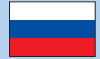


Underpinning

Diaphragm wall - Barrettes

BOLSHOI THEATRE

MOSCOW - RUSSIA



Underpinning works to refurbish the Bolshoi Theater and create a major underground part

The Bolshoi Theatre was first built in 1825, but its contemporary version was reconstructed and extended in 1825. The refurbishment project of the Bolshoi has been elaborated under the aegis of Ministry of Culture. The project consisted of a total underpinning of the existing building and the creation of a major underground part (4 to 5 basements going about 22m below the scene level) brimming over existing construction.

Solétanche Stroy, the Solétanche Bachy Russian subsidiary, was in charge of diaphragm wall and foundation barrettes works (inside and outside of the theatre) :

- A 24m deep perimeter wall that constitutes the water resistant cofferdam anchored in the clay and chalk. The major part of the external diaphragm wall has a thickness of 80cm, excepting two parts where the thickness was increased up to 120cm. This concerned the front side (small theatre) where a thick retaining wall without intermediary supports was required by the architectural project (the diaphragm wall is



Hydrofraise in front of the facade of the Bolchoi

OWNER:	MINISTRY OF CULTURE
ARCHITECT:	NIKITA SHANGIN (KURORTPROYEKT)
MAIN CONTRACTOR:	SUY ENGINEERING
WORKS PERIOD:	JANUARY 2006 - APRIL 2007

WORK CARRIED OUT:

Exterior of existing building

- 9,640m² of 80cm thick diaphragm wall
- 300m² of 120cm thick diaphragm wall
- 60 barrettes 2.80m x 0.80m, depth 24m

Interior of the building

- 942m² of 100cm thick diaphragm wall
- 38 barrettes 2.80m x 0.80m, depth 23m

curved, allowing horizontal arching effect to develop) as well as the rear part where the vertical free span was reaching 12m.

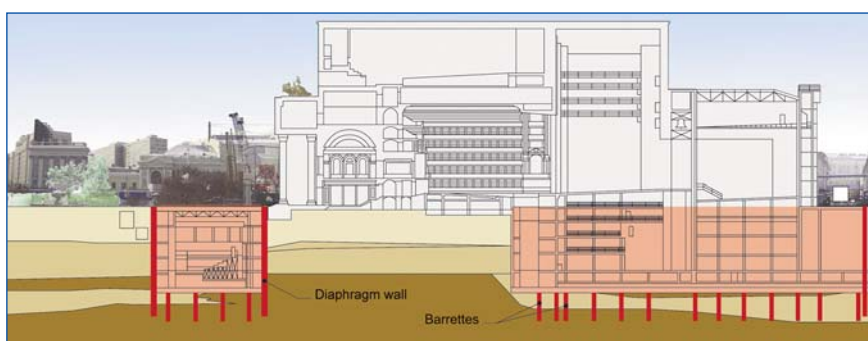
- A retaining wall in front of the columns that support the pediment and the chariot, and against which the underground concert hall will be built.

- The new structures is underpinned by barrettes equipped with pre-founded steel columns.

- Inside the theatre, under the stage, a semi-circular diaphragm wall separates the amphitheatre from the technical zones, and barrettes and piles also bear the load of the new structures. For this job, the Hydrofraise “Latine” was used due to its compact design.



Foundations plan of the new underground structures



Cross section view



The Hydrofraise “Latine” was used due to its compact design



Hydrofraise “latin” working inside of “Bolchoi”