

Charles-Augustin COULOMB - A geotechnical tribute

Paris, september 25 & 26, 2023



Execution of diaphragm walls and ground anchors The latest innovations

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Spie Batignolles Fondations

The recent innovations

In diaphragm walls execution :

- High-performance / compact drilling tools (up rising standards),
- Quality panel joints (stop end + waterstop between panels),
- Onboard instrumentations,
- Effective drilling slurry treatment,
- Concrete evolution (rheology)

In ground anchors execution :

- « Sonic » and vibrating drilling,
- Precise installations and drilling controls,
- Equipment adaptations,
- Removable anchors

Diaphragm walls - High-performance tools

- D-Walls up to 1.8m thick and 70m depth,
- Soletanche-Bachy's grippers



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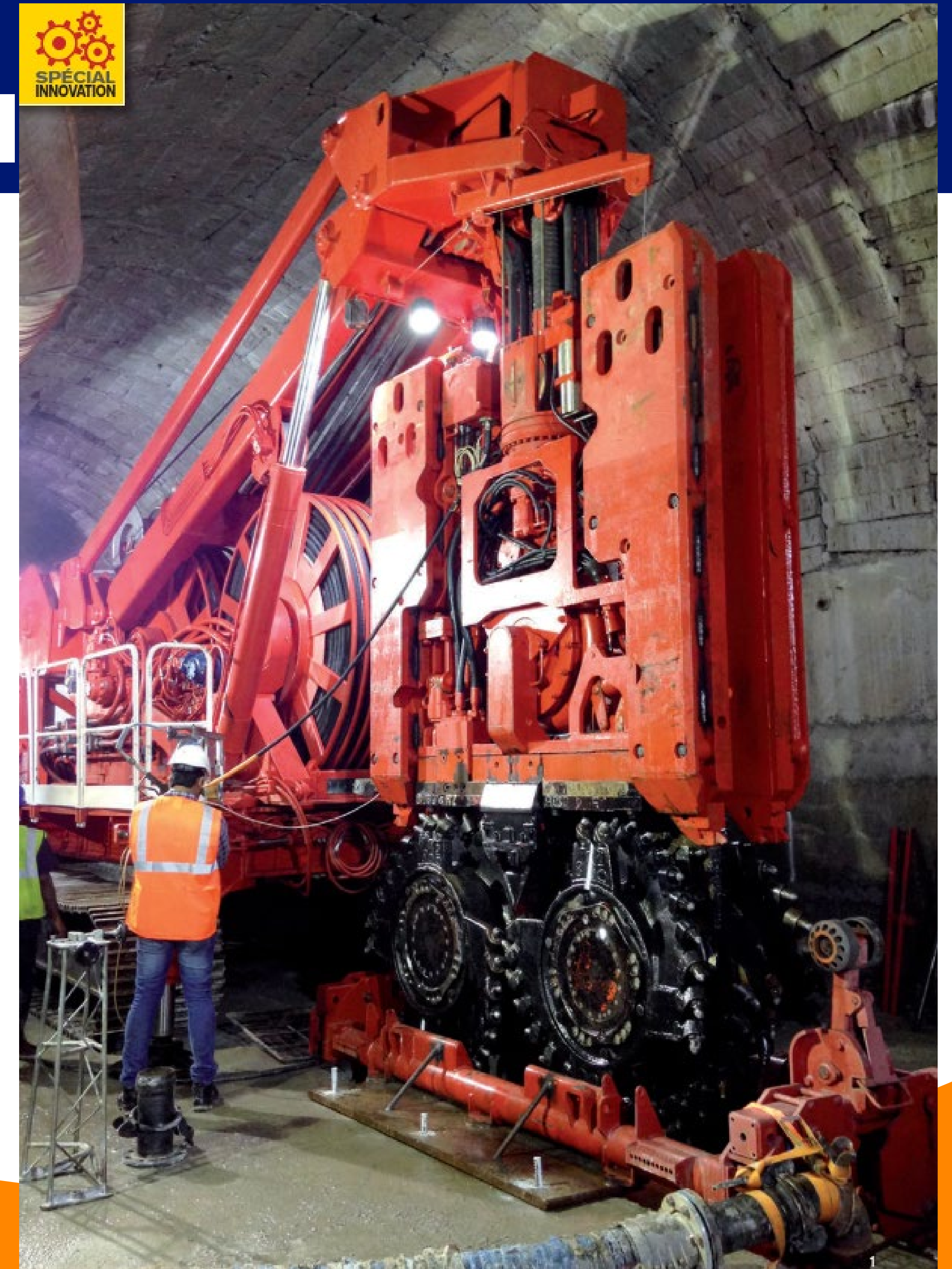
Diaphragm walls - High-performance tools

- Compact equipments (under 6m clearance height)



Diaphragm walls - High-performance tools

- Compact equipments (under 6m clearance height)

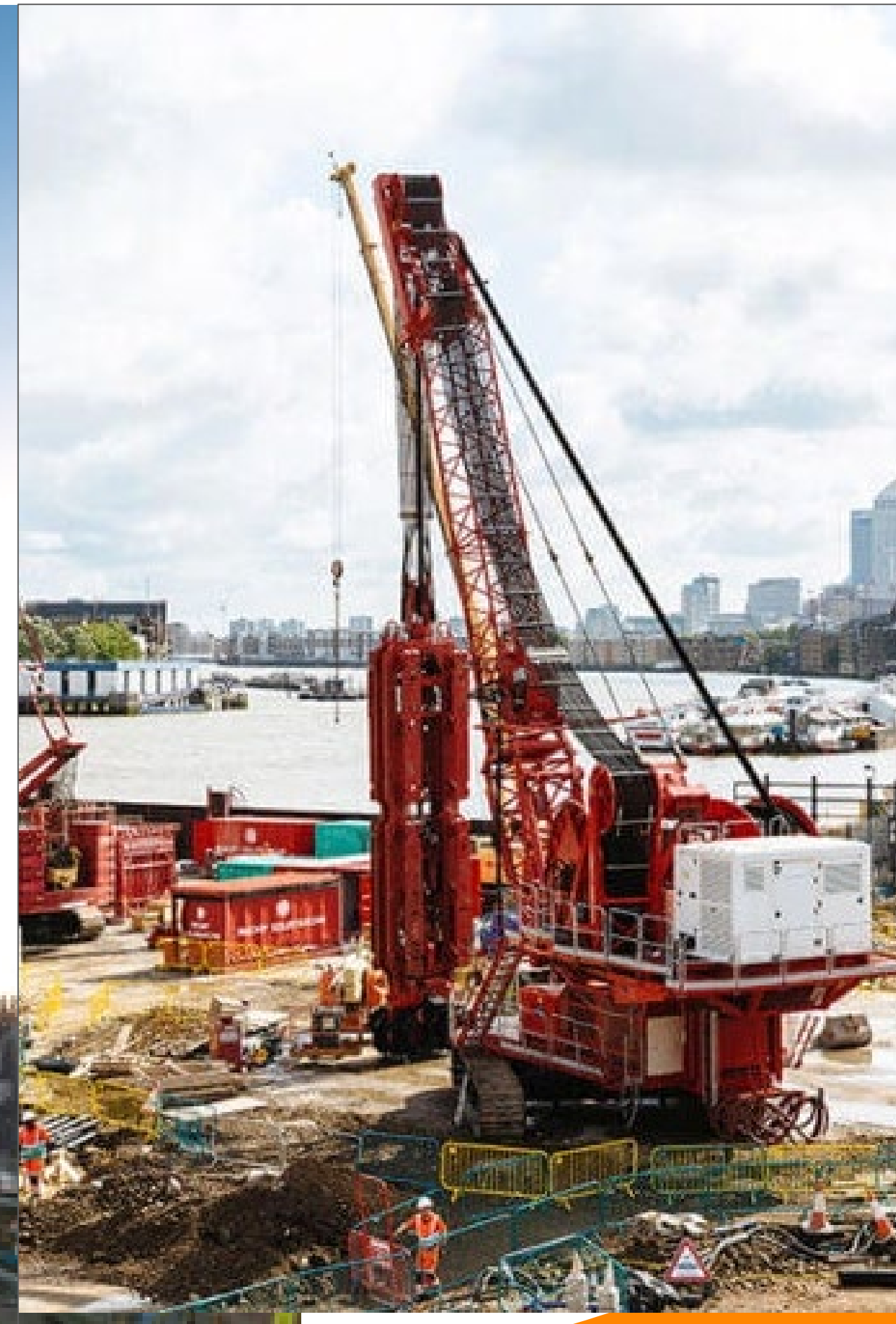


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Diaphragm walls - High-performance tools

- The contribution of the rotary head

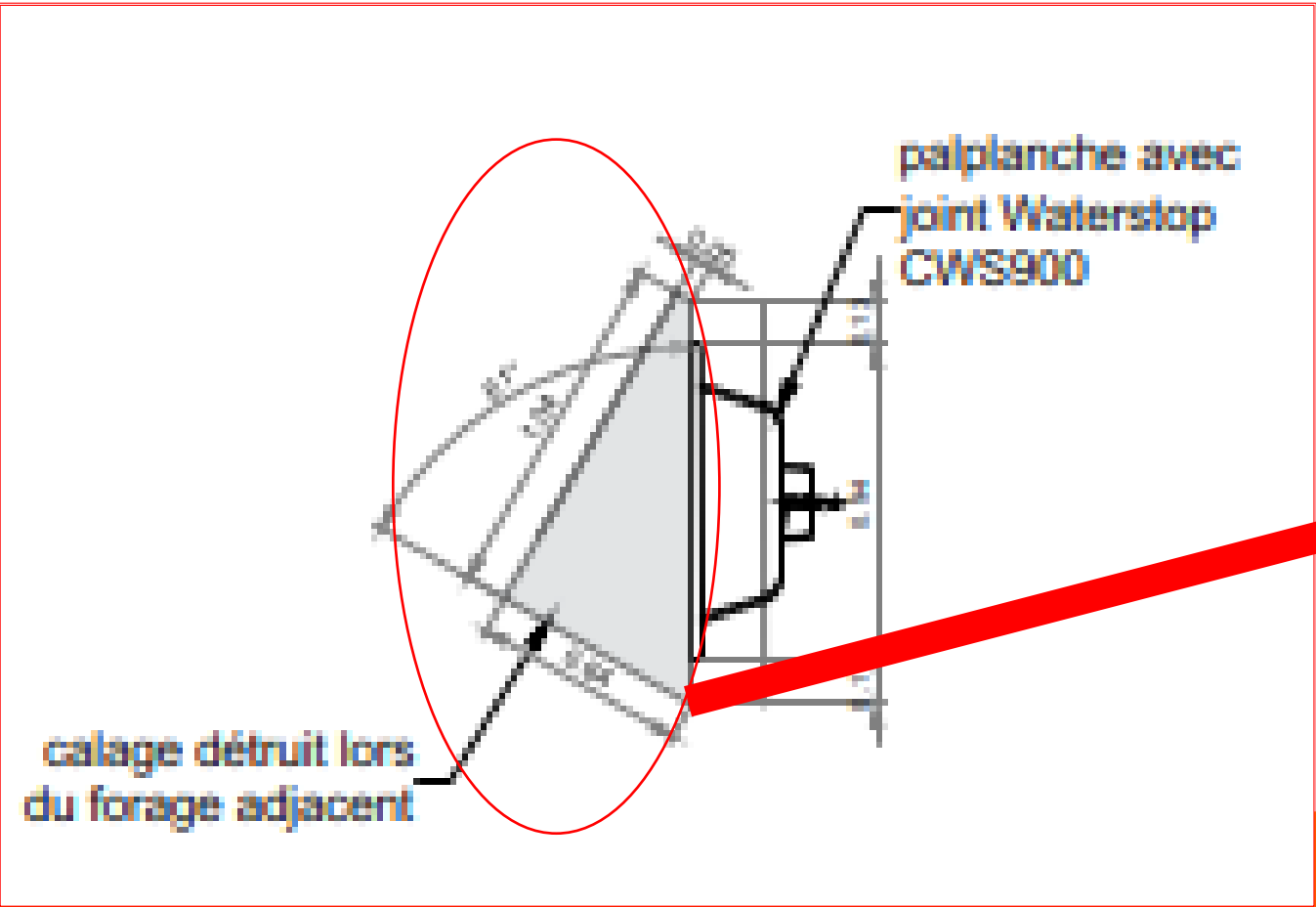
- Electric equipments / machines



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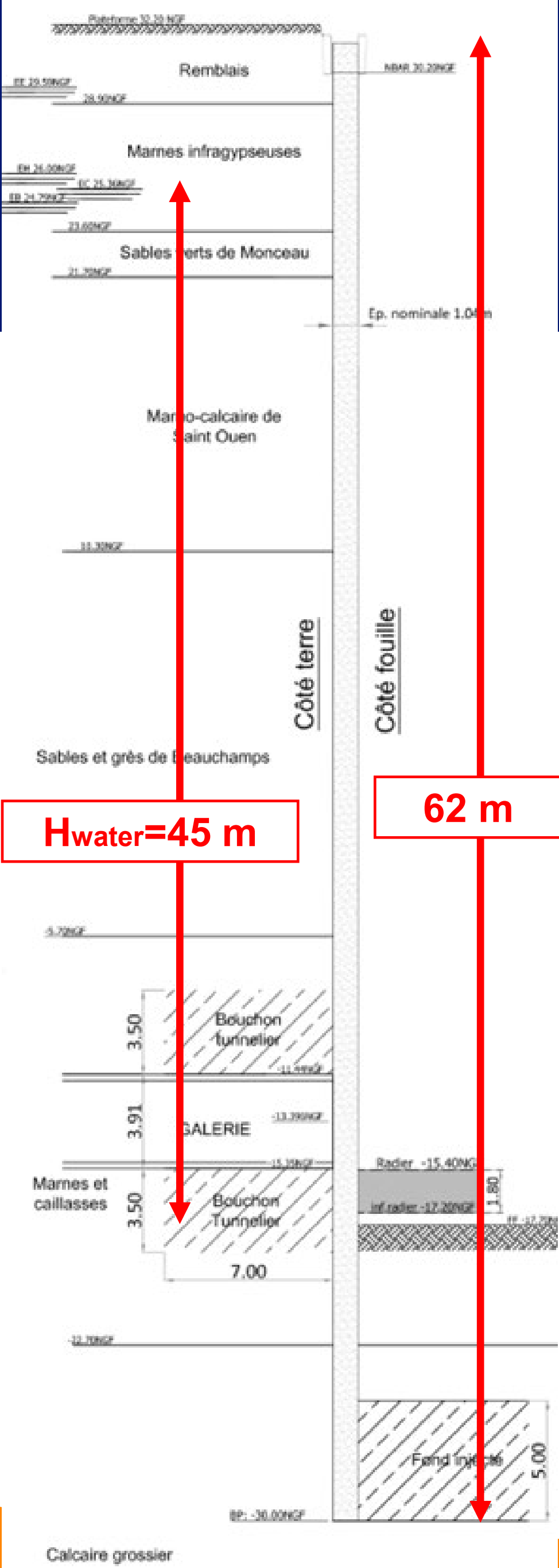
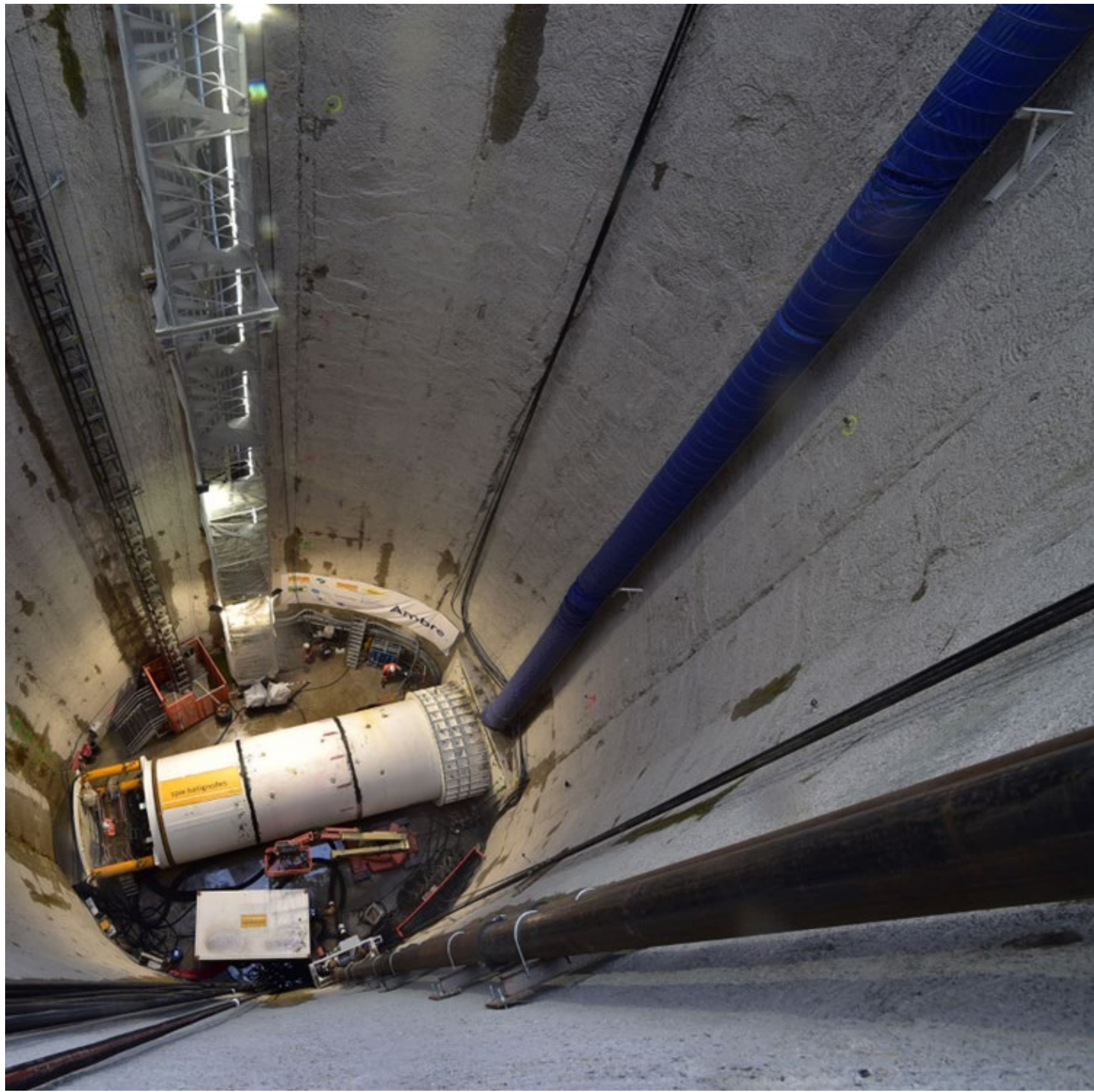
Diaphragm walls – Quality panel joints

- Stop end + waterstop >60m



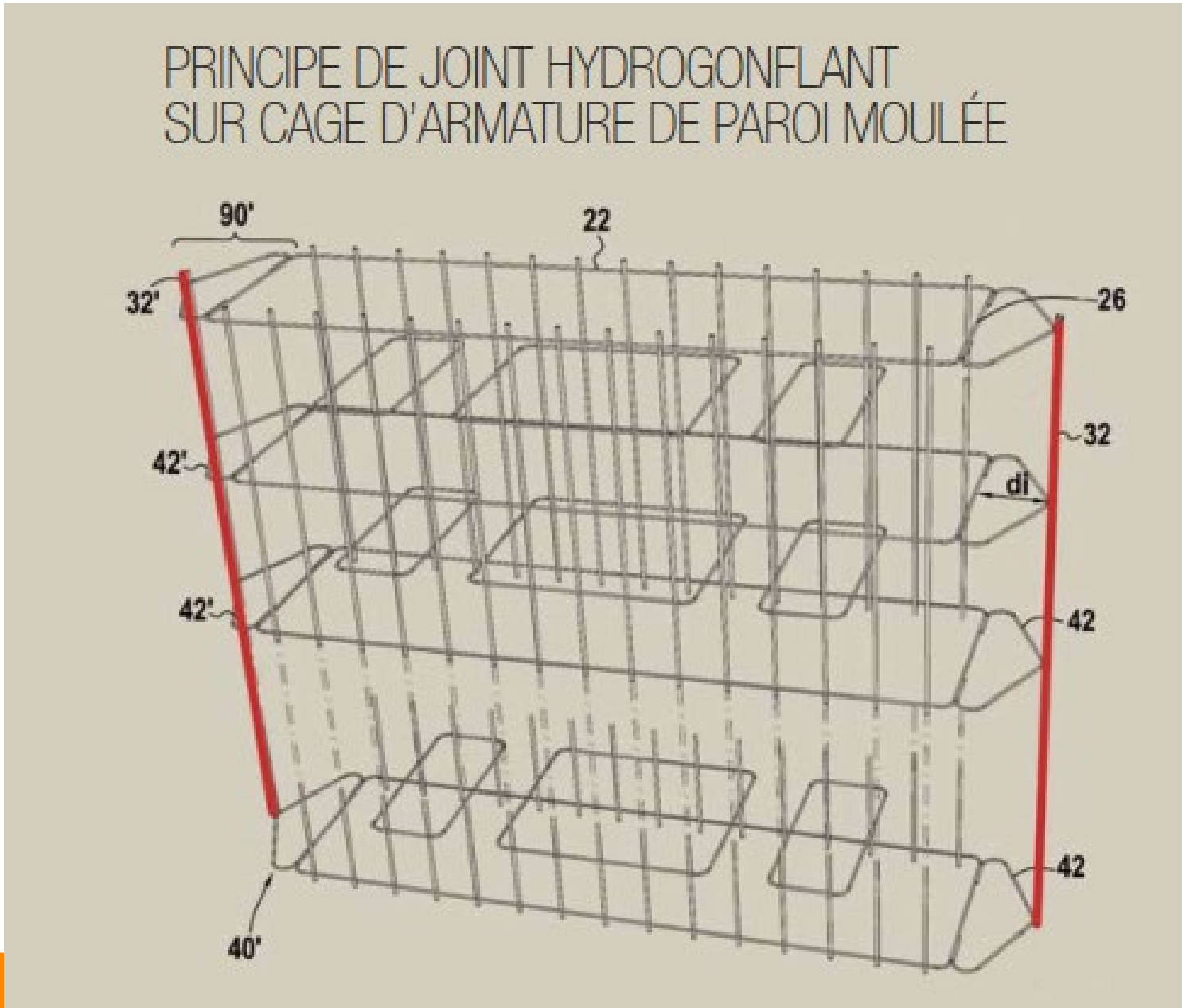
Diaphragm walls – Quality panel joints

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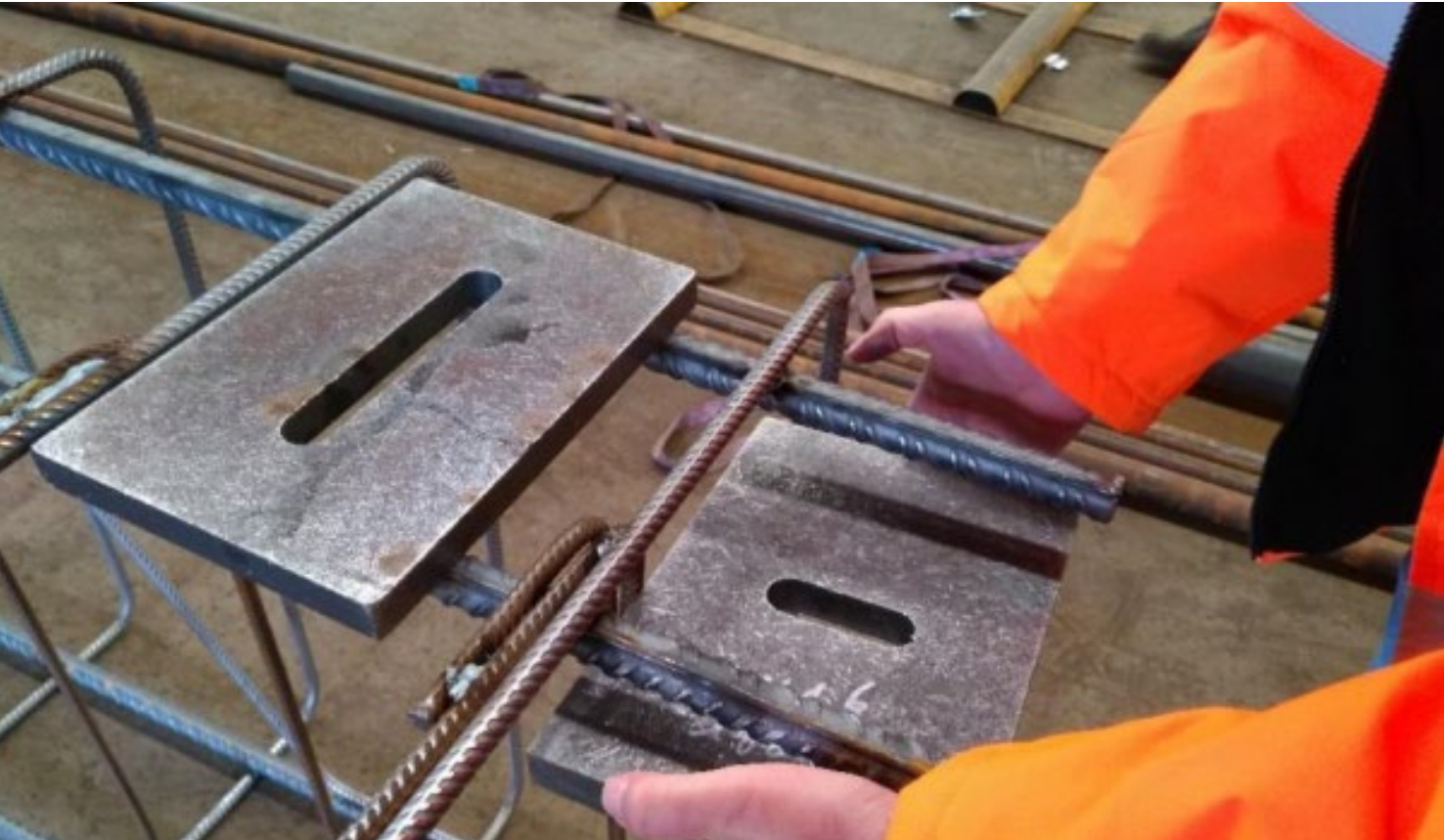
Diaphragm walls – Quality panel joints

- Overlap drilling + waterproofing

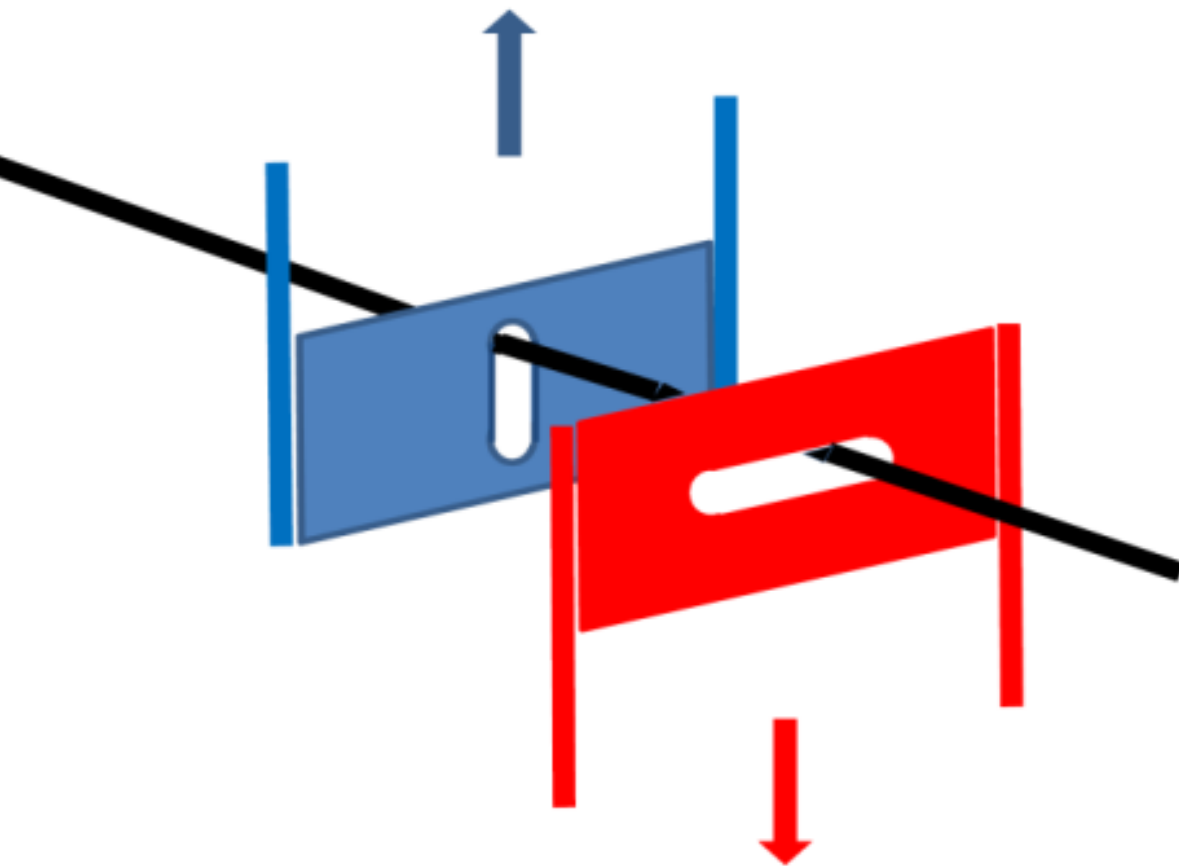


Diaphragm walls

- Reinforcement cages links with crosslocks

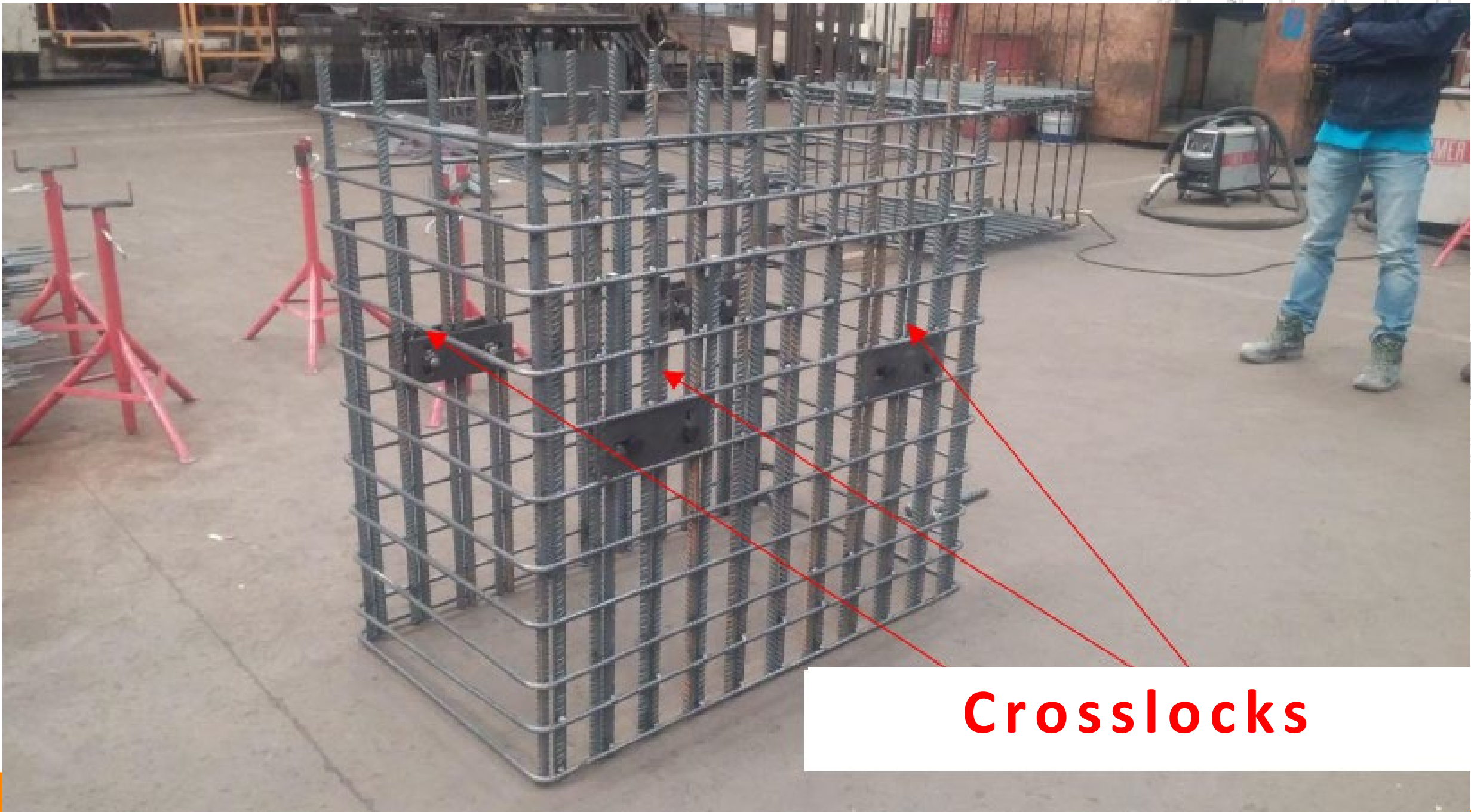


Upper reinforcement cage

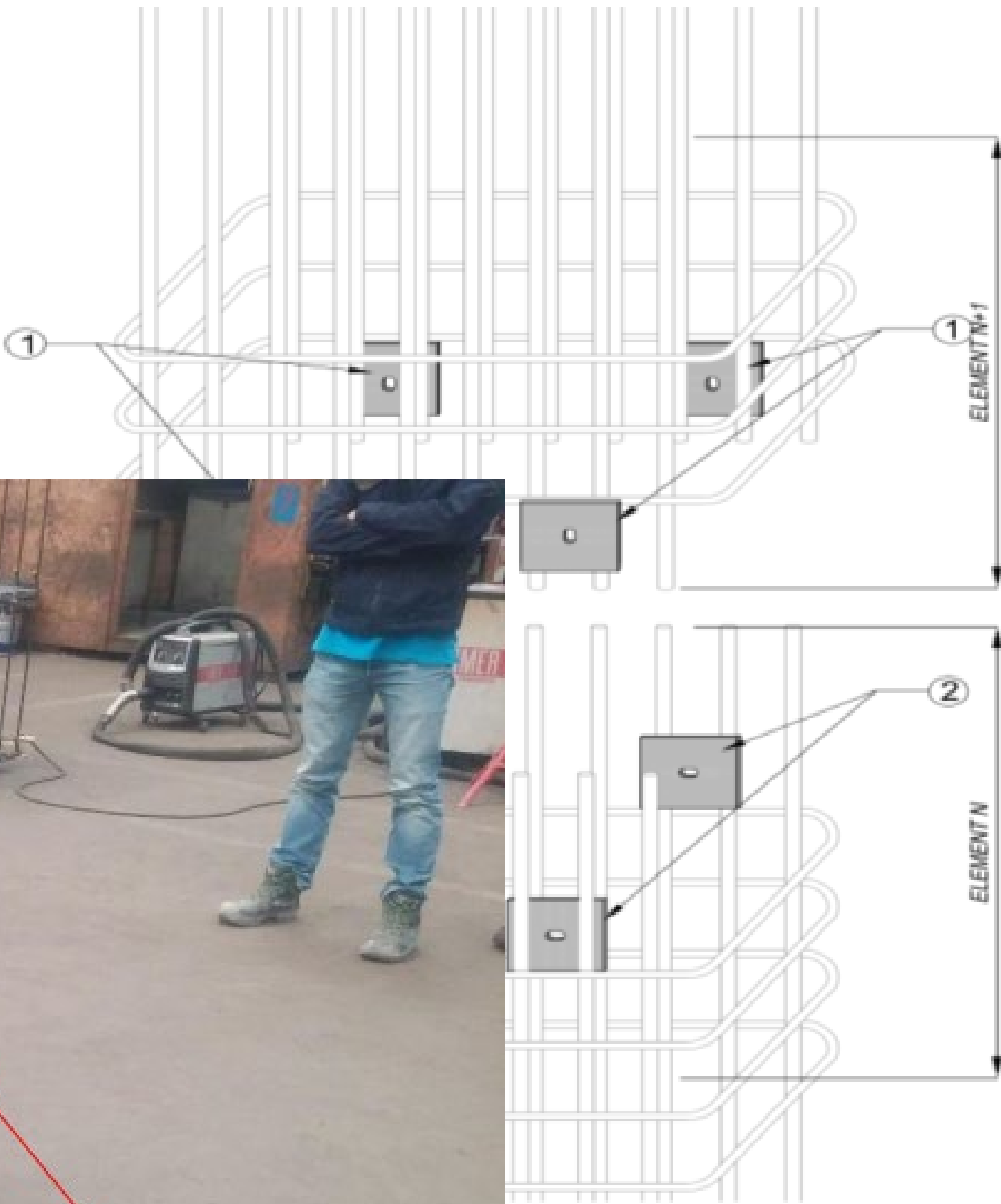


Bolt

Lower reinforcement cage



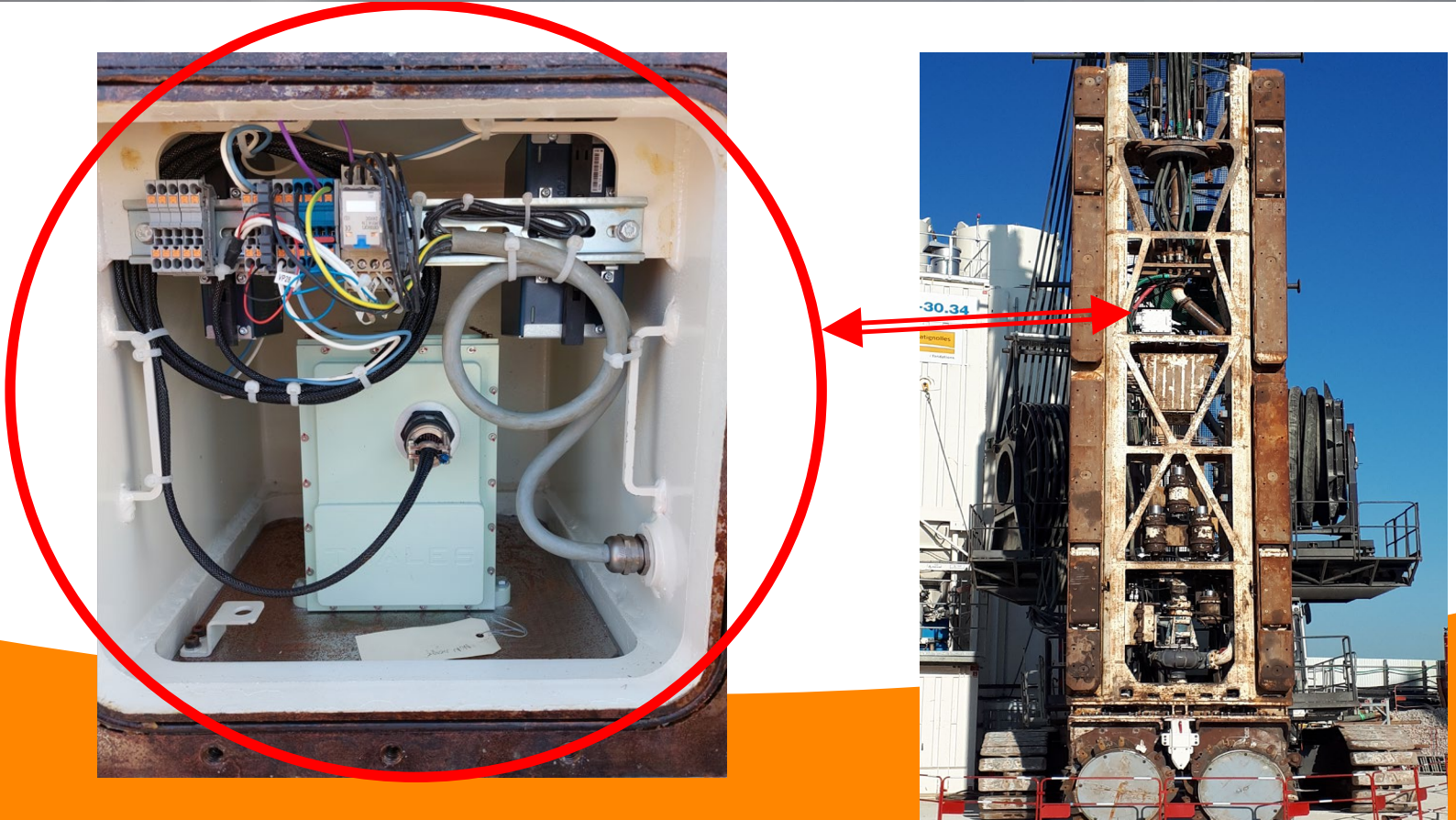
Crosslocks



Diaphragm walls - instrumentation

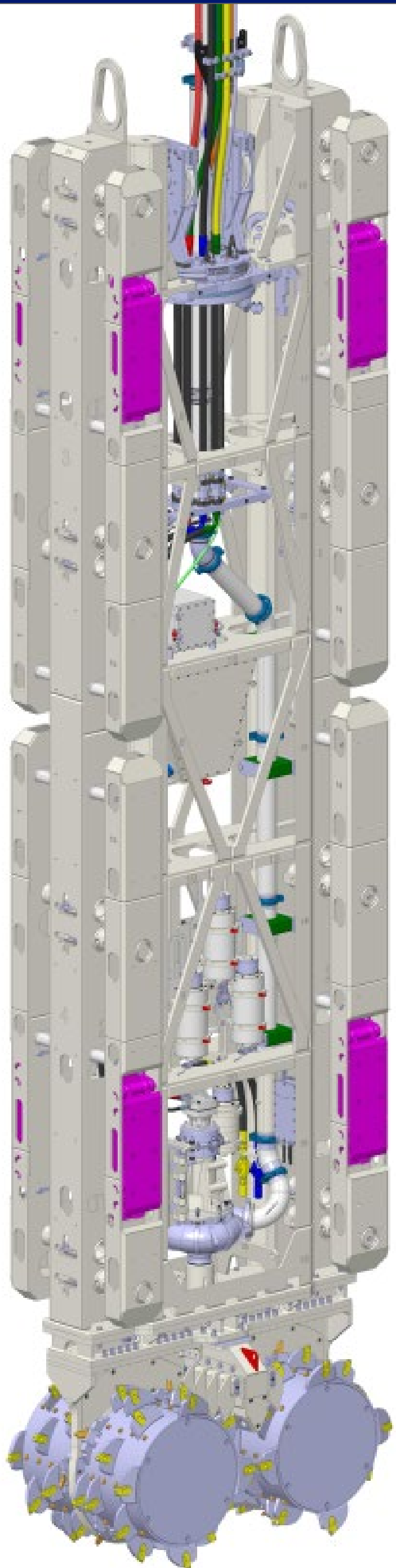
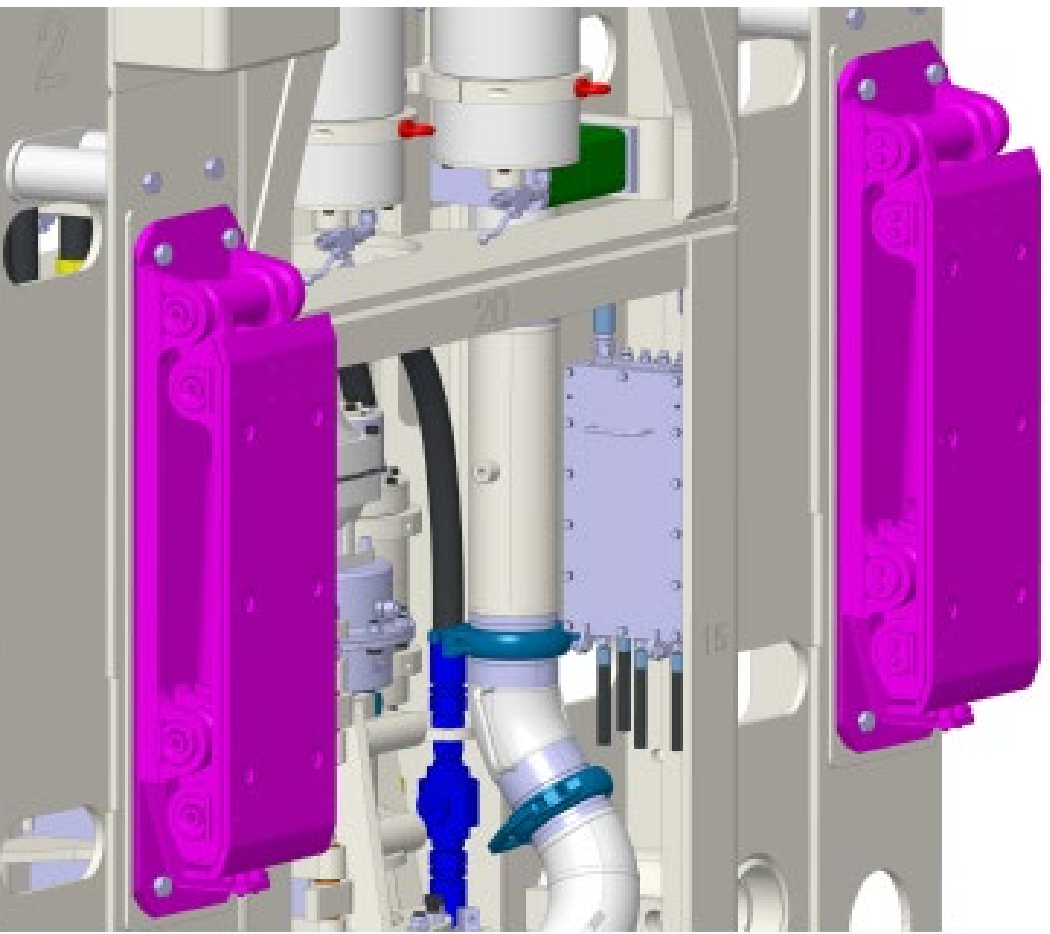
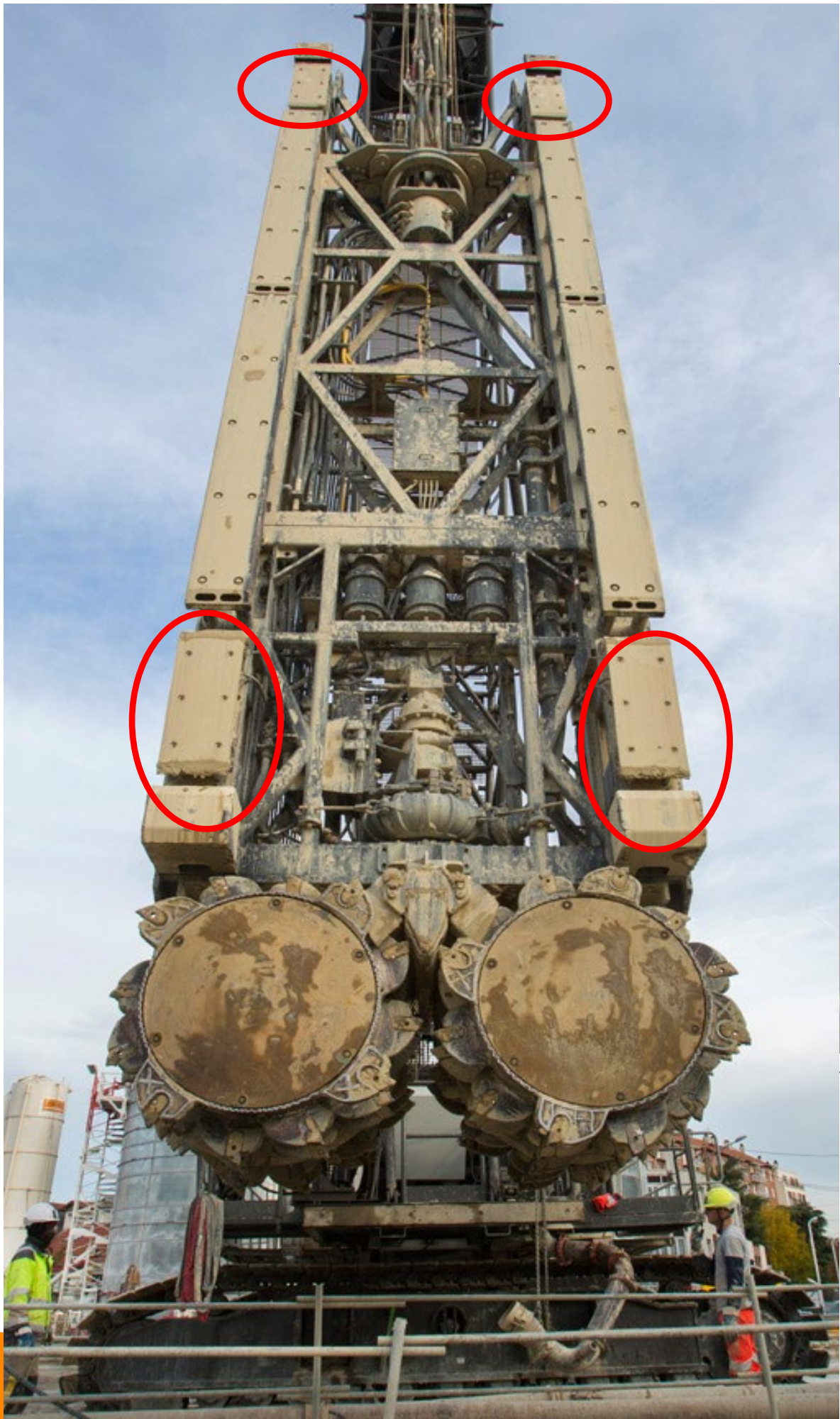
Real-time control of drilling tool trajectory

Machine software helping drilling operators taking right decisions



Diaphragm walls - instrumentation

Trajectory correction shutters



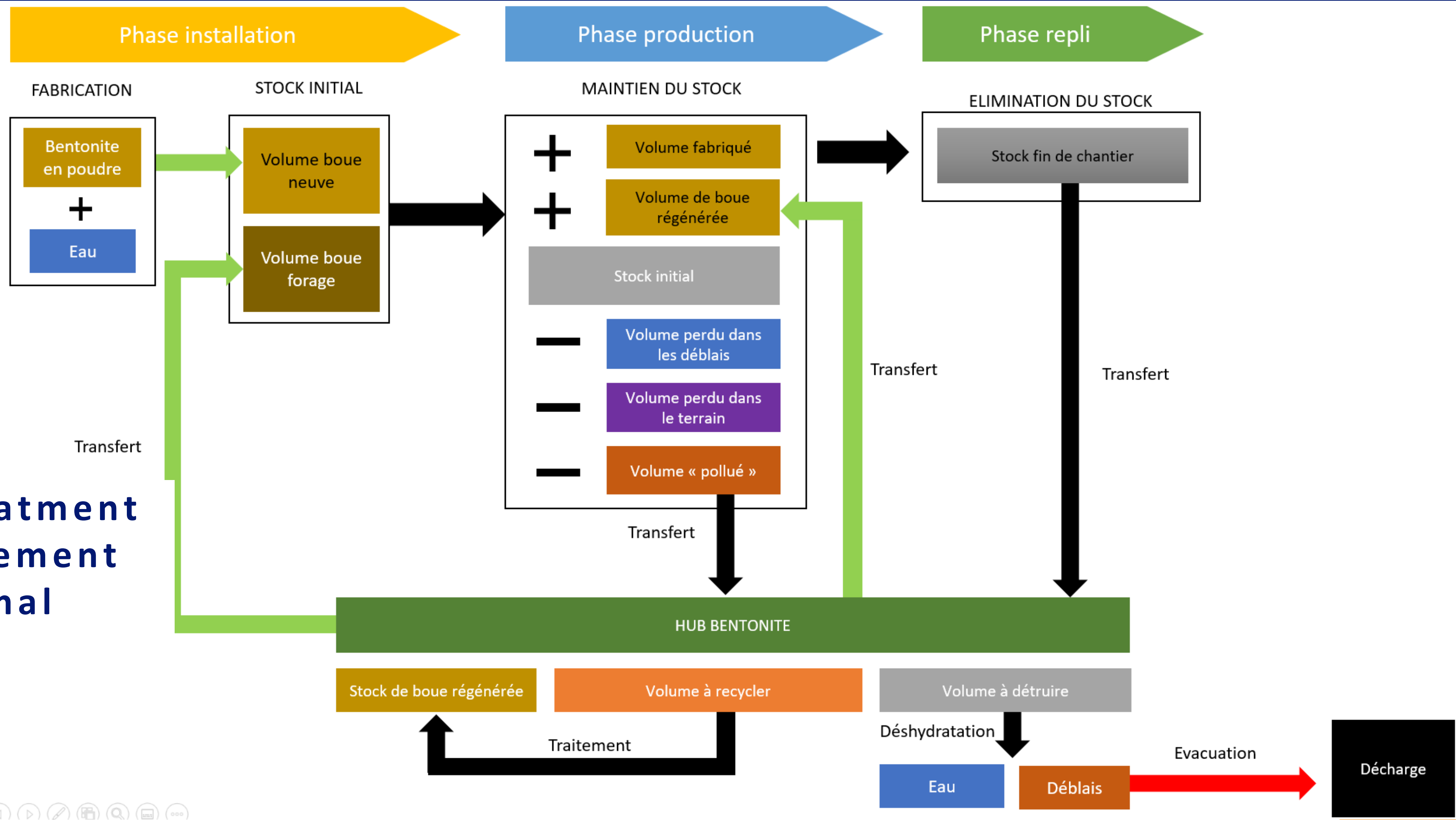
Diaphragm walls – Drilling slurry treatment

View of a power plant with storage



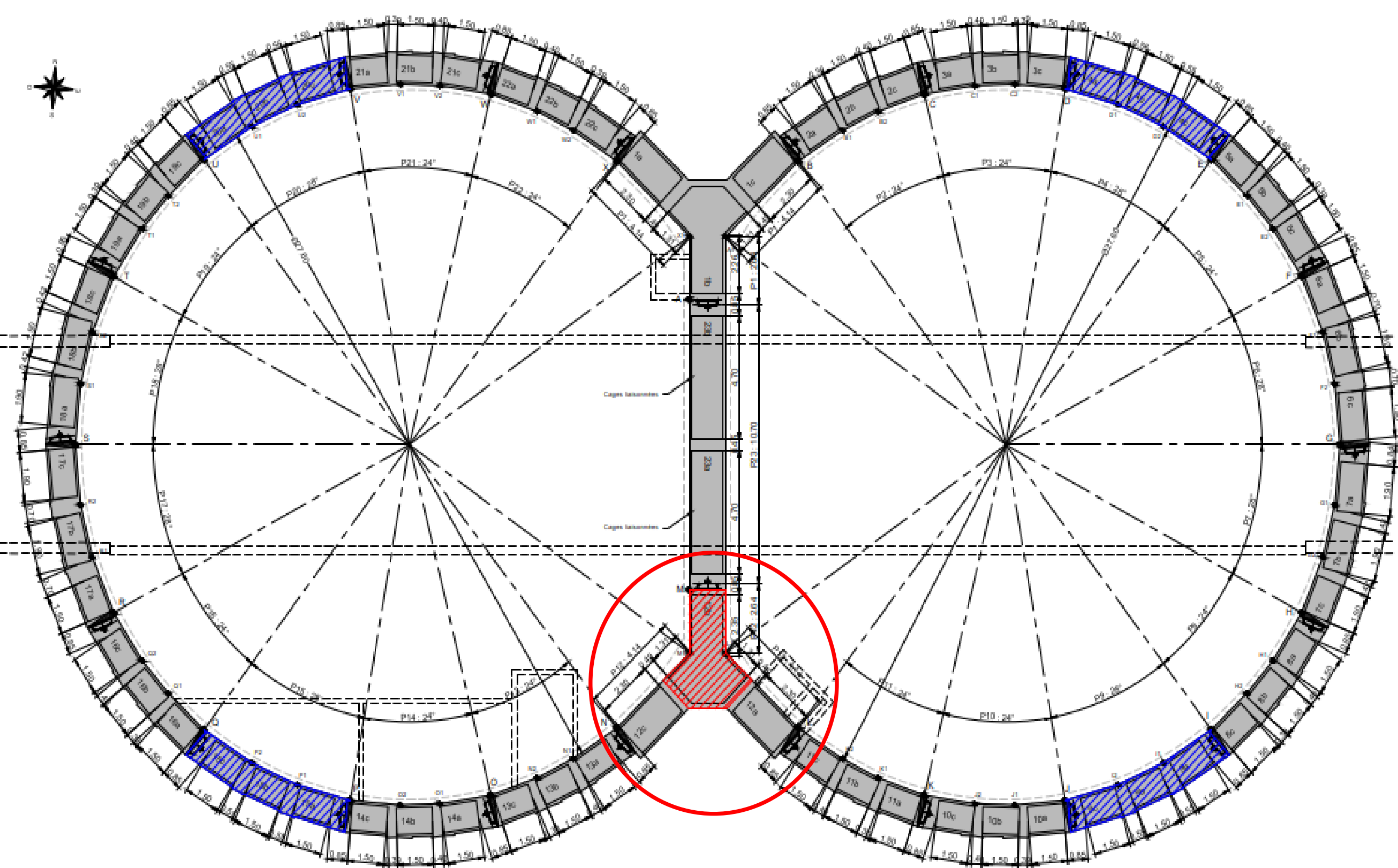
Diaphragm walls – Drilling slurry treatment

Diagram of the treatment for optimal management of slurry and minimal waste discharge (Hub - L18-1 GPE)



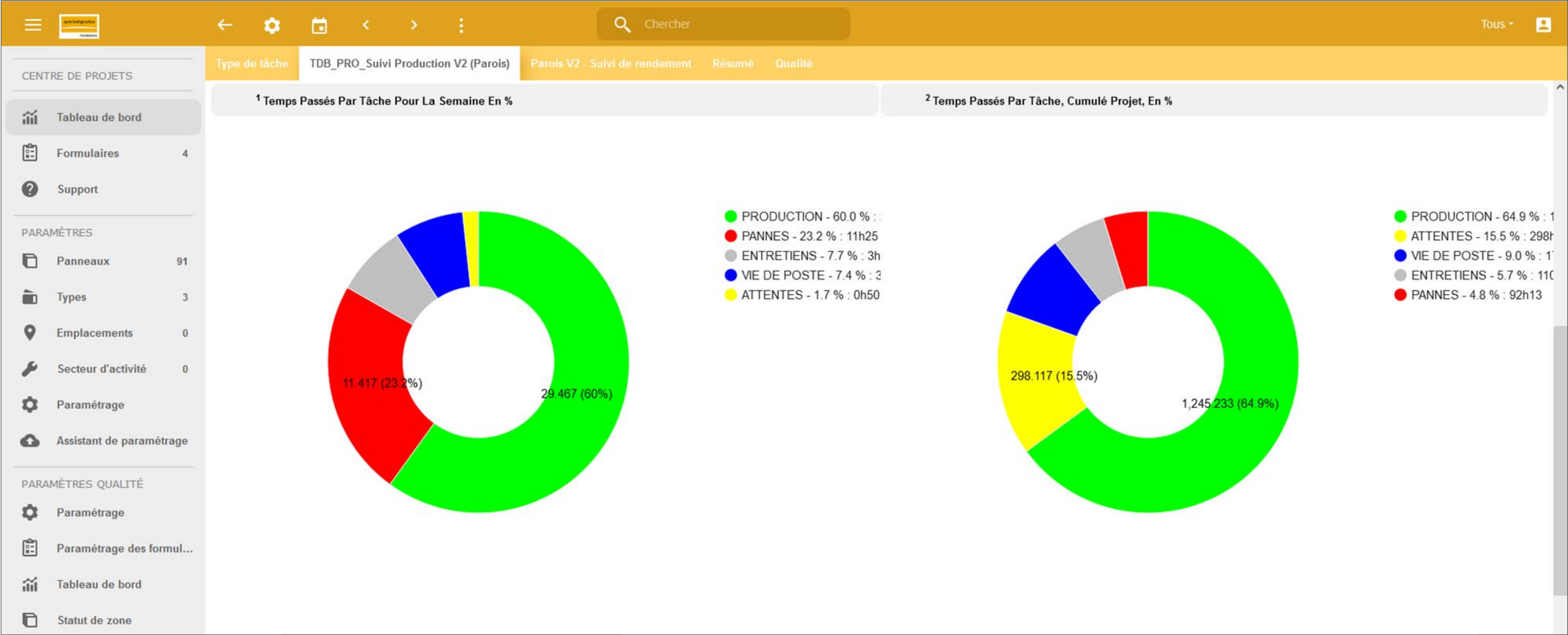
Diaphragm walls– Concrete evolutions

The rheology of the diaphragm wall concrete should allow pouring panels of nearly 900m3 in 10 hours



Diaphragm walls – Progress tracking

The Chrono-analysis

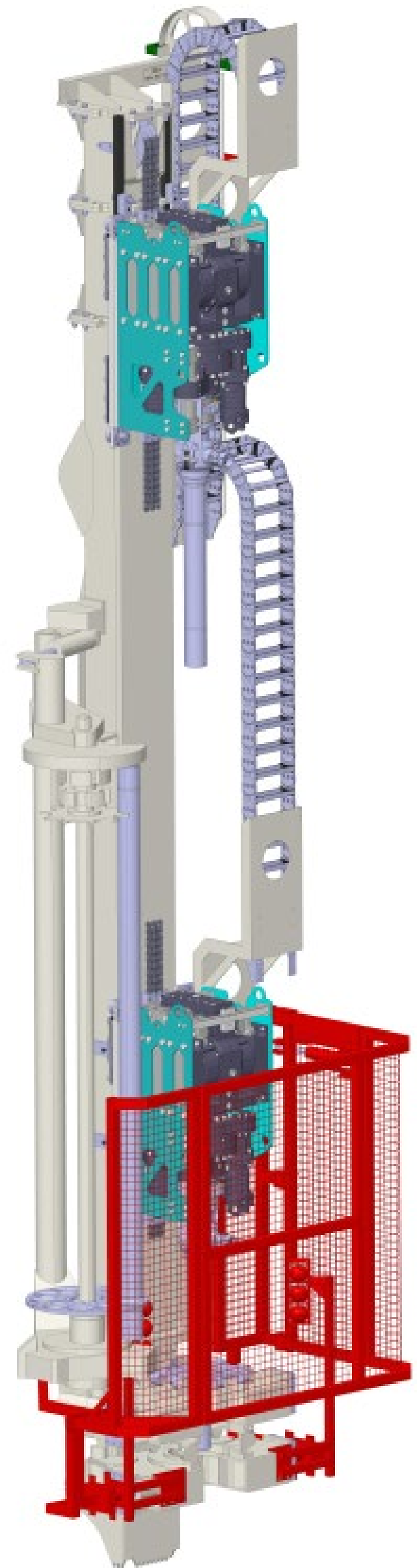


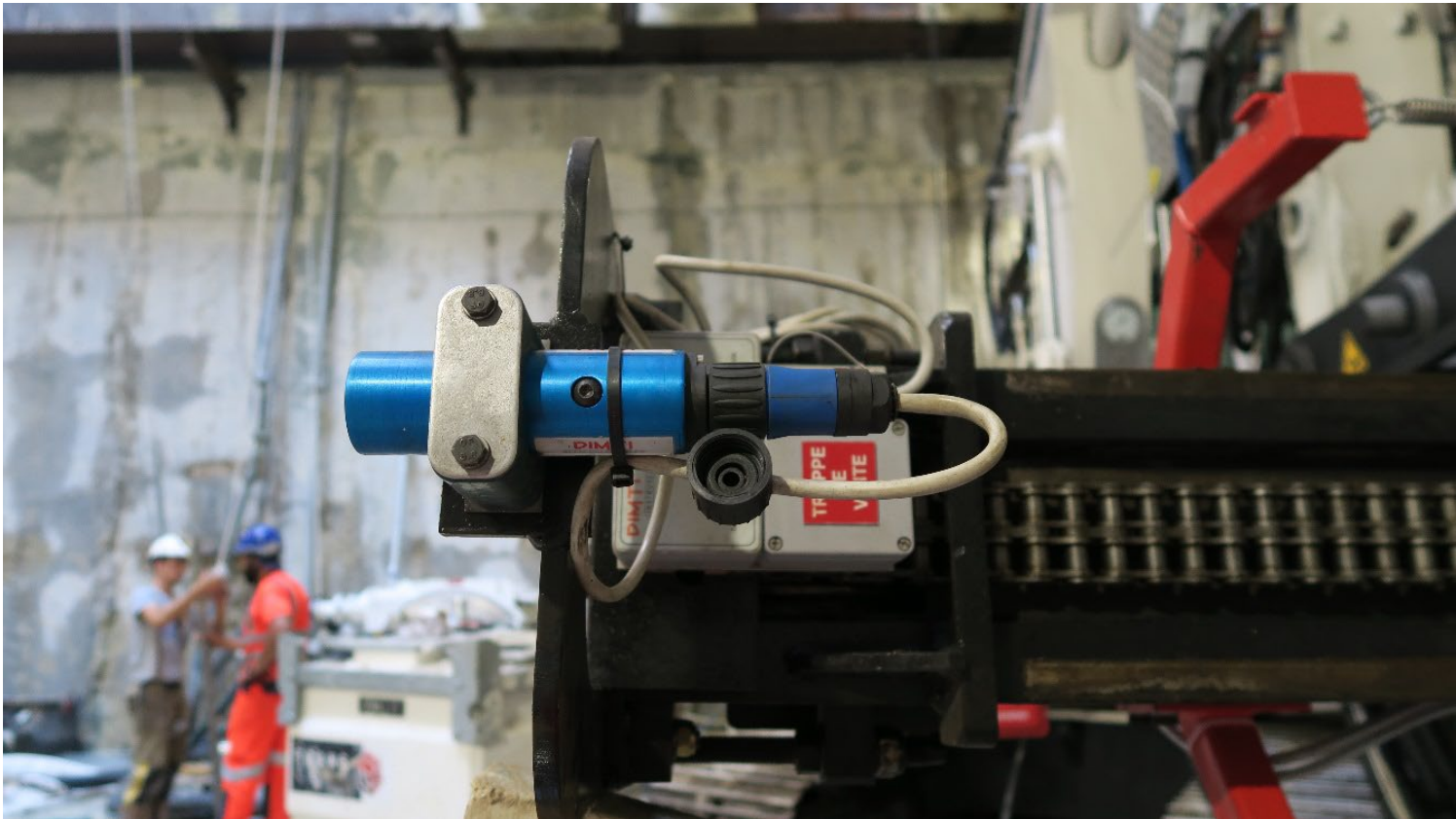
Ground anchors

« Sonic » and vibrating drilling

Improvements:

- Drilling speed,
- Single method for alluvium and rocks,
- Equipment through the casing,
- Reliable method,





REFLEX ROTA-LOCK OVERSHOT^{MC} pour EZ-GYRO^{MC}

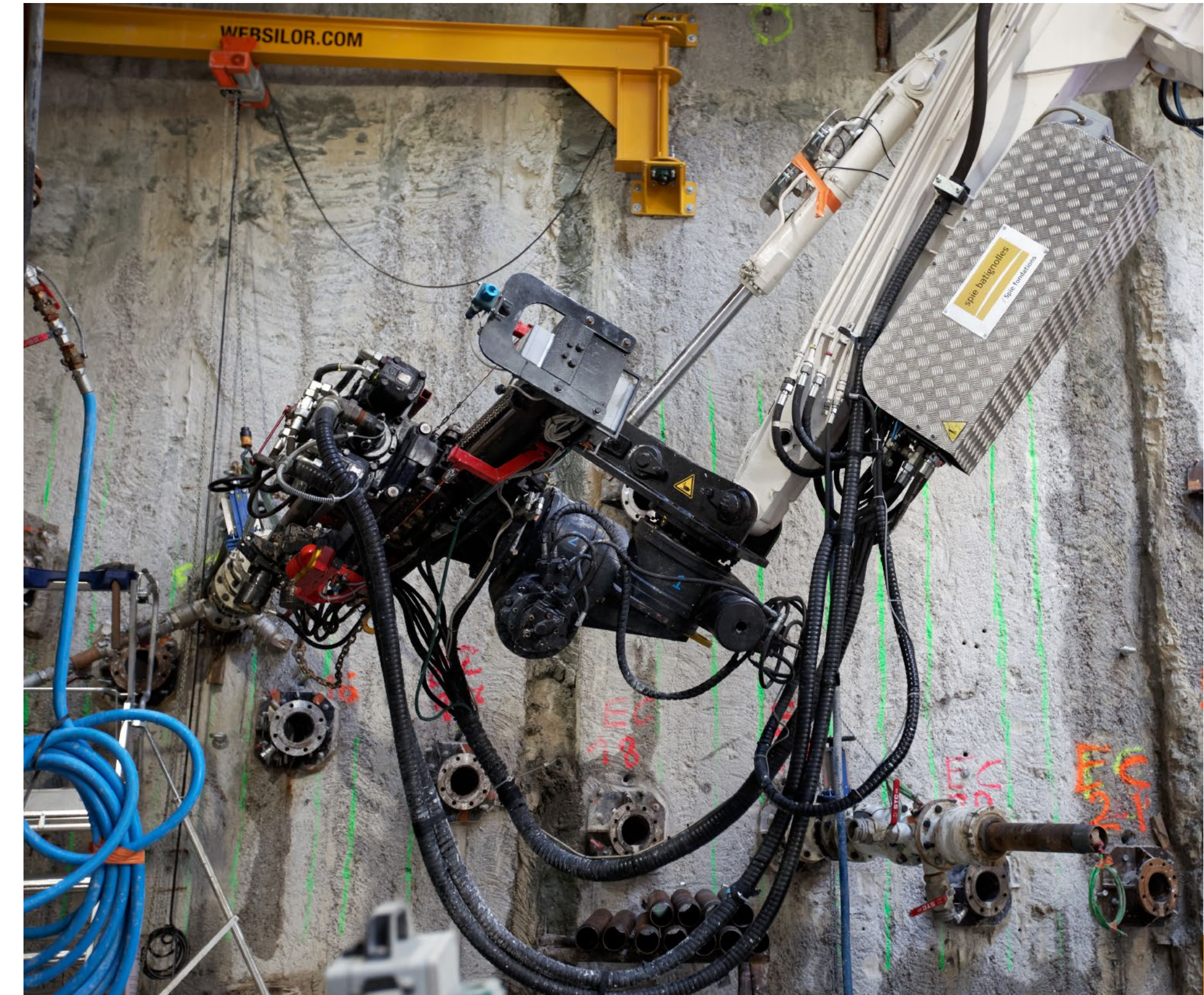


Prism support

Ground anchors

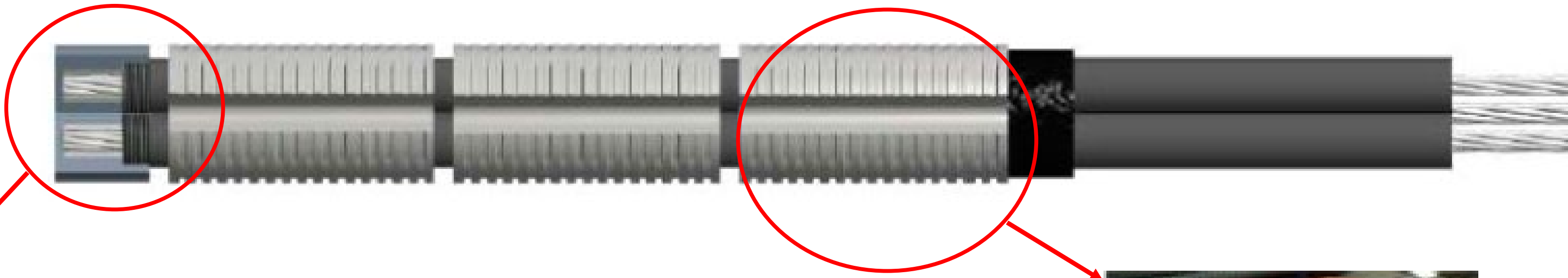
Examples of equipment service developments and adaptations

Drilling arm used on hydraulic excavator



Ground anchors

DSI removable anchors



Thank you for your attention