

Metro Station

Athens Attiko Metro

Elliniko Station

Athens, Greece

Project

Metro Station Bit and Metro Building
Athens Attiko Metro, Extension of line 2 to Elliniko

Construction Cost

Total cost: approx. € 21 m.

Project Schedule

Design: 2006-2010
Construction: 2006-2011

Project Description

Main Station (including ventilation and detonation shafts)

Length: 123m
Width: 17m – 28m
Depth: 25m – 28m

5 final levels: Foundation level / Platform level/ Ticket Issue level / EM level / Roof level

Station's East Entrance

Length: 15m
Width: 9m
Depth: 26,5m

Station's Access Tunnel

Length: 3,5m
Cross section: 44m² - 55m²
Effective cross section: 25 m²

Construction Method

Main Station and East Entrance:

Excavation & Reinstatement (Cut & Cover)
Retaining structures of open excavation: reinforced concrete shaftpiles, prestressed anchors, gunite, structural tissue

Station's Access Tunnel

Top Down Excavation - NATM Excavation

Final Lining

Reinforced concrete C30/37, B500c

Geology

Debris, clastic deposits, neogene deposits (siltstones, conglomerates, marly limestones)
Access tunnel overburden height: 10m

Our Services

- Geotechnical evaluation
- Detailed geotechnical and structural design

Client

J/V AKTOR SA – SIEMENS AG – VINCI CONSTRUCTION
GRANDS PROJECTS



Station's construction works

Metro Station

Athens Attiko Metro

Argiroupoli Station

Athens, Greece

Project

Metro Station Bit and Metro Building
Athens Attiko Metro, Extension of line 2 to Elliniko

Construction Cost

Total cost: approx. € 21 m.

Project Schedule

Design: 2006-2010
Construction: 2006-2011

Project Description

Main Station (including ventilation and detonation shafts)

Length: 123m
Width: 19m – 28m
Depth: 21m – 24.5m

5 final levels: Foundation level / Platform level / Ticket Issue level / EM level / Roof level

Station's East Entrance

Length: 43m
Width: 4m-8m
Depth: 2.0m-14m

Station's Access Tunnel

Length: 52m
Cross section: 44m² - 55m²
Effective cross section: 25 m²

Construction Method

Main Station and East Entrance:

- Excavation & Reinstatement (Cut & Cover)
- Retaining structures of open excavation: reinforced concrete shaftpiles, prestressed anchors, gunite, structural tissue.

Station's Access Tunnel

Top Down Excavation - NATM Excavation

Final Lining

Reinforced concrete C30/37, B500c

Geology

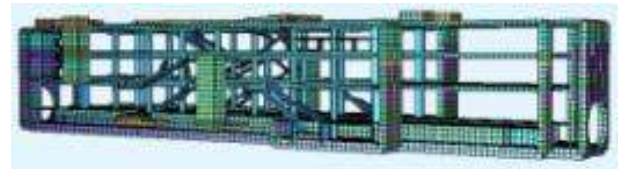
- Debris, Athenian schists
- Access tunnel overburden height: 6m-7m
- Existence of common utility network

Our Services

- Geotechnical evaluation
- Detailed geotechnical and structural design

Client

J/V AKTOR S.A. – SIEMENS AG – VINCI CONSTRUCTION
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Building Station Analysis Model



Station construction works



Metro Project

Athens Attiko Metro

Sourmena Shaft

Athens, Greece

Project

Athens Attiko Metro, Extension of line 2 to Elliniko Shaft for the launch of TBM machine

Construction Cost

Total cost: approx. € 5 m.

Project Schedule

Design: 2006 - 2010

Construction: 2006 - 2011

Project Description

Retaining structures of open excavation

Length 74.50m

Width: 16m – 18m

Depth: 25,4m

Final lining consisting of the following levels:

- Foundation slate level
- Two in between slates with openings
- Top slate level

Construction Method

- Excavation & Reinstatement (Cut & Cover)
- Retaining structures of open excavation: reinforced concrete shaftpiles, prestressed anchors, gunite, structural tissue.
- Final lining at the NW section of the shaft, dimensioning 20m x 14,35m, consisting of reinforced concrete C30/37 and B500c
- Reinstatement of the rest, after the completion of the TBM assembly and real works

Geology

- Debris.
- Clastic deposits
- Existence of common utility network inside the excavation
- Existence of middle pedestal at the exiting bridge at 7m distance of the WE side of the shaft

Our Services

- Geotechnical evaluation
- Detailed geotechnical and structural design

Client

J/V AKTOR S.A. – SIEMENS AG – VINCI CONSTRUCTION
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Shaft construction works



TBM assembly

Metro Project

Athens Attiko Metro

Elliniko Shaft

Athens, Greece

Project

Railway tunnel ventilation shaft and TBM relocation shaft
Athens Attiko Metro, Extension of line 2 to Elliniko

Construction Cost

Total cost: approx. € 2.2 m.

Project Schedule

Design: 2006-2010
Construction: 2007-2011

Project Description

Retaining structures of open excavation with rectangular cross section

Length: 22m
Width: 16m
Depth: 25.5m

Final lining consisting of the following levels:

- Foundation slate level
- Two in between slates with openings
- Top slate level

Construction Method

Excavation & Reinstatement (Cut & Cover)
Retaining structures of open excavation: reinforced concrete shaftpiles, prestressed anchors, gunite, structural tissue.

Final lining:

Reinforced concrete C30/37 and B500c

Geology

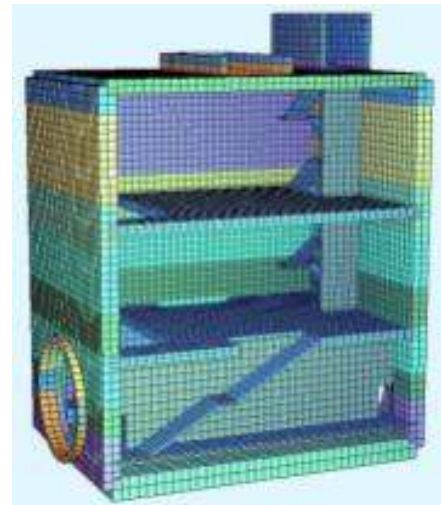
- Debris,
- Athenian schist

Our Services

- Geotechnical evaluation
- Detailed geotechnical and structural design

Client

J/V AKTOR S.A. - SIEMENS AG – VINCI CONSTRUCTION
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Shaft analysis model



Shaft construction works

Metro Tunnel

Athens Attiko Metro

Extension of line 2

Athens, Greece

Project

Metro Tunnel

Construction Cost

Total cost: approx. € 84,5 m.

Project Schedule

Design: 2006-2010

Construction: 2007-2011

Project Description

Urban Tunnel

Length: 4.593m

Cross Section: double track with diameter 9,48m

Excavation Method

Mechanical excavation with EPB - TBM (Earth Pressure Balance - Tunnel Boring Machine)

Final Lining

Pre-cast segments concrete C40/50 and B500c

Geology

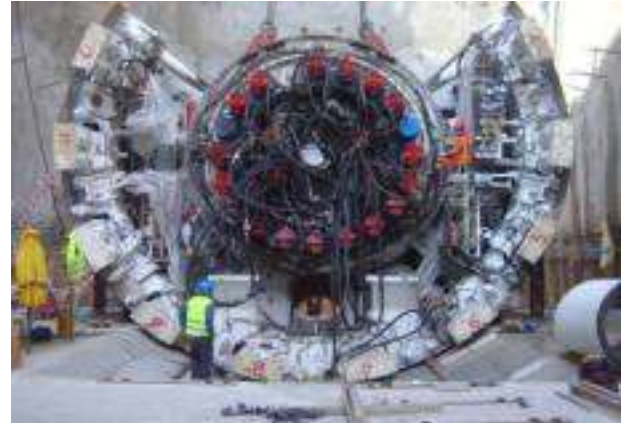
- Debris, clastic deposits, neogene deposits (siltstones, conglomerates, sandstones, marly limestones, alpine deposits (marly limestones, athenian schists)
- Underground water table
- Overburden height: 10m – 18m

Our Services

- Geotechnical evaluation
- Detailed design of the final lining
- Detailed design for the EPB –TBM advance

Client

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TBM assembly



TBM's digging out at Elliniko station

Metro Station

Athens Attiko Metro

Agios Antonios station

Athens, Greece

Project

Metro station building pit
Retaining structures of the west blast shaft

Construction Cost

Total cost: approx. € 10 m.

Project Schedule

Design: 2002 - 2004
Construction: 2002 - 2004

Project Description

- Pile anchored wall retaining structure

Station building pit

Max. width: 75m
Max. length: 150m
Max. depth: 19,3m

West blast shaft

Length: 26m
Max. width: 14,1m
Max. depth: 14,5m

Construction Method

- Pile anchored wall retaining structure
- Top down construction

Geology

Alluvial deposits, man-made deposits
Ground water
Archaeological findings

Our Services

- Detailed geotechnical & structural design
- Design jointly elaborated by OMIKRON KAPPA CONSULTING & EDR GmbH, Munich

Construction Details

- Construction of secant piles in the regions of the building pits over the tunnel portals and near the existing buildings
- Pile walls anchoring with one to six rows of prestressed anchors
- Construction of Berlin walls in the perimeter of the building pit due to safety reasons

Client

C. I. KALOGRITSAS S.A.



Station building pit view during construction



Station during operation