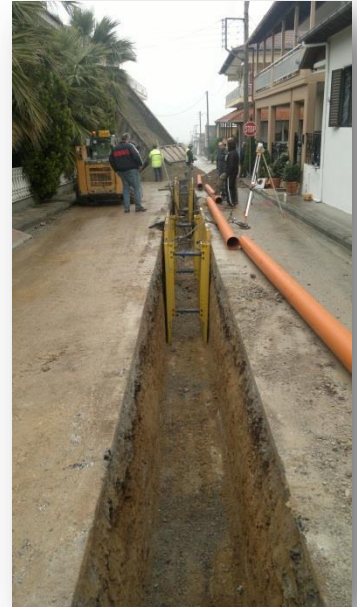


DKND ENGINEERS Ltd

CIVIL ENGINEERS
ENVIRONMENTAL PLANNING
ROAD SAFETY EXPERTS
CONSULTANTS
PROJECT MANAGEMENT



www.dknd.gr
email: dknd@dknd.gr



COMPANY PROFILE



ABOUT

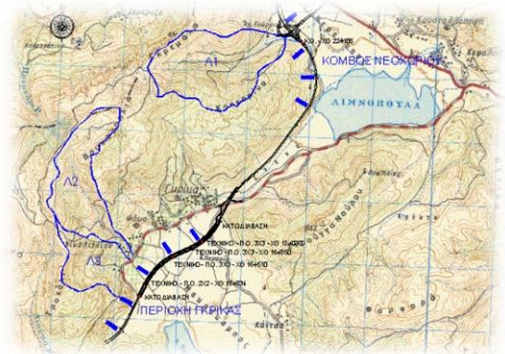
DKND Engineers is an engineering – consulting company established in 2001 in Thessaloniki–GREECE, after the merger of the individual consultancies run by its founding members and since then has grown steadily, offering a wide range of high quality services, providing engineering design and consulting services on large infrastructure – environmental projects.

For more than a decade, the company mainly focuses on road network planning and design, hydraulic infrastructure networks design, flood risks assessment & management and water pollution control methods.

Key objective of the company is to provide technically sound along with customer suited solutions to each project. The successful delivery of complex and multidisciplinary projects, is guaranteed by the efficient management structure combined with the expertise, know-how and accumulated experience of the company's staff. By persistently updating its practices and staying abreast to current technological developments, the company is best positioned to provide specialized project approaches and optimize project solutions.

The company is privately-owned and entirely independent of manufacturers, suppliers and contractors.

DKND Engineers's head office (private owned) is located at 8 Ploutarhou st., 546 23 Thessaloniki, Greece.



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ACTIVITIES

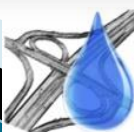
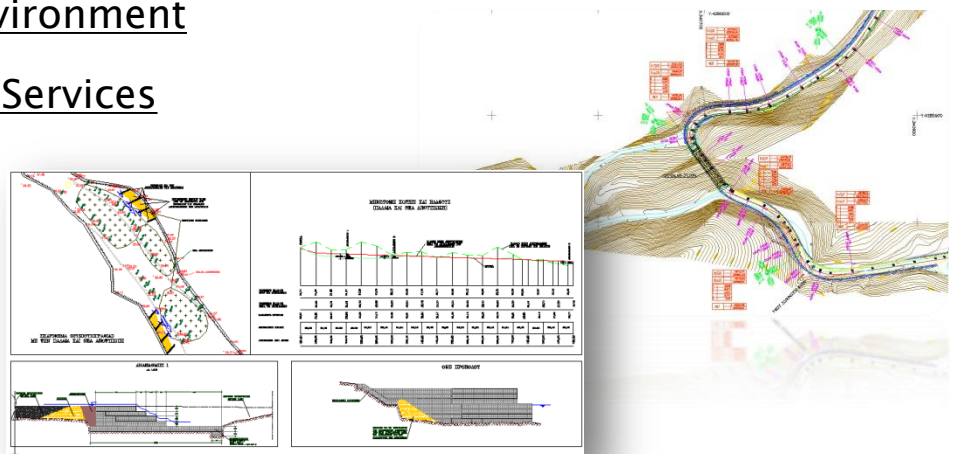
DKND Engineers offers integrated services in project coordination and design with the view of safeguarding that all assignments undertaken are performed according to the project specifications, on time and within budget, and meet the project requirements in terms of technical, scientific and quality standards.

The firm has extensive experience in project planning, highway / road design, road safety audits, environmental impact assessment studies, topographic surveys, environmental and water quality control studies. For design purposes, the latest available engineering software packages are used, which can be modified in-house and adapted to suite the client's particular requirements.

Our expert staff provides advice and support to clients on all issues and procedures related to project implementation, from the initial planning phase to the most detailed designs.

The main fields of activities of the company are the following:

- ▶ Transportation
- ▶ Water & Environment
- ▶ Consulting Services



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Transportation

DKND Engineers's Transportation Sector, offers a wide range of services including:

- planning
- engineering
- topographic surveys
- traffic surveys
- environmental and socio – economic studies
- cost estimates, budget composition and financial monitoring
- preparation of tender documents
- safety audits



The company's staff has extensive experience and scientific skills in water and environmental related technologies. Integrated highways & transportation planning requires **multidisciplinary approach** to solving problems and improving performance of systems, thus the department is organized to attain the combination of, the main goal of road design with socio – economical & technical criteria and, the multidisciplinary support to the project i.e. topographical survey, drainage and sewage design, flood control, structural engineering etc.

Our experience is mainly extended in the following fields:

- Transport Engineering and Operations
- Highway Planning and Design
- Road Safety Planning
- Traffic Management and Road Signs Planning
- Procurement, Specifications and Guidelines
- Construction Issues Troubleshooting and Support



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Road Safety

The firm is a **pioneer** in the plan/design and implementation of the new road restraint systems according to the EU directive EN 1317 and the Greek Instructions of OMOE – SAO.

Firm's experts offer solutions in full compliance with the instructions, employing our experience as we elaborate Road Safety Studies applying to the EU directive EN 1317 and OMOE–SAO since 2011, from our first new standards based 14,5km highway road safety study.

Since then our experience grow consistently and is now based on 17 *major* road safety total studies, predominantly for Egnatia Odos SA, during the preparation of which have been studied more than 150km of highways, more than 300km of lateral and vertical routes, 23 interchanges and a total of more than 230km of safety barriers and restraint systems are already fitted and placed.

Services provided by ***DKND Engineers*** to the project :

- complete road safety master plans,
- complete designs and constructing solution/details of the system applied,
- complete implementation studies,
- local and international market research,
- consulting services for local and international Manufacturers,
- consulting services for Ministries, Municipalities, Public Organizations, PPP Concession & Construction Groups,
- consulting services for Constructors and Installers.



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Water & Environment

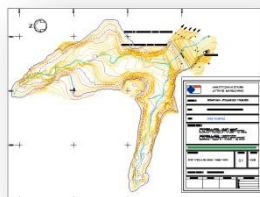
Managing the water cycle and harnessing the environment for the benefit of many is certainly among the greatest challenges of today. In the Water and Environment Sector, ***DKND Engineers*** offers a wide range of services including:

- planning
- engineering
- environmental and socio-economic studies

The company's staff has extensive experience and scientific skills in water and environmental related technologies. The adoption of “**sustainable development**” principle couples with intelligent solutions fit to our clients requests. Understanding the real needs of the client and mobilize our acquired expertise, leads to viable and sustainable solutions.

Our experience is mainly extended in the following fields:

- Water resources planning and development
- Water supply and treatment
- Sewage collection and stormwater management
- Treatment and disposal of wastewater and sludge
- Irrigation and flood control
- Multipurpose small Dams design
- Environmental audits and impact assessment studies



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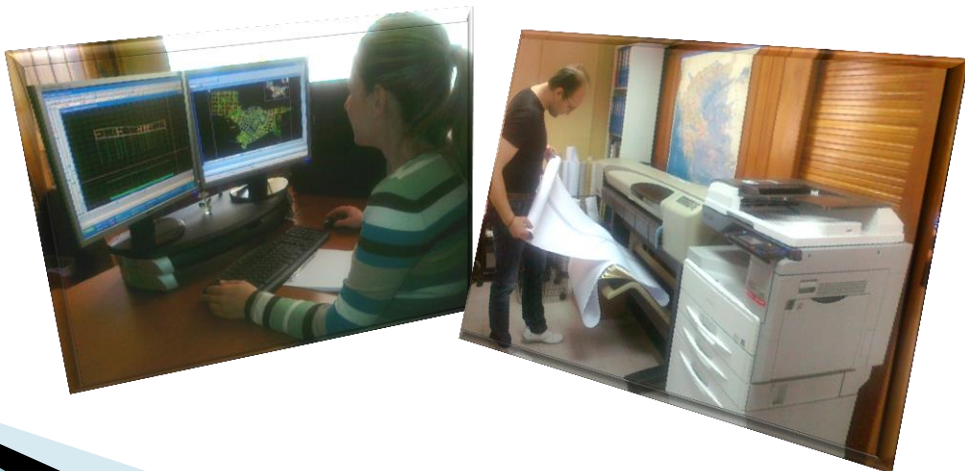
PEOPLE

Since its establishment, *DKND Engineers* operates with criteria that emphasize on the human factor, and in this context the company invests constantly on human resources as they represent its most valuable asset.

The human resources management system which focuses on:

- ▶ Work satisfaction, staff progress and excellence in science and the consultancy sector
- ▶ Continuous competitiveness in the market
- ▶ Proficient, on-time and qualitative service provision in each contract
- ▶ Fulfillment of clients' expectations and client satisfaction
- ▶ Constant improvement of quality and productivity
- ▶ Collaborative spirit

The staff is mainly composed by engineers (civil, structural), architects, environmental impact assessment experts, and surveyors. The firm also employs a number of field experts for hydrographical, topographic and soil surveys and investigations and retains consultants for specialized projects such as earthquake engineering etc.



DKND ENGINEERS Ltd

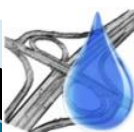
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SOFTWARE TOOLS

DKND possesses specialized software tools classified in various categories such as:

- ❖ General
- ❖ CAD – GIS
- ❖ Hydraulic Design
- ❖ Process Design
- ❖ Highway Design
- ❖ Transportation Design
- ❖ Land Surveying and Terrain Modeling



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CLIENTS

DKND offers it's services to various clients on Greek territory, as:

- ❖ Hellenic (Greek) Ministry of Public Works
- ❖ Hellenic (Greek) Ministries, Municipalities and Public Organizations
- ❖ Region of Central Macedonia
- ❖ Region of Western Macedonia
- ❖ Region of Epirus
- ❖ Region of Thessalia
- ❖ TERNA S.A.
- ❖ AKTOR S.A.
- ❖ J&P – AVAX
- ❖ INTRAKAT S.A.
- ❖ IONIOS S.A.
- ❖ ATHONIKI DEVELOPMENT
- ❖ Egnatia Odos S.A. (Egnatia Highway Company)
- ❖ ALDI SUPER MARKETS etc



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TYPICAL PROJECTS

EGNATIA HIGHWAY

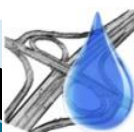
Egnatia Highway, starting from the port of Igoumenitsa and ending at Evros Prefecture, is the road axis which, by traversing Greece horizontally, links Western to Eastern Europe and thereof to Asia, in a total length of 680 klm on main axe and 300 klm on transversal axes connecting neighbor countries on the north of Greece.

DKND Engineers has a major contribution on that project with the design and redesign of more than 100 klm of main and transversal axes (and more than 200 klm of vertical roads network), the design of more than 15 complex intersections and the planning of more than 200 klm of drainage and stormwater management along the highway.

The services provided by DKND Engineers to the project included the following:

- complete designs (reconnaissance, preliminary and final) of the highway alignment,
- complete designs (reconnaissance, preliminary and final) of the structures (bridges, tunnels, intersections, etc.),
- hydraulic and drainage studies,
- topographic surveys
- complete road safety master plans

The most competitive sections of that project were:

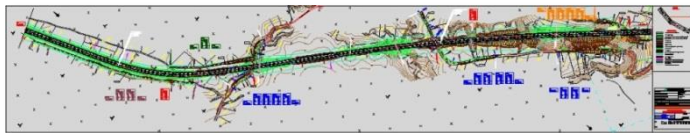


ROAD NETWORK DESIGN on EGNATIA HIGHWAY

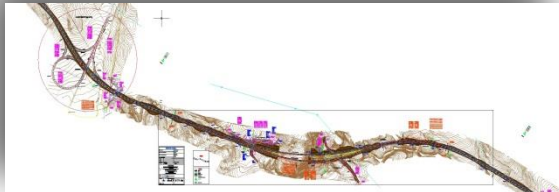
- Section 6.0 (from Kleidi Intersection to Kouloura Interchange). Total length of 25 klm of main axe, with three Interchanges. The road is set on an embankment that forms the flood control border of Axios River (one of the major rivers in Greece).



- Section 45.1.4 (from Kostarazi to Argos Orestiko Interchange). The section, is located in the vertical axe towards Albania, in an high relief landscape with sequencing trenches and embankments. The section also contains a bridge of 420m of length and four complex interchanges.



- Section 45.4 (from Ieropigi to Kristallopigi, Greek - Albanian Borders) Total length of 17,3 klm of main axe, with two interchanges and a tunnel of 0,6 klm.



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STORMWATER MANAGEMENT on EGNATIA HIGHWAY

- ▶ Section 12 (Marmaras stream). The project includes river flood risk management and riverbed reinforcement in a length of more than 35 km, along with fully detailed hydrological design of the river basins.



- ▶ Section 60.3.4 (from Petritsi Interchange to Promahonas). The project consists of flood control works design, in one of the major interstate rivers of Greece (Strymonas river), with flood flux estimation of $3.500\text{m}^3/\text{sec}$, in order to protect the Egnatia Highway network, passing by the river on the narrow border passage.



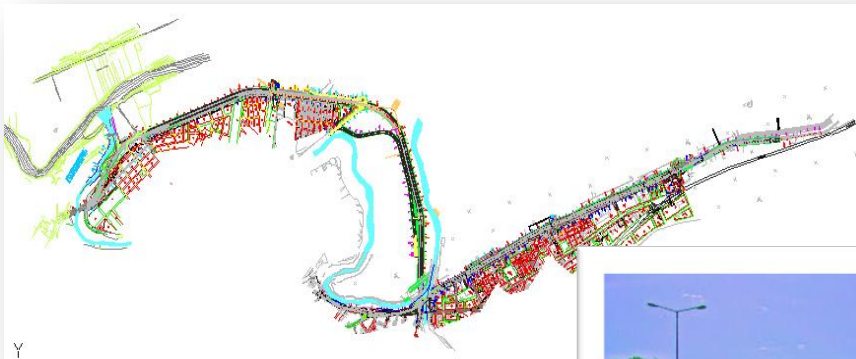
- ▶ Section 1.1.4 (River Arahthos area). The project aimed on riverbed adjustment, under the new bridge (of length of 1.080m) serving Egnatia Highway. The river flood flux design estimation is of $800\text{m}^3/\text{sec}$.



OTHER AUTHORITIES PROJECTS

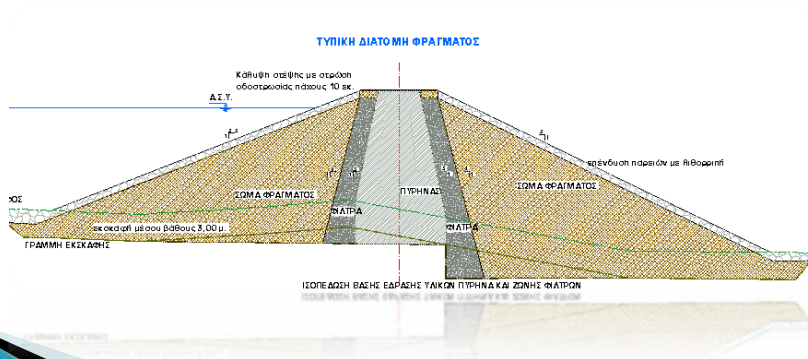
PREFECTURE OF THESSALIA – LARISSA RINGROAD

- ▶ Larissa city ringroad. Larissa is the fifth biggest city of Greece, located in the centre of the country, with a population of approximately 170.000 people. The section of the ringroad designed, with a length of 12 klm (main axe and service roads), was also serving as flood control border of Pinios River.



COUNTY OF PELLA – 12 SMALL IRRIGATION DAMS

- ▶ Pella is a county located on the northern Greece, in a high relief mountain region. The twelve small dams designed, aimed on helping local agricultural economy.



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ROAD SAFETY MAJOR PROJECTS

According to EN 1317

❖ Construction of road section Potidaia – Kassandreia.

Total study modification, road safety studies and consulting services for 17,4 km of the highway construction, with new design of 2 interchanges and more than 30km of service roads, with more than 10 overpasses and underpasses.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 4th 2012 – 8th 2016

CLIENT: INTRAKAT CONSTRUCTIONS S.A.

❖ Construction of “Egnatia Odos Motorway”, section 60.1.2 & 60.2.2

Total road safety study modification and consulting services for 22,5 km of the highway construction, with 4 interchanges and more than 45km of service roads, with more than 8 overpasses and underpasses.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 5th 2013 – Now

CLIENT: TERNA S.A., AKTOR S.A.

❖ Construction of “Egnatia Odos Motorway”, section 58.1 N. Moudania – N. Potidea.

Total road safety study modification and consulting services for 4,5 km of the highway construction, with 1 interchange and more than 15km of service roads.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 12th 2013 – Now

CLIENT: TOMI S.A.



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❖ ***Construction of “Egnatia Odos Motorway”, section 50.3 Florina – Niki.***

Total road safety study modification and consulting services for 14,5 km of the highway construction, with 2 interchanges and more than 45km of service roads, with more than 6 overpasses and underpasses.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 2014

CLIENT: TERNA S.A., AKTOR S.A., PORTO KARRAS S.A.

❖ ***Construction of “Egnatia Odos Motorway”, sections 80.1.1 & 80.2.3***

Total road safety study modification and consulting services for 25 km of the highway construction, with 8 interchanges and more than 35km of service roads, with more than 10 overpasses and underpasses.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 2014

CLIENT: AKTOR S.A.

❖ ***Construction of “Egnatia Odos Motorway”, section 80.3***

Total road safety study modification and consulting services for 15 km of the highway construction, with 2 interchanges and more than 25km of service roads, with more than 10 overpasses and underpasses.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 2014

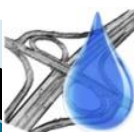
CLIENT: AKTOR S.A.

❖ ***Construction of Mavroneri interchange – Kilkis city***

Total road safety study modification and consulting services for 5,2km of the suburban highway construction, with an interchange and more than 12km of service & urban roads. All the necessary during construction, temporary transportation regulations also provided.

DATE: 2015

CLIENT: TOMI S.A.



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❖ ***Completion of the road study of the National Road Trikala – Pylh, section from Karavoporos bridge to Lygaria***

Total road safety study modification and consulting services for 9,6 klm of the highway construction, with 3 interchanges and more than 6klm of service roads.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 2014

CLIENT: KOKKINOS S.A.

❖ ***Completion of the road study of the National Road Veria – Naousa***

Total road safety study modification and consulting services for 8,4km of the highway construction, with 3 interchanges and more than 13km of service roads.

All the necessary during construction, temporary transportation regulations also provided.

DATE: 2015

CLIENT: FOREAS S.A.

❖ ***Niarchou Avenue, Final road & urban transportation studies***

Total highway design and urban transportation planning including bus ways and a TRAM way for a complex of a 4,5km of Niarchou avenue, with more than 9klm of service roads, 1 intersection, 4 fully scaled roundabouts and 5klm of bicycle road.

Total road safety study included.

DATE: 10th 2009 – Now

CLIENT: Prefecture of Epirus (Greece)



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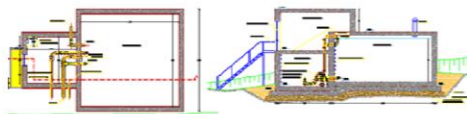
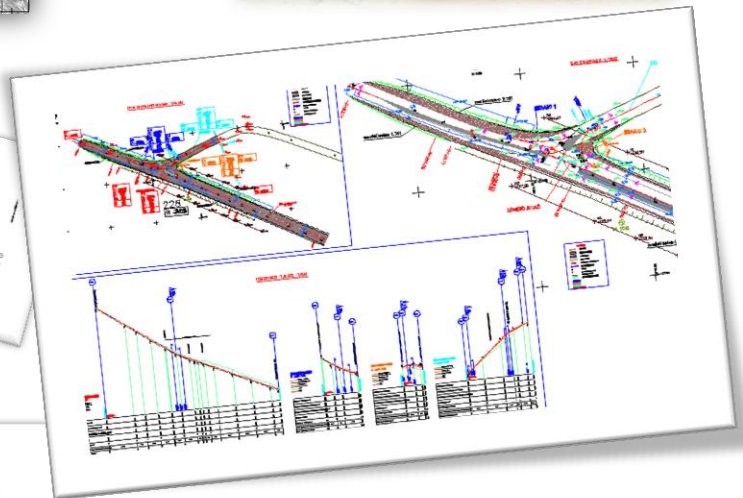
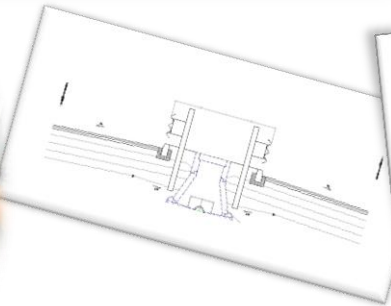
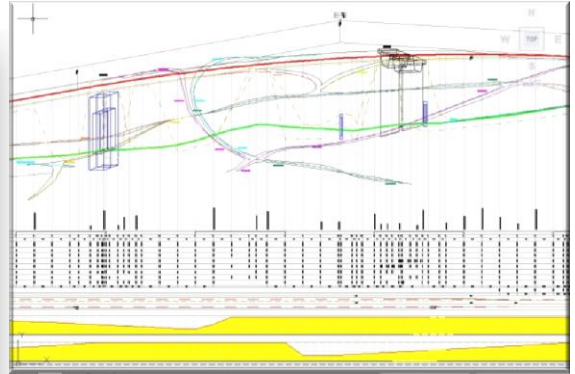
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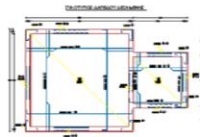
DKND ENGINEERS O.E.

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