Laayoune New Phosphate Port Turnkey (EPC) Project

Design and Construction

June 2025

Project Description

Location

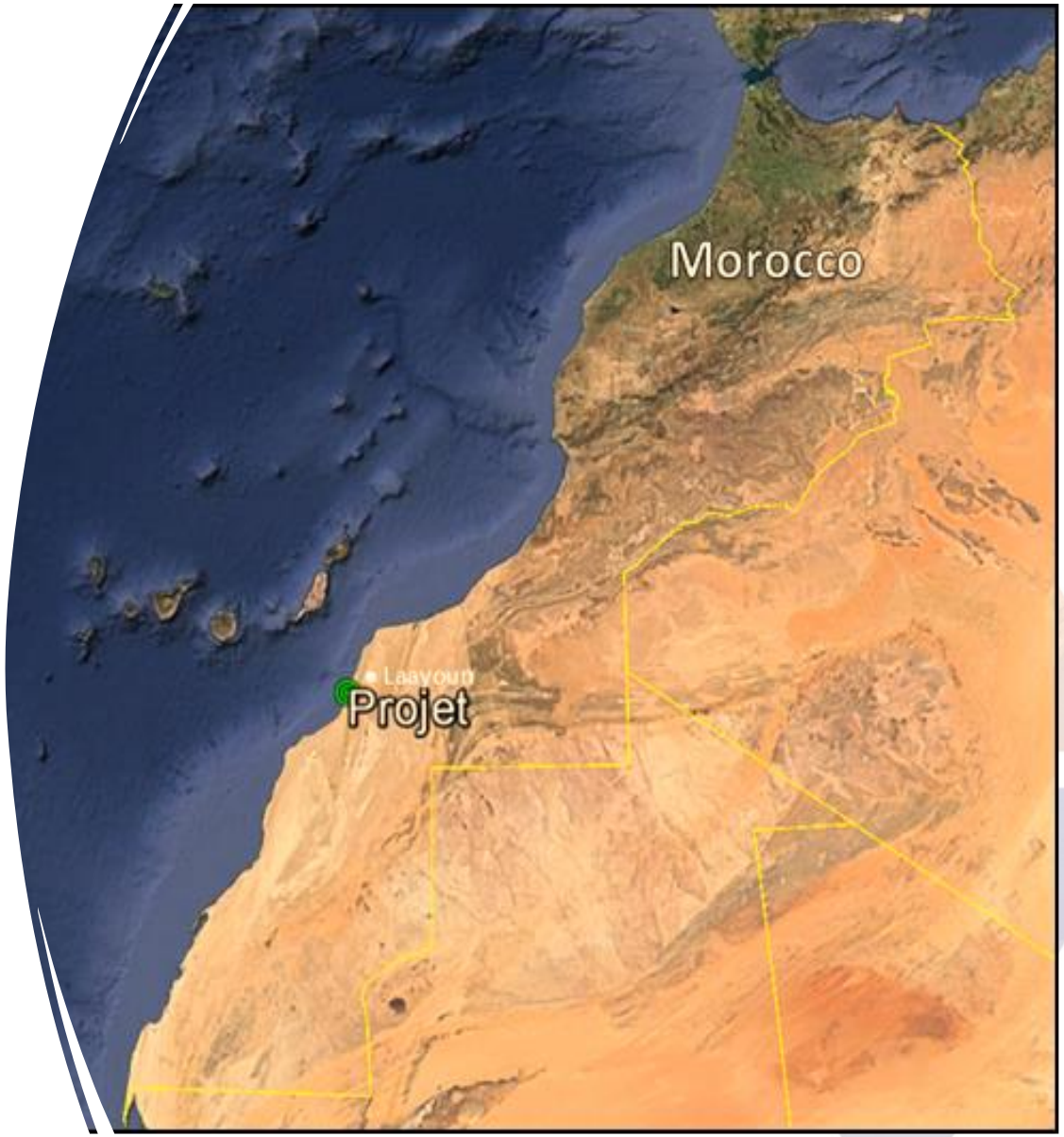
The project is located on the Atlantic coast of Morocco, about 1,000km south-west of Casablanca, 25 km west of Laayoune city and 2 km south of the OCP current site.

Scope

Design and construction of a new Phosphate Terminal at the south side of the current Laayoune Wharf.

The new Terminal will support the port traffic needs at the area, namely:

- Importation and exportation traffic of dry bulks.
- Importation and exportation traffic of liquid bulks.



Project Description

CLIENT: PHOSBOUCRAA SA (OCP)

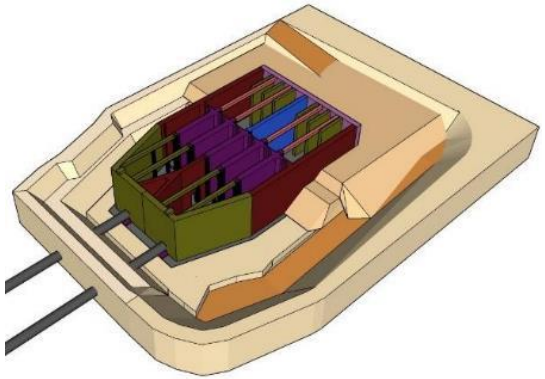
EPC Contractor: Archirodon Group NV

Detailed Design: COWI

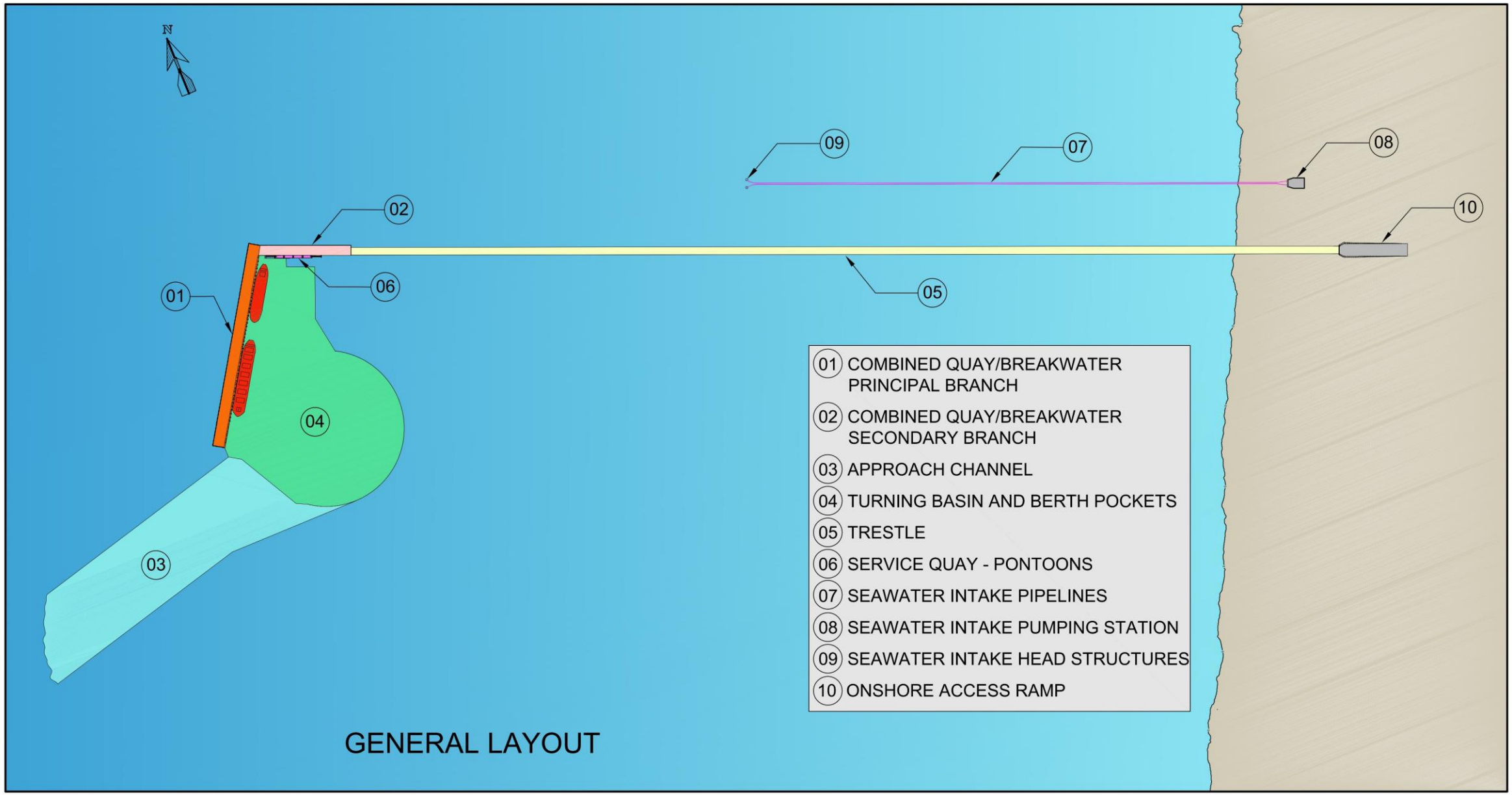
CONTRACT AMOUNT: 460mil USD

EPC PACKAGES

1. **LOT 1 – ACCESS TRESTLE**
2. **LOT 2 – SEA WATER INTAKE**
3. **LOT 3 – COMBINED QUAY/BREAKWATER**

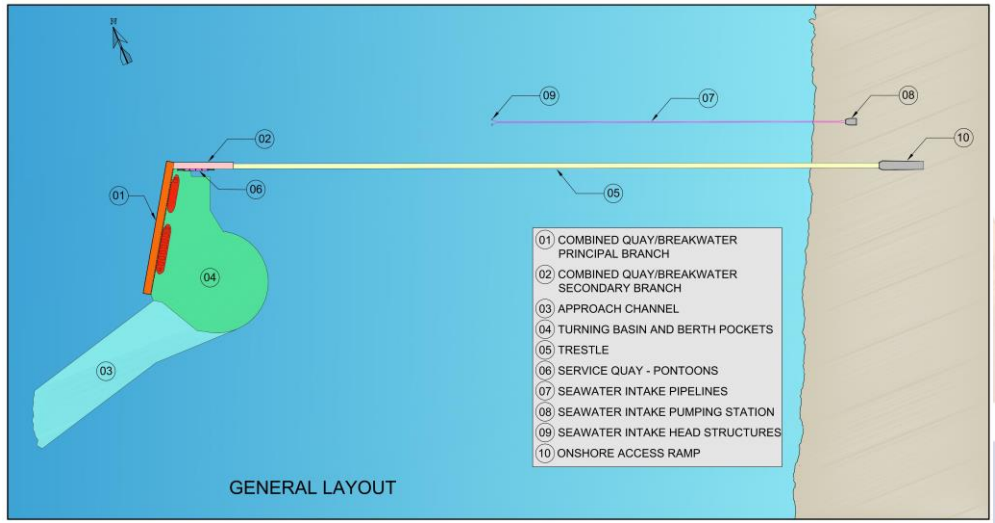


Project Layout



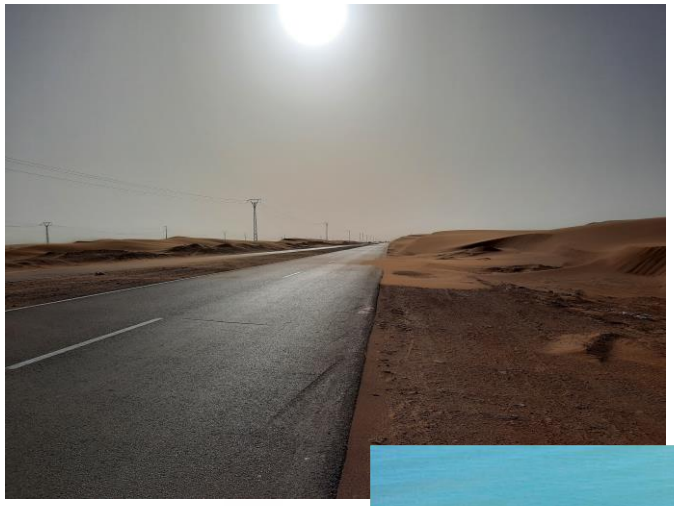
Design and Build Scope of Works

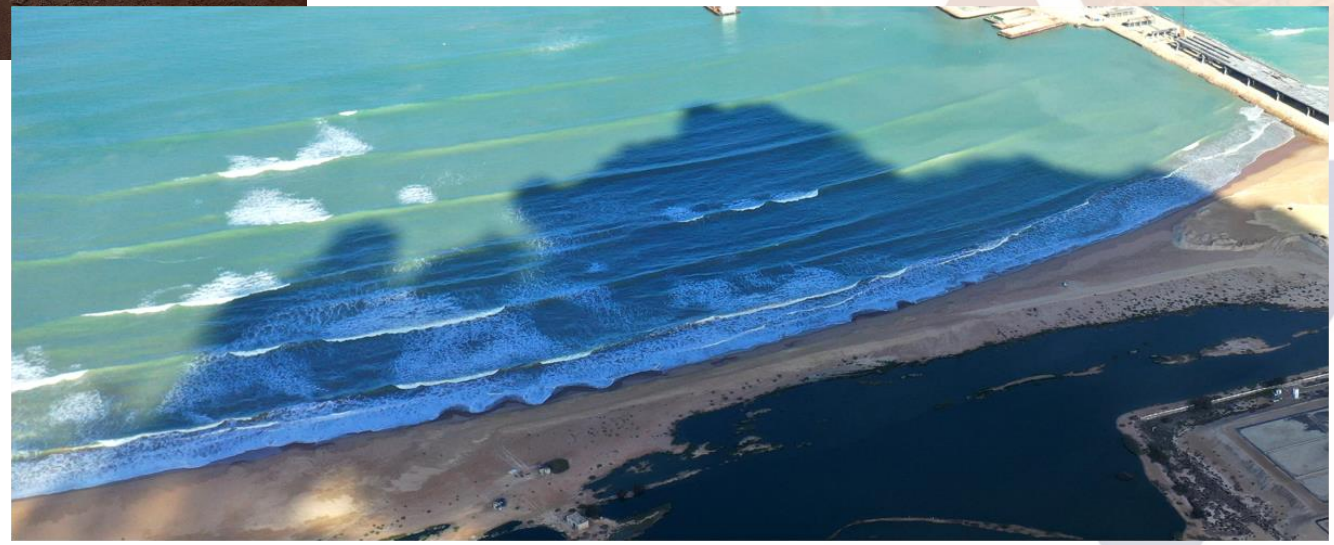
- Onshore Access Ramp (200m)
- Access Trestle (3.2km)
- Combined breakwater/quay caisson structure (950m)
- Dredging (800,000 m^3)
- Seawater Intake System (30,000m^3/hr)
  - Booster well pumping station,
  - Subsea HDPE 2.3m diameter pipelines (2 x 1740m long)
  - Intake Header structures
  - Electro-chlorination plant
- Service Quay Pontoons (120m long) and access walkways
- Wet Utility Lines (potable, fire, sewage pipelines)



Project Challenges

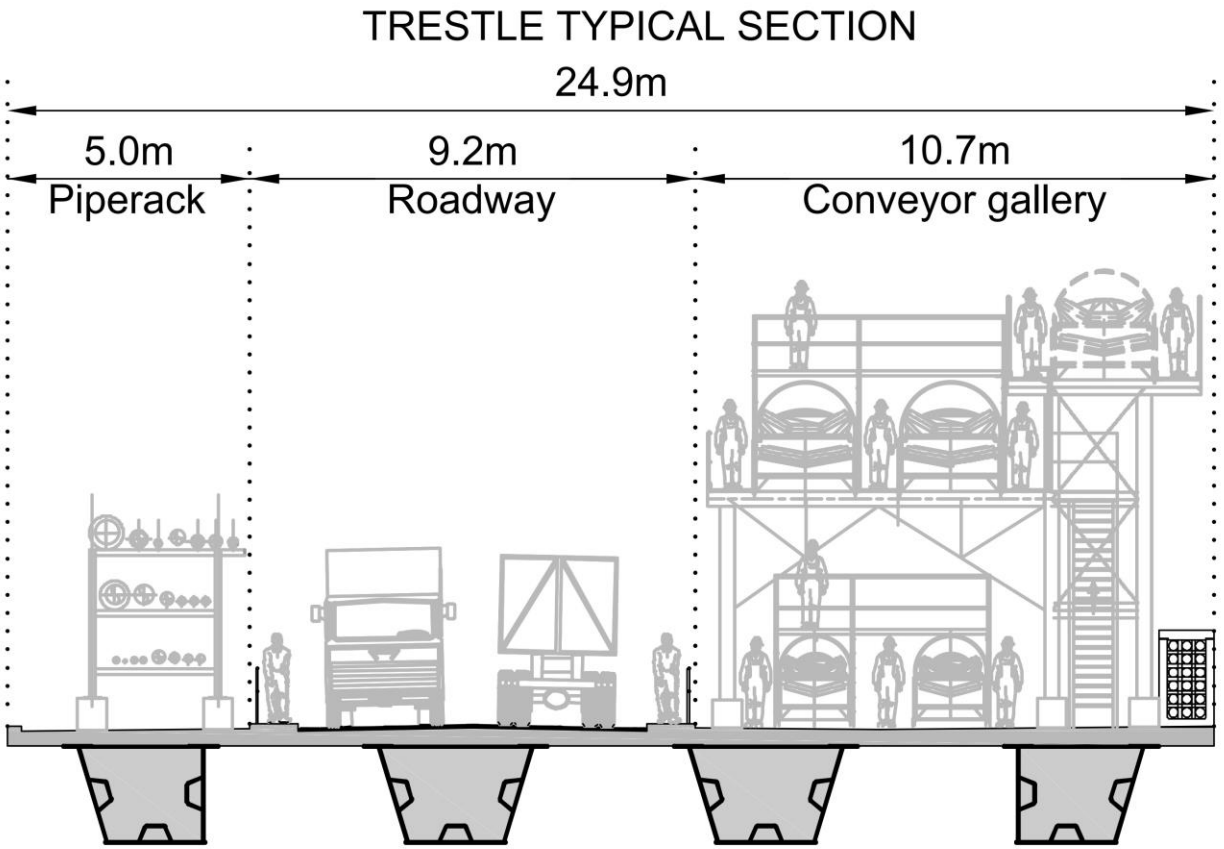
- Extreme daily winds and strong sea swells
- Local ecosystem
- Remote location
- Metocean conditions, long period and infra-gravity waves





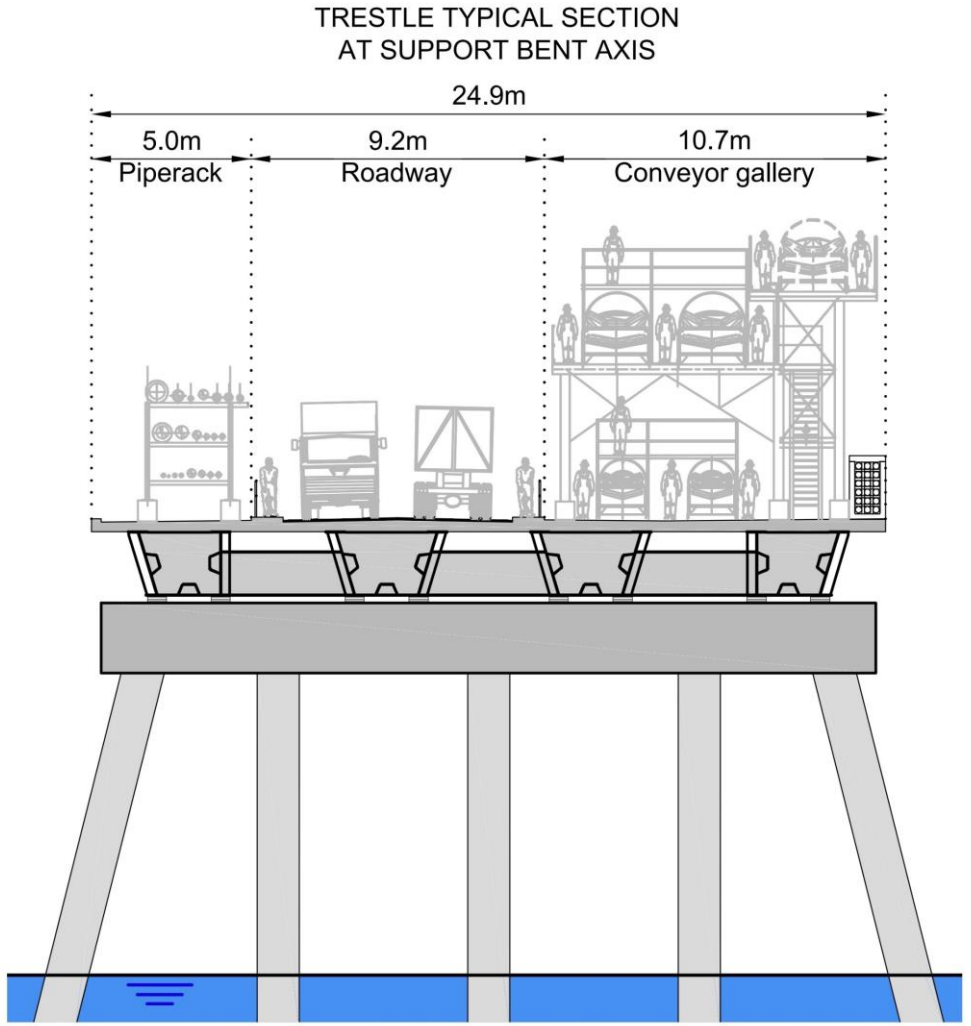
Trestle

- 24.m wide
- 3.2km long
- Composite Section
  - Four (4) steel box girders
  - Reinforced Concrete slab
- Spans varying
  - from 37m to 44m



Trestle

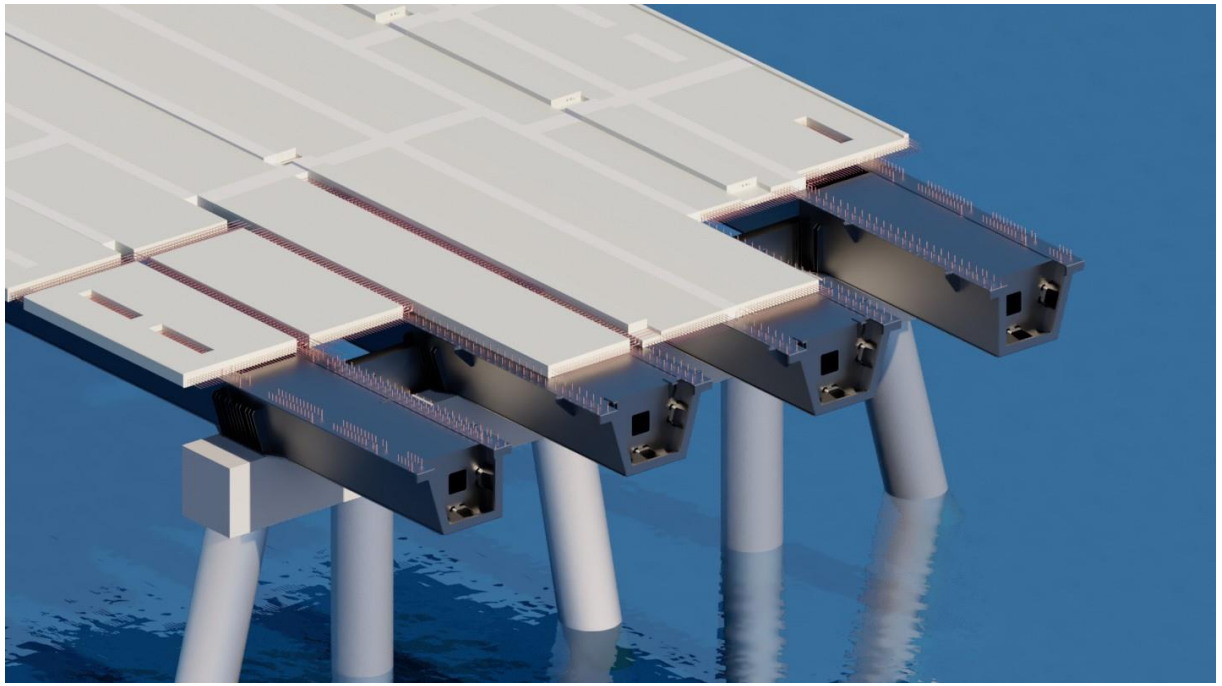
- 77 No support bents
- 5 No driven steel piles per bent
- Pile caps (77 No)
  - Reinforced concrete (23 No)
  - Structural steel (54 No)
- Laminated Elastomeric Bearings
- Expansion Joints
  - spaced @ 205m (~5 spans)



Trestle

Engineering & Construction Innovations

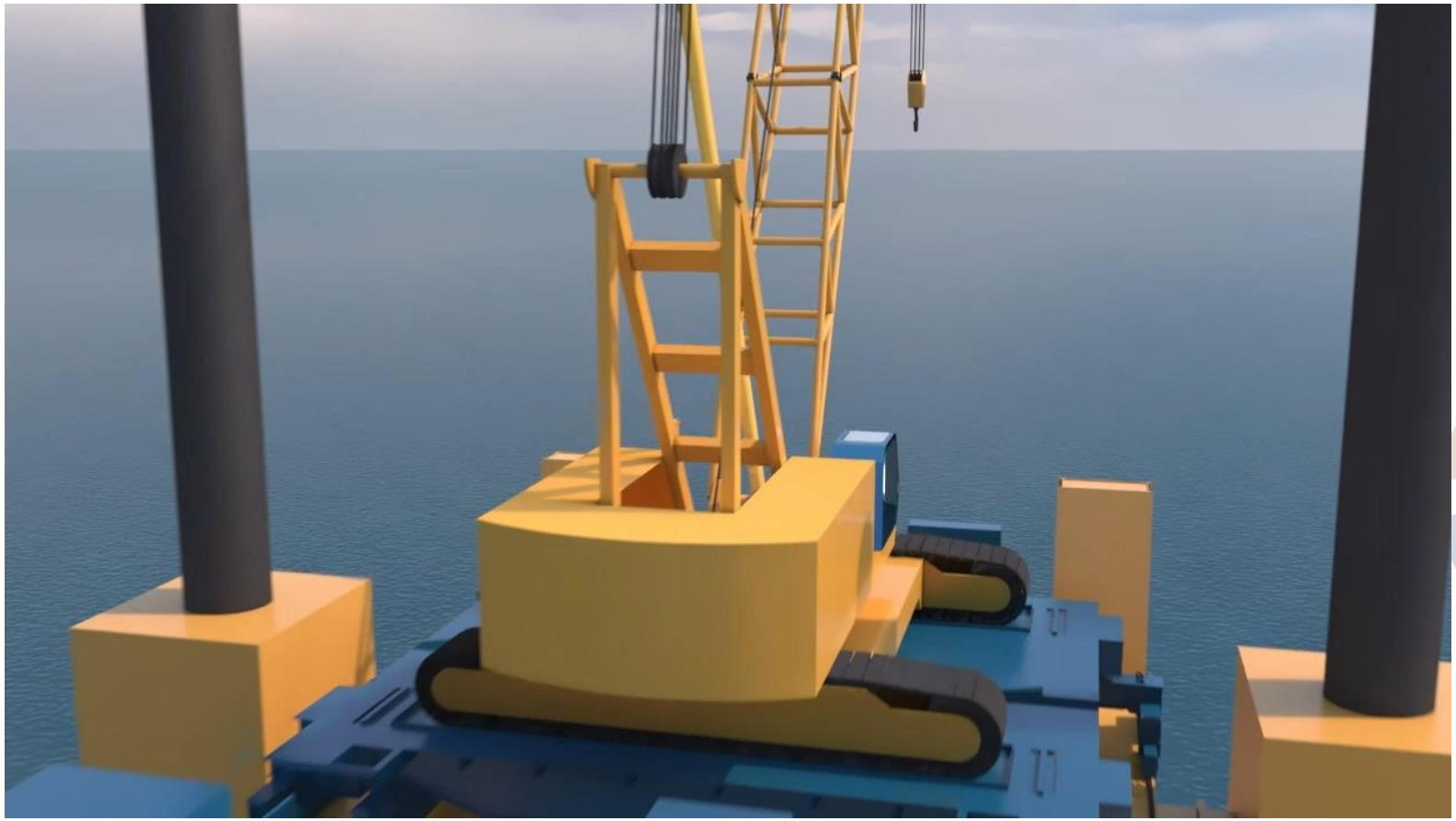
Full thickness precasting of Reinforced Concrete Slabs



Trestle

Engineering & Construction Innovations

The Self Launching Girder (SLG)



Trestle

Construction

Trestle

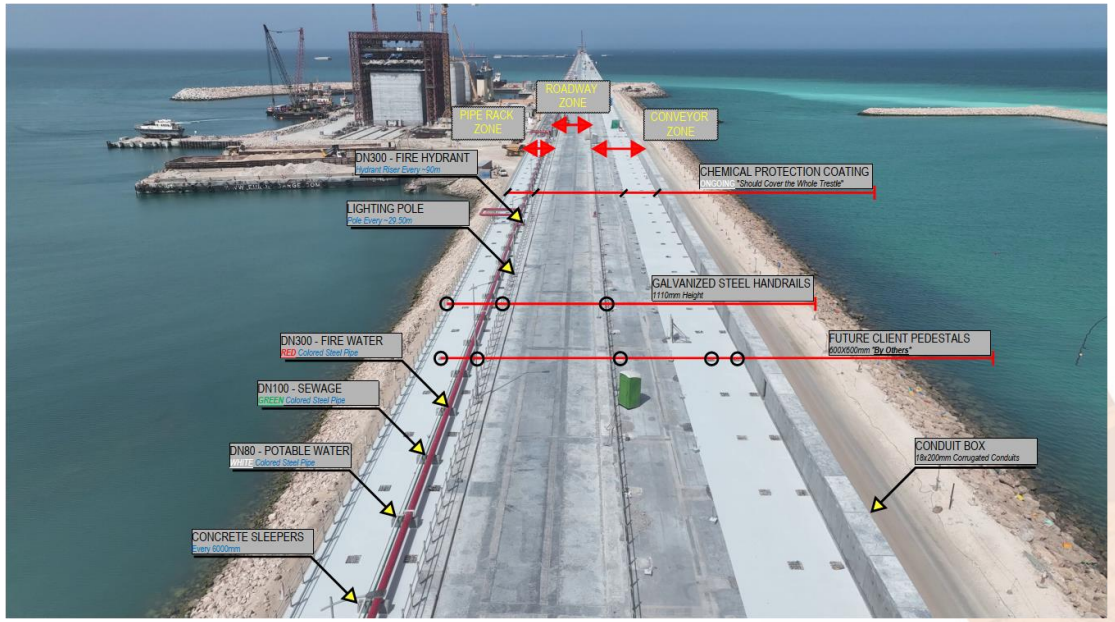
Construction

Trestle

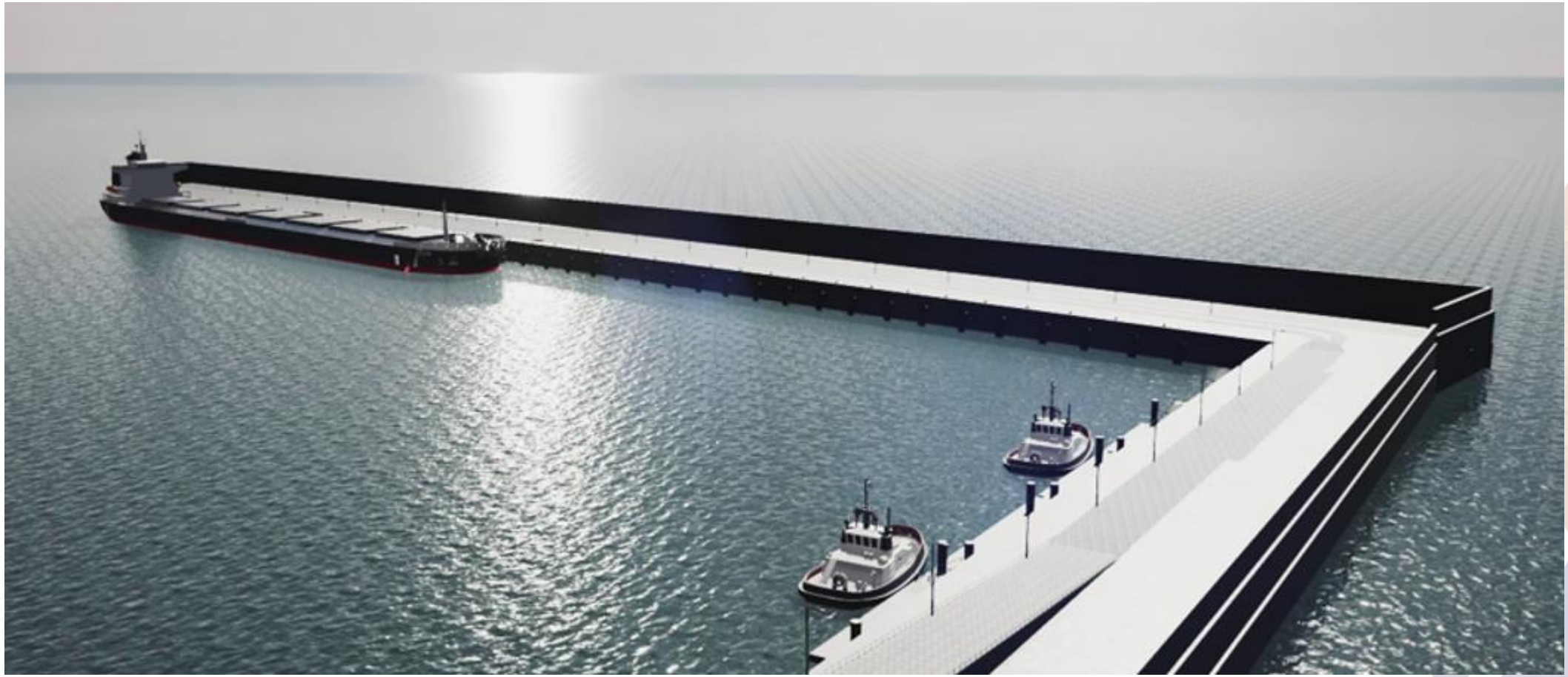
Construction

Trestle

Construction



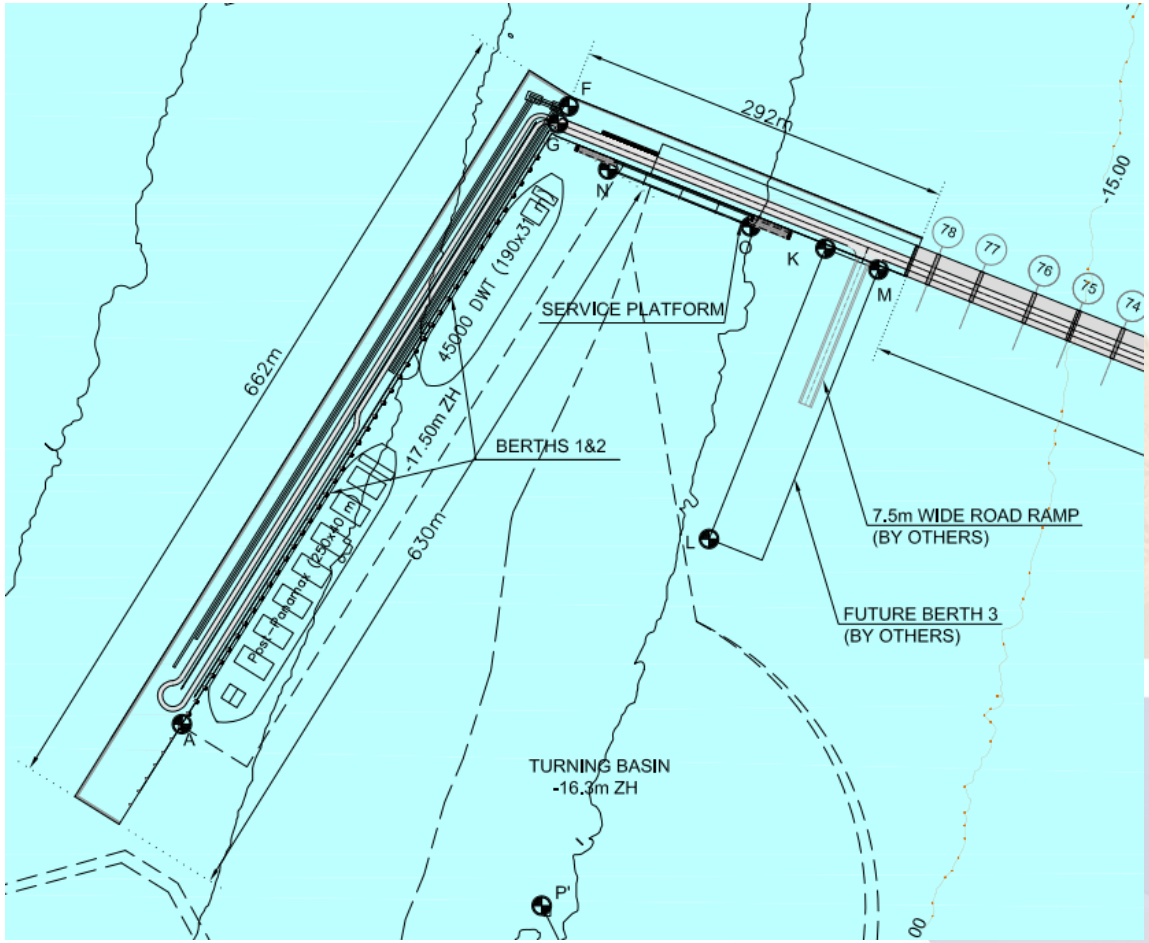
Combined Quay/Breakwater



Combined Quay/Breakwater

- Principal branch 630m
- Secondary branch 290m
- Berths 1 & 2

Ship type	Displacement (t)	Capacity (DWT)	Length (m)	Width (m)	Loaded draught (m)
Post Panamax bulker	121 000	100 000	250	40	15.5
Panamax bulker	94 000	76 800	225	32.3	14.3
Liquid bulk vessels (Panamax)	94 000	76 800	225	32.3	14.3
Handymax	56 000	45 000	190	31	11.5
Smaller ship	4 000	2 000	80	20	5.7
Tug boat	NA	NA	30/40	12	6



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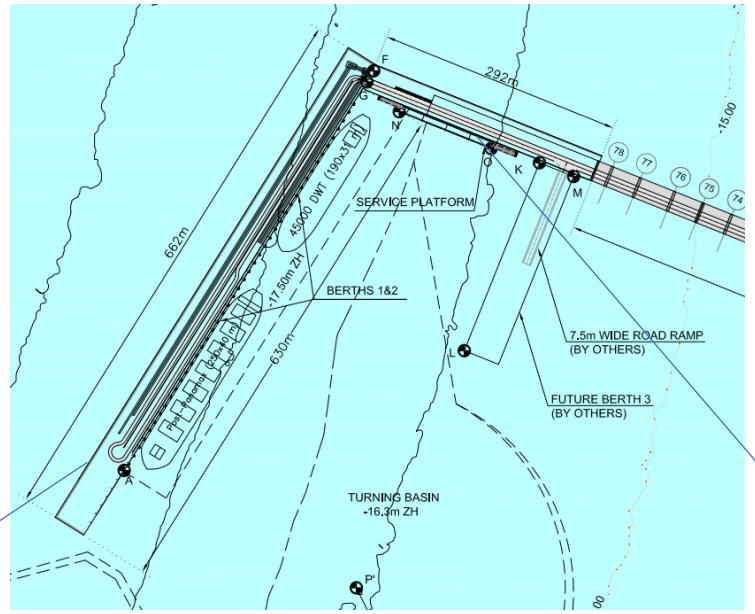
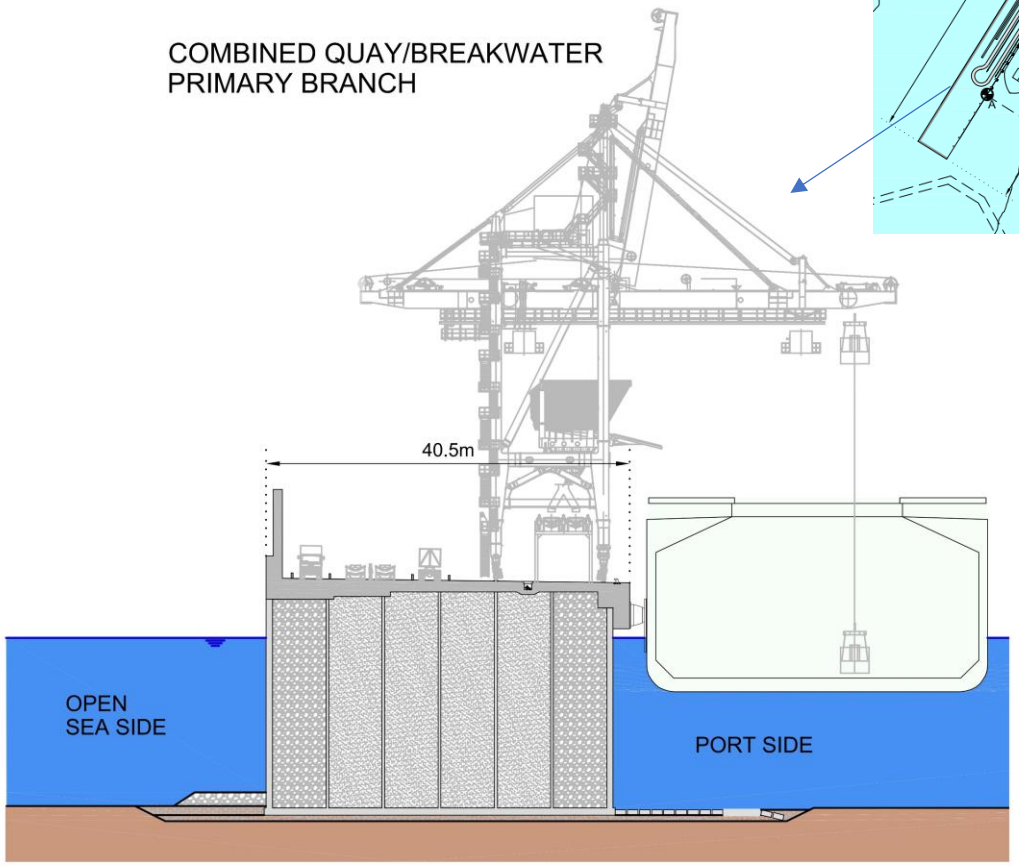
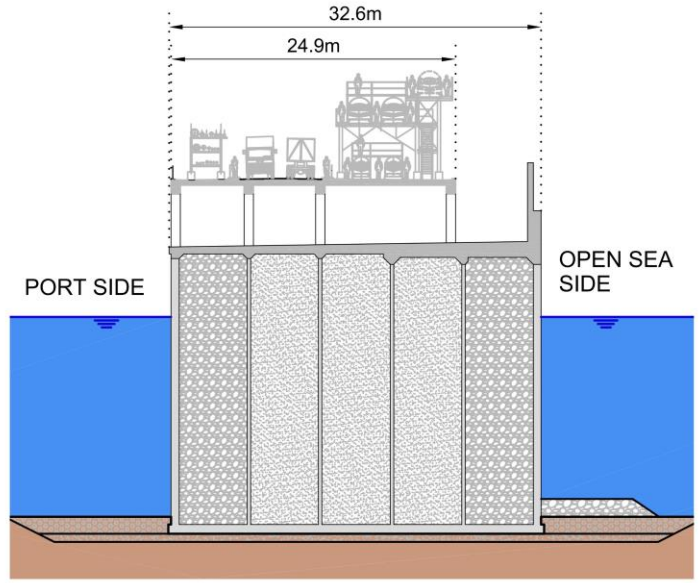


COMBINED QUAY/BREAKWATER
PRIMARY BRANCH

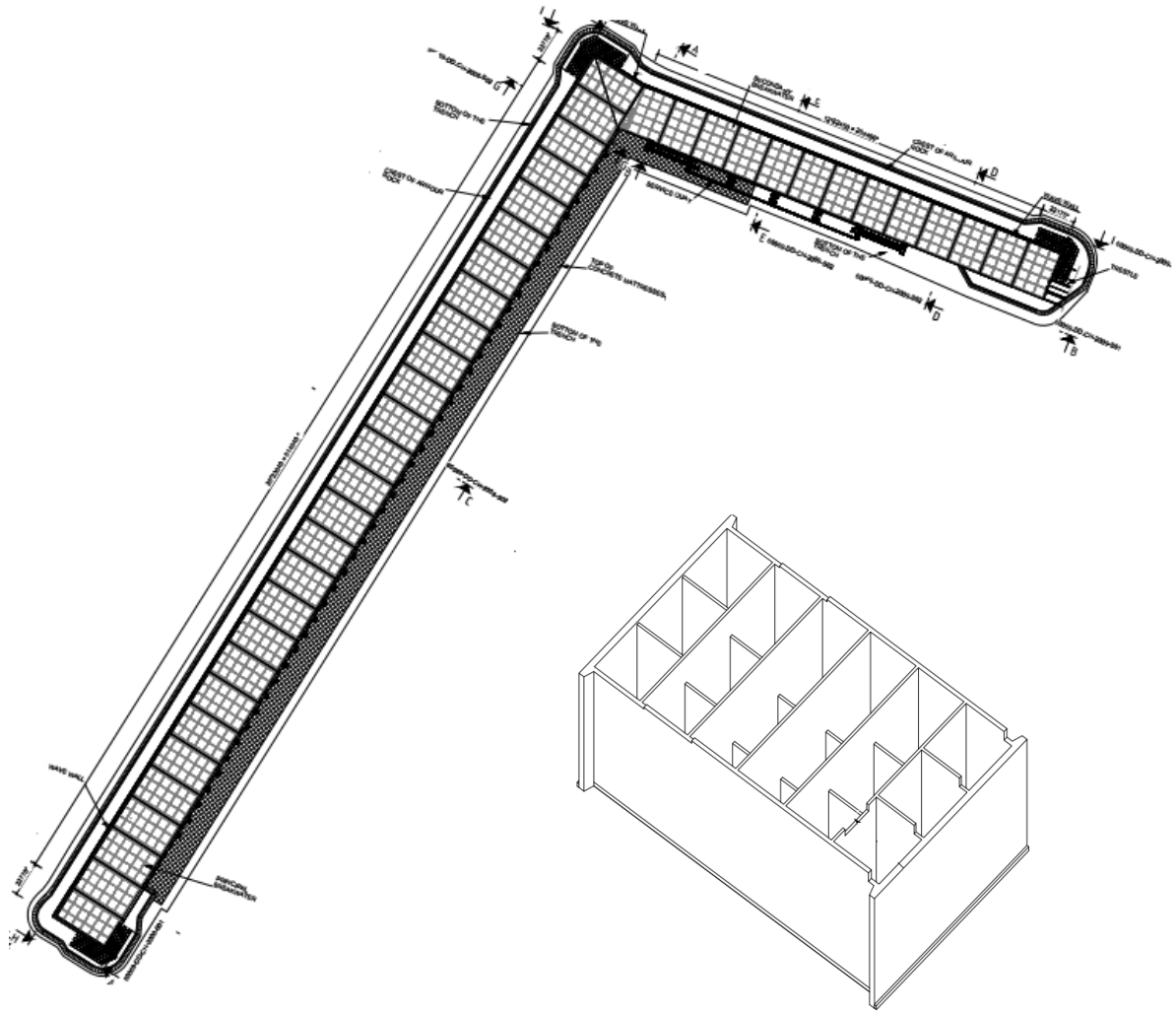


COMBINED QUAY/BREAKWATER
SECONDARY BRANCH



Combined Quay/Breakwater

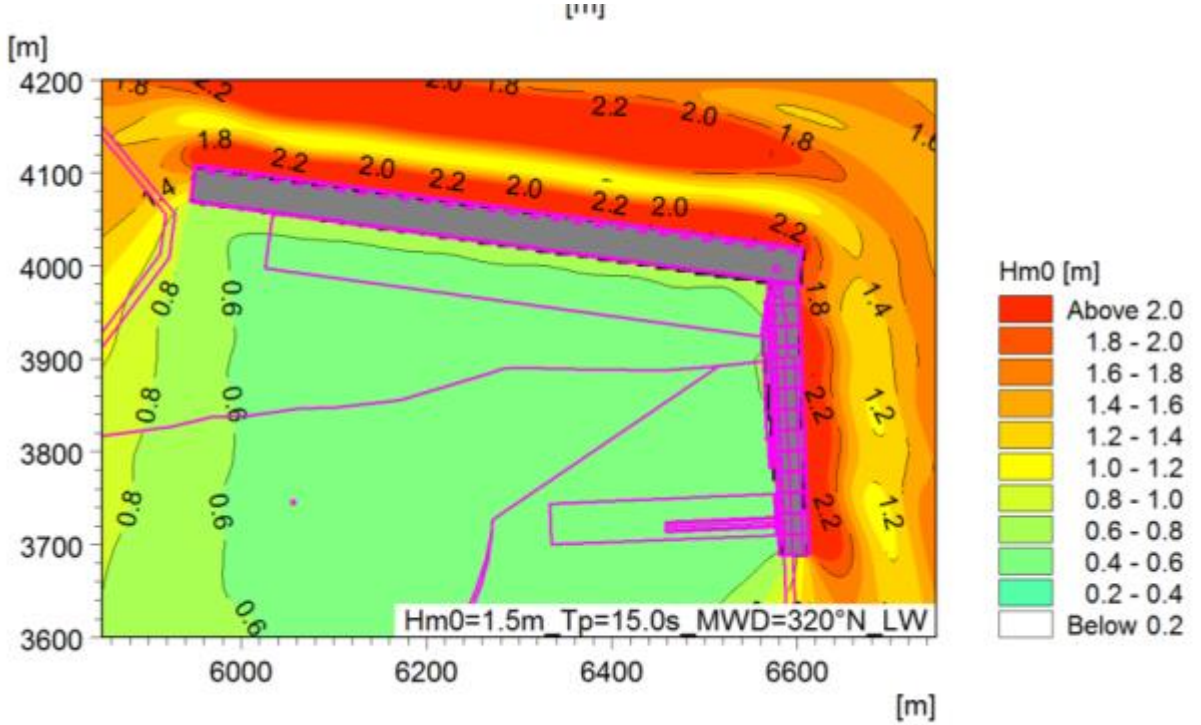
- 41 No Reinforced Concrete units
  - 10,000 tonnes weight each
- 1 to 2m thick Superstructure
- Wave wall 7.4m to 10.4m high

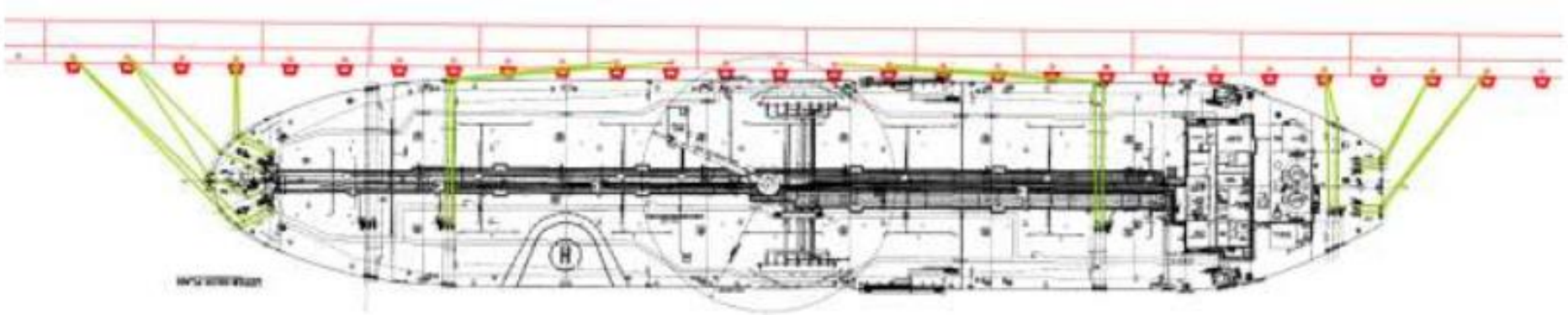


Combined Quay/Breakwater

Special Studies

- Wave Agitation and Mooring Study
  - 10% downtime
  - Modelling of infra-gravity waves

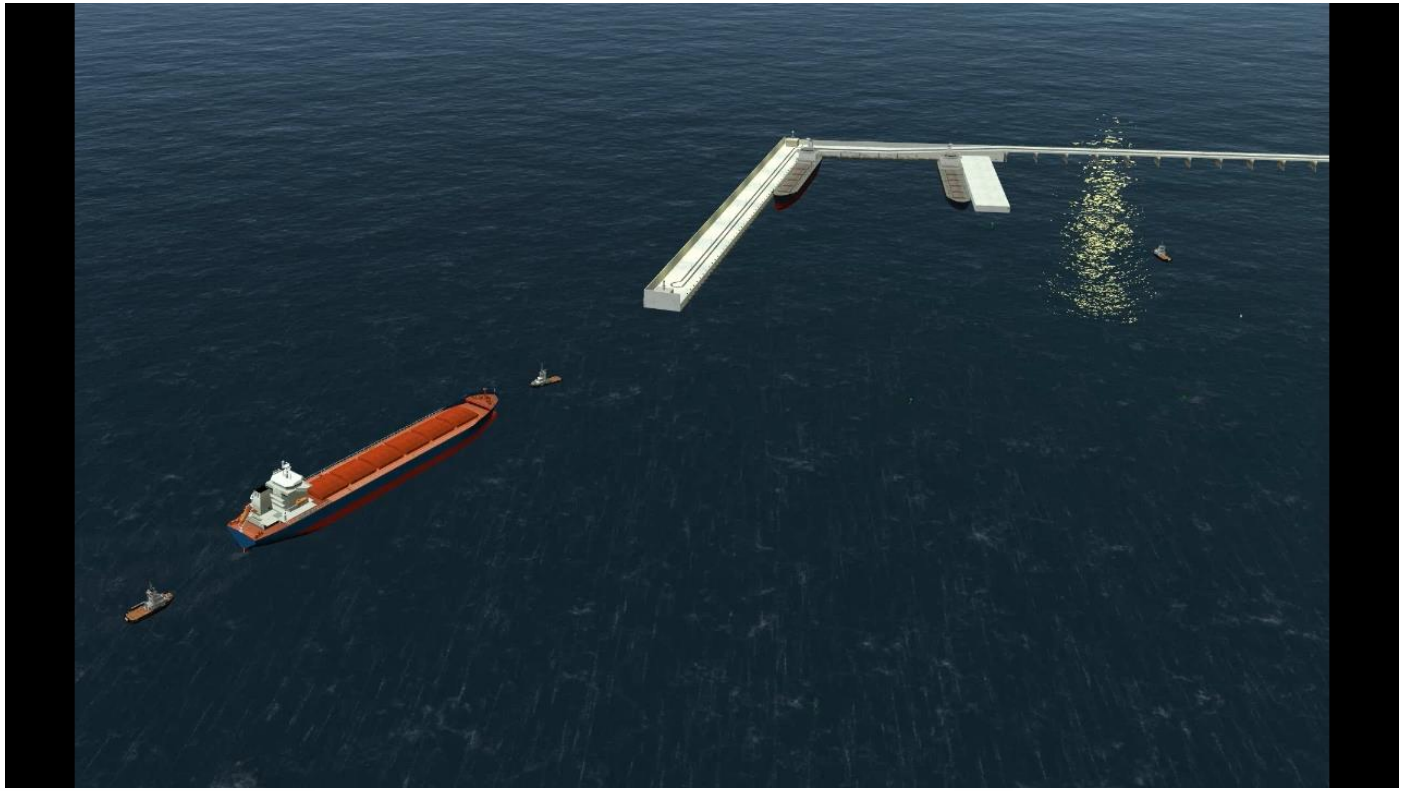


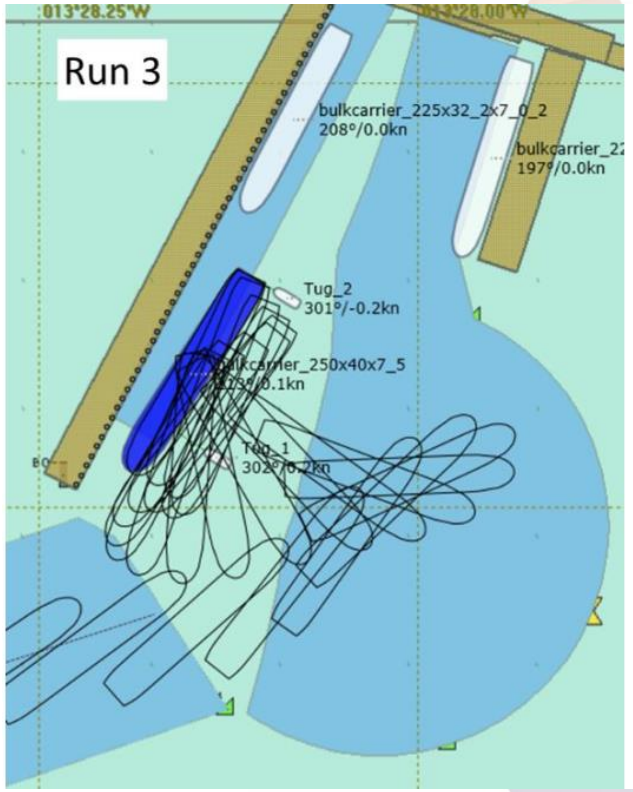


Combined Quay/Breakwater

Special Studies

- Full Mission Bridge Navigation Simulation

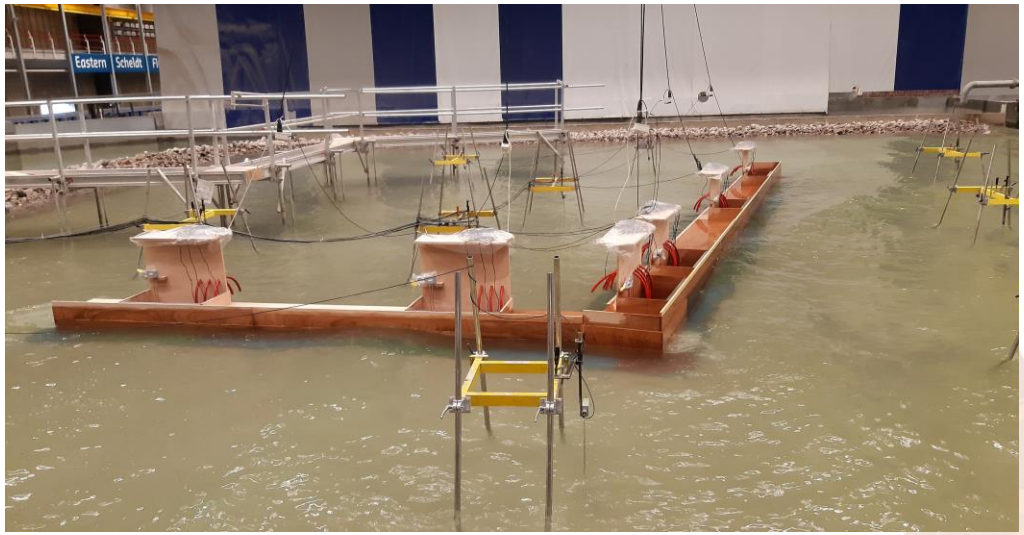




Combined Quay/Breakwater

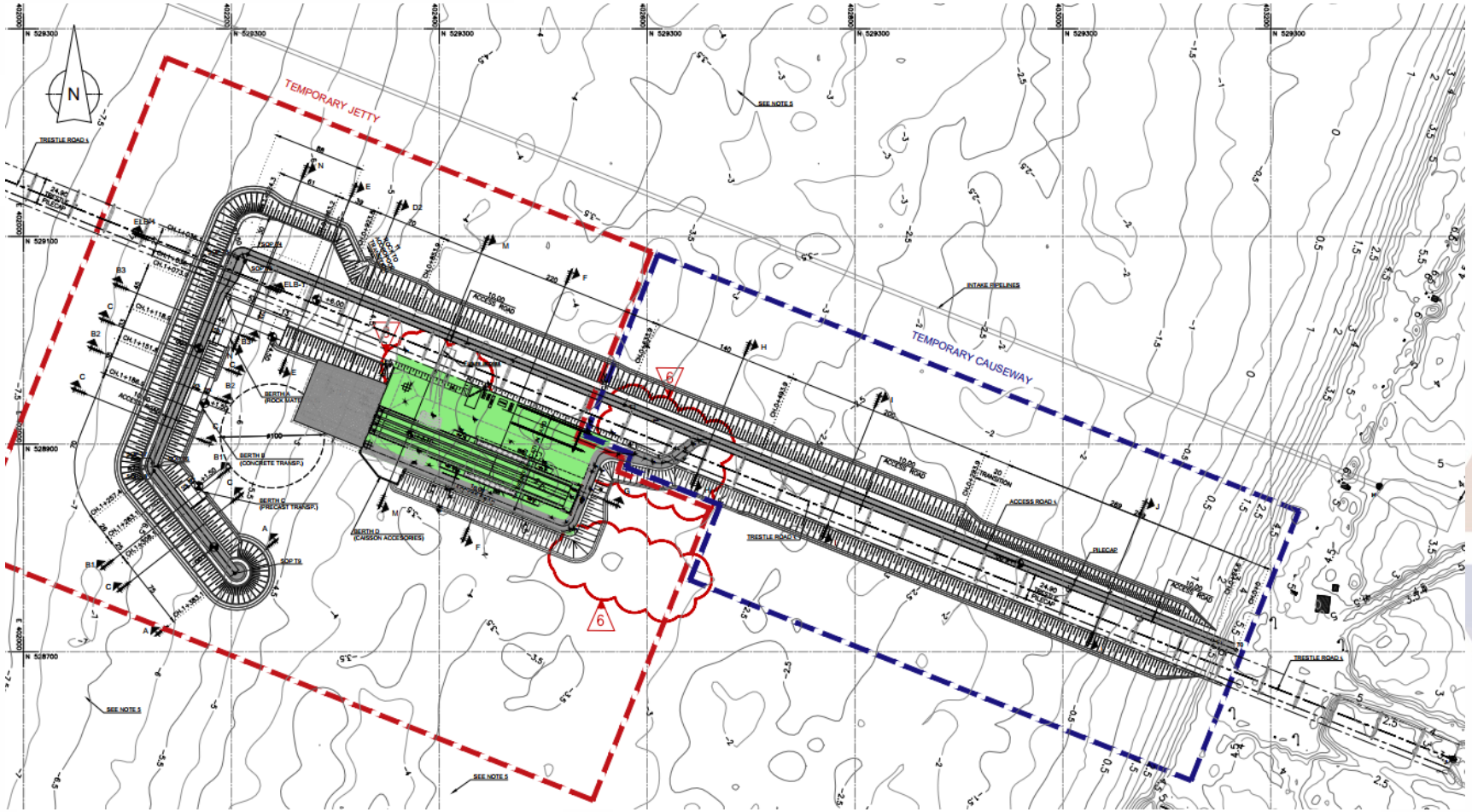
Special Studies

- 2D & 3D Physical Model Testing
  - seawater overtopping,
  - wave pressures
  - toe scour protection stability



Combined Quay/Breakwater

Temporary Harbour and Caisson fabrication Yard



Combined Quay/Breakwater

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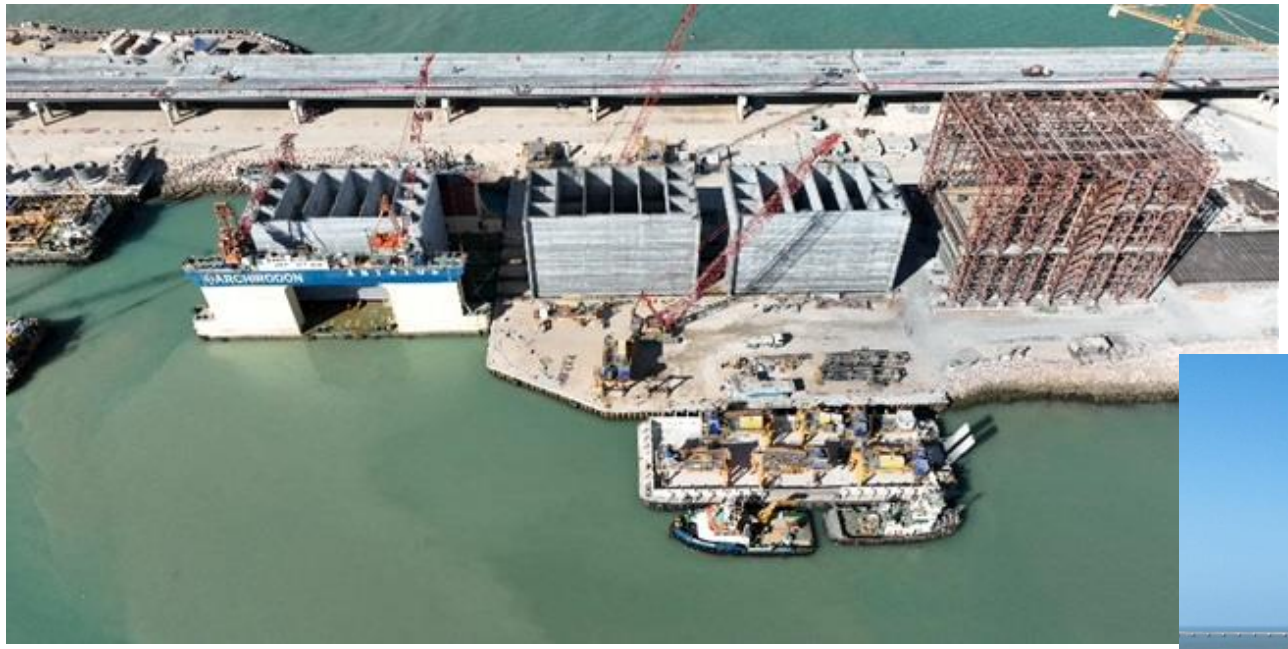

Combined Quay/Breakwater

Caisson Transportation & Installation

Combined Quay/Breakwater

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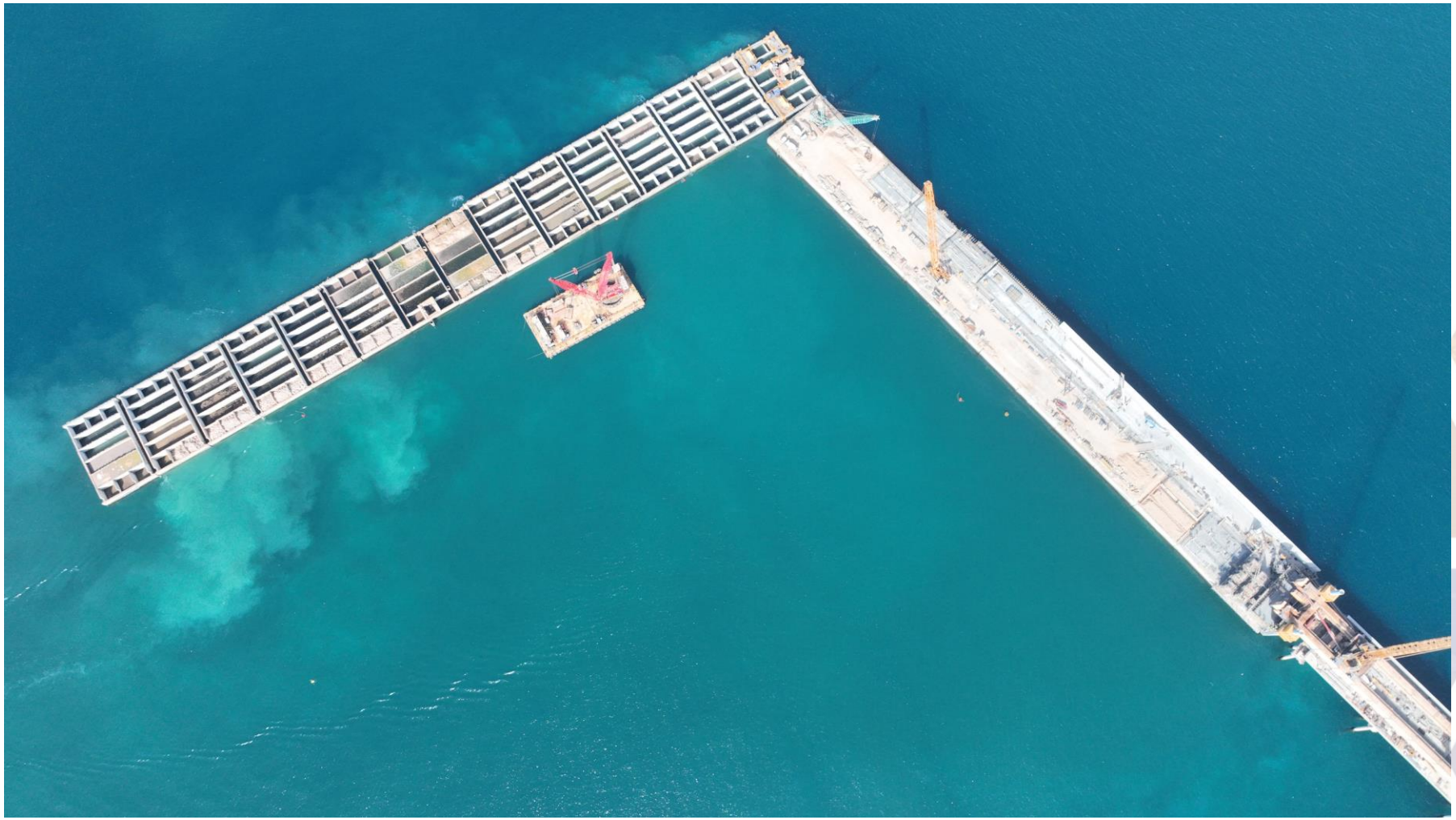
Caisson Transportation & Installation

Combined Quay/Breakwater

Installed Caissons & Superstructure Construction



Combined Quay/Breakwater

Installed Caissons & Superstructure Construction

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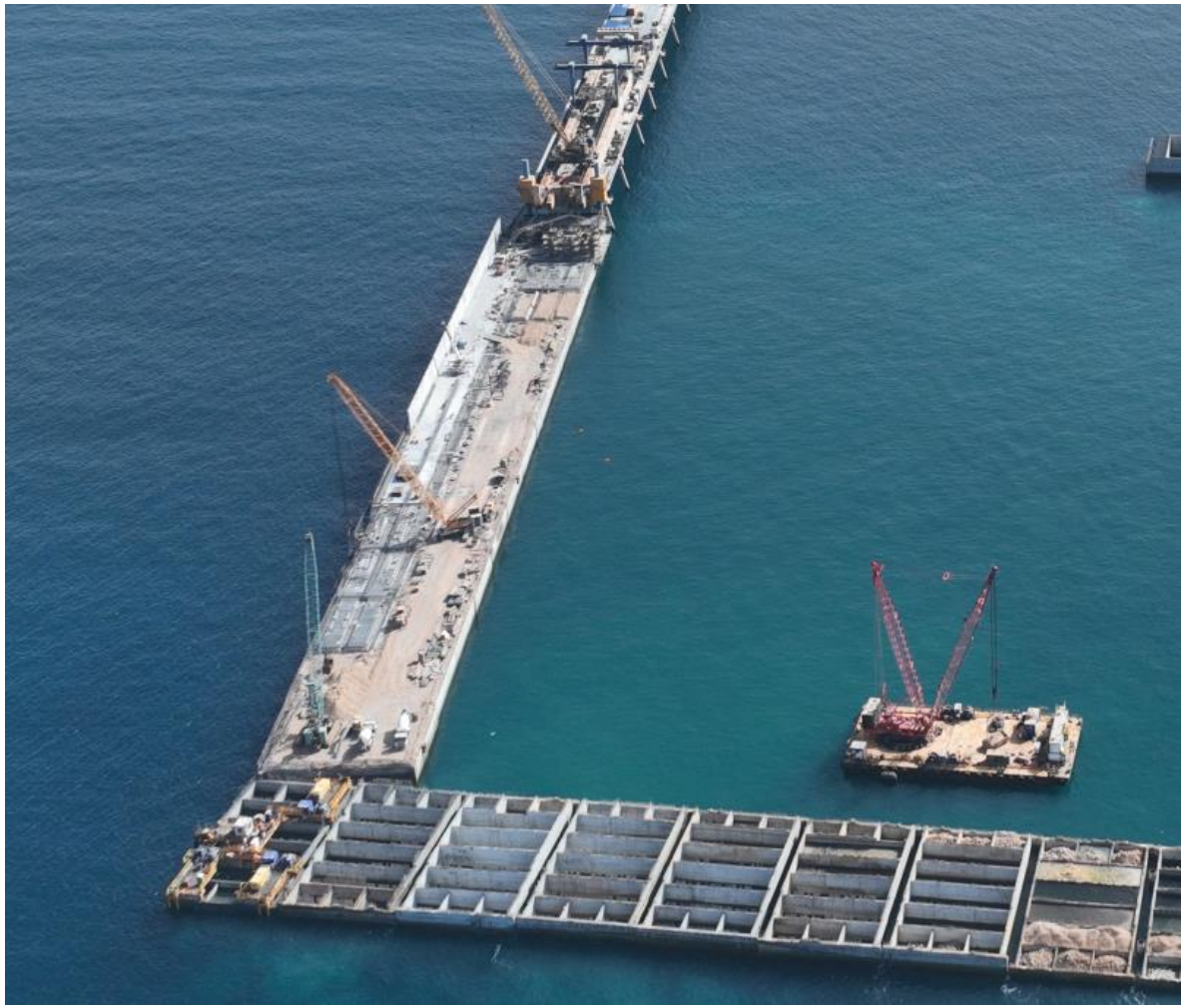
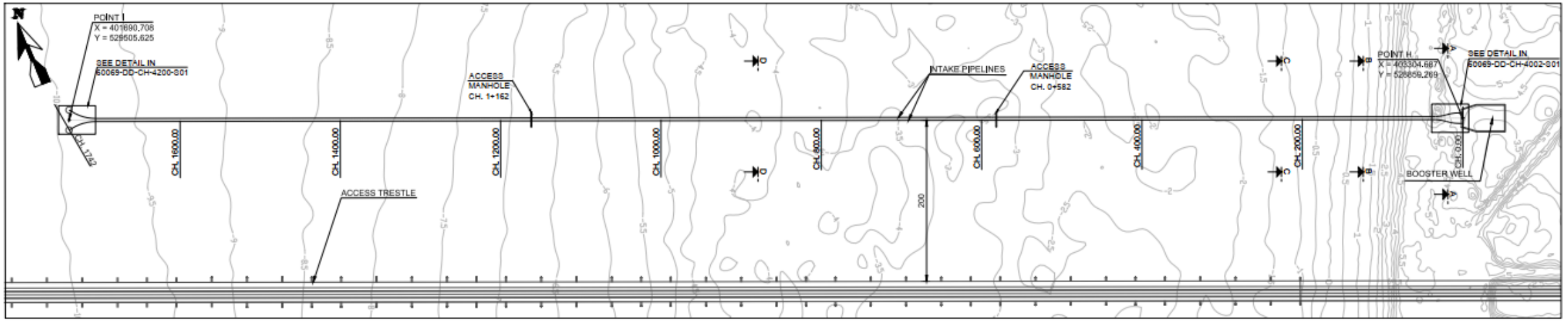
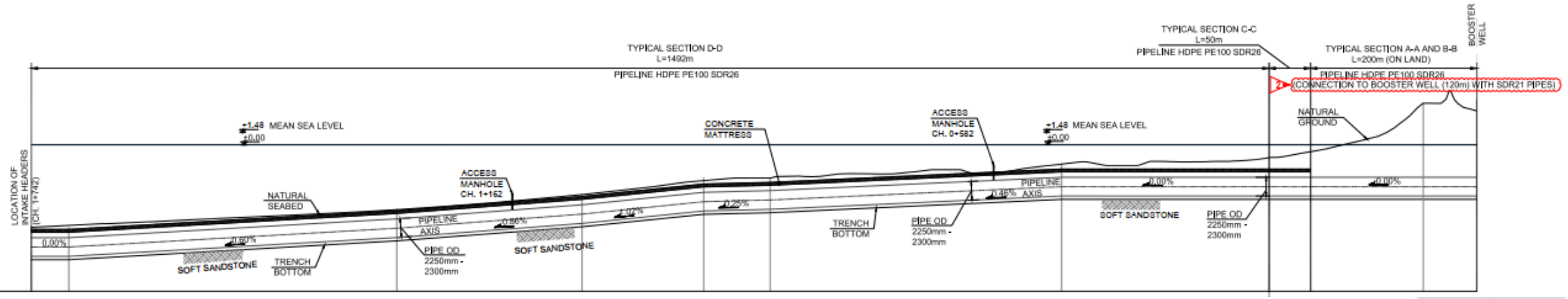


Seawater Intake



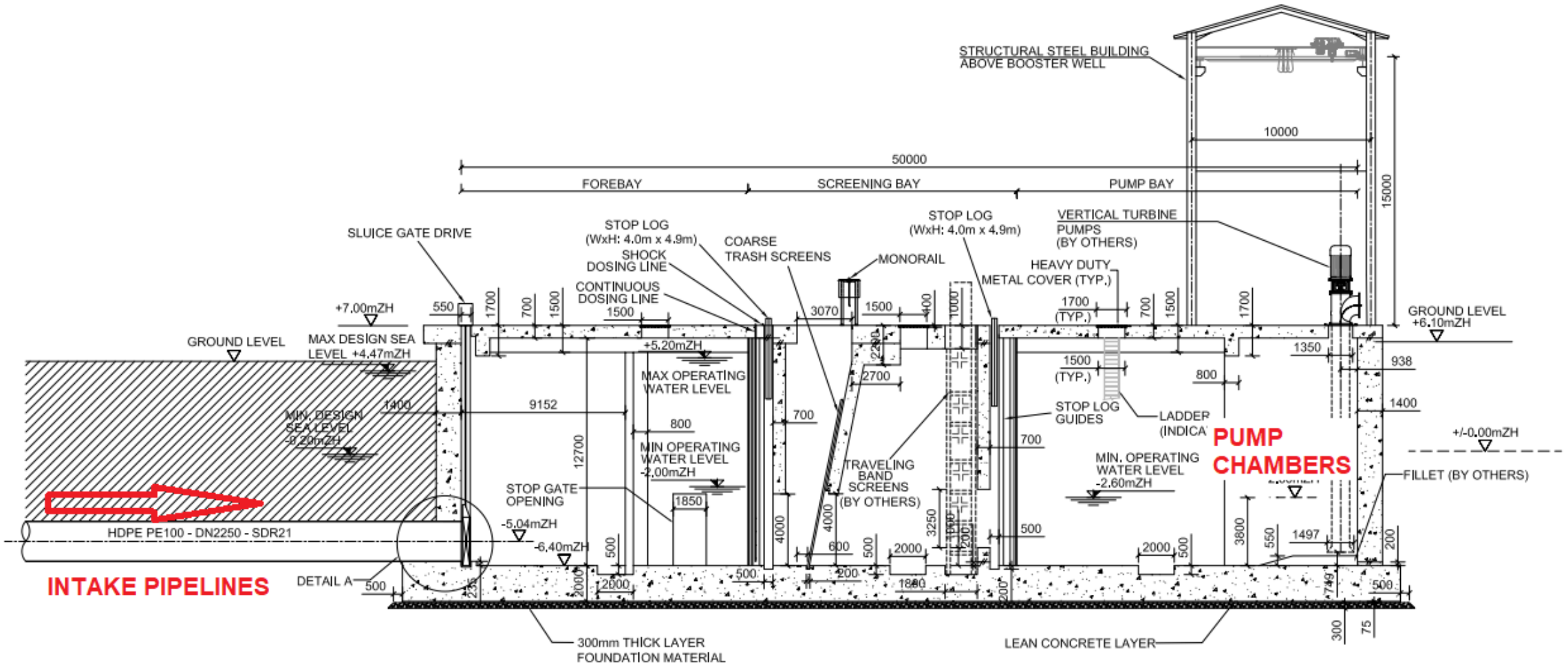
SEAWATER INTAKE GENERAL ARRANGEMENT

Scale: 1:3000



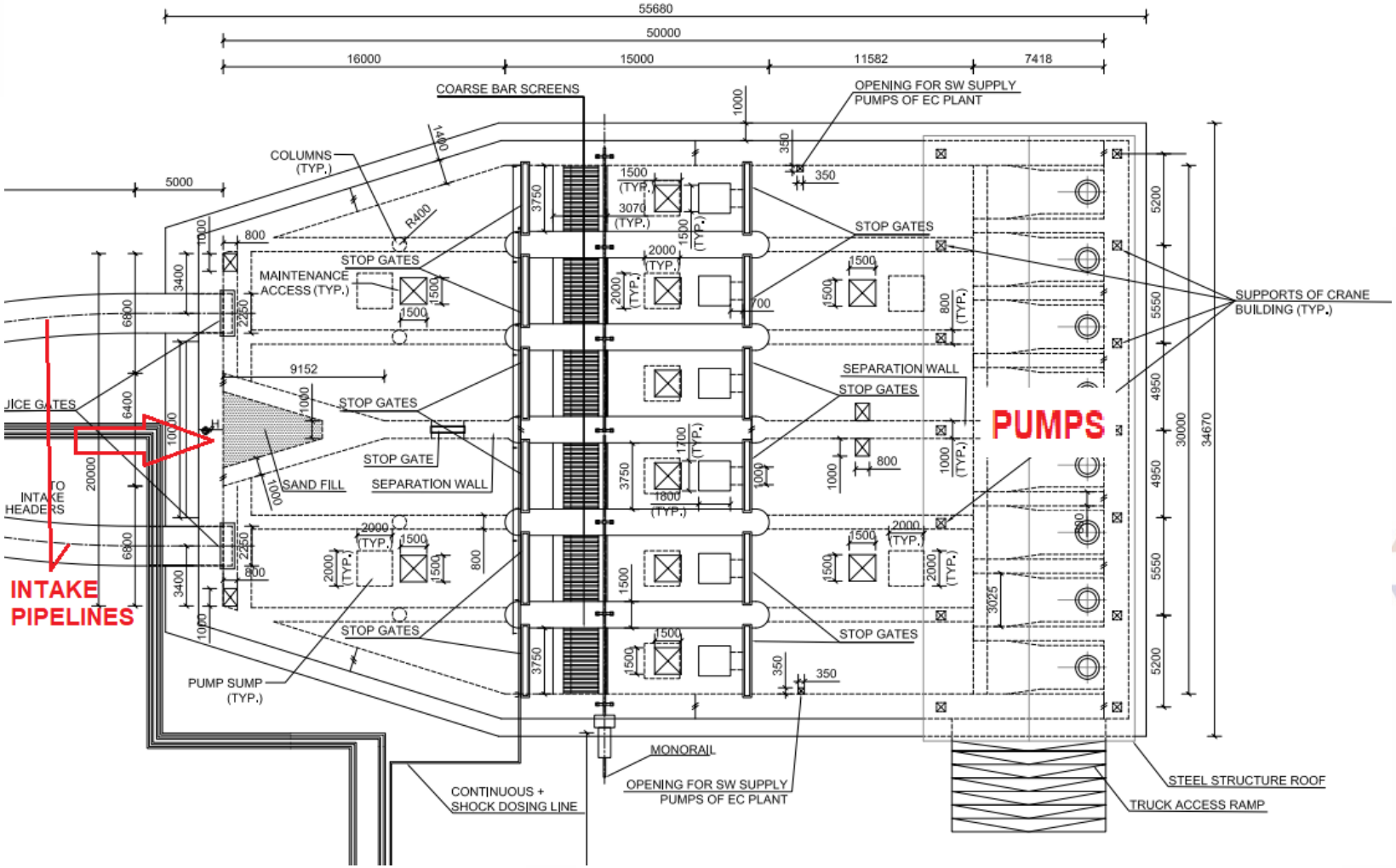
Seawater Intake

Booster Well Pumping Station



Seawater Intake

Booster Well Pumping Station



Seawater Intake

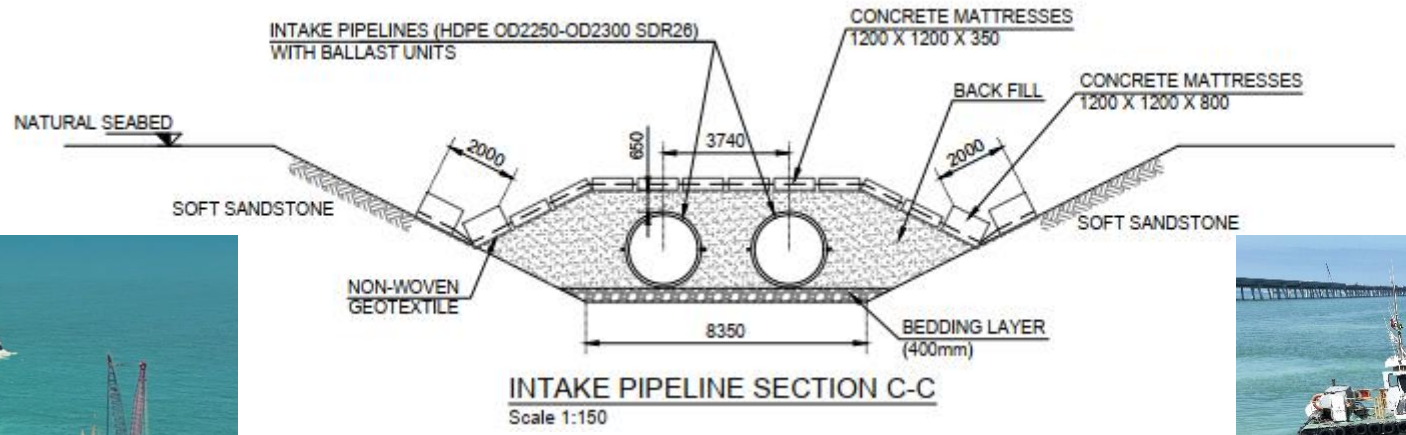
Booster Well Pumping Station

Seawater Intake

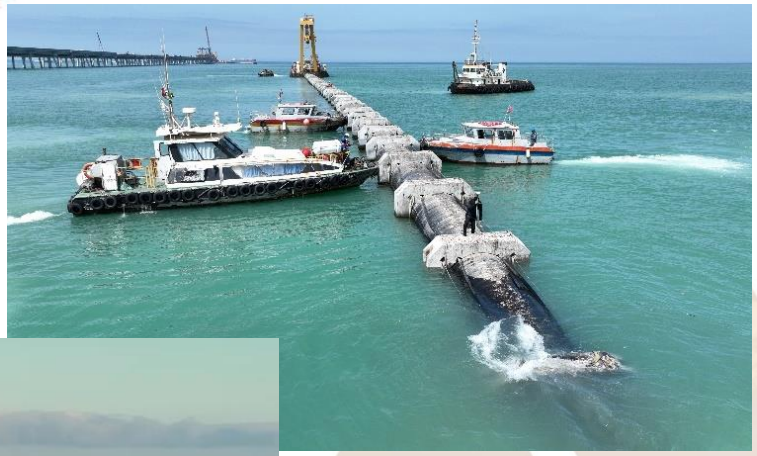
Booster Well Pumping Station

Seawater Intake

Subsea HDPE pipelines

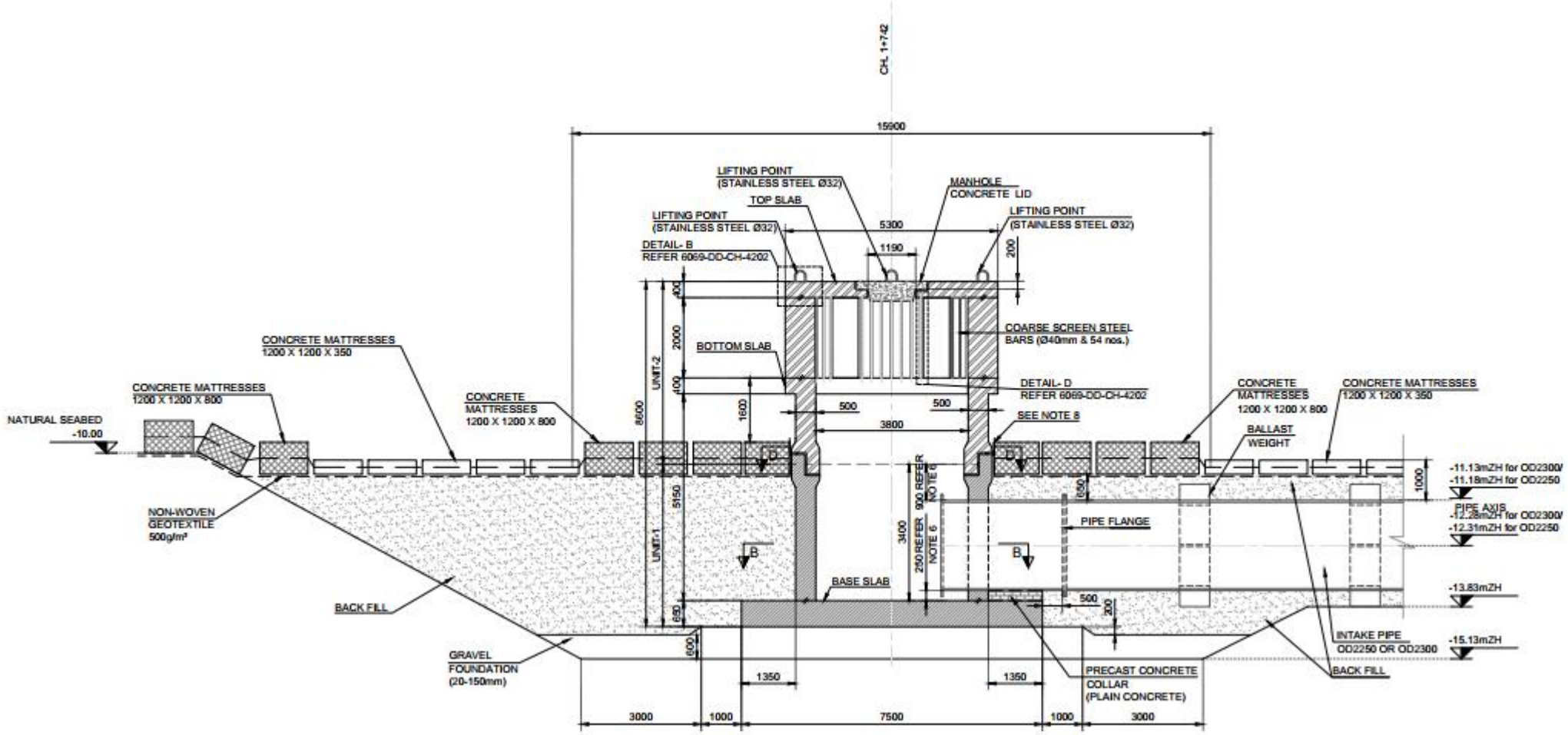


INTAKE PIPELINE SECTION C-C
Scale 1:150



Seawater Intake

Header Structure



Seawater Intake

Header Structure

Project quantities

- **Structural Steel:** 42,500 Tons
- **Concrete:** 340,000 m3
- **Black Reinforcement:** 32,500 Tons
- **Galvanized Reinforcement:** 23,500 Tons
- **HDPE Pipelines 2300mm:** 2 x 1750m = 3,500 lm
- **Rocks & fill:** 3,252,965 Tons
- **Dredging:** 800,000 m3

ARCHIRODON