


SSAB:N TERÄSPAALUPÄIVÄ 2018

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Installation of RD pile wall in Peterhead harbour

Piet van Breukelen

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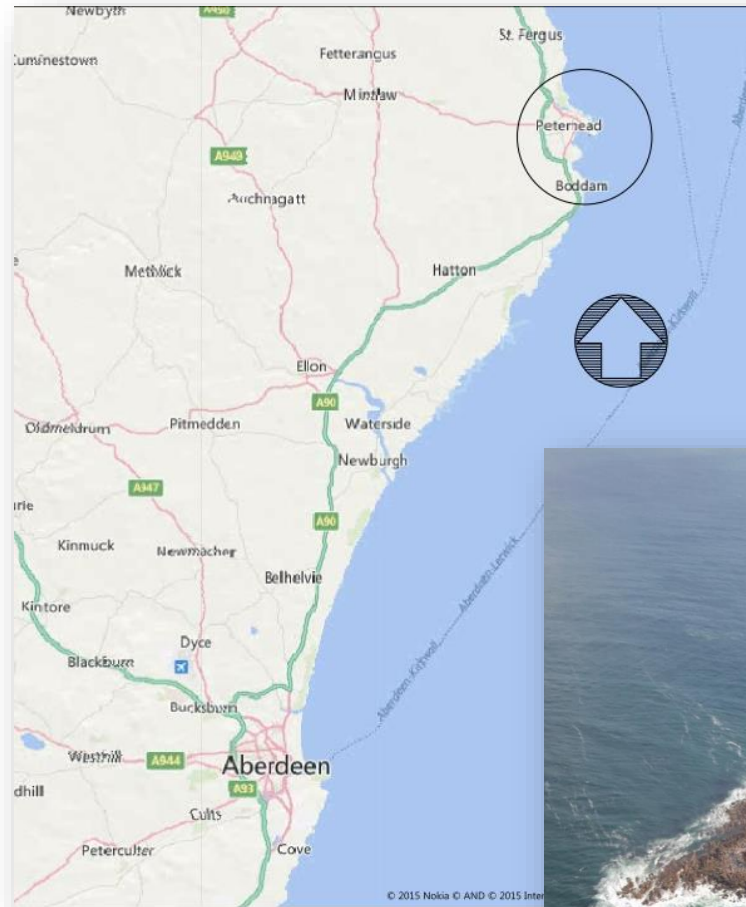
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Content

- ▶ Location
- ▶ Contract
- ▶ Project description
- ▶ Selection of RD[®] pile wall
- ▶ SSAB deliveries
- ▶ Installation details
- ▶ Installation experience
- ▶ Grouting
- ▶ Questions

Location

- Peterhead Port is an important port in the fishing and oil industry and an important asset to the economy of the North East of Scotland.



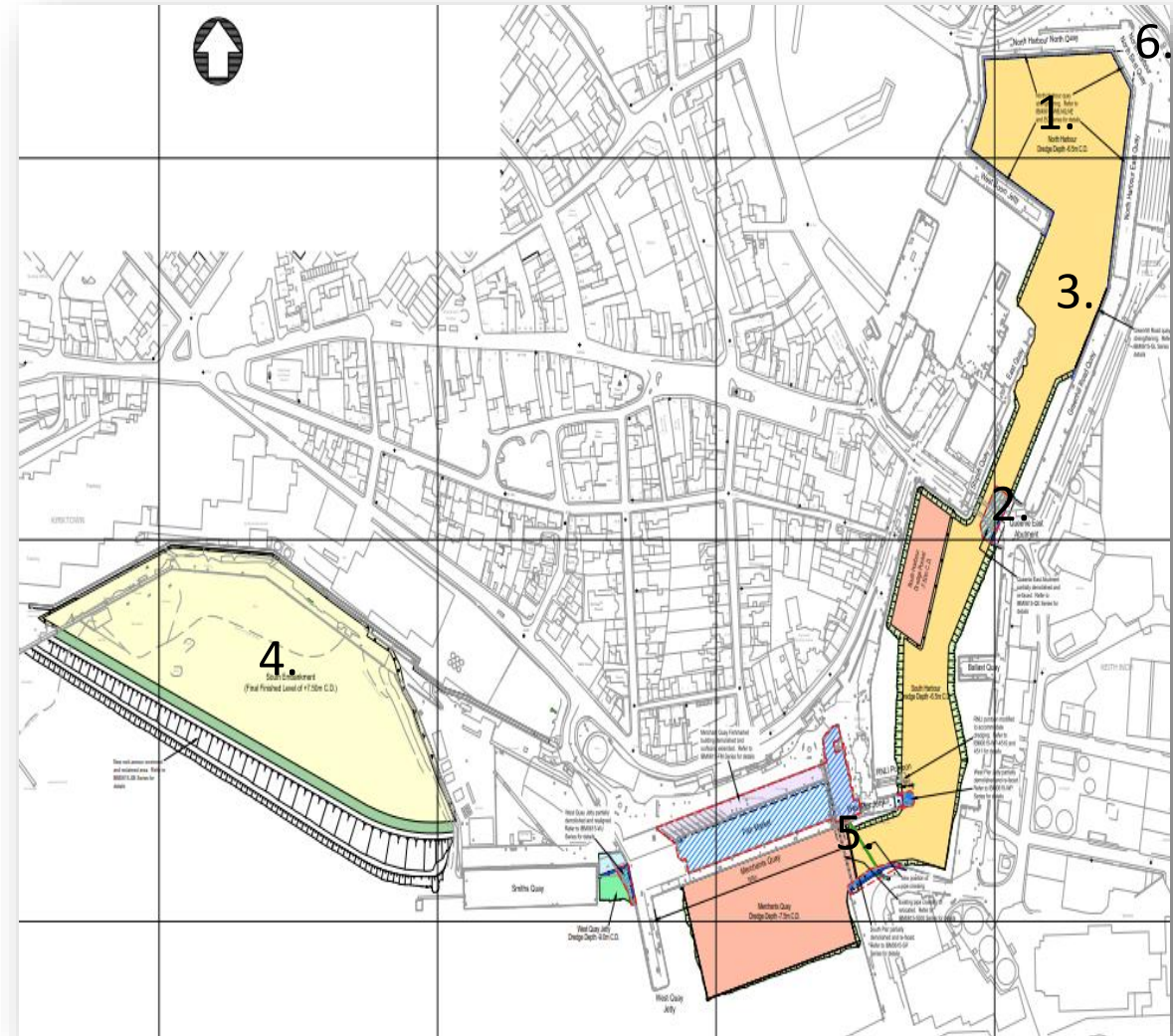
Contract

- ▶ The £30+ million contract has been awarded to a JV between civil engineering contractor McLaughlin & Harvey and dredging contractor Boskalis Westminster.
- ▶ The inner harbour redevelopment project is part of the largest development in the history of the Port.
- ▶ Designer: RPS Consulting Engineers
- ▶ Piling contractor: Quinn Piling



Project description

1. Strengthening of the existing quay wall around the North Harbour.
2. Removal of Queenie Bridge and removal of Queenie abutment.
3. Dredging of the harbour by 3m generally.
4. Construction of a new revetment at Smith Embankment and reclamation of additional land.
5. Realignment of South quay, West quay jetty and West Pier to allow for widening of the harbour entrance and modernisation of the existing quays.
6. The existing fish markets on Merchants quay will be demolished with and replaced by a brand new fish markets located in the North harbour.

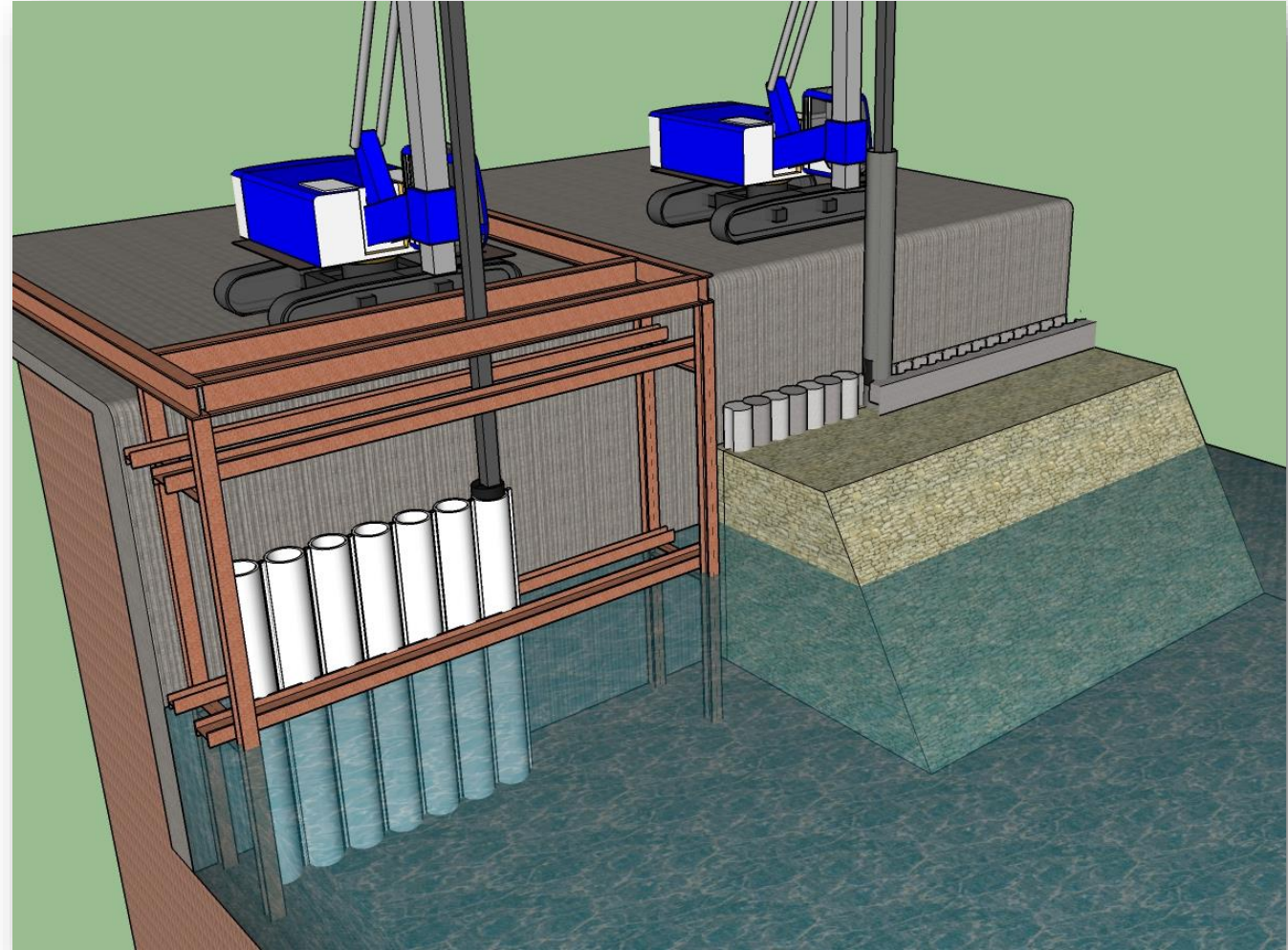


Selection of RD[®] pile wall

- Stephen McAuley, Contract Manager at McLaughlin & Harvey:

“We chose the RD[®] pile wall solution because it greatly simplifies the pile installation sequence. The client’s original design required the use of temporary embankments to install reinforced concrete bored piles.”

The RD[®] pile wall solution eliminated the temporary embankments and the piles can be installed in one step to create a continuous wall with only one piling rig”.



SSAB deliveries

► Original delivery:

- ø 610 x 12.50 mm in S440J2H
 - 960 pcs, lengths 10.50 - 16.50 m
- ø 610 x 16.00 mm in S440J2H
 - 102 pcs, lengths 15.70 - 20.00 m

► Additional delivery:

- ø 610 x 12.50 mm in S440J2H
 - 127 pcs, length 13.50 m

► All with RM/RF interlocks

- 30 km of RM/RF interlocks

► Total project delivery:

- 1189 pcs.
- 16.5 km of piles (= 3200 tons)
- 14000 m² of wall



Installation details

- ▶ Installation from old existing quay wall by using DTH with steel fist with wing pilot.
- ▶ Drilling is in granite rock with an approx. UCS value from 10 - 20 MPa.
- ▶ Installation in both directions (left/right) working simultaneously.
- ▶ Use of templates to secure wall verticality.
- ▶ Piles are drilled below 6,5 m sea water for 7 m into existing sea bed.
- ▶ After installation existing sea bed will be dredged away for 3m.



Installation experience

- ▶ Installation started with 1 rig and increased to 3 rigs working simultaneously.
- ▶ Installation speed expected to be 2,5 piles per day/rig. Real life up to 6 piles per day/rig.
- ▶ Steel fist with wing pilot needed to be replaced after approx. 50 piles.
- ▶ Some minor corrective actions had to be taken to keep the wall in line (adjusting the RM interlock).

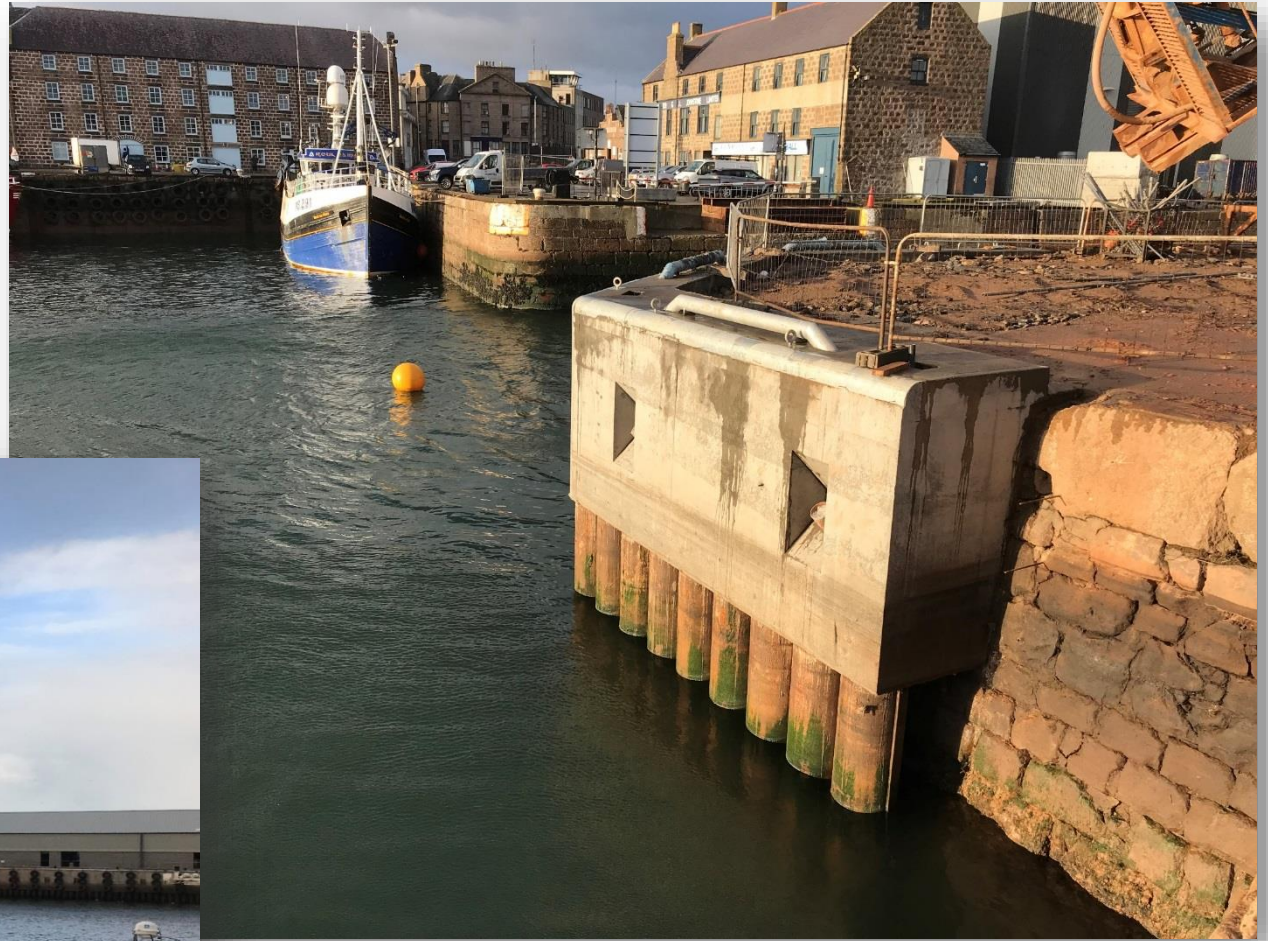


Grouting

- ▶ To secure a rigid pile foot all piles are grouted.
- ▶ For this the contractor closed the bottom of the RF interlock and drilled 4 holes in the injection channel in the bottom 2 m. The holes are then plugged with low pressure valves.
- ▶ Contractor used standard grout mix with approx. 20-30 bar pressure.



Any questions?





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