

# DANSK STÅLDAG 2014



København Ringsted TP30  
Christian Riis Petersen



Sundsvallsbroen  
Helge Skov Pedersen



Odins Bro  
Hilmer Jung Larsen

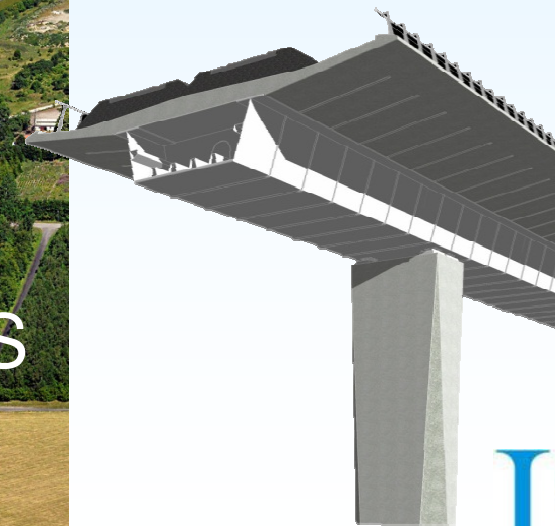


# DANSK STÅLDAG - 2014

## Den ny bane København-Ringsted TP 30



Christian Riis Petersen  
ISC Rådgivende Ingeniører A/S



**ISC**  
Innovative Engineering



# TP 30

Bygherre



Totalentreprenør



Totalrådgiver

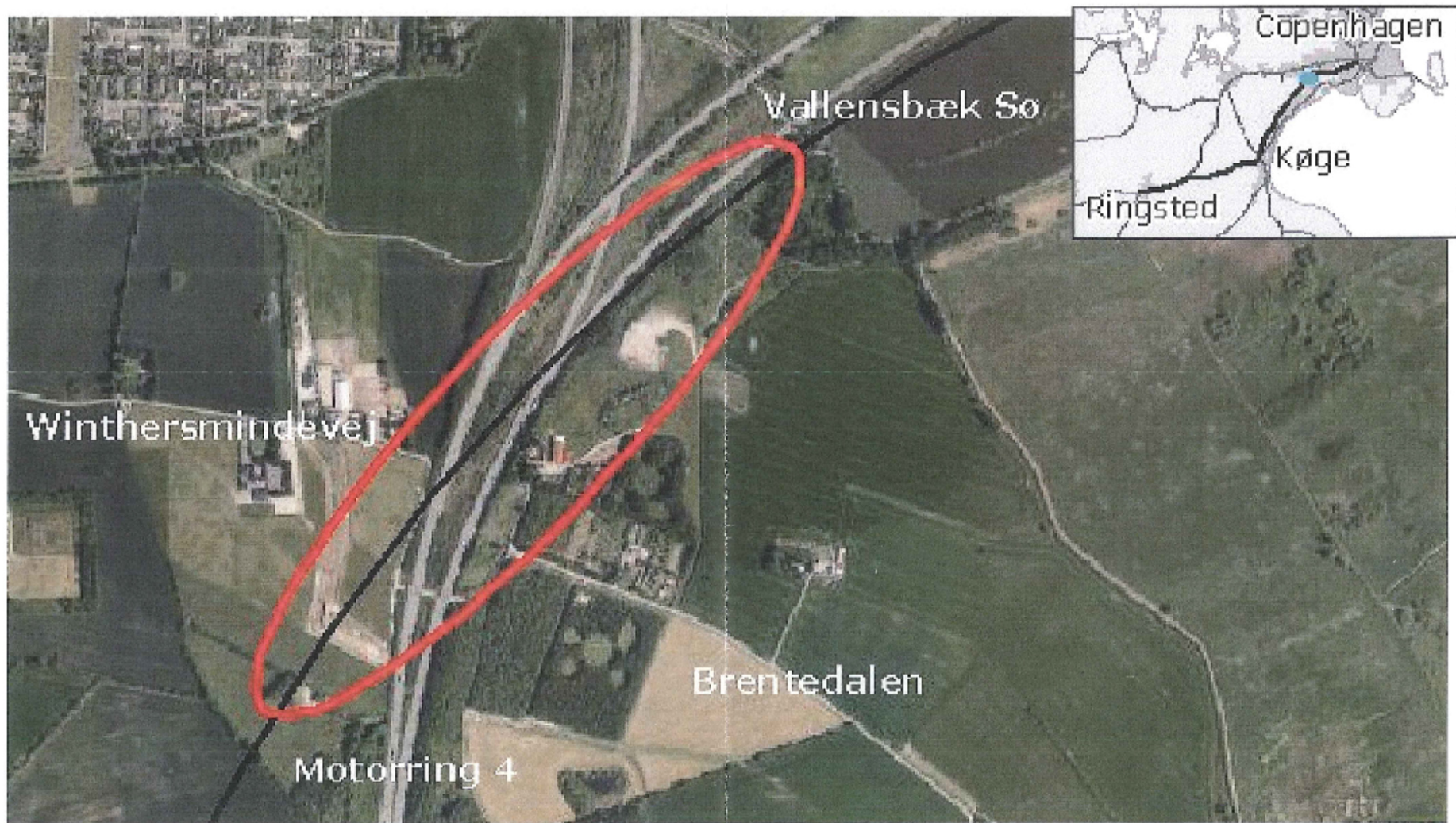


Arkitekt



Jord & afvanding

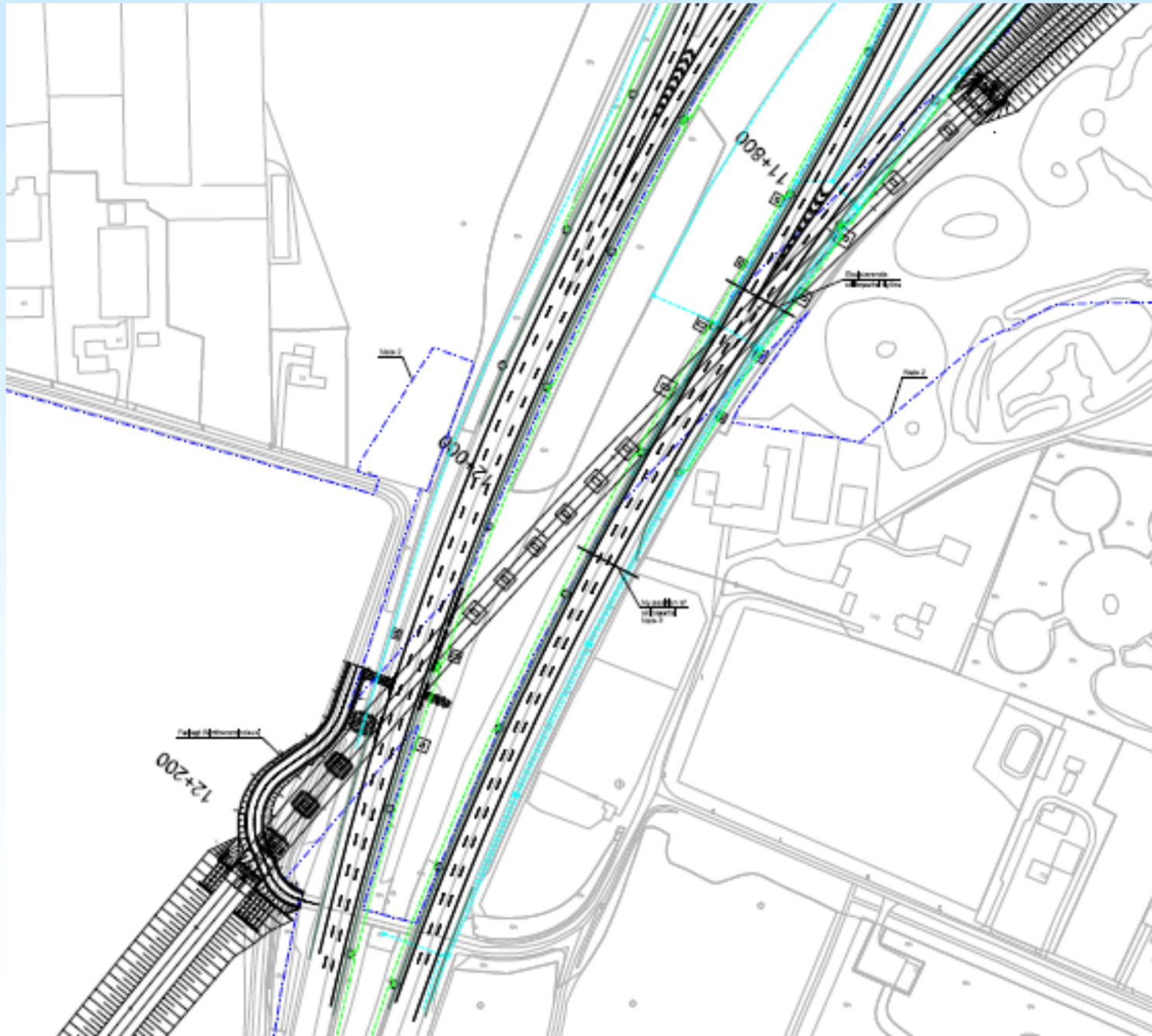


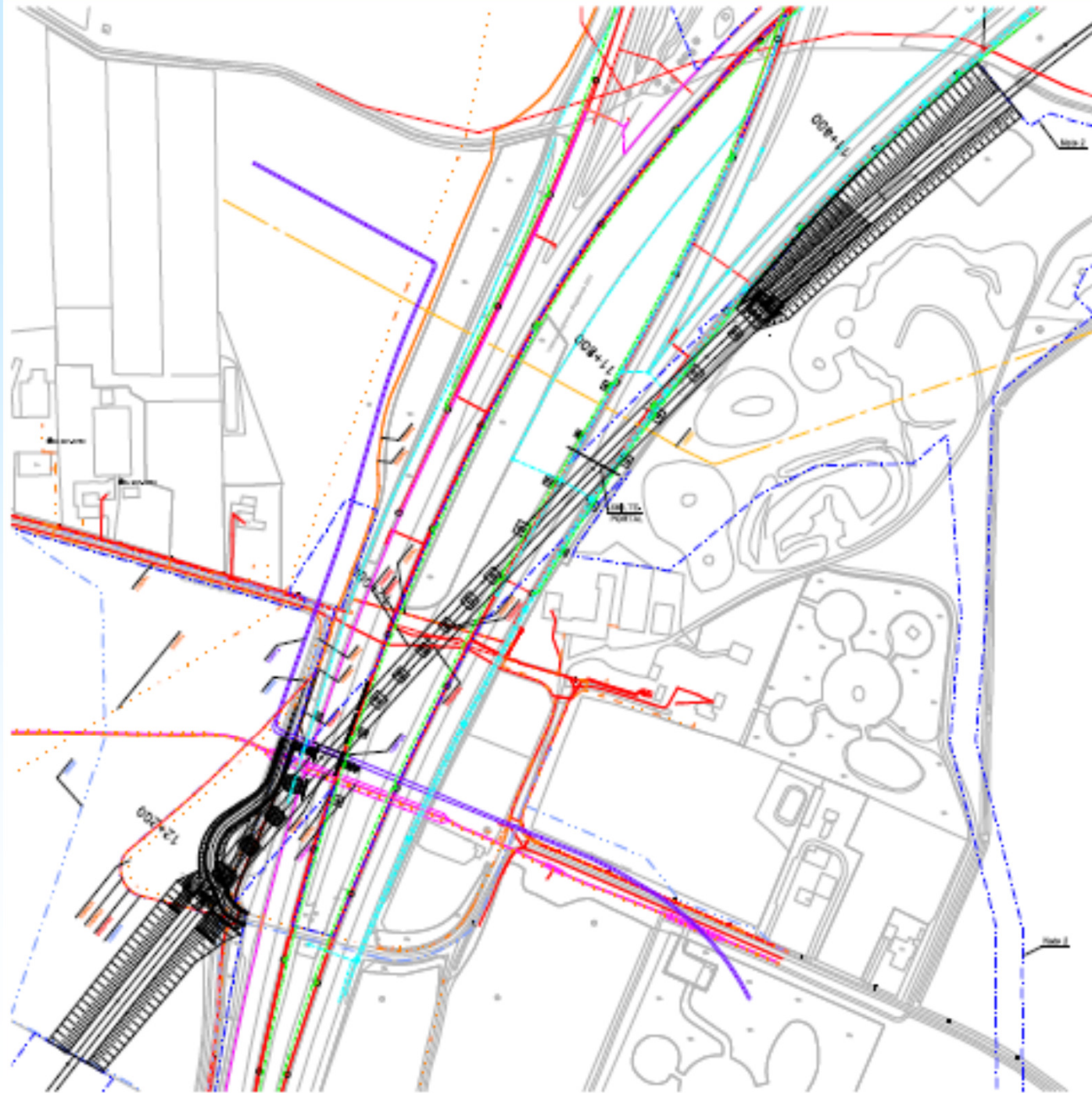


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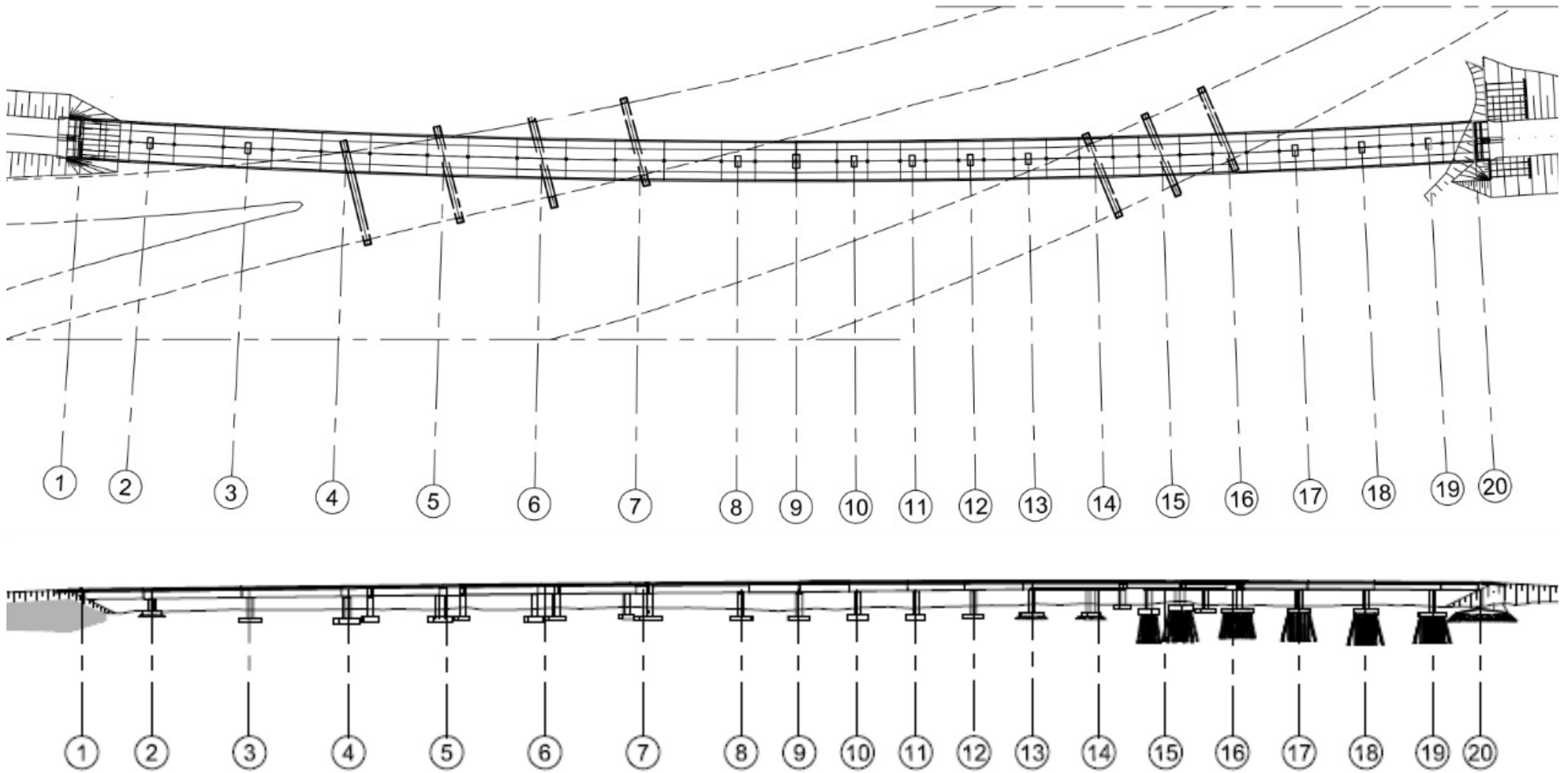


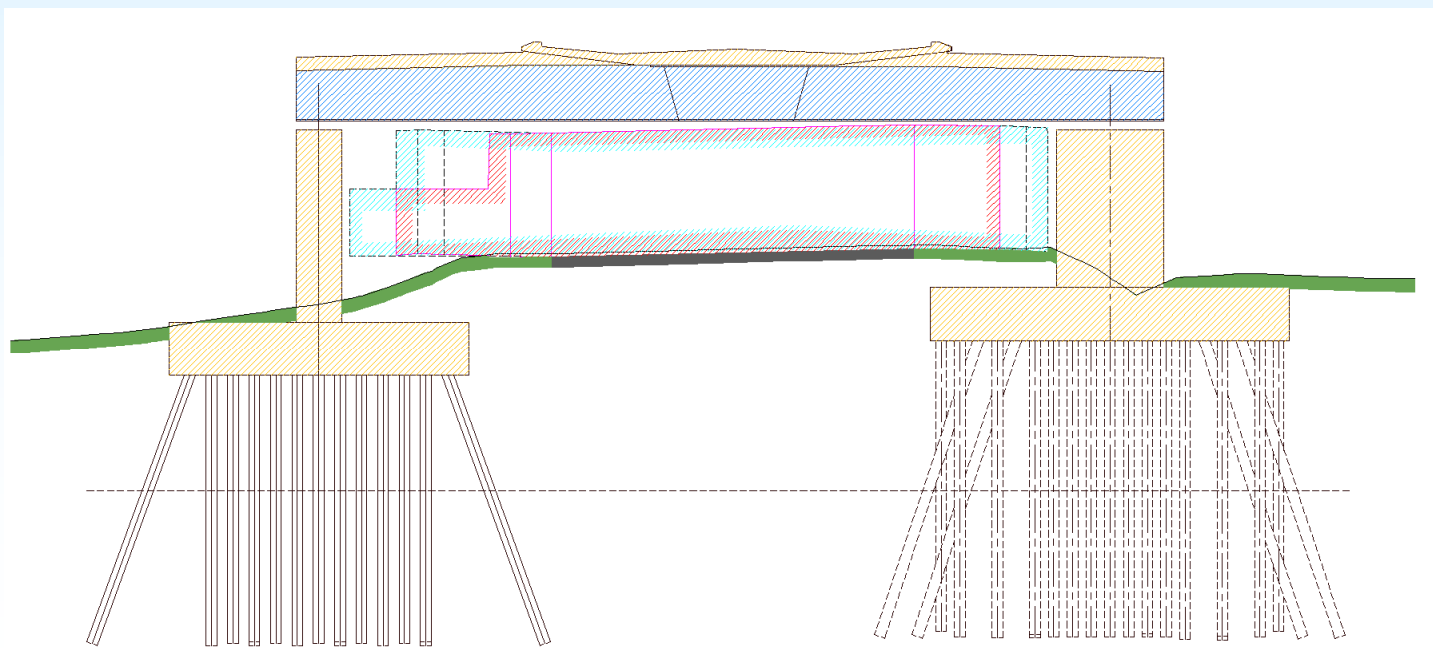
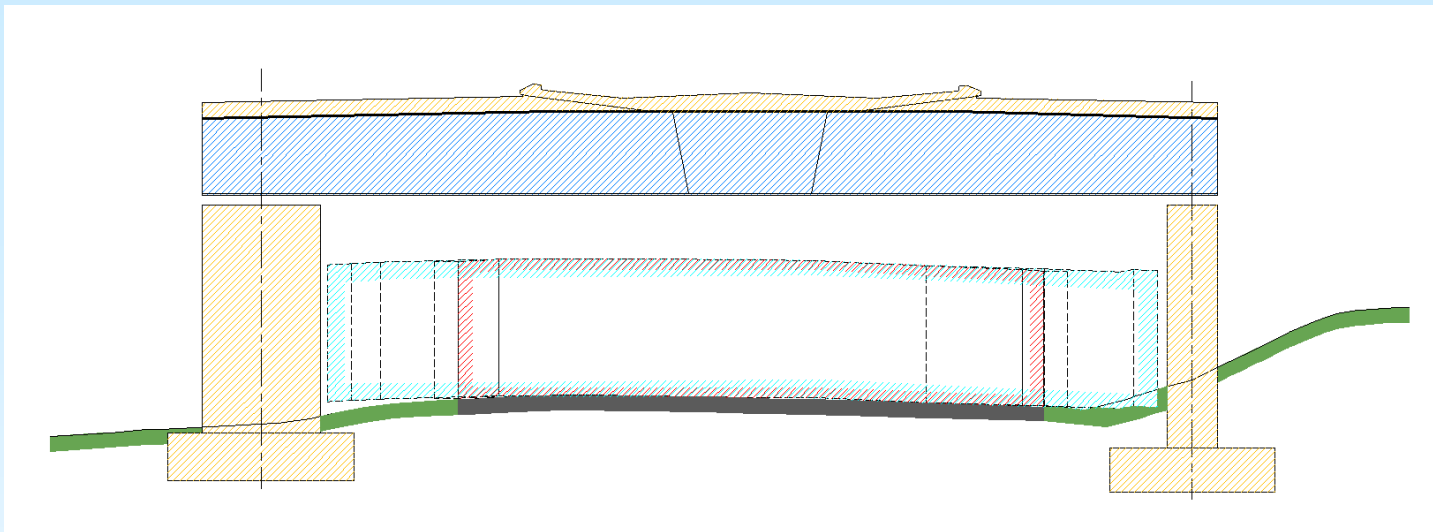






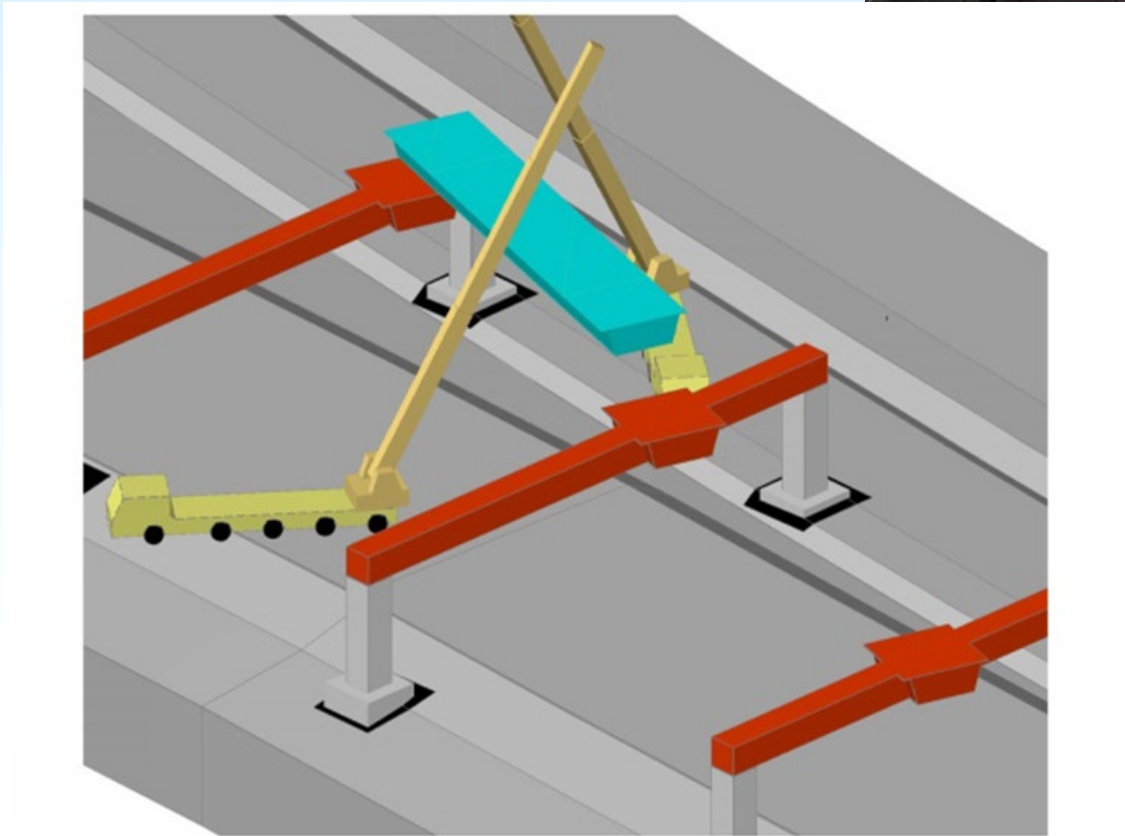




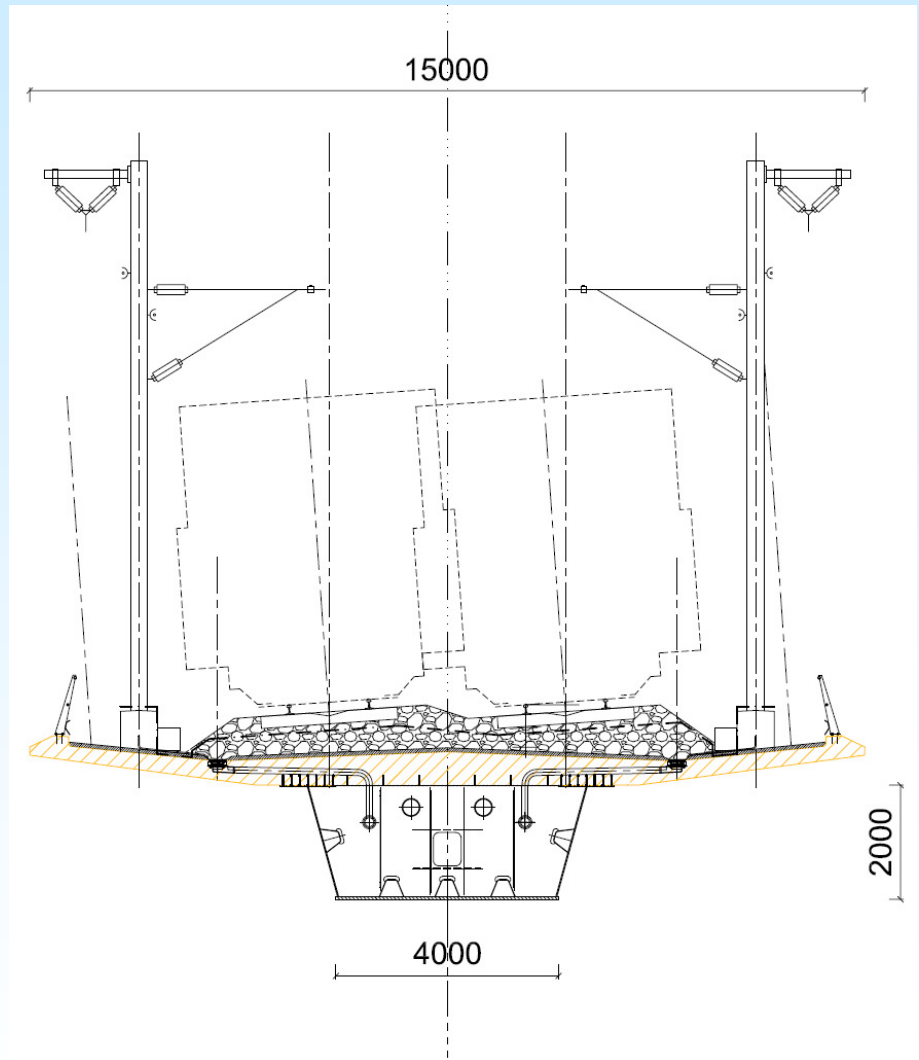
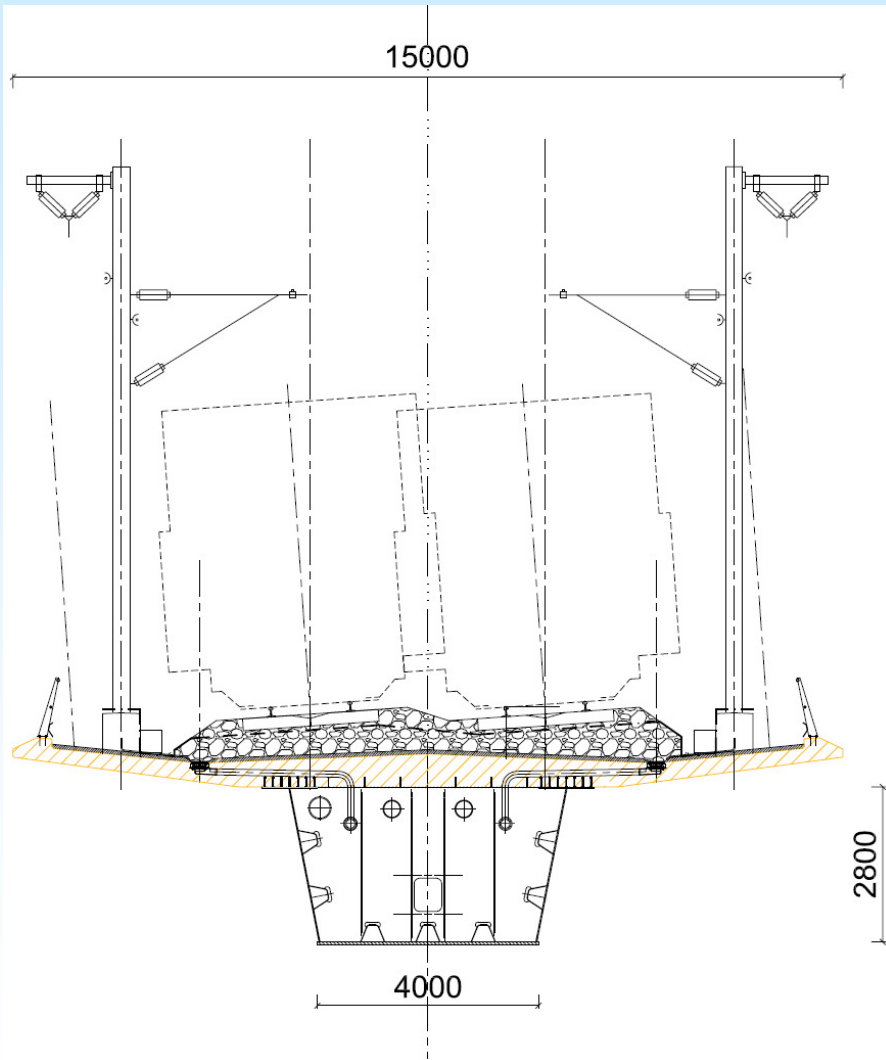


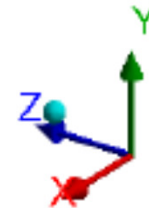
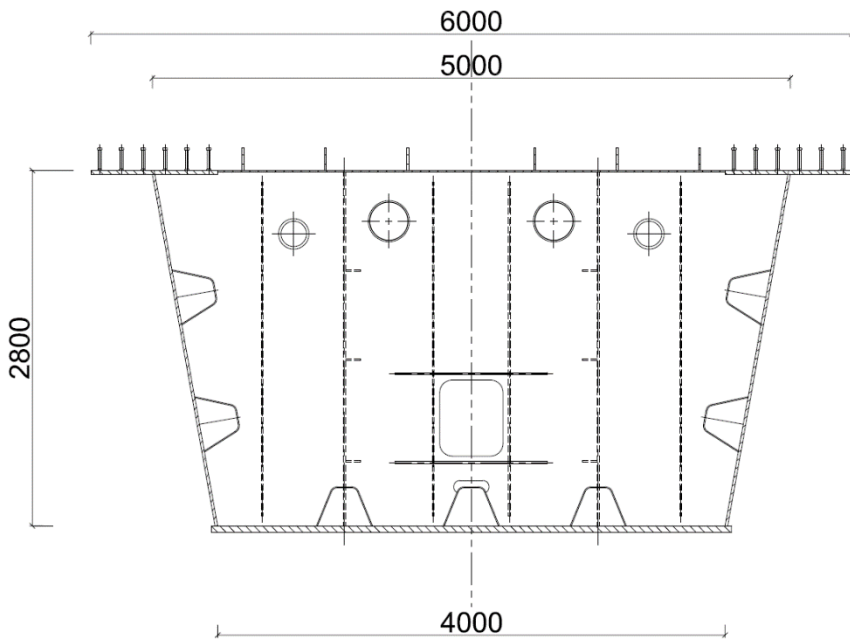
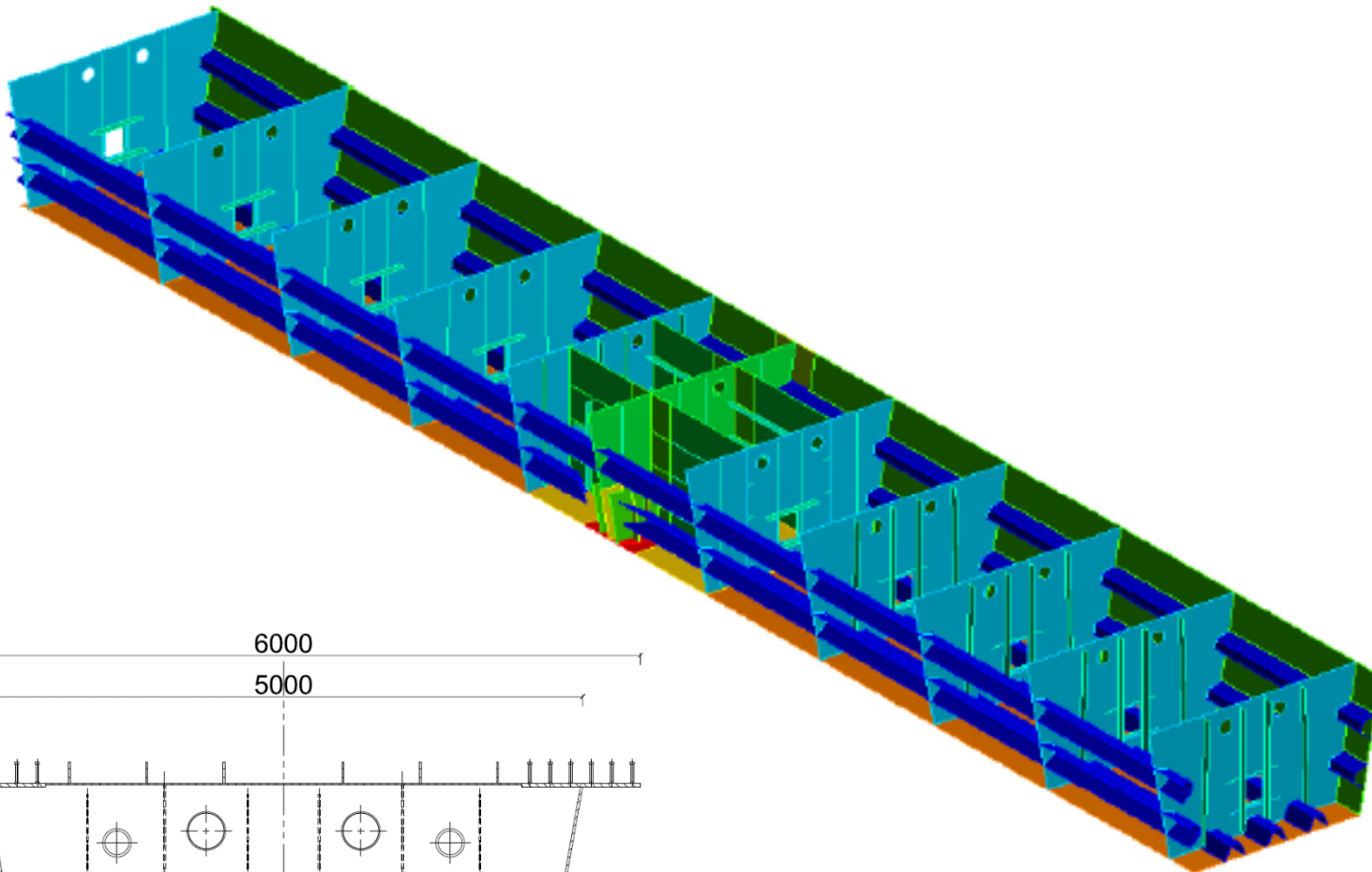
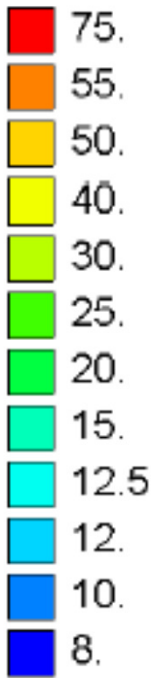




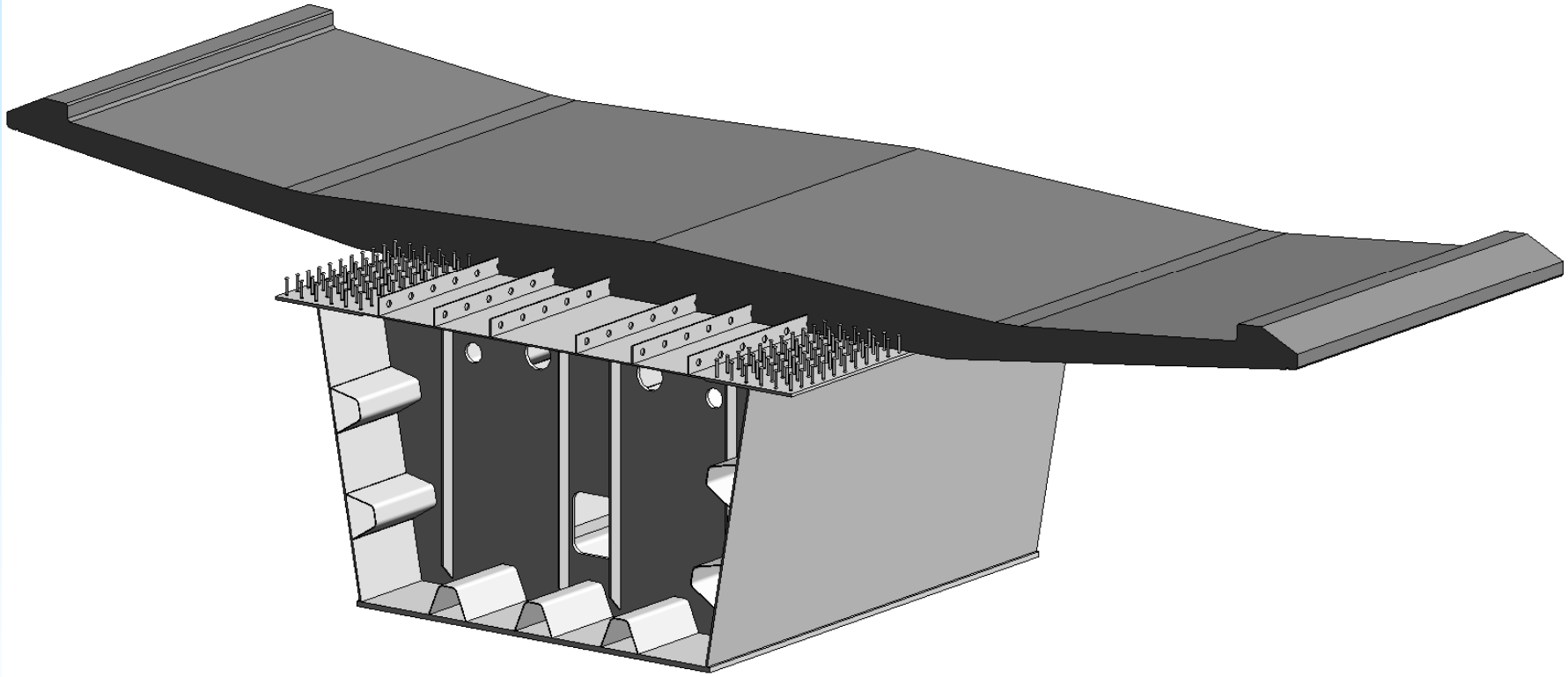


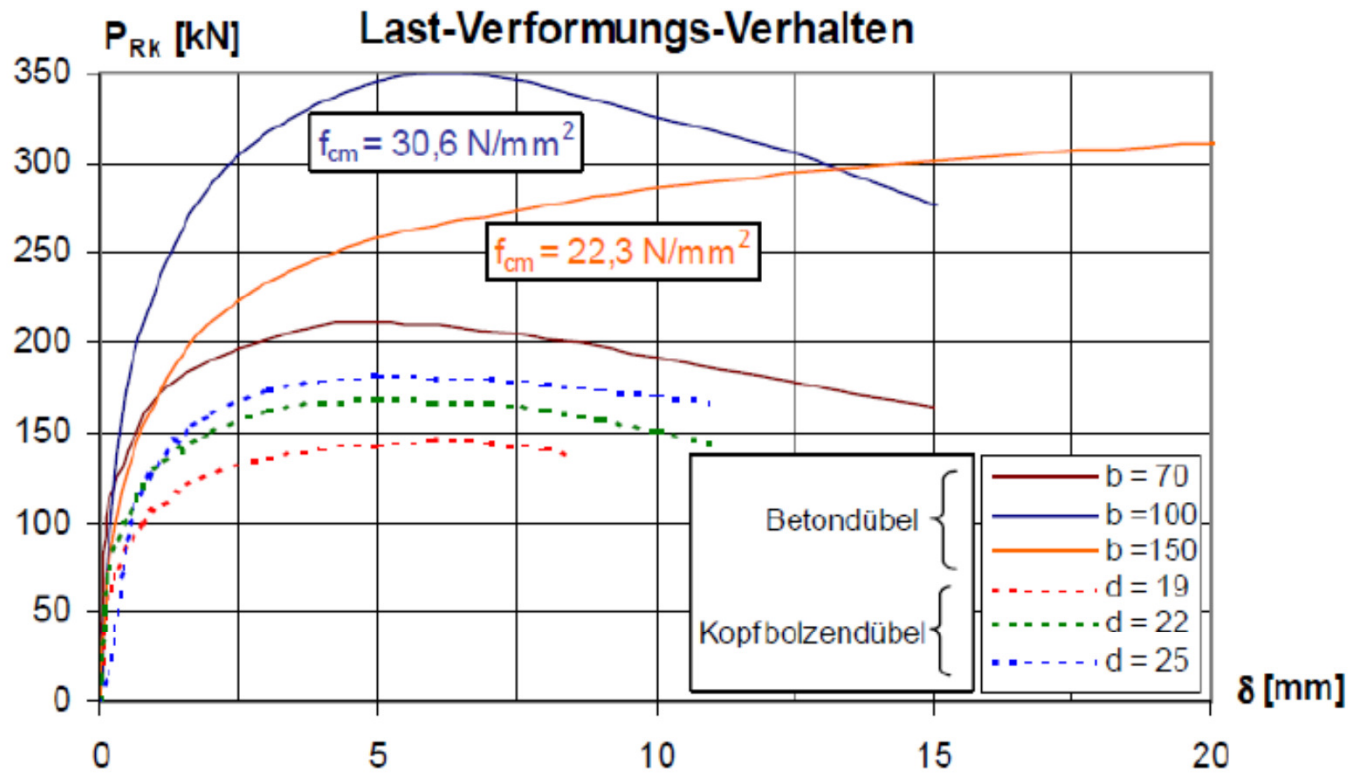
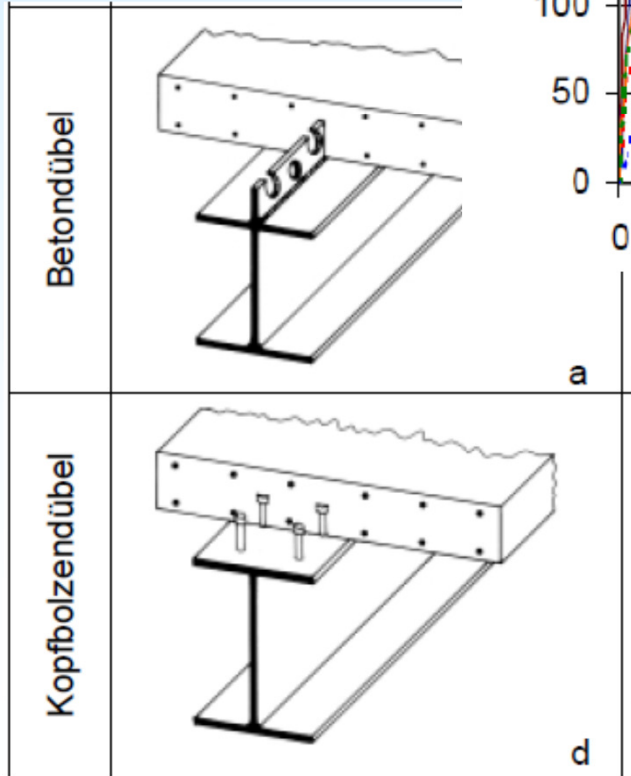




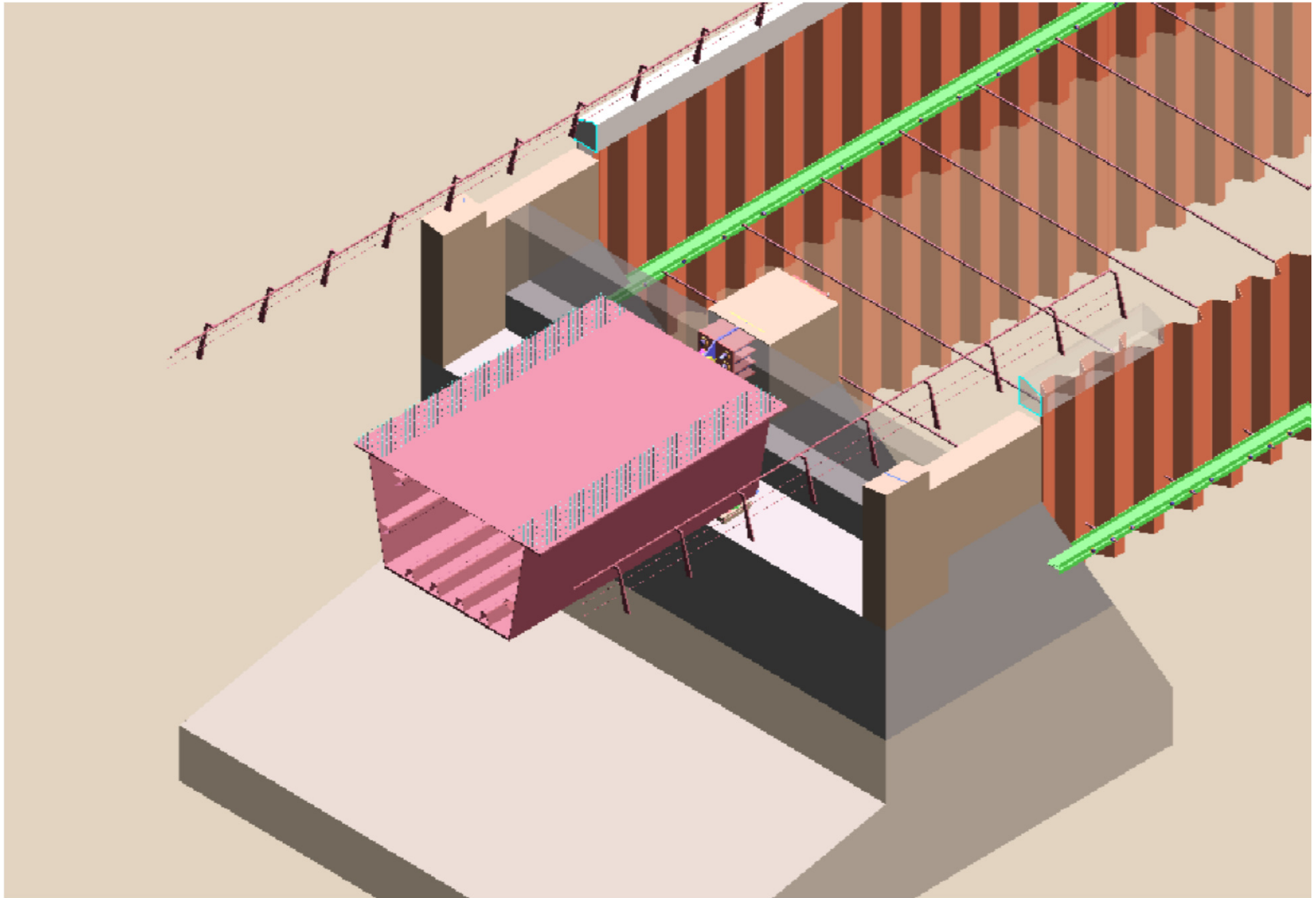


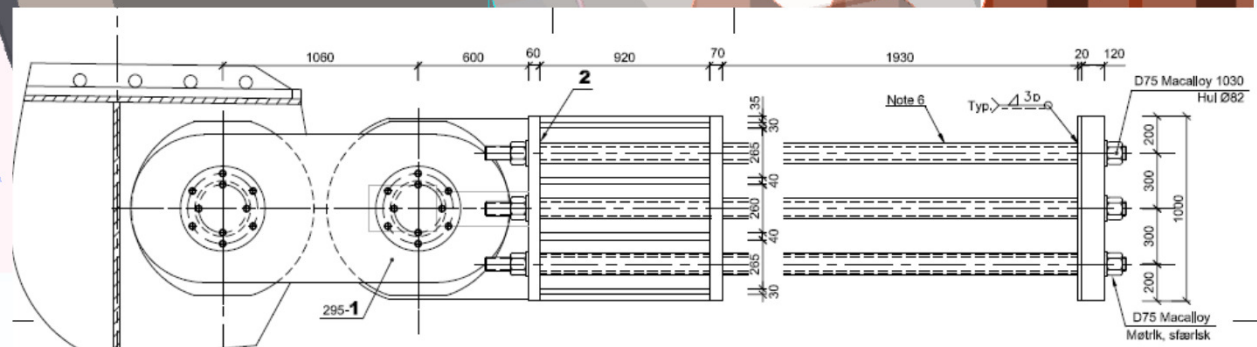
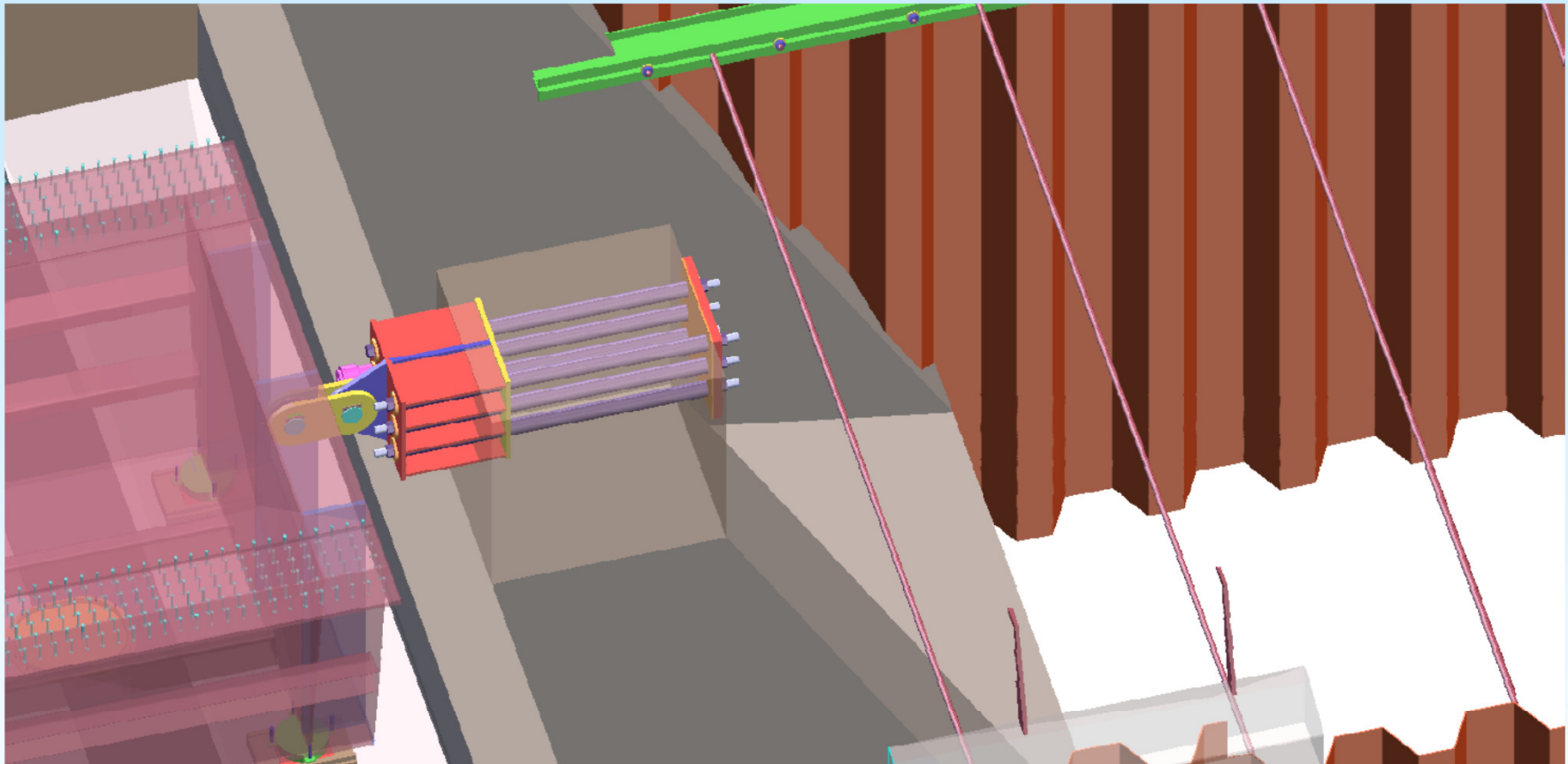




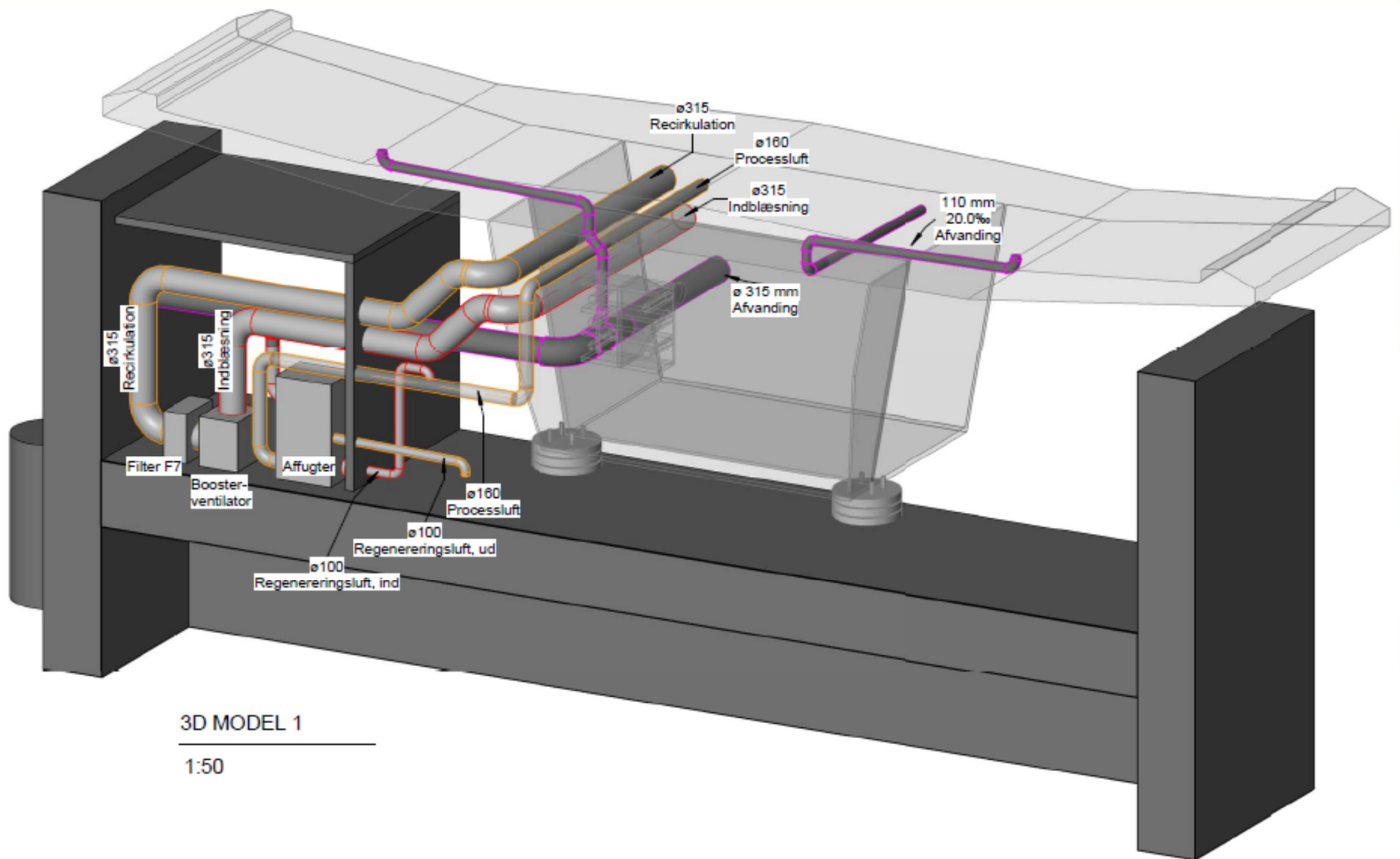






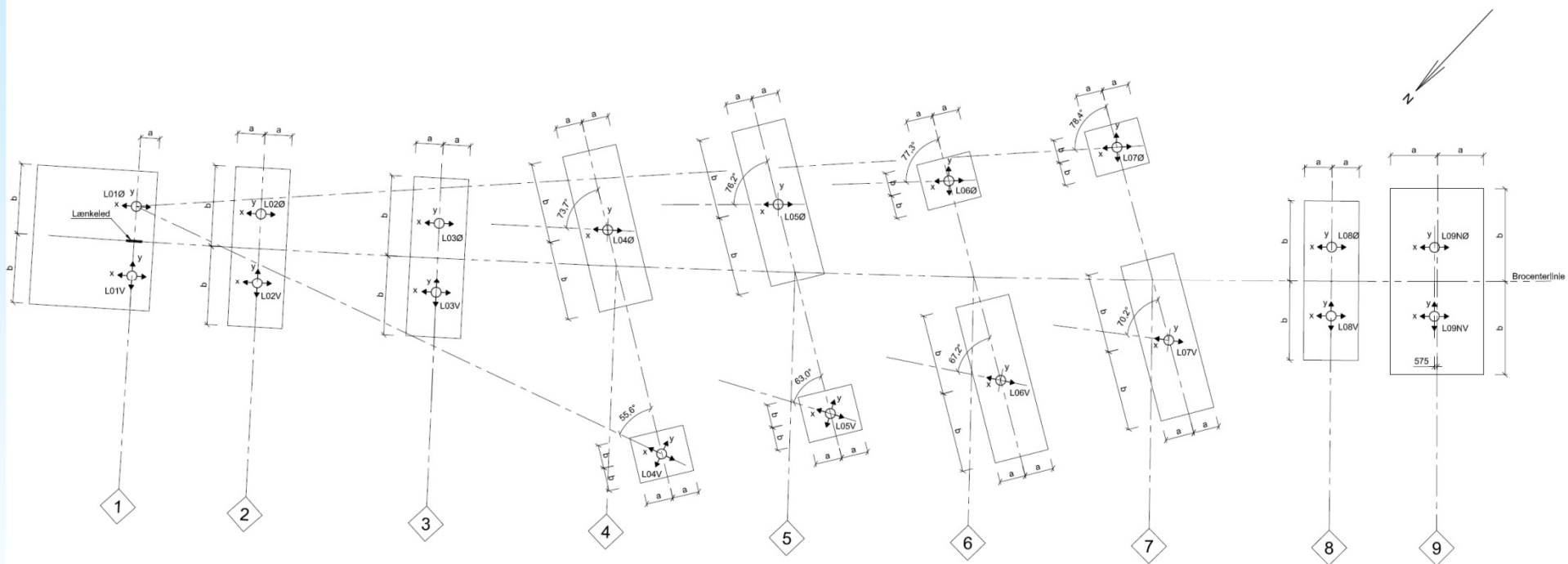


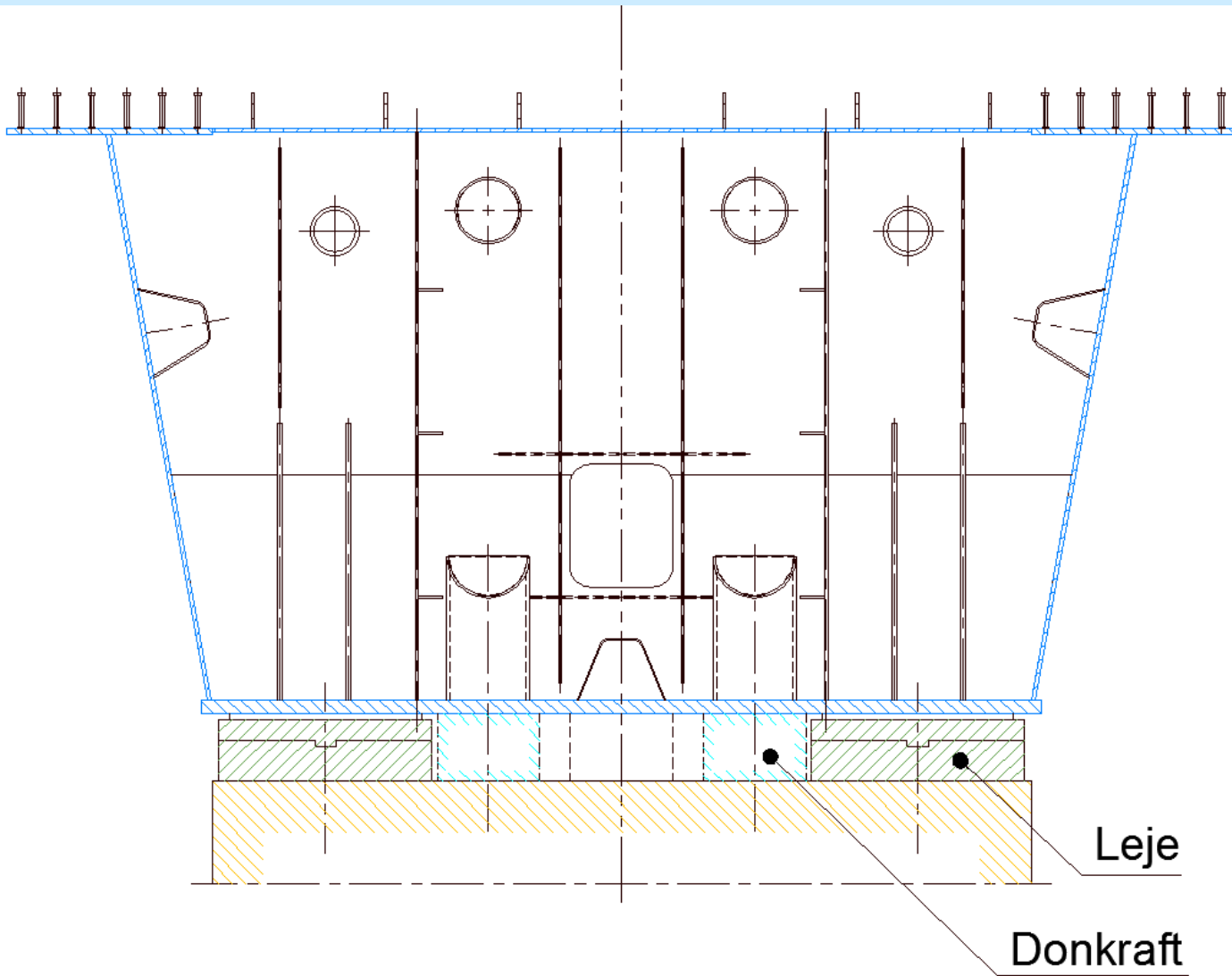




3D MODEL 1

1:50

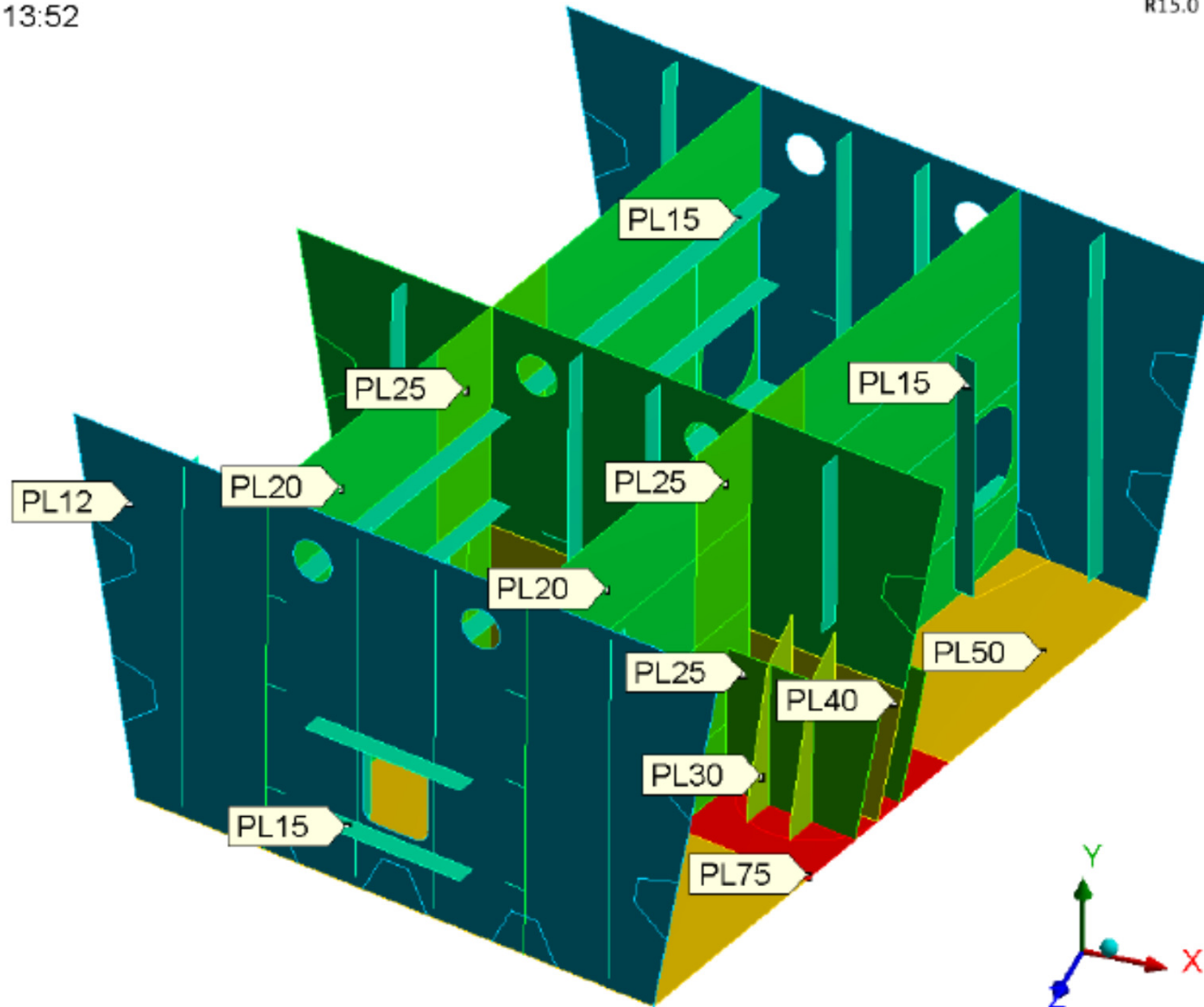


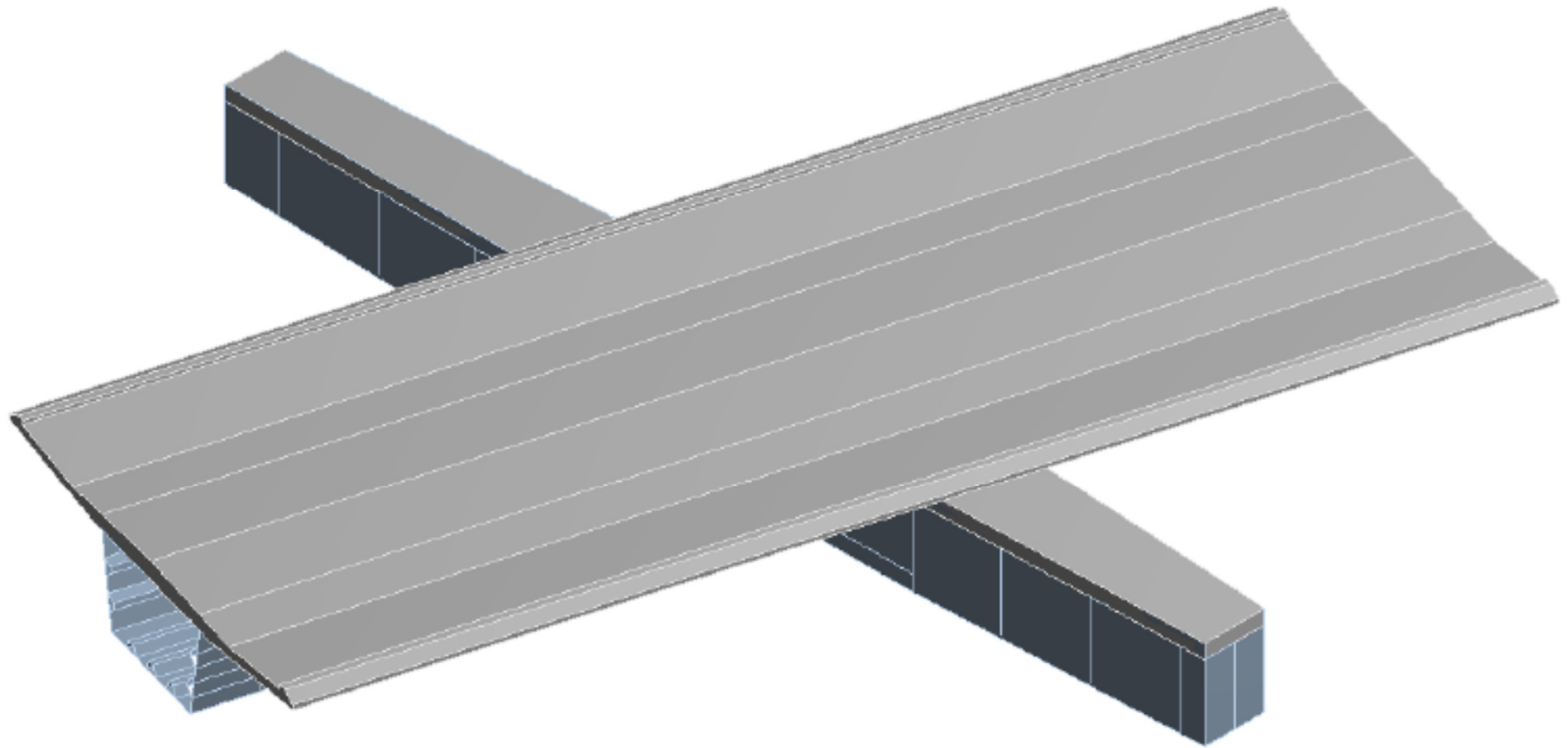


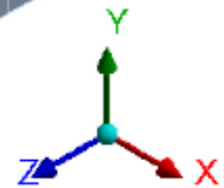
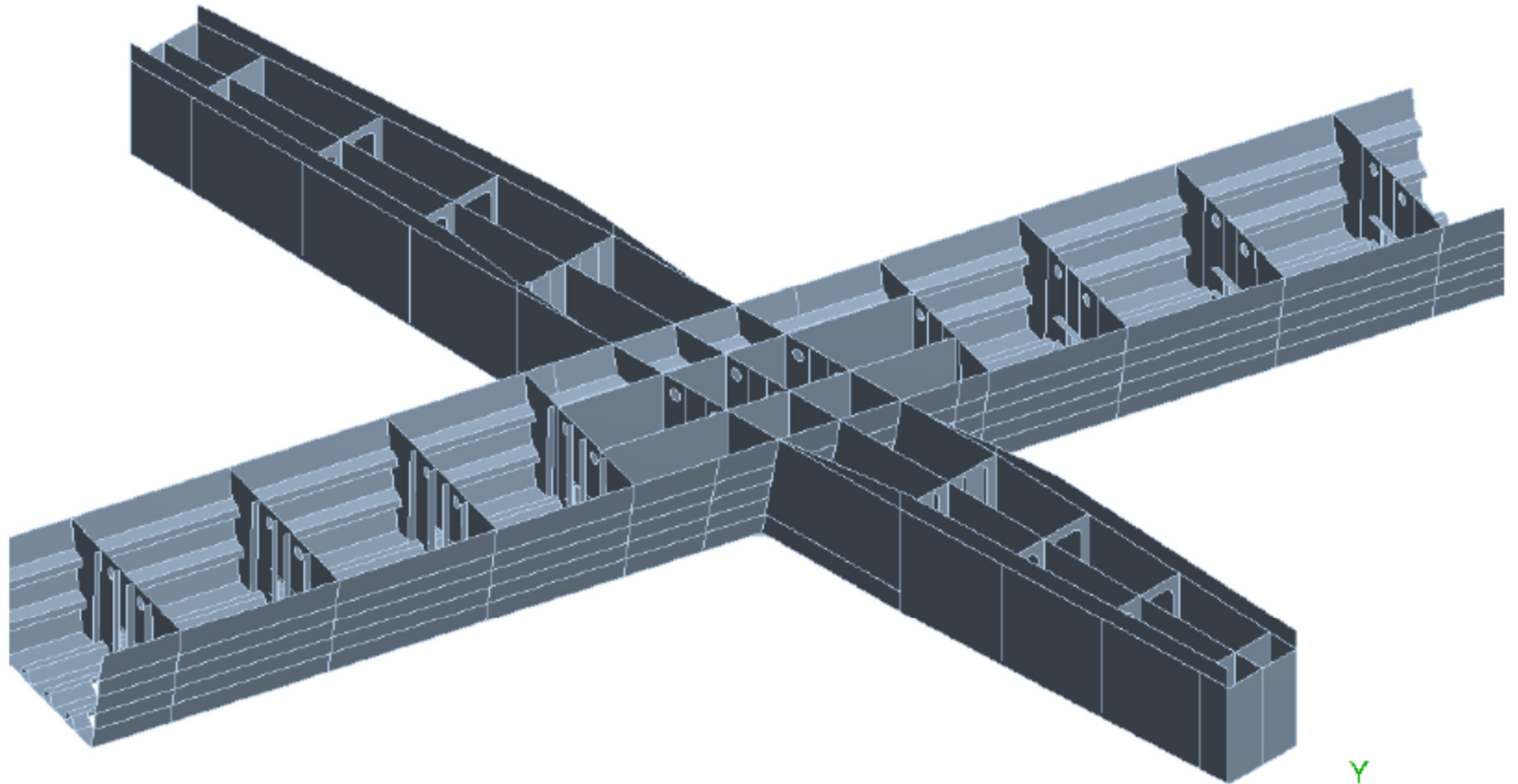


Geometry  
19/09/2014 13:52

ANSYS  
R15.0



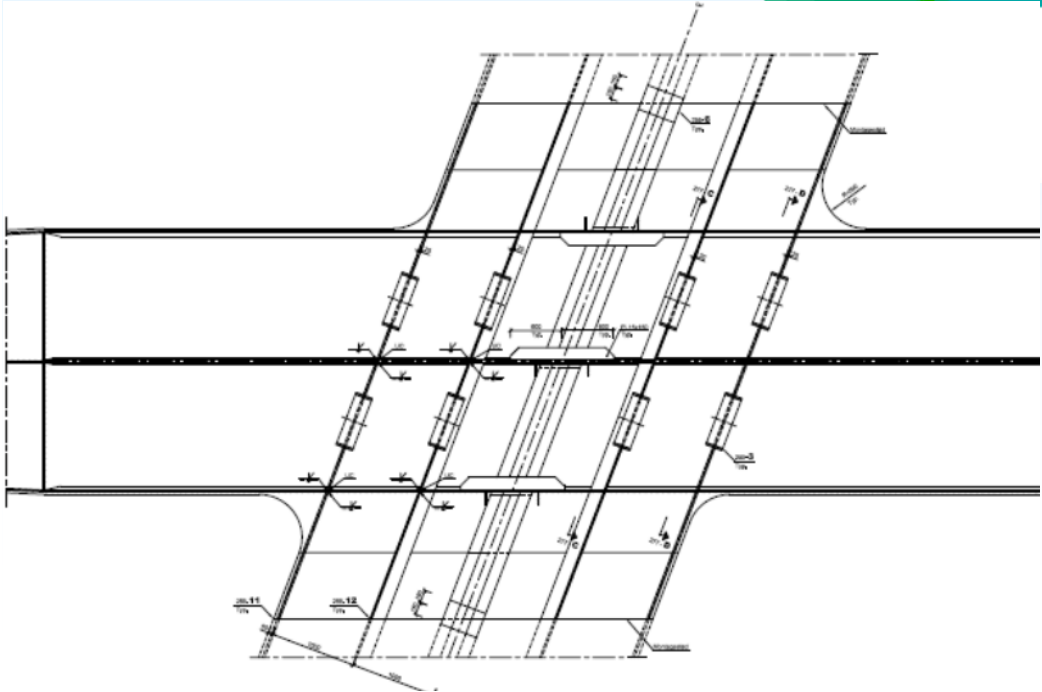
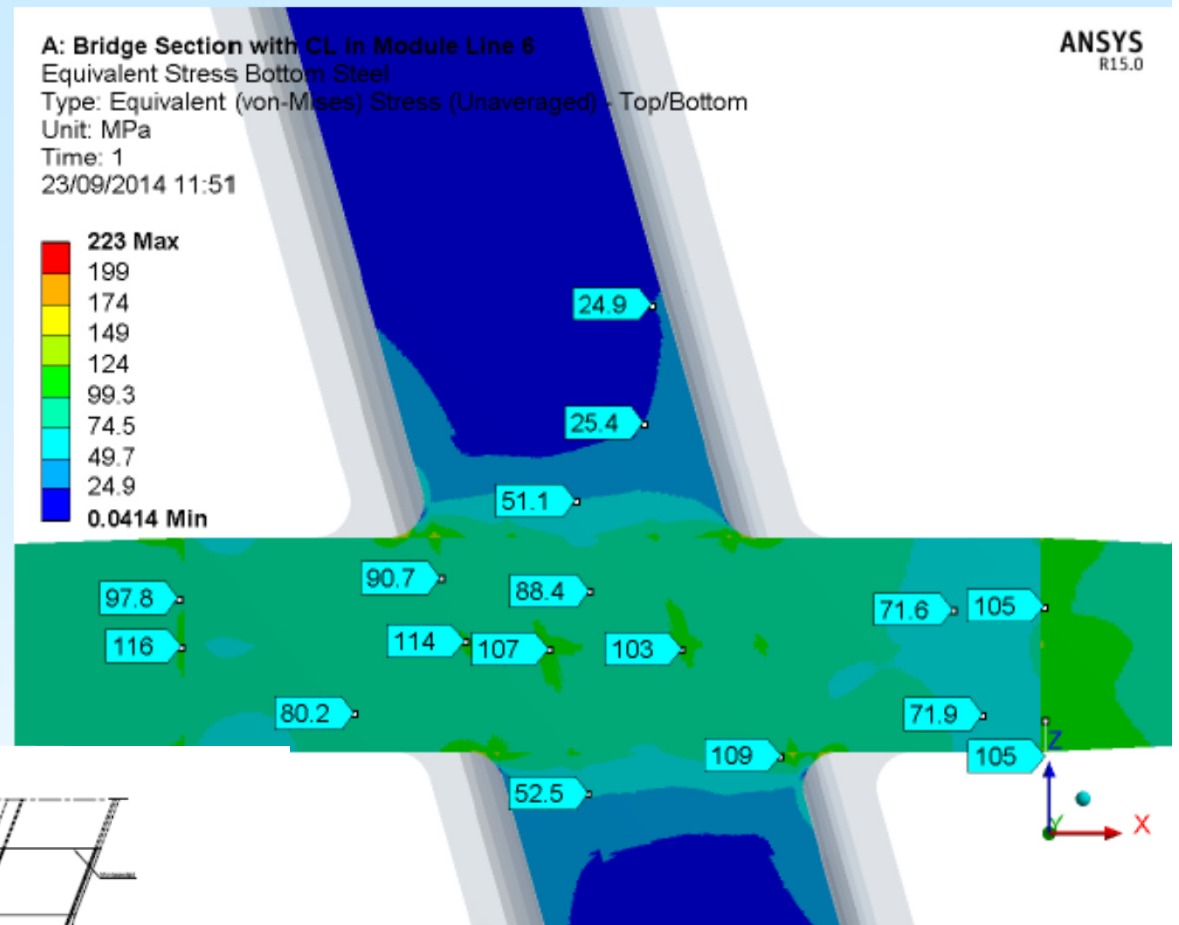
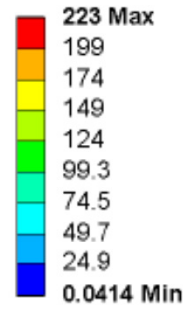


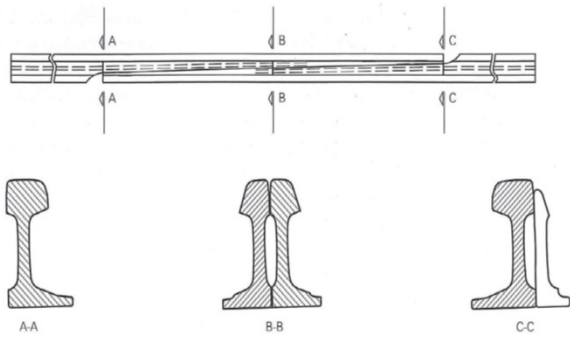


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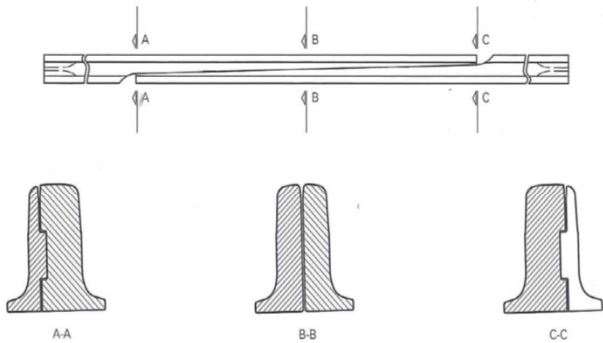


**A: Bridge Section with CL in Module Line 6**  
Equivalent Stress Bottom Steel  
Type: Equivalent (von-Mises) Stress (Unaveraged) - Top/Bottom  
Unit: MPa  
Time: 1  
23/09/2014 11:51

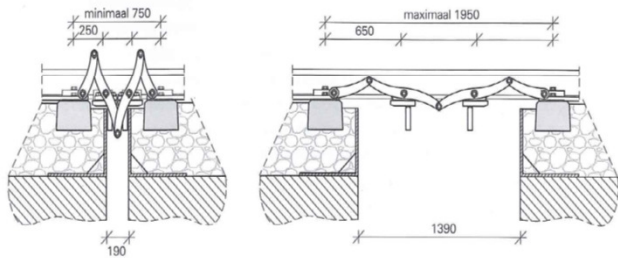




Bewerken van een spoorstaaf tot compensatielas.



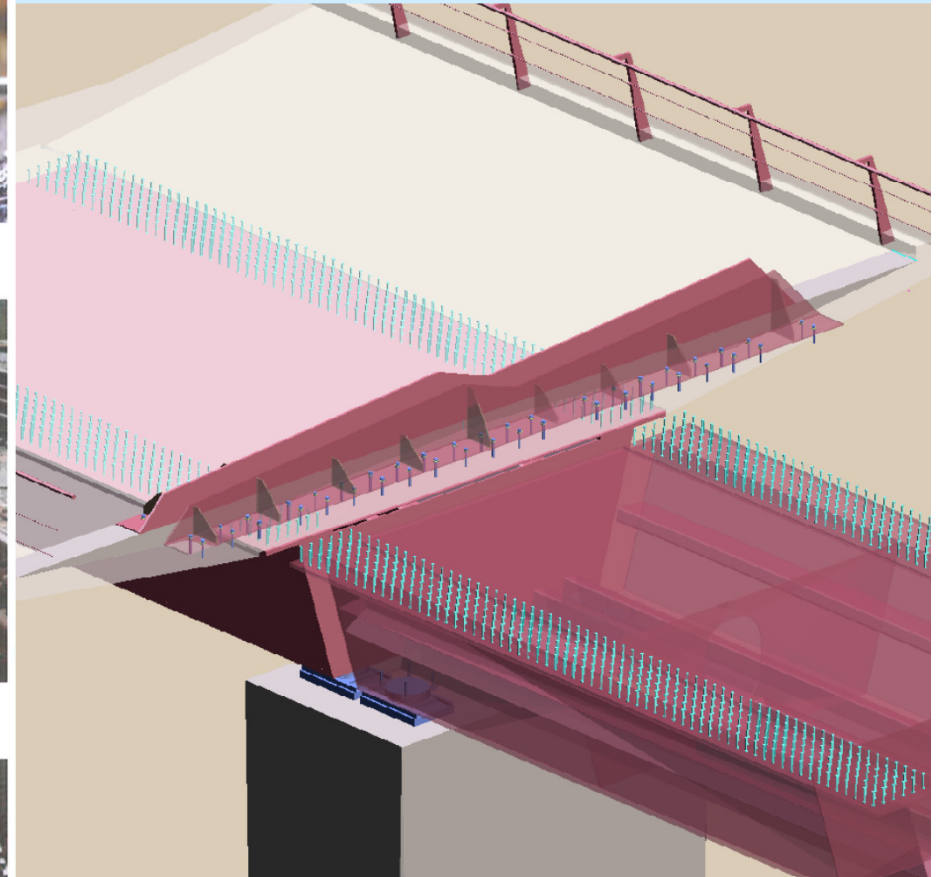
Compensatie-inrichting IJsselbrug, Zwolle.

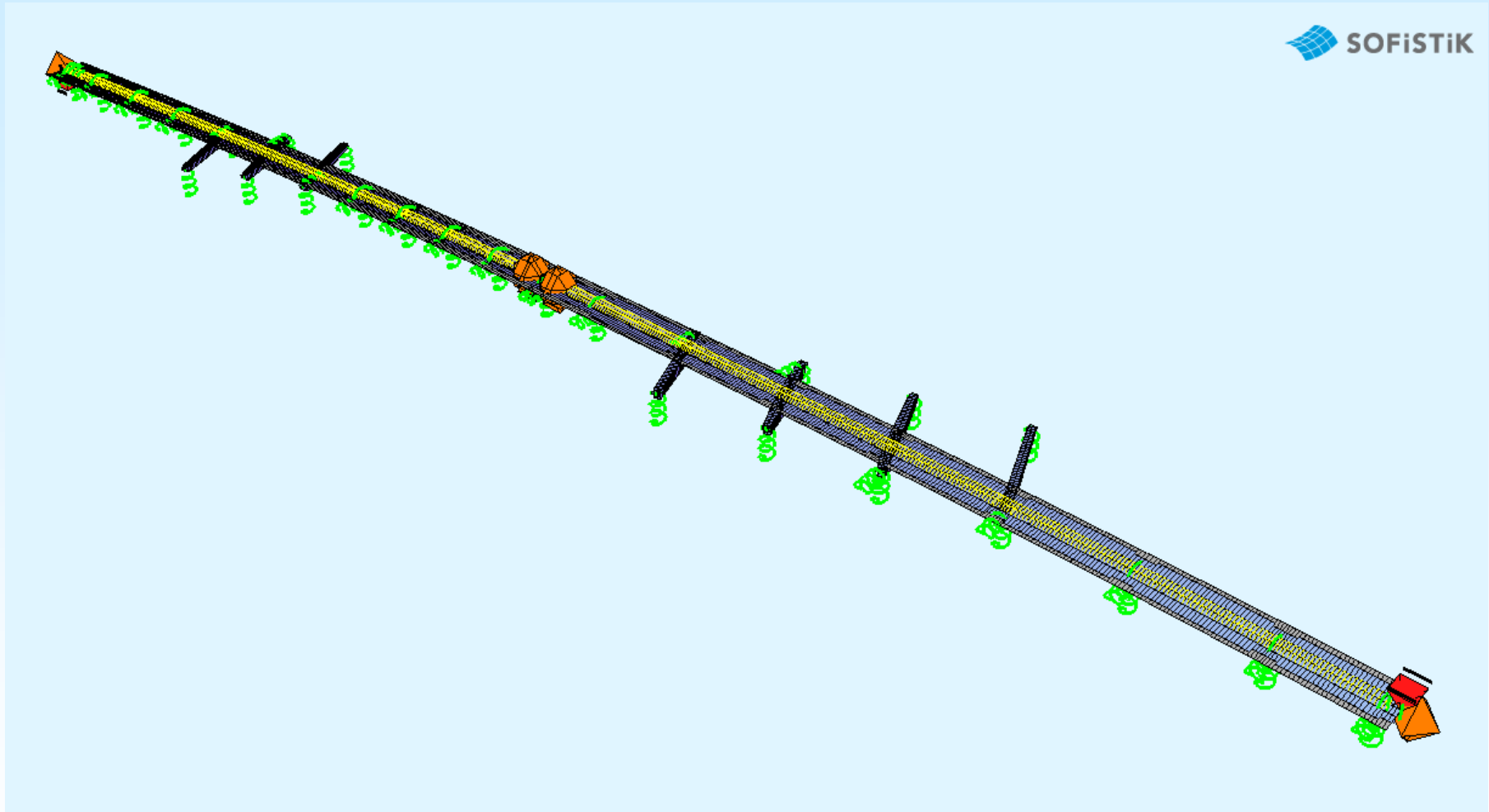


Overzicht en doorsneden van compensatielassen. Boven: de 'spoorstaafprofiel'-uitvoering. Midden: de 'volprofiel spoorstaaf'-variant. Onder: de maximale en minimale uitslag bij een speciale compensatie-inrichting met scharen.

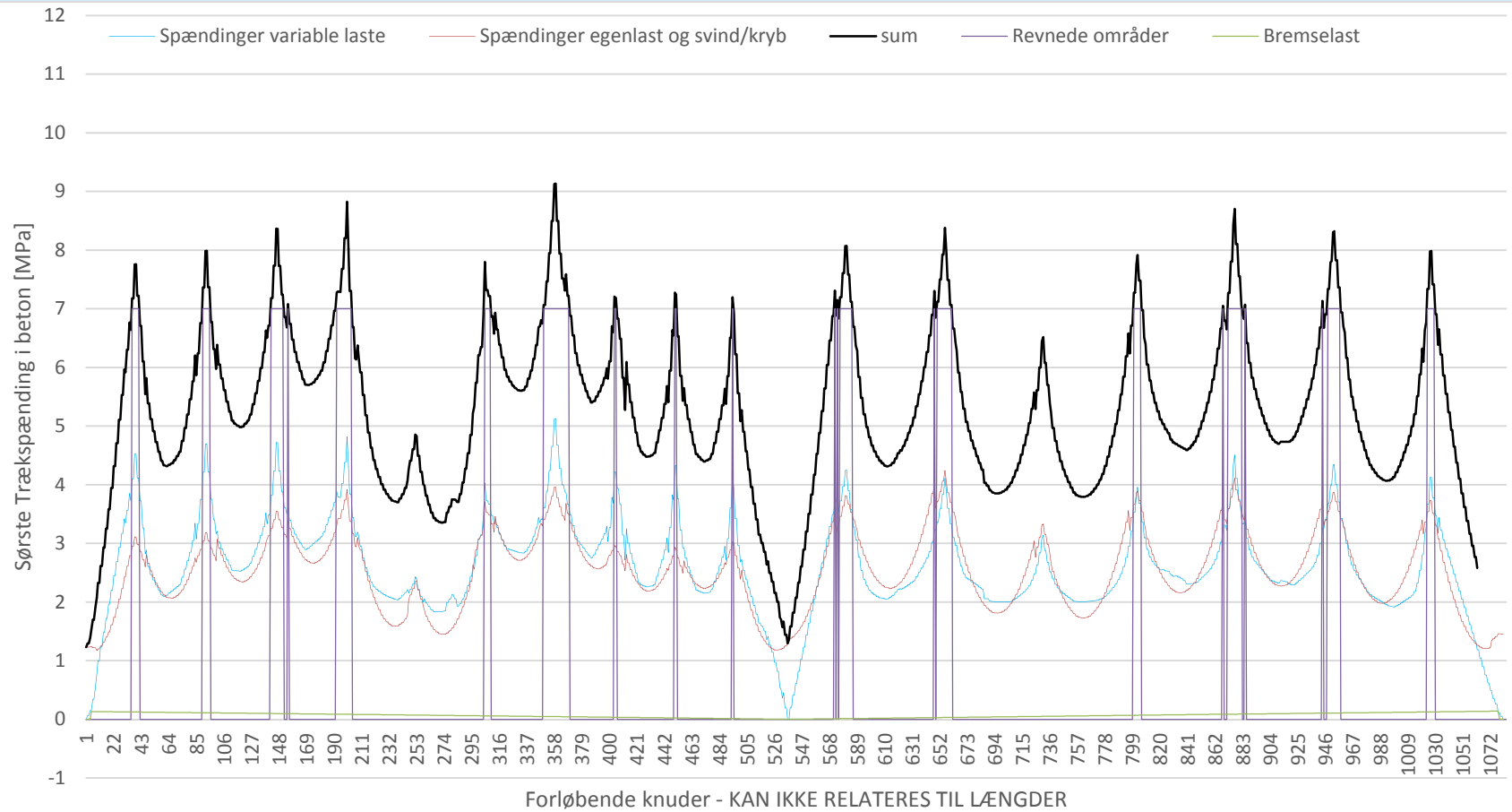


Detail tong en aanslagspoorstaaf.









### Accelerations for tog A1 to A10







Steel tonnage 3600 tons





# DANSK STÅLDAG - 2014 SUNDSVALL BROEN, SVERIGE STÅLOVERBYGNING

**Helge Skov Pedersen**  
ISC Rådgivende Ingeniører A/S

**ISC**  
Innovative Engineering

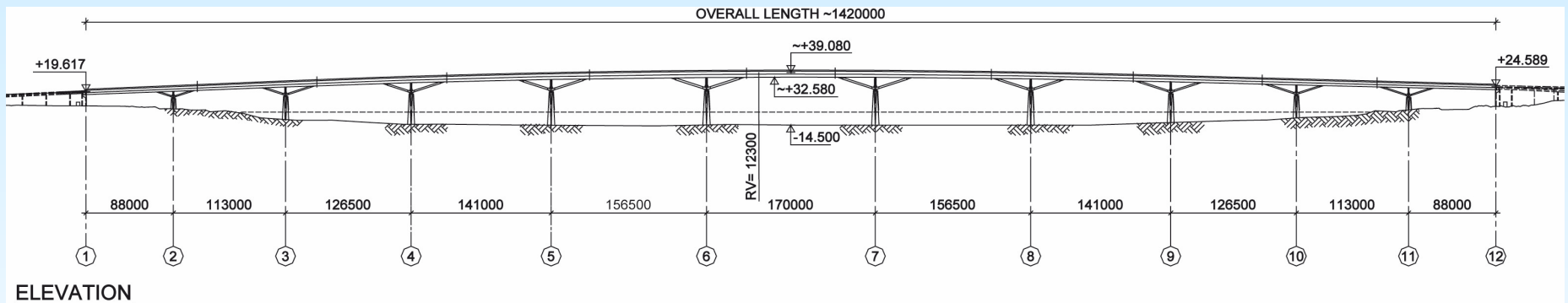
# STÅLOVERBYGNING

Introduktion  
Fabrikation  
Transport  
Montage



# GEOMETRI, ELEVATION

TOTALLÆNGDE 1420 m



## Spændvidde:

Min.: 88,0 m

Max.: 170 m

11 spænd

11 sektioner

## Højde:

Syd: 19,6 m

Midt: 39,1 m

Nord: 24,6 m

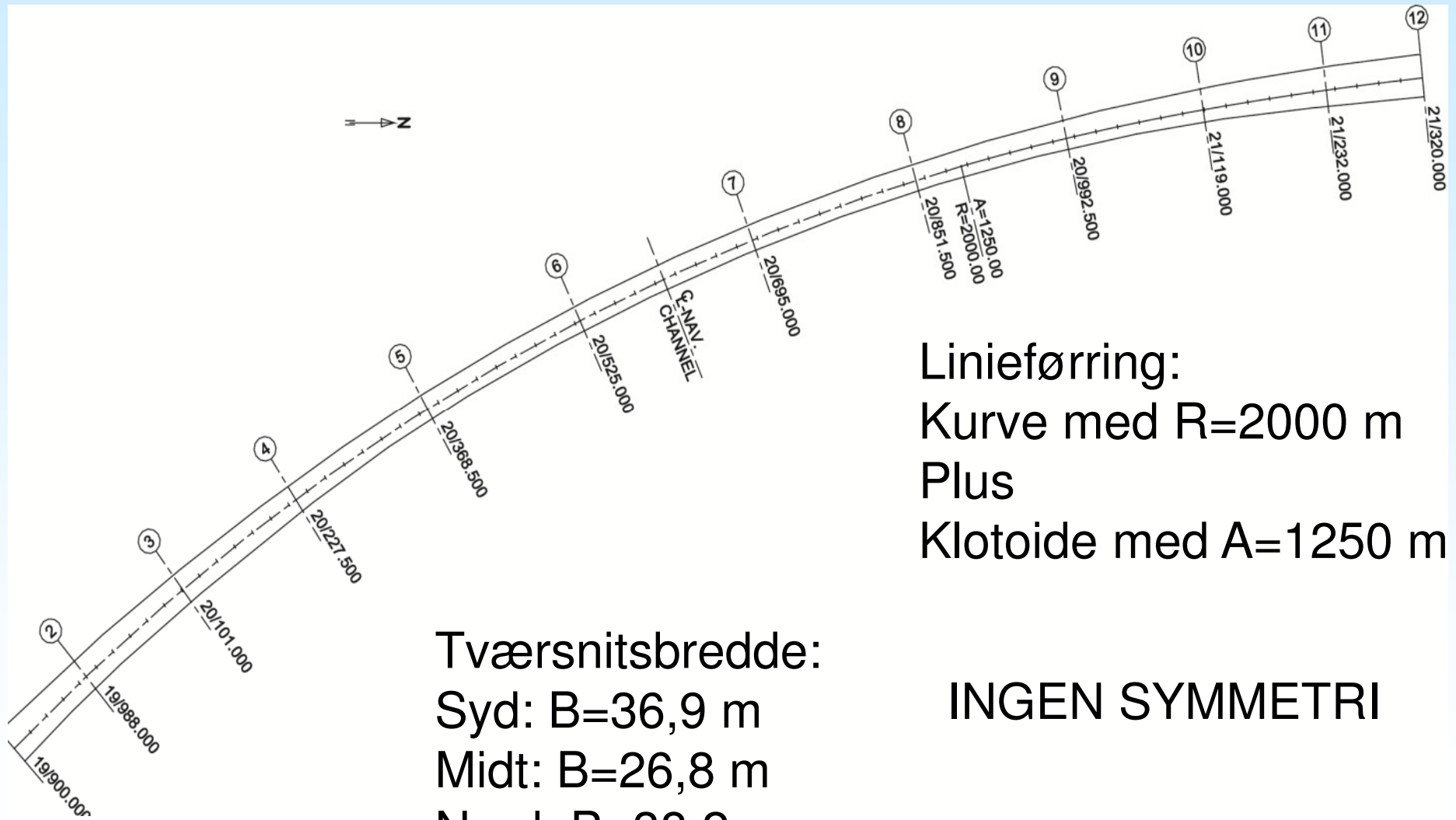
## Tværsnitshøjde:

Min.: 3,5 m

Max.: 6,5 m

INGEN SYMMETRI

# GEOMETRI, PLAN



Linieførring:  
Kurve med  $R=2000$  m  
Plus  
Klotoide med  $A=1250$  m

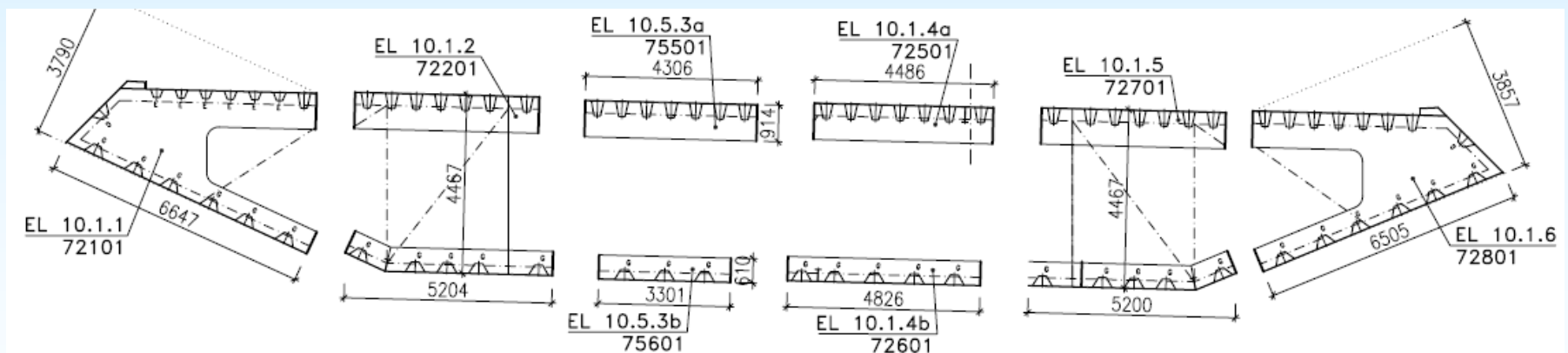
Tværsnitsbredde:  
Syd:  $B=36,9$  m  
Midt:  $B=26,8$  m  
Nord:  $B=38,2$  m

INGEN SYMMETRI



# FREMSTILLING

BROEN ER DELT I 11 SEKTIONER  
HVER SEKTION BESTÅR AF 5 TIL 7 SEGMENTER I ALT 64  
HVER SEGMENT BESTÅR AF 6 TIL 8 ELEMENTER I ALT 428



# FREMSTILLING I SENGENTHAL



# FREMSTILLING I SENGENTHAL



# LANDTRANSPORT TIL FLODBÅD

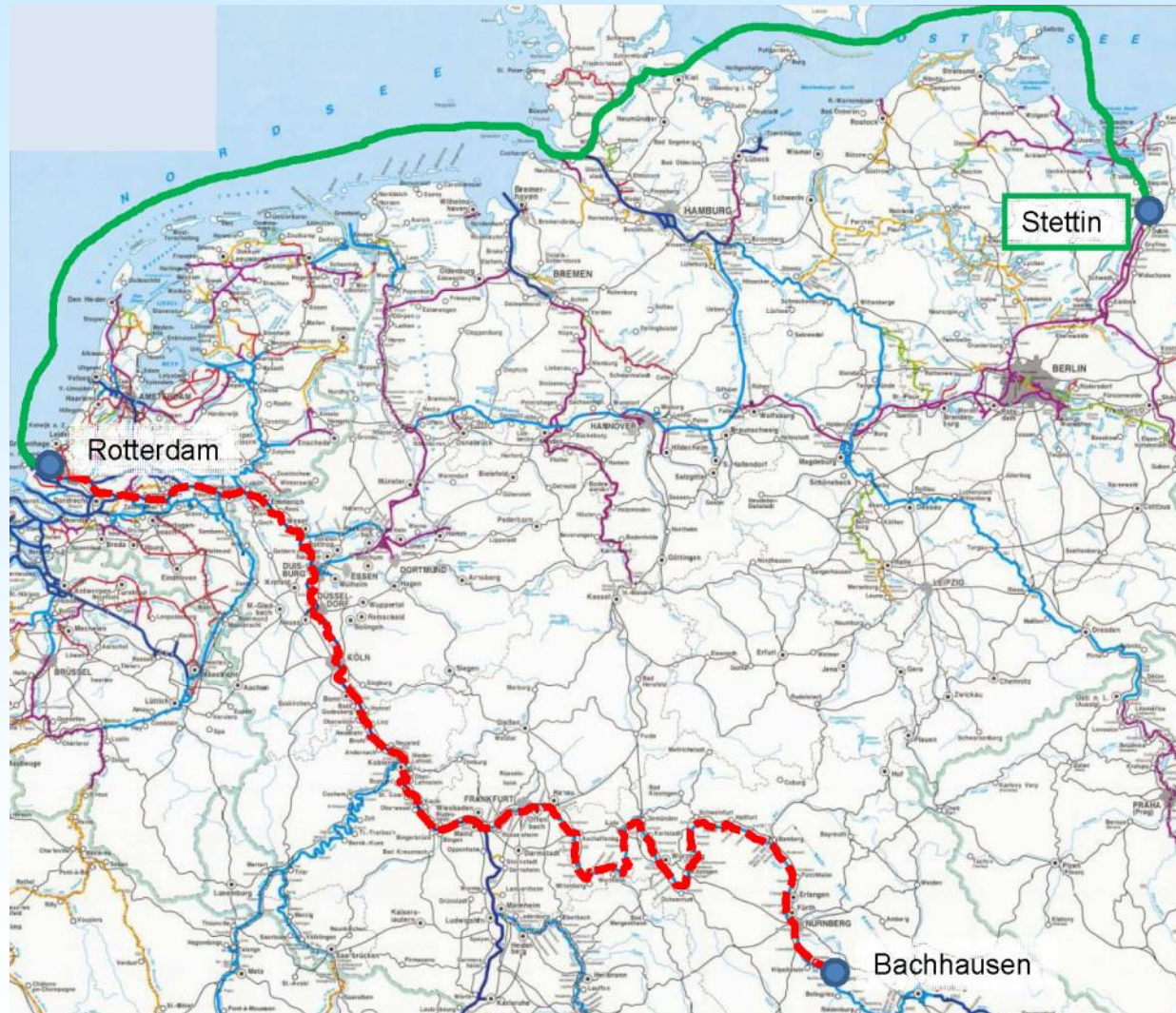




# BROELEMENTER PÅ VEJ TIL ROTTERDAM



# TRANSPORT FRA SENGENTHAL VIA ROTTERDAM TIL STETTIN





# PÅ VEJ GENNEM KIELERKANALEN



# LOSNING AF ELEMENTER I STETTIN





# SAMLING AF ELEMENTER I STETTIN



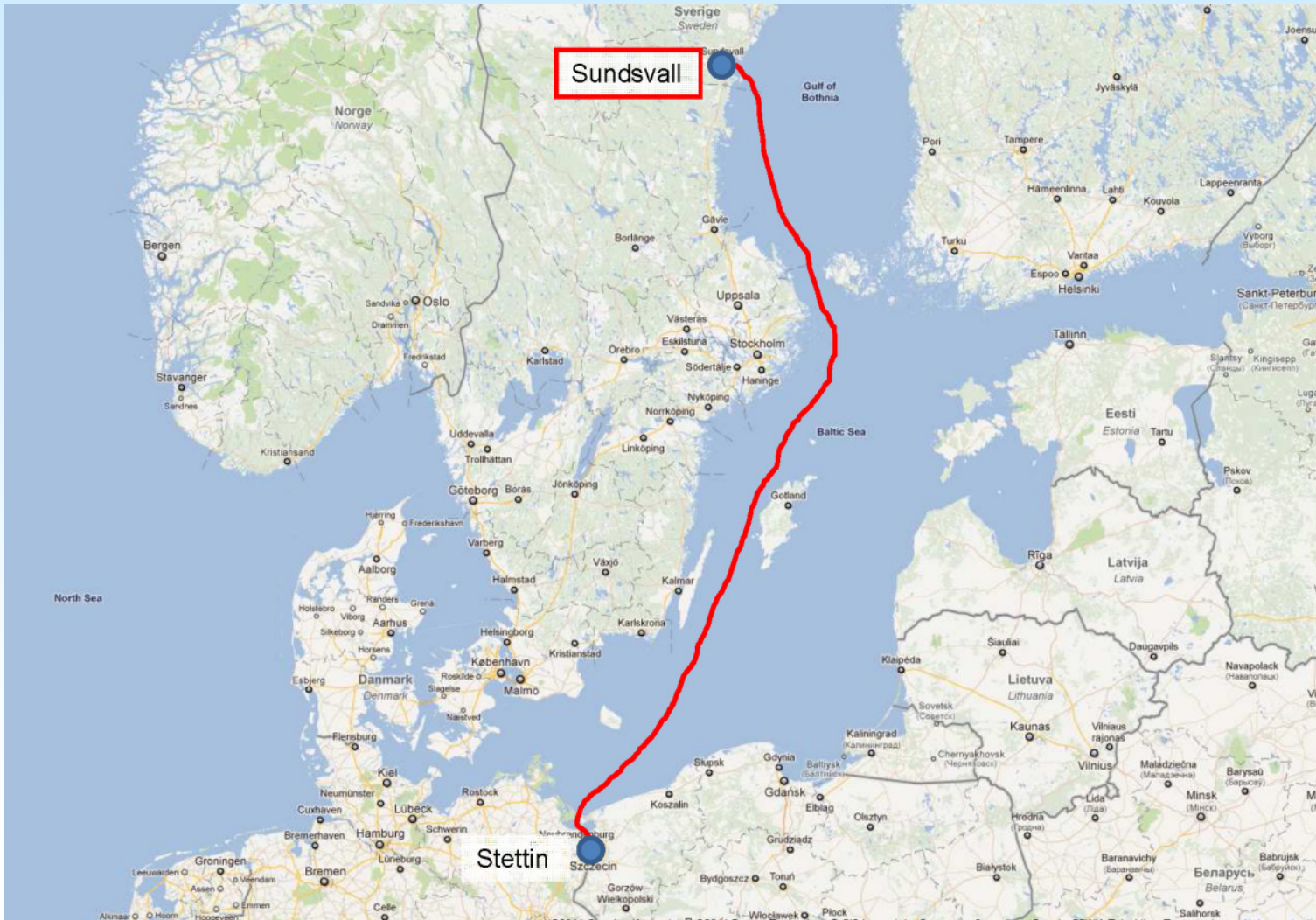


# BROSEKTION SKUBBES UD TIL PRAM

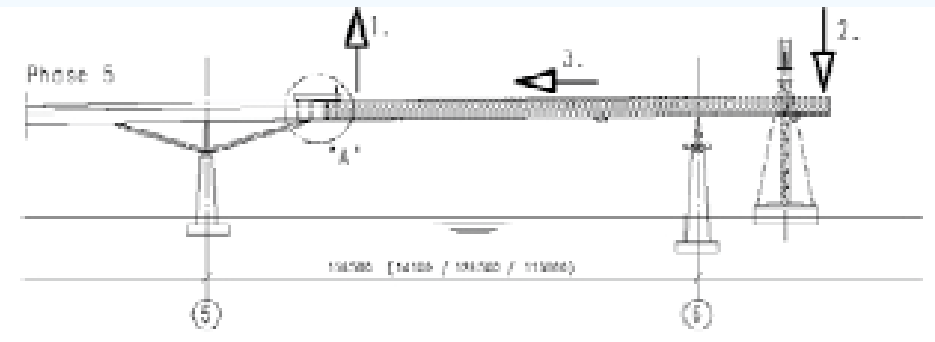
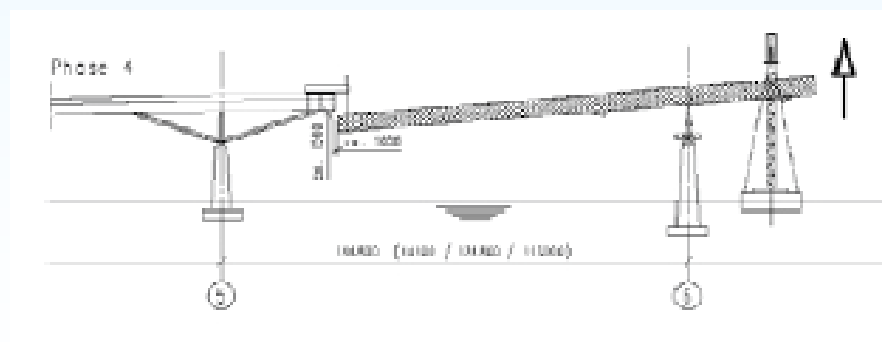
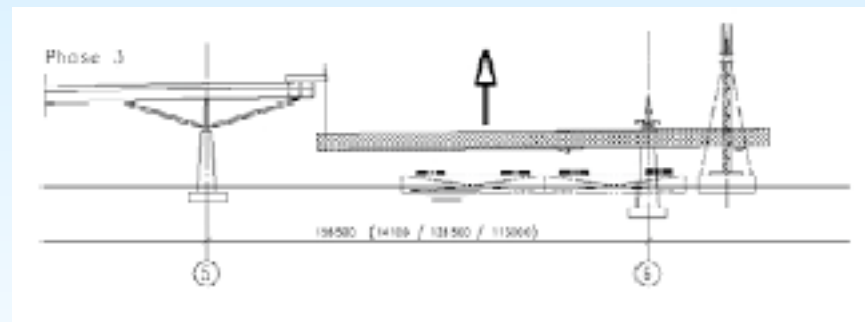
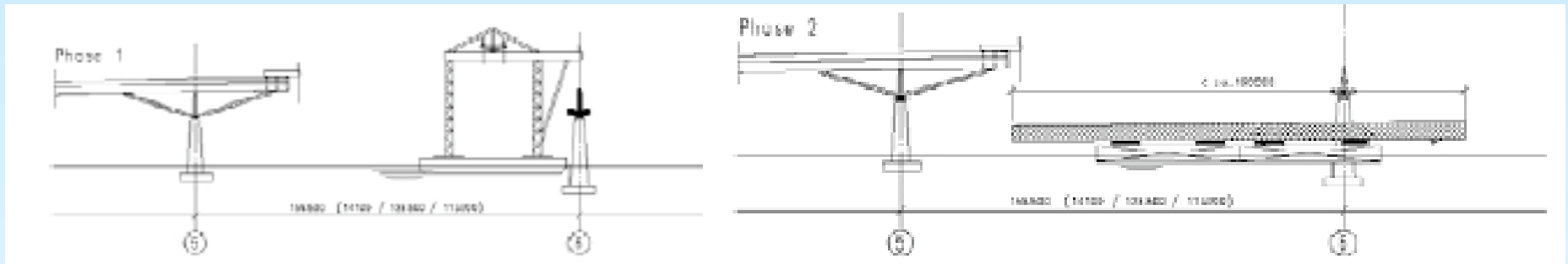




# TRANSPORT FRA STETTIN TIL SUNDSVALL

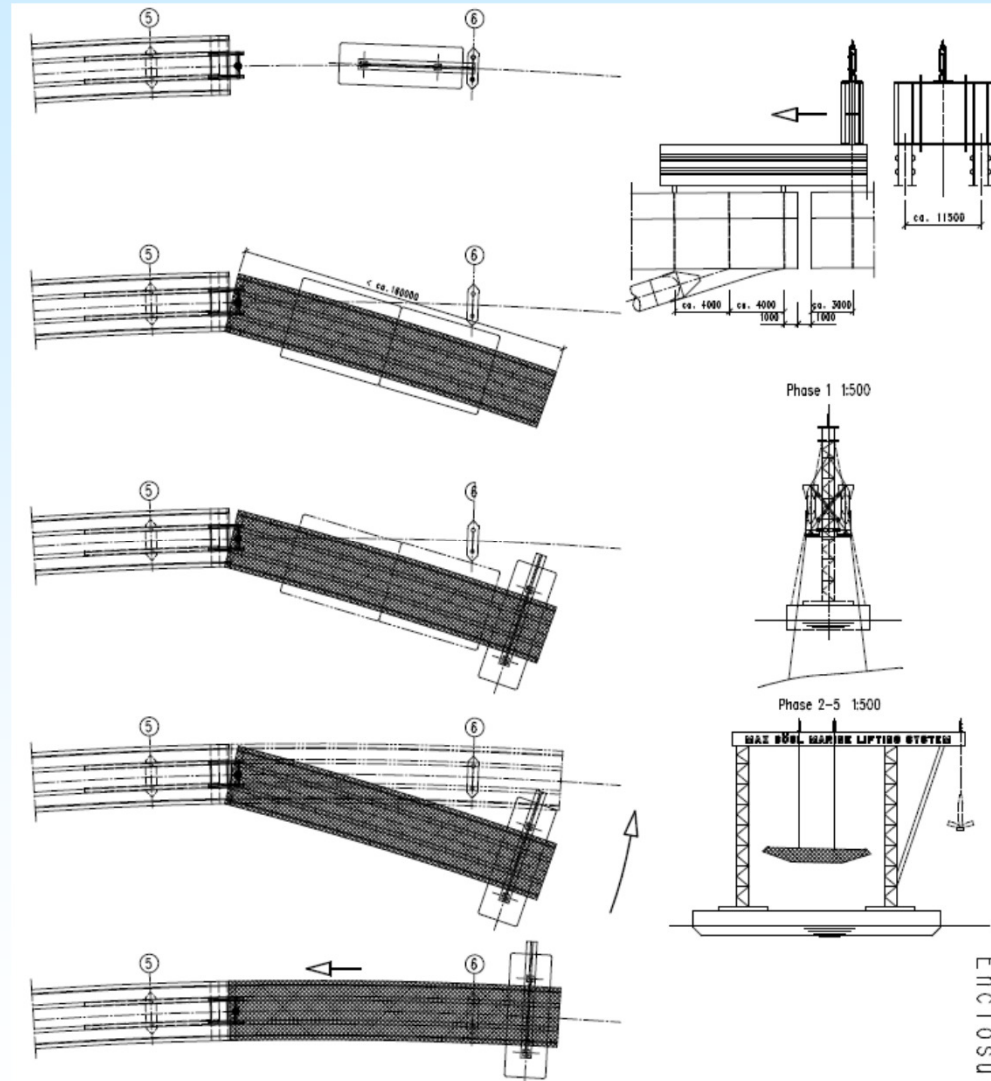


# MONTAGE I SUNDSVALL

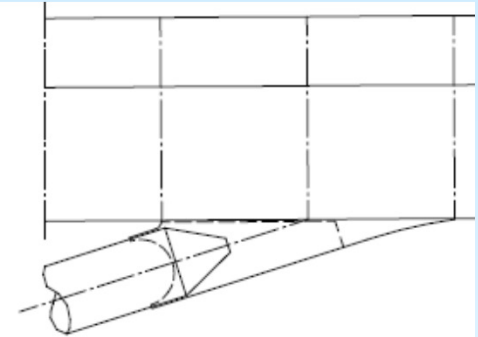
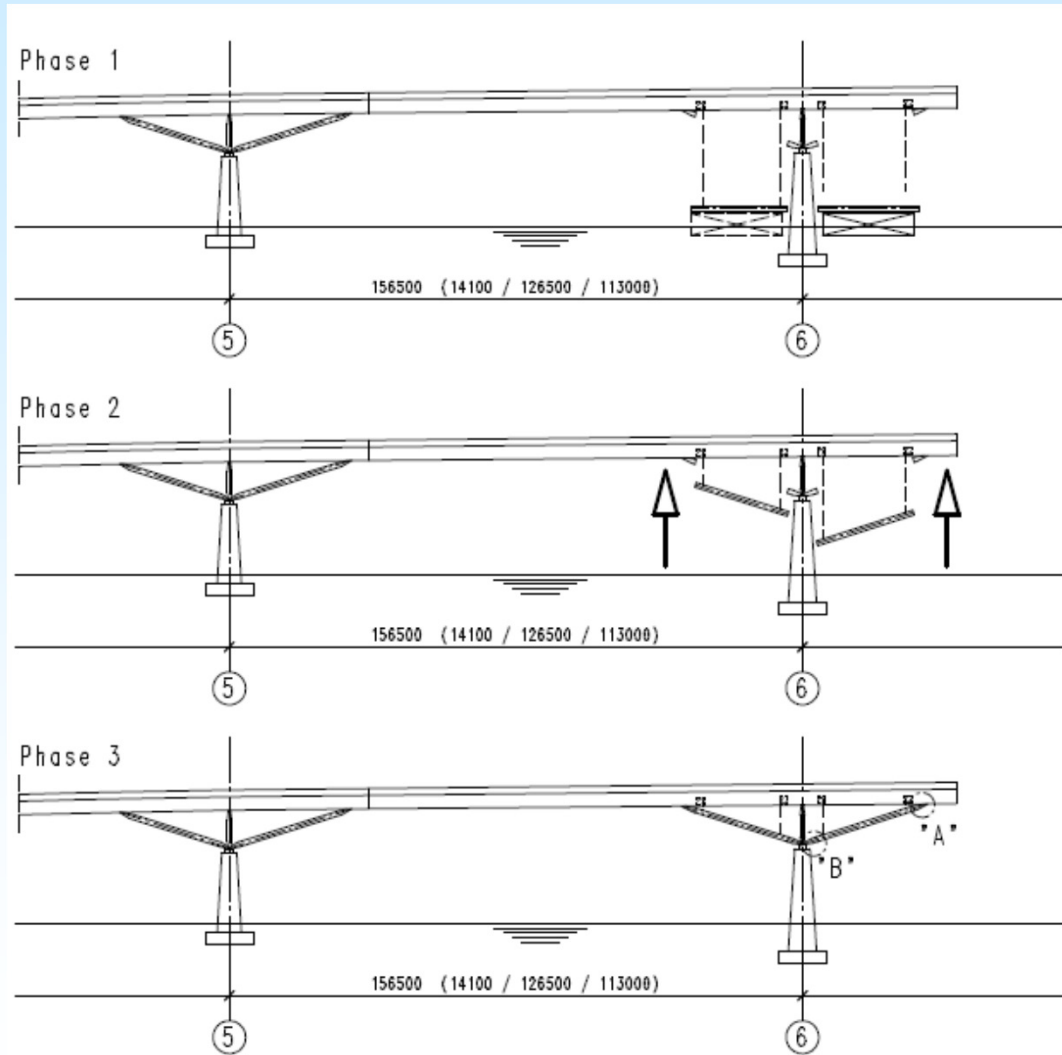




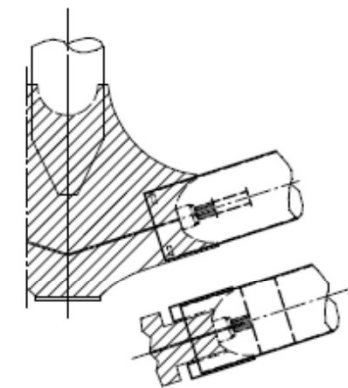
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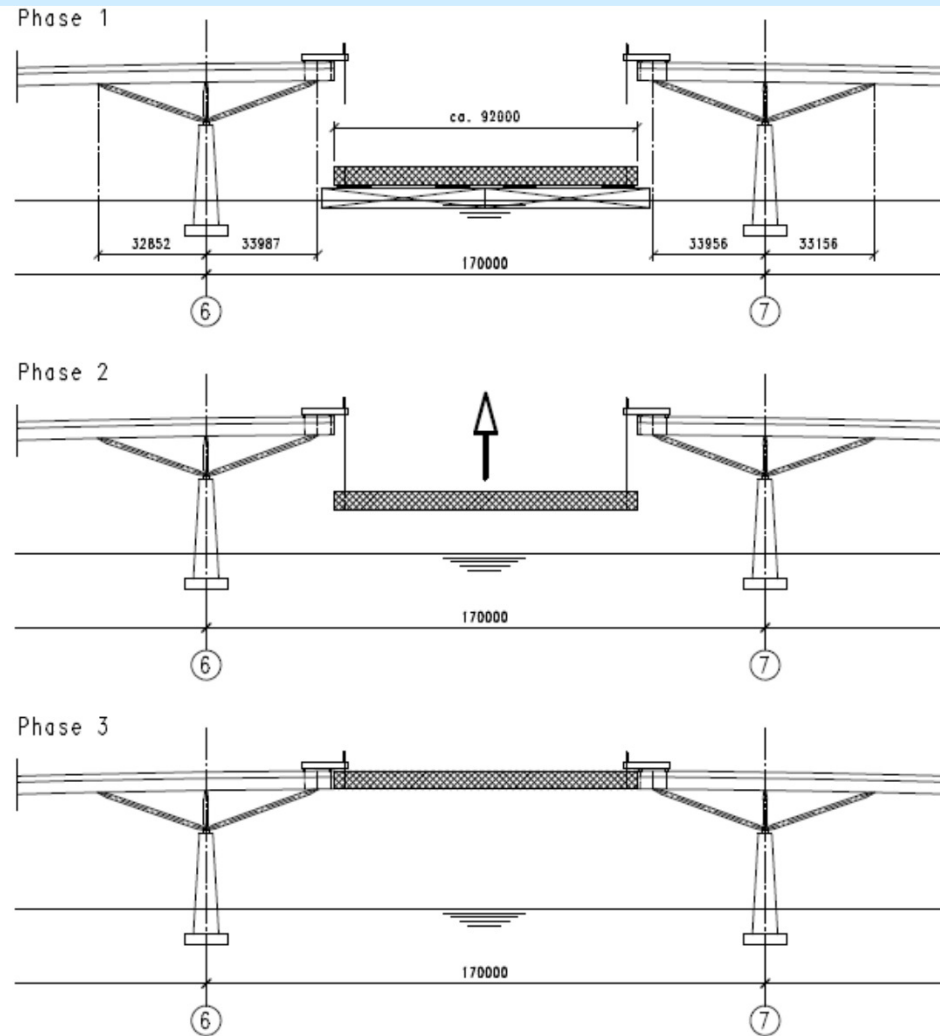
# MONTAGE I SUNDSVALL



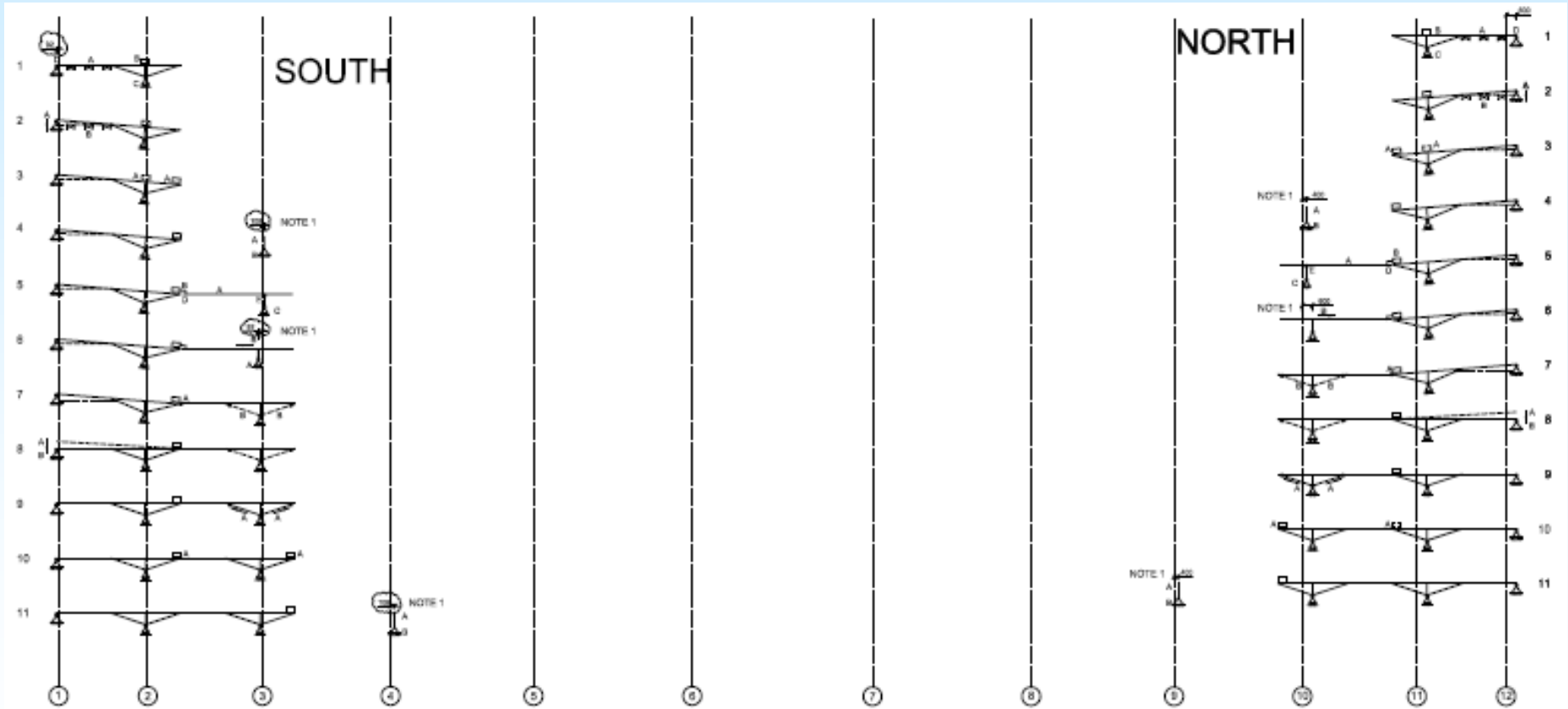
Detail 'B' 1:100



# MONTAGE I SUNDSVALL

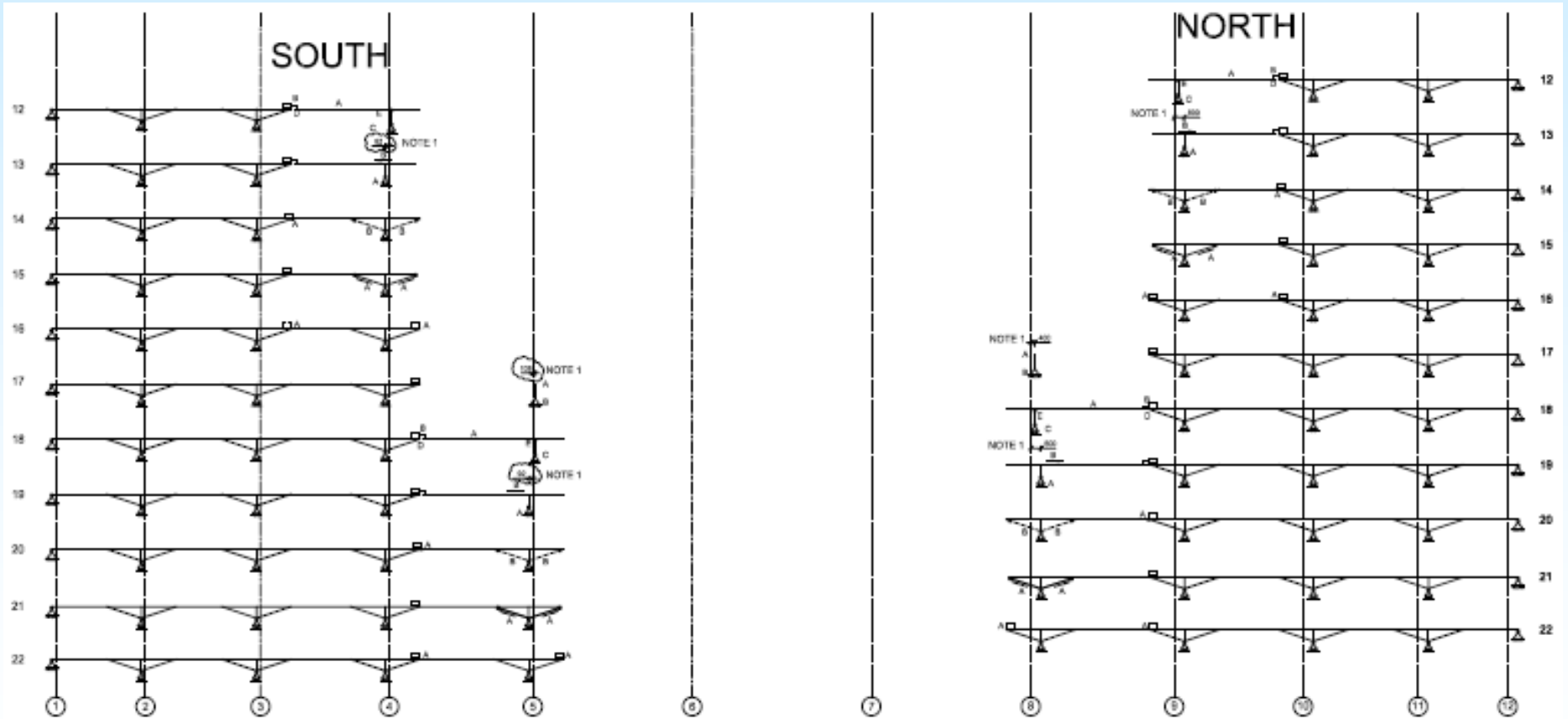


# MONTAGE STEP 1 - 11

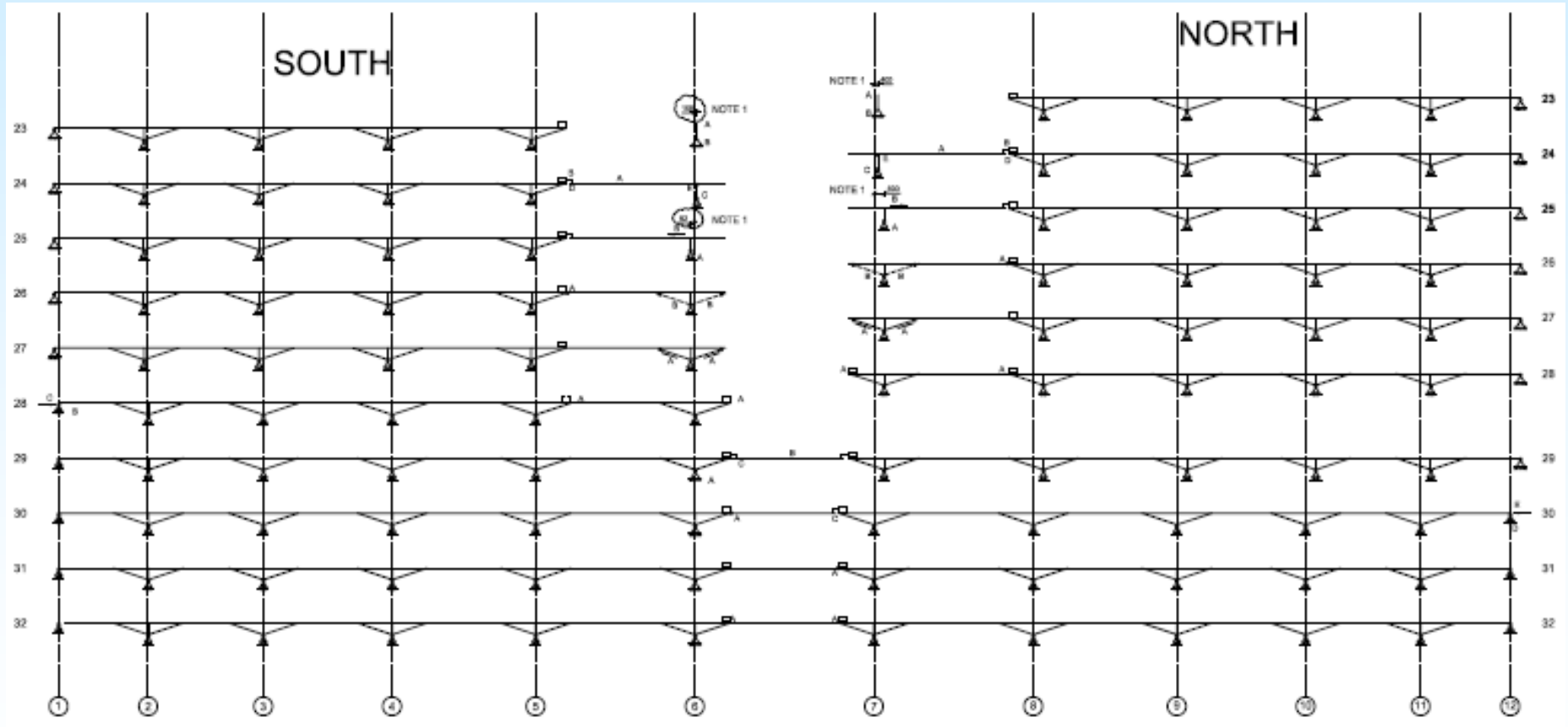




# MONTAGE STEP 12 - 22



# MONTAGE STEP 23 - 32



# MONTAGE SEKTION 1



# MONTAGE AF SEKTION 10





# LØFTEUDSTYR



# MONTAGE AF STAG





# KLAR TIL MONTAGE AF SEKTION 5



# SIDSTE SEKTION LØFTES PÅ PLADS





# SUNDSVALLSBROEN ÅBNES DEN 18 DECEMBER 2014







**DANSK STÅLDAG – 2014**

**ODINS BRO, ODENSE**

Hilmer Jung Larsen

**ISC**  
Innovative Engineering



















09/25/2013 14:57:57

Kamera 1



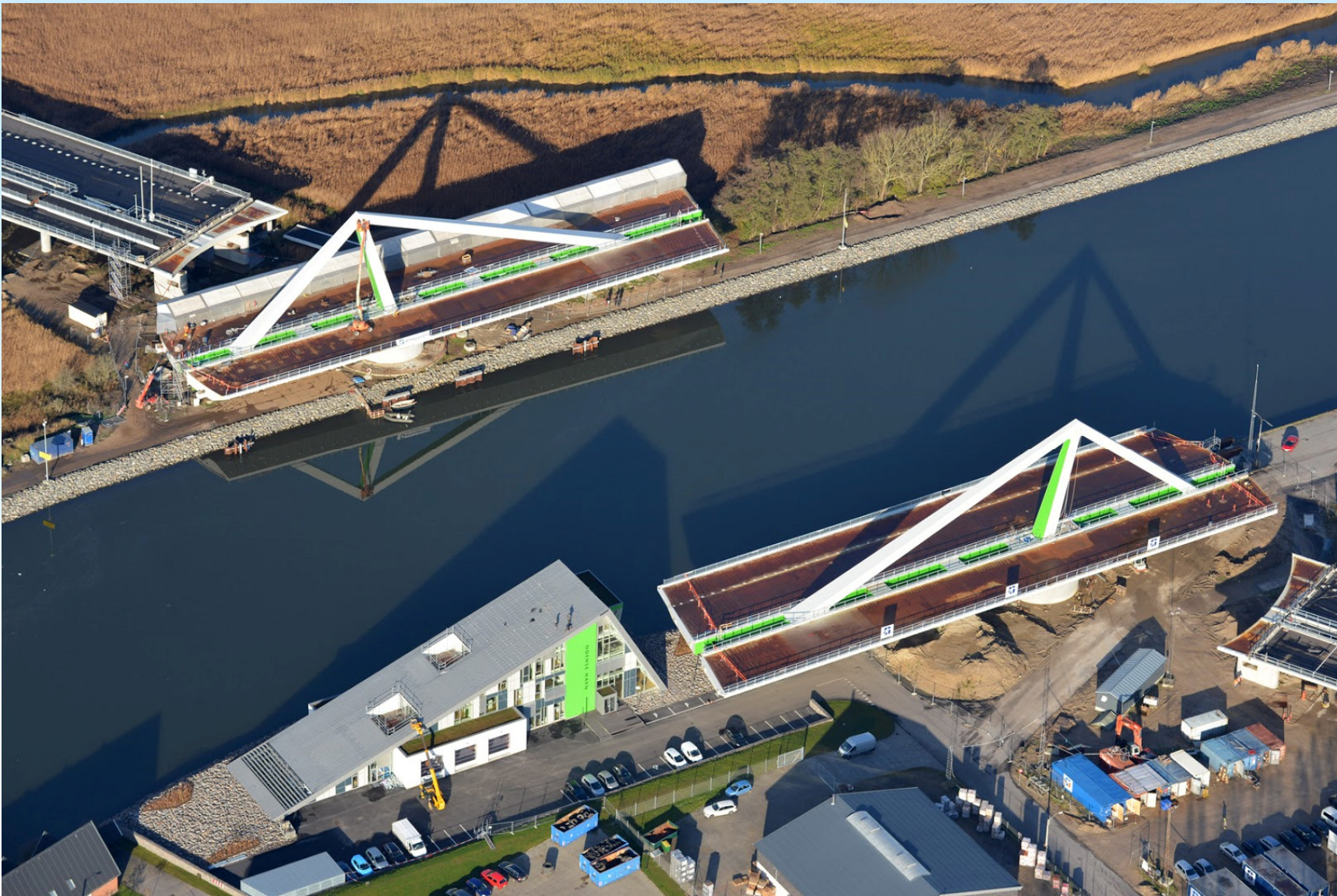
09/25/2013 14:47:03  
Kamera2









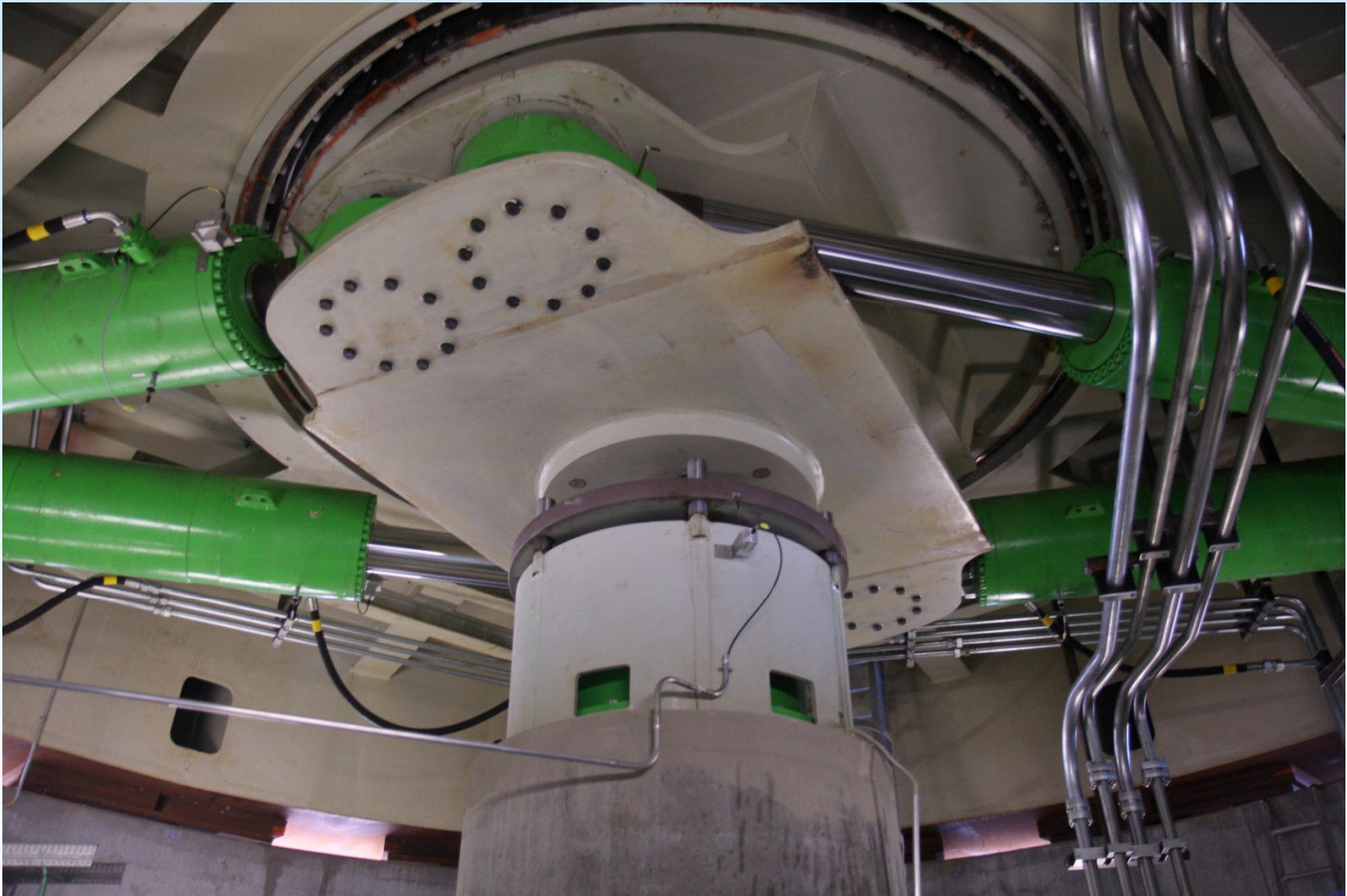


















**Odins Bro** **Betjening** 12-03-2014 16:57:52

825 Øst Svingfag KB7A: Vippeleje mod bromidte, position: -60-04-M4-BG01: Høj stop alarm  
 Event log: \*SYS\*: PLC i Brosvagt genstartet Info tavler:

Gult blink  Klokke Stop  Rødt blink  
 Gult blink  Rødt blink  
 Offline pumpe  
 1. pumpe  
 2. pumpe  
 3. pumpe

Passage-signal NV  Passage-signal NO  
 Passage-signal SV

Rødt blink  Klokke Stop  Gult blink  
 Rødt blink  Gult blink  
 Offline pumpe  
 1. pumpe  
 2. pumpe  
 3. pumpe

Vind: 3 m/s

Bro åbning			Trafikregulering			Farvands signaler	
Start HPU'er	Hydraulik Klar	Styring Klar	Start blink	Trafik stoppet	Start klokker	Advarsels horn	Kanal lukket
Stop HPU'er	Hydraulik V Stoppet	Hydraulik Ø Stoppet	Bomme vest		Bomme øst	Udadgående	Indadgående
Åbne Svingfag	Svingfag åbnes	Svingfag åbne	Sti Luk	Åbne alle	Sti Luk	Forvent klar	Forvent klar
Luk Svingfag	Svingfag lukkes	Svingfag lukket	< Vej Luk <		< Vej Luk <	Klar	Klar
STOP Svingfag	Svingfag Stoppet	Nødstop	> Vej Luk >		> Vej Luk >	Sluk signaler	Sluk signaler

Betjening | Service | Alarmer | Override | Trend | Setup | Hydraulik | Trafik | Farvand | Affugtning





Tak for opmærksomheden

