

Stockholm, Värtahamnen

Per Vinther Larsen

Dansk Spuns- og Rammedag

10. Juni 2015



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12-06-2015

Värtahamnen

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Aktører



- Bygherre

- Stockholms Hamnar & Stockholm Stad

- Entreprenør

- Aarsleff
- JV Värtahamnen HB

- Rådgiver

- COWI A/S

- Kontrakter

- Pir och Kaj – 1.164.225.000 SEK Totalentreprise
 - Nuværende kontraktsum – 1.428.213.000 SEK
- Infrastruktur – 62.898.000 SEK Hovedentreprise



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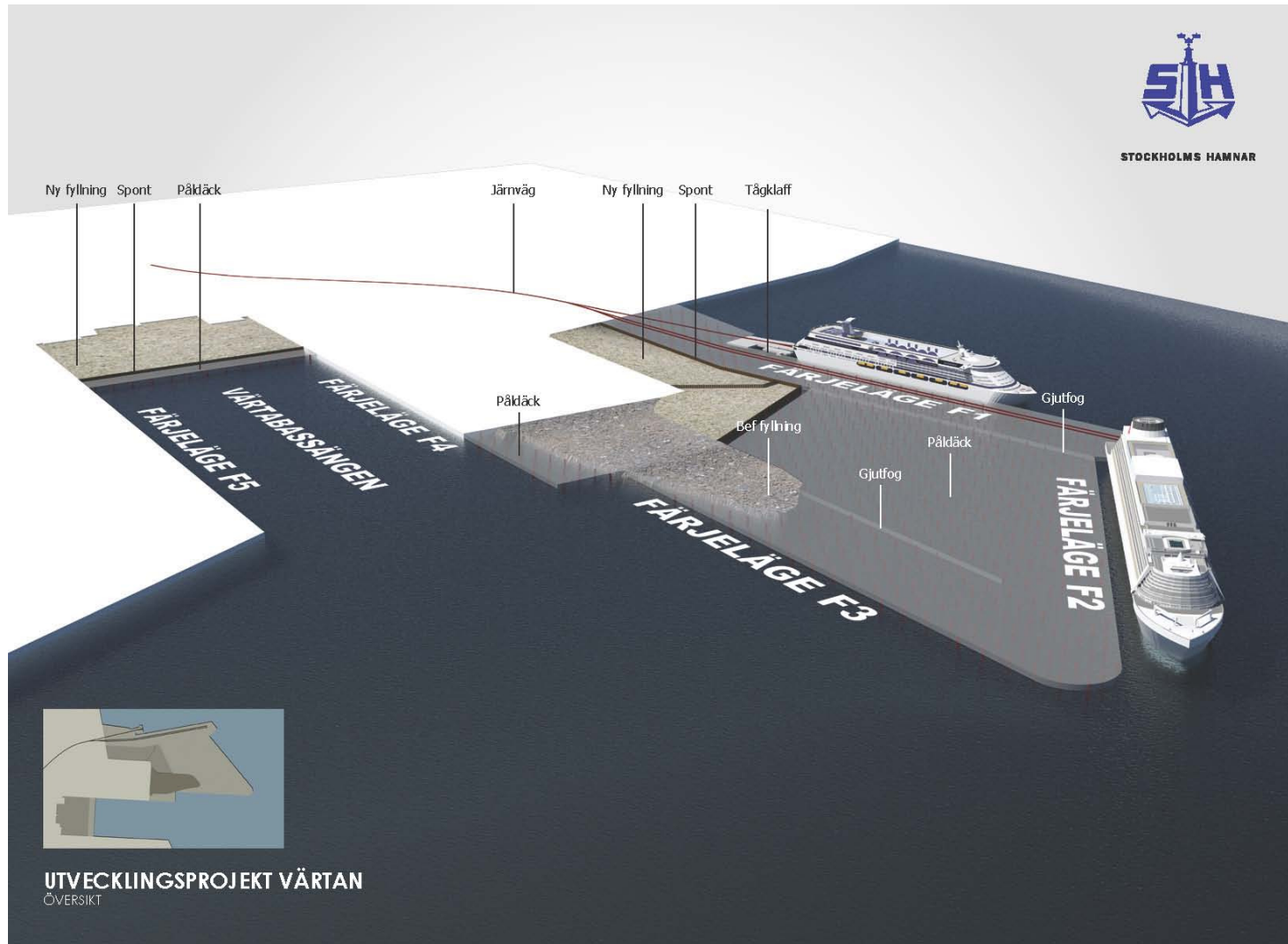
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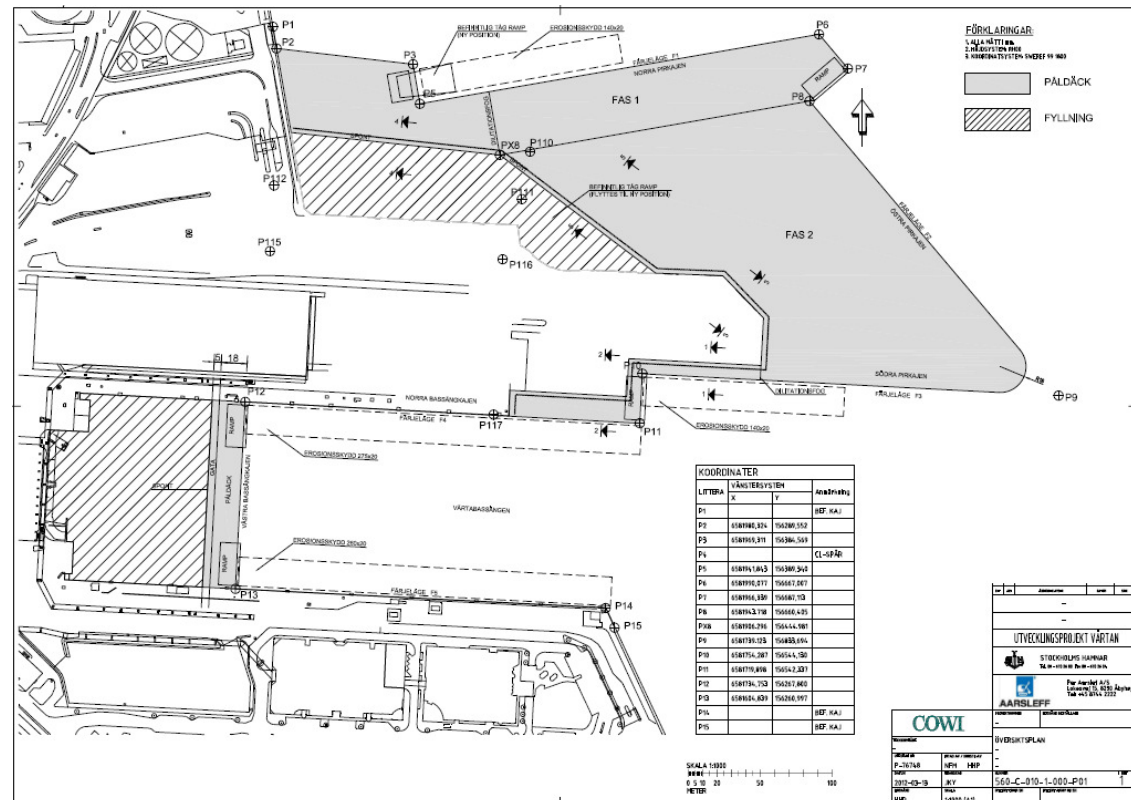


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Tidsplan

Kontrakt:

- Start: 2013-02-01
- Slut: 2016-12-01
- Varighet: 46 md



Mængder



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– **Fundering**

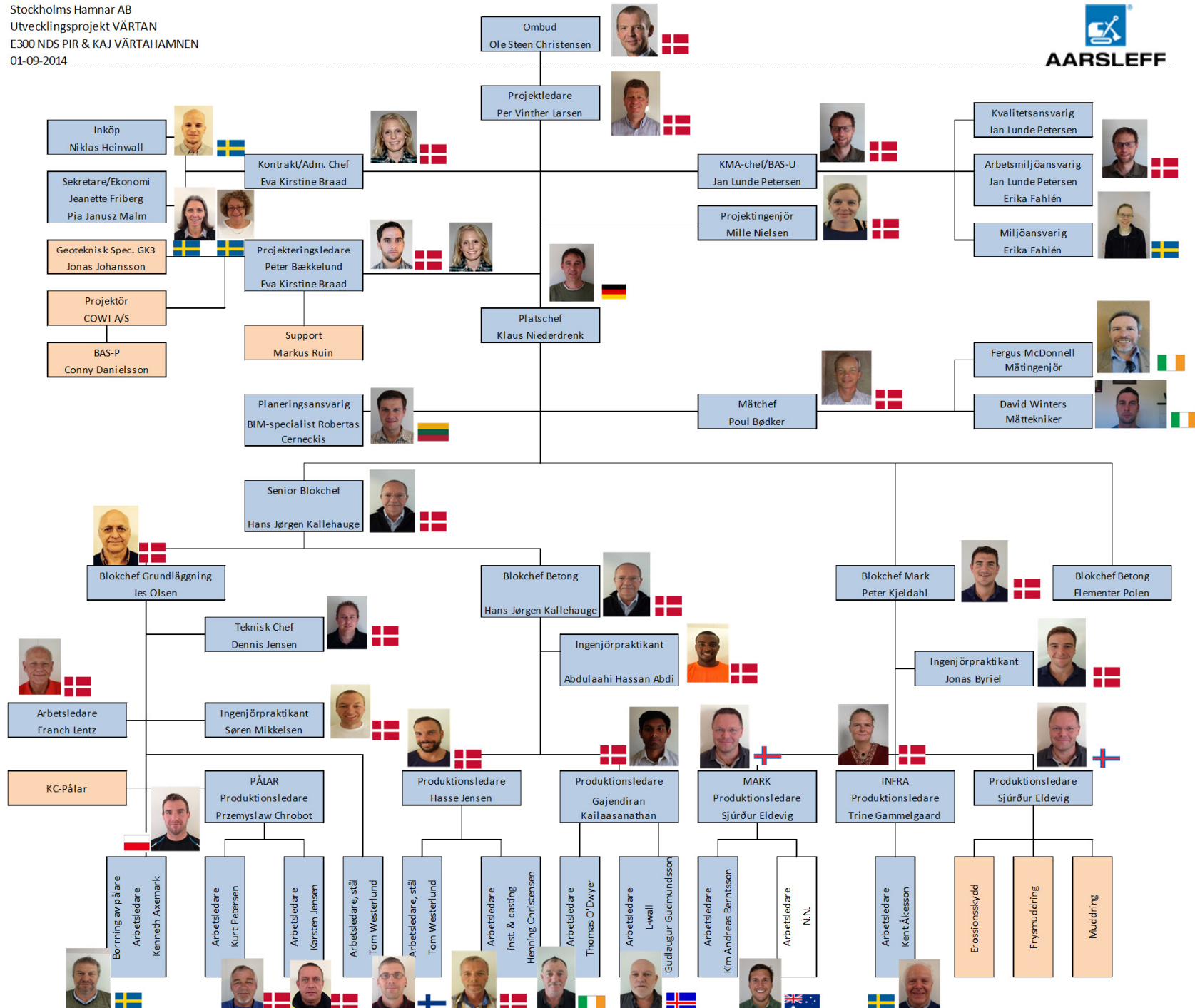
- Stålpæle (Ø864-1168): 1012 stk, 40.000 lbm.
- Spuns H1 + H2: 266 lbm. = 5.030 m²
- Spuns H3: 258 lbm. = 3.638 m²

– **Jordarbejde**

- Uddybning: 14,000 m³
- "Frysmuddring": 3,000 m³
- Udgravning: 60,000 m³
- Fyldning: 80,000 m³
- Belægning: 116.000 m²

– **Betonarbejde**

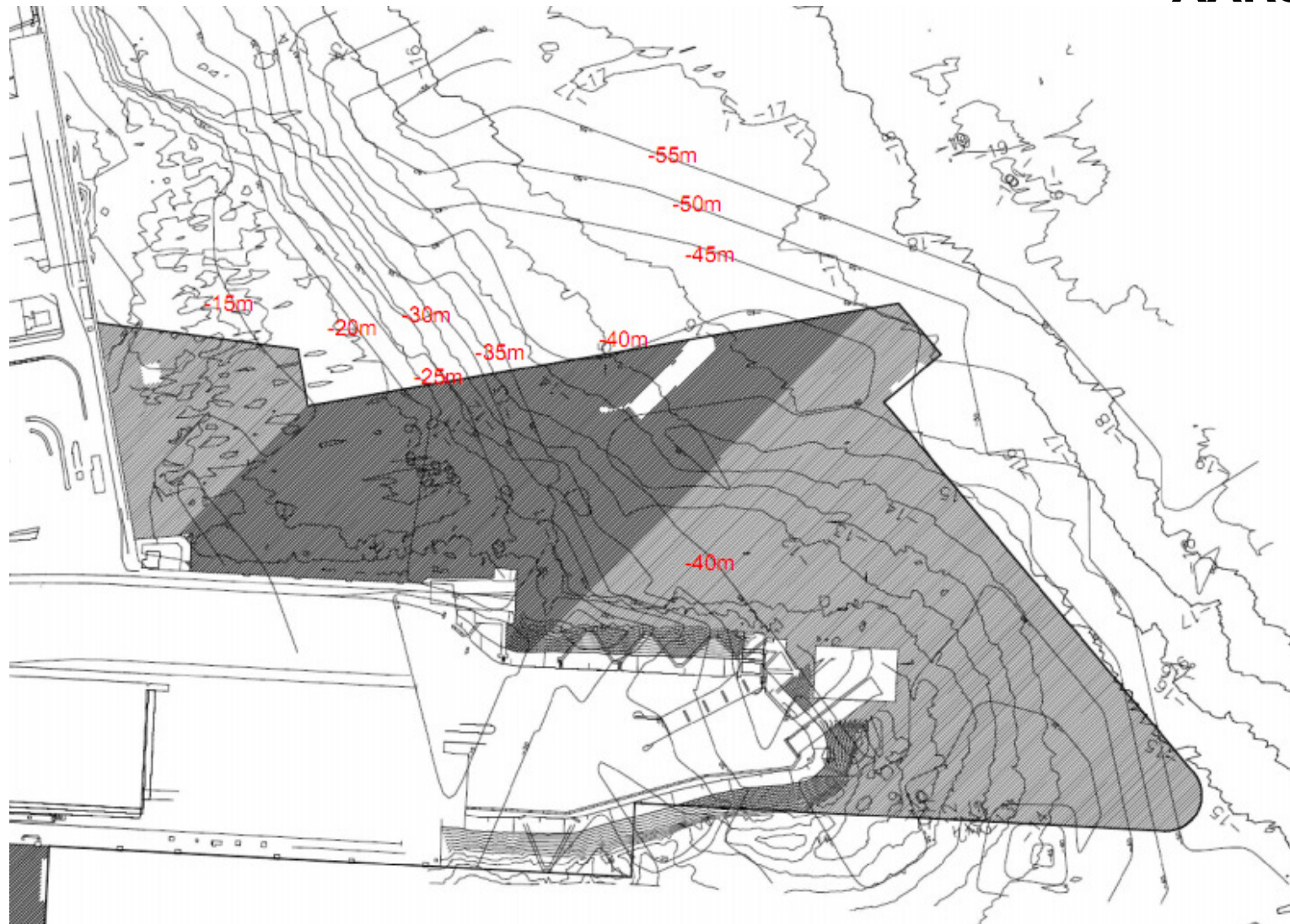
- Beton: 45,000 m³ (præ-fab. 30,000 m³)
- Armering: 18,000 tons
- L-elementer: 300 lbm.



Tolket bjergniveau



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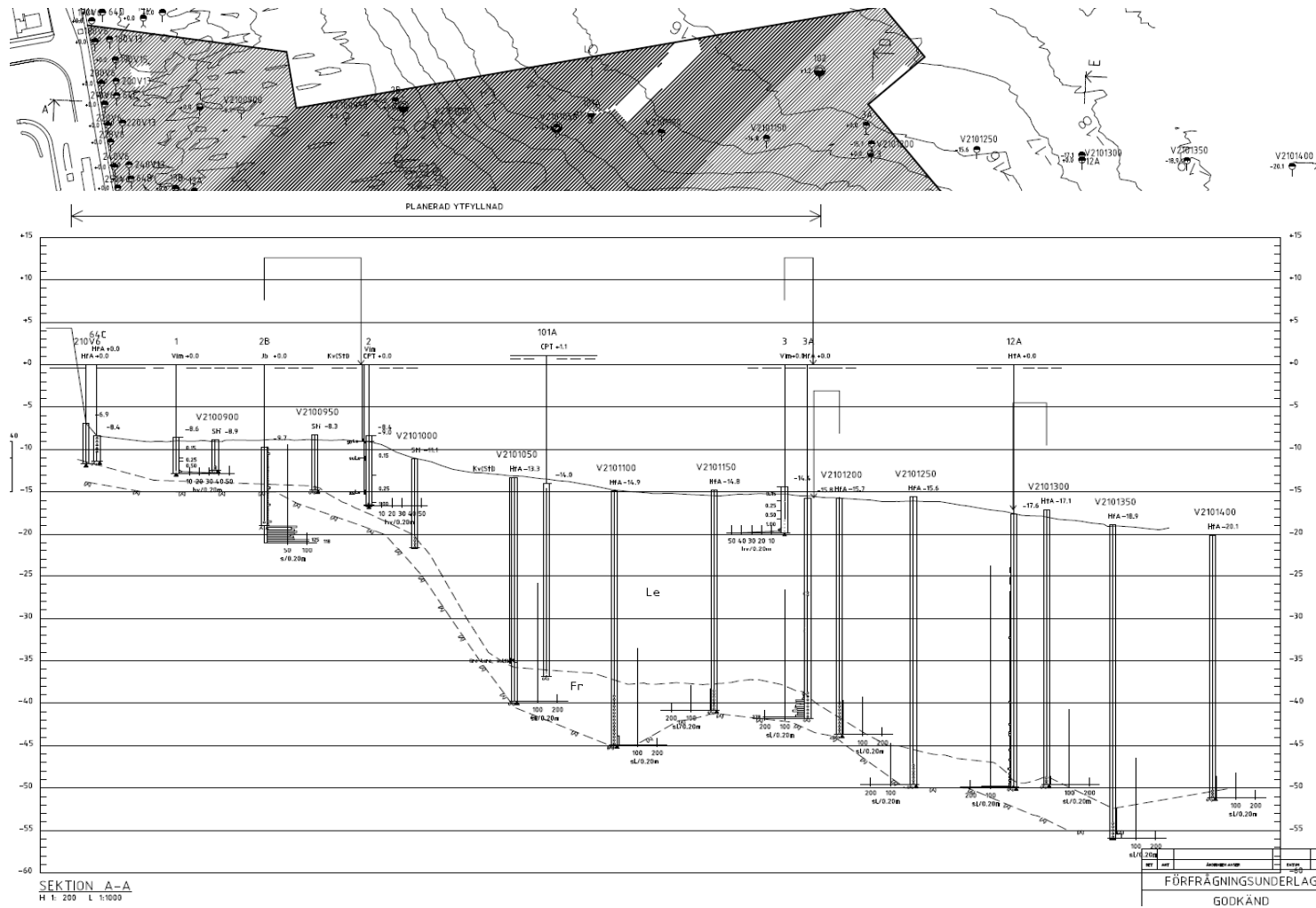
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Geoteknisk snit



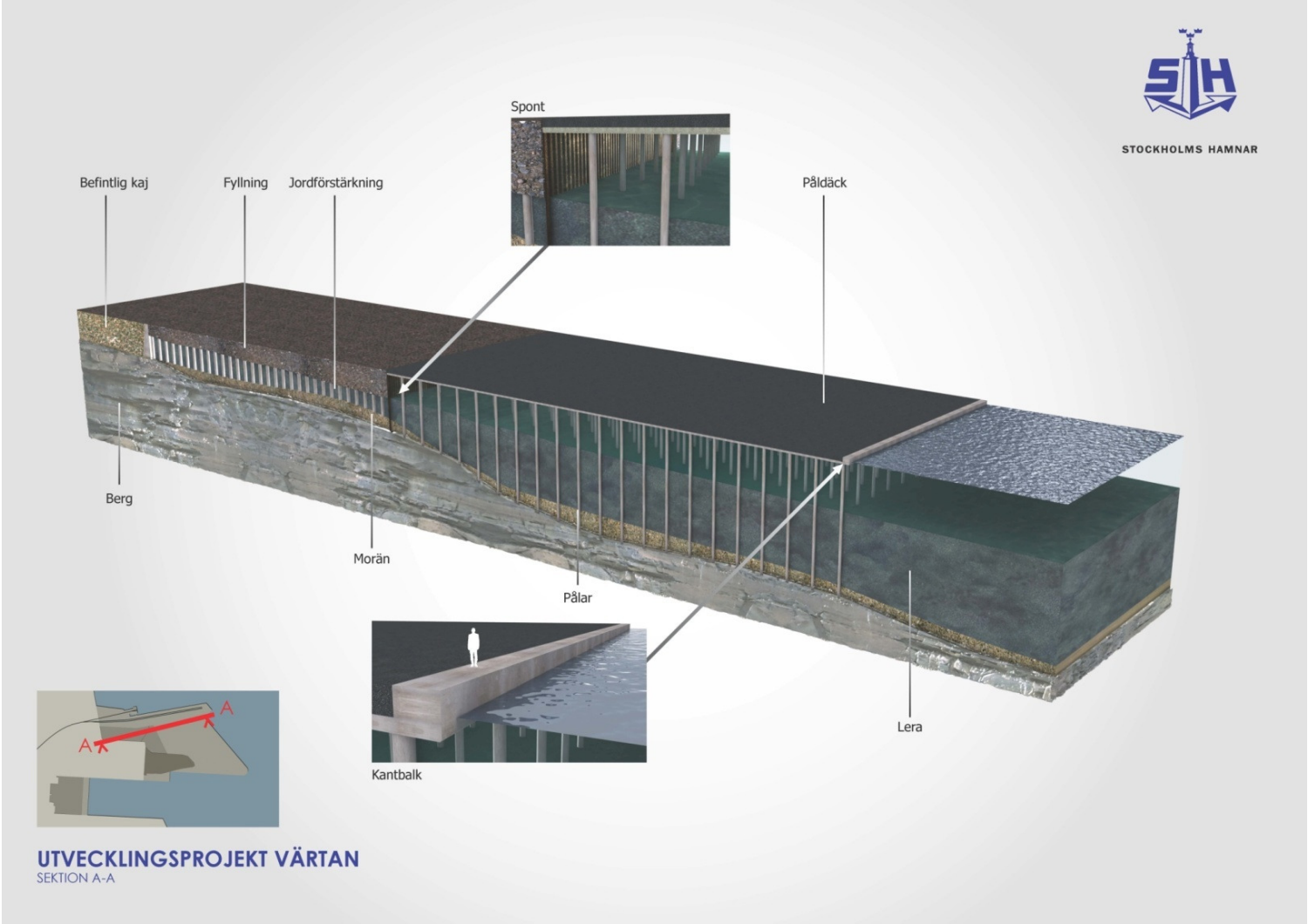
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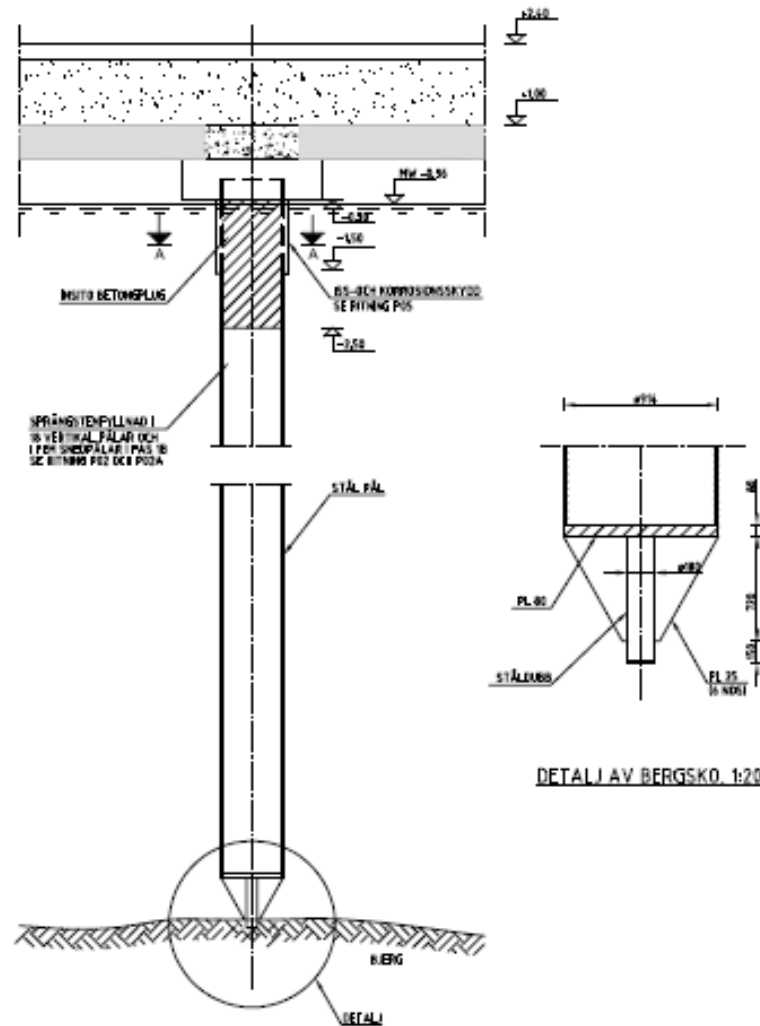
3D illustration



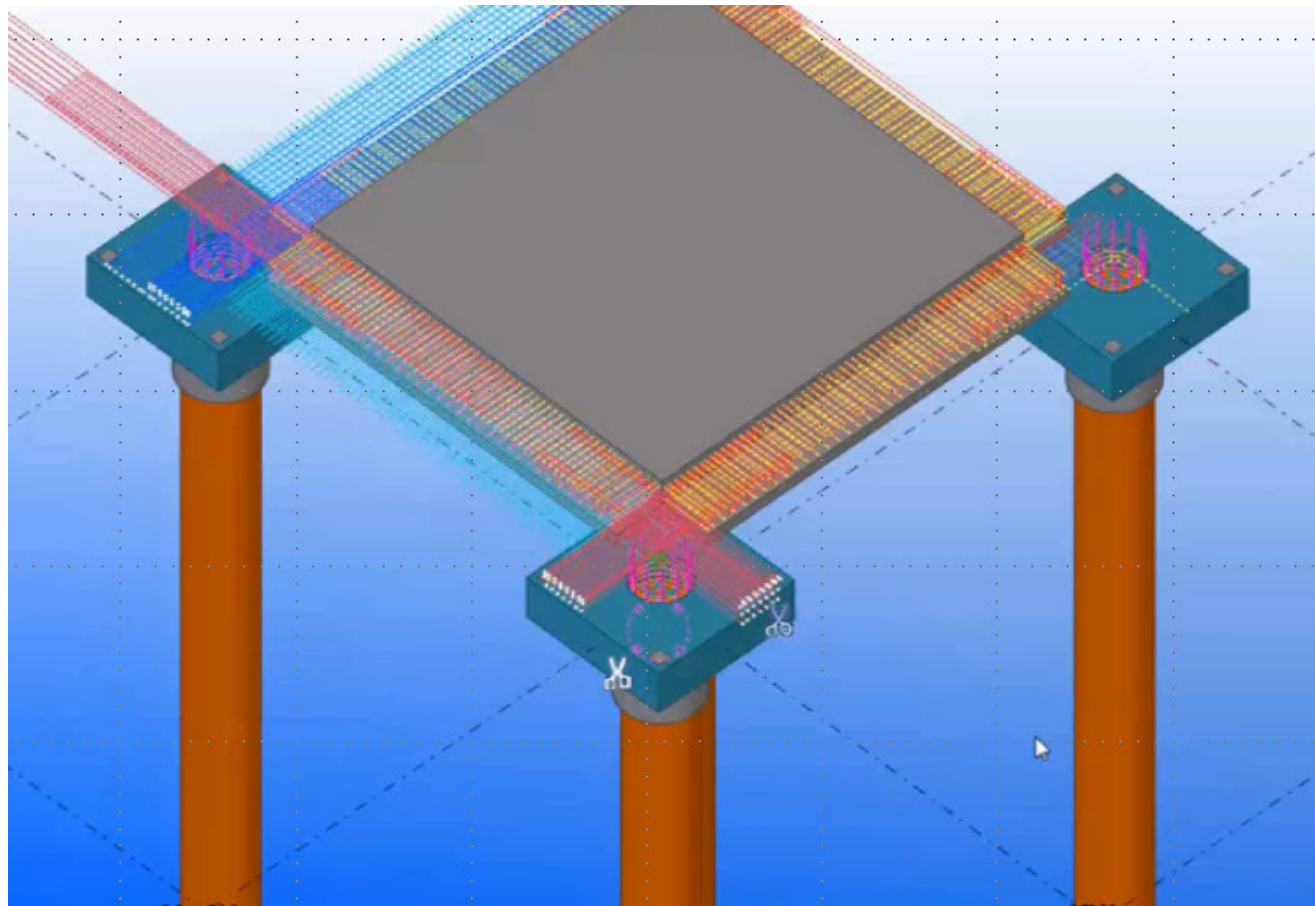
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Konstruktionsprincip



Building information model (BIM)



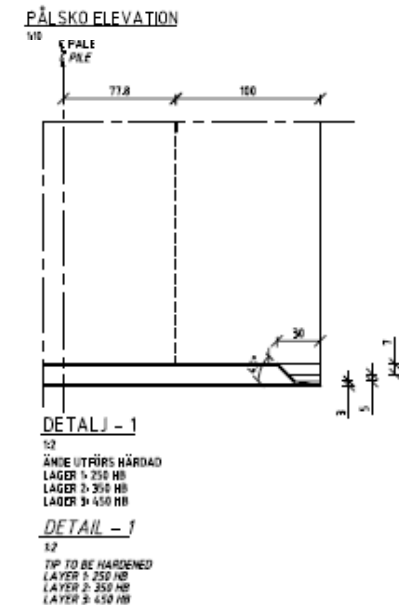
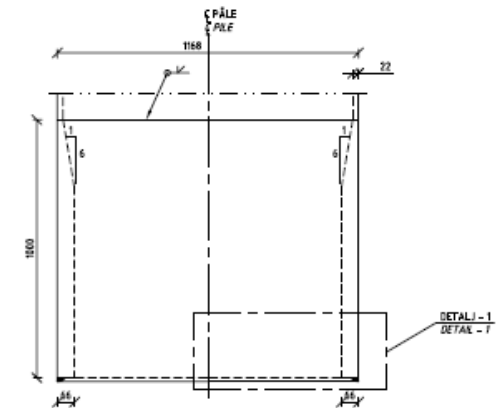
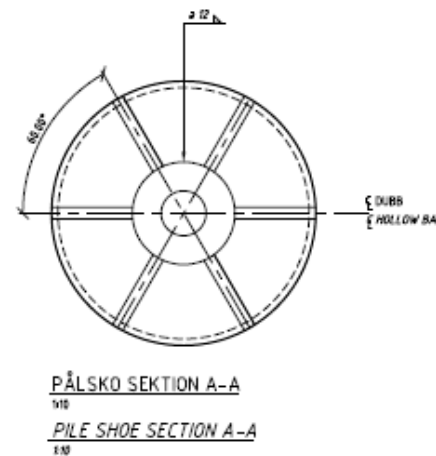
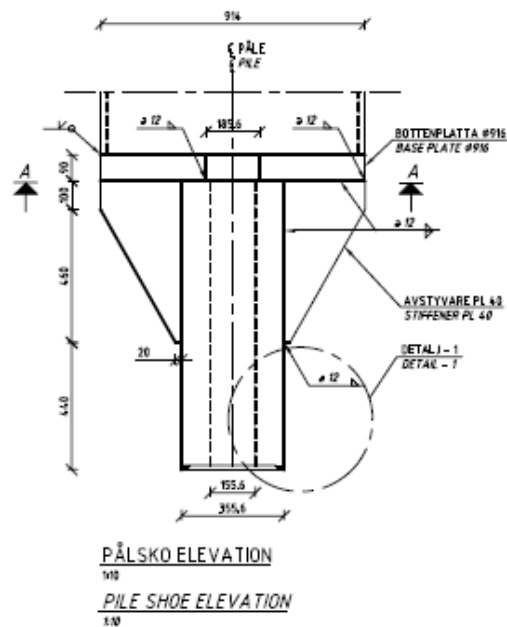
Konstruktionsprincip



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2 typer pælesko

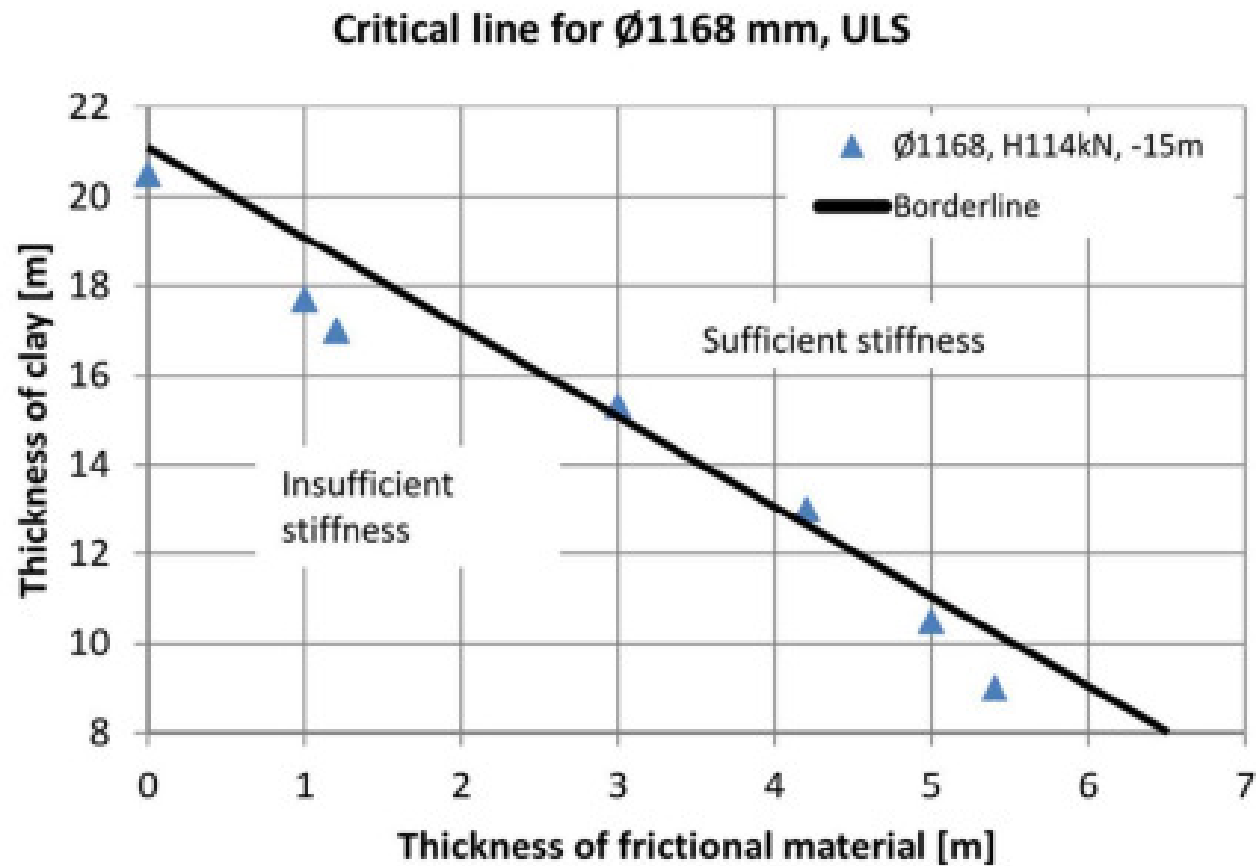
- Traditionel bjergsko
- Alternativ, åben pælesko



Konstruktionsprincip

Kriterium for valg af pælesko

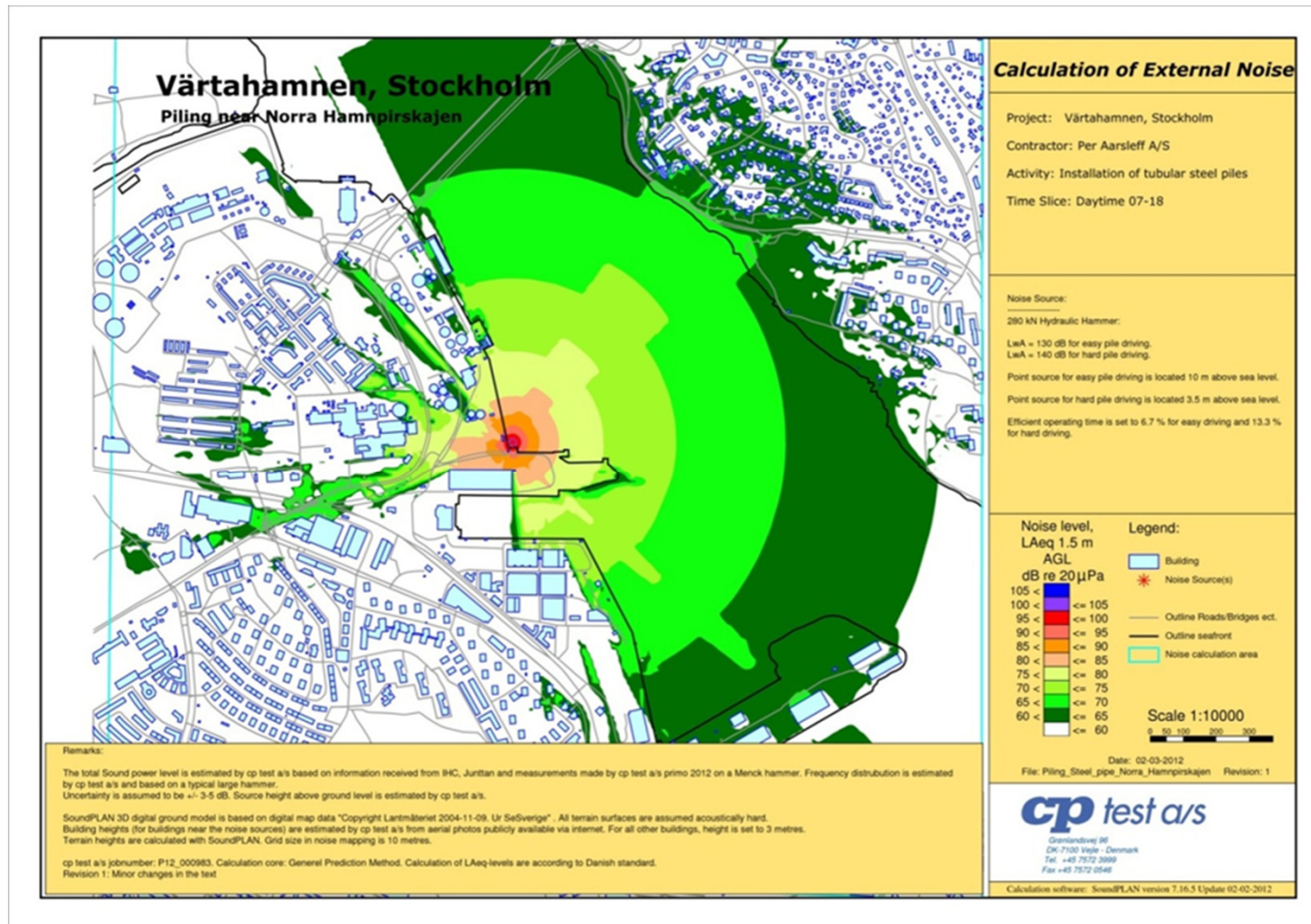
- Horizontal stivhed





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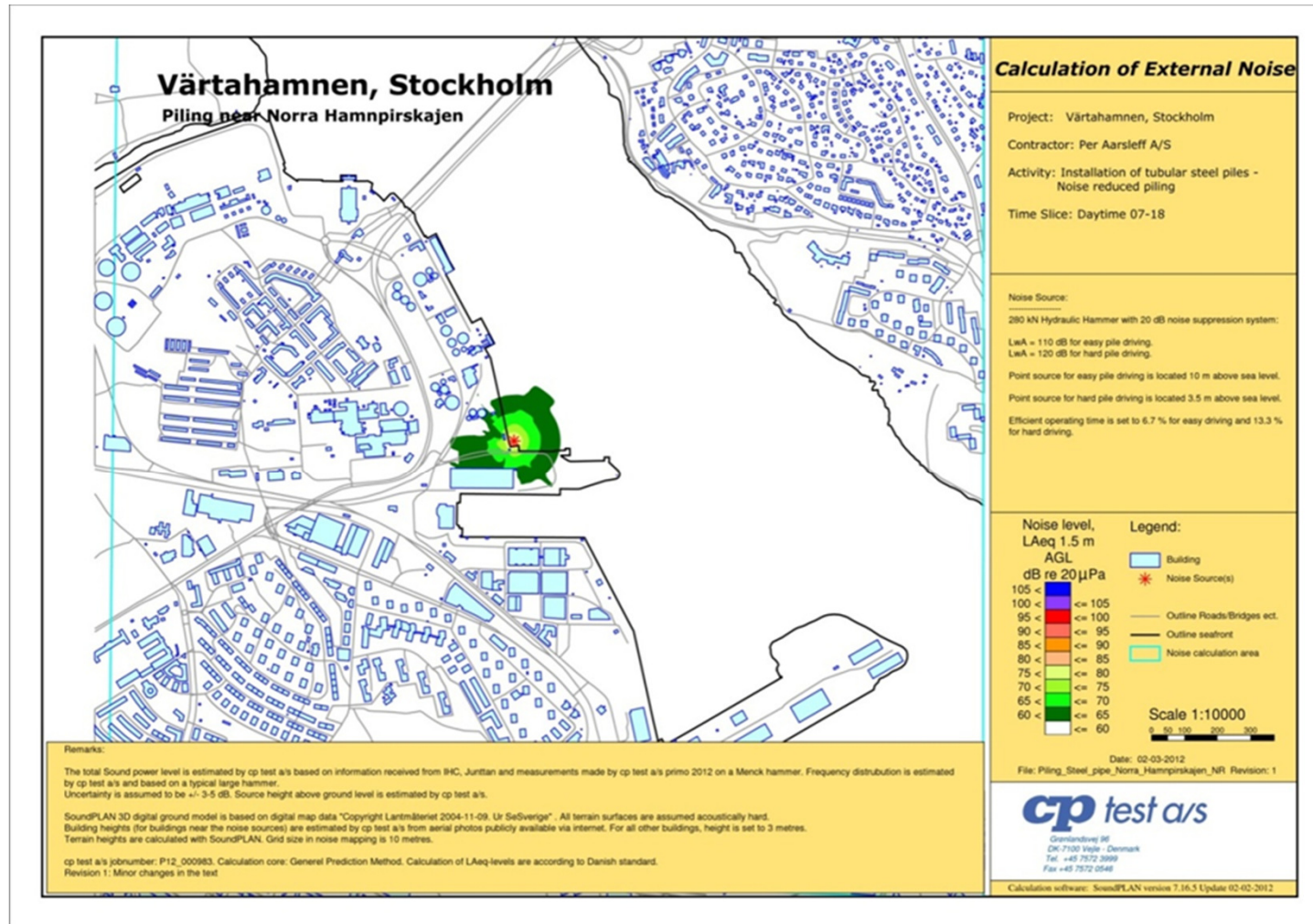
IHC S280 uden støjreduktion



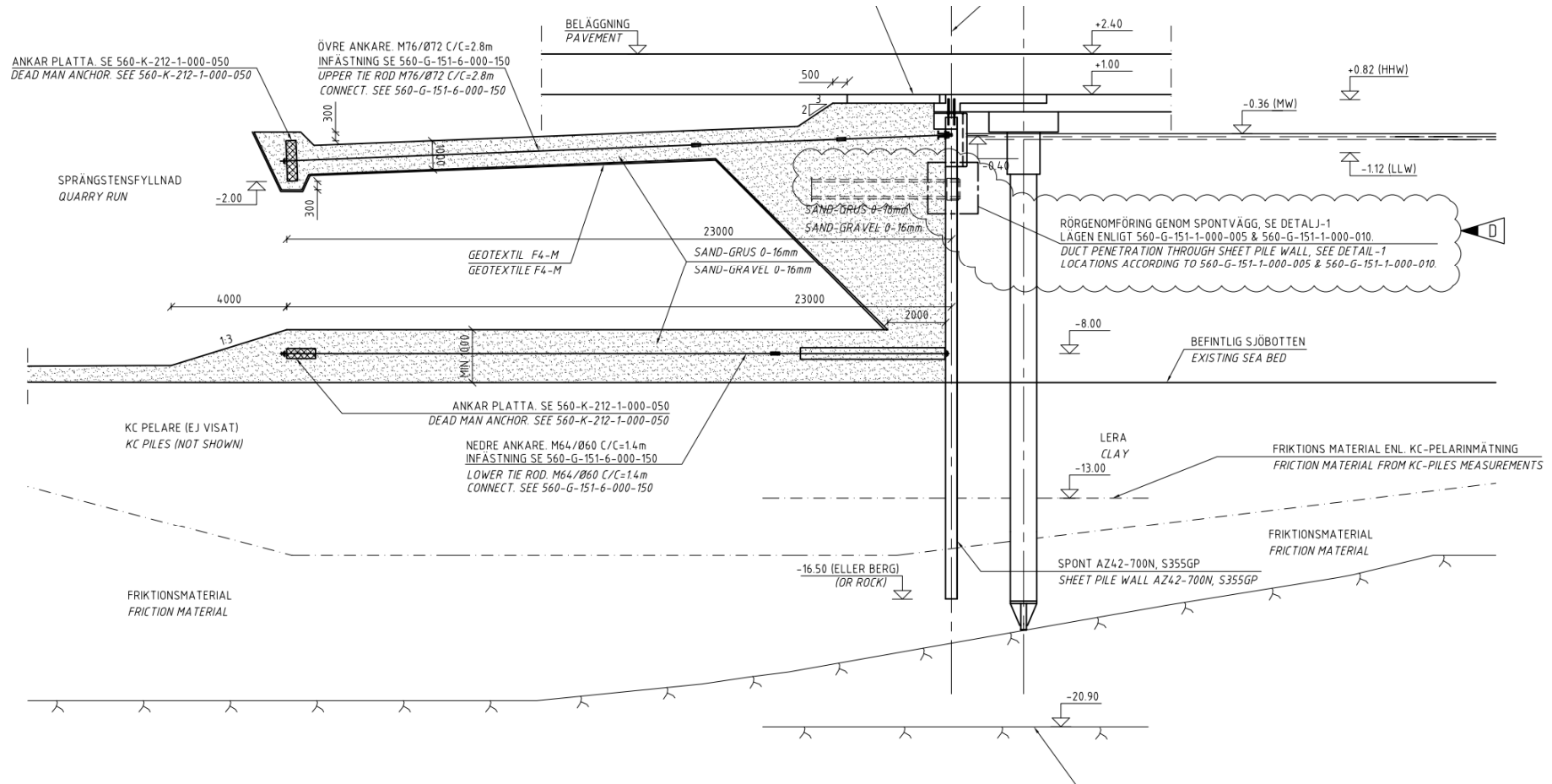


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IHC S280 med støjreduktion



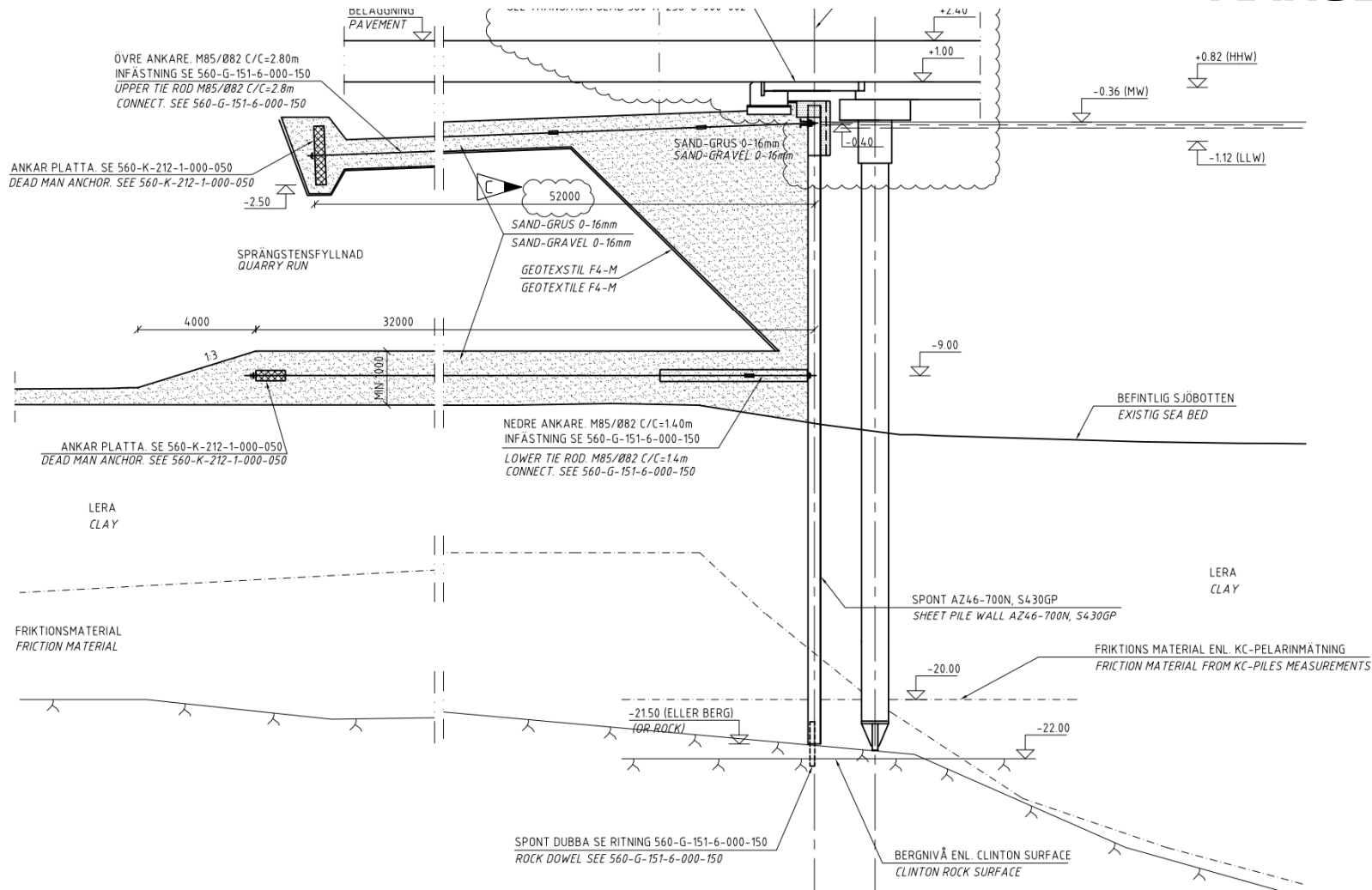
Konstruktionsprincip



Konstruktionsprincip



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Stålpæle leverance



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Steel coils til pæle, Düzce, Tyrkiet



Læsse pæle til skib, Izmit, Tyrkiet



Stålpæle - pælesko



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Stålpæle - håndtering



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Losse skib til lager



Læsse Aarsleff forsyningsflåde A105



Stålpæle - lager



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Stålpæle - udstyr



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- Crawler crane LR 1300
- IHC S280
- ICE 1412
- Barge Aarsleff A102
- Supply barge Aarsleff A105

Stålpæle



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Stålpæle



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- Sidste pæl :) 11-03-2015



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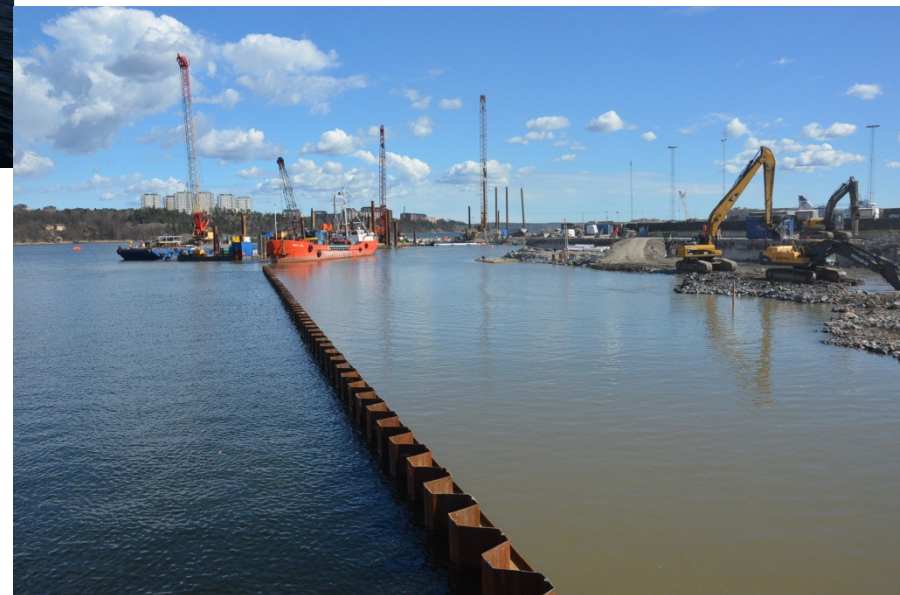
Spuns



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- Crawler crane LR 1100
- Flåde: Aarsleff AI03 (Oscar)
- 40VM
- S90



Spuns



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HI + H2

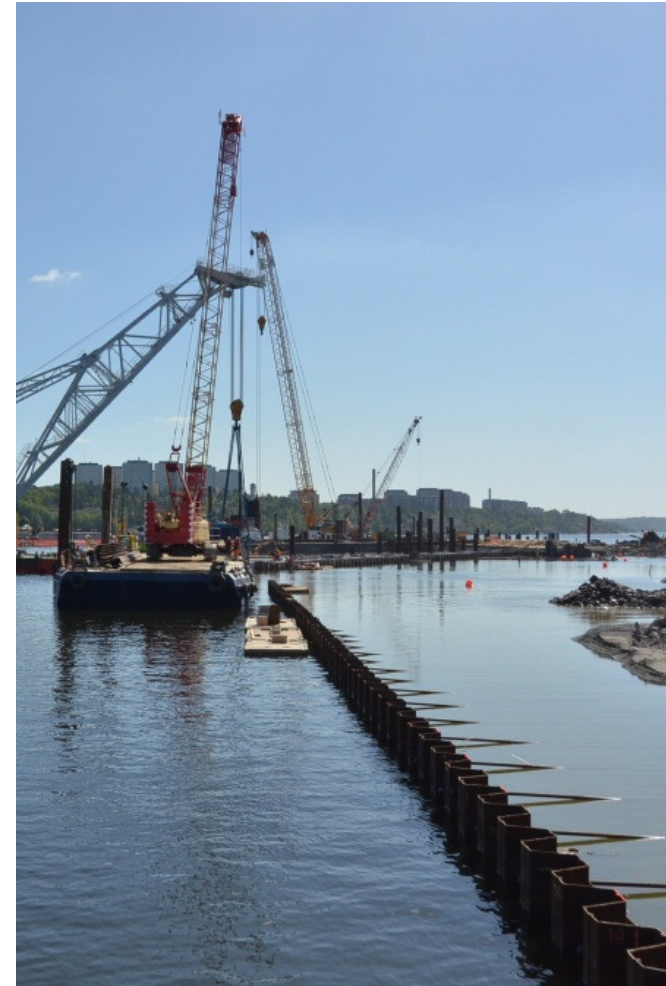
- AZ44 – 700N
- AZ42 – 700N
- AZ46 – 700N
- AZ28 – 700N

H3

- AZ44
- AZ40
- AZ28



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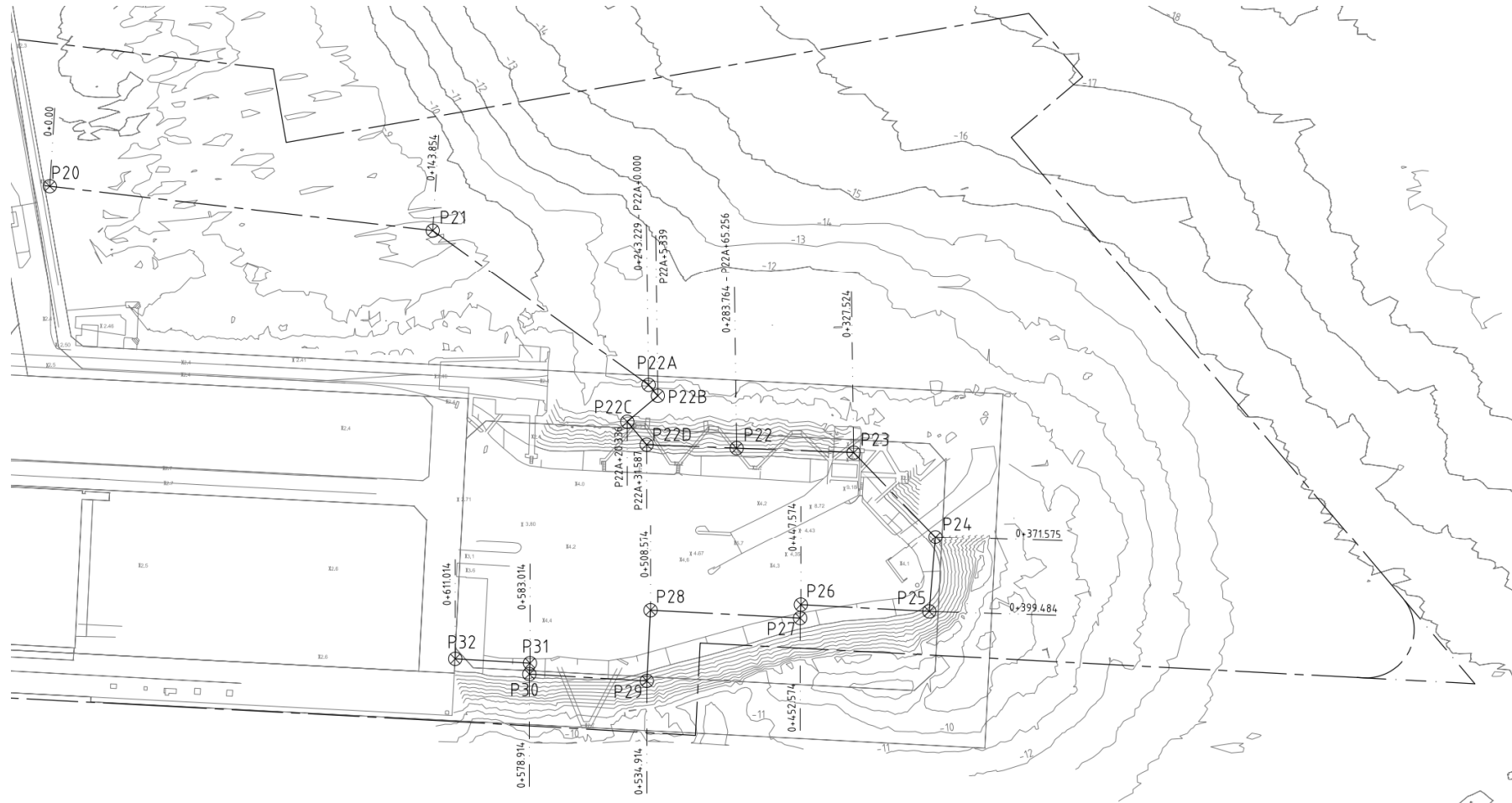
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Udfordring – eksisterende pier



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- Løsning I: Forboring med Casagrande



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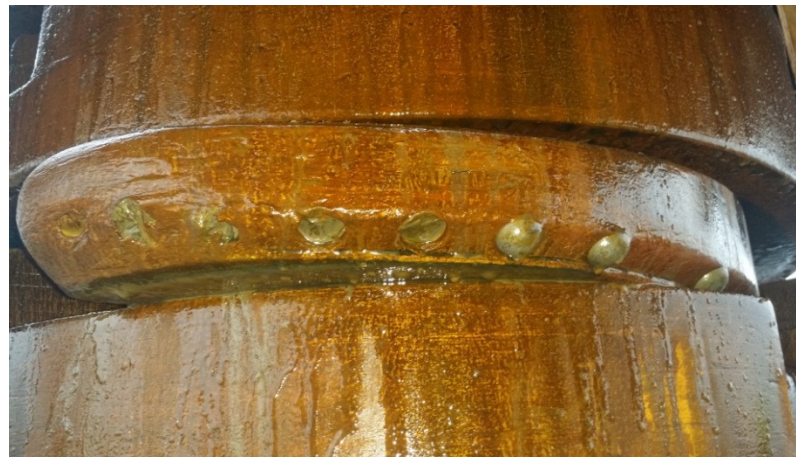
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○ Løsning 2: DTH-boring med Bauer BG46



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○ Løsning 3: Forboring Bauer BG46



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Præ-fab Swinoujscie, Polen



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Præ-fab Swinoujscie, Polen



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Pile Caps



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- Installeret med crawler crane LR 1100 fra Aarsleffs flåde A+A



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Pile Caps



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Dækelementer



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- Installeret af 260 tons flydekran Lodbrok
- Max hastighed 4 knob

Dækelementer



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Dækelementer - installation



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Dækelementer - stitching



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- Passagergangsfundamenter



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- Havnespecifik udrustning
 - Fundamenter
 - Montage
- Kantbjælke
- El-kulvert



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Jordarbejde på dæk



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- OPI-kanaler
- Overfladedræn
- Anden rørføring
- Fyldning
- Bærelag og belægninger



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”Frysmuddring”



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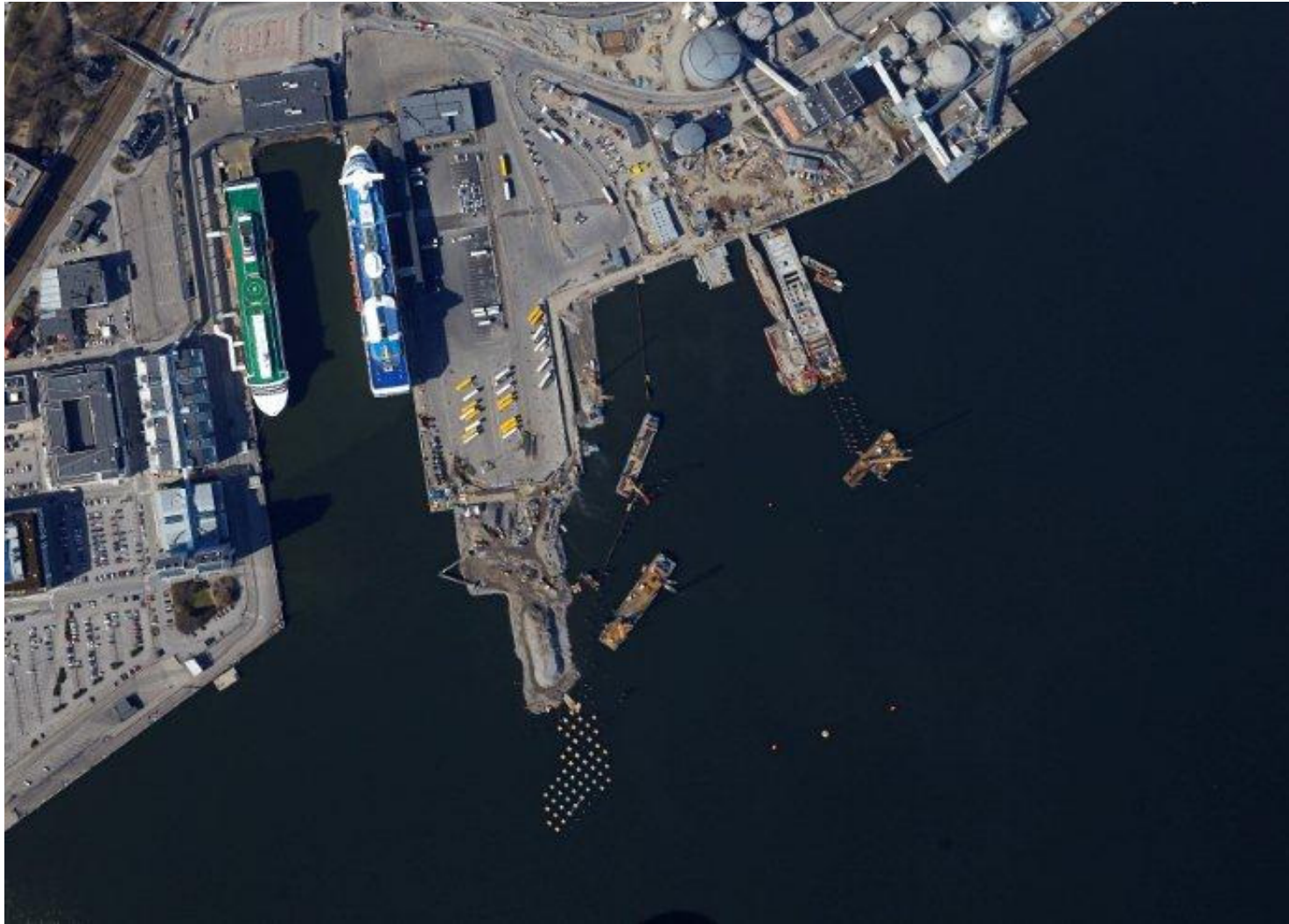
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Marts 2014



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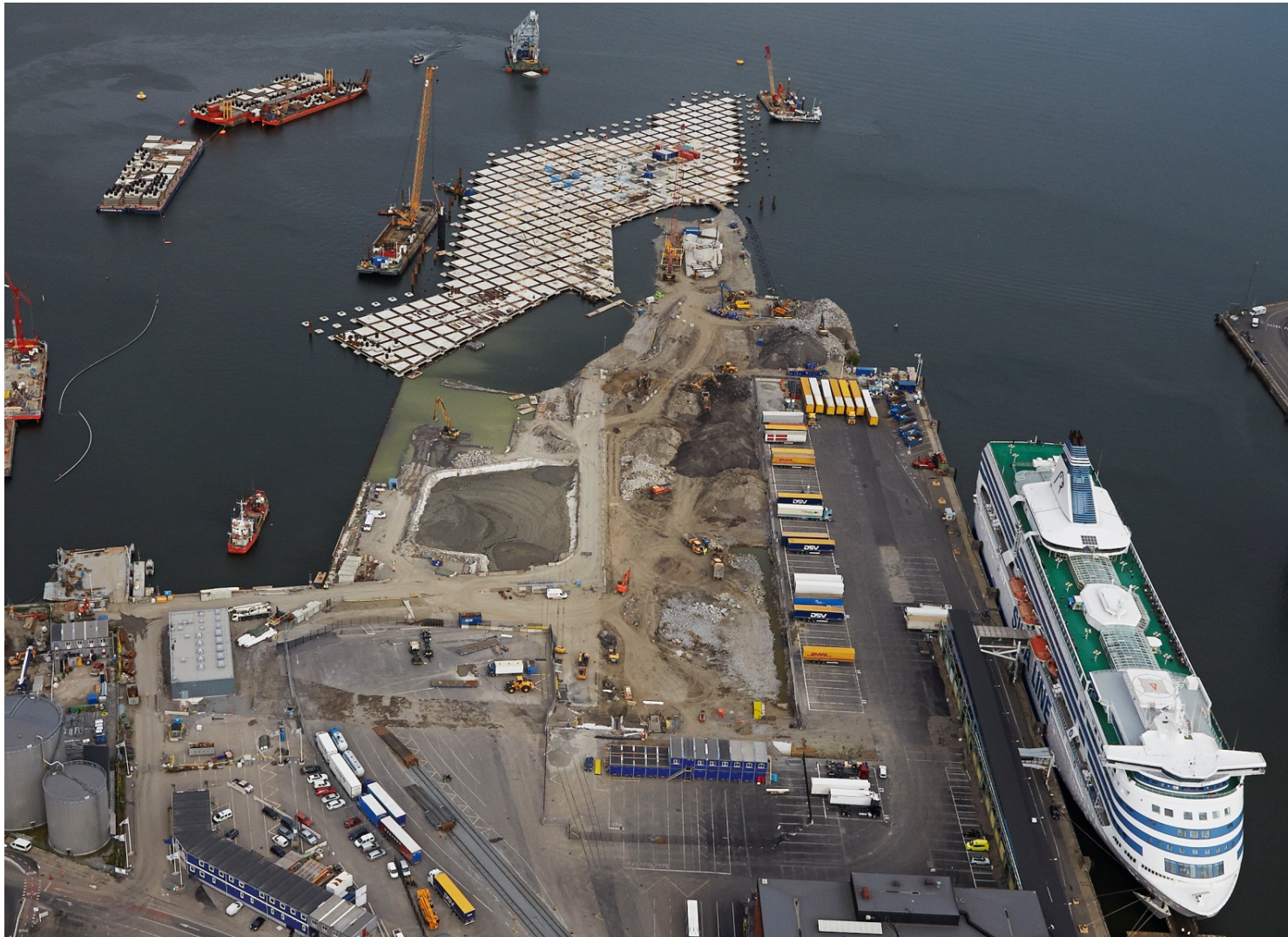
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Juli 2014



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Juli 2014



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Oktober 2014



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Januar 2015



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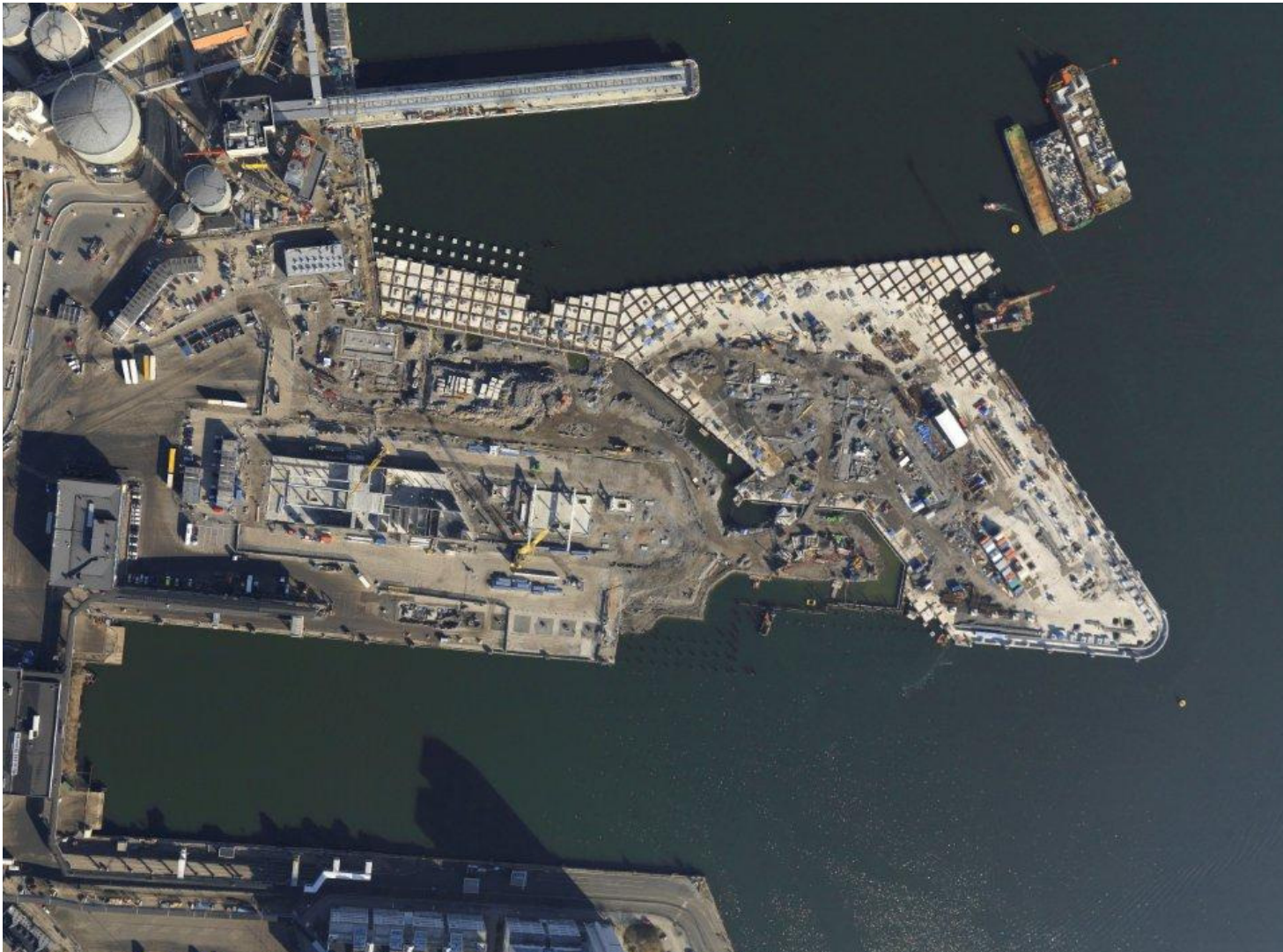
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Marts 2015



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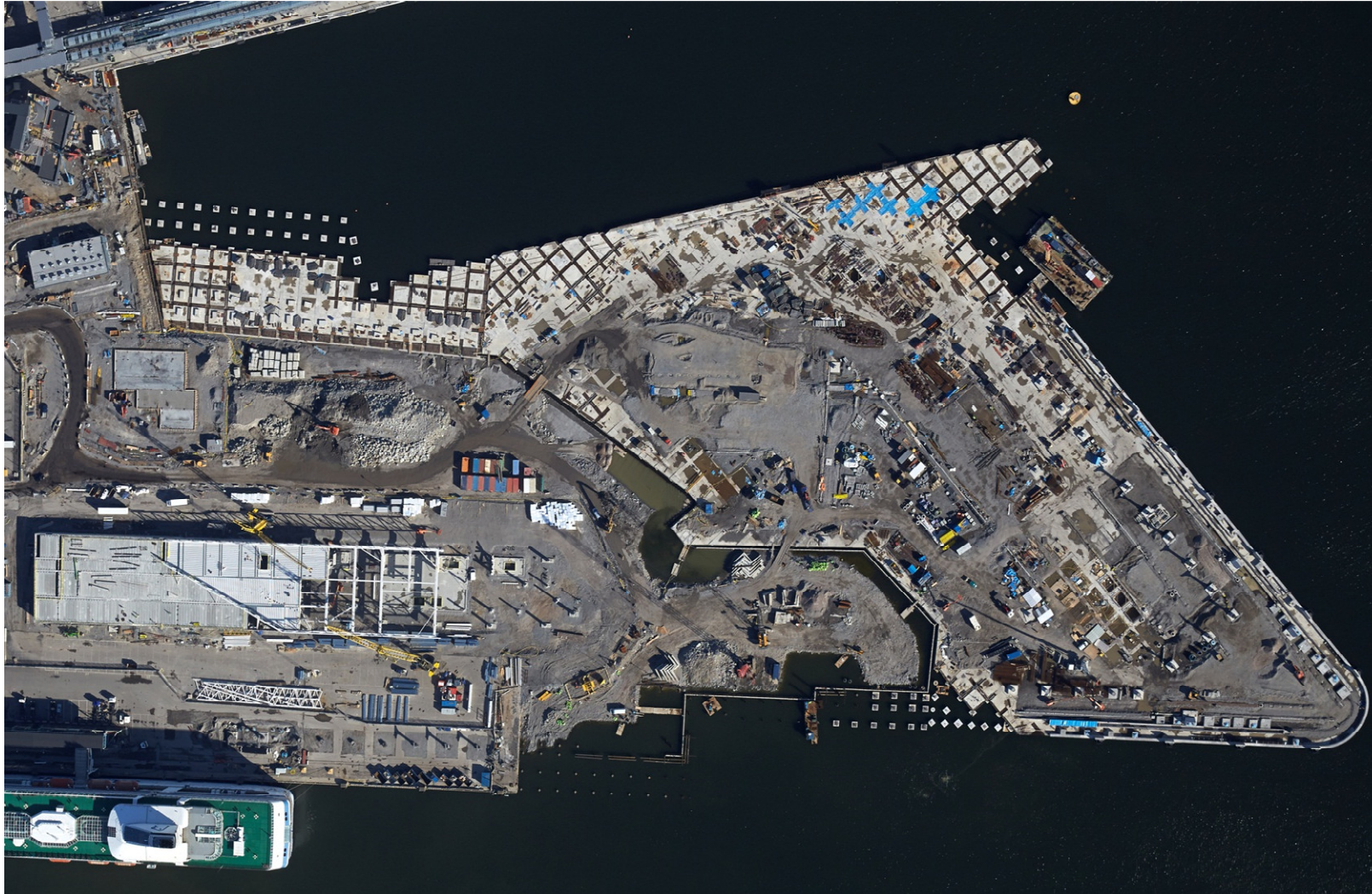
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April 2015



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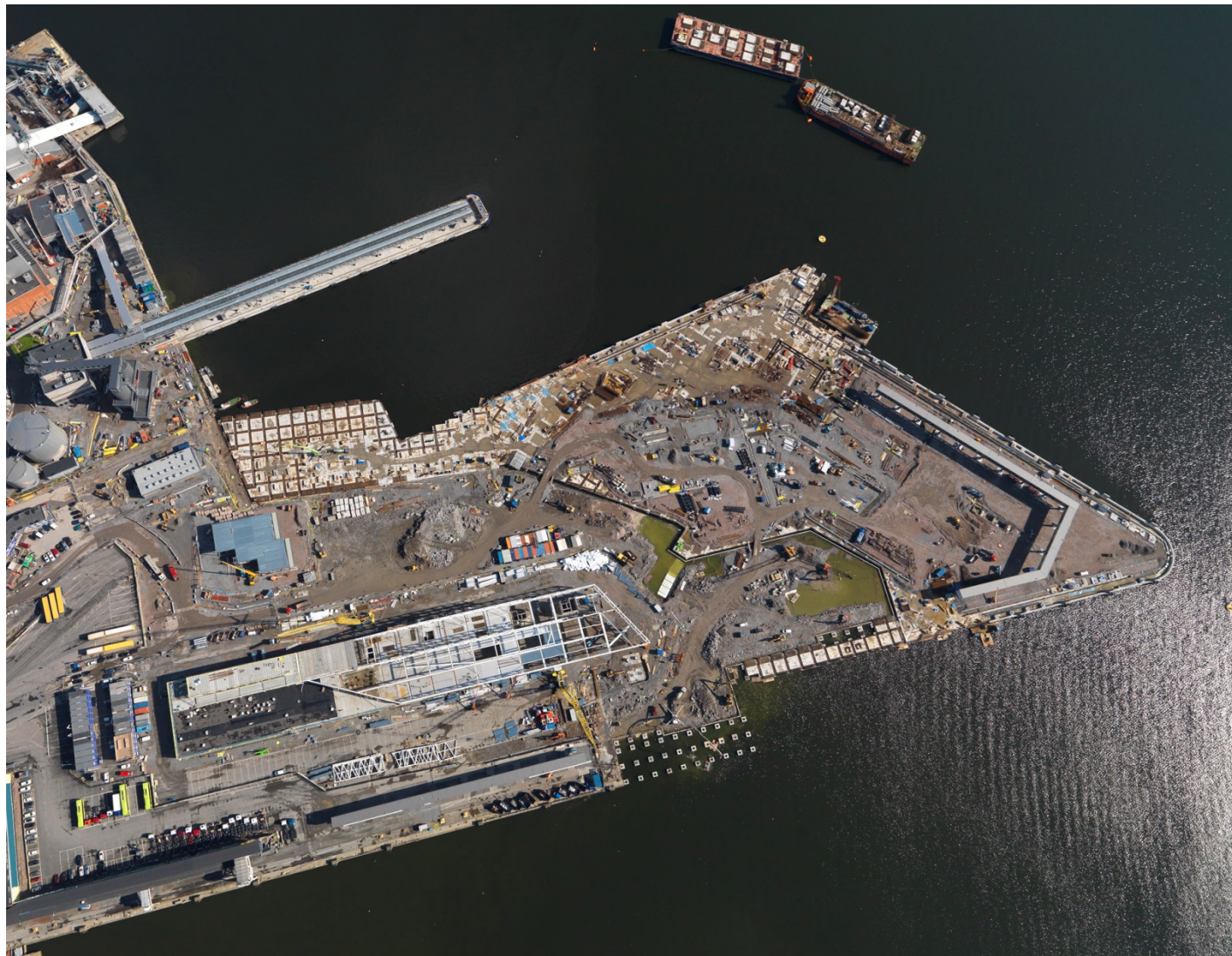
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Maj 2015



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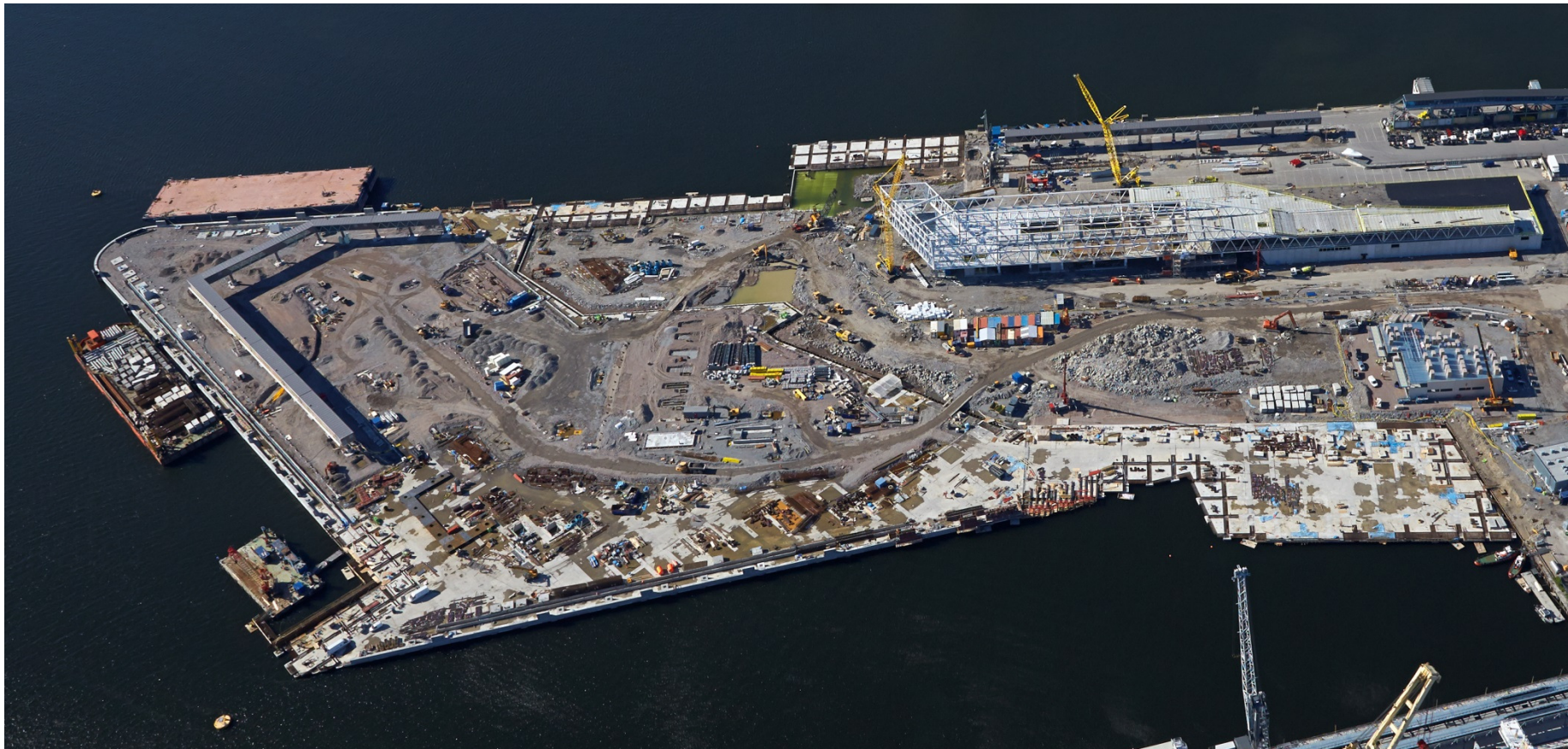
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Juni 2015

Spørgsmål?



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