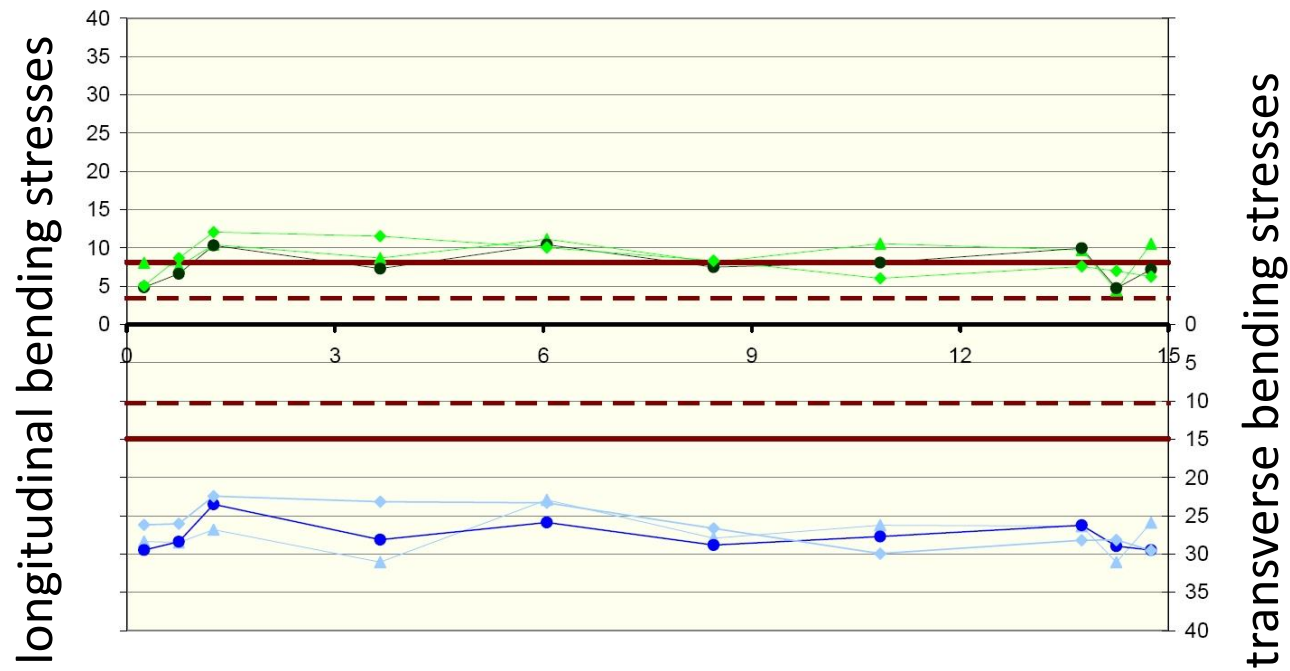
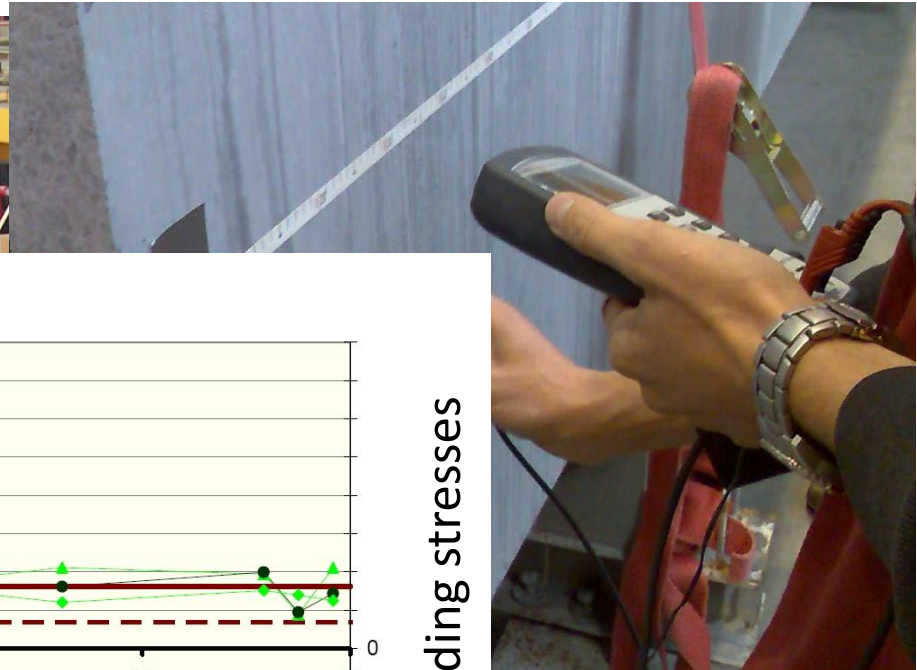
transverse direction



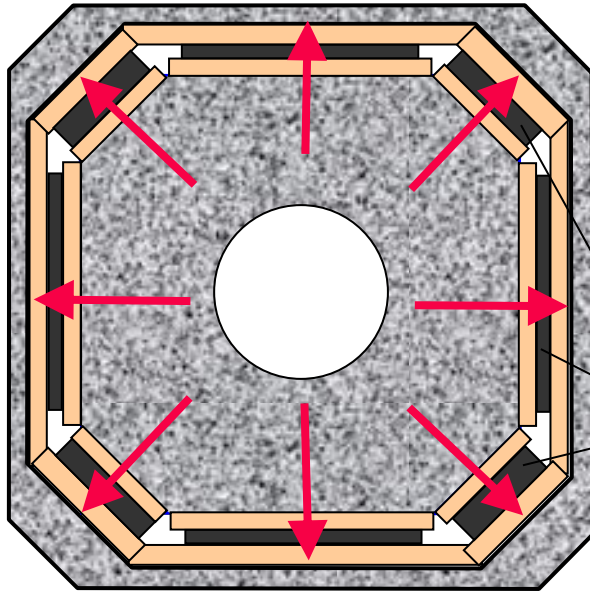
longitudinal direction



Fertigteilproduktion - Qualitätskontrolle



Autogenes Schwinden - Rissbildung

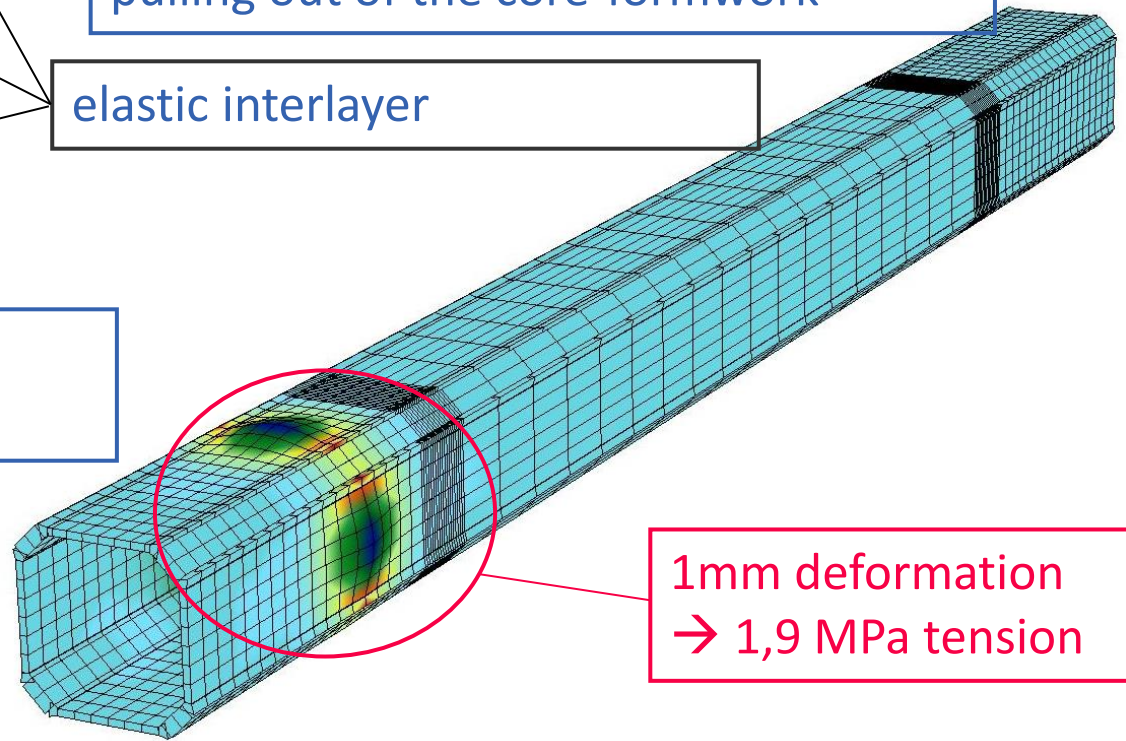


- elastic core formwork
- definition of time for formwork-removal by a calculation with time-dependent mechanical properties

pulling out of the core-formwork

elastic interlayer

- superposition with restraint from shrinkage



1mm deformation
→ 1,9 MPa tension

CNC – Fräsen Fugenstirnflächen

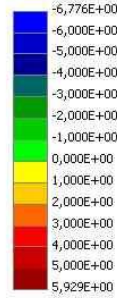
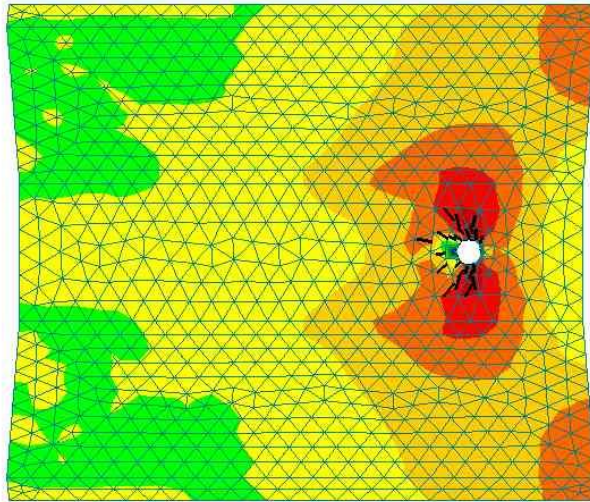


Temporäre Vorspannung BZ

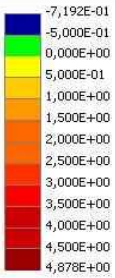
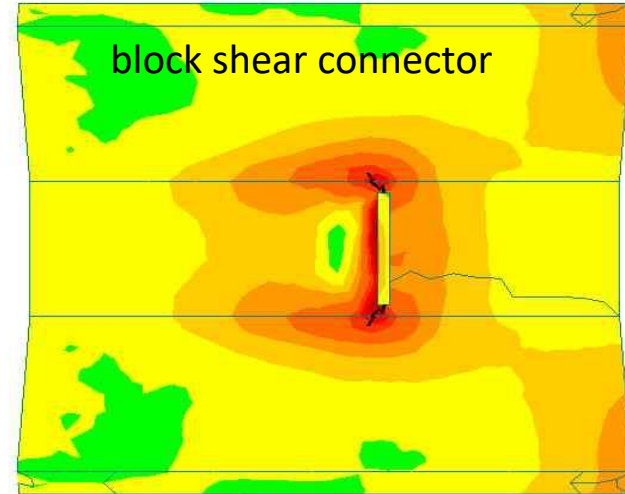
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Cracks:elements, width multiplier: 1,0E+00, Filter: <0,000E+00; ...>, First, Second, Third
G.O<0,000E+00;5,007E-05> [m], SN<-4,681E+00;-4,681E+00> [MPa], ST<3,606E-03;3,606E-03> [MPa]

Scalars:iso-areas, in nodes, Principal Stress, Max., G. <-7,192E-01;4,878E+00> [MPa]
Cracks:elements, width multiplier: 1,0E+00, Filter: <0,000E+00; ...>, First, Second, Third

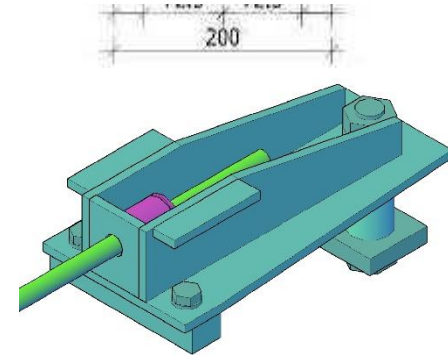
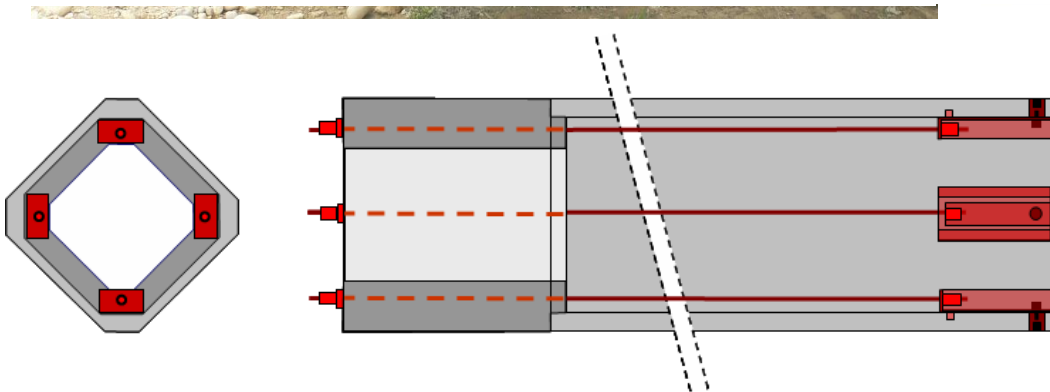
G.O<9,703E-07;2,996E-05> [m], SN<4,875E+00;4,875E+00> [MPa], ST<3,961E-03;3,961E-03> [MPa]

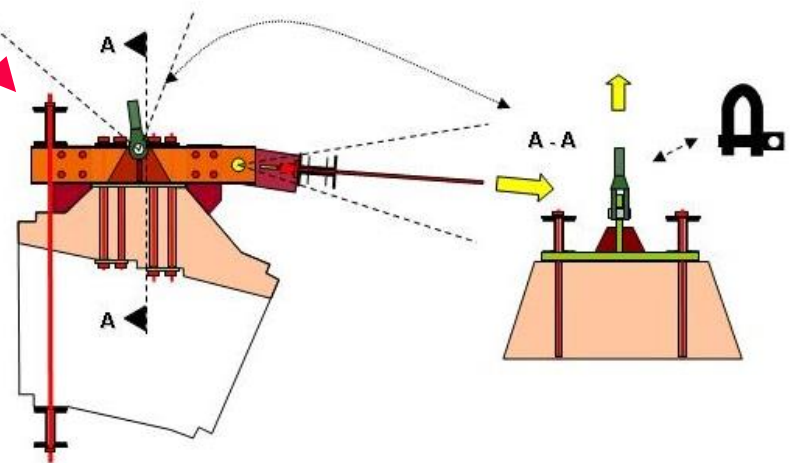
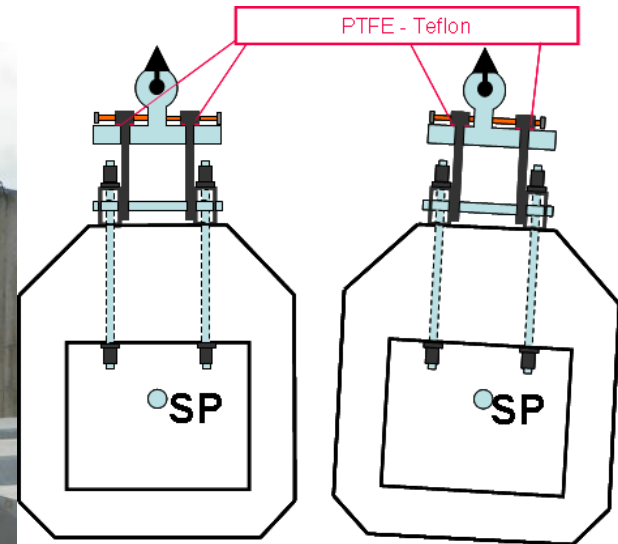
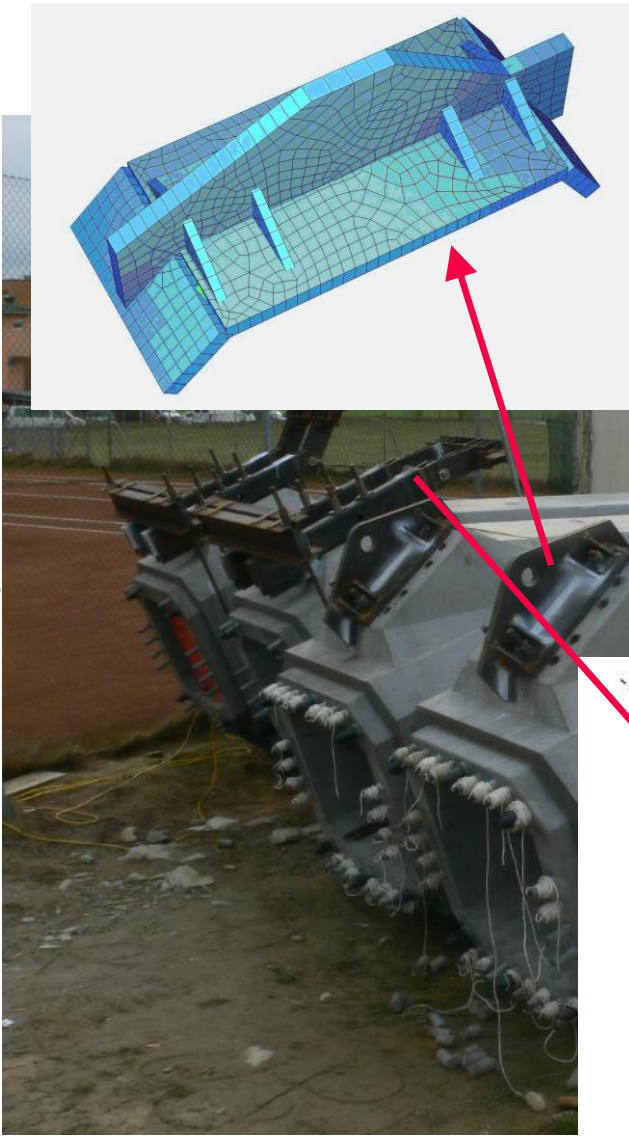
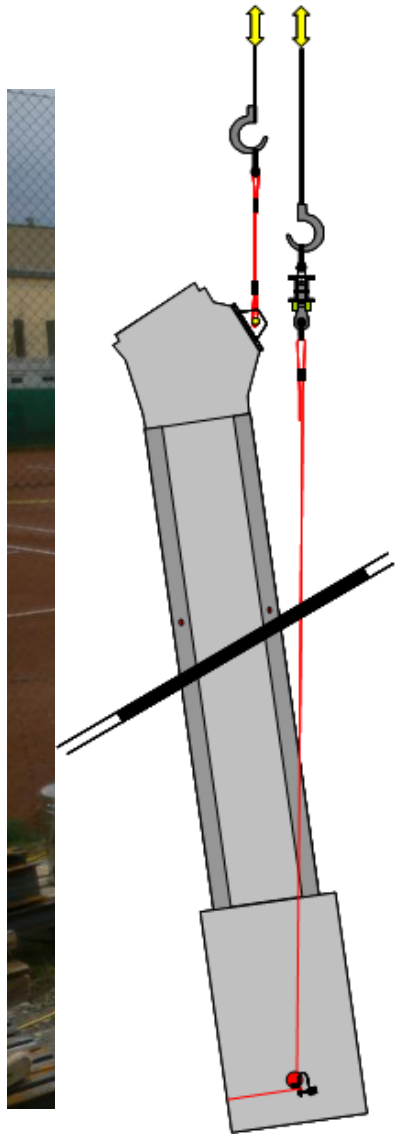


Abs.min.
Abs.max.



Abs.min.
Abs.max.







Gelenkschale am Bogenwiderlager



Gelenkbolzen Kämpferknoten



Montage Element 2



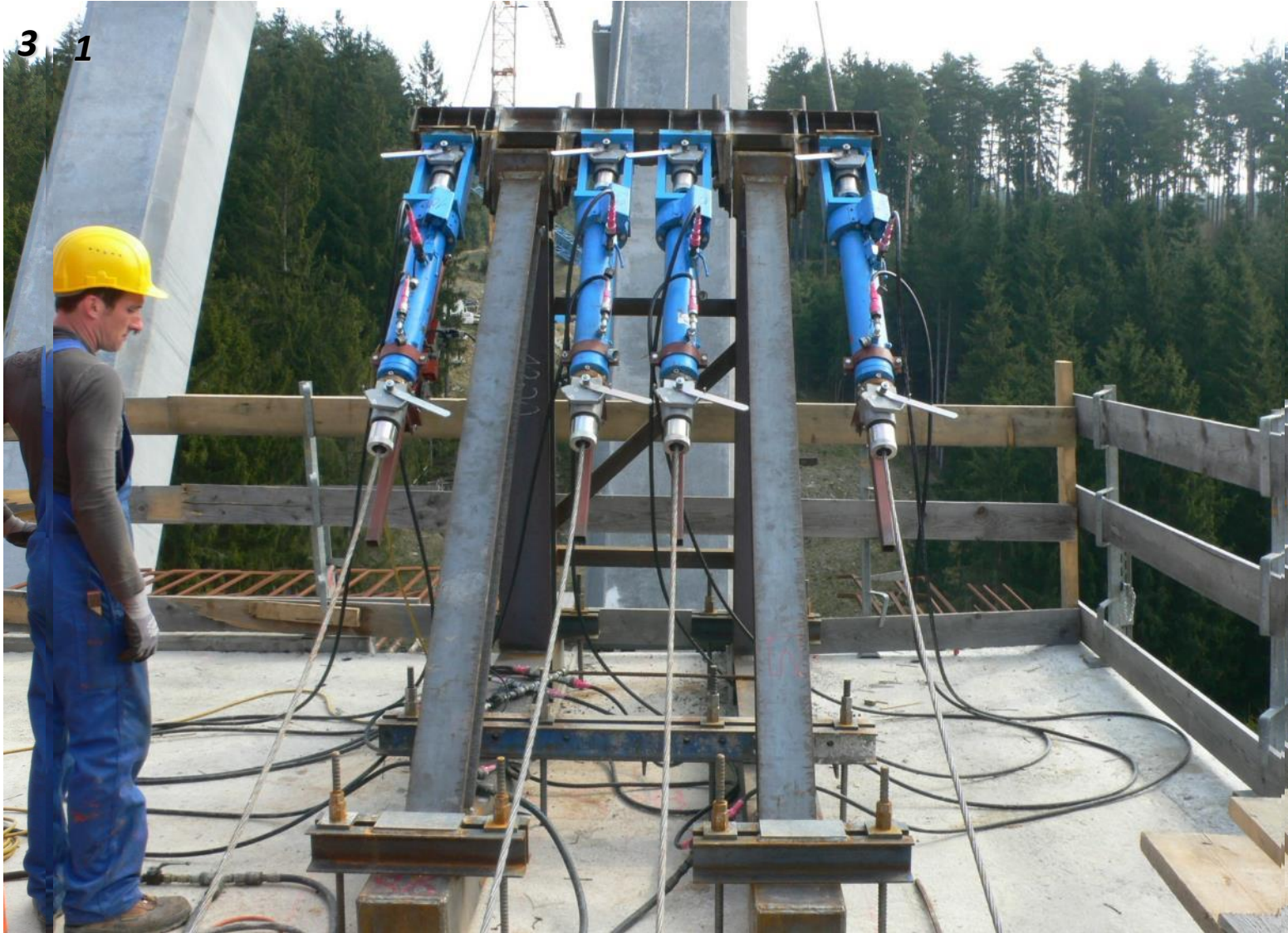
Schnüre zum Einziehen der Monolitzen



Anordnung von 4 150 mm² Litzen zum Absenken



Absenken der Bogenhälften

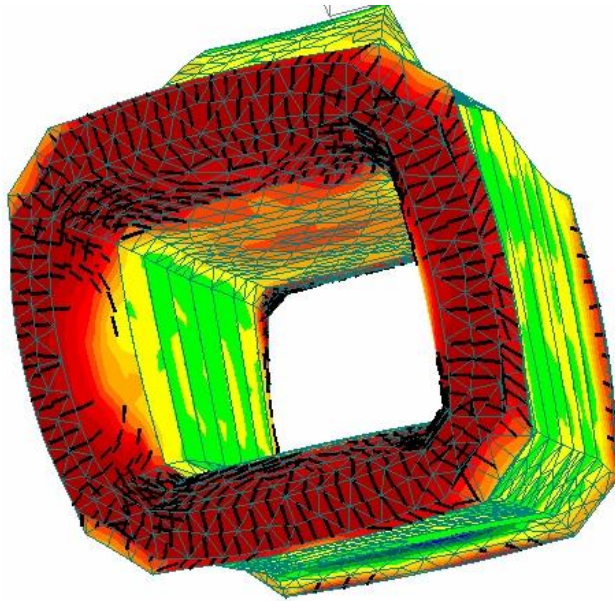




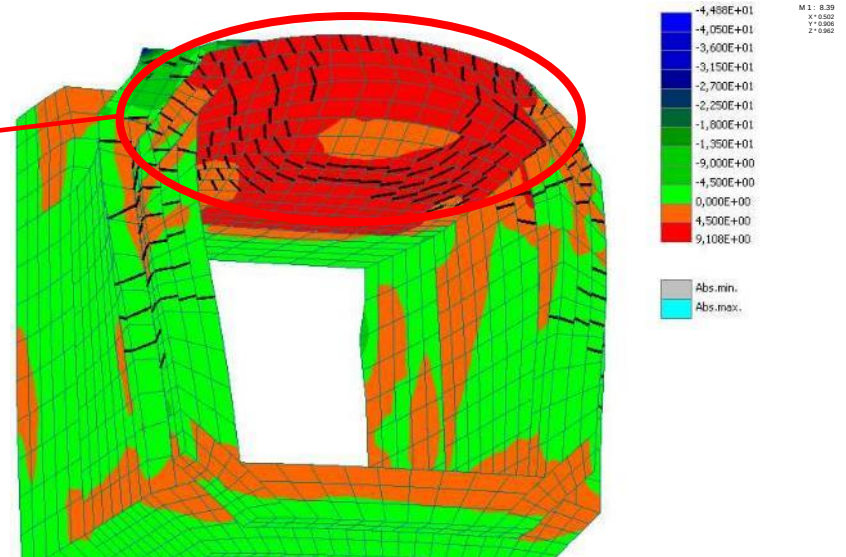
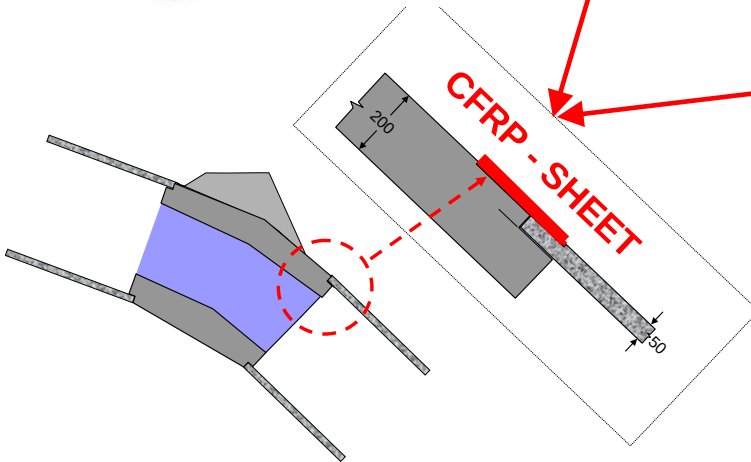
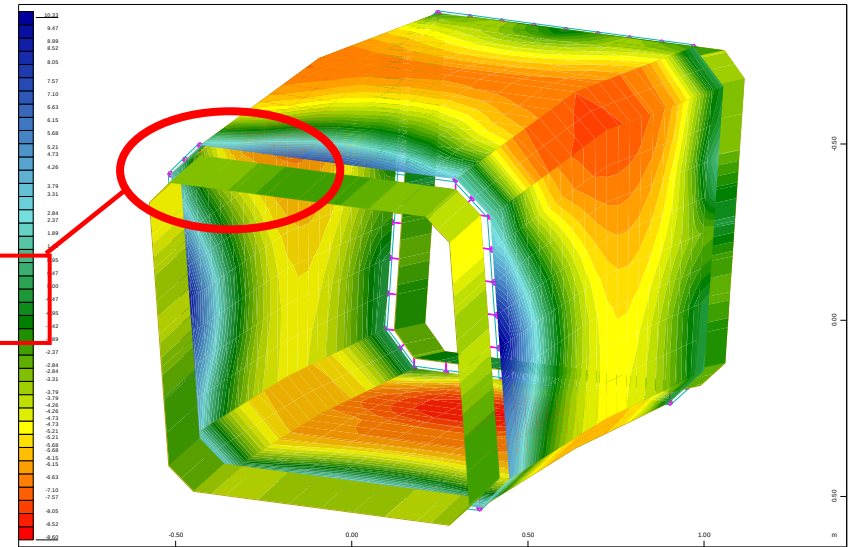
Schalung Bdrückendeck, externe Spannglieder, Monitoring Equipment



Numerische Analysen Knotenelemente

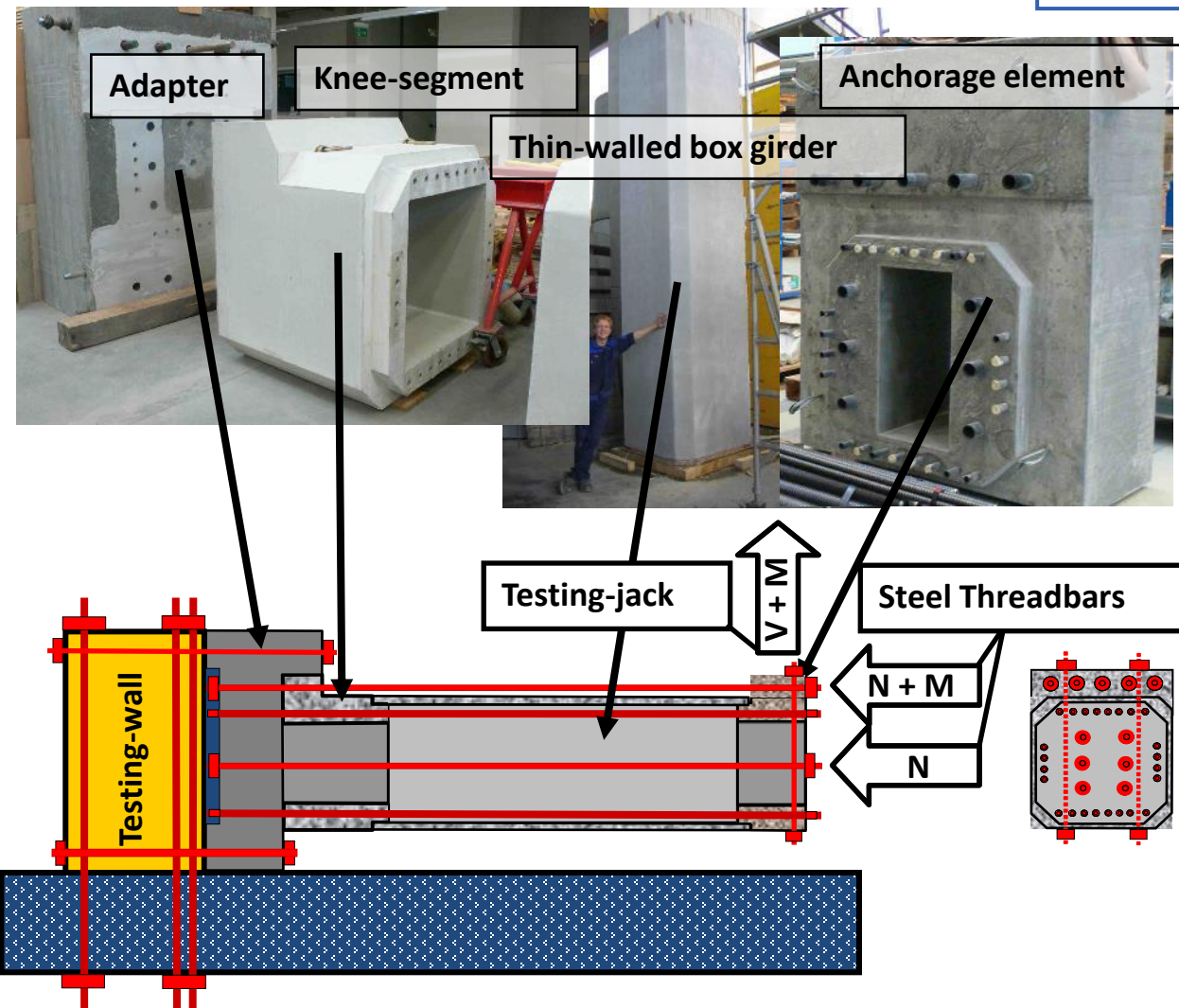


Tensile stress

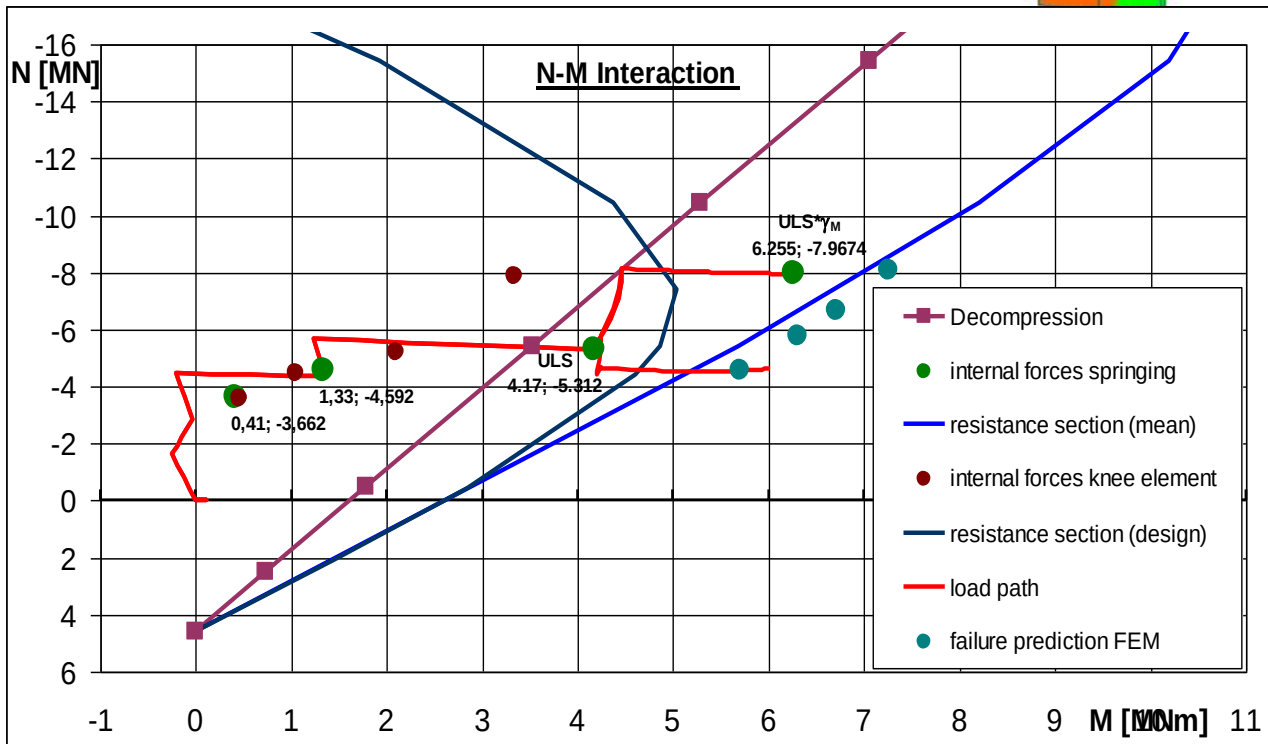
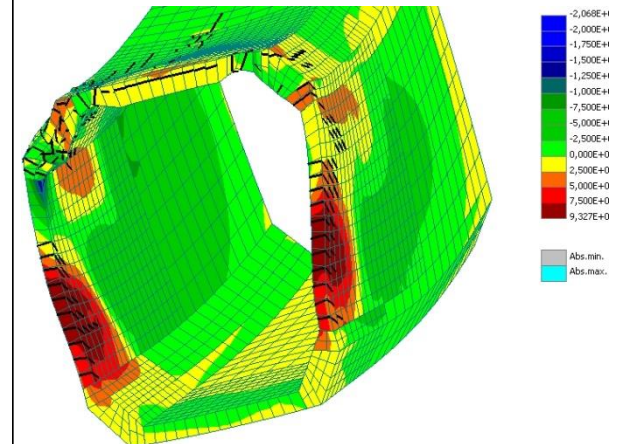
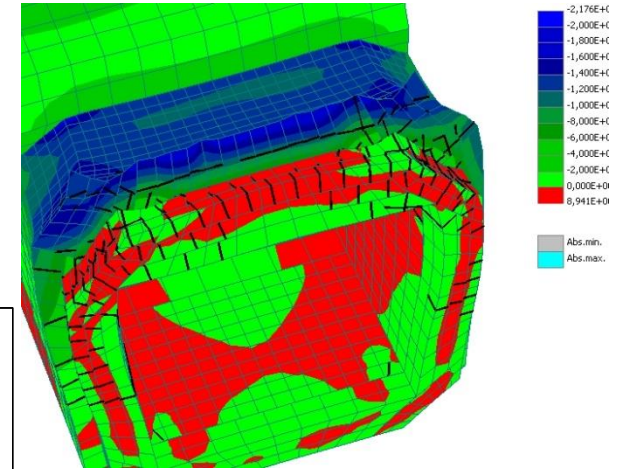
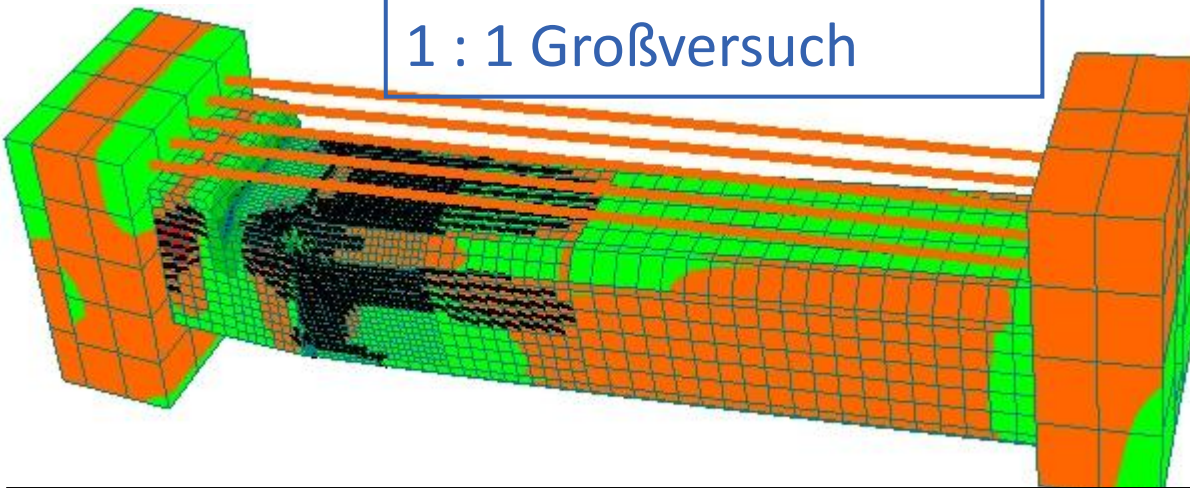


1 : 1 Großversuch

Konzentrierte Lasteinleitung



1 : 1 Großversuch







Danke für die Aufmerksamkeit!

