

Project datasheet: Deep Excavation

Project name: Bandeira Square Reservoir

Location: Rio de Janeiro, Brazil

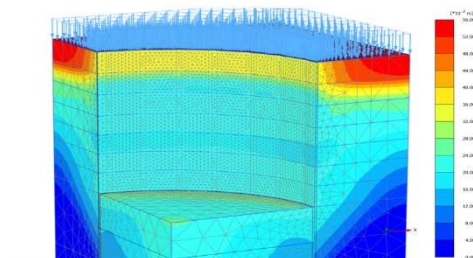
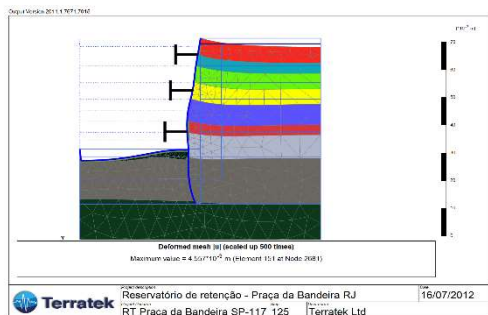
Client: OAS Contractors

Description: The Bandeira Square Reservoir is part of the works to prevent flash floods in the Tijuca borough. It consists of a 30 m deep excavation through soft to dense sediments from soft clay to silty sand. The excavation support consisted of an 800 mm thick diaphragm wall. The circular shape of the water reservoir eliminated the need for tiebacks. Terratek designed a series of internal circular ring concrete beams to provide internal support



Services provided by Terratek

- Site investigation including geophysical testing, drilling and sampling, permeability, pumping, CPTU and PMT tests;
- Diaphragm wall design;
- 2D and 3D Plaxis numerical modelling;
- Structural design;
- Instrumentation and monitoring;
- Site supervision.



Project datasheet: Deep Excavation

Project name: Niterói Square Reservoir

Location: Rio de Janeiro, Brazil

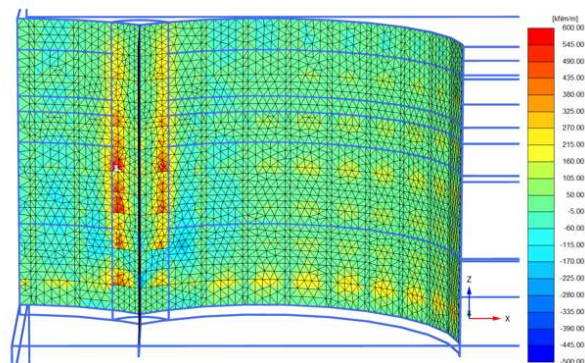
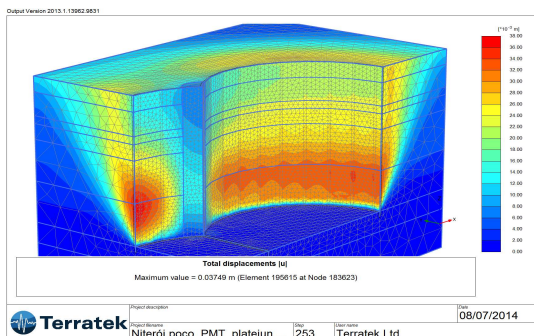
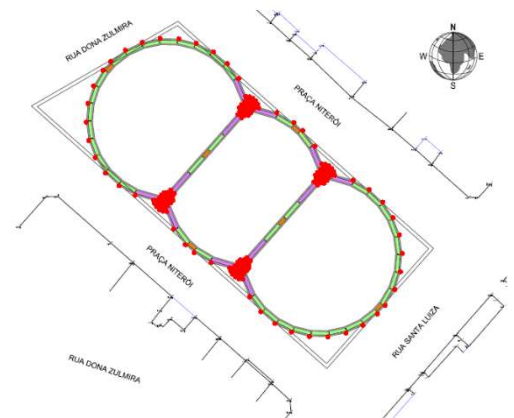
Client: OAS Contractors

Description: The Niterói Square Reservoir, as part of the Tijuca borough flash floods preventive works, was built in 2014. It consists of a 28 m deep excavation using a shape to prevent the need for tiebacks, with three 18 m diameter intersecting circles. Ground conditions are dense sediments from silty clays to silty sand, overlying gneiss bedrock. The excavation support consisted of an 800 mm thick diaphragm wall. Terratek designed a series of internal circular ring concrete beams to provide internal support and well ground improvement with jet grouting around the wall joints.



Services provided by Terratek

- Site investigation including geophysical testing, drilling and sampling, permeability, pumping, CPTU and PMT tests;
- Diaphragm wall design;
- 2D and 3D Plaxis numerical modelling;
- Structural design;
- Instrumentation and monitoring;
- Site supervision.



Project datasheet: Deep Excavation

Project name: Varnhagen Reservoir

Location: Rio de Janeiro, Brazil

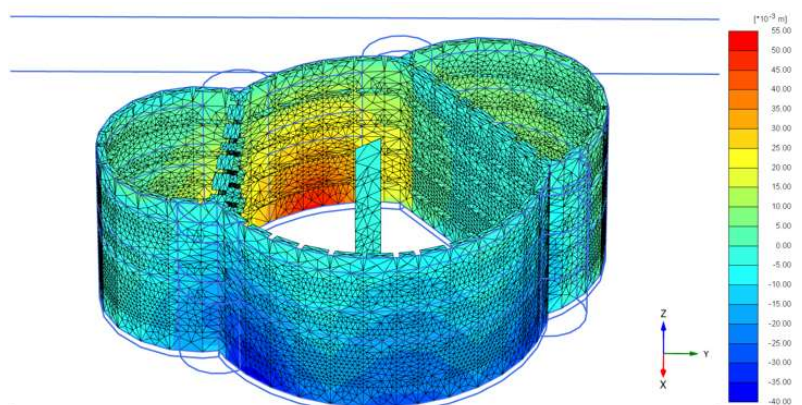
Client: Riwa Contractors

Description: The Varnhagen Reservoir, as part of the Tijuca borough flash floods preventive works, was built in 2017 with a total volume of 45 000 m³. Due to the shape of the area, it was built, Terratek designed three circular intersecting shapes 22, 18 and 15 m in diameter. The excavation was 23 m deep to the top of the gneiss bedrock. Ground conditions are dense sediments from silty clays to silty sand, overlying gneiss bedrock. The excavation support consisted of an 800 mm thick diaphragm wall. Terratek designed a series of internal circular ring concrete beams to provide internal support and well ground improvement with jet grouting around the wall joints.



Services provided by Terratek

- Site investigation including geophysical testing, drilling and sampling, permeability, pumping, CPTU and PMT tests;
- Diaphragm wall design;
- 2D and 3D Plaxis numerical modelling;
- Structural design;
- Instrumentation and monitoring;
- Site supervision.



Project datasheet: Deep Excavation

Project name: FMC test pit

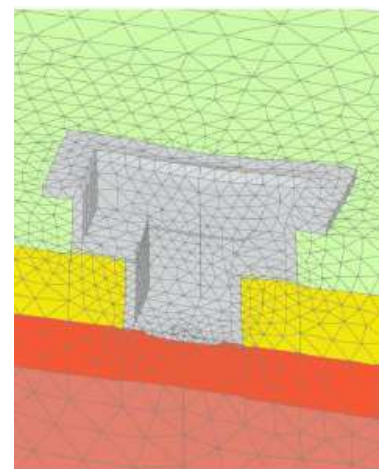
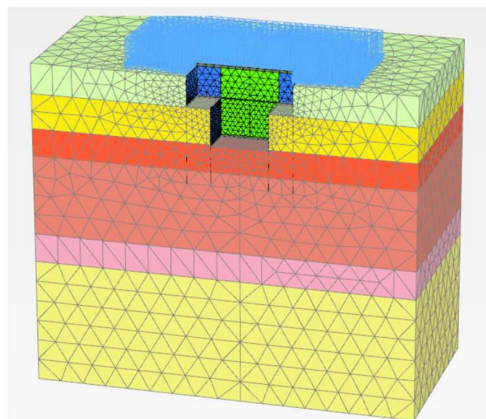
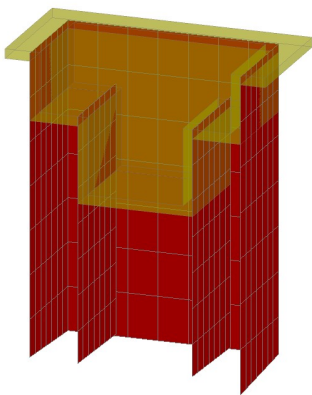
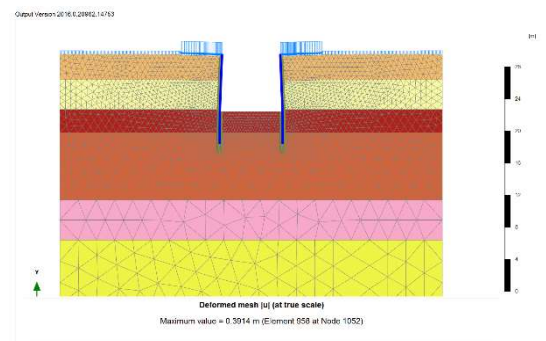
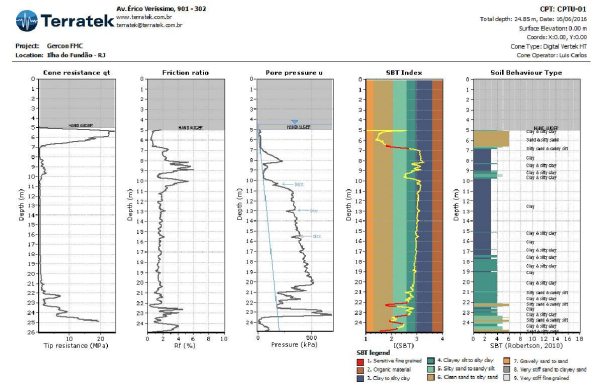
Location: Fundão Island, Rio de Janeiro

Client: Gercom Contractors

Description: It is an 8 m deep excavation for an industrial test pit for the FMC Research Centre in Rio de Janeiro, Brazil, supported with secant piles. Soil conditions were challenging: very soft clays. Terratek carried out the site investigation and design. The 2D Plaxis model led to a very conservative design, then a 3D Plaxis model was built which led to an optimised design and pile length was reduced from 15 to 12 m.

Services provided by Terratek

- Seismic CPTU testing
- Secant pile wall design;
- 3D Plaxis numerical modelling;
- Instrumentation and monitoring;
- Site supervision.



Project datasheet: Deep Excavation

Project name: Lifestyle Hotel

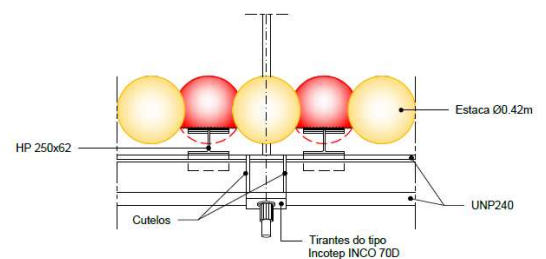
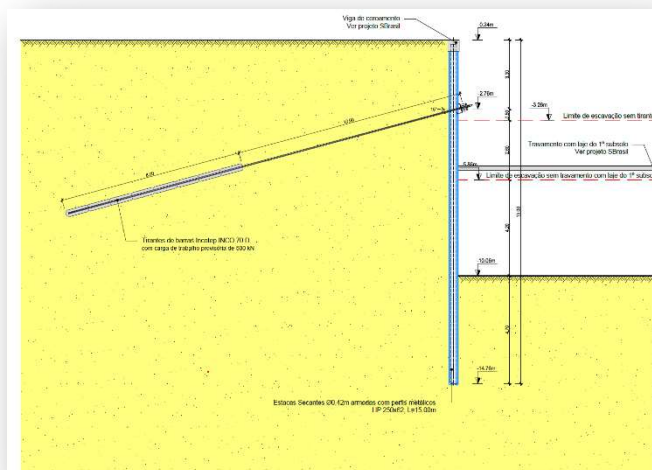
Location: Praça do Ó, Rio de Janeiro, Brazil

Client: Lafem Contractors

Description: It is a 10 m deep excavation for the basement of a hotel located on the seafront of Barra da Tijuca Beach in Rio de Janeiro. Soil conditions are very dense sand and high water table. Terratek designed the excavation support with 420 mm diameter 16 m long secant piles employing 800 kN temporary tiebacks.

Services provided by Terratek

- Secant pile wall design;
- 2D Plaxis numerical modelling;
- Instrumentation and monitoring;
- Site supervision.



Project datasheet: Deep Excavation



Project name: CSN Car Dumper 1

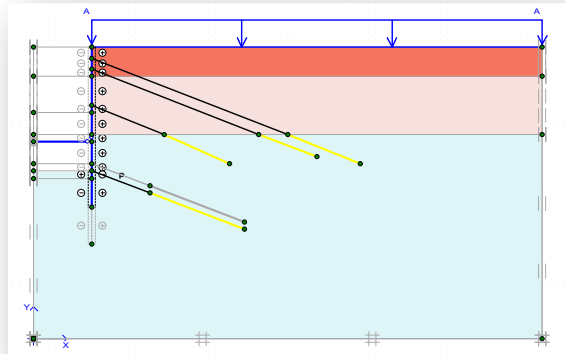
Location: Sepetiba Harbour, Brazil

Client: Paranasa Contractors

Description: Consists of a 22 m deep excavation through soft sediments employing 400 mm thick diaphragm wall

Services provided by Terratek

- Design review
- Dewatering design
- PMT testing and analyses
- 2D Plaxis numerical modelling
- Site supervision



Project datasheet Deep Excavation

Project name: CSN Car Dumper 2

Location: Sepetiba Harbour, Brazil

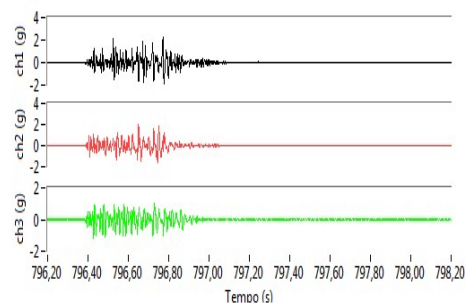
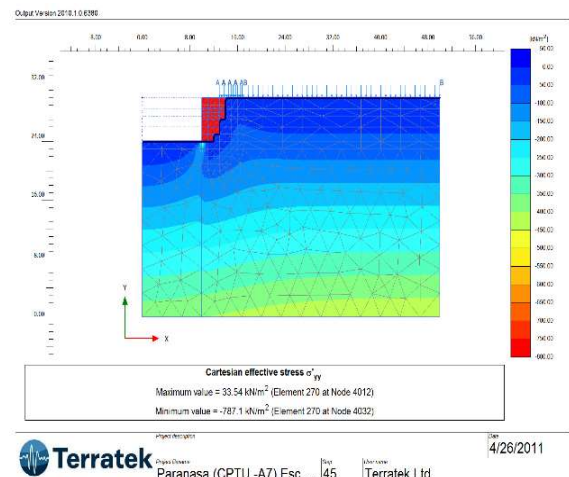
Client: Paranas Contractors

Description: Consists of a 22 m deep excavation through 8 m soft sediments followed by residuals soils and gneiss. Excavation support consists of an 8 m deep 1.2 m diameter secant jet-grouting columns, pinned to the bedrock.



Services provided by Terratek

- In situ testing and analyses
- Excavation support design
- 2D Plaxis numerical modelling
- Instrumentation and monitoring
- Vibration monitoring during rock blasting
- Site supervision



Project datasheet Deep Excavation

Project Name: Hotel Windsor Barra

Location: Rio de Janeiro, Brazil

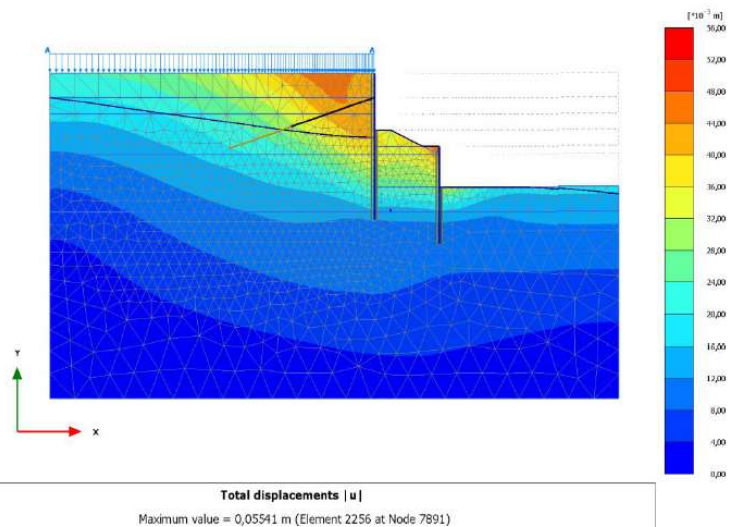
Client: SIG Contractors

Description: Consists of a 12 m deep excavation through very beach dense sand. Excavation support consists of a 400 mm thick, 18 m deep diaphragm wall



Services provided by Terratek

- Excavation support design
- 2D Plaxis numerical modelling
- Instrumentation and monitoring
- Site supervision



Project datasheet: Deep Excavation

Project name: Uruguai Underground Station



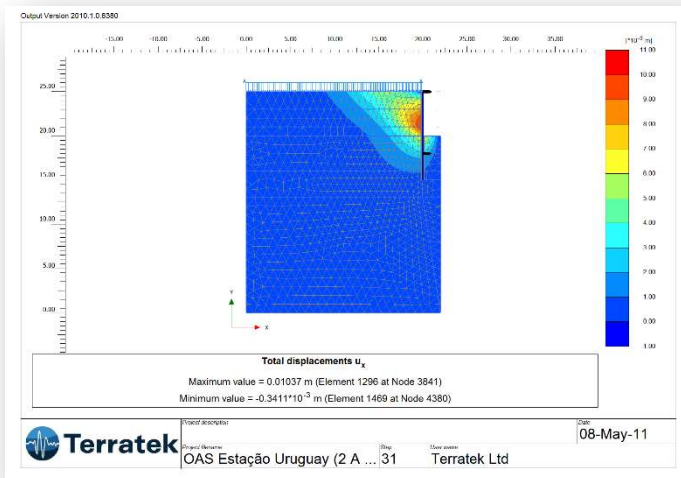
Location: Rio de Janeiro, Brazil

Client: ThyssenKrupp

Description: It consists of a 6.5 m deep excavation through the uncompacted fill, dense silty sands for the Uruguai Underground Station project. The excavation support consisted of Larssen 604 steel sheet piles.

Services provided by Terratek

- Site investigation results analyses
- Plaxis 2D numerical modelling
- Excavation support design



Project datasheet: Deep Excavation

Project name: Petrobrás Building

Location: Santos, Brazil

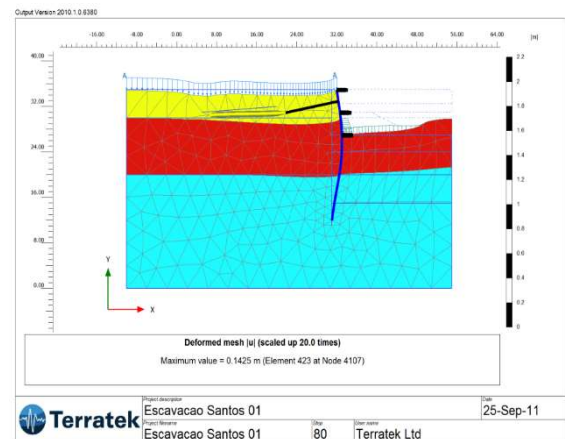
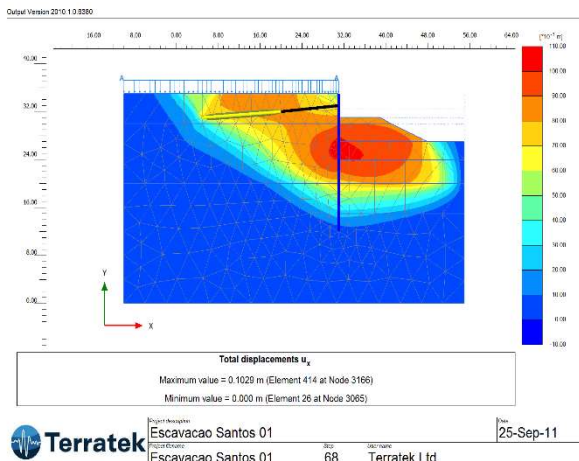
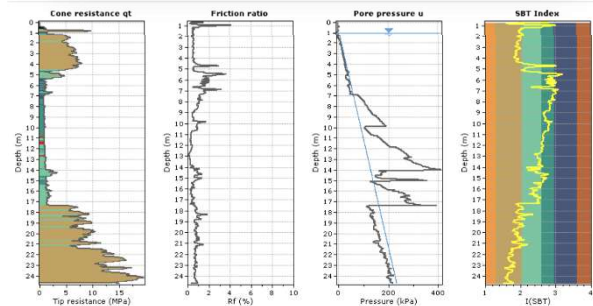
Client: Construcap Contractors



Description: Terratek designed an 8 m deep excavation in Santos clay. The excavation support consisted of a 25 m deep, 400 mm thick diaphragm wall with only one line of temporary soil anchors.

Services provided by Terratek

- Analysis of site investigation data
- Plaxis 2D numerical modelling
- Excavation support design;
- Site supervision



Project datasheet: Deep Excavation

Project name: Porto Atlântico Building

Location: Rio de Janeiro, Brazil

Client: Odebrecht Contractors



Description: Terratek designed a 15 m deep excavation support. The excavation support consisted of 25 m deep, 650 mm thick diaphragm wall, using rotary drill equipment capable of pinning the wall through 3 m down through the bedrock

Services provided by Terratek

- Analysis of site investigation data
- Plaxis 2D numerical modelling
- Excavation support design;
- Site supervision

