



SOLETANCHE BACHY

10TH INDIAN OCEAN PORTS & LOGISTICS 2016

SEM NORDEV, REUNION ISLAND
THURSDAY 28 AND FRIDAY 29 JANUARY 2016

OVERVIEW OF PORT WORKS FOCUS ON « LA RÉUNION »

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2016

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SOLETANCHE BACHY

Revenue 2015: 1,5 billion euros

- A global contractor with expertise in civil and geotechnical engineering
- A wide range of clients in **public** and **private** sectors:
 - Central and local government
 - Industrial
 - Property developers
 - Project promoters
 - Operators infrastructure
 - General building and civil engineering contractors
- **16** Innovation prizes awarded by the French civil works federation
- **12** ground technology subsidiaries



Port 2000, Le Havre - France



Palm Jebel Ali, Dubaï



Al Raha Beach, Abu Dhabi

* Revenue including the share of revenue in jointly controlled companies

Equipment



GEOMIX®



Hydrofraise HC05®



TRENCHMIX®



piles



KS 3000®



JET PLUS®



Mud drilling

Our scope

Engineering works interacting with the ground:

- Underground car parks
- Tunnels and metros
- Port construction
- Storage tanks and drainage
- Environmental protection

Special engineering works:

- Urban excavations
- Dams
- Foundations for building or civil engineering works
- Slope stabilization
- Structural refurbishment and underpinning works



A worldwide presence

Projects
completed in over
100 countries

Established in over **40**
countries

A worldwide
network of over
900 engineers and
executives

Over **10850**
employees, more
than **60** nationalities

Local and **global**
presence

MARINE WORKS

I. Creation of structures

1. Conception and construction of quays
 - A. Danish quay
 - B. Diaphragm wall quay
 - C. Mixed section steel quay (combi-wall)
 - D. Quay built with caissons
2. Dry docks
3. Offshore jetties and wharves
4. Port facilities
 - A. Dolphins
 - B. Hard standings

II. Remediation and maintenance of existing structures

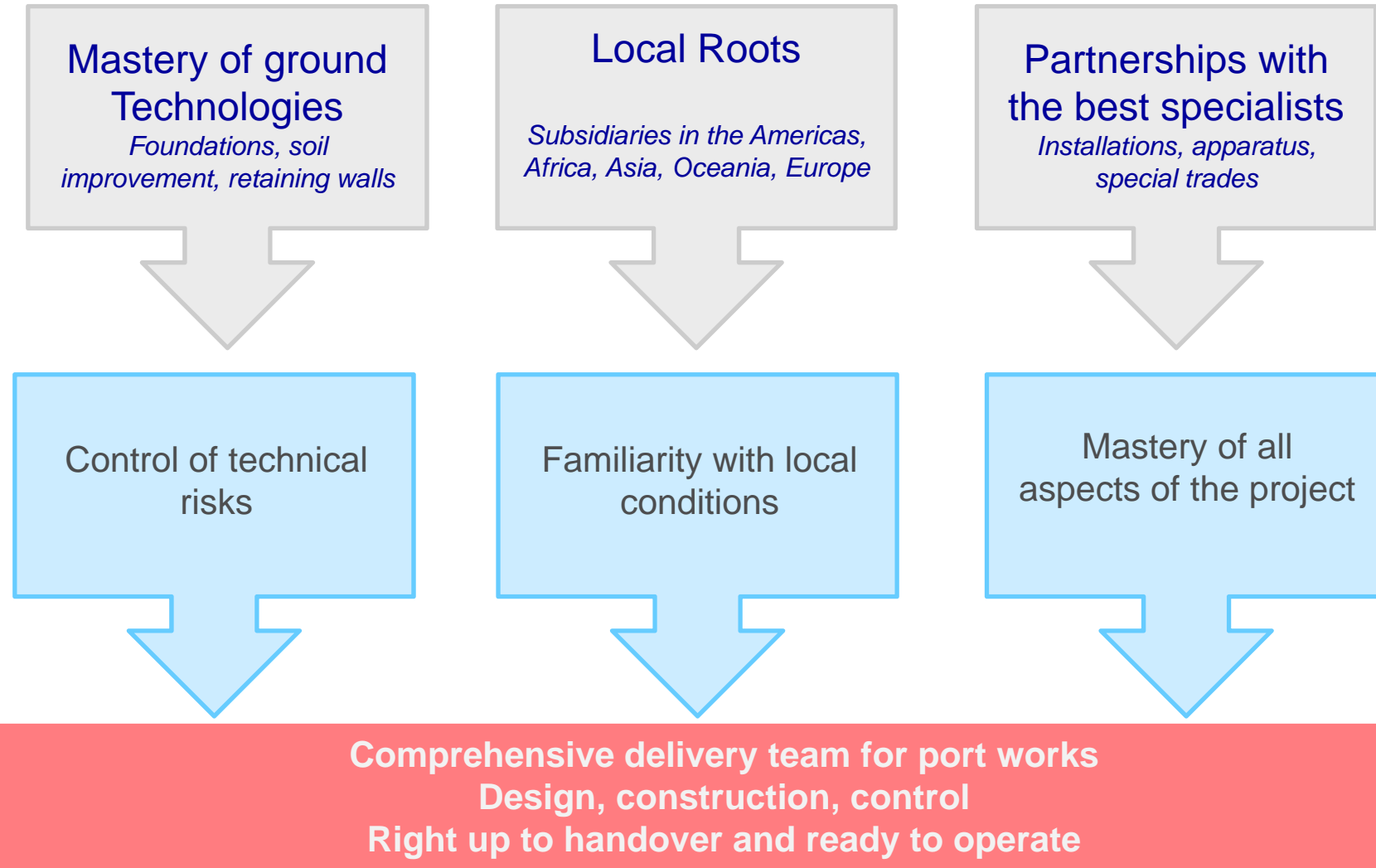
1. Remediation of quays
2. Deepening of existing quays
3. Widening of dry docks

Diversity in infrastructure types

- All types of port terminal :
 - Container
 - Mineral, bulk
 - Oil & Gas
 - Cruise ships
 - Marinas
- River and maritime ports



A specialist in such undertakings for better risk management



Our main references for world ranking operators

Country	Project	Date	Amount (M€)	Owner
United Arab Emirates/Dubai	Jebel Ali - Terminal 3	in progress	35	DP World
Togo	Lomé - Terminal Bolloré	in progress	41	Bolloré
Uruguay	Montevideo - Muelle C	in progress	35	Autoridad Nacional de Puertos (ANP)
Colombia	Puerto Brisa	2013	50	Puerto Brisa SA
Colombia	Buenaventura - Muelles 2, 3 & 4	2013	17	Sociedad Portuaria de Buenaventura
Argentina	Buenos Aires - Terminales Río de la Plata	2012	11	Dubai Port - Terminales Río de la Plata SA
Mexico	Altamira - Terminal Mc Dermott	2012	18	Mc Dermott
Benin	Cotonou - Terminal Bolloré	2011	51	Millenium Challenge Authority MCA
France	Le Havre - Port 2000 (postes 5-10)	2010	218	Port Autonome du Havre PAH
Uruguay	Montevideo - Terminal Cuenca del Plata	2009	27	Terminal Cuenca del Plata SA (TCP)
Colombia	Cartagena - Muelles 3 & 4	2008	16	Terminal Maritimo Muelles El Bosque
United Arab Emirates/Abu Dhabi	Al Raha Beach	2008	200	Aldar Properties PJSC

Our Main References

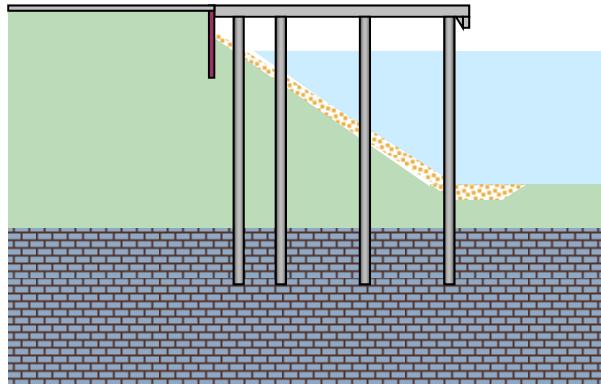


I. Creation of structures

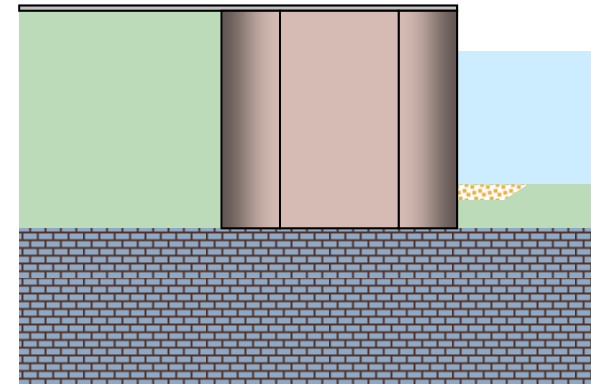
1. Conception and construction of quays
 - a) Danish Quay
 - b) Diaphragm wall quay
 - c) Mixed section steel quay (combi-wall)
 - d) Quay built with caissons

2. Dry docks
3. Offshore jetties and wharves
4. Port facilities
 - a) Dolphins
 - b) Hard standings

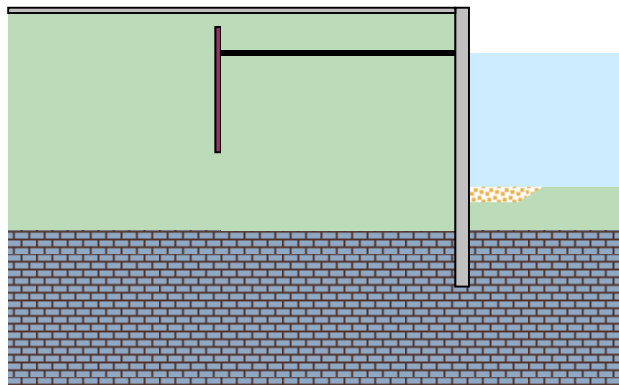
1. Conception and construction of quays



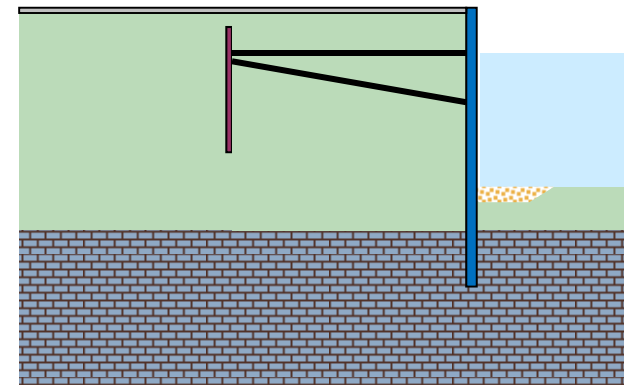
Danish quay



Quay built with caissons



Diaphragm wall quay

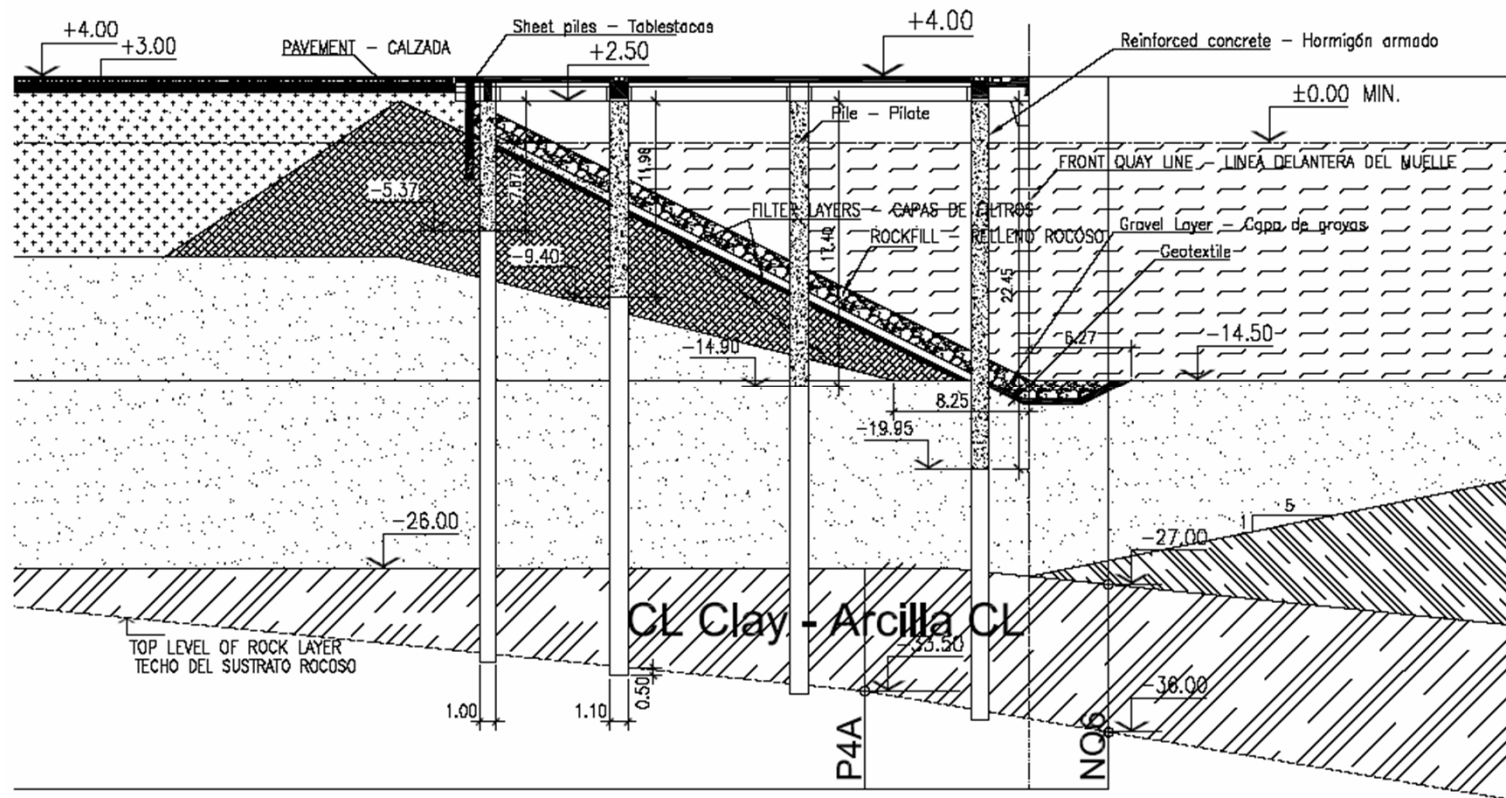


Mixed section steel quay

1. Terminal Cuenca del Plata, Uruguay – Danish quay



1a) Quai danois – Terminal Cuenca del Plata, Uruguay



Coupe sur le quai danois de Montevideo, Uruguay

1a) Quai danois – Terminal Cuenca del Plata, Uruguay

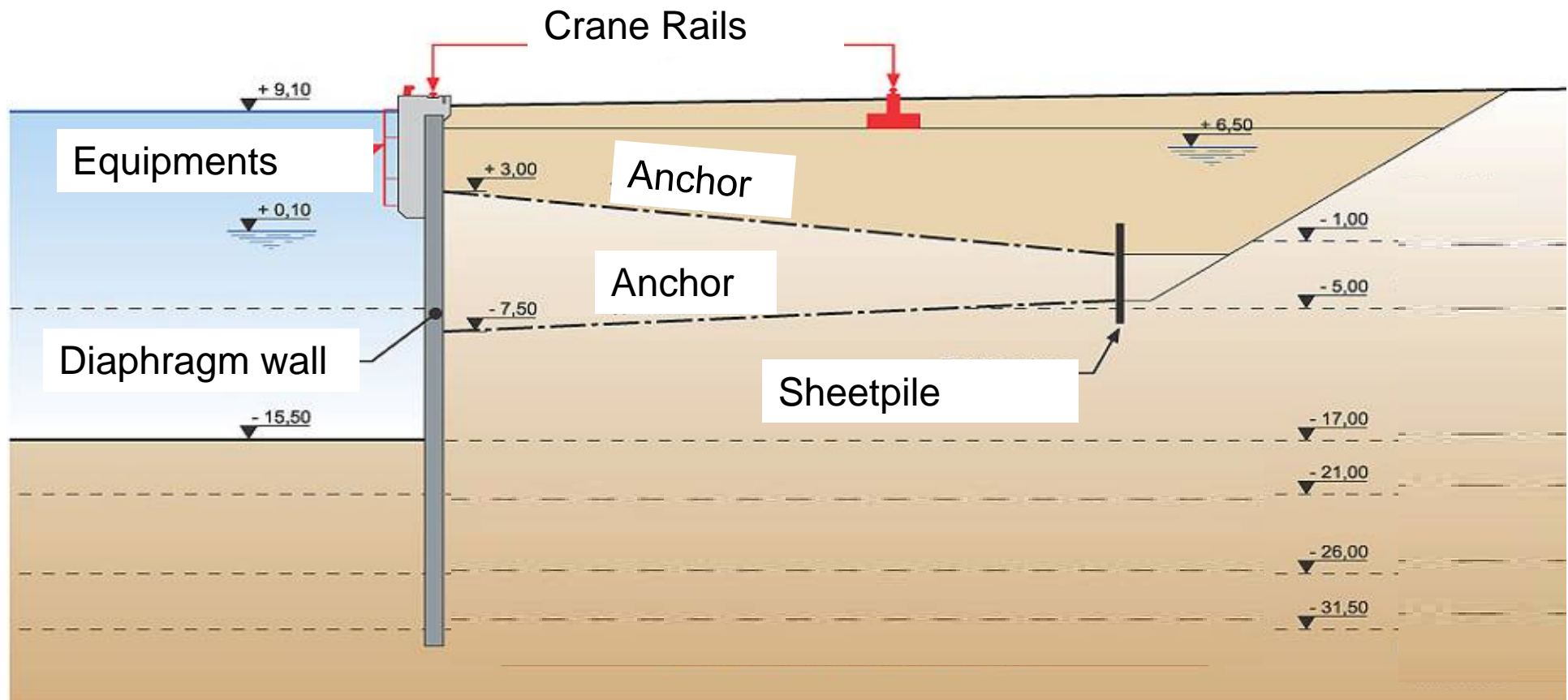


Solution de construction sans moyens nautiques : **plates-formes modulaires**

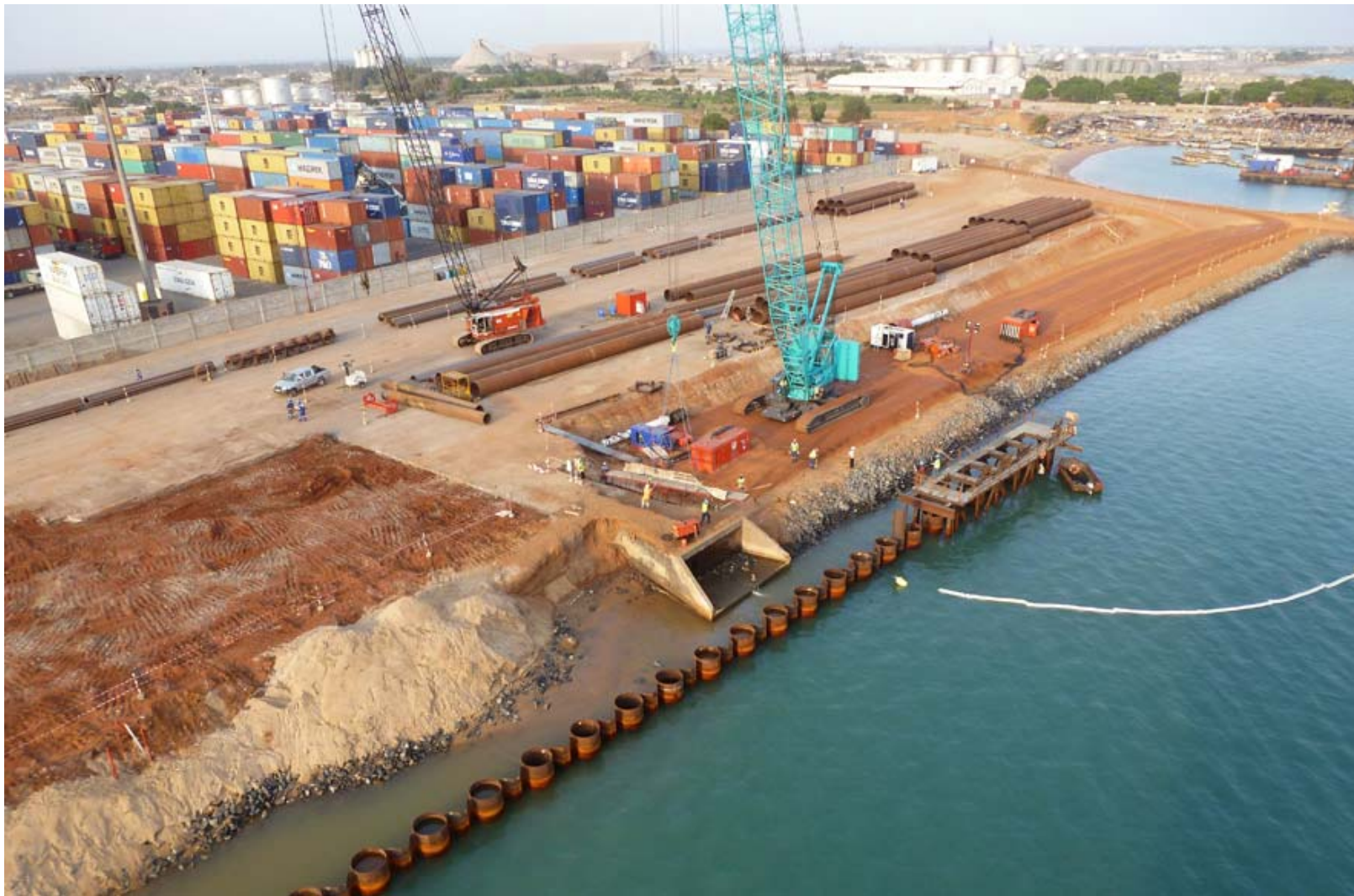
1. Le Havre Port, France – Diaphragm wall quay



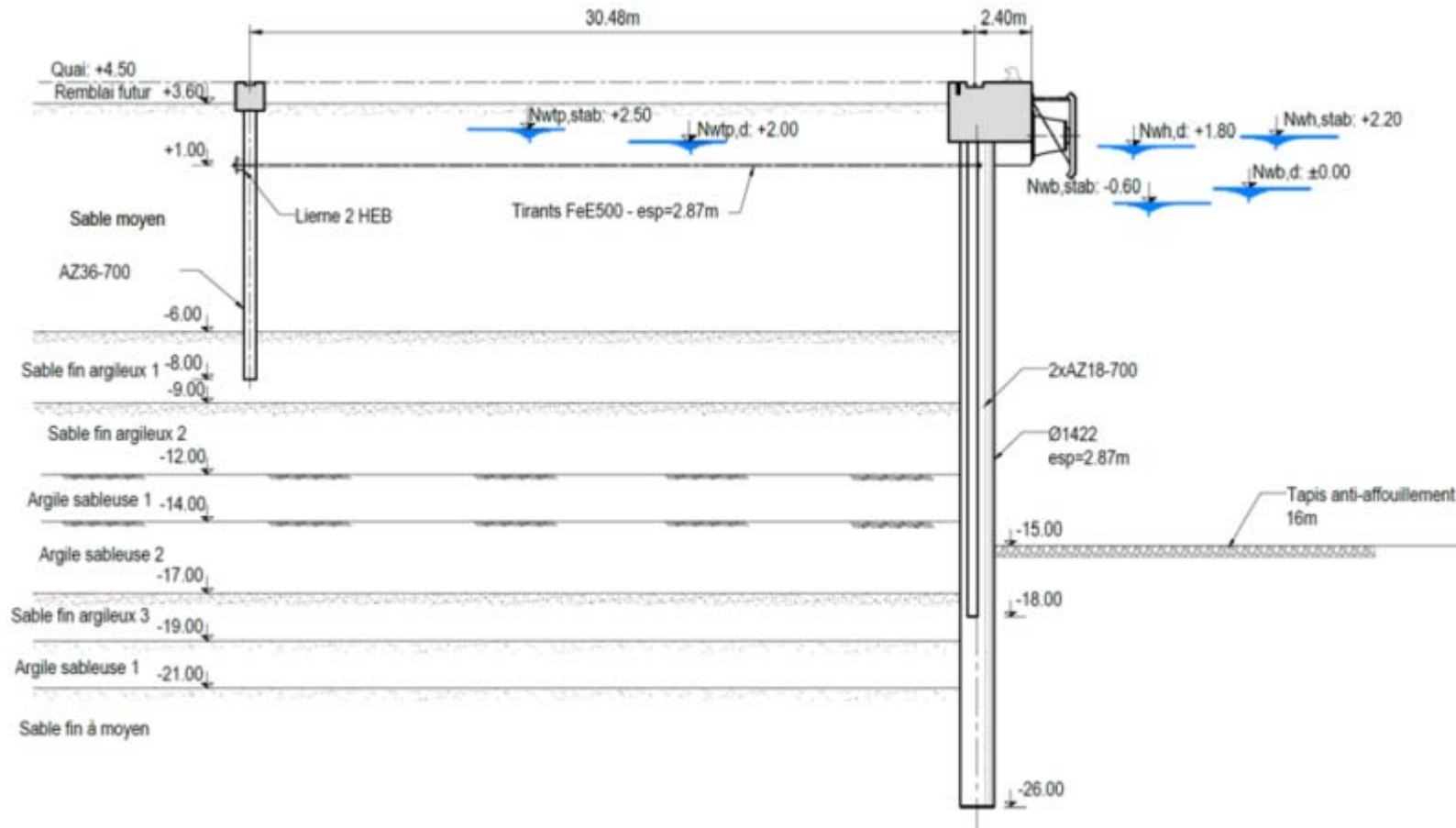
1. Le Havre Port, France – Diaphragm wall quay



1. Lomé Port, Togo – Mixed section steel quay (combi-wall)



1c) Quai en rideau mixte acier – Terminal Bolloré, Lomé (Togo)



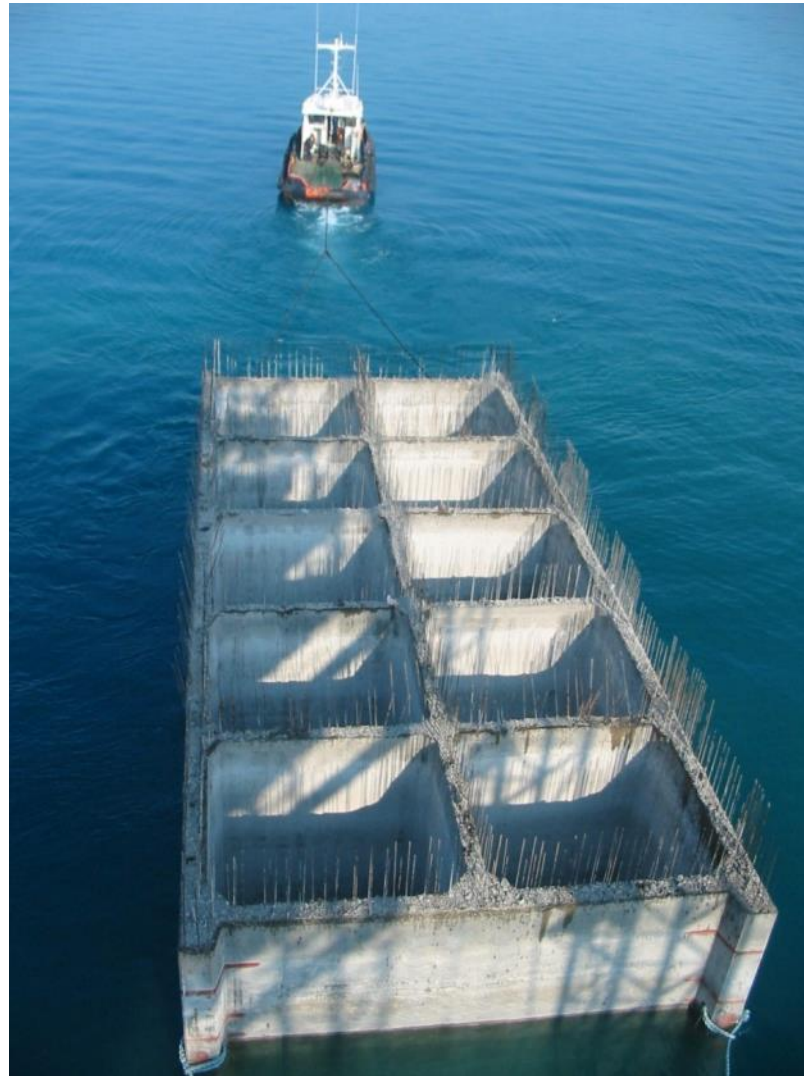
Coupe sur le quai rideau mixte acier de Lomé, Togo

1c) Quai en rideau mixte acier – Terminal Bolloré, Lomé (Togo)

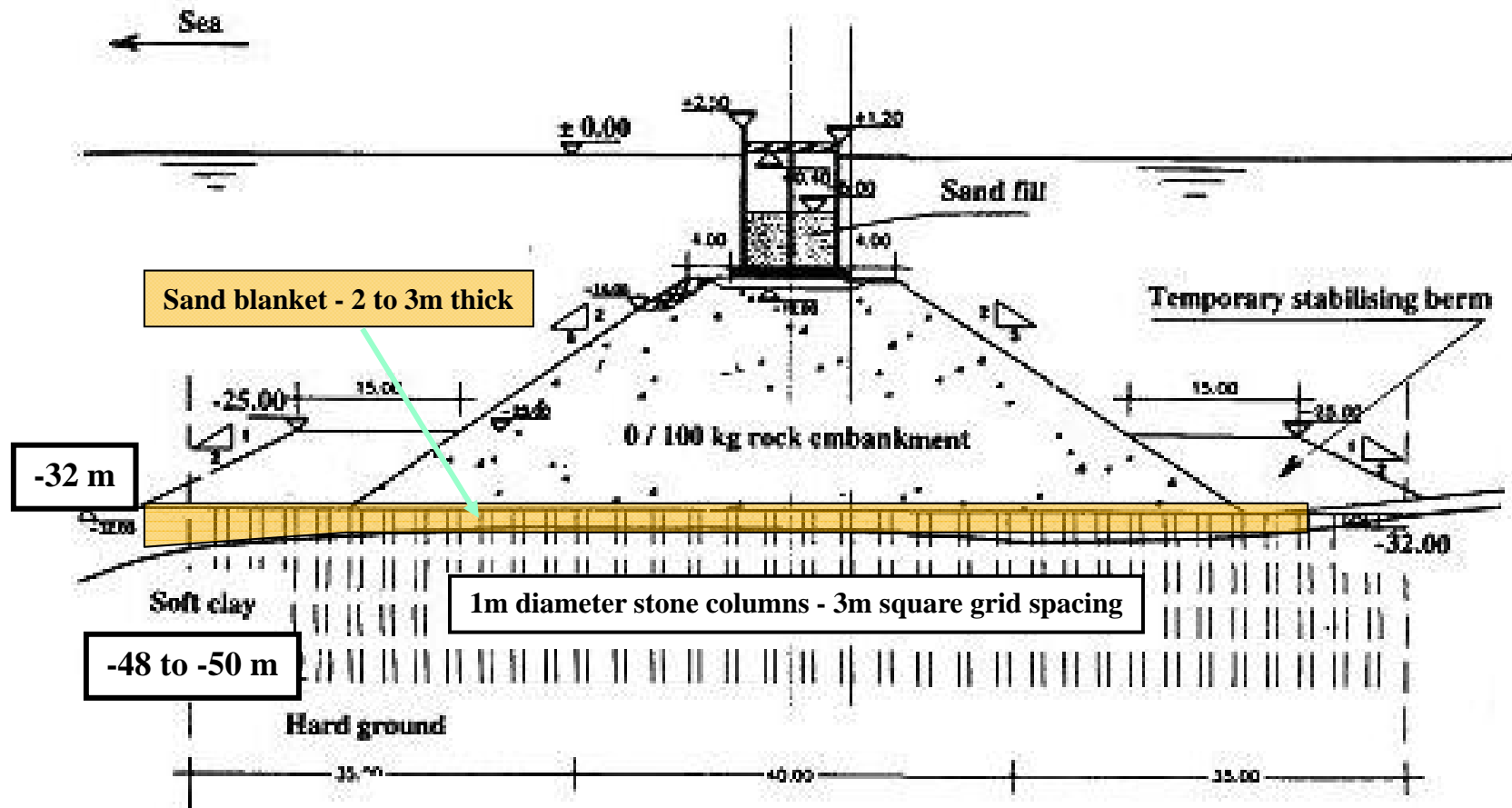


Mur de quai et rideau d'ancrage : Avant la pose des tirants

1. Patras, Greece – Quay built with caissons



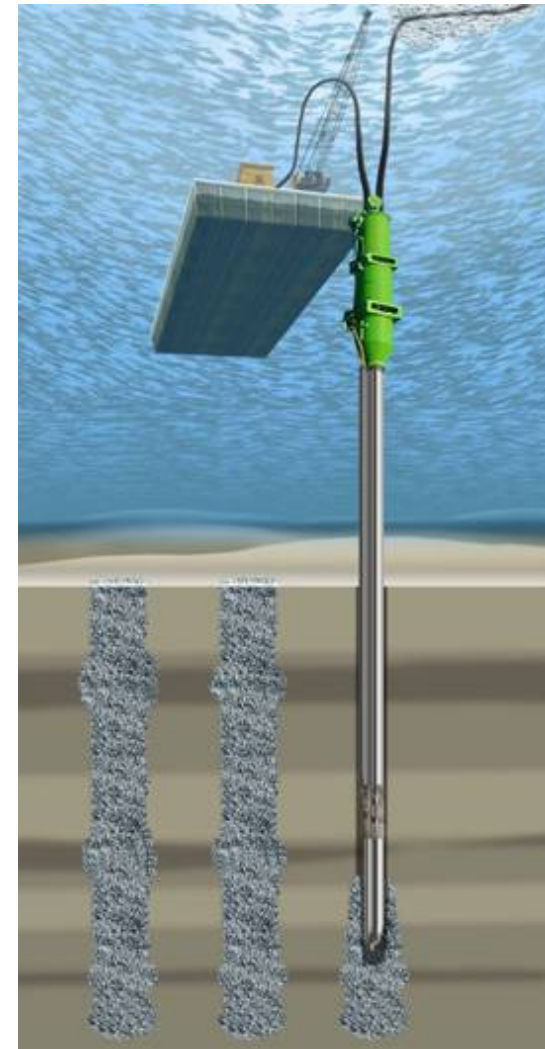
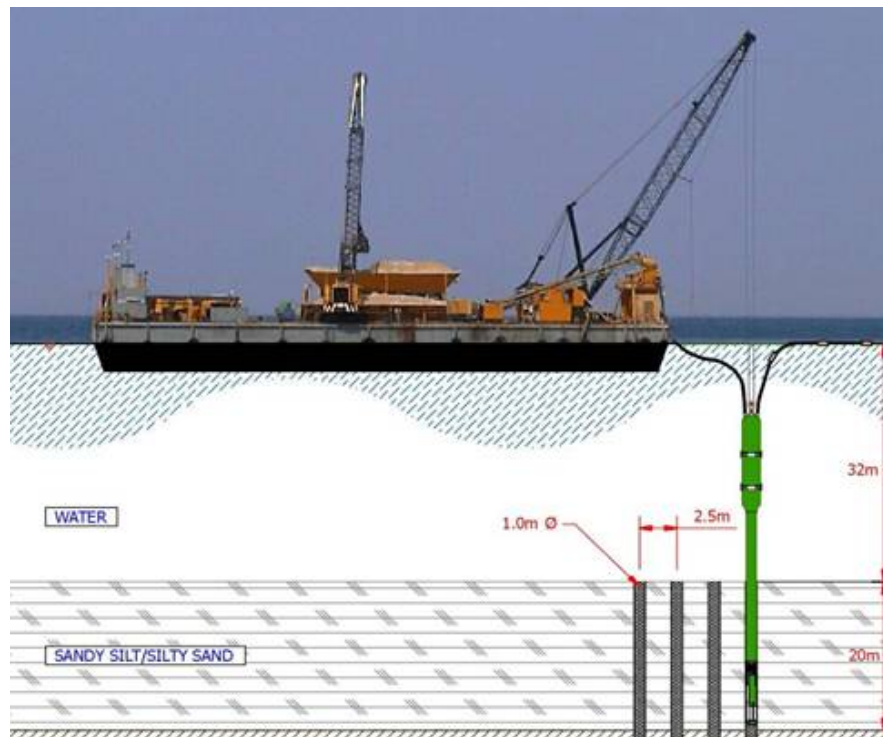
1d) Quai en caissons – Patras (Grèce)



Assise de la digue renforcée par des colonnes ballastées (18 m de long, 50 m de profondeur)

1d) Quai en caissons – Patras (Grèce)

- Stone columns



1. Quays: A comparative approach to selection criteria

Advantages and disadvantages of different construction		Danish Quay	Diaphragm wall quay	Combi-wall	Caisson quay
Conditions of use	Heavy rail mounted gantry cranes	Green	Green	Orange	Red
	Bulk and heavy loads	Orange	Green	Orange	Green
	Light loads	Orange	Orange	Green	Orange
Location of the quay	Seismic zone	Green	Orange	Orange	Orange
	Rough water (impact absorption)	Green	Red	Red	Orange
	Excavation of dock	Orange	Green	Orange	Red
	Off shore structure	Green	Orange	Green	Orange
	Large draught	Green	Red	Orange	Green
	Strong current or sedimentation	Red	Green	Orange	Red
		Orange	Green	Green	Red
Elements needed for the construction	Marine plant	Orange	Green	Green	Red
	Precasting yard	Orange	Green	Green	Red
	Heavy land based plant	Orange	Green	Orange	Orange
	Dredging and fill	Orange	Green	Green	Red
Durability and maintenance	Vulnerability to vessel impact	Orange	Green	Red	Green
	Vulnerability to corrosion	Red	Green	Red	Green
	Durability and maintenance works	Orange	Green	Orange	Green
Potential for increasing draft at a later date		Red	Orange	Red	Orange

2. Dry Docks – Safina Dry Dock, Dubai



Safina Dry Dock, in operation

3. Offshore jetties and wharves – Puerto Brisa, Colombia



4a) Port facilities – Dolphins, breakwaters



Construction of dolphins - Fort de France
Muriers Cove breakwater - Guadeloupe

4b) Port installations – Hard standings



Palm Jebel Ali, Dubai – UAE

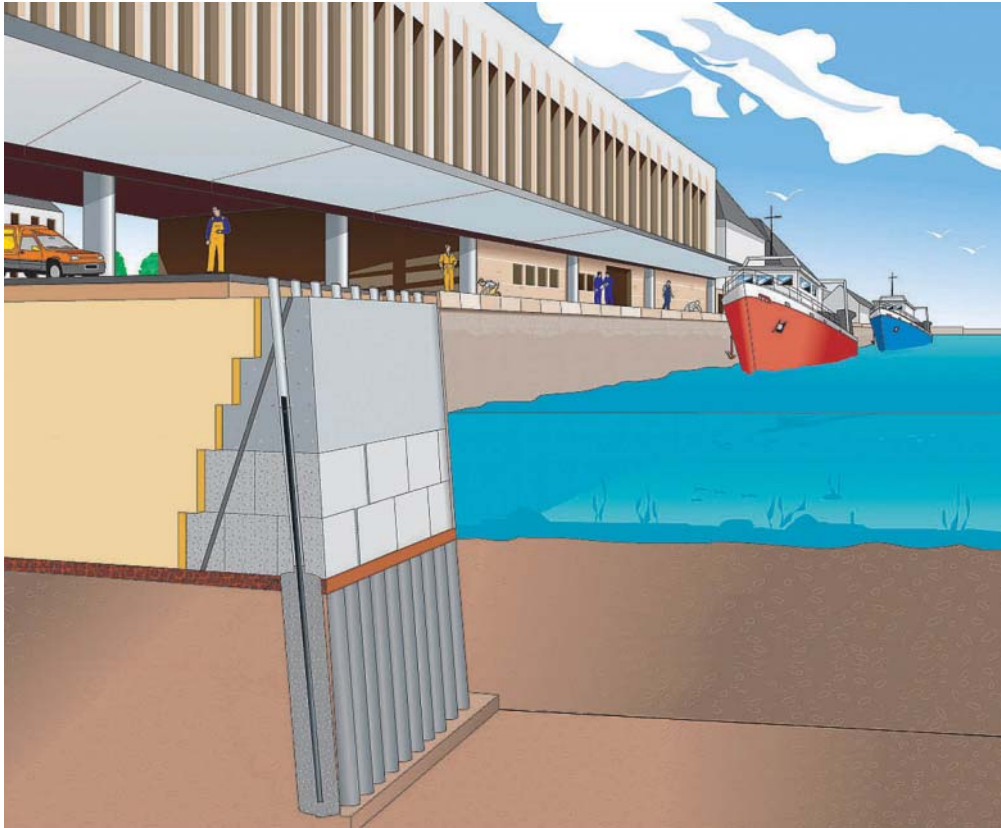


Penny's Bay, Hong Kong

II. Remediation and maintenance of structures

1. Remediation of quays
2. Deepening of existing quays
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1. Remediation of quays – Concarneau - France



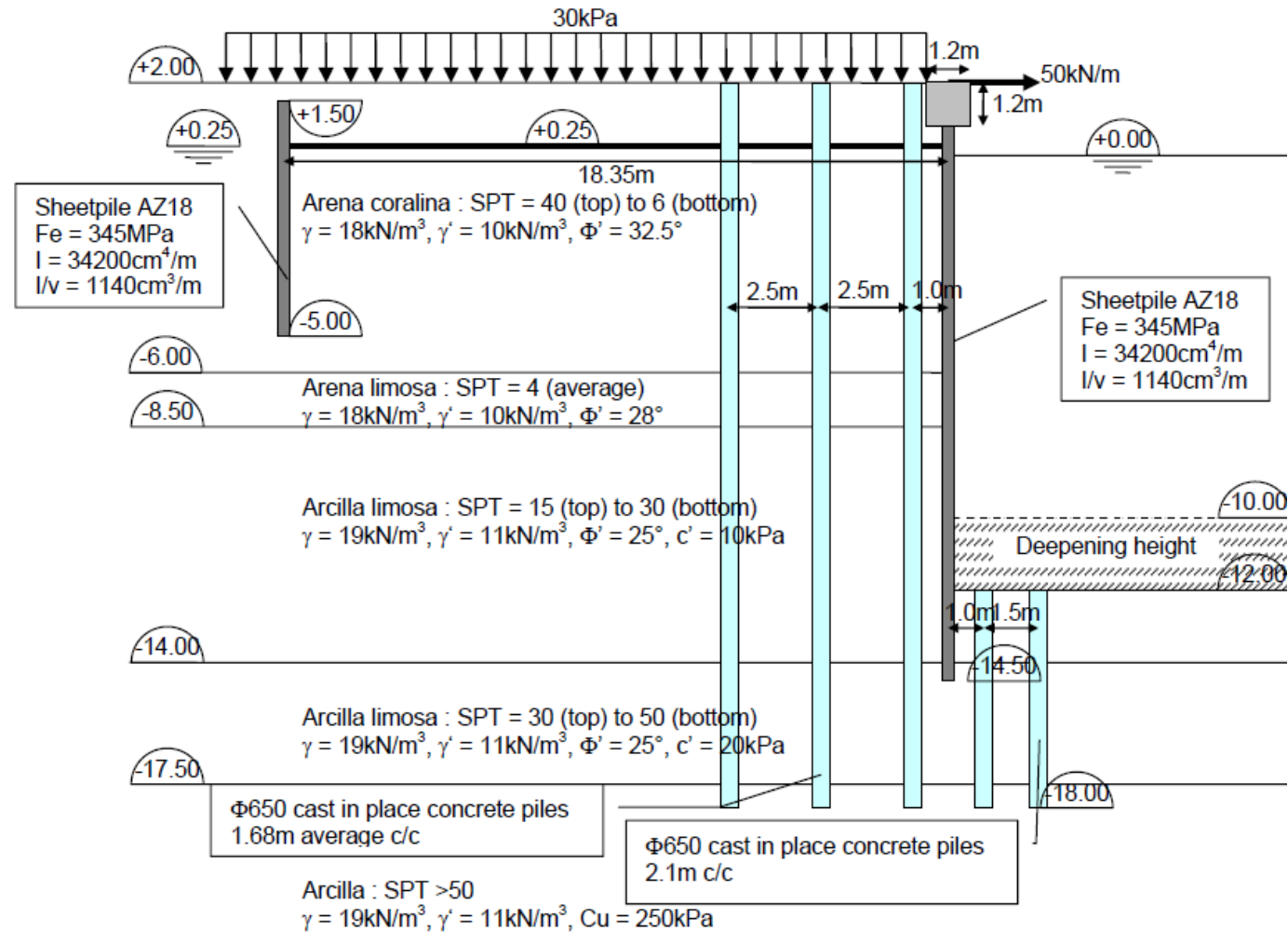
Concarneau, underpinning of the Carnot quay



2. Deepening of existing quays – Cartagena, TMM El Bosque



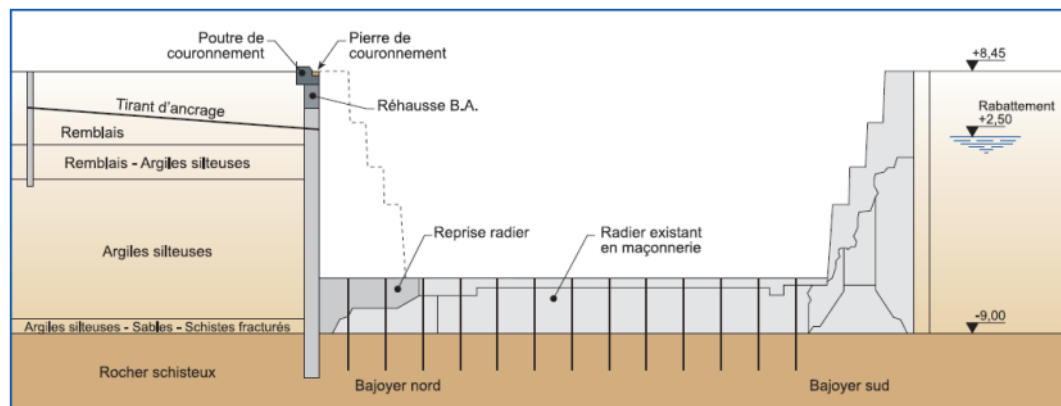
2. Approfondissement de quais – Cartagène, TMM El Bosque



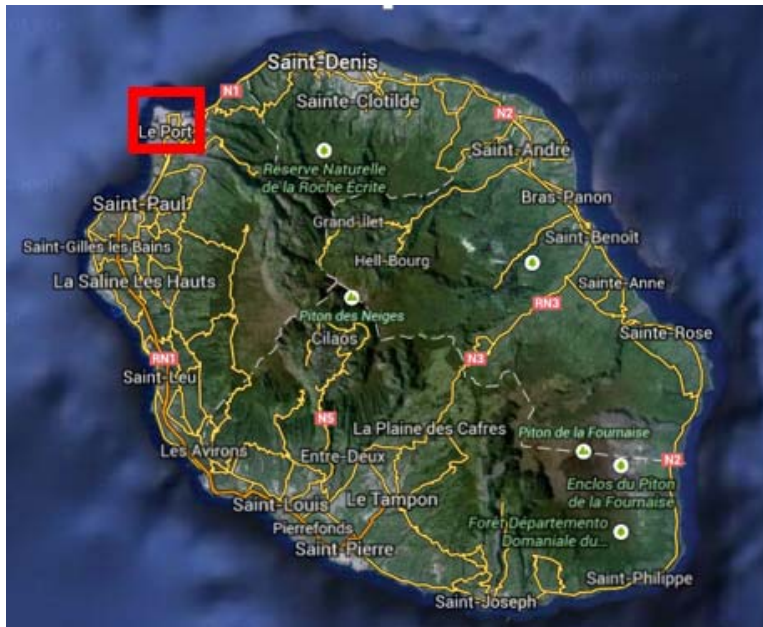
3. Widening of dry docks – Brest N°1 dry dock

Dry dock n°1, Brest – France *Widening and modernisation*

- Slurry cut-off walls for the excavations 2600 m²
- Diaphragm wall for new cross wall 2800 m²
- 168 Nos passive tie-backs
- 728 anchors for the base slab



« PORT EST »



Extension Port Est – Phase 2

Prolongement et rempiètement des quais

Maîtrise d’Ouvrage: MEDDE / DEAL 974



Maîtrise d’œuvre: ARTELIA Eau & Environnement – Branche maritime



Coordonnateur SPS: SOCOTEC Réunion



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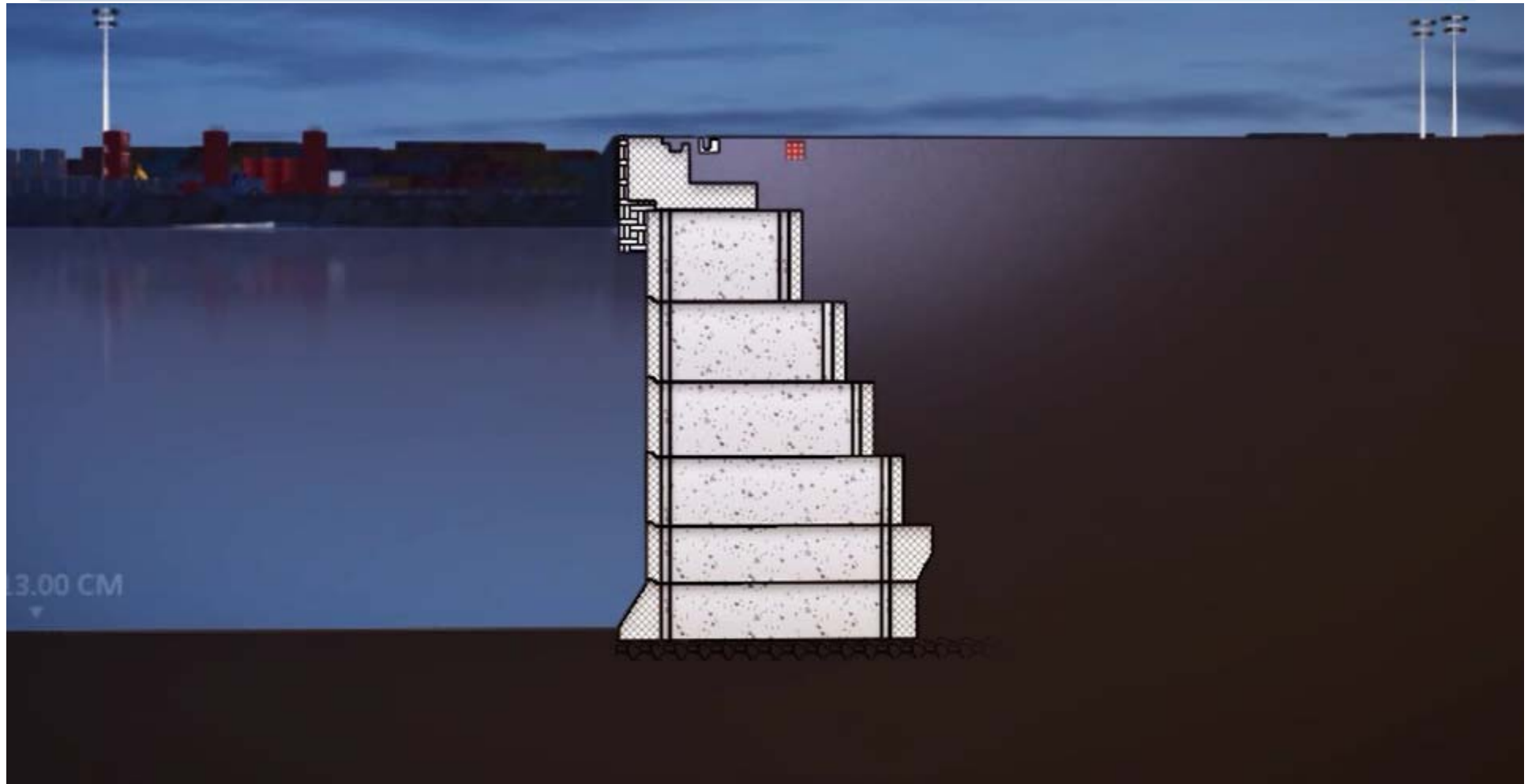
31,5 M€

FOCUS ON PORT EST

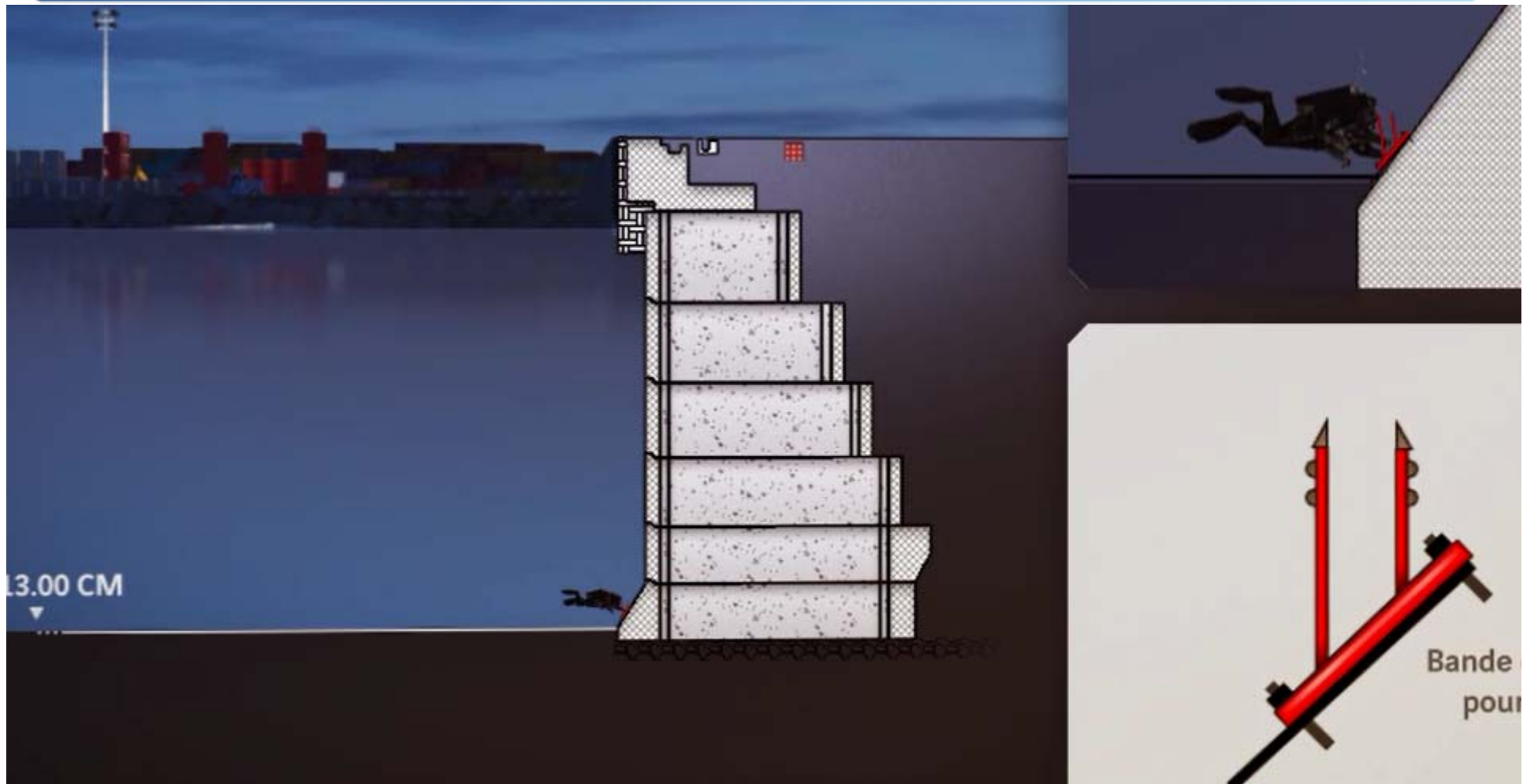




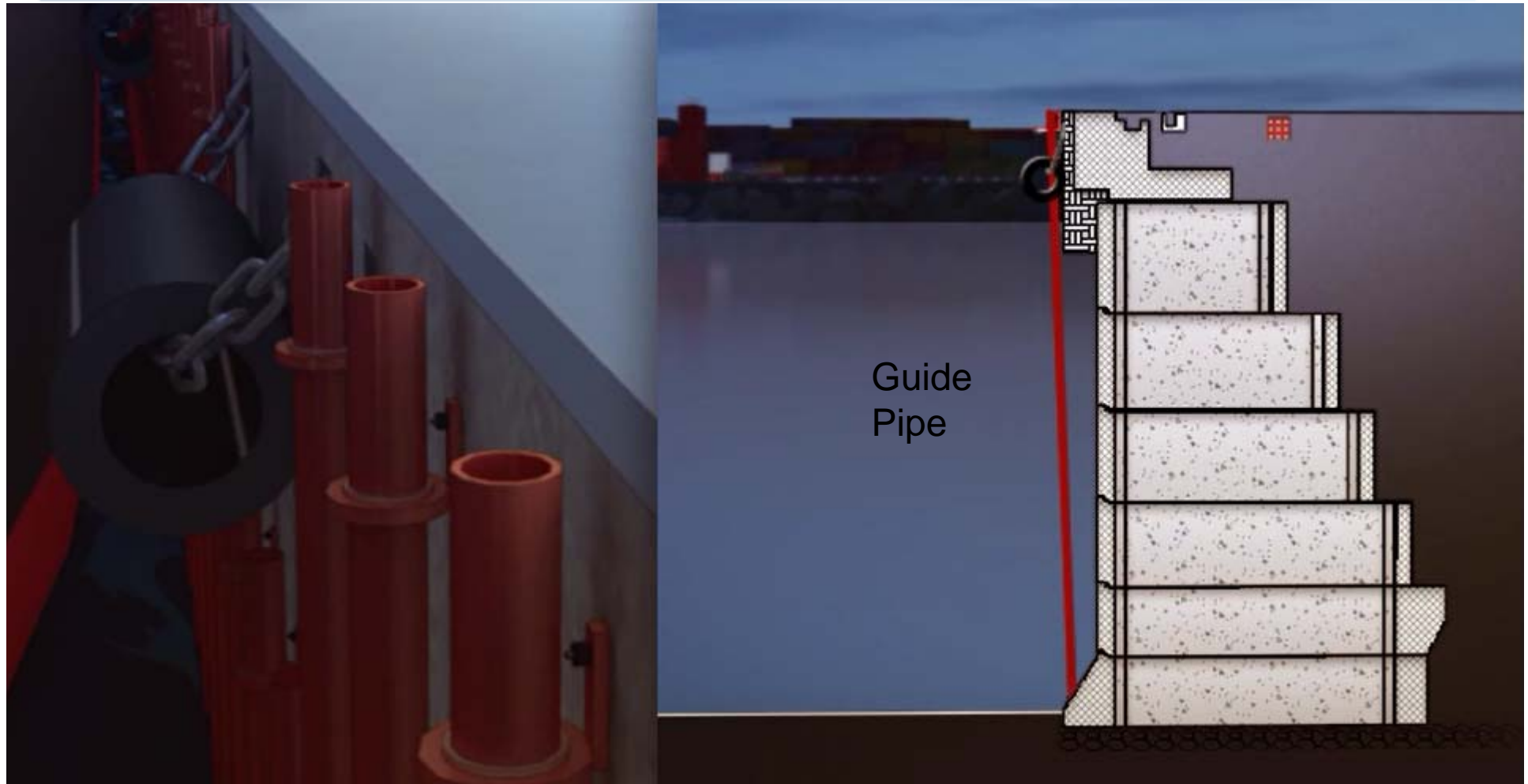
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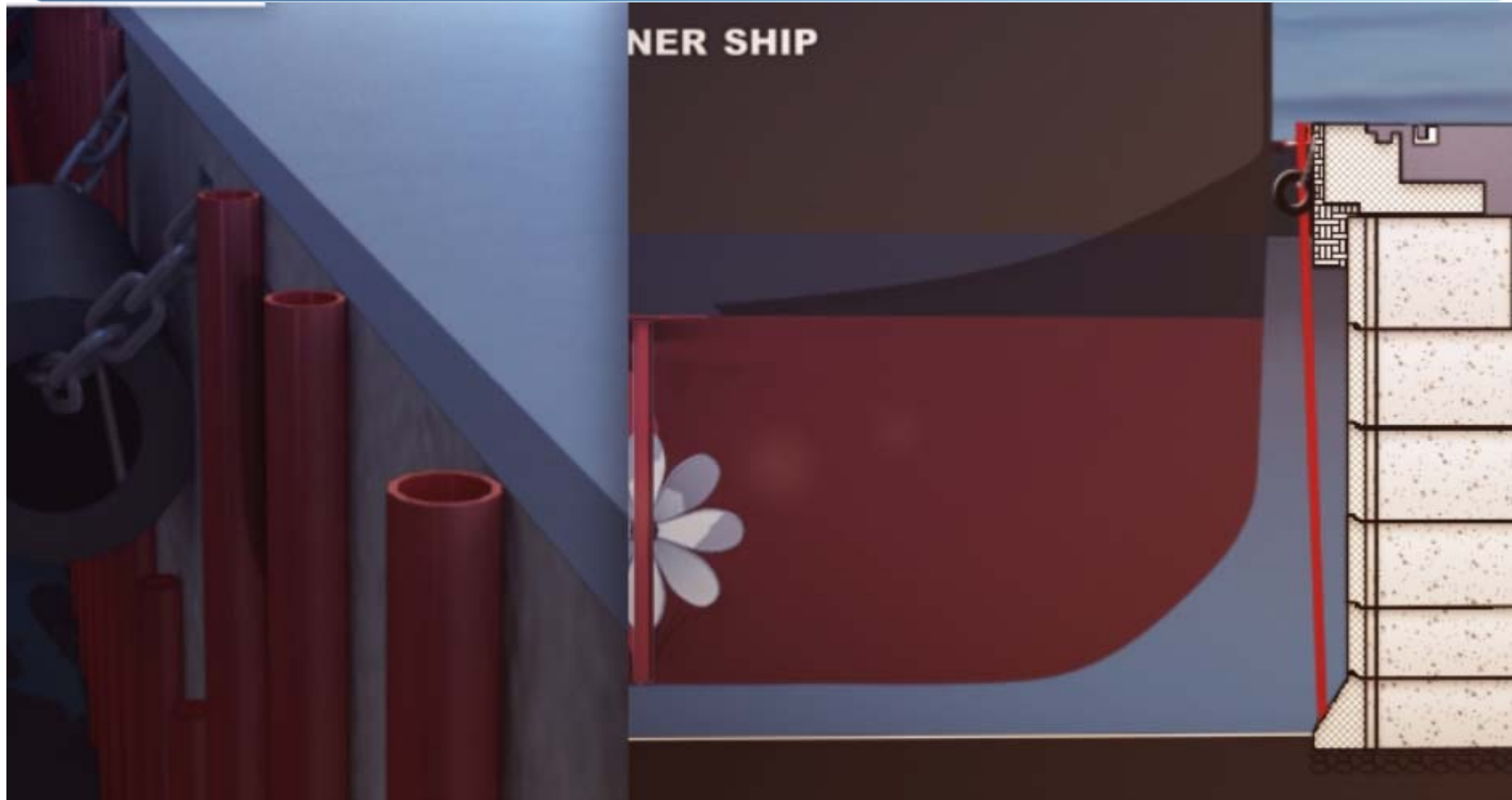
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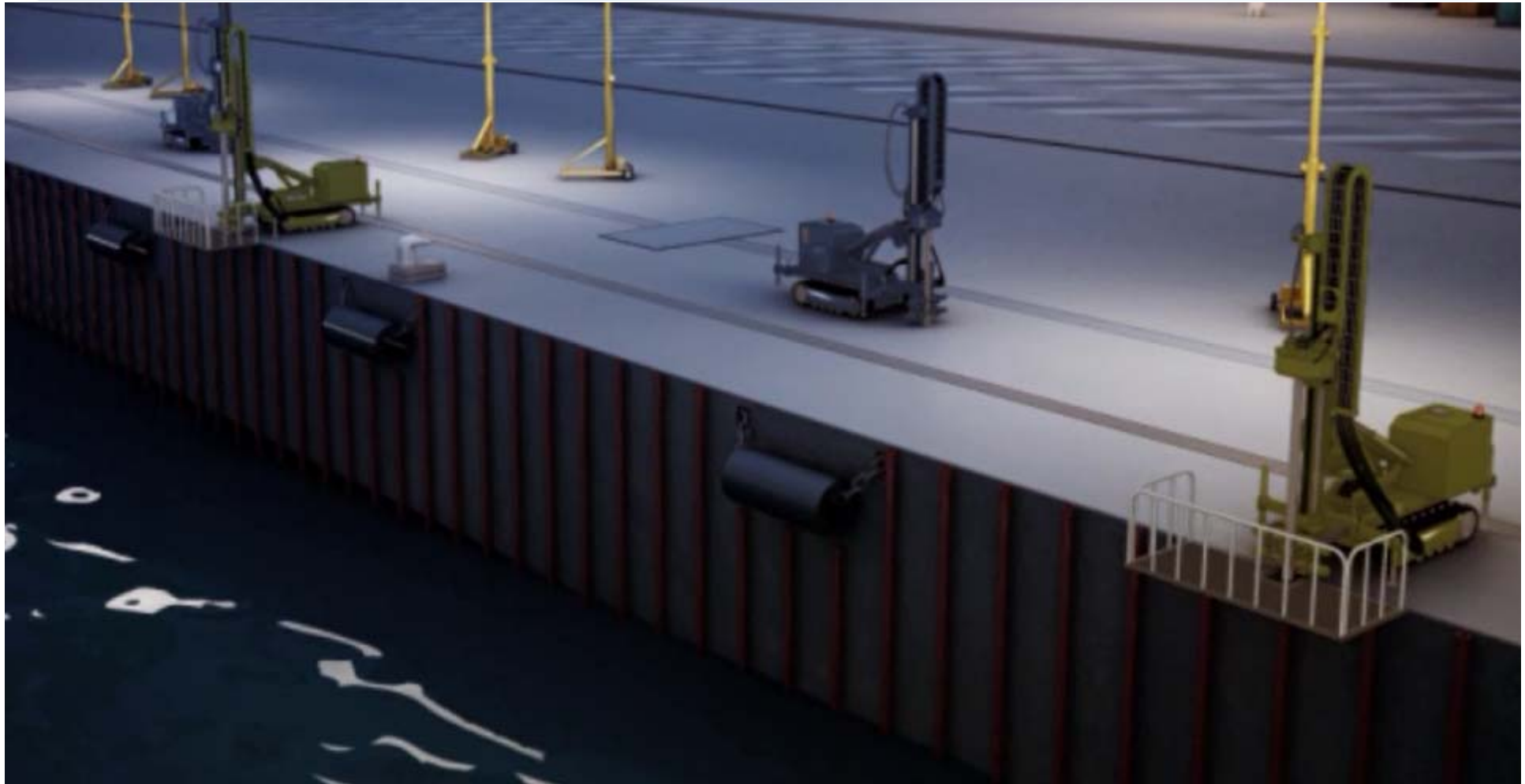
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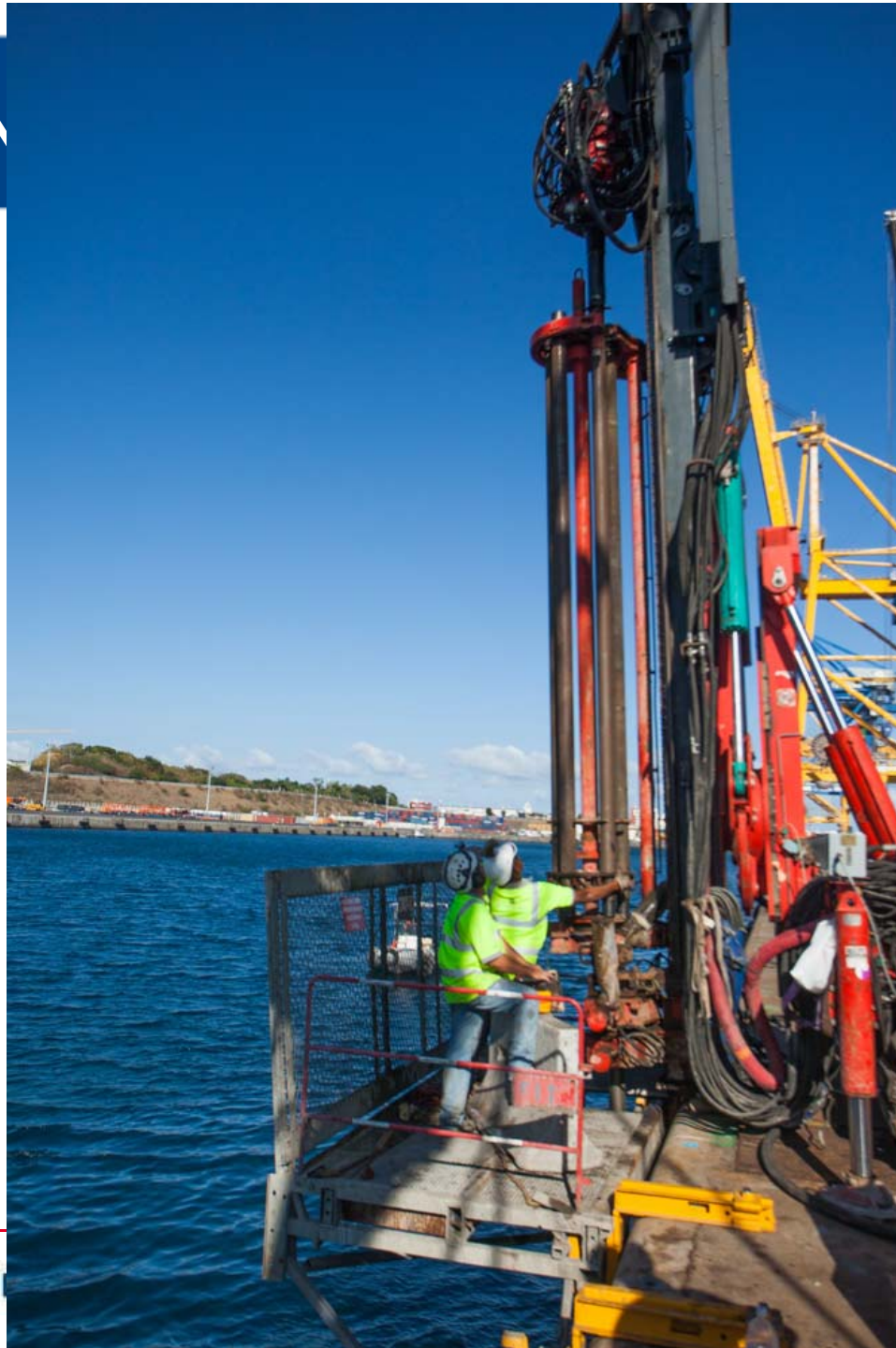


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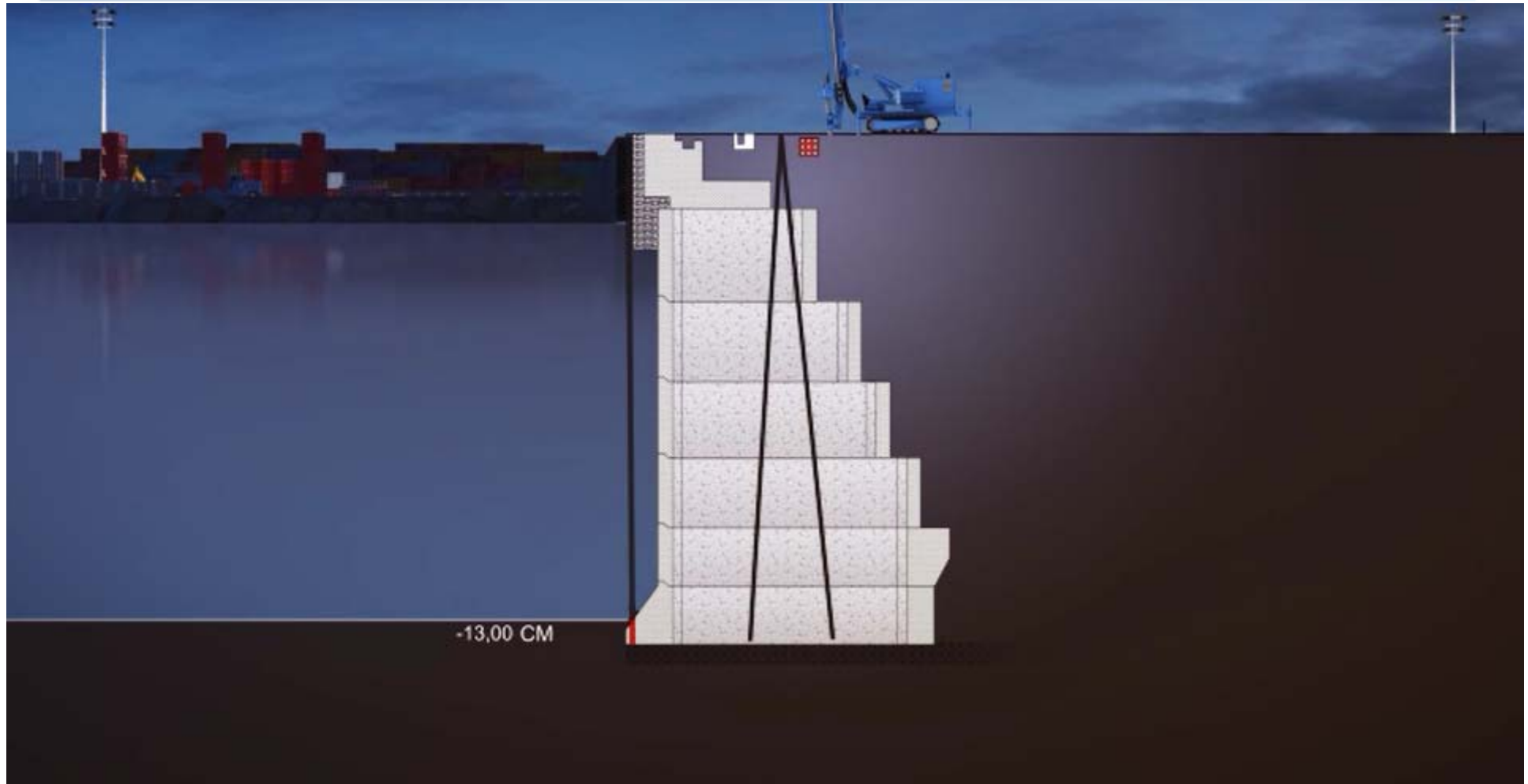




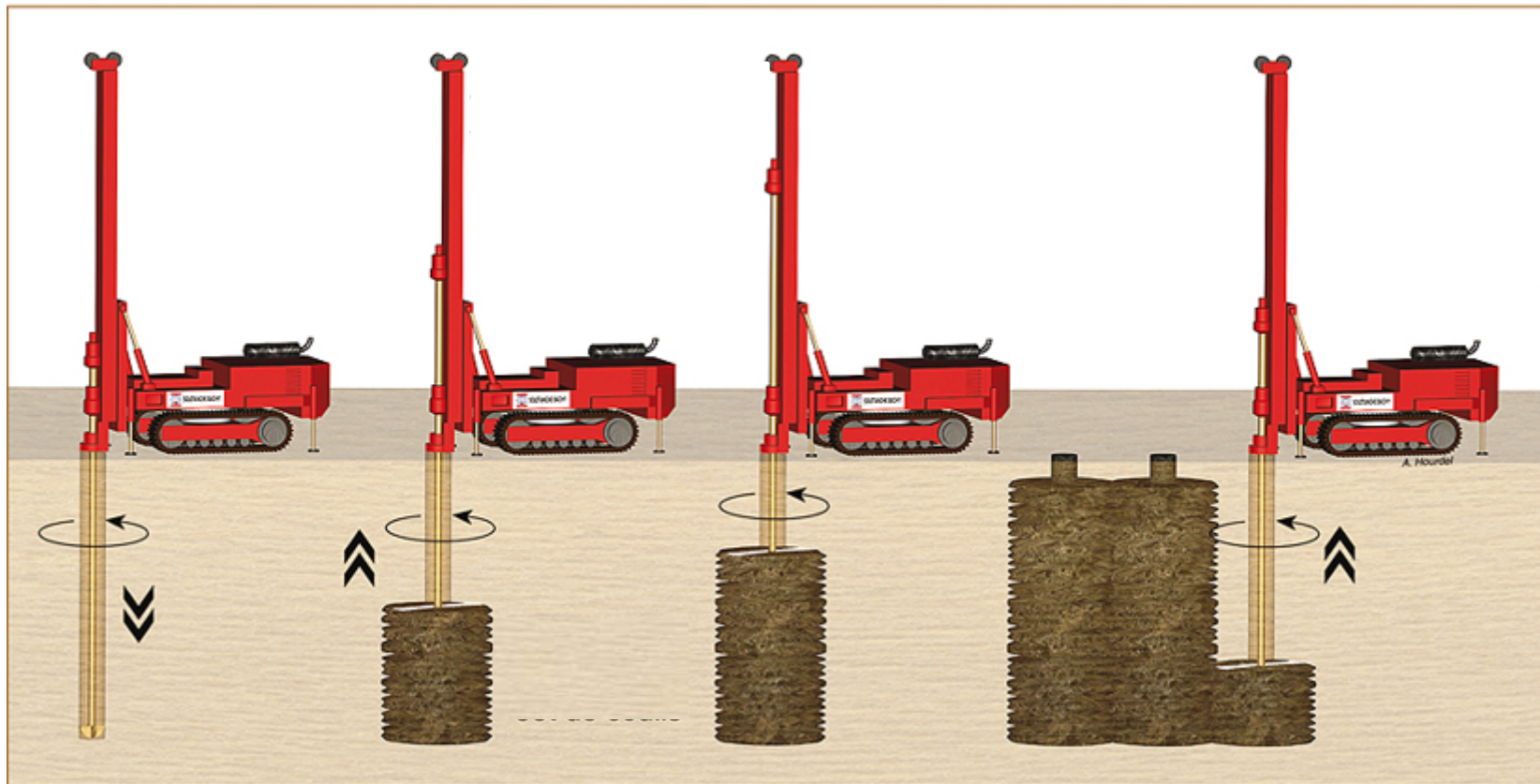
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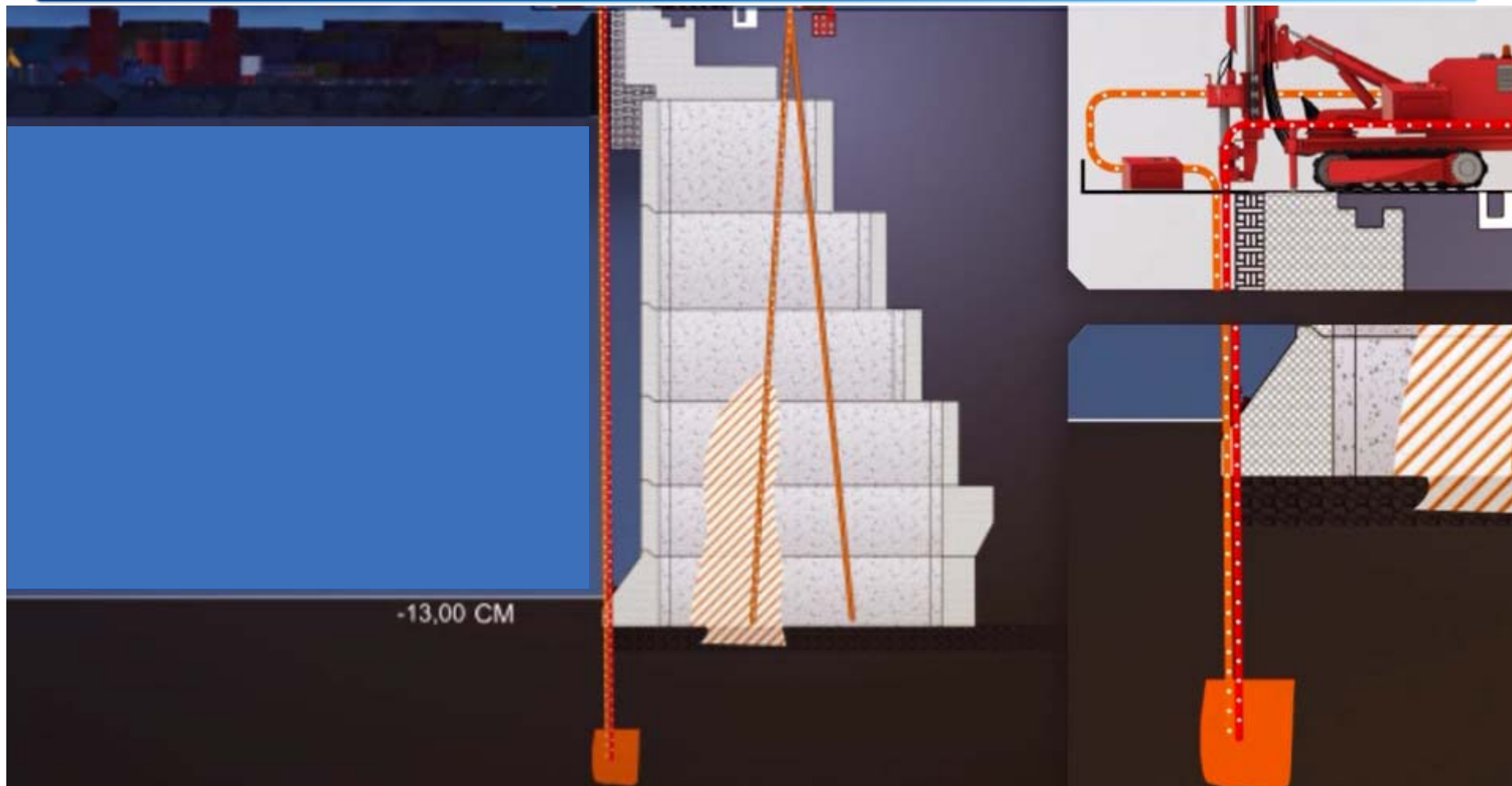
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JET GROUTING



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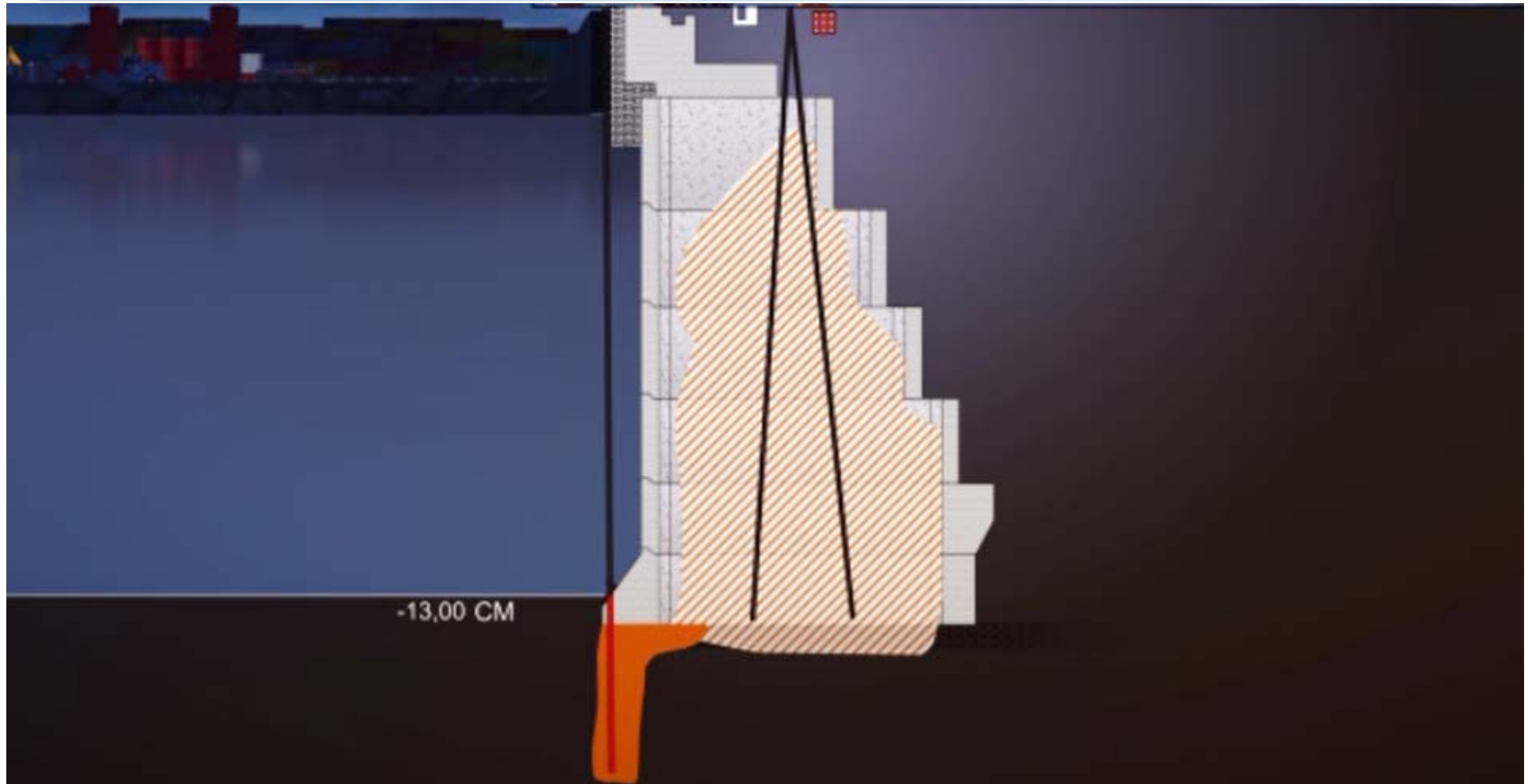


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SPOILS ARE Poured
IN CAISSONS

-13,00 CM

FOCUS ON « PORT EST »



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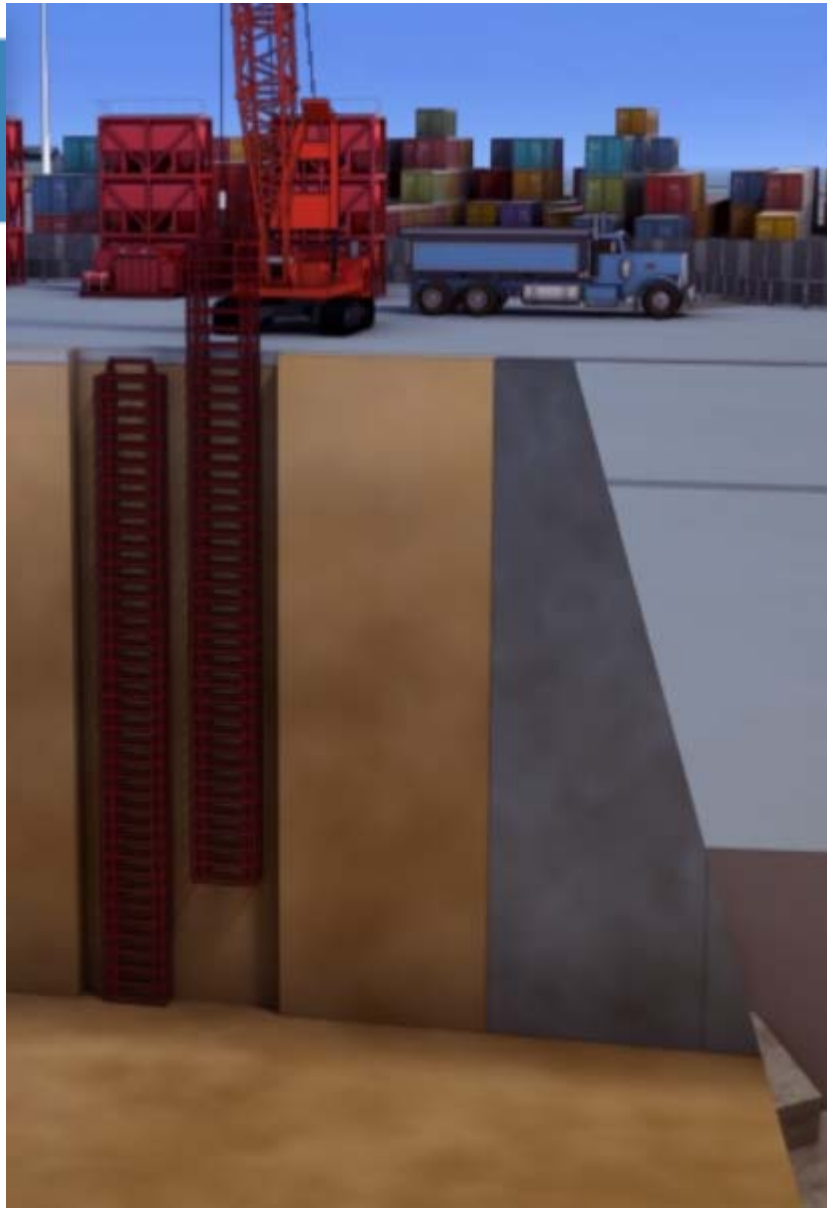
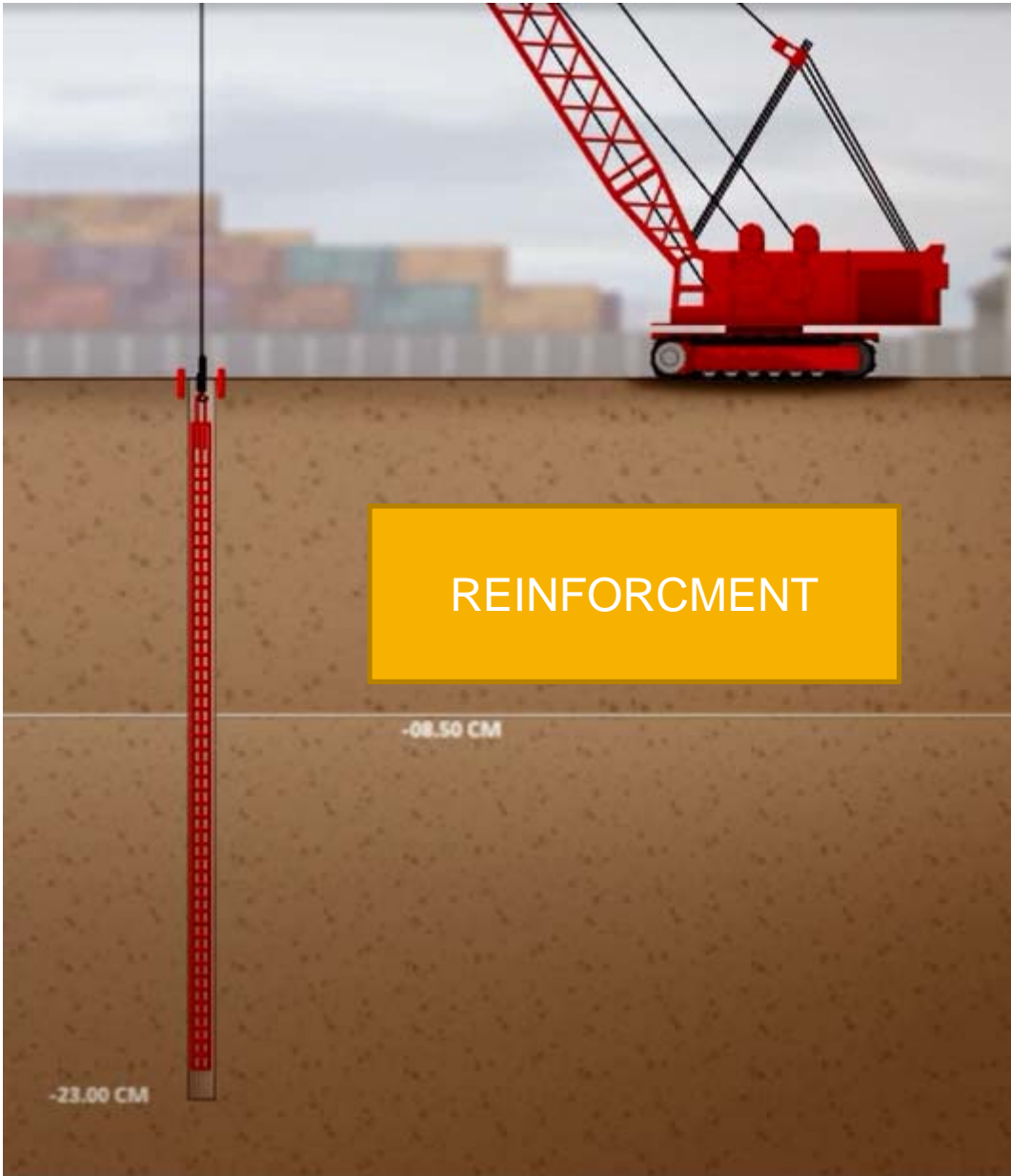


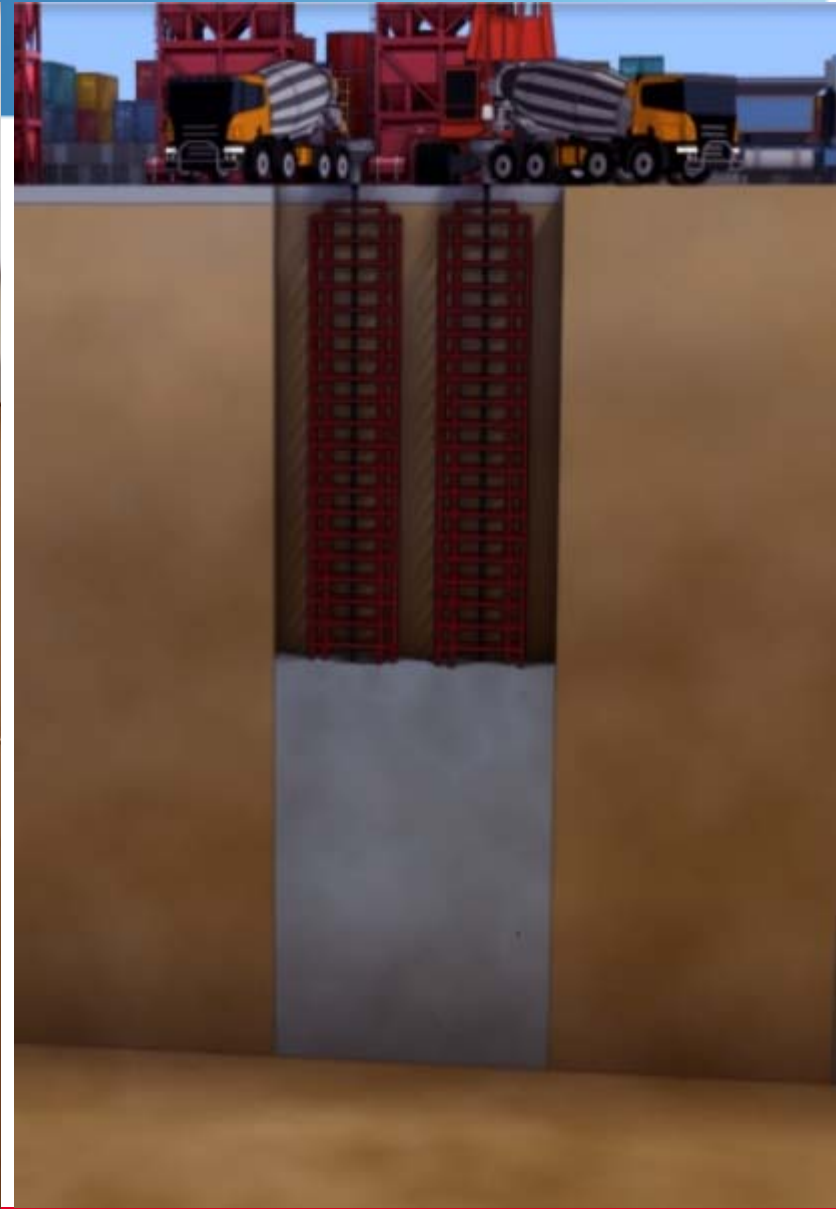
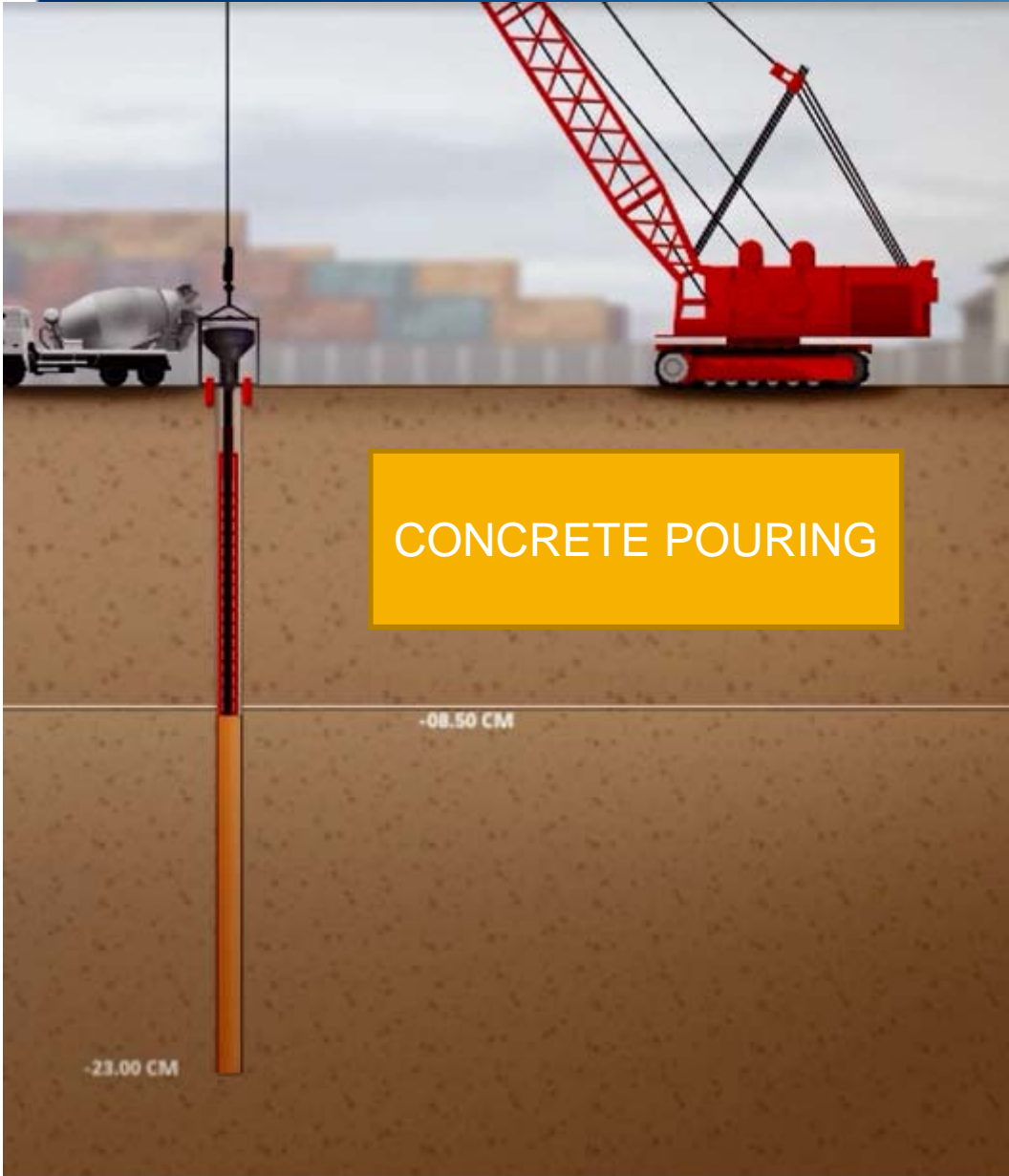
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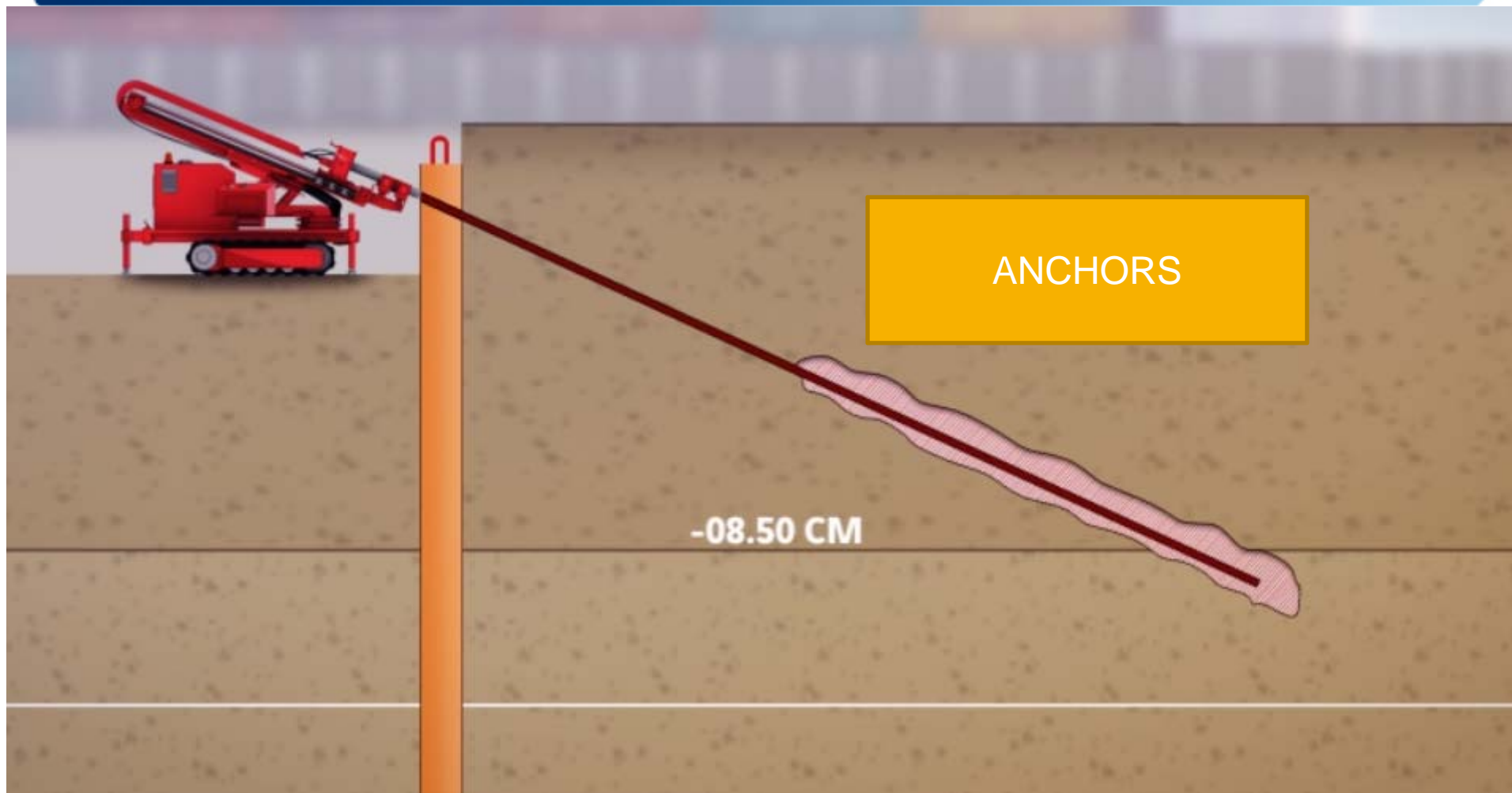
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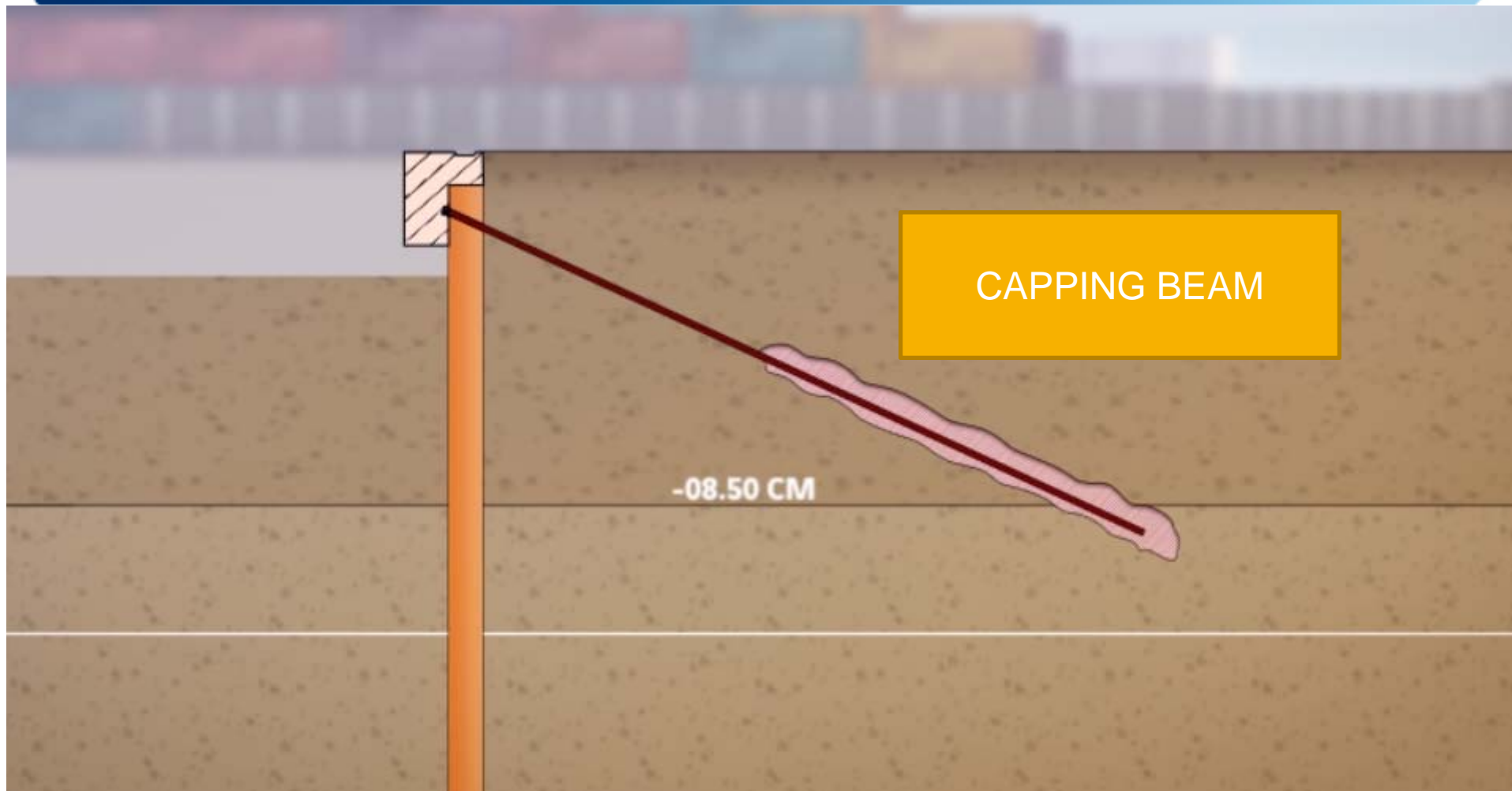
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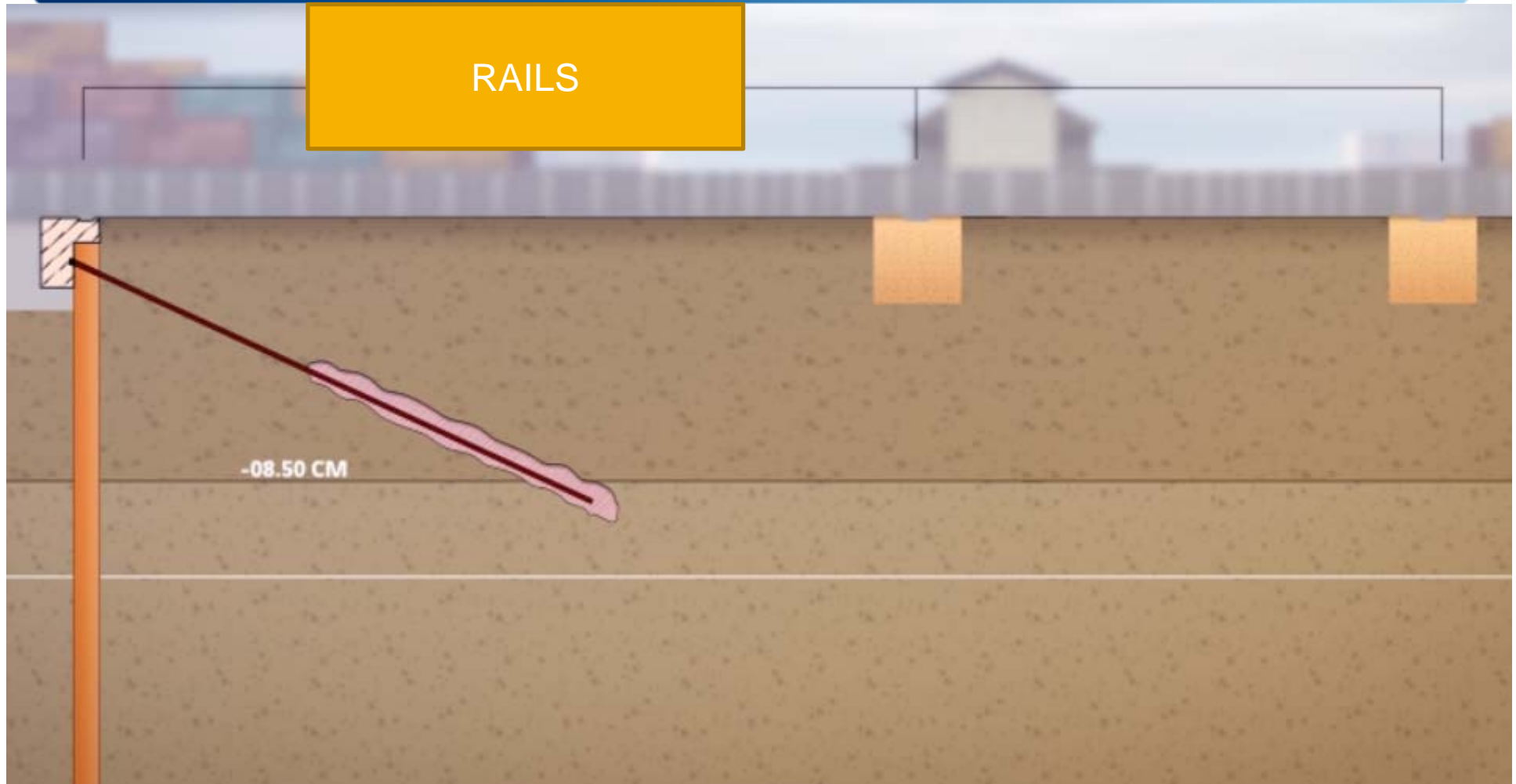
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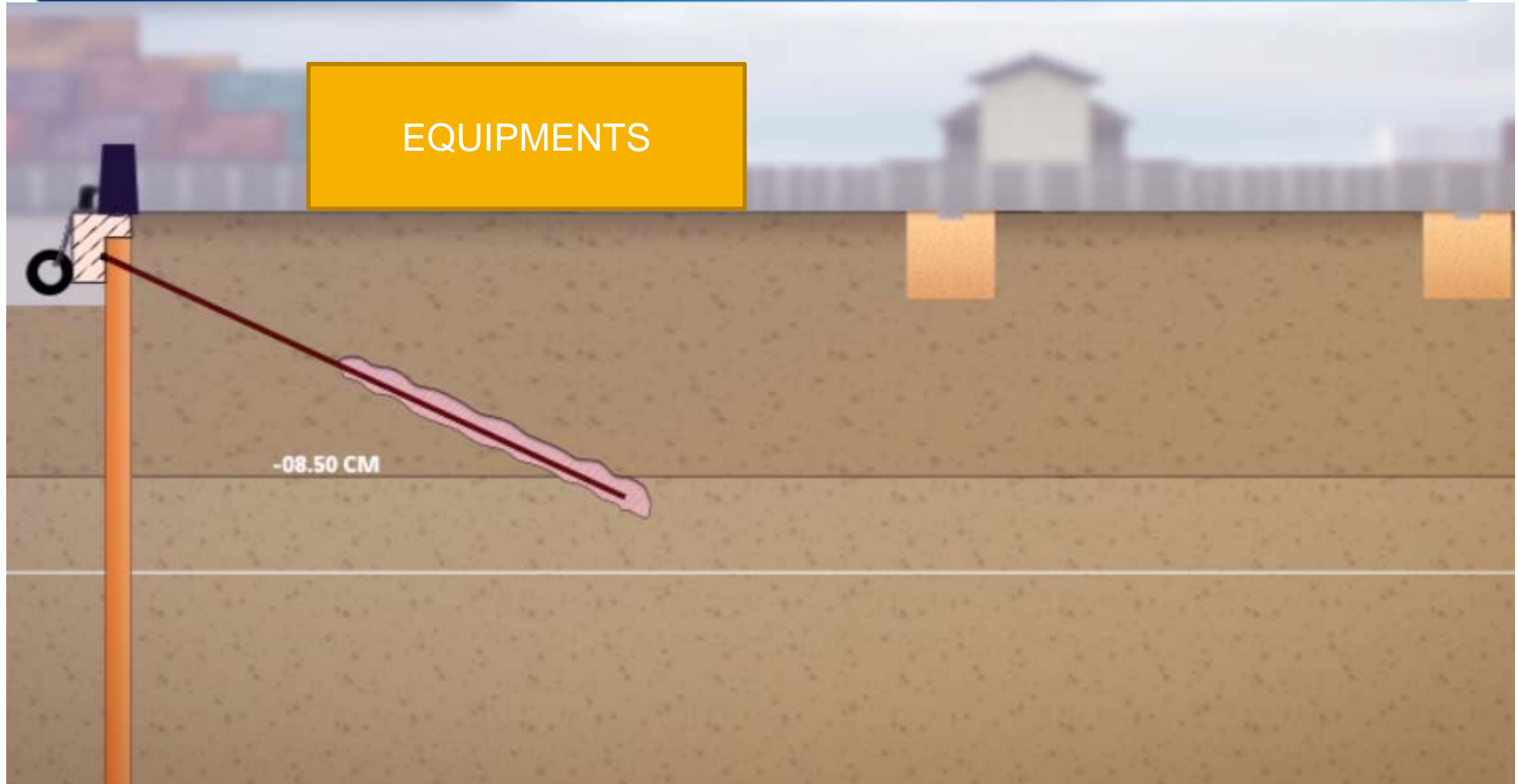
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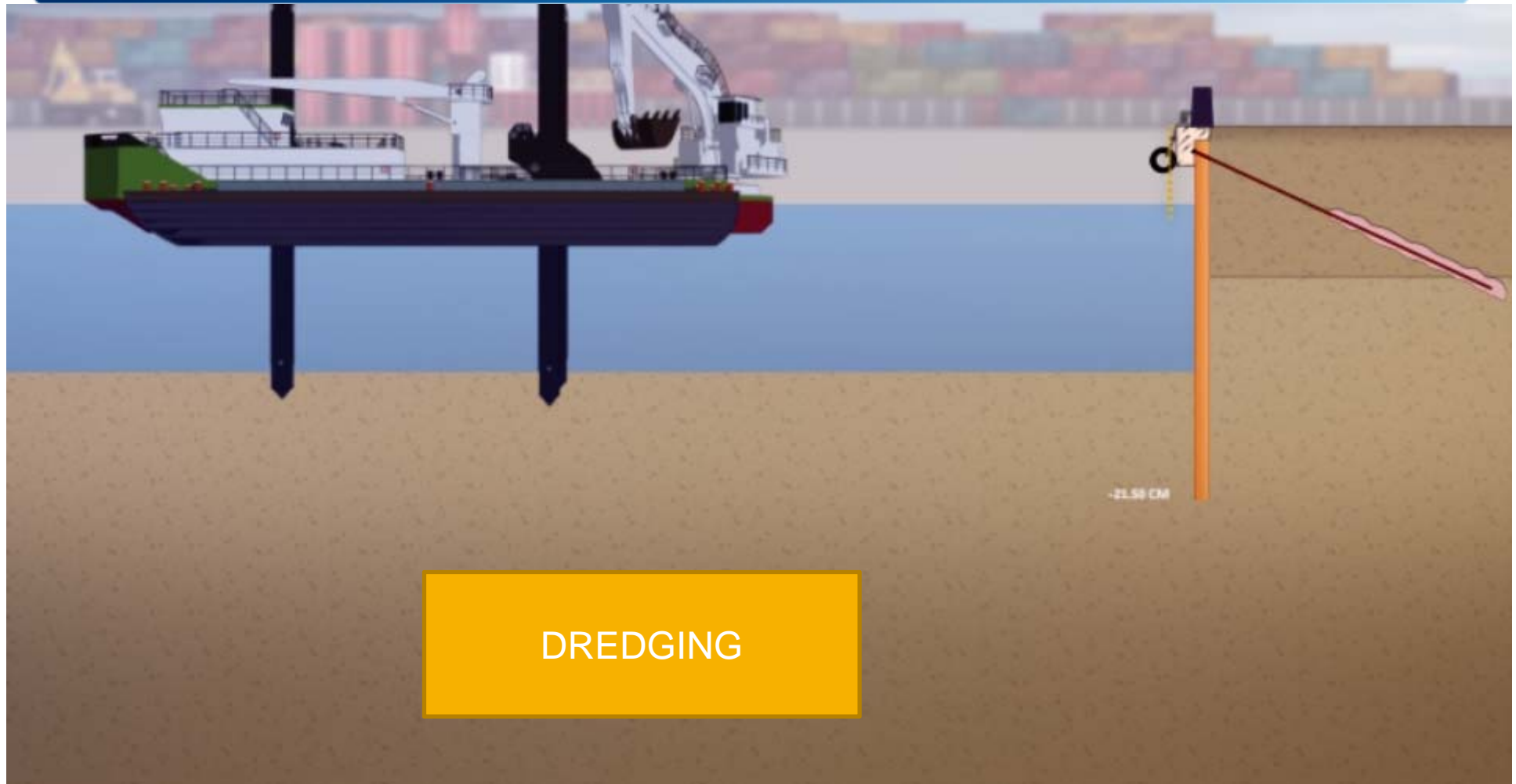
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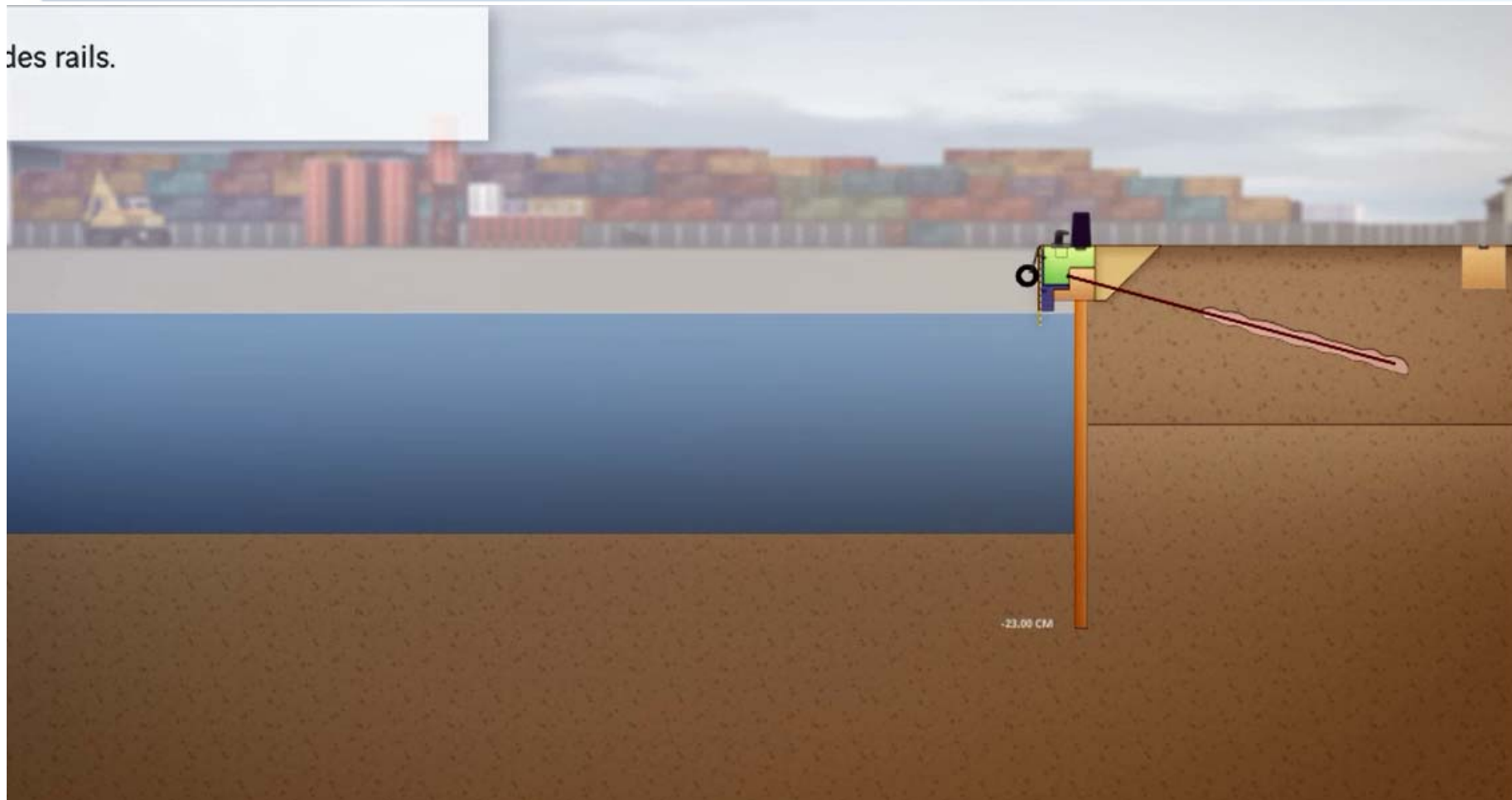


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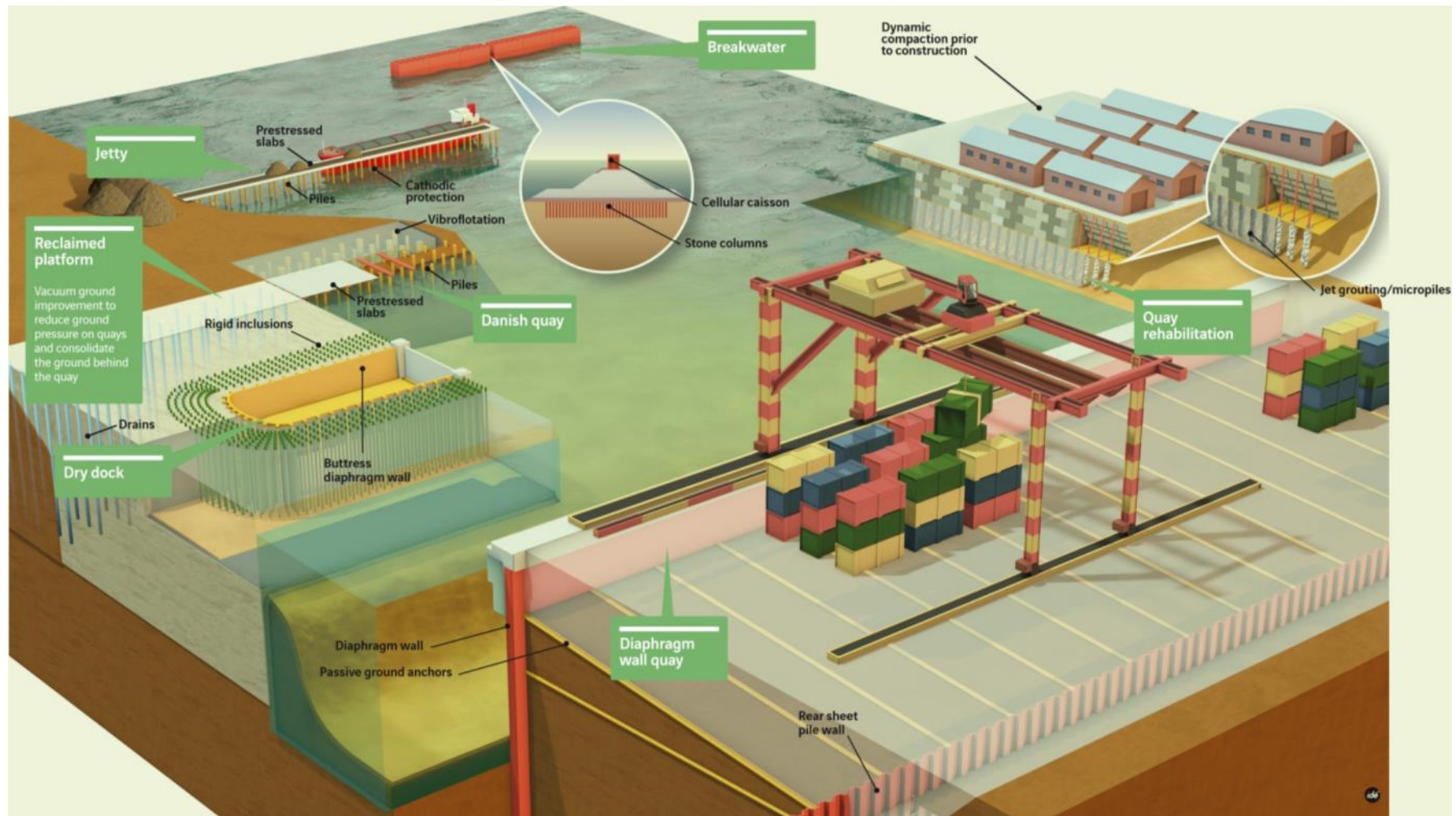
des rails.



FOCUS ON « PORT EST »



To sum up



A wide variety of techniques and expertise

To sum up



SOLETANCHE BACHY

BUILD ON US !

**THANK YOU FOR YOUR
ATTENTION**