

# Build on us



Soletanche Bachy is a world leader in foundations and soil technologies, operating in 60 countries via a network of 80 subsidiaries and branches.

The Group offers effective and innovative construction solutions to public and private clients, in order to complete deep foundations, retaining structures, cut-off walls, reinforcing and civil works for all types of projects, from the largest international structures to the most local sites.

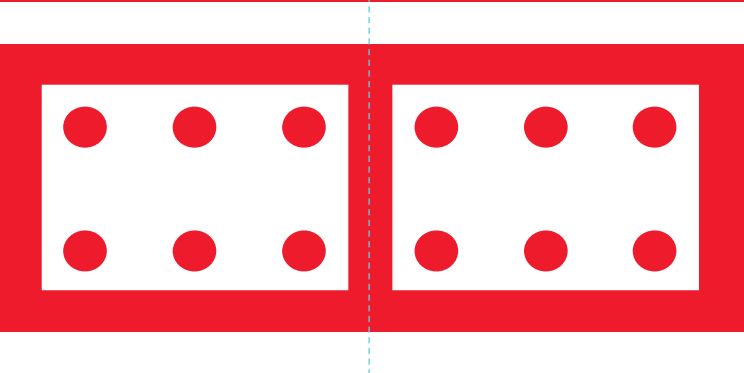
Through its subsidiaries, Soletanche Bachy operates as a general contractor and a specialist subcontractor to design, build, rehabilitate and maintain ports, dams, car parks, metros, tunnels, energy facilities, buildings, etc.

The Group provides environmental solutions by participating in the construction of structures with a positive impact, by implementing optimised technical solutions and by carrying out daily actions on our worksites.

You have a project?  
Contact us

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## Diaphragm Wall



### Process

Techniques and applications



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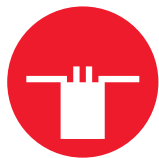
## What is a diaphragm wall?

The diaphragm wall is a reinforced concrete screen cast into the ground, used for all types of structures (underground stations, buildings, parking lots, basins, dams) and in all types of soil. It is one of Soletanche Bachy's most frequently used techniques, for permanent retaining structures, deep foundations or the construction of deep cut-offs.

## Applications



Retaining structures



Deep foundations



Cut-offs



Underpinning

## The advantages of diaphragm walls

- ✓ Adapted to the presence of water in the ground,
- ✓ Preferred in urban environments, close to adjoining buildings, under limited height, or on a small footprint,
- ✓ Its high inertia makes the diaphragm wall much less deformable,
- ✓ Can be used as a temporary or permanent structure,
- ✓ Numerous environmental optimizations are possible.

### Technical specifications

**Thickness**  
From 0.5m to 1.8m (depending on country)

**Depth**  
Over 90m

**Water tightness**  
By using CWS metal formwork to incorporate a joint between two panels, or with interlocking joints in the concrete of the adjacent panel.

## Environmental benefits

- + **Low-carbon concrete**, thanks to the Exegy by Soletanche Bachy supply solution.
- + **Electric equipment**, using the Hydrofraise® with an electric power pack or connected to a battery pack.
- + **Designs optimized by our design offices**, enabling us to propose variants that reduce material quantities (steel-free diaphragm walls).

## Implementation

1

**Construction of the guide wall**, consisting of two temporary reinforced concrete walls defining the precise layout of the structure, to guide the drilling tool and support the future wall equipment.

2

**Excavation of the panels** using a bucket or an Hydrofraise®, in one or more passes, with the aid of a support fluid (or drilling mud), which contributes in particular to the stability of the trench.

3

**Placement of the reinforcement cage, and installation of the concreting columns.** The concrete encases the cages and gradually pushes the drilling mud back to the surface, where it is pumped to be recycled and reused.

4

**Earthworks / Excavation** carried out safely under the shelter of the diaphragm wall.

## Execution controls and monitoring

- **Real-time measurement of drilling deviations**, thanks to a range of high-precision sensors embedded in the drilling tool body, developed and patented by Soletanche Bachy. The Z-Lyze® tool is used to process data from our tools.
- **Control of the physico-chemical properties of materials** by our in-house laboratory, through numerous tests and analyses on slurry and concrete to verify their quality.
- **Inclinometer checks** to monitor movements of the diaphragm wall during excavation and throughout the life of the structure.
- **Corrections of any potential deviations using our patented tools.**

## WHY WORK WITH SOLETANCHE BACHY

- ✓ A technique mastered for over 60 years.

- ✓ We design and build our equipment, such as grabs and Hydrofraises®, to suit project constraints.

- ✓ An in-house Materials department to formulate concretes and drilling fluids according to our customers' needs.

## Equipment

Soletanche Bachy designs and manufactures its equipment to adapt to the constraints of each worksite:



**Hydrofraise® HC05:**  
Compact, containerizable, the Hydrofraise® HC05 is ideal for highly constrained environments, under limited height. It can be fitted with an electric power pack to reduce its carbon footprint, and grippers for enhanced performance.



**Hydrofraise® HF6:**  
Capable of reaching depths of up to 90m while maintaining a reduced footprint, the Hydrofraise® HF6 meets the constraints of today's urban worksites. The HF6 is equipped with grippers and can operate electrically.



**Hydrofraise® HF8:**  
A machine capable of drilling in the hardest terrain and at great depths. This machine can also be transported in a container and dismantled in 72 hours. The Hydrofraise® HF8 can also be fitted with an electric power pack and grippers.



**KS / Baya grab:**  
Quiet and low-vibration, they are perfectly suited to urban worksites. The latest generations are equipped with hydraulic flaps and electronic sensors for greater drilling precision and verticality.

## References



**TESTIMONIO II**  
Monaco  
Use of the electric Hydrofraise®



**STORMWATER TANKS**  
Minnesota, USA  
Final diaphragm wall without steel



**RAILWAY LINE HS2**  
United Kingdom  
7km of diaphragm walls for numerous structures



**UNIVERSITY TOWER**  
Mexico City  
Mexico  
Deep diaphragm wall with grab (48m)



**PORT 2000**  
Le Havre  
France  
Use of low and ultra-low carbon concrete



**URBAN HIGHWAY NSC105**  
Singapore  
First use of HF8 Hydrofraise® with grippers

- ✓ A digital platform (Zetta-Lyze®) to collect, analyze and track project data in real time.

- ✓ In-depth control of verticality and rigorous monitoring of implementation.