

# geotechnical, civil engineers & geologists



GEOTECHNICAL INVESTIGATION & DESIGN - INFRASTRUCTURE DESIGN - CONSULTING SERVICES

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# about us

## **ROXPLAN ENGINEERING**

ROXPLAN ENGINEERING is a Consulting Engineering Company managed and operated by experienced engineers / geologists committed to the art and science of Geotechnical and Infrastructure Engineering, always aiming in giving high quality, simple and cost-effective solutions to the projects undertaken.

ROXPLAN ENGINEERING is staffed with experienced Geotechnical Engineers and Engineering Geologists, having extensive experience respectively in all aspects of Geotechnical and Infrastructure Engineering (Railway projects, Hydraulic works, Road and Bridge design, Building foundation design, Tunnels, Cut & Covers, Slope design etc).

ROXPLAN ENGINEERING has available modern equipment including drilling-rigs, in situ and laboratory testing devices and with the use of specialized software, can give reliable, fast and economical design solutions to all geotechnical problems.

## **ROXPLAN INTERNATIONAL**

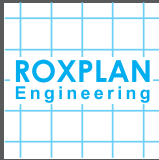
ROXPLAN INTERNATIONAL has been established in Qatar, in order to give us the opportunity to offer our services in the State of Qatar and the broader Gulf Area, utilizing our expertise and experience in the Geotechnical and Infrastructure design fields.

## **Clients & Collaborations**

We have been cooperating in various projects with international consultants like W.S. Atkins, AEKOM, SSF of Germany etc.

Our clients include the main organizations which manage the major infrastructure and building projects in a number of European countries, Middle East etc, as well as major contractors like Hochtief, Vinci etc.





# what we do

## Geotechnical & Geological Investigations

- Programming of Investigations
- Inspection of Geotechnical Works
- Interpretation of Investigation Results
- Sampling Boreholes: on-shore / off-shore
- Trial Pits
- Special Sampling Works
- In situ permeability Testing
- Standard Penetration Tests (S.P.T.)
- Plate Loading Testing
- Wagon Drillings
- Cone Penetrometer Testing
- Pressuremeter Dilatometer Testing
- Trial Embankments
- Borrow Areas Investigations
- Geophysical Investigations
- Physical Properties Laboratory Testing
- Engineering Properties Laboratory Testing
- Chemical Properties Laboratory Testing

## Engineering Design

- Shallow - Deep Foundations
- Ground Improvement / Treatment
- Underpinning
- Water Filtration and Drainage
- Borrow Areas - Damping Sites
- Embankments
- Excavations
- Slopes and Landslides
- Geosynthetics (Design and Application)
- Ground Water Management
- Retaining Structures
- Road / Airfield Pavements
- Tunnels - Underground structures
- Dams - Hydraulic Projects
- Port Structures / Offshore Geotechnics
- Instrumentation
- Landfills
- Bridges
- Industrial / Residential Buildings

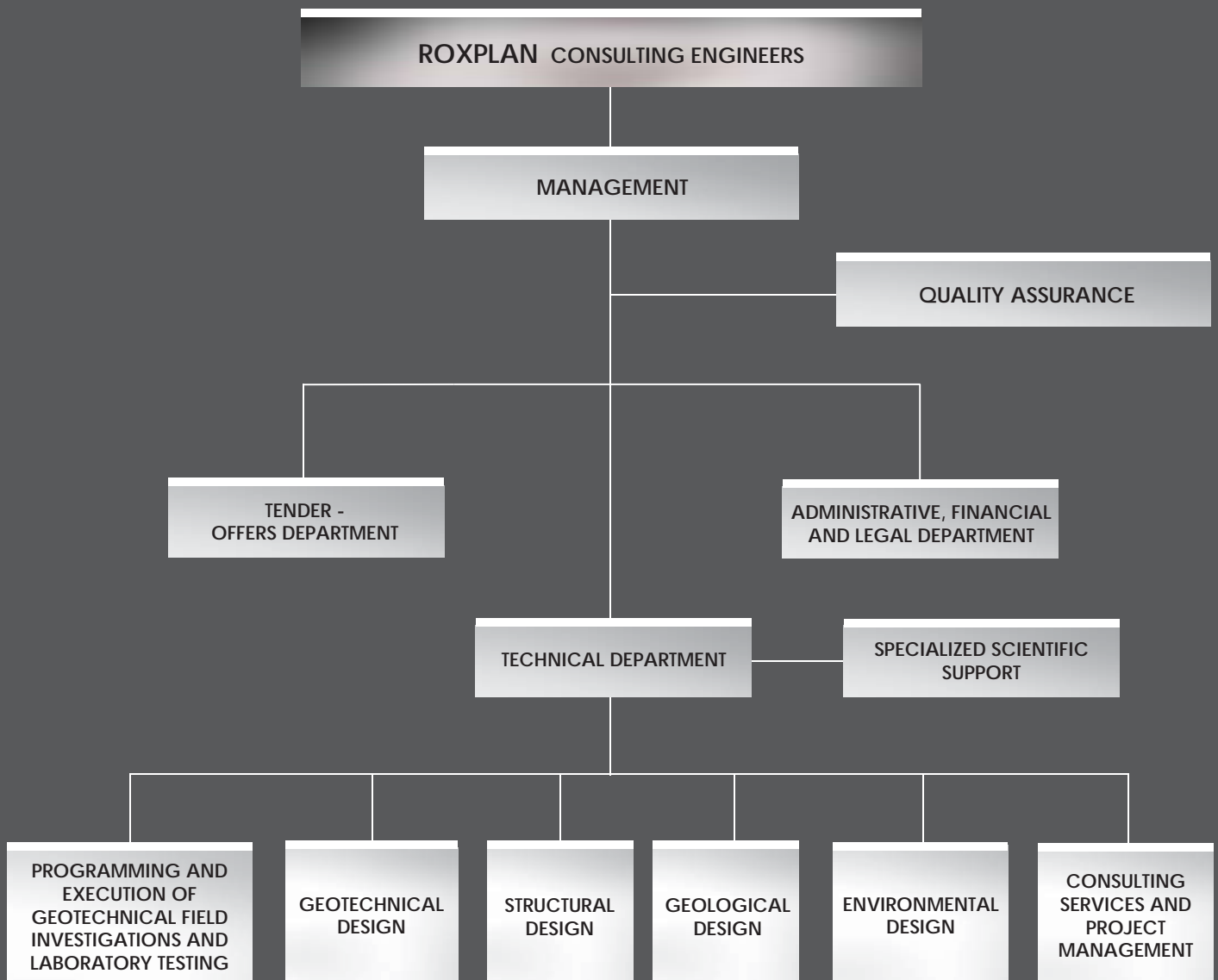
## Consulting Services

- Checking of Designs
- Expert Evaluations
- Observation / Interpretation of Instruments
- Value Engineering
- Preparation of Tender Documents
- Evaluation of Contractors' Offers
- Project Management
- Verification
- Independent Engineer Services
- Risk Assessment





# our structure









our expertise





# underground structures

Metros, Railway and Road Tunnels, Cut and Covers, Large Conduits.



# underground structures



## ▶ ATHENS METRO

### ▶ Client:

ATTIKO METRO S.A.

### ▶ Technical Info:

Geotechnical Consulting Services, consisting of the management of the Athens Metro owner Geotechnical Department for Lines 2 and 3 of the Metro (25km underground lines, 21 stations, depot and other auxiliary structures).



## ▶ NEW HIGH SPEED RAILWAY LINE ATHENS - KORINTHOS - PATRAS, "AIGIO" AREA TUNNEL PELOPONNESE, GREECE

### ▶ Client:

ERGOSE S.A. / WS ATKINS S.A.

### ▶ Technical Info:

Geotechnical Investigation with Coring Boreholes and Pre-Final Geotechnical Design of the main Tunnel (L=3,5Km), 2 Cut & Covers and 3 Escape Tunnels (L=250-350m).

# underground structures



## DOHA METRO, QATAR

**Client:**  
DEUTSCHE BAHN INTERNATIONAL /  
QATAR RAIL

**Technical Info:**  
Geotechnical & Tunneling Services  
for Tender Preparation  
for the Doha Metro,  
50Km of Double Tube Tunnel,  
25 Stations and other auxiliary  
Structures.



## DOHA METRO, QATAR

**Client:**  
SSF INGENIEURE AG / PORR - SBG - HBK  
/ QATAR RAIL

**Technical Info:**  
Geotechnical Investigations and  
Evaluation - Dewatering Design -  
Stations Temporary Structures Design  
- Risk Assessment for the Green Line  
of the Doha Metro.  
17 km of Twin-Tube Tunnel, 10 Stations  
- Switch Boxes etc.

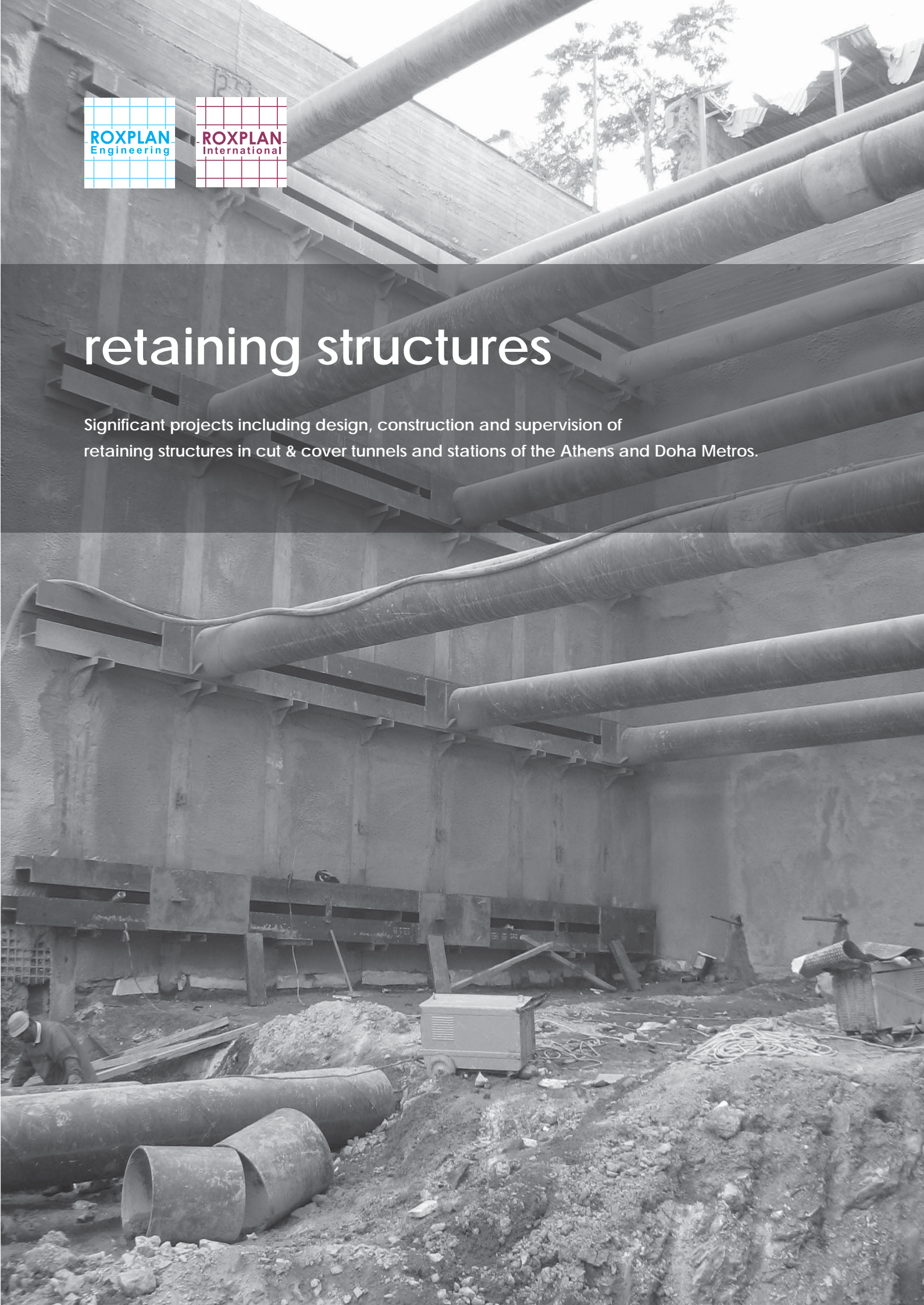






# retaining structures

Significant projects including design, construction and supervision of retaining structures in cut & cover tunnels and stations of the Athens and Doha Metros.





# retaining structures



► **“KARELIAS INDUSTRY”,  
KALAMATA CITY AREA,  
PELOPONNESE, GREECE**

► **Client:**  
KARELIAS S.A.

► **Technical Info:**  
Geotechnical Investigation with  
Coring Boreholes inside Buildings  
and Geotechnical Design of  
micro-pile support system for  
underpinning nine Buildings of  
the “Karelias” Industry.



► **TECHNICAL COLLEGE,  
KARPENHSI,  
EVKITANIA MUNICIPALITY,  
GREECE**

► **Client:**  
EVKITANIA MUNICIPALITY

► **Technical Info:**  
Geotechnical Investigation  
with Coring Boreholes and  
Geotechnical Design of pile  
support system for underpinning  
Buildings of the Technical  
College.

# retaining structures



## ► NEW SHOPPING MALL CENTER AT LARISSA RAILWAY STATION AREA, ATHENS, GREECE

► Client:  
KAROYZOS CONSTRUCTION S.A.

► Technical Info:  
Geotechnical Design for the  
Temporary Retaining Structure  
consisting of a 21.5m Deep Anchored  
Piled Retaining Wall, designed for the  
construction of a 5 floor underground  
parking - garage.



## ► "TIMAGENIS" BUILDING AT PIRAEUS PREFECTURE, GREECE

► Client:  
TIMAGENIS S.A.

► Technical Info:  
Geotechnical Investigation and  
Geotechnical Design for a 10m  
Deep Anchored Piled Retaining Wall,  
designed to Retain  
2 Basements, excavated Under  
Existing Old Masonry Building.







# buildings

Schools and University Complexes, Conference Complexes,  
Bank Complexes, Municipal Market Buildings, Plants, Shopping Centers.

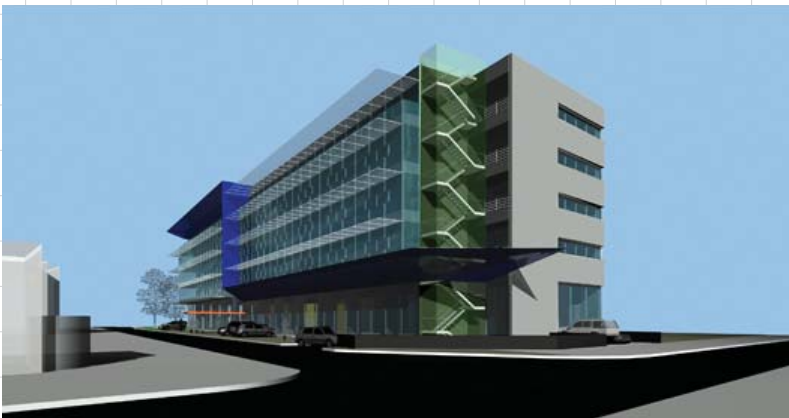




► **KOSMOPOLIS PARK  
SHOPPING MALL,  
KOMOTINI CITY,  
THRACE PREFECTURE, GREECE**

► **Client:**  
REAL ESTATE DEVELOPMENT  
KOMOTINI S.A.

► **Technical Info:**  
Geotechnical Investigation with  
Coring Boreholes and Trial Pits and  
Geotechnical Design of Buildings of a  
Shopping Mall at Komotini City.  
It is a Complex of Buildings of 10.000m<sup>2</sup>  
ground coverage with two basements  
and five floors at an environment of  
high ground water level.



► **NEW OFFICE BUILDINGS  
AT PEIRAIUS STR.,  
ATHENS**

► **Client:**  
J & P DEVELOPMENT

► **Technical Info:**  
Geotechnical Investigation and  
Geotechnical Design for a 5 Floor  
Office Building with 2 basements,  
of 9.000m<sup>2</sup> ground coverage in total.



► **NATIONAL LIBRARY,  
PRAGUE,  
CZECH REPUBLIC**

► **Client:**  
J & P DEVELOPMENT

► **Technical Info:**  
Geotechnical Design  
for a Building with  
ground coverage of 6200m<sup>2</sup>, total  
Height of 27m and total floor area of  
63.000m<sup>2</sup>.

NORTH-WEST

# buildings



## ► INDUSTRIAL COMPLEX OF LARKO S.A., GREECE

► Client:  
LARKO S.A. / E' TECHNIKI S.A.

► Technical Info:  
Geotechnical Investigation and Geotechnical Design for retaining structures supporting industrial facilities.



## ► PRINTING INDUSTRIAL COMPLEX OF D.O.L., VIOTIA MUNICIPALITY, GREECE

► Client:  
DOL S.A.

► Technical Info:  
Geotechnical Investigation with Coring Boreholes and Trial Pits and Geotechnical Design for an Industrial Complex of Buildings, with ground coverage of 25.000m<sup>2</sup>, including special foundation design of large and heavy machine complexes. Quality control services during construction of backfilling and excavations.



## ► RESIDENTIAL COMPLEX OF BUILDINGS, CRAKOW, POLAND

► Client:  
W. S. ATKINS

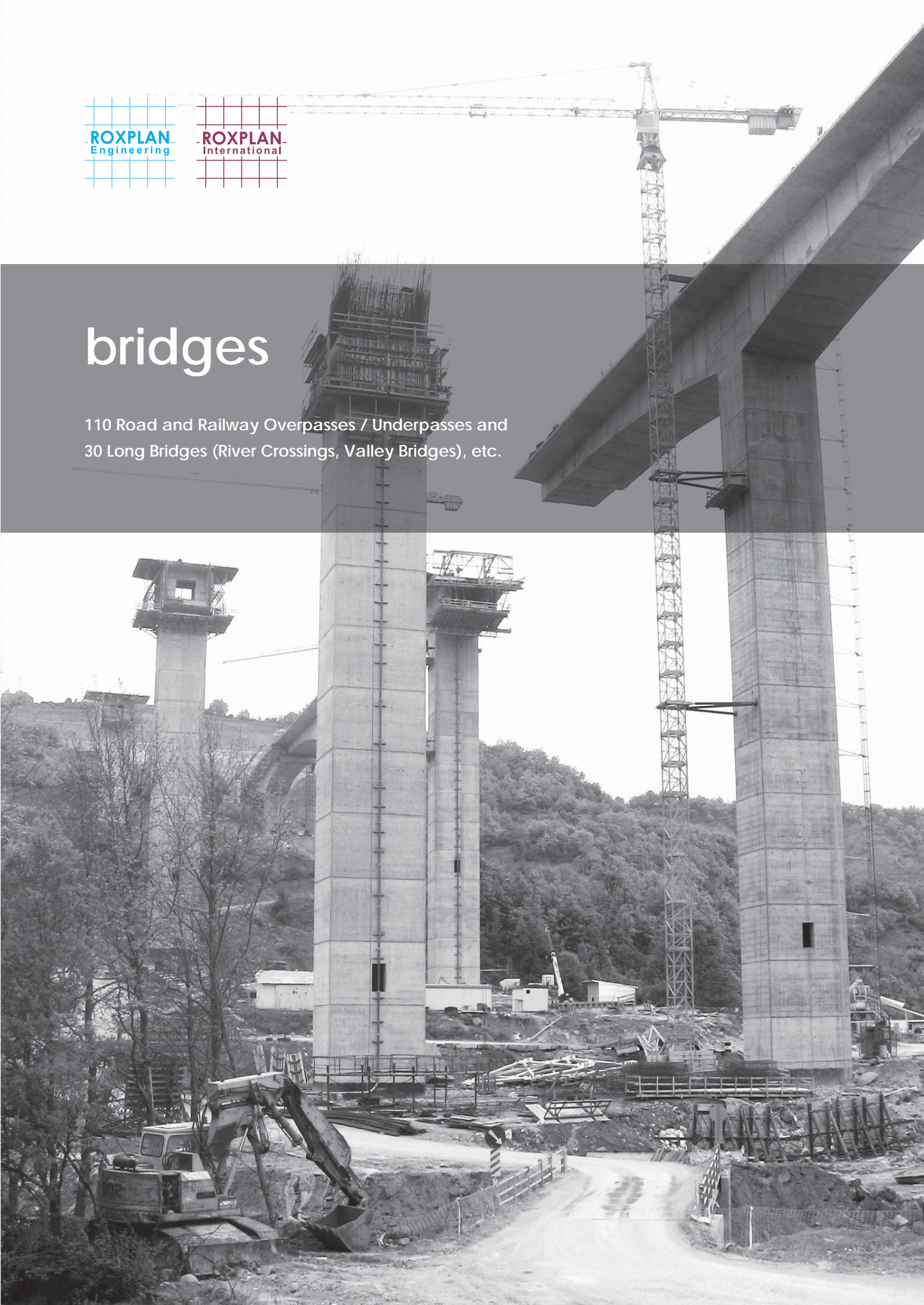
► Technical Info:  
Geotechnical Design for a Complex of Residential Building with ground coverage of 8.500m<sup>2</sup>, total Height of 24m and total floor area of 31.500m<sup>2</sup>, with three basements close to a river, with loose sand-gravel deposits.





# bridges

110 Road and Railway Overpasses / Underpasses and  
30 Long Bridges (River Crossings, Valley Bridges), etc.







► **DESIGN OF BRIDGES,  
IN SECTION 6  
OF EGNATIA ODOS,  
MACEDONIA PREFECTURE,  
GREECE**

► **Client:**  
EGNATIA ODOS S.A.

► **Technical Info:**  
Supervision and evaluation of geotechnical investigations, Final Geotechnical Design of three Main Line Bridges. Design of special retaining structures for reducing settlements on existing structures due to embankment construction.



► **BRIDGE CROSSING  
STRIMONAS RIVER,  
SECTION 60.2.2,  
EGNATIA ODOS,  
MACEDONIA PREFECTURE,  
GREECE**

► **Client:**  
EGNATIA ODOS S.A.

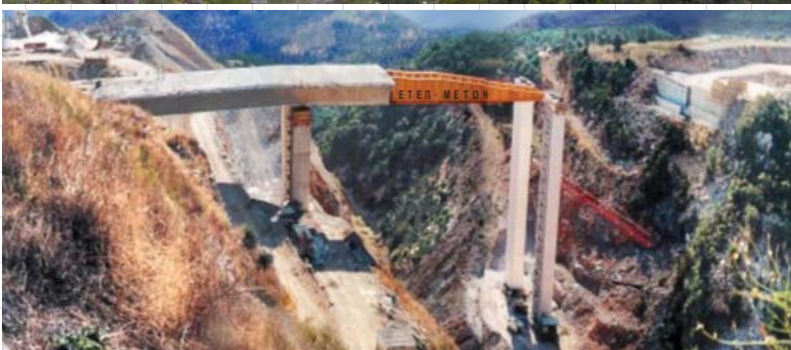
► **Technical Info:**  
Final-Stage Geotechnical Design of the Bridge crossing Strimonas River ( $L_{total}=475m$ ) with 13 Spans ( $L=42-43m$ ). Ground improvement of the loose foundation soil with vibro-replacement method.



► **ATHENS - SALONICA  
NEW HIGHWAY, SECTION  
A. THEODOROI - ALMIROS  
(CH. 261+000 - CH. 286+000),  
THESSALY, GREECE**

► **Client:**  
MINISTRY OF PUBLIC WORKS /  
METON-ETEP JV

► **Technical Info:**  
Inspection and Evaluation of Geotechnical Investigations, Geotechnical Design of two Valley Bridges ( $L=180-250m$  in length) and 20 Road Bridges ( $L=25-150m$  in length) along a 25km long section of the motorway. Foundation of Bridges was mainly on piles 20 - 40m in length.





► **VALLEY-BRIDGE CROSSING  
VENETICOS RIVER,  
SECTION 4.1.3s, EGNATIA ODOS,  
MACEDONIA PREFECTURE,  
GREECE**

► **Client:**  
EGNATIA ODOS S.A./FABERMAUNSEL S.A.

► **Technical Info:**  
Inspection and Interpretation of  
Geotechnical Investigations, Final  
Stage Geotechnical Design of the  
Bridge Branches 1A ( $L_{1A}=531m$ ) and  
1D ( $L_{1D}=636m$ ). Branch 1A was  
designed with 5 Spans (85.6m -  
120m), while branch 1D was  
designed with 6 Spans (75 -  
120m). Foundation of the  
piers (70m high) was made by  
shafts and bored piles.



► **KOSKARAGA RIVER BRIDGE  
PELOPONNESE, GREECE**

► **Client:**  
PELOPONNISOS REGION / KYROMITIS S.A.

► **Technical Info:**  
Geotechnical Investigation,  
Geotechnical Design of a Valleybridge.  
Special design for filling Karstic  
Voids by Grouting Techniques.







# railways

More than 10 Railway Stations and  
several hundred kilometers of railway line.





## ► RECONSTRUCTION OF AT GRADE METRO RAILWAY LINE, ATHENS

► Client:  
ISAP S.A.

► Technical Info:  
Geotechnical Investigations with  
600m of Coring Boreholes along  
a 25.5km of existing railway line  
and geotechnical design of the  
railway track foundation.





► **RECONSTRUCTION OF  
SOFADES - KARDITSA - TRIKALA  
- KALABAKA RAILWAY LINE,  
THESSALY, GREECE**

► **Client:**  
ERGOSE S.A.

► **Technical Info:**  
Geotechnical investigations, design  
and material quality control for the  
railway track foundation of 60 km of  
Railway Line.







# road design

Highways and provincial roads of approximately 320 km in length, with 80 high open-cuts, 60 embankments (including Reinforced Embankments), Pavement Design, etc.







► **"TIRIA" JUNCTION AND SECONDARY ROADS, SECTION 1.2.2. EGNATIA ODOS, N. GREECE**

► **Client:**  
EGNATIA ODOS S.A.

► **Technical Info:**  
Inspection and Interpretation of Geotechnical Investigations, Final Geotechnical Design of 10Km of Highway with Open Cuts ( $H_{max}=22-35m$ ) and Embankments ( $H_{max}=10-15m$ ).



► **KORINTHOS-PATRAS-PYRGOS MOTORWAY, SECTION: KIATO-DERVENI, PELOPONNESE, GREECE**

► **Client:**  
OLYMPIA JV (HOCTHIEF-AKTOR J/V)

► **Technical Info:**  
Geotechnical Investigations with 4000m of Boreholes for the needs of the Geotechnical Design of 21 Main Line Bridges and Overbridges ( $L=25-120m$ ), Cut & Cover ( $L=160m$ ), Lane Cover ( $L=110m$ ), 40 Large Box Culverts, 30 High Embankments, 17 Open Cuts and 62 Retaining Walls.



► **“VERIA CITY” JUNCTION  
SECTION 5.3.  
EGNATIA ODOS, GREECE**

► **Client:**  
EGNATIA ODOS S.A.

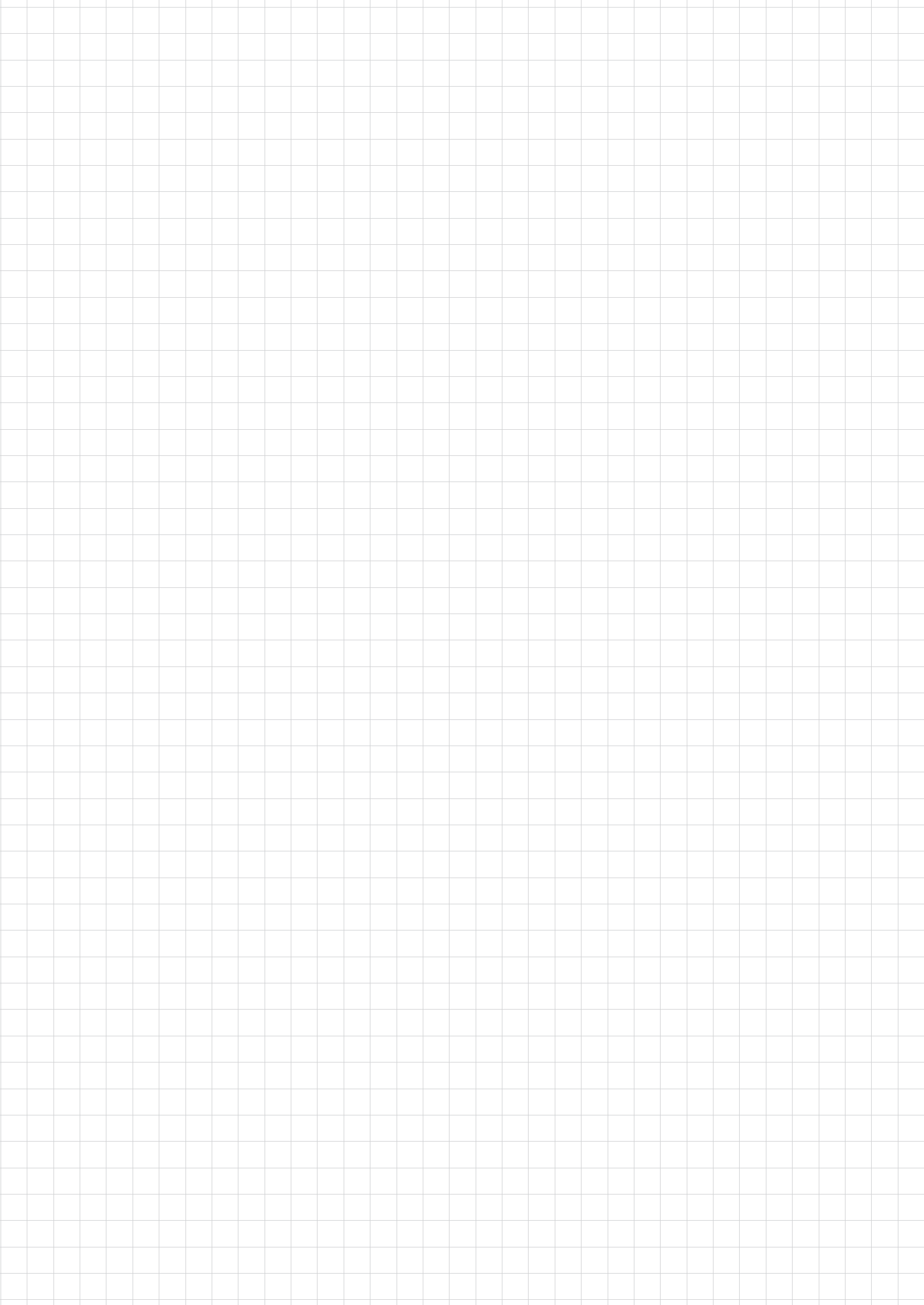
► **Technical Info:**  
Inspection and Interpretation of Geotechnical Investigations, Final Geotechnical Design of the Junction, including 2 Single Span Bridges, 4 Embankments (L=250-550m), and 2.5Km of Road Design.



► **OLD NATIONAL HIGHWAY  
ATHENS-THIVES,  
SECTION: MANDRA-ERITHRES  
GREECE**

► **Client:**  
ATTIKI PREFECTURE

► **Technical Info:**  
Geotechnical Investigations with Coring Boreholes and Trial pits for the Geotechnical Design of 4 Embankments ( $H_{max}$  =11-22m, L=60-200m), 5 Open Cuts ( $H_{max}$  =10-30m, L=140-540m), 2 Single Span Bridges (L=15-20m), 1 Cut & Cover (L=120m), 5 Large Box Culverts and 17.5Km of Road Design.





# hydraulic works

17 Dams, 20 Reservoirs, 14 Irrigation/Sewage  
Networks and Pump-houses.



# hydraulic works



## ► "EGARES" RESERVOIR, NAXOS ISLAND, GREECE

► **Client:**  
MINISTRY OF AGRICULTURE

► **Technical Info:**  
Geotechnical Consulting Services and Quality Control during the construction of the reservoir, 20m in height and 150m long and 600.000m<sup>3</sup> in volume.



## ► "PANAGIOTIKO" DAM IN MAGNISIA MUNICIPALITY, THESSALY, GREECE

► **Client:**  
MINISTRY OF AGRICULTURE

► **Technical Info:**  
Final Geotechnical Design of a rock-fill Dam, 40m in height, 150m long and 2.500.000m<sup>3</sup> in volume with an up-stream concrete slab.



## ► "DESKATI" DAM OF GREVENA CITY AREA, MACEDONIA PREFECTURE, GREECE

► **Client:**  
MUNICIPALITY OF DESKATI

► **Technical Info:**  
Geotechnical Design of an earth Fill Dam, 26m in height, 280m long and 1.000.000m<sup>3</sup> in volume.



# hydraulic works



## ► "KATO PITSA" RESERVOIR, PELOPONNESSE PREFECTURE, GREECE

► **Client:**  
MUNICIPALITY OF KORINTHIA

► **Technical Info:**  
Consulting Services - Quality Control during construction of the Reservoir, 15m in height, 120m long and 315.000m<sup>3</sup> in volume.



## ► "ERESSOS" DAM, LESVOS ISLAND, GREECE

► **Client:**  
MINISTRY OF AGRICULTURE

► **Technical Info:**  
Consulting Services during construction of a Dam, 30m in height, 350m long and 2.750.000m<sup>3</sup> in volume.

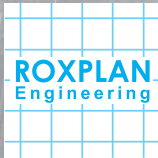


## ► "KORIS GEFIRI" DAM, CHIOS ISLAND, GREECE

► **Client:**  
MINISTRY OF AGRICULTURE

► **Technical Info:**  
Consulting Services - Quality Control during construction of an R.C.C. Dam, 37m in height, 120m long and 3.000.000 m<sup>3</sup> in volume.





# airports, ports, off-shore structures

2 Airports, 15 Port Structures and participation in the design of 2 Oil Platforms.





## airports, ports



### ► IKARIA ISLAND AIRPORT, GREECE

► **Client:**  
MINISTRY OF TRANSPORTATION

► **Technical Info:**  
Geotechnical Investigation with  
Coring Boreholes and Geotechnical  
Design of new airfield pavement,  
extension of the existing and design of  
the new open cuts of the airport area.



### ► "ARISTOTELIS" KASTORIA AIRPORT, MACEDONIA PREFECTURE, GREECE

► **Client:**  
MINISTRY OF TRANSPORTATION

► **Technical Info:**  
Geotechnical Investigation with  
Coring Boreholes, Trial Pits and Coring  
Sampling of the existing pavement,  
as well as Geotechnical Design of the  
new airport pavement and extension  
of the existing one.



# airports, ports



## ► IMPROVEMENT AND EXTENSION OF EXISTING HARBOR FACILITIES SIFNOS ISLAND, GREECE

► Client:  
KYKLADES PREFECTURE

► Technical Info:  
Geotechnical Investigation with off-shore Boreholes and Geotechnical Design of the Foundation Conditions of the new Port Facilities.

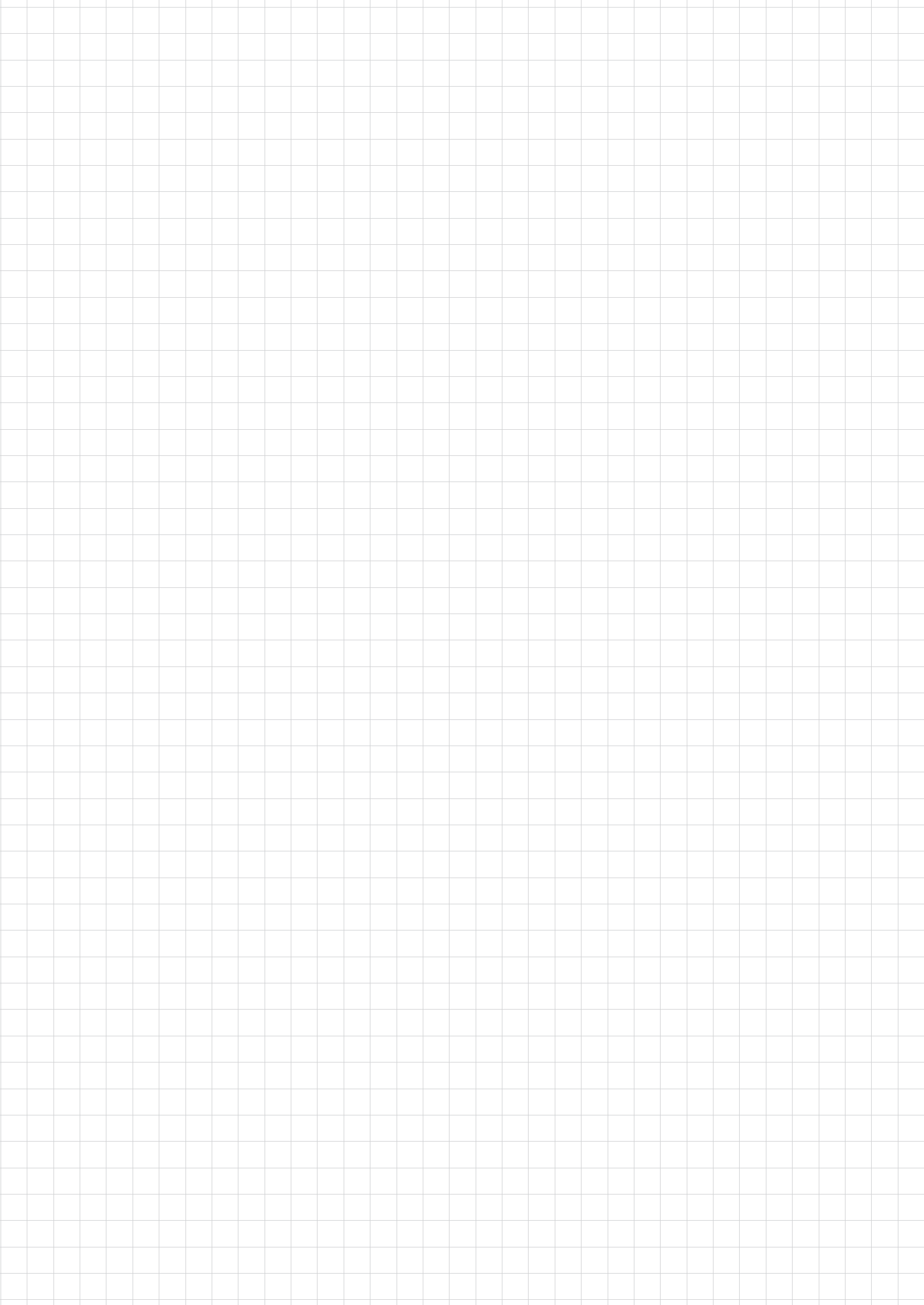


## ► IMPROVEMENT AND EXTENSION OF EXISTING HARBOR FACILITIES SYROS ISLAND, GREECE

► Client:  
KYKLADES PREFECTURE

► Technical Info:  
Geotechnical Investigation with off-shore Boreholes and Geotechnical Design of the Foundation Conditions of the new Port Facilities.

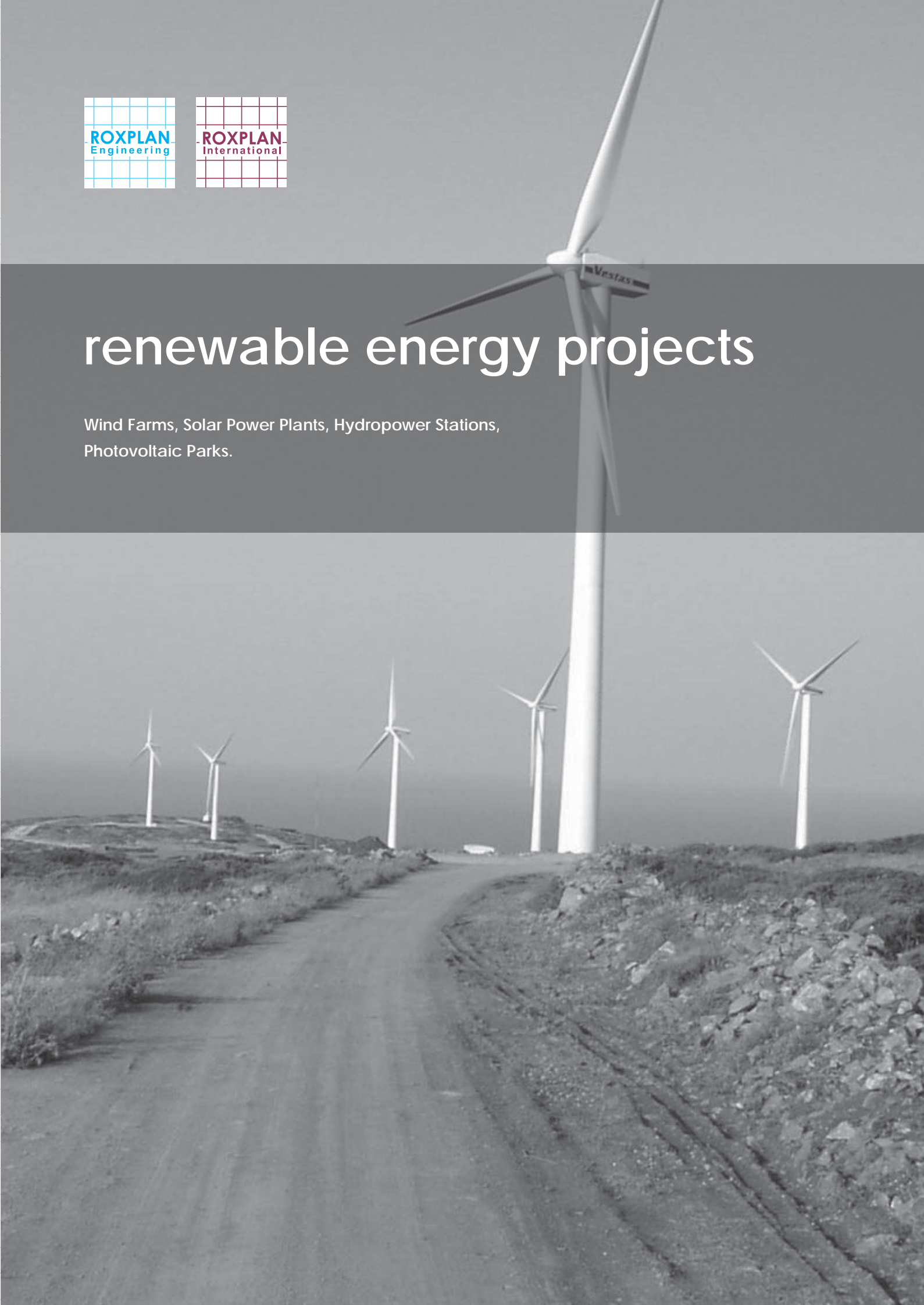






# renewable energy projects

Wind Farms, Solar Power Plants, Hydropower Stations,  
Photovoltaic Parks.



# renewable energy projects



► **WIND FARM AT  
"VOSKERO" AREA,  
HERAKLIO PREFECTURE,  
CRETE ISLAND, GREECE**

► **Client:**  
DOMIKI KRITIS S.A.

► **Technical Info:**  
Geotechnical Investigation and  
Geotechnical Foundation Design  
for a wind farm consisting of 7 Wind  
Turbines, (50m high).



► **"AG. IOANNIS" WIND FARM,  
LASITHI AREA,  
CRETE ISLAND, GREECE**

► **Client:**  
PLASTIKA KRITIS S.A.

► **Technical Info:**  
Geotechnical Investigation and  
Geotechnical Foundation Design  
for a wind farm consisting of 9 Wind  
Turbines, (47m high).

# renewable energy projects



► **17MW WIND FARM OF SIDIROKASTRO AREA, MACEDONIA PREFECTURE, GREECE**

► **Client:**  
AIOLIKI SIDIROKASTROU S.A.

► **Technical Info:**  
Geotechnical Investigation and Geotechnical Foundation Design for a wind farm consisting of 20 Wind Turbines, (55m high).



► **WIND FARM AT MARMARI AREA, EVIA ISLAND, GREECE**

► **Client:**  
IBY ITA S.A.

► **Technical Info:**  
Geotechnical Investigation and Geotechnical Foundation Design for a wind farm consisting of 13 Wind Turbines, (35-50m high).



► **SOLAR THERMAL POWER PLANT OF 25 MW MUNICIPALITY OF LEFKI, CRETE ISLAND, GREECE**

► **Client:**  
ABENGOA SOLAR

► **Technical Info:**  
Geotechnical, Geological and Geophysical Investigation. Preliminary Foundation Design of a 200m high Power Tower and 5 Industrial Building Complexes.

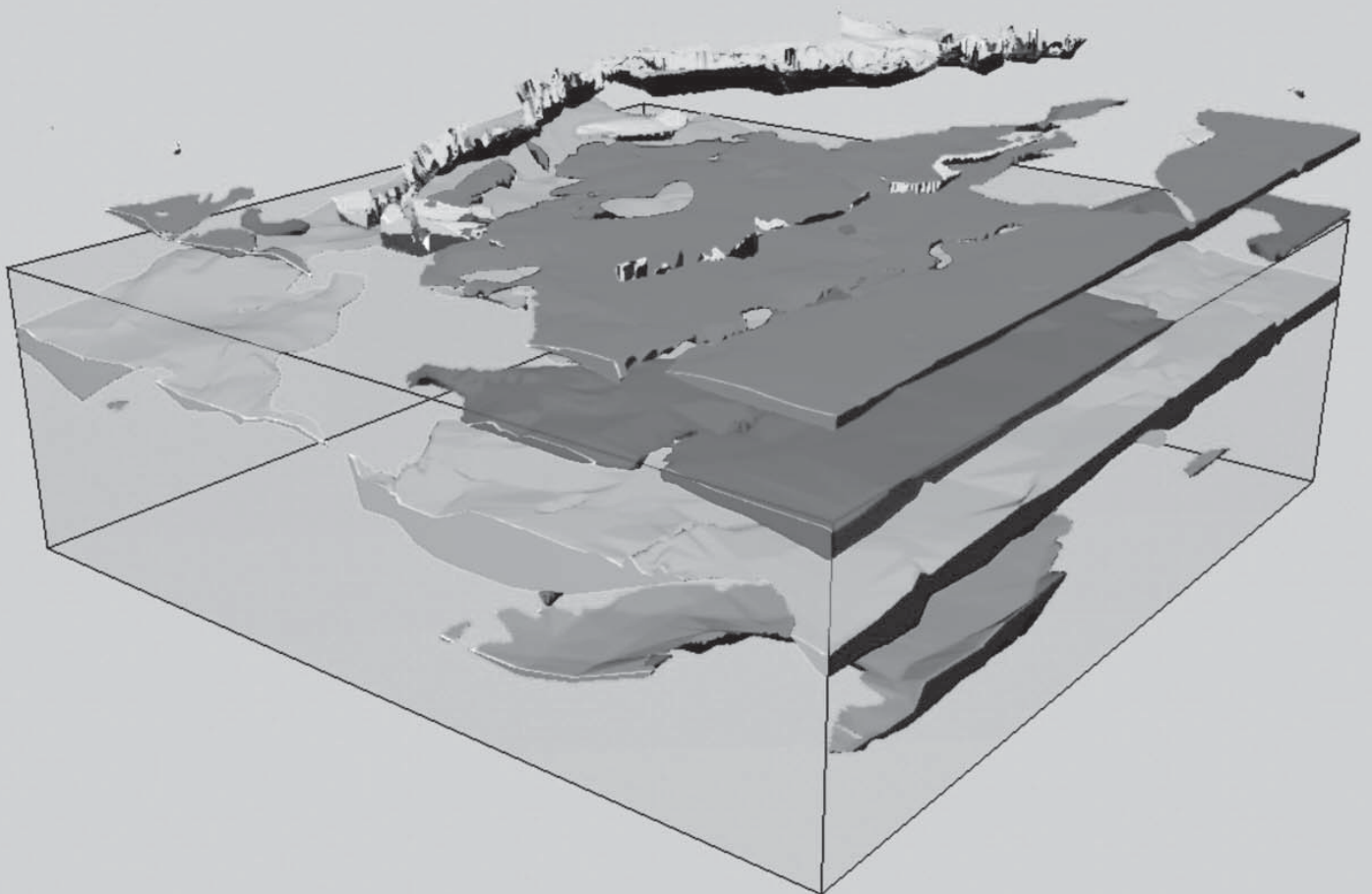




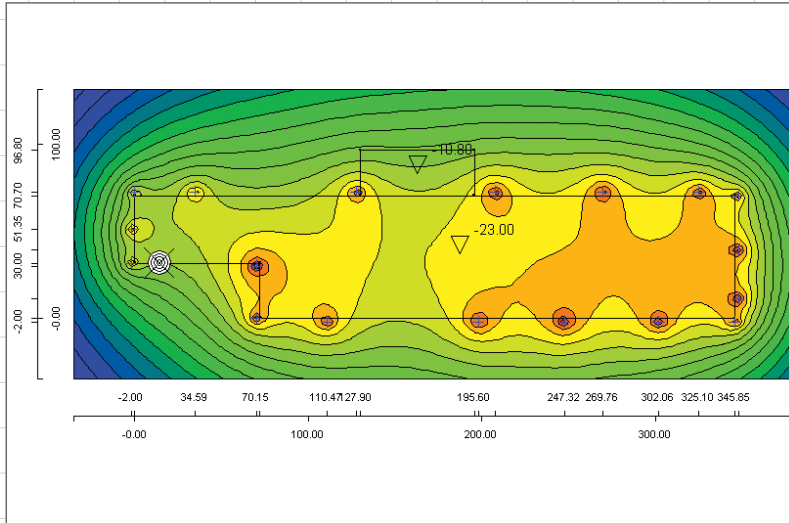


# ground water management

Geological - Hydrogeological Studies, 3-D Modeling,  
Well Testing and Development, Dewatering Design,  
Desalination Systems, Geochemical Analyses, GIS Applications.



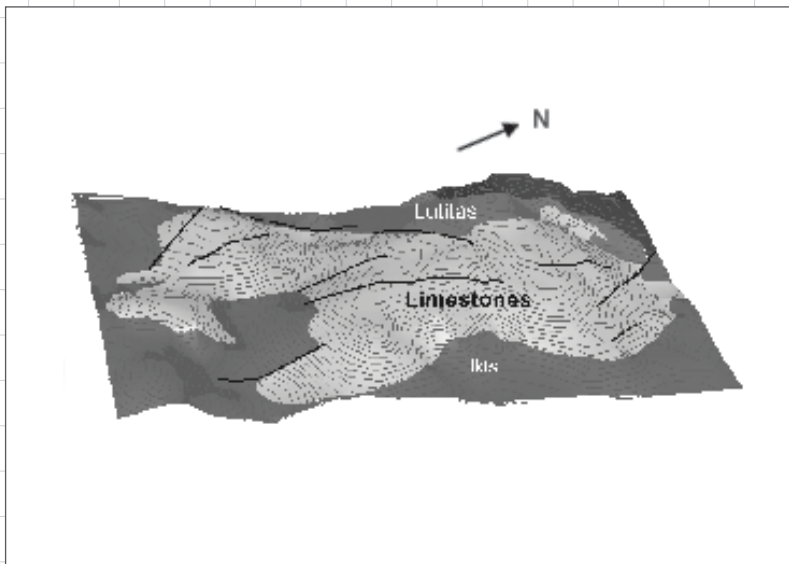




► DEWATERING DESIGN OF EDUCATION CITY STATION, DOHA METRO (Pre-Tendering stage)

► Client:  
SSF Ingenieure S.A.

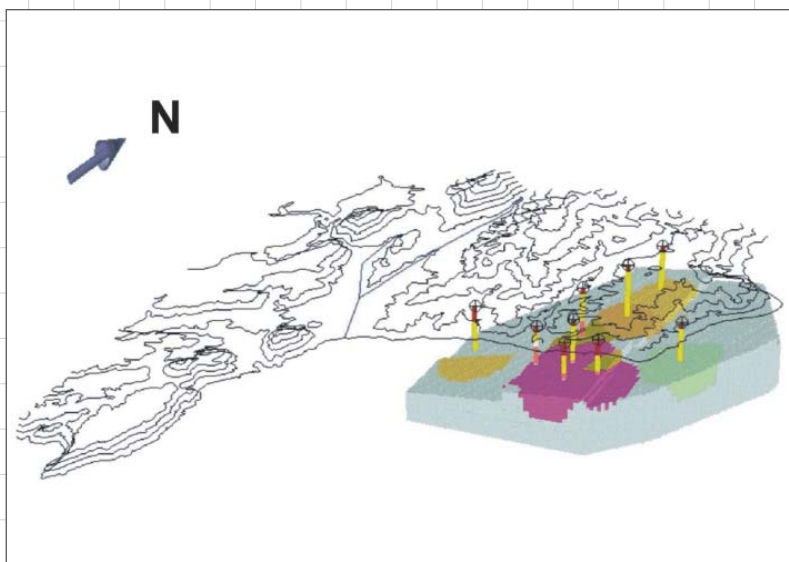
► Technical Info:  
Assessment of the Geological & Hydrogeological data, Calculations, Modelling & Design of the Dewatering System of the Station.



► HYDROGEOLOGICAL STUDY FOR THE PROTECTION OF THE GROUND WATER AQUIFER SYSTEM EL COLORADO AREA, EL SALVADOR

► Client:  
EL SALVADOR CEMENT INTUSTRY

► Technical Info:  
Geological & Hydrogeological Study, Geochemical Analyses of the Ground Water System, 3-D Modelling.

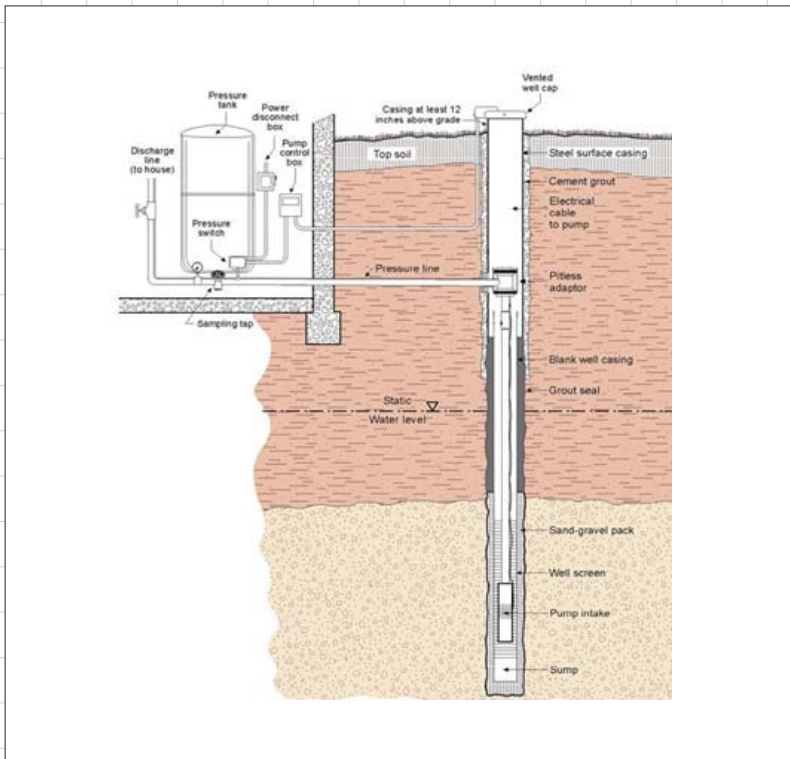


► ARTIFICIAL RECHARGE OF KARSTIC GROUND WATER USING 3-D MODELLING, ENIPEAS RIVER BASIN, THESSALY, GREECE

► Client:  
THESSALY PREFECTURE

► Technical Info:  
Geological & Hydrogeological Model, Ground Water Model using 3-D CAD techniques for the delineation of the aquifer geometry.

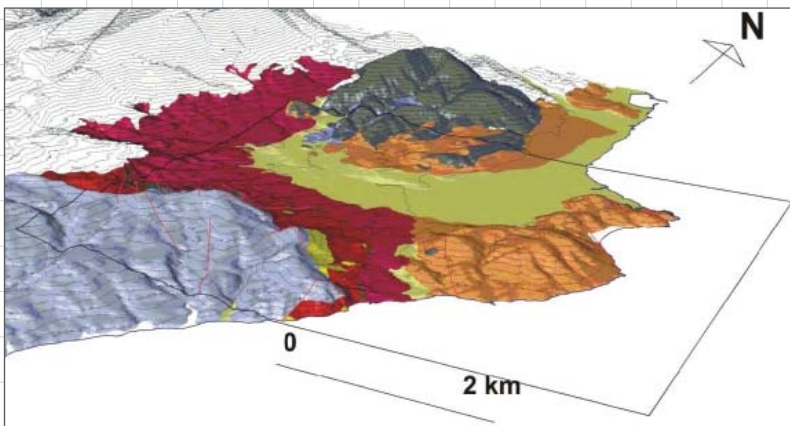
# ground water management



## WELL REHABILITATION AND DEVELOPMENT AT 10 WELL FIELDS, NORTH THESSALY BASIN, GREECE

**Client:**  
THESSALY PREFECTURE

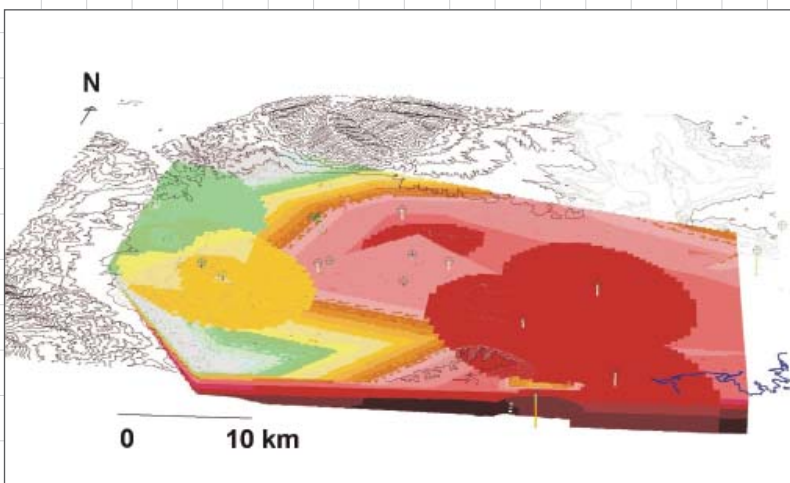
**Technical Info:**  
Data Collection, Field Observation, Pumping Tests, 3-D Ground Water Model for each Well Field, Well Development Studies.



## GEOCHEMICAL ANALYSIS MODEL AT THE KAVALA REGION GEOTHERMAL FIELD, MACEDONIA, GREECE

**Client:**  
MACEDONIA PREFECTURE

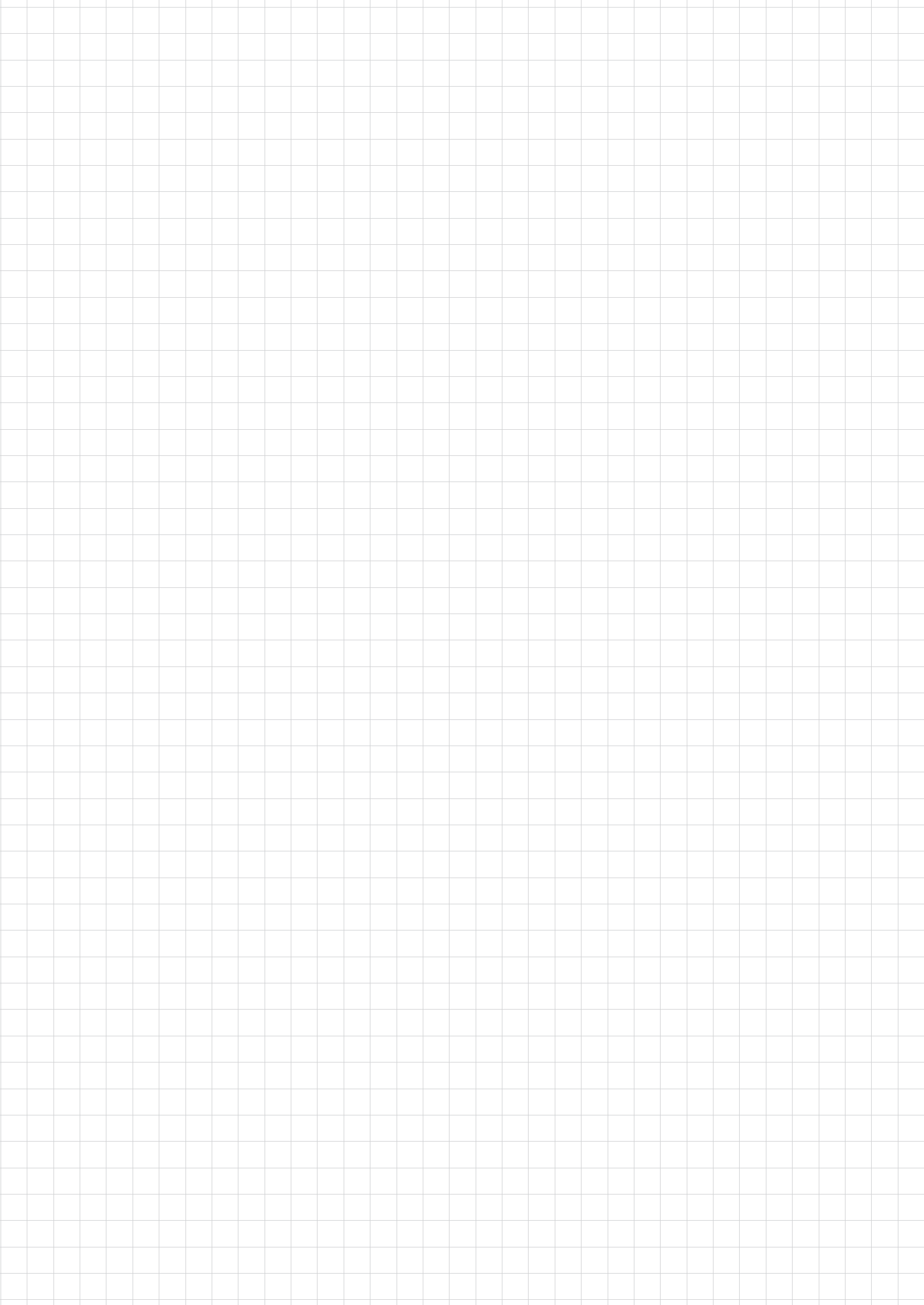
**Technical Info:**  
Geological Study, Geochemical Analyses, 3-D Modelling of the chemical elements scattering.

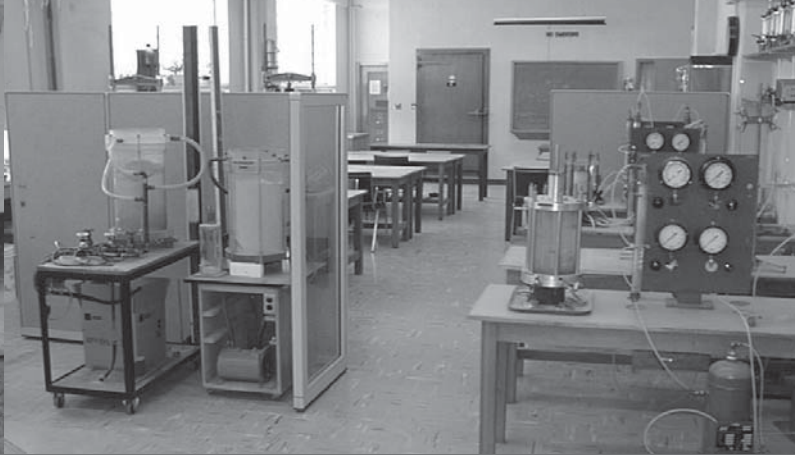
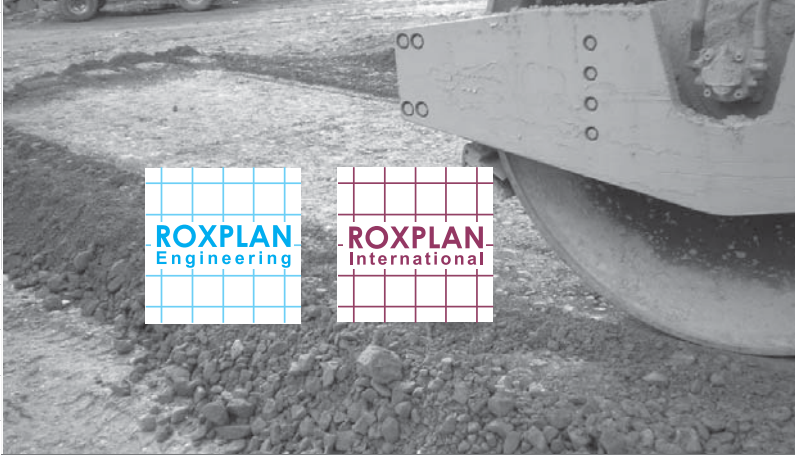
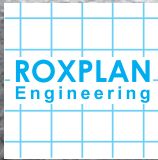


## HYDROGEOLOGICAL STUDY FOR THE WATER SUPPLY OF THE INDUSTRIAL ZONE OF PATRAS, GREECE

**Client:**  
HELLENIC BANK FOR THE INDUSTRIAL DEVELOPMENT (ETVA S.A.)

**Technical Info:**  
Geological & Hydrogeological Study, Artificial Recharge Study, Well Exploration, Pumping Tests, 3-D Modelling.





# geotechnical investigations

More than 30.000m of coring boreholes, both on-shore and off-shore with laboratory and in-situ testing, for more than 500 different projects.



# geotechnical investigations

- ▶ Our company has the capability and experience to execute a wide range of field and laboratory testing / investigations.
- ▶ Our experience includes execution of more than 30.000m of coring boreholes, both on-shore and off-shore, for more than 500 different projects, with corresponding laboratory testing and evaluation of their results. For these projects programming and inspection of the works were included in our scope.



*On-Shore Boreholes*



*Off-Shore Boreholes*



*Wagon-Drilling*



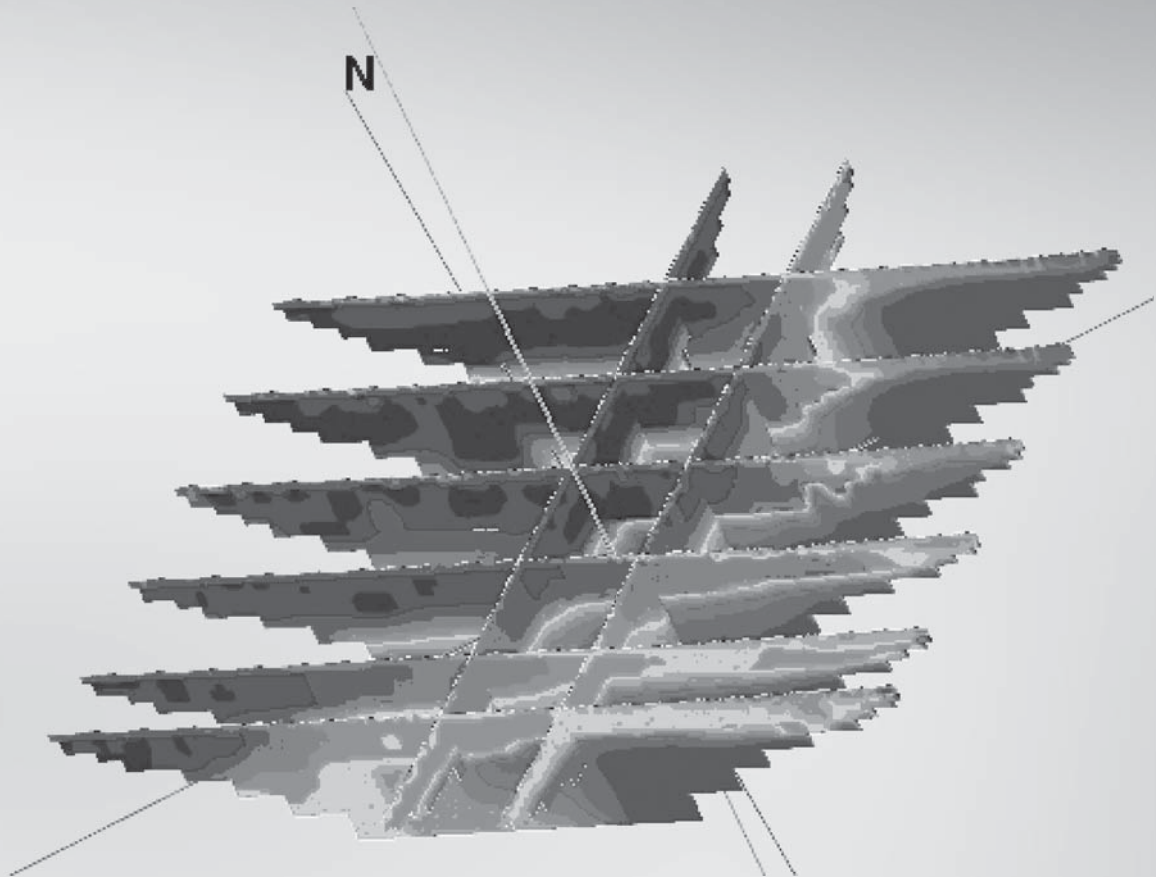
Laboratory Testing





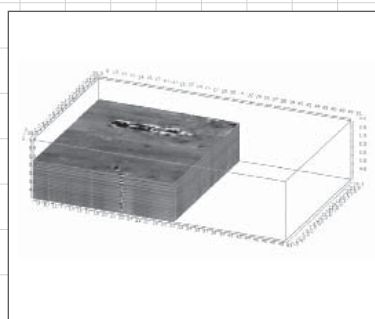
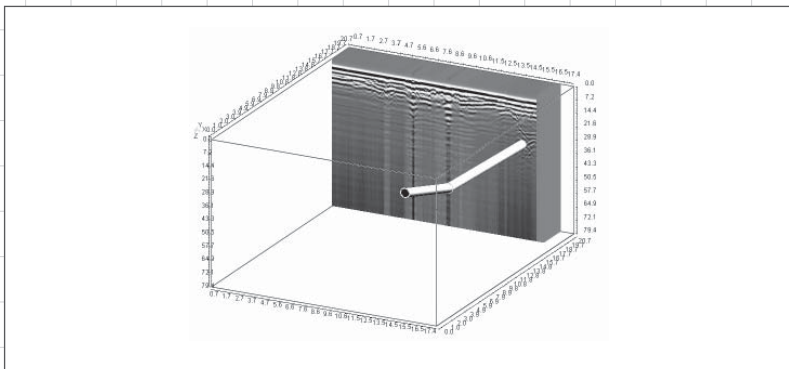
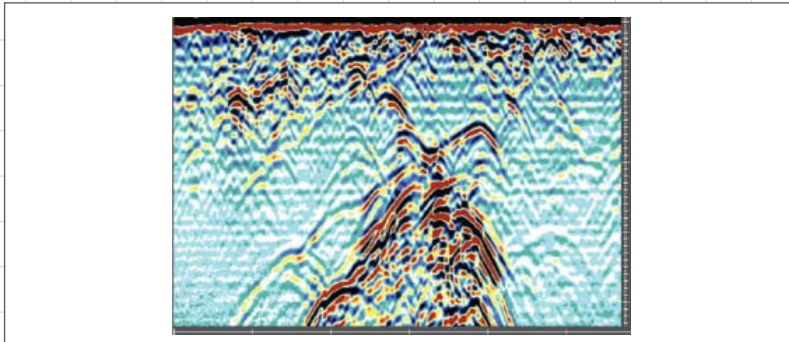
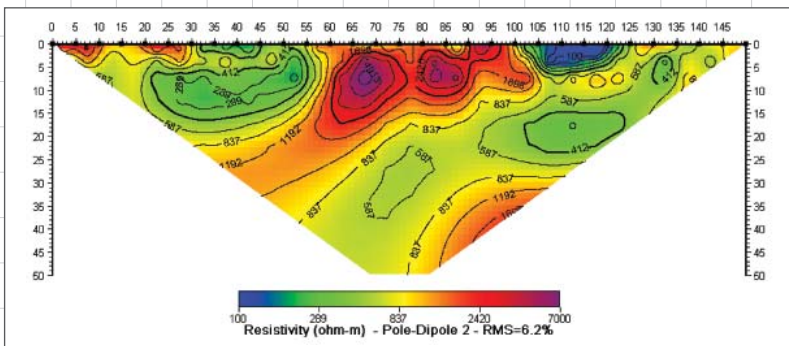
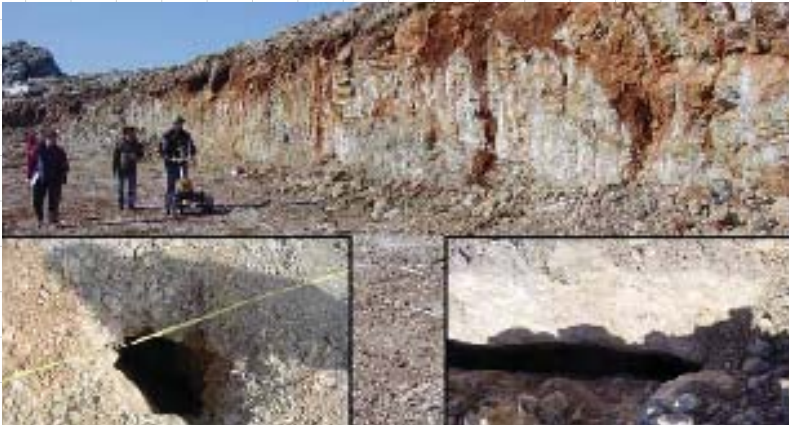
# geophysical investigations

Karsts - Cavities - Sinkholes - Fracture Zones,  
Utilities - Buried Structures,  
Reinforcement - Voids of Concrete,  
Seismic/Dynamic Properties of Subgrade Materials,  
Unexploded Ordnances (UXO's), Marine - Hydrographic Services  
Environmental Applications, Parameters for Grounding Design





# geophysical investigations



## ► KARSTS - CAVITIES - SINKHOLES - GROUND WATER TABLE - FRACTURE ZONES

► **Project:**  
"KTENIAS", TRIPOLIS GREATER AREA, PELOPONNESSE, GREECE

► **Scope:**  
- Detection of cavities-karsts, sinkholes and fracture zones with non-destructive geophysical methods

► **Geophysical Methods:**  
- Ground Penetrating Radar (GPR)  
- Electrical Resistivity Tomography (ERT)

► **Geophysical Equipment:**  
- Mala Geoscience GPR (ProEx Control Unit, shielded antennas of 500, 250 MHz and unshielded of 100, 50 & 25 MHz central frequency, XV11 monitor, Trimble RTK GPS)  
- Terrameter LS 16 channel resistivity meter, multicore cables, electrodes

► **Depth Range:**  
- 0 - 15m (GPR Method)  
- 0 - 80m (ERT Method)

## ► THESSALONIKI METRO, GREECE

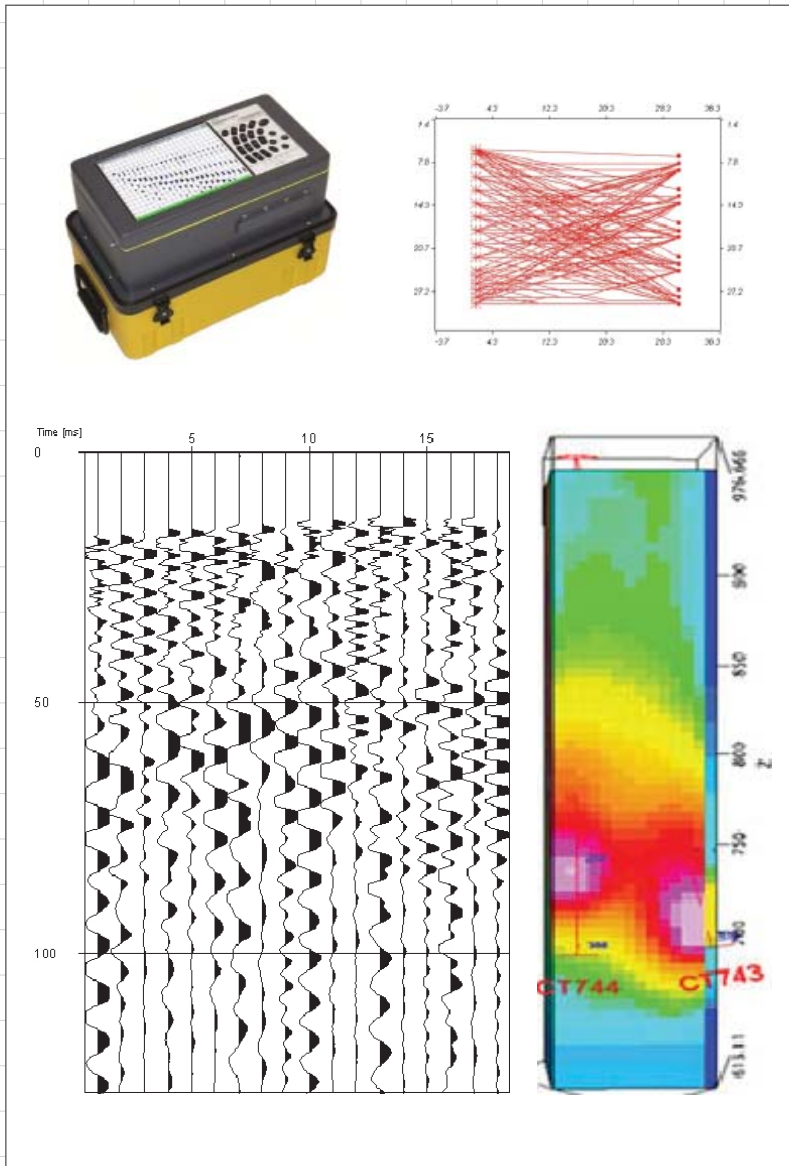
► **Project:**  
THESSALONIKI METRO, GREECE

► **Scope:**  
- Detection of buried structures (water pipes, cables, sewer pipes, ancient remains, etc.), along the Metro Alignment using non-destructive methods

► **Geophysical Methods:**  
- Ground Penetrating Radar (GPR)

► **Geophysical Equipment:**  
- Mala Geoscience GPR (ProEx Control Unit, shielded antennas of 500, 250 MHz, 1.6 GHz central frequency, XV11 monitor, Trimble RTK GPS)

► **Depth Range:**  
- 0 - 6m



## SEISMIC/DYNAMIC PROPERTIES OF SUBGRADE MATERIAL

**Project:**  
DESIGN OF "ASOPOS" EARTH DAM, GREECE

**Scope:**

- Detection of the dynamic elastic parameters of the subgrade materials in the foundation area for the a-seismic design of the dam (80m high)

**Geophysical Methods:**

- Seismic Tomography (CSL Method)

**Geophysical Equipment:**

- Digital Seismic recorder with 24 channels of GEOMETRICS Company, model SMARTSEIS, with sampling ability of 32 ms.
- Mechanical seismic source, automatic, with applicability within the borehole. Type MH 60 of company VIBROMETRIC OY.
- Wooden beam for the production of S-waves in the multi-offset VSP method.
- Chain of eight (8) tri-axial geophones, with 5 meters spacing between geophones and ability to attach them to the walls of the borehole.
- Control Box for controlling the seismic source. Control Box for controlling the geophones. Laptop to control the data quality and their preliminary processing.

**Depth Range:**

- 0 - 100m

## ENVIRONMENTAL APPLICATIONS - GROUNDING DESIGN

**Project:**  
PETROLINA FACILITIES, CYPRUS

**Scope:**

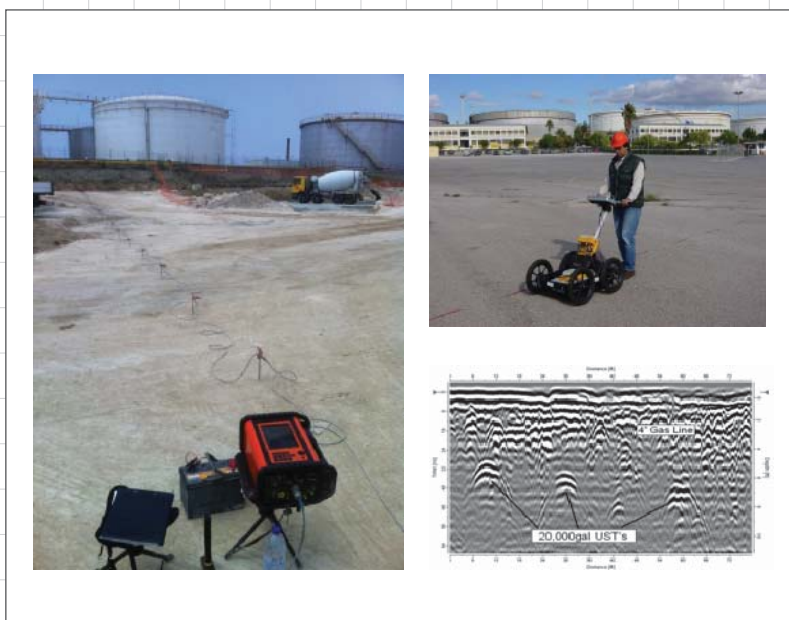
- Hazardous waste mapping, underground storage tanks (UST), Resistivity definition for Grounding Design

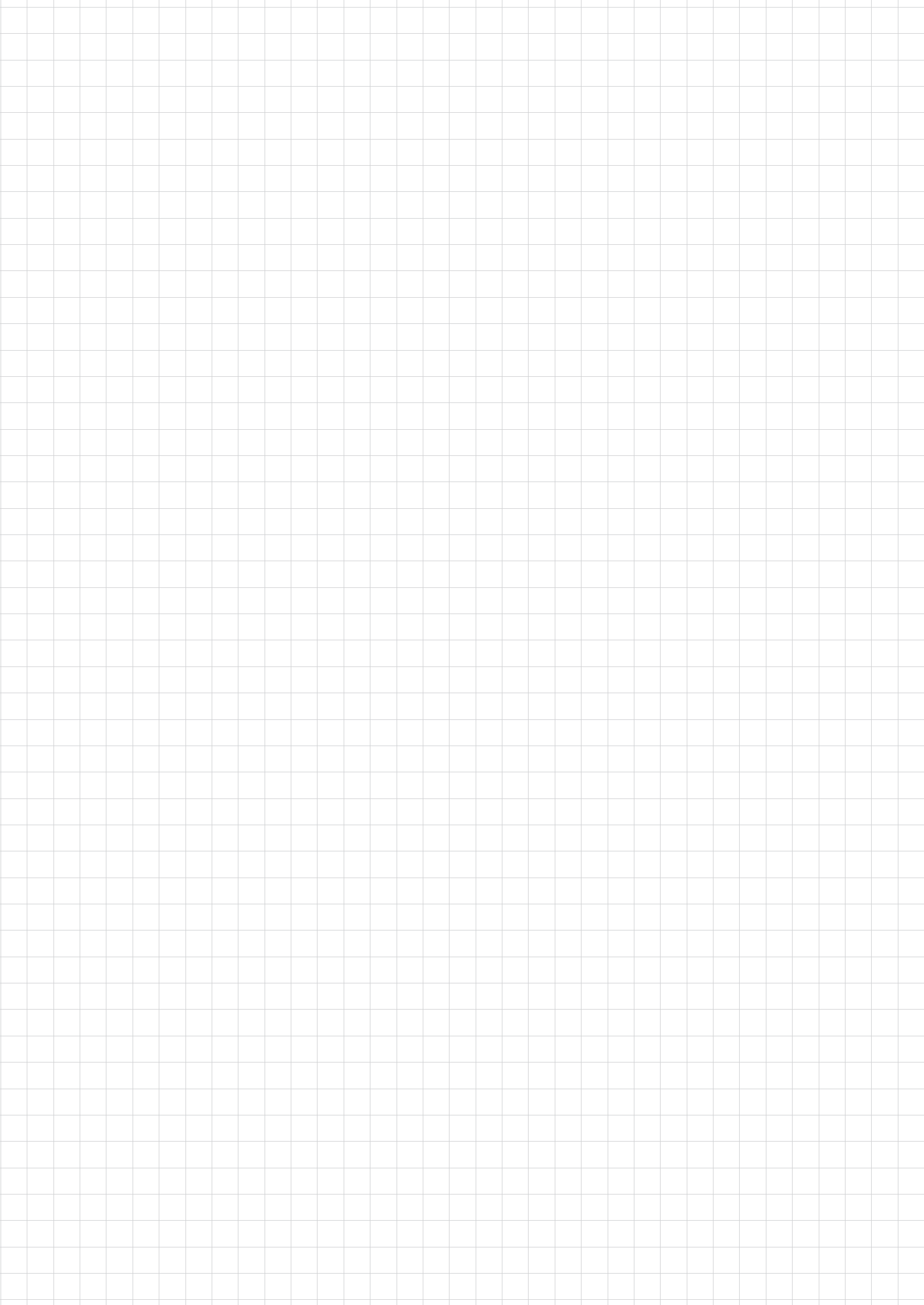
**Geophysical Methods:**

- GPR
- ERT

**Geophysical Equipment:**

- Mala Geoscience GPR
- Terrameter LS 16 channel resistivity meter, multicore cables, electrodes







# consulting services

Checking of Design, Expert Evaluation, Value Engineering, Tender Documents, Risk Assessment, Independent Engineer Services.







GEOTECHNICAL INVESTIGATION & DESIGN - INFRASTRUCTURE DESIGN - CONSULTING SERVICES

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