

GIORGOS SOULIS

Laboratory Teaching Staff Member School of Technology Department of Environmental Science University of Thessaly Larissa, Greece

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Education

- Degree in Civil Engineering of Infrastructure Projects, School of Technological Applications, Technological Educational Institute of Thessaloniki.
- Postgraduate Studies, M.Sc., "Advanced Environmental Management Technologies in Engineering Works", University of Thessaly

Educational activities and teaching work in Undergraduate Course of Study

<u>1) University of Thessaly, School of Technology, Department of Environmental</u> <u>Science</u>

2019 till today: Teaching the course: Principles of Environmental Design (L)

2020 till today: Member of the Research Laboratory "Chemical and Construction Materials Technology Laboratory" of the Department of Environment of the School of Technology of the University of Thessaly, with Professor X. Spiliotis as Director (Government Gazette 2630/t.B '/29-06-2020)

2) University of Thessaly, Civil Engineering Course of Study of T.E. (Larissa)

2019 till today: Teaching the following courses:

- 1) Reinforced Concrete (T)
- 2) Reinforced Concrete (L)
- 3) Technical Geology (T)
- 4) Technical Geology (L)
- 5) Strength of Materials (L)
- 6) Soil Mechanics (L)
- 7) Road Engineering (L)
- 8) Rock Mechanics and Tunnels Elements (T) & (PE)

Supervision of degree theses of students of the Civil Engineering Course of Study of T.E. (Larissa) of the University of Thessaly. 21 theses have been successfully prepared and supported, from 2019 to date, under my supervision.

Participation in three-member thesis examination committees of students of the Civil Engineering Course of Study of T.E. (Larissa) of the University of Thessaly.

3) T.E.I. of Thessaly, School of Technological Applications, Department of Civil Engineering of T.E. (Larissa)

2016 - 2019: Teaching the courses:

- 1) Reinforced Concrete (T)
- 2) Reinforced Concrete (L)
- 3) Technical Geology (T)
- 4) Technical Geology (L)
- 5) Strength of Materials (L)
- 6) Soil Mechanics (L)
- 7) Road Engineering (L)
- 8) Rock Mechanics and Tunnels Elements (T) & (PE)
- 9) Rock Mechanics and Tunnels Elements (L)

Supervision of degree theses of students of the Department of Civil Engineering of T.E. (Larissa). 26 theses were successfully prepared and supported under my supervision.

Participation in three-member thesis examination committees of students of the Department of Civil Engineering of T.E. (Larissa).

Work experience

2014 - 2018: Manager of Laboratories and Materials Quality - Responsible for Environmental Issues in the J/V AECOM Infrastructure & Environment UK Ltd – OMEK S.A. – A.O. Central Greece.

Concession Project: Design, Construction, Financing, Operation, Maintenance and Operation of the Central Greece Motorway E-65.

Competent Public Body: Ministry of Infrastructure, Transportation and Networks / Department of Projects Construction of Central, Western and Northern Greece. Concessionaire: Odos Central Greece S.A.

Independent Engineer: J/V AECOM Infrastructure & Environment UK Ltd – OMEK S.A. – A.O. Central Greece.

Construction Company: J/V E-65 (TERNA S.A. – TERNA ENERGY AVETE). Project Budget € 1,348,486,062.06. 2012 - 2014: Manager of Quality Control Laboratory in the construction company AKTOR S.A.

Project: New Motorway, Section Demir Kapija – Smokvica, part of Pan-European Motorway Corridor X (North Macedonia).

Construction Company: AKTOR S.A.

Supervisor Service: J/V EGIS International & IRD.

Project Budget: € 233,148,177.23.

2010 - 2012: Quality Control & Quality Assurance Manager in the construction company DRAGADOS S.A. at the Projects:

- 1) IONIA ODOS Motorway: GU 1N to 6N.1 from Ch.: 0+158 to Ch: 16+630, budget € 83.750.789,47.
- 2) IONIA ODOS Motorway: GU 15N to 18N.1 from Ch.: 76+272 to Ch: 118+350, budget € 153.583.579,53.

Both Projects 1 and 2 are subsections of the Concession Project: Design, Construction, Financing, Operation, Maintenance and Operation of the Ionia Odos Motorway from Antirio to Ioannina, Pathe Motorway Athens (Metamorfossi I/C) – Maliakos (Skarfia) and Path connecting branch Schimatari – Chalkida, regulation of related issues.

Competent Public Body: Ministry of EN.SP.PW.

Concessionaire: NEA ODOS S.A.

Independent Engineer: J/V Scott Wilson Ltd – OMEK S.A., Ionia Odos S.A. Construction Company: EURO IONIA CONSTRUCTION J/V (DRAGADOS S.A. – FERROVIAL AGROMAN S.A. – TERNA S.A.)

At the same time, I was responsible for Environmental Issues and Coordinator of Quality and Laboratories of all Projects in Greece of the Spanish construction company DRAGADOS S.A. with a total budget of roughly €600,000,000.00 for the IONIA ODOS Motorway and CENTRAL GREECE E-65 Motorway.

2009 - 2010: Quality Control & Quality Assurance Manager - Responsible for the production and laying of the Anti-Skid Layer in the construction company TERNA S.A.

Project: EGNATIA ODOS Motorway, Construction works for the completion in Panagia – Grevena section, from I/C Panagia to Ch.: 16+300 (4.1.1s – 4.1.2s). Construction Company: TERNA S.A.

Supervisor Service: EGNATIA ODOS S.A.

Project Budget: € 59,381,000.00.

2005-2009: Quality Control & Quality Assurance Manager in the construction company ATTI-KAT S.A. at the Projects:

- 1) EGNATIA ODOS Motoreay: Panagia Grevena section, from I/C Panagia to Ch.: 6+300 (4.1.1s), budget € 205.000.000.
- 2) EGNATIA ODOS Motorway: Panagia Grevena section, from Ch.: 6+300 to Ch.: 16+300 (4.1.2s), budget € 162.000.000.

Construction Company: ATTI-KAT S.A. Supervisor Service: EGNATIA ODOS S.A. Projects Total Budget: € 367.000.000,00.

At the same time, I was responsible for Environmental Issues and Coordinator of Quality and Laboratories of all Projects in Greece of the construction company ATTI-KAT S.A.

2000 - 2005: Project Manager – Construction Manager – Quality Control and Quality Assurance Manager – Environmental Manager at the construction company ATTI-KAT S.A. of the largest Environmental Project in the Balkans. Project: Karla Reservoir and Related Works. Construction Company: J/V "ATTI-KAT S.A. – ATHINA S.A. – EKTER S.A." Supervisor Service: EYDE / KARLAS. Project Budget: € 176.082.171,70.

2000-2005: As Quality and Laboratories Coordinator of all Projects of the construction company ATTI-KAT S.A., the same as above period of time, I installed and organized the site laboratories at the following Projects:

- 1) PATHE Motorway Construction of supplementary works of the PATHE Motorway in Skotina Katerini section, budget € 58.694.057,23.
- 2) PATHE Motorway Construction of supplementary works of the PATHE Motorway in section Yliki Ag. Konstantinos, budget € 88.041.085,84.
- 3) EGNATIA ODOS Motorway: Panagia Grevena section, from I/C Panagia to Ch.: 6+300 (4.1.1s), budget € 205.000.000,00.
- 4) EGNATIA ODOS Motorway: Panagia Grevena section, from Ch.: 6+300 to Ch.: 16+300 (4.1.2s), budget € 162.000.000,00.

Construction Company: ATTI-KAT S.A.

Supervisor Services: EYDE / PATHE (1 and 2) - EGNATIA ODOS S.A. (3 and 4).

1998 - 2000: Quality Control & Quality Assurance Manager in J/V ''ETEP S.A. – METON S.A – VENT S.A." at the following Projects:

- 1) PATHE Motorway Construction of the motorway with accompanying works in the section Agioi Theodoroi Almyros, budget € 128.424.520,55.
- 2) PATHE Motorway PATHE Motorway Crossing through the Katerini Urban Zone, budget € 95.377.842,99.

Construction Company: J/V ''ETEP S.A. – METON S.A – VENT S.A.'' Supervisor Service: EYDE / PATHE.

1997 - 1998: Quality Control & Quality Assurance Manager in the construction company VENT S.A. at the following Projects:

- PATHE Motorway Execution of complete construction works of the motorway with accompanying works in the section: Raches I/C– Agroinvest Facilities from Ch.: 240+300 to Ch.: 244+500, budget equivalent to € 20.542.921,00.
- 2) PATHE Motorway Execution of complete construction works of the motorway with accompanying works in the section: Agroinvest Facilities Pelasgia Tolls from Ch.: 244+500 to Ch.: 250+000, budget equivalent to € 16.140.865,74.

Construction Company: VENT S.A. Supervisor Service: EYDE / PATHE.

At the same time, I was Coordinator of Quality and Laboratories of all Projects in Greece of the construction company VENT S.A.

1995 - 1997: Quality Control & Quality Assurance Manager – Construction Engineer of Agios Nikolaos Tunnel in J/V "AKTOR S.A. – ATTI-KAT S.A."

Project: EΓNATIA ODOS Motorway, Section Koumaria – Agia Anastasia, budget equivalent to € 20.542.921,00.

Construction Company: J/V "AKTOR S.A. – ATTI-KAT S.A." Supervisor Services: DEKE Ioanninon and EGNATIA ODOS S.A.

1993 - 1995: Project Manager – Construction Manager – Responsible of Quality and Topography tasks – Redaction of quantity surveying, protocols of receipt of invisible tasks, payments progress certificates in the construction company ARDEYSEON & APOCHETEYSEON S.A. at the following Projects:

- Arta Sewerage Construction of Arta Central Pipe Section on Krystalli Street and Secondary Network (Phase A), budget equivalent to € 1.760.821,72.
- 2) Extension and Reinforcement of Watertight Piping in the Center of Arta (Phase D), budget equivalent to € 616.287,60.
- 3) Construction of Arta Center Micropipeline (Phase B), budget equivalent to € 484,225.97.
- 4) Extension of the Water Supply Network in a Section of Vasileos Kon/nou Street.
- 5) Storm Drainage of Agia Sophia Section.
- 6) Sewerage Section of Agia Paraskevi Street.
- 7) Sewerage Section of Pavlos Melas Street.
- 8) Sewerage Section of Mostraion Street.
- 9) Sewerage of Parodos Agia Sophia.
- 10) Sewerage of Arta Section of Agia Sophia Street.
- 11) Sewerage Arta C.P. National Road.

Construction Company: ARDEYSEON & APOCHETEYSEON S.A. Supervisor Services: DEYA Arta, OTE Arta, T.S. Municipality of Arta.

1991-1993: Construction Manager – Responsible of Quality and Topography tasks – Redaction of quantity surveying, protocols of receipt of invisible tasks, payments progress certificates in J/V "K.A.A ODOU SKOUFA ARTA – ODYSSEYS S.A." at the following Projects:

- Arta Sewerage Skoufa Street Central Sewerage, budget equivalent to € 880,410.86.
- Arta Sewerage Section of Regional Road, budget equivalent to € 586,940.57.
- 3) Construction of Arta Watertight Piping extension (3rd Phase), budget equivalent to € 167,278.06.

- 4) Placement of 60 Fiber Optics and Micropipeline cable Patras Preveza -Ioannina'' Section: Philippiada - Preveza, budget equivalent to € 551,724.14.
- Placement of 60 Fiber Optics and Micropipeline cable Patras Preveza -Ioannina'' Section: Ioannina - Philippiada, budget equivalent to € 654,438.74.
- 6) Surveying impression of three phases in the Prefecture of Arta, after the assignment of the Technical Department of OTE Arta.

Construction Company: J/V "K.A.A ODOU SKOUFA ARTA – ODYSSEYS S.A.". Supervisor Services: DEYA Arta, OTE Arta, T.S. Municipality of Arta, OTE Filippiada, OTE Ioannina.

1990-1991: Expertise in Laboratories, Quality Control and Quality Assurance Laboratories in Regional Public Works Laboratory of Epirus [R.P.W.L. E.]

Areas of expertise:

- 1) Structural Materials and Concrete
- 2) Soil Materials Earthworks
- 3) Pavements
- 4) Bituminous Materials

More specifically:

- > Execution of tests and controls on mortars, artificial stones, cement materials, ceramic products, structural materials, marking materials.
- > Performing chemical analyzes of metals, rocks.
- > Control of cement quality, suitability of water and concrete additives.
- > Control of suitability of aggregates for concrete.
- > Concrete mix designs of various categories.
- Performing tests and strength controls of fresh or hardened concrete samples.
- Controls and testing of concrete structures, as well as various materials used in concrete structures.
- > Control and execution of tests of metal construction elements and iron reinforcement of concrete.
- > Shotcrete mix design and control of shotcrete
- Carrying out sampling and tests in the Laboratory and on the construction site (on-site and laboratory C.B.R., slab test load, pile test load, etc.) to check the suitability of soils as structural materials for the foundation of all kinds of constructions.
- > Monitoring and performing quality controls on earthworks, earthen dams, embankments, pavements, etc.

- Execution of Geotechnical Investigations by conducting boreholes, control of mechanical soil characteristics (unimpeded compression, one-dimensional consolidation, triaxial test).
- > Control of geotextiles and geogrids.
- > Design and construction of reinforced earth using geogrids.
- > Identification of sources of aggregates materials.
- > Carrying out sampling and testing to control the suitability of aggregates for pavement constructions.
- > Control of asphalt materials for their suitability for asphalt structures.
- > Asphalt mixtures mix designs.
- > Monitoring and control of the operation of permanent asphalt production plants.
- > Monitoring and performing quality controls on asphalt pavements and other asphalt constructions.
- > Mix designs of antiskid layer.
- Measurement and monitoring of surface characteristics of asphalt layers using special equipment: Skid Tester, Surface Regularity Tester, Mini Texture Meter).
- Start of development of Operational Procedures and Work Instructions, with the aim of establishing a Certified Quality Assurance System in construction companies.
- > Implementation of the principles given by EN 29000:87 standard of ELOT due to the upcoming start of implementation of it, promoting the idea of developing Quality Systems in construction companies.

Conferences - Seminars

- 1986: International Hydraulics Conference in KAPRUN, Austria. During the conference, the MOOSER (curved gravity) and DROSSEN (double curvature vault) dams were visited and informed.
- 1987: International Hydraulics conference at the scientific Hydraulics Laboratory (Hydraulics Laboratory) in DELFT, Holland. During the conference, a visit and briefing (analysis of technical characteristics and construction methodology) was made to the largest dams in the Netherlands: HARINGVLIE - GREVELINGEN, BROUVER - HAVENS, VOLKERAK, SLUIZEN, AFSLUITDIJK.
- 1992: 1st Panhellenic Conference on Bituminous Mixtures and Pavements in collaboration with the Road Engineering Laboratory of AUTH (Thessaloniki, 16-17/01/1992).

- 1994: 1st Panhellenic Conference on Road Engineering in collaboration with TEE (Athens, 04-07/10/1994).
- 1996: 2nd Panhellenic Conference on Bituminous Mixtures and Pavements in collaboration with the Road Engineering Laboratory of AUTH (Thessaloniki, 01 02/04/1996).
- *1997:* **3rd Panhellenic Congress of Geotechnical Engineering in collaboration with TEE (Athens, 20 22/03/1997).**
- 1999: Scientific conference on "The tunnels of Egnatia Odos" (Ioannina, 24/10/1999).
- 2000: Seminar on Quality Control and Quality Assurance in Public Projects held in Larissa with the sponsorship of the Ministry of National Economy (MINE), the supervision of the Joint Guidance Committee (JGC) - sub-committee of the monitoring committee of the Community Support Framework (K.P.S.), whose organization was undertaken by ISMES S.p.A. Bergamo (Italy), in the context of its work as a Special Quality Control Consultant (ESPEL) for Public Works.
- 2001: 4th Panhellenic Congress of Geotechnical and Geoenvironmental Engineering in collaboration with TEE (Athens, 30/05 - 01/06/2001).
- 2001: Scientific conference on "The tunnels of the Egnatia Road" (Ioannina, 07 08/12/2001).
- 2002: 3rd International Conference on Bituminous Mixes and Pavements in collaboration with the Road Engineering Laboratory of AUTH & Egnatia Road SA (Thessaloniki, 21-22/11/2002).
- 2003: 14th Concrete Conference in collaboration of TEE with the Greek Concrete Department (Kos, 15 17/10/2003).
- 2005: Conference on Concrete Technology and Structural Steels based on the new European ELOT EN Standards (Volos, 16/04/2005).
- 2005: 2nd Panhellenic Road Engineering Conference in collaboration with TEE (Volos, 18 20/05/2005
- 2005: Conference on the implementation of the new European Standard for Concrete EN 206-1 in collaboration with the TEE / Department of Epirus (Ioannina, 04/11/2005).
- 2006: 5th Panhellenic Congress of Geotechnical and Geoenvironmental Engineering (Xanthi, 31/05 02/06/2006).

- 2006: 15th Concrete Conference in collaboration with TEE / Hellenic Concrete Department (Alexandroupoli, 25 27/10/2006).
- 2007: 4th International Conference on Bituminous Mixtures and Pavements in collaboration with the Road Engineering Laboratory of AUTH and Egnatia Odos SA. (Thessaloniki, 19 20/04/2007).
- 2008: 3rd Panhellenic Conference on Anti-Seismic Engineering and Technical Seismology in collaboration with Soil Mechanics Laboratory of EMP, TEE and ETAM. (Athens, 05 - 07/11/2008).
- 2009: 16th Concrete Conference in collaboration with TEE / Hellenic Concrete Department and ETEK (Paphos Cyprus, 21 - 23/10/2009
- 2010: 6th Panhellenic Conference on Geotechnical and Geoenvironmental Engineering in collaboration with TEE (Volos, 29/09 01/10/2010).
- 2010: 5th Panhellenic Marine Projects Conference (Athens, 22 25/11/2010).
- 2011: 5th International Conference on Bituminous Mixtures and Pavements in collaboration with the Road Engineering Laboratory of AUTH (Thessaloniki, 01 06/03/2011).
- 2012: 3rd Panhellenic Road Engineering Conference in collaboration with TEE (Athens, 09 10/02/2012).
- 2014: 7th Panhellenic Conference on Geotechnical and Geoenvironmental Engineering in collaboration with TEE (Athens, 05 07/11/2014).
- 2015: 6th International Conference on Asphalt Mixes and Pavements in collaboration with the Road Engineering Laboratory of AUTH (Thessaloniki, 10 11/06/2015).
- 2016: Conference of the P.P.S. "Administration and Management of Projects and Programs" on the subject: "Administration and Management of Projects (Project Management)" (TEI of Thessaly - Larissa, 27/09/2016).
- 2016: 17th Concrete Conference in collaboration with EPES and TEE / Department of Central Macedonia (Thessaloniki, 10 12/11/2016).
- 2017: Conference of the P.P.S. "Administration and Management of Projects and Programs" on the subject: "Design and Implementation of Public Projects in a period of economic recession" (TEI Thessaly - Larissa, 17/03/2017).
- 2017: Conference of the P.P.S. "Modern Technologies of Environmental Management Projects" on the subject: "Presentation of the MIKE Water Models" in collaboration with the Department of Civil Engineering

Infrastructure Projects of TEI Thessaly (Larissa, 22/03/2017).

- 2018: Seminar on: "New Concrete Technology Regulation 2016 Application on construction site" TEE of Central and Western Thessaly (Larissa, 24 and 25/10/2017).
- 2018: Conference on subject: "The Protected Area of Karla Mavrovounio -Kefalovryso Velestinou: The problems, the prospects, the new institutional framework" organized by the Ecodevelopment Area Management Agency Ka.Ma.K.Ve., the National Center of Environment & Sustainable Development, the Region of Thessaly - P.E. of Magnesia and Sporades and the Municipality of Rigas Feraios - TEE of Magnesia (Volos, 02/03/2018).
- 2018: 18th Panhellenic Concrete Conference entitled "Sustainable concrete construction and the contribution of its technology to the protection of the environment", organized by the Technical Chamber of Greece (TEE Hellenic Concrete Department), the National Technical University of Athens (NTUA) and Scientific and Technical Chamber of Cyprus (ETEK) (Athens 29-30-31/03/ 2018).
- 2018: Conference on subject: "Management of Solid Waste and Construction Excavation & Demolition Waste (ECDW) in Central and Western Thessaly -Perspectives" - TEE of Central and Western Thessaly (Larissa, 17/05/2018).
- 2018: 7th Panhellenic Road Safety Conference organized by the Department of Civil Engineering of University of Thessaly and the Association of Greek Transport Engineers (Larissa 11-12/10/2018).
- 2018: International Conference: Pinios river Source of life & development in Thessaly. The conference was held under the auspices of the Ministry of Environment & Energy, the Ministry of Rural Development and Food, the Ministry of Infrastructure and Transportation, the Region of Thessaly and the scientific auspices of University of Thessaly and the Technological Educational Institute of Thessaly (TEI of Thessaly). Co-organizers were TEE – Regional Department of Central & Western Thessaly, TEE Regional Department of Magnesia, GEOTEE of Central Greece (Larisa 02 and 03/11/2018).
- 2019: Conference on subject: "Relationship on solid foundations: I am informing -Evolving" and a visit to the Factory of AGET HERACLIS, a member of the Lafarge-Holcim group in Agria Volos (Volos, 04 and 05/10/2019).
- 2020: 10th National Conference of Metal Structures (NTUA), Athens 08 10/10/2023). The conference was organized by the Society for Research in Metallurgical Projects (EEME) and the TEE.

2021: 12th National Conference on Soft Forms of Energy under the auspices of the Polytechnic School of AUTH (Thessaloniki 07 – 09/04/2021). The conference was organized by the Solar Engineering Institute in collaboration with the Mechanical Engineering Department of AUTH.

Participation in research projects – programs

- Research program of the Center for Technological Research of Thessaly in the framework at the project "Quality Control of Road Engineering Projects" Private funding.
- Pilot Project at Region of Thessaly, "Development of Technical Specifications of secondary aggregates materials by ECDW" in collaboration with the University of Thessaly.

Current research activities and research interests

- 1) Environmental Design of Technical Projects
 - Spatial and environmental effects of coastal erosion
 - Life cycle analysis and environmental impact of T.P.
 - Principles of environmental planning
 - Environmental pollution
 - Environmental hygiene
 - Defining low carbon footprint solutions
 - Introduction of green products weaning off production from carbon
- 2) Construction, Management and Operation of Technical Projects
 - Improvement of soils with waste
 - Reinforcement of soils with environmentally friendly injection materials
 - Contribution of the circular economy to the construction of T.P.
 - Acceleration of T.P. construction time
 - End-of-waste status and waste management
 - Stability of slopes Landslides
 - Measurements of air pollutants and noise pollution during the construction and operation of T.P.
 - Design of the satisfaction of citizens passing by the E-65 motorway
 - Green bridges Fauna crossings

- 3) Structural Materials
 - Concrete in the future (ash, recycled materials, steel fibers, chemical additives)
 - Extreme conditions concrete
 - Investigating ways to increase the lifespan of concrete structures.
 - Reuse of materials from demolition of existing structures.
 - Geosynthetic materials
 - Development of Technical Specifications of secondary aggregates materials by ECDW
 - Quality control of structural materials and road engineering materials
- 4) Climate Change:
 - CO2 management, investigating the possibility of storing and returning C to the subsoil.
 - Techniques for dealing with the phenomenon of desertification.
 - Estimation of carbon fluxes in the post-fire period
 - The danger of overpopulation
- 5) Renewable Energy Sources
 - Restoration of the landscape after the construction of the Wind Park.
 - Biodiversity of water areas.
 - Utilization of R.E.S. from the villages of Lake Karla, without degrading the area's biodiversity.

Publications

Alamanis N., Papageorgiou G., Chouliaras I., Xafoulis N., Kotsopoulos S., Farsirotou E., Lazogiannis K., Soulis G. (2020), "Proposals for Upgrading the Teaching of Geotechnical Courses", Universal Journal of Educational Research 8(5): 1752-1758, 2020.

Foreign Languages

• English - First Cetificate Degree, University of Cambridge.

Knowledge of IT and PC operation

- Knowledge and use of operating systems: Microsoft Windows 98, 2000, XP, Vista, Windows 7, Windows 8, Windows 10.
- Knowledge and use of General Programs: Microsoft Office (Word, Excel,

Power Point, Access, Internet).

- Knowledge and use of programs related to the science of Civil Engineering: AutoCAD, Geocalc, Ergoliptis, TECTON.
- Conducting distance courses through the Microsoft Teams online platform (modern distance learning).
- Asynchronous education using the e-class online platform of the University of Thessaly.
- ECDL degree holder.

Construction experience

• I am registered in the Constructors' Experience Registers in the 4th Level of Road Engineering, Tunneling and Hydraulic Works of the Ministry of Infrastructure and Transport / General Secretariat of Infrastructure / Directorate of Registers.