



 **MAVRAKIS**
CONSULTING ENGINEERS



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About Us

Mavrakis Consulting Engineers S.A. was founded in 1997 and is the successor state of the private practice of Ioannis G. Mavrakis, who started his career as a civil engineer back in 1978. Up until December 2003, Mavrakis Consulting Engineers S.A., was operating in parallel with F. Karydakis-I. Mavrakis & Partners Ltd. Throughout all these years, technical excellence, highly educated staff and teamwork have always been the key assets helping us evolve into one of the most reputable consulting firms in Greece, serving clients in the private and mainly in the public sector.

Maintaining all the high standards that have brought us to where we are now and staying up to date in a constantly evolving field are two very important aspects. At Mavrakis Consulting Engineers S.A. we believe that progressing is achieved by investing in our people and with that in mind, a continuing education and training system has been established. State of the art software, engineered by major software developers, is used in all our projects (SOFiSTiK, SCIA, Bentley, etc.)

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Since the firm's founding, infrastructure projects have always been our main area of expertise, starting from the initial phase of the conceptual design and going all the way through the detailed design and supervision during the construction stage. However, throughout the years, Mavrakis Consulting Engineers S.A. has also been involved in the design of major building, transport and marine projects. Our ability to deliver each and every one of the assigned projects in short deadlines and at the same time in the highest possible quality enhances the competitiveness of our company in the field of structural and civil engineering.

Message from our President & CEO



Mavrakis Consulting Engineers S.A. is an exciting, fast growing engineering company with a family-friendly atmosphere, a strong dedication to customer satisfaction and a drive to provide positive technical contributions to the most challenging engineering problems.

Our experienced and self-motivated design teams achieve success by embracing our company's core values:

Integrity

Those with integrity possess strong moral character, exhibit consistency between words and deeds and do what is right. They establish trust by demonstrating honesty, ethical behavior and accountability.

Customer Relationship/Loyalty

Customer focus is demonstrated by responsive, dependable, empathetic advocacy of customer's needs, goals and objectives thereby creating positive word of mouth advertising.

Communication

Effective communicators set clear objectives with explicit, measurable goals and a realistic timeframe for achievement. They are available and approachable and they demand performance while providing constructive evaluation and feedback.

Vision

Having vision is possessing a keen sense of what to do to maximize the potential of the company. It is demonstrated by proactive, forward thinking and planning that anticipates and delivers performance beyond the company's and customer's current needs.

Sound and Timely Decision Making

Good decision-making requires good decision analysis. It requires identification of options, clarity of judgment, completeness, thoroughness, decisiveness and effective implementation. In short, it means getting it correct.

Continuous, Measurable Improvement

Always look for a better way of doing things. Seek new, innovative opportunities to excel, overcome adversity and provide alternative, constructive views. Continually improve processes and systems to improve productivity.

J. Mavrakis

Chairman & CEO

Mavrakis Consulting Engineers S.A. infrastructure team provides structural design services to the infrastructure industry, reinforced with sound cost control and estimating experience in the following:

- **Bridges**

- Cast in situ Slabs
- Cast in situ Boxes
- Pre-tensioned Precast Beams
- Steel
- Steel – Concrete Composite
- Balanced Cantilever
- Incremental Launching
- Cable Stayed

- **Commercial Buildings**

- Large residential Complexes
- Large Office Buildings
- Shopping Centers
- Industrial Buildings

- **Tunnels**

- Underground boring
- Cut & Cover
- Submerged

- **Consultancy Services**

- CAT II & III Checks
- Employer's site representative
- Feasibility Studies

- **Communities**

- Hospitals
- Schools
- University Buildings
- Theaters
- Convention Centers
- Prison Buildings
- Public Service Buildings
- Stadiums
- Public Swimming Pools

- **Transportation**

- Airport Buildings
- Rail maintenance yards
- Underground Parking Lots
- Multistorey Car parks
- Public organisation's fleet
Garages

- **Water**

- Jetties
- Fresh water Networks
- Pumping Stations
- Reservoirs
- Sewage & Waste Water
Networks
- Road Drainage
- Dams
- Irrigation Networks
- Streams & River Flood Control

- **Special Projects**

- Masts and Chimneys
- Rehabilitations and Retrofitting
- FRP Strengthening
- Large Steel Space-Trusses
- Temporary Works
- Scaffolding

- Retaining Structures

Our Service Delivery

Beginning with a comprehensive project analysis, our directors take a hands-on approach to the overseeing and organisation of all major projects.

The successful delivery of projects is testament to their knowledge and practical understanding of the elements critical to the success of infrastructure projects.

Our design team's internal seamless cooperation and interaction guarantees the quality of all our projects.

All current projects' progress is checked against schedule on weekly basis, during staff updates. This way project managers ensure that everything is delivered in a timely manner.

All our staff are trained and maintain our QA policy, according to the EN ISO 9001:2015 standard. Additionally all drawings calculations and reports pass through an internal checking procedure before being issued.

Advanced Structural Dynamics Capability

For over 40 years we have been designing projects in high seismicity areas in Greece.

Our bridge and structures design teams have extensive knowledge of advanced structural dynamics analysis and design, whether it is about new design under seismic loading or inspection, assessment and rehabilitation of structures that suffered substantial damage during earthquakes.

Additionally our engineers have extensive experience in dynamic analysis of human and wind induced vibrations.

Our range of advanced structural dynamics capability includes:

- Analysis and design of structures under seismic loading
- Inspection and assessment of dynamic loading induced damages
- Human and wind induced vibrations
- Design of tuned mass dampers and shock absorbers
- Design of seismic isolation and other energy dissipation mechanisms
- Push over analysis to determine possible collapse mechanisms

BRIDGES



BRIDGE DESIGN IS THE MAIN AREA OF EXPERTISE OF MAVRAKIS CONSULTING ENGINEERS S.A. OUR COMPANY DESIGNS ALL TYPES OF BRIDGES INCLUDING CONCRETE, STEEL, COMPOSITE, PRECAST BEAMS BRIDGES, CABLE STAYED AND FOOTBRIDGES, SEGMENTAL LAUNCHING AND BALANCED CANTILEVER BRIDGES.

Tied Arch Railway Bridge

The bridge which is part of the New Double-Track High Speed Railway Line connecting Athens and Thessaloniki, passes over a valley 70m deep and has a total length of 404.8m consisting of three simply supported tied arches (126.85+151.10+126.85).

Carriageway's width is 14.25m and the height of the two end arches is 25.08m while the height of the middle one is 29.64m. The deck comprises two, 2.90m high, steel box girders connected with cross beams every 3.80m. The three arches comprise a steel circular hollow section $\Phi 1800$ DIA, while the two piers consist of a rectangular hollow concrete section with a varying width.

The bridge was constructed using the incremental launching method.

Our role:

- Detailed design of all temporary structures (temporary piers, retaining walls)
- Detailed design of the incremental launching procedure assembly yard and launching systems
- Detailed design of seismic isolation system
- Construction Engineering
- BIM model/Fabrication drawings





2.5 km Elevated Motorway

The bridge carries a two-lane carriageway over a local industrial zone and connects the port of Thessaloniki with the Athens-Thessaloniki Motorway. The deck consists of simply supported spans 29.60 m long and its total length is 2,750.00 m. Each span comprises six precast-prestressed beams and a cast in-situ slab. The deck is 11.00 m wide and traffic is constrained by Jersey-type parapets.

Intermediate piers consist of two circular columns of 1.60 m DIA, which support the precast beams through elastic rocker bearings. All piers are founded on $\Phi 150$ DIA pile groups, connected with rigid pile caps.

Our role: Detailed structural design



Steel Footbridges

The two footbridges are constructed about 500 m apart and carry two footpaths over a dual carriageway.

The total span of the bridges is 45 m, the height of the arch (measured from the Deck) is 7.50 m and the width of the deck is 2.70 m.

The structural system is simply supported and has the form of a bowstring arch. The two arches are inclined inwards in order to increase the overall stability of the system. The arches are constructed of rectangular welded hollow sections and the decks cross beams of IPE sections. The deck is supported by 30 mm DIA prestressed Mcalloy tendons.

The deck is constructed as a steel-concrete composite section and is cast in-situ. The bridges are founded on a group of small diameter piles.

Our role: Detailed structural design



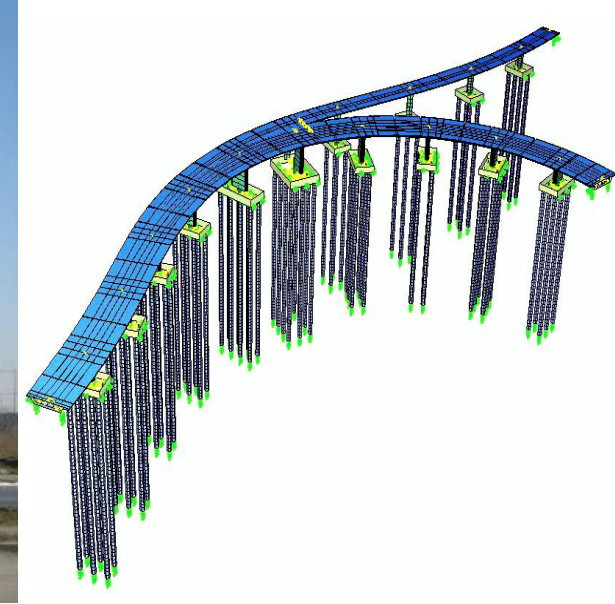


2nd Cross-Border Bridge at the Border Crossing “Kipi-Ipsala”

The total length of the bridge is 841m and is divided into 3 parts. The 1st and 3rd part, concern the access bridges on the Greek and Turkish side, consisting of precast beams, with a length of 150.35 and 290.65m respectively. The main bridge, with a total length of 400m is a three-span (110m/180m/110m) extradosed bridge. Carriageway's width is 34.5m and the height of the two pylons is 35m. It is the first extradosed bridge to be constructed in Greece.

Our role:

- Final Structural Design
- Geotechnical Design
- Hydraulic Design

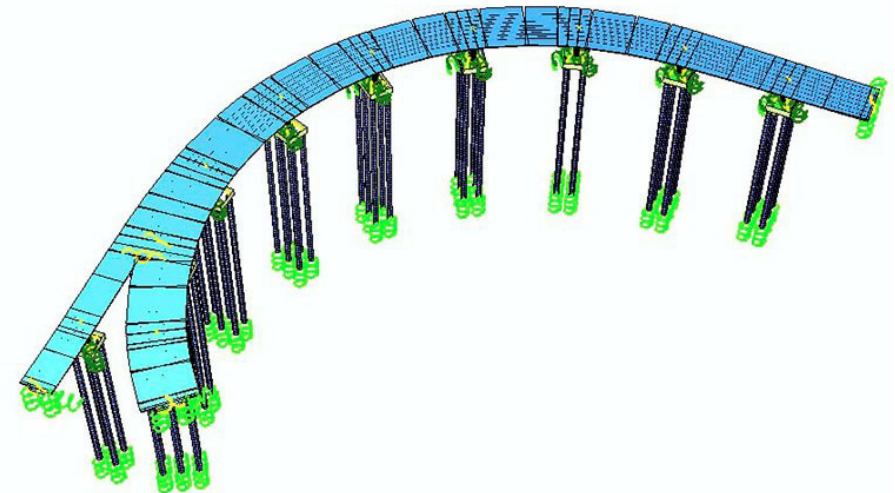


K16 Motorway Junction

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Junction K16 connects Thessaloniki's Ring Road with "Athens-Thessaloniki" main Motorway. The three main Carriageways that were designed are C, B+G and D+E. Carriageway C comprises 22 continuous spans of 547.70 m total length. The deck is formed by a voided, post-tensioned slab. All piers are founded on large diameter piles connected with rigid pile caps. Carriageway B comprises 11 continuous spans of 262.15 m total length. The deck is formed by a voided, post-tensioned slab. All piers are founded on large diameter piles connected with rigid pile caps. Carriageway G comprises six continuous spans of 160.41 m total length. The deck is formed by a voided, post-tensioned slab. All piers are founded on large diameter piles connected with rigid pile caps. Carriageway D comprises 10 continuous spans of 267.50 m total length. The deck is formed by a voided, post-tensioned slab. All piers are founded on large diameter piles connected with rigid pile caps.

Our role: CAT III Checking





Composite Bridge at Thessaloniki's Port

The Bridge is located near Thessaloniki's port and carries a dual carriageway over a local oil refinery.

The total length of the Bridge is 286.00 m and consists of four continuous spans (57.00+86.00+80.00+63.00 m). Carriageway's width is 11.00 m and there are two footways of 1.70 m width on the sides. Traffic is contained with Jersey-type parapets. The deck comprises four, 3.00 m high, welded steel beams connected with rigid cross beams over the supports.

The deck slab is constructed with 8 cm thick precast elements, which are stitched together with 22 cm in-situ concrete. All five piers of the Bridge are founded on 1.50 m DIA – 45.00 m long pile groups.

Our role: Detailed structural design

Dual Carriageway Bridge

The bridge is located near the borders with Albania and carries a motorway over a valley. The design includes two identical bridges constructed a few cm apart. Each of them carry three lanes of the motorway.

It has a total length of 278.20 m and consists of seven simply supported spans (39.80 m each). The deck comprises six precast-prestressed beams that are supported on elastometallic bearing pads. The slab is constructed with 10cm thick precast elements, which are stitched together with 14 cm deep in-situ concrete.

Due to the significant height of the deck, intermediate piers are formed as box-type sections in order to address buckling issues. They are founded on rigid pile caps, that are carried by large diameter pile groups. The abutments are founded on large diameter piles and carry integral wing walls.

Our role: Detailed structural design



Bridge Design Capabilities

Mavrakis Consulting Engineers S.A. provides a broad range of integrated infrastructure and systems solutions. We are a leading transportation and systems engineering consultancy with a proven track record and an award-winning reputation for excellence in bridge engineering.

Our bridge engineering team combines high-level technical engineering skills with an artistic appreciation of bridge structures and a keen sense of environmental responsibility.

Our range of bridge engineering services includes:

- Planning and conceptual design
- Analysis and detailed design
- Independent Checking
- Construction and erection engineering
- Seismic engineering
- Advanced structural dynamics
- Sliding and launching systems
- Temporary works
- Structural appraisal & rehabilitation
- FRP strengthening
- Pier impact & steady state assessments
- Failure analysis and forensic engineering
- Expert reports and testimony

SPECIAL PROJECTS

MAVRAKIS CONSULTING ENGINEERS S.A.
DESIGN TEAMS HAVE OVER 40 YEARS OF
EXPERIENCE IN DELIVERING ENGINEERING
EXCELLENCE IN SPECIAL PROJECTS,
INCLUDING HIGH-RISE MASTS & CHIMNEYS,
PRESTRESSED MEMBRANES & SHELL
STRUCTURES, FRP STRENGTHENING,
STRUCTURAL ASSESSMENT,
REHABILITATION AND RETROFITTING OF
HISTORICAL STRUCTURES.

Road Coverage structure

The project's scope of work included the construction of a bridge type structure to act as a coverage of the road and to be used in the urbanization of the area.

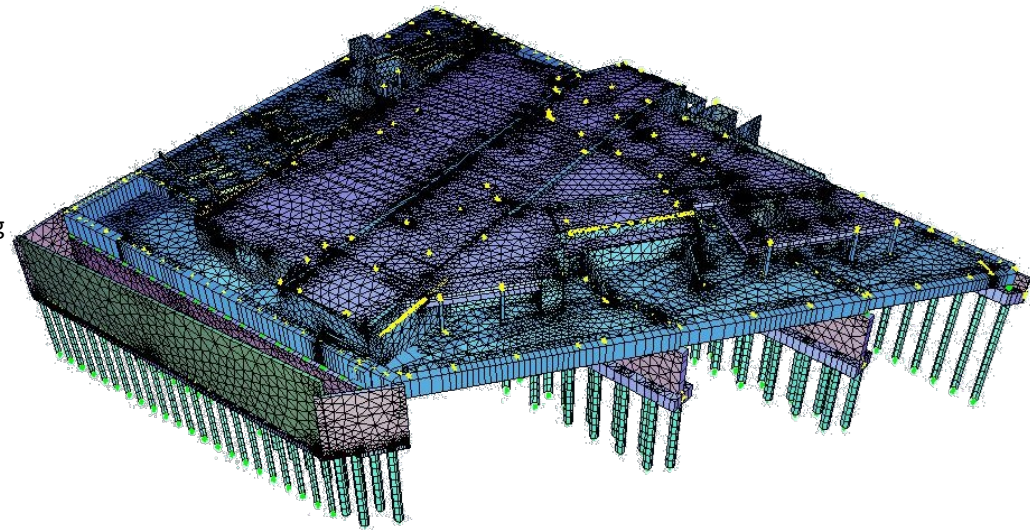
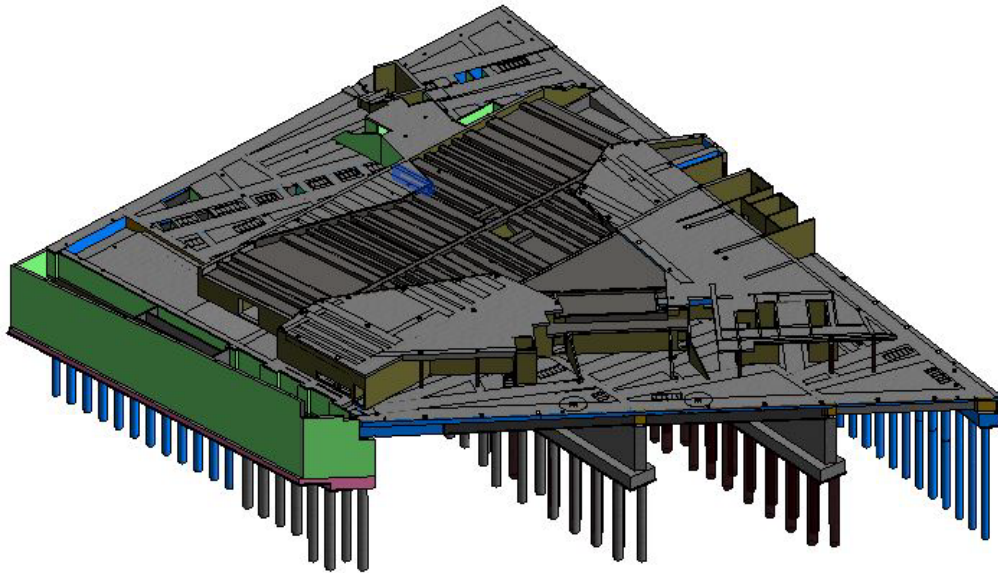
Our first involvement in the project was at tender stage, when Mavrakis Consulting Engineers S.A. was hired in order to carry out the preliminary design and BoQ verification.

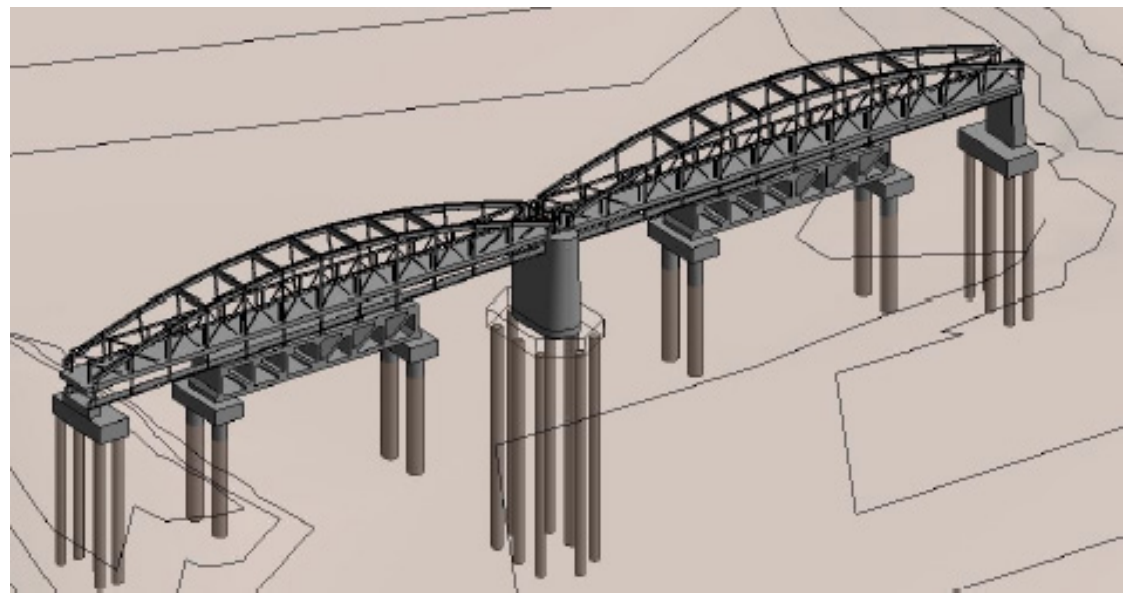
At second stage, we were commissioned the full detailed design of the structure, including the foundation, BIM modeling and concrete detailing.

Our role: -Verification of the preliminary design and BoQ

- Detailed Design
- Full BIM modelling
- RC detailing

SPECIAL PROJECTS





100 Year old Bridge refurbishment

Pier M48 is part of a 2.4 km elevated motorway. After its construction, a major alteration of the adjacent span design, led to a significant increase to its loading.

The strengthening process required the complete reconstruction of the two columns, in order to withstand the required loads. A new RC wall, founded on piles was constructed, in order to lift the existing deck. Five hydraulic jacks were used to lift the deck for about 25 cm, and then pier M48 was reconstructed. The new form of the pier is a stocky RC wall.

This form was required by the design in order to withstand horizontal seismic loadings. The deck was strengthened with the use of GRP strips for the lifting process.

Our role: Detailed structural design



Bridge Pier Strengthening

Pier M48 is part of a 2.4 km elevated motorway. After its construction, a major alteration of the adjacent span design, led to a significant increase to its loading.

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This form was required by the design in order to withstand horizontal seismic loadings. The deck was strengthened with the use of GRP strips for the lifting process.

Our role: Detailed structural design





Prestressed Membranes

The project concerns the design of a prestressed membrane system to provide shading to the park's buildings. The whole structure comprises two independent subsystems: The buildings system that comprises five membranes of 17.00 x 17.00 m and the entrance system, which consists of four 11.00 x 11.00 m membranes.

Each membrane is rectangular in plan and obtains a double parabola shape when installed. All edges of the membranes are attached to steel strands. All strands are anchored to the prestressing mechanisms at the top of the steel columns.

The steel columns are regular SHS sections. They are all pin supported at their base and held in place by four prestressed strands.

Our role: Detailed structural design

SPECIAL PROJECTS



Retaining Structures

The project's scope of work included the upgrading of several existing junctions in Doha, Qatar.

Mavrakis Consulting Engineers S.A. carried out the CAT III checking for all permanent retaining structures of the project. Our SoW included the structural verification of Pile Wall retaining systems and MSE Wall systems with a total area of 200,000 m² and a maximum height of 16m.

The retaining systems were verified according to both British Standards and AASHTO provisions.

Our role: CAT III Checking

SPECIAL PROJECTS



TRANSPORTATION

The background image shows a construction site for a large structure, likely a bridge or a large building. A yellow crane is positioned on the left, lifting a large steel beam. The structure consists of a network of steel beams forming a roof or a large overpass. The scene is set in an open area with some vegetation in the foreground. The overall tone is industrial and focused on infrastructure.

MAVRAKIS CONSULTING ENGINEERS S.A.
DELIVERS COMPREHENSIVE SERVICES
OVER THE FULL LIFE CYCLE OF A PROJECT
TO BENEFIT THE GOVERNMENT AND
PRIVATE INDUSTRY CLIENTS THAT IT
SERVES. WE HAVE A GENUINE
APPRECIATION AND UNDERSTANDING OF
THE OPERATING STRUCTURES AND
BUSINESS NEEDS OF THE
TRANSPORTATION INDUSTRY. OUR
PROFESSIONALS DESIGN STRUCTURES TO
SERVE TRANSPORTATION BY LAND SEA OR
AIR.



Aircraft Repair Hangar

The Hangar compound comprises four separate buildings. Buildings 1, 2 & 3 spring a total GEA of 4,608.00 m², 6,125.00 m² and 7,070.00 m² accordingly, divided over three storeys.

The fourth building is the main hangar where aircrafts are being inspected and repaired. The total plan is 27,625.00 m² and the total height is 34 m. The hangar is founded on 80 cm DIA piles. The roof is supported on reinforced concrete columns and its dimensions are 325.00 m x 85.00 m. The main roof trusses have two spans of 175.00 & 150.00 m respectively and are 12.00 m high. The transverse roof trusses span 82.00 m and are 8.00 m high. The two main entrance doors with a width of 169.00 m & 142.00 m respectively and 22.75 m tall each, are sliding and folding.

Our role: Detailed structural design



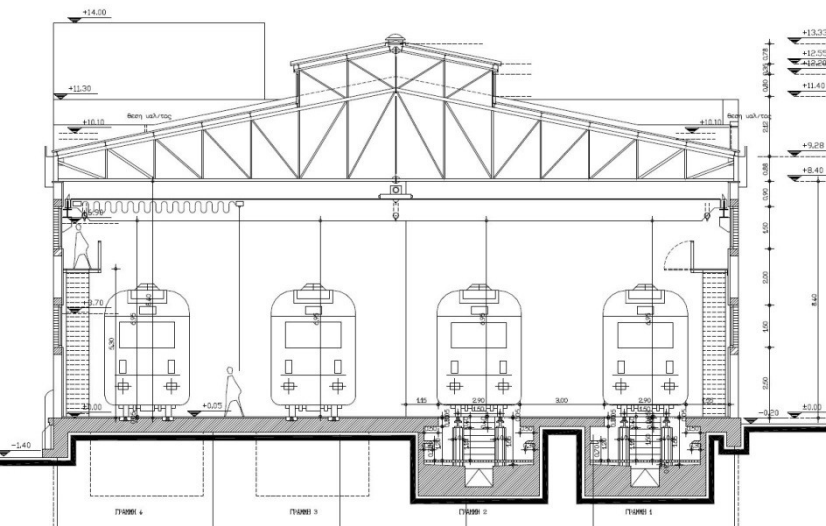


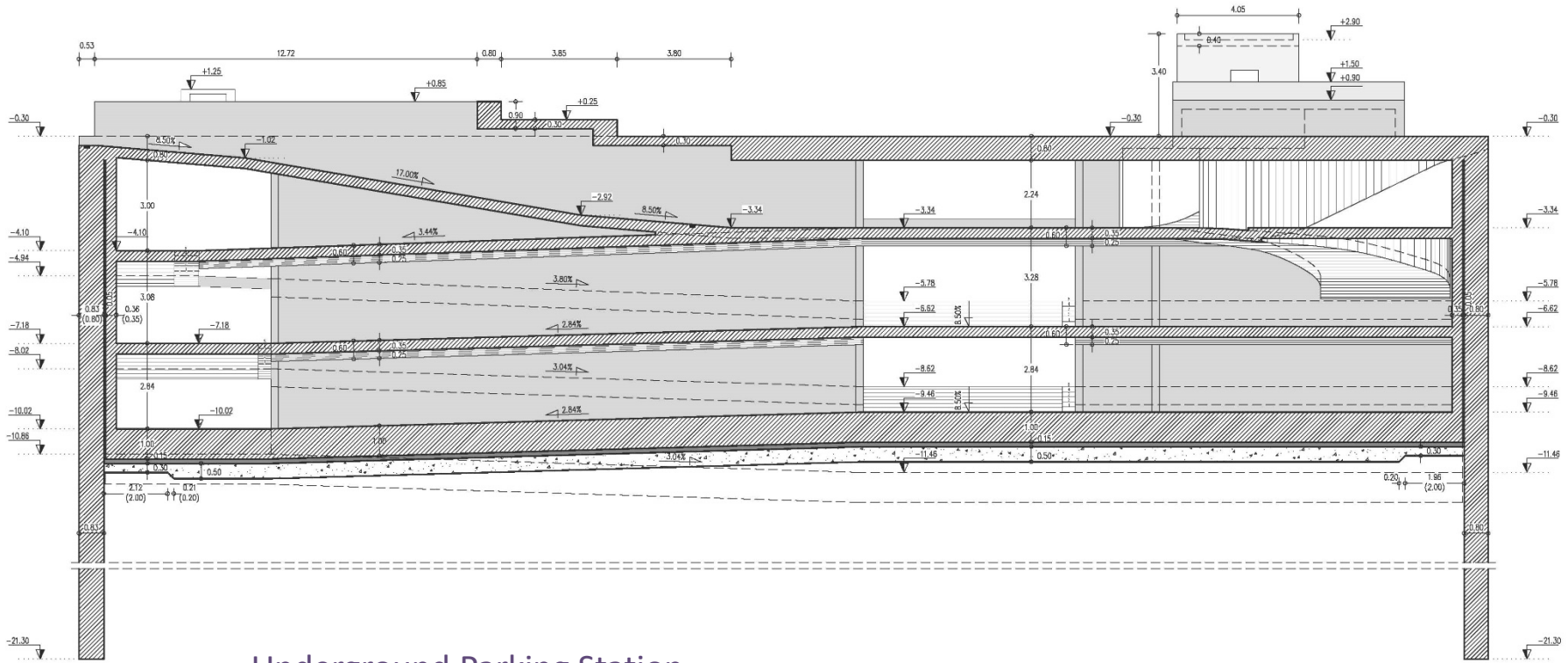
Rail Maintenance Yard

The train maintenance yard comprises three main buildings that are structurally connected. Buildings 1 & 2 comprise three storeys of 739.00 m² and 819.00 m² respectively. The structural frame is formed by RC columns and beams carrying 25 cm deep slabs. The buildings are founded on spread footings connected with crossbeams.

The main repairing area is 278.00 m long by 24.30 m wide and covers a total area of 6,755.40 m². The structural system consists of RC columns that support the steel truss of the roof. Under the train corridors two RC columns support the rail so there can be adequate workspace for maintenance under the wagons. At the bottom of the roof's steel truss there is a crane bridge running through the whole length of the structure.

Our role: Detailed structural design





Underground Parking Station

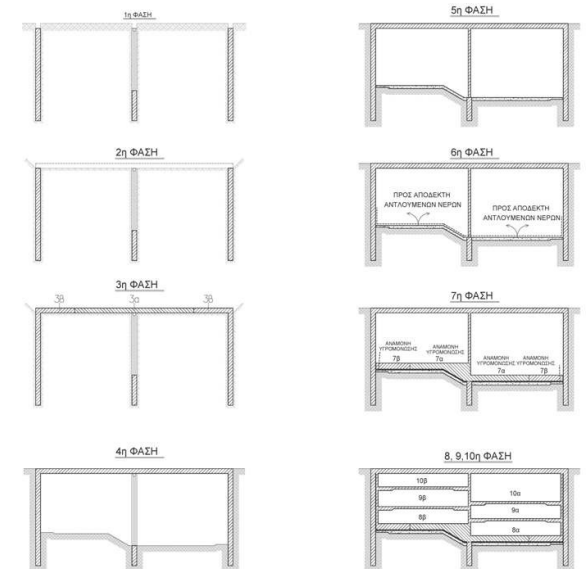
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The building consists of three underground parking levels surrounded by a continuous external wall. The bottom slab is rigidly connected to the external wall forming a box type structure. Waterproofing is achieved by using "waterstop" membranes.

The excavation was carried out utilizing the "Top-Down" method, in order to minimize impact to the surrounding roads and buildings. Initially the external wall was casted through continuous boreholes on the perimeter of the structure. Following the completion of the walls, the top slab was casted. Having secured the external walls against deflection, the internal excavation was carried out.

The intermediate slabs consist of solid RC concrete and span in one direction, with the shortest span being 15 m. The structural analysis was carried out using shell element FE models, taking into account the separate construction phases.

Our role: Detailed structural design





Police Vehicle Garage

The building complex consists of five separate buildings, one RC and four steel buildings, constructed on a site with a total plan of 50,000.00 m². Mavrakis Consulting Engineers S.A. was responsible for the detailed design of the four steel structures with a total GEA of 1,830.00 m².

The main characteristic of the buildings is their column grid, which features long spans. The position and type of the vertical bracings was decided based on the provisions for the space requirements of the several vehicle types. The structural system of the buildings comprises frames with either two or four columns in the one direction, while in the other direction there are vertical bracings to account for the horizontal loads.

Our role: Detailed structural design

Transportation Design Capabilities

Mavrakis Consulting Engineers S.A. has global capability in all structural aspects of the development of transportation infrastructure. Our sophisticated advisory services extend from initial planning detailed design and structural monitoring of occupied structures.

The key areas of our transportation engineering capabilities include:

- Planning and conceptual design
- Analysis and detailed design
- Independent Checking
- Construction and erection engineering
- Seismic engineering
- Advanced structural dynamics

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OF

- Airport terminals & repair hangars
- Fleet management & repair garages
- Rail terminals & maintenance yards
- Underground & multistorey car-parks



Office Buildings Complex

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This building complex in Marousi, Athens was designed and constructed to house the offices of MICHANIKI S.A and insurance company GENERALI. The total plan of the site is 7,200.00 m² and the office plan is of a total area of 8,650.00 m².

The complex consists of three independent four-storey office buildings (K1, K2 and K3), which are connected on the basement level. Underground, there is a two-storey parking garage with a total plan of 11,760.00 m².

The main construction material of all three buildings is reinforced concrete, while in the case of K2, the roof is composite consisting of steel beams of varying height and RC slab with a depth of 15 cm. The foundation of the complex is a raft, while the vertical loads in the case of all three buildings are carried by the outer shell.

Our role: Detailed structural design

COMMERCIAL





Ministry of Finance I.T. Building



Ministry of Finance data centre contains all the servers and equipment that support the electronic systems of the country's taxing system. It is an old factory that was reconstructed and expanded to cover the data centre's needs. It consists of two underground levels, ground floor and four storeys. The total area of the building is 22,600.00 m². Underground parking has a total area of 7,000.00 m² and provides about 600 parking spaces.

The reconstruction process was based on keeping the facades of the building (they were remodeled according to the architectural design) and reinforcing the existing structural system to withstand additional loads from the added levels. The foundation of the building has been reinforced with bored, cast in-situ piles. In order to enhance load bearing capacity of the structure, stiff walls and elevator cores have been added to the structural system. All new slabs that were constructed, are steel-concrete composite in order to minimize additional dead weight.

Our role: Detailed structural design

COMMERCIAL



Naval Staff Insurance Org. Offices

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Naval Staff Insurance Org. Offices Building is located on the Miaouli dock, in Piraeus. It covers a whole building block and its plan covers 1,350 m².

The total area provided is 10,615.00 m², 1,350.00 m² of which are used for the ground floor shopping centre. The rest of the available space is occupied by shipping companies' offices. The building has a two storey underground car park (3,115.00 m²) that provides 250 parking places.

The building has eight storeys in total. The structural system comprises a circular column grid supporting solid flat slabs. On the top three floors, a steel structure provides additional balcony space. The building is founded on large diameter bored, cast in-situ piles.

Our role: Detailed structural design

COMMERCIAL





Structural appraisal & retrofitting of Villa Kazouli

Villa Kazouli was built in 1902 as residence of businessman N. Kazoulis, on 47,000.00 m² land area in Kifisia, Athens. In 1940 the building was occupied by German troops and after World War II it was used as a hospital, until 1953. In 2001 its ownership was transferred to Ministry of Infrastructure and was converted to the Center of Environmental and Sustainable Development.

After serving as a hospital, the building was abandoned and suffered extensive damage. Large parts of the roof, masonry and mezzanine floors collapsed. Foundations suffered excessive settlement compromising the overall stability of the structure.

During the structural appraisal, the structural system was analyzed according to current standards in order to verify its load bearing capacity. During the retrofitting, masonry walls and foundation were reinforced using steel anchors and cement-resin grouting. Mezzanine floors and the roof were completely redesigned, using most of the existing materials, in order to preserve the character of the building.

Our role: Structural appraisal & retrofitting

COMMERCIAL





Building Complex Athens 2004

The project was about the design of an office building complex for specific uses and facilities in order to accommodate the OLYMPIC GAMES STEERING COMMITTEE ATHENS 2004. The building complex is located on the corner of Philikis Etaireias - Iolkou - Al. Panagouli in Nea Ionia, Athens and includes seven structurally independent buildings with total surface area of 34,000.00 m² and corresponding auxiliary areas of 30,000.00 m².

By exploiting the old factory complex of former PEIRAIKI-PATRAIKI (COMPLEX "MOUTALASKI"), a complex of seven separate buildings that are internally connected and have separate fenced surroundings was created. Among others, the complex houses a large conference center with capacity of 500 delegates and an underground parking garage with capacity of 700 cars divided over three levels.

Our role: Detailed structural design





Athens 2004 International Broadcasting Centre

Athens 2004 international broadcast center is located in Kifisias Ave, on the east side of OAKA stadium. During 2004 Olympic Games it hosted media and reporters from all over the world that covered the event. After the end of the Olympic Games it was converted to a shopping mall, named Athens Golden Hall.

The building consists of a two level underground parking and eight storeys of office space. The parking area, which provides 1600 parking places, consists of RC walls and is founded on large diameter bored piles. The eight storeys above it, are supported by a steelwork frame and composite slabs structural system. The total GEA of the building is 41,000.00 m².

Our role: Detailed structural design of steelwork frame

Commercial Design Capabilities

Mavrakis Consulting Engineers S.A. structural engineering team designs buildings having in mind facility function and constructability. This knowledge allows us to provide cost-effective designs. Our engineers also maintain a close working relationship with architects and building services teams to incorporate their needs to the design, aiming to deliver a comprehensive solution.

The key areas of our commercial buildings engineering capabilities include:

- Planning and conceptual design
- Analysis and detailed design
- Independent Checking
- Construction and erection engineering
- Seismic engineering
- Advanced structural dynamics

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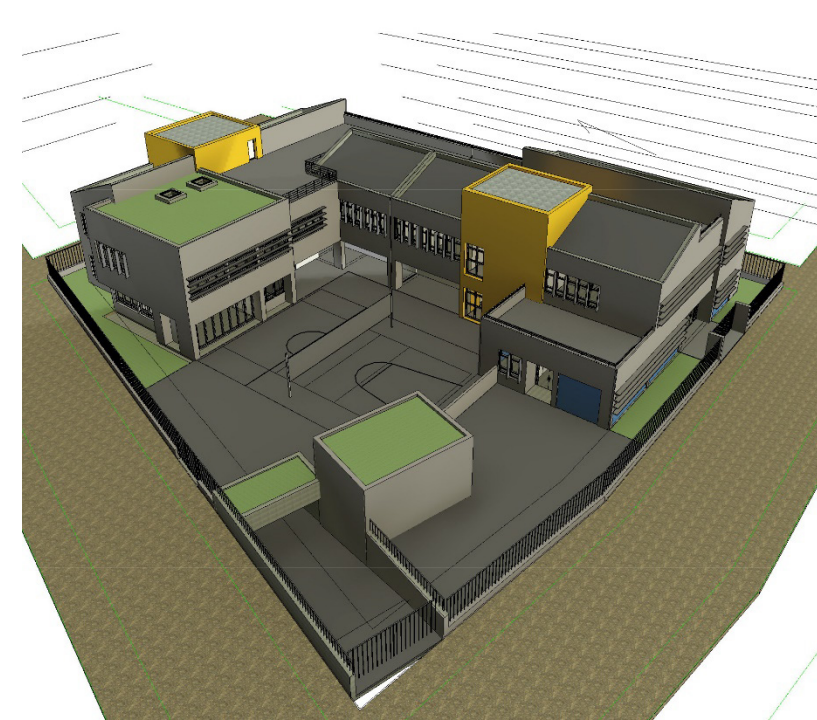
OF

- Large office buildings
- Residential complexes
- Hotels
- Shopping centers
- High rise, multi use buildings
- Industrial buildings & warehouses

COMMUNITIES

An aerial, isometric view of a modern architectural complex, possibly a school or community center, rendered in a monochromatic green color. The building features multiple levels, flat roofs, and large glass windows. The overall aesthetic is clean and contemporary.

FOR OVER 40 YEARS, MAVRAKIS CONSULTING ENGINEERS S.A. HAS BEEN WORKING WITH LOCAL AUTHORITIES TO ASSIST WITH LONG AND SHORT-TERM INFRASTRUCTURE NEEDS. WE PROVIDE FULL-SERVICE ENGINEERING SERVICES – FROM STUDIES TO REVIEW, DESIGN AND CONSTRUCTION. WHETHER IT IS A NEW SPORTS CENTRE OR THE RECONSTRUCTION OF AN OLD SCHOOL OUR EXPERTS PROVIDE THE LOCAL COMMUNITY WITH THE MOST EFFECTIVE SOLUTION.



17 Bioclimatic School Units in the Region of Central Macedonia

The scope of the project includes the design, financing, construction, maintenance and facilities management of seventeen (17) new School Units in the Region of Central Macedonia through a PPP scheme.

Our role:

- Preliminary, Final and Detailed Structural Design
- Geotechnical Foundation Design





Development of the 'GSP' Area

The new GSP will be a public “park - city square” with a rich topography, modulating new retail and leisure urban fronts, located in Nicosia, Cyprus. Its plan covers 14,000 m² and it consists of a two-level underground parking and above-ground recreational and retail spaces.

The structural system comprises steel-concrete composite columns in scatter positions, as indicated from architectural requirements. The ground level slab, due to the high loads that it is expected to be carrying, is solid and supported by RC beams. A flat slab structural system was chosen for all other levels, while the structure rests on a raft foundation. On the south side, a 1,900 m² steel canopy composes an “alley” housing several retail spaces.

BIM process was used for the design and the project coordination.

Our role:

- Detailed structural design
- Design of temporary retaining structures
- Construction Supervision

COMMUNITIES



Chania Hospital

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MAVRAKIS CONSULTING ENGINEERS S.A.

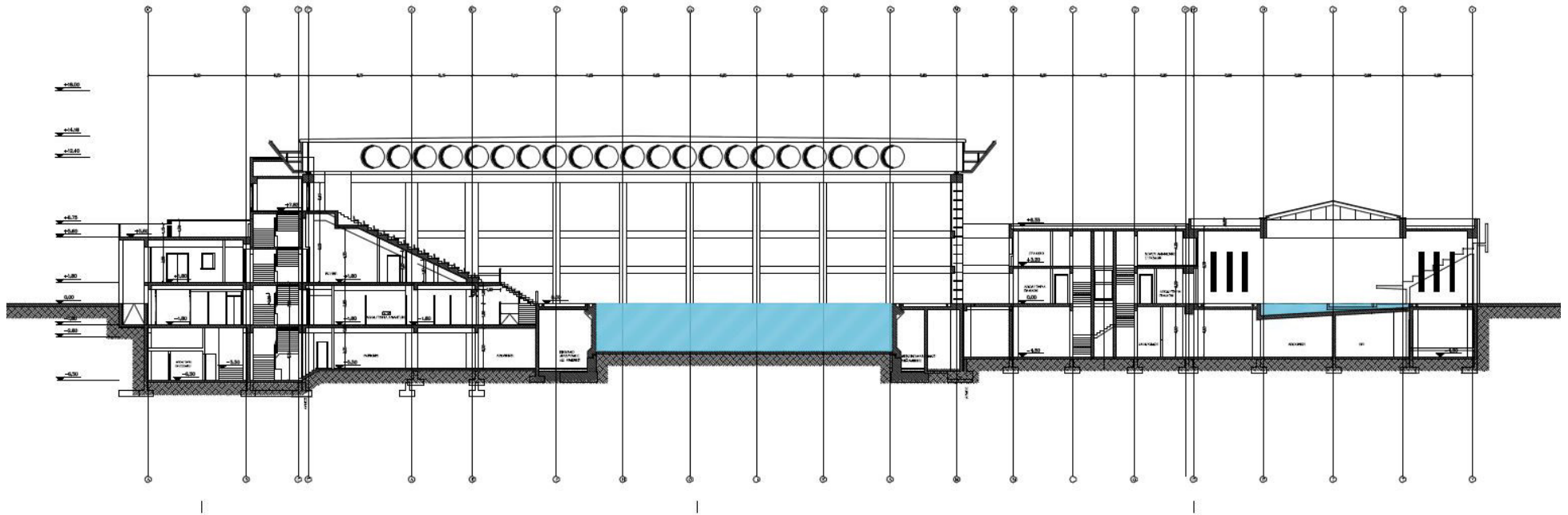
Mavrakis Consulting Engineers S.A. carried out the detailed design of the building complex of the General Hospital in Chania.

The whole complex consists of 17 buildings in total, one to seven storeys high, with a total GEA of 49,400.00 m² spread over a site of 187,000.00 m². The main building complex has the shape of an H and houses the main units and the surgeries of the hospital, while the rest of the surrounding structures house all the other functions of the hospital.

In the surrounding area, among others, there is parking space for 850 cars and a helipad.

Our role: Detailed structural design





Public Swimming Pools Complex

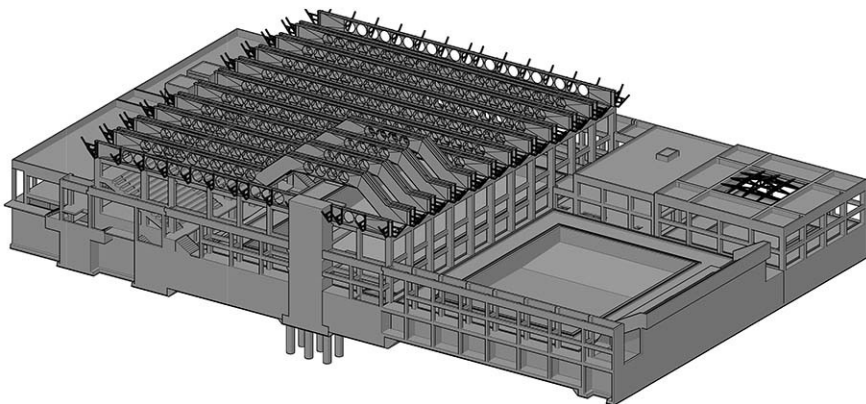
The whole structure consists of three separate buildings. The main building covers the deep diving pool, a medium scale grandstand and all support facilities (changing rooms, gyms etc.). The building is covered by a steel-concrete composite roof at the level of 18.00 m.

The second part of the structure houses a smaller training pool together with its support facilities. The load carrying structure comprises RC columns and walls founded on spread footings. The roof consists of solid RC slabs carried by 1 m deep prestressed/post-tensioned beams. In order to provide adequate lighting conditions, a steel pyramid-type structure covered by polycarbonate sheets was constructed over the training pool.

The third part of the structure comprises an open-air pool and a small grandstand. All structures are founded on spread footings.

Our role: Detailed structural design

COMMUNITIES





OAKA Stadium Roof

42

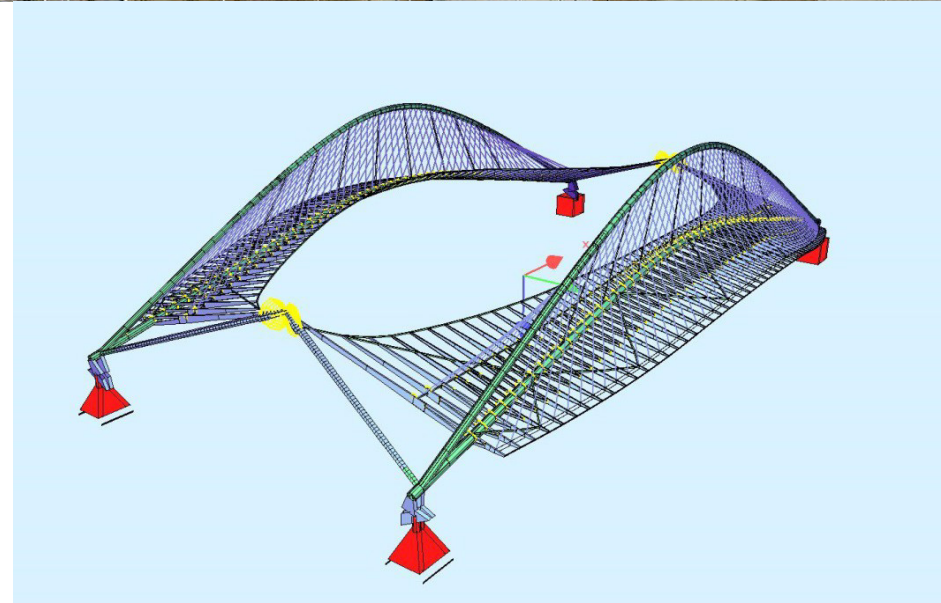
O.A.K.A. is the main stadium that the hosted the Athens Olympic Games 2004.

The total area of the roof (in plan) is 25,000.00 m² and is supported on four pin connections at 7.00 m high above the ground. The surfacing of the roof is constructed out of glass sheets.

The roof comprises two main arches spanning 304.00 m. They are formed by circular hollow sections of 3.25 & 3.60 m diameter. The main arches are supported on pin supports on their ends and are also pin-connected to each other.

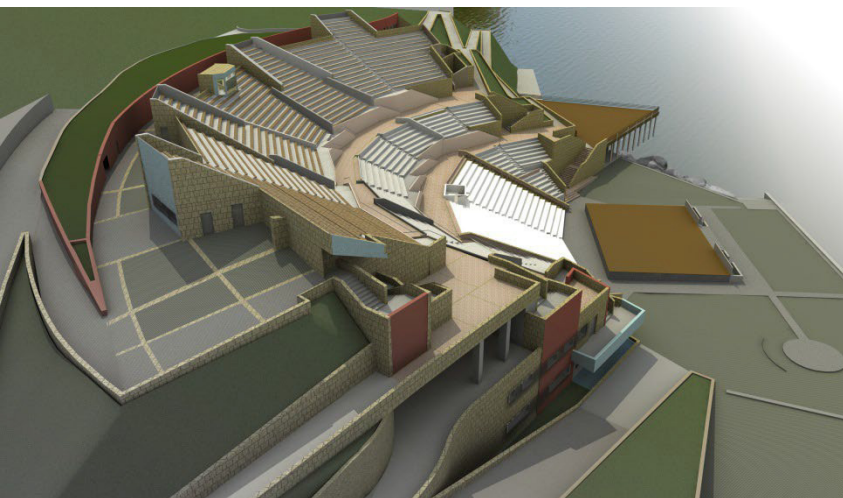
Cross beams are made of steel CHS and IPE sections. All connections of steel elements were carried out and inspected in the fabrication yard. On site connections are bolted using prestressed bolts. Cross beams are supported by prestressed cable hangers.

Our role: CAT III Checking





Open Theater at Thermi's Lake



The building is an open-air venue with amphitheatrical shape that follows the existing natural slopes of the scenery. Structurally, it is divided in three separate parts: The upper and main sitting stand, the lower stand and the performance area with the changing rooms and support facilities.

The upper and main sitting stand comprises the largest part of the structure. It carries the sitting arrangement for the audience and several approach walkways. At the bottom it forms a large car park to accommodate the needs of the venue. It is formed by longitudinal three-storey frames with inclined top beams. On the back side of the structure, a solid RC wall withstands earth pressures and provides waterproofing to the car park. The lower sitting stand follows explicitly the natural slope. It is formed by a spread footing beam grillage with an RC slab on top.

Changing rooms and performance support facilities are completely underground. The structural system is formed by a grid of RC walls that withstand earth pressures, provide waterproofing and support the performance area. On the north side of the theater, there is a dock founded on piles at the bottom of the artificial lake.

Our role: Detailed structural design



Thermi City Hall

44

The new Thermi City Hall consists of two main buildings with total GEA of 3,700.00 m². The main structure houses a two-storey underground parking covering the whole plan of the building. The underground parking is founded on a grillage of spread foundation beams. The surrounding RC shell is used to support earth pressures and provide waterproofing. The slabs of the building, due to the large spans, are mushroom type with ribs in the main spanning direction. On the ground floor there is the main City Council Hall, and four large meeting rooms. In the middle of the building there is a large atrium.

The Second building houses the offices and services of the council. The structure is formed by RC columns and beams that carry conventional solid RC slabs. The two buildings are connected with a steel footbridge spanning 12.15 m.

The roof of the main building consists of steel frames and polycarbonate plastic panels. On the south side there are photovoltaic panels in order to reduce the CO₂ footprint of the building.

Our role: Detailed structural design



Community Infrastructure Design Capabilities

Mavrakis Consulting Engineers S.A. has global capability in all structural aspects of the development of community infrastructure. Our sophisticated advisory services extend from initial planning to detailed design or rehabilitation and façade retaining of historic structures.

The key areas of our community infrastructure engineering capabilities include:

- Planning and conceptual design
- Analysis and detailed design
- Independent Checking
- Construction and erection engineering
- Seismic engineering
- Advanced structural dynamics

OF

- Schools & University buildings
- Sport centers & large stadiums
- City Halls
- Theaters
- Hospitals
- Prisons
- Convention centers
- Public swimming pools
- General public services buildings

TUNNELS



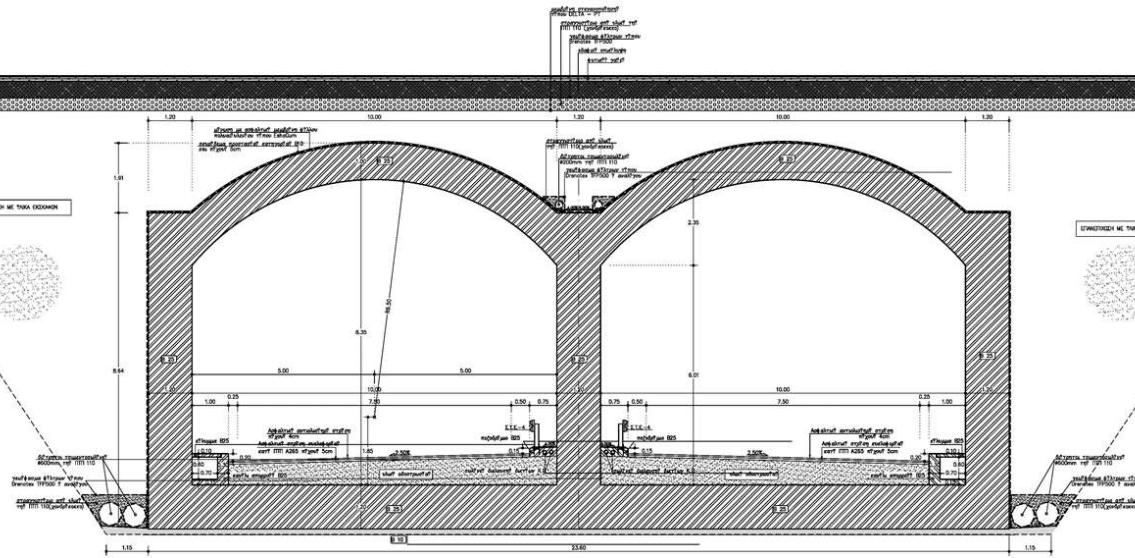
MAVRAKIS CONSULTING ENGINEERS S.A.
TUNNELING GROUP HAS EXTENSIVE
EXPERIENCE IN THE RAIL INDUSTRY ON
NEW LIGHT RAIL, METRO, ROADS, SERVICES
AND HEAVY RAIL PROJECTS. DESIGN
INSPECTION AND REHABILITATION OF
EXISTING TUNNELING INFRASTRUCTURE IS
THE KEY AREA OF OUR EXPERTISE.

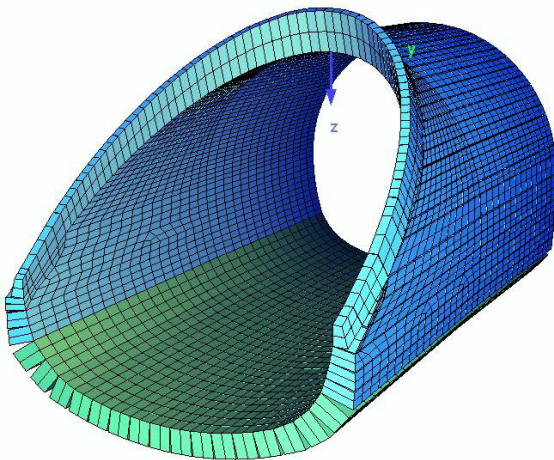
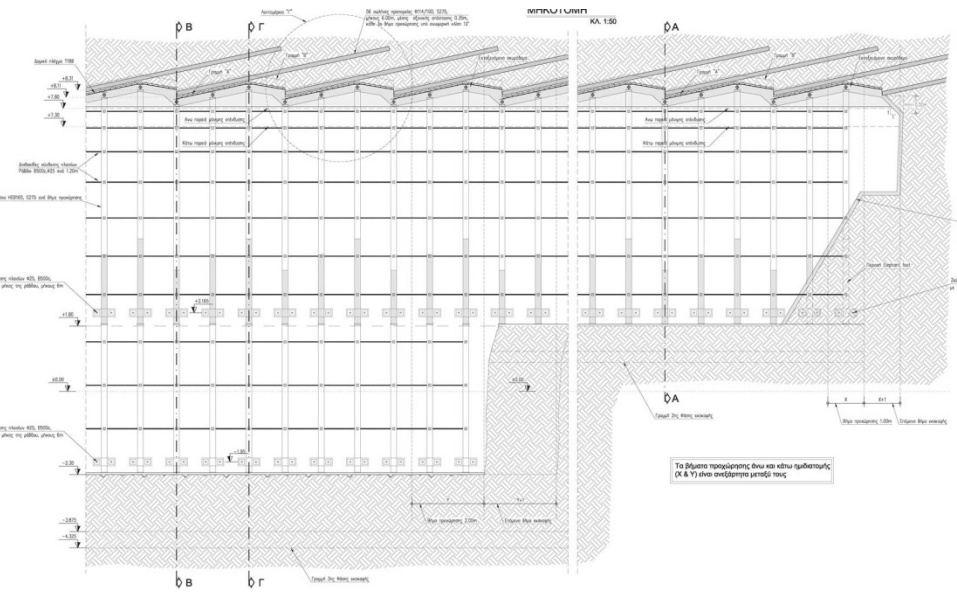
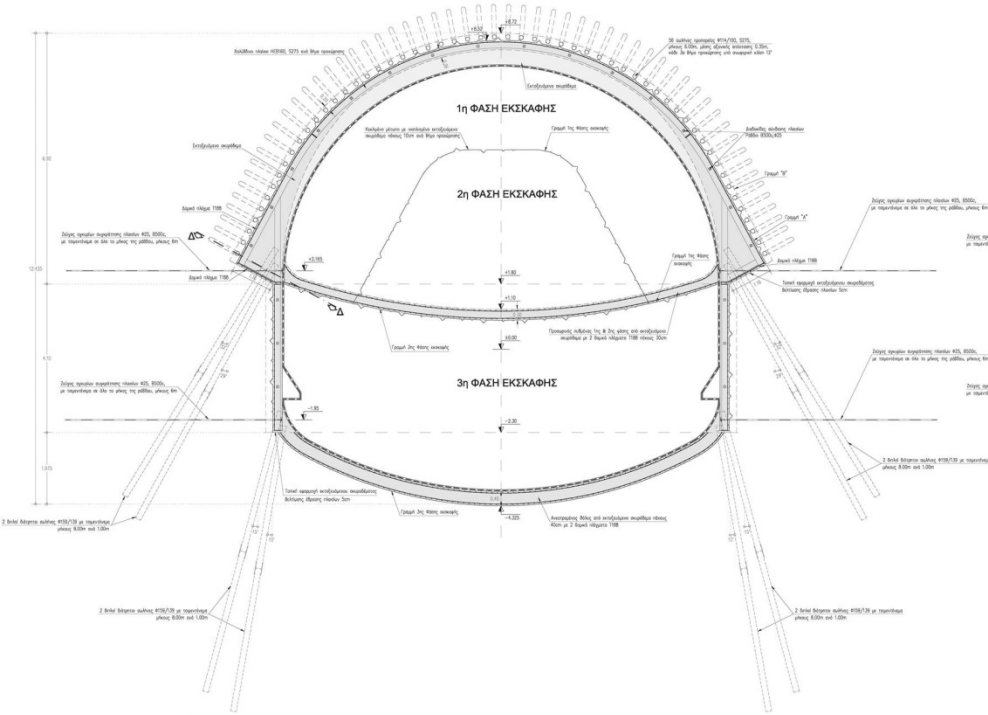
Dual Carriageway Cut & Cover

The tunnel comprises two, 10.00 m wide sections and is 168.00 m long. Each section provides two traffic lanes and one emergency footway. A two-lane trunk road connecting two local villages is located over the tunnel.

The tunnel was constructed with the cut & cover method. The tunnel comprises 1.20 m thick RC walls and is founded on 1.20 m deep raft. The top section is semi-circular and is 1.00 m thick. Around the tunnel special waterproofing is installed. A large network of pipes and drains dissipates rain water away from the structure.

Our role: Detailed structural design





Tunnel on dual Carriageway

The total length of the tunnel is 1,365.00 m and is divided into four different section types according to the geological conditions of the area. The section shape of the main and the services tunnel is round and consists of two layers of support. The temporary support, which is formed using forepoling tubes and 20 cm sprayed concrete and the permanent lining, which is formed by in-situ concrete. In the main tunnel there are 40.00 m long emergency parking lanes. The emergency evacuation tunnel is constructed 25.00 m next to the main Tunnel. The two tunnels are connected with three evacuation corridors. The entrance of the tunnel is 19.00 m long and is constructed using the cut & cover method.

Our role: Detailed structural design

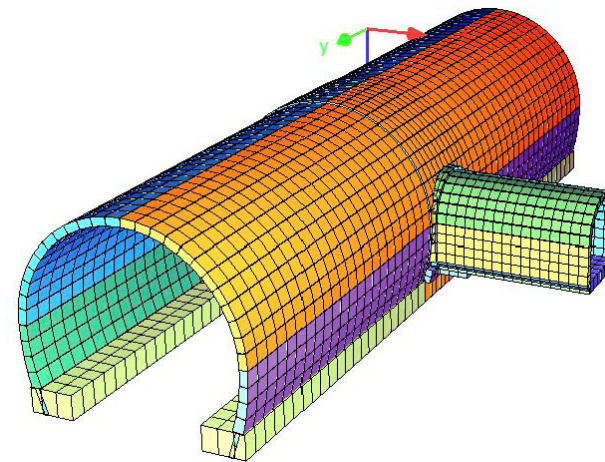
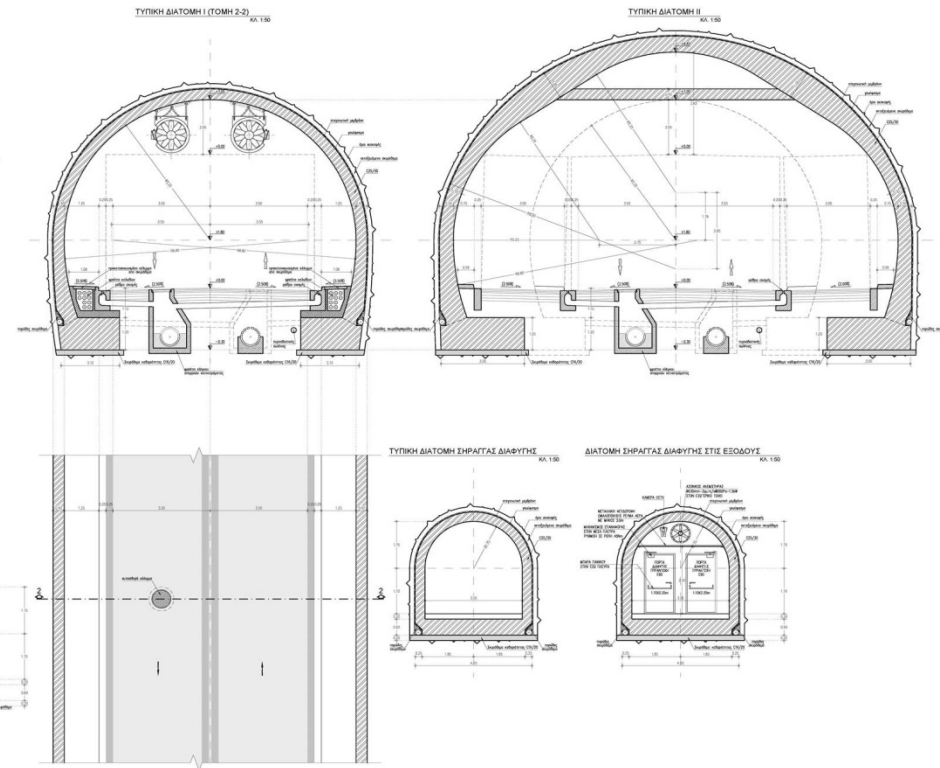
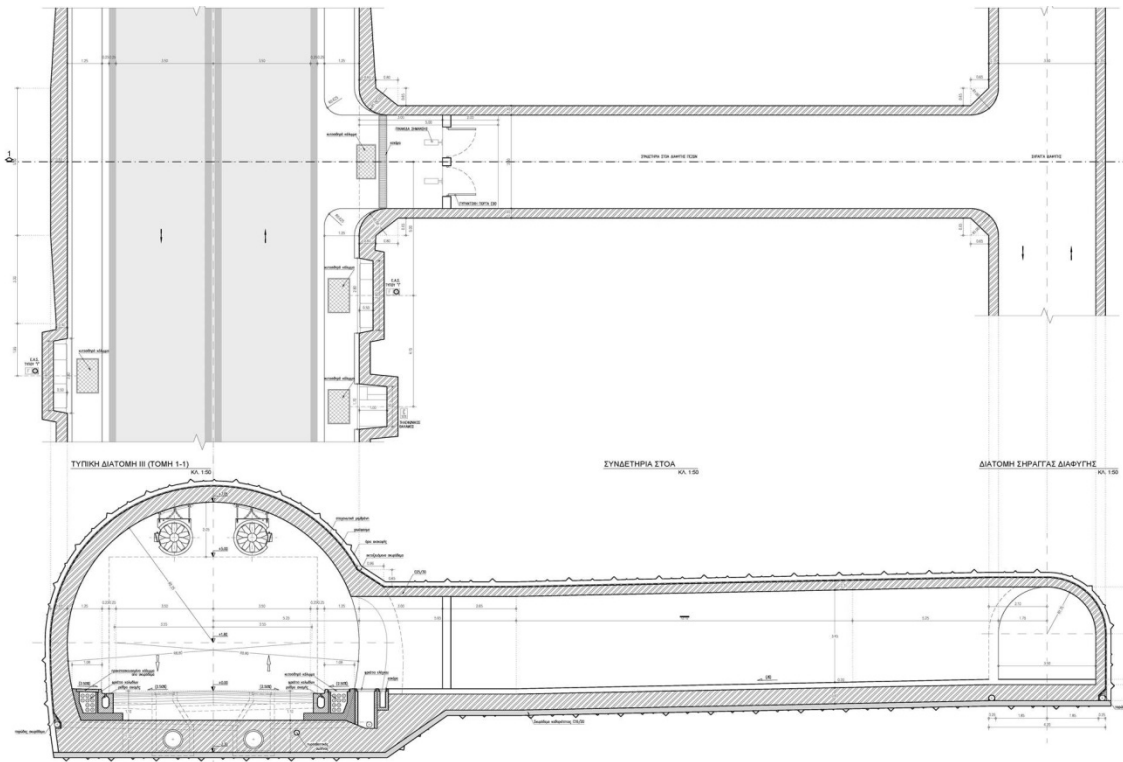
Tunnel on dual Lane Trunk Road

The total length of the tunnel is 400.00 m and is divided into three different section types according to the geological conditions of the area. The section shape of the main tunnel is round on the first 60.00 m and semi-circular on the rest of its length. The support mechanism consists of two layers, the temporary support which is formed using forepoling tubes and 20 cm sprayed concrete and the permanent lining which is formed by in-situ concrete.

In the main tunnel there are 40.00 m long emergency parking lanes. The emergency evacuation Tunnel is constructed 25.00 m next to the main tunnel. The two tunnels are connected with three evacuation corridors. The entrance and exit of the Tunnel are 19.00 m and 25.00 m long respectively and are constructed using the cut & cover method.

Our role: Detailed structural design

TUNNELS



Tunneling Design Capabilities

Mavrakis Consulting Engineers S.A. has global capability in all structural aspects of the development of tunneling infrastructure. Our sophisticated services extend from initial planning detailed design and structural monitoring of occupied structures.

The key areas of our tunneling engineering capabilities include:

- Planning and conceptual design
- Analysis and detailed design
- Independent Checking
- Construction and drilling engineering
- Seismic engineering
- Advanced structural dynamics
- Structural monitoring
- Water drainage & pressure release

OF

- Cut and cover tunnels
- Caverns and underground stations
- Railway, road and services tunnels
- Mechanised traditional soft ground and rock tunnels
- Shafts
- Directional drilling and thrust bore tunneling
- Tunnel remedial works
- Expert services

OUR PEOPLE

The background of the slide features a group of seven diverse individuals in silhouette, standing against a solid green background. The silhouettes are arranged in a loose line, with some individuals slightly behind others, creating a sense of depth. The overall aesthetic is clean and modern.

OUR EMPLOYEES HELP US GAIN AND BUILD COMPETITIVE ADVANTAGE THROUGH THEIR ENERGY, IMAGINATION AND LOCAL INSIGHTS. IT'S ESSENTIAL THAT WE REWARD THEM COMPETITIVELY AND INVEST IN THEIR DEVELOPMENT TO ENSURE THAT WE REMAIN RESPONSIVE TO A RAPIDLY CHANGING WORLD

Our strength comes from our people

In Mavrakis Consulting Engineers S.A. our most valuable asset are our people. Our collaborative working style emphasises teamwork, trust and tolerance for diverging opinions.

We take special care to ensure that our engineers receive the best available training and stay up to date with industry's innovations.

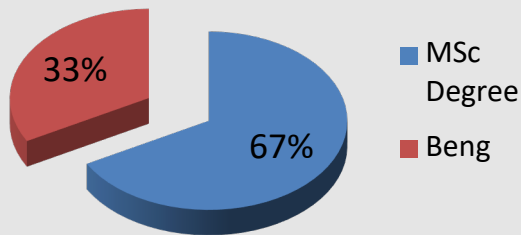
Our people are trained continuously, and all training is recorded to our personnel

files. Training and development is delivered as:

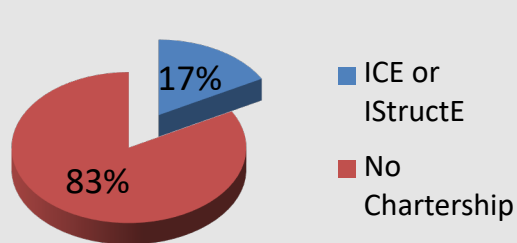
- In house training courses
- Courses organised by the local Engineering Council
- Software updates & new technologies
- Commercial awareness and project management courses
- CDM & Health and Safety Courses
- Representation in international Structural Engineering Conferences
- Online Webinars
- QA updates & auditing

Our Engineers' Stats

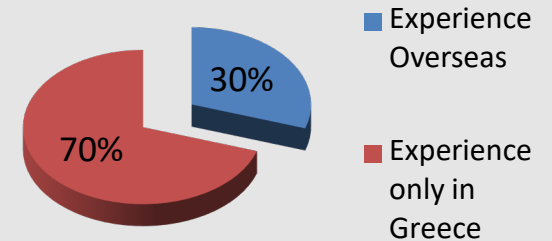
MSc Qualification



Chartership in the UK



Overseas Experience



Mavrakis Consulting Engineers S.A. is a member of the "Ministry of Infrastructure, Transport and Networks" registry. The licensing system consists of five classes (A to E) according to the size and budget of the projects. (A being the lowest, E the Highest)..

Our company has been awarded the following licenses:

- **Structural Engineering Services:** Class E
- **Water Engineering Services:** Class E
- **Land Surveying Services:** Class B
- **Environmental Engineering Services:** Class A
- **Geotechnical Engineering Services:** Class B
- **Road Design Services:** Class C

Our Offices

In Mavrakis Consulting Engineers S.A. we provide all available means to our engineers, so they only thing they have to focus on is creativity, innovation and our clients' needs.

Our privately owned HQ office is located in the center of Thessaloniki and comprises:

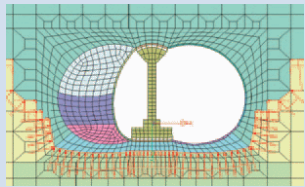
- 3800 sq.ft of working space
- Underground Car Park
- Fully equipped workstations with 3-year replacement program
- Print/Post room
- Library room
- Recreational area
- Several meeting rooms

We maintain subscriptions to online and electronic libraries accessible to all our staff to stay up-to-date with new Standards & codes of Practice.

Structural Analysis Software – BIM Software



SOFiSTiK is a general-purpose FE package, used for structural and dynamic analysis/design of all types of Structures, including Bridges, Buildings, Tunnels and other non-conventional types of structures.



Wintube is special package for analysis and design of tunnels. It is mainly used for the analysis of 3D volume models and simulation of successive construction stages.



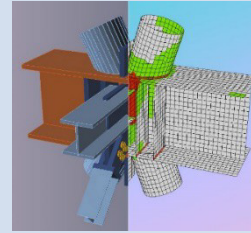
GEO5 software package is designed to solve various geotechnical problems. Besides common geotechnical engineering tasks, the suite also includes highly sophisticated applications for the analysis of tunnels, building damage due to tunneling or stability of rock slopes.



Autodesk® Robot™ Structural Analysis Professional software provides structural engineers with advanced building simulation and analysis capabilities for large, complex structures.



SCIA Engineer is an integrated, multi-material structural analysis software and design tool for all kinds of structures. Its wide range of functionality makes it the ideal partner for the design of office buildings, industrial plants, bridges or any other project



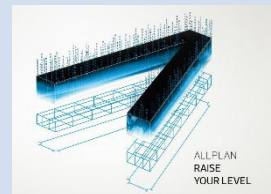
IDEA StatiCa Connection is a FEM package, that designs and checks welded or bolted connections, 2D or 3D joints and provides clear pass / fail checks according to EC / AISC / CISC standards.



Autodesk Revit is a BIM software that allows users to design a structure and its components in 3D and it is 4D BIM capable with tools to plan and track various stages in the structure's life cycle.



Autodesk Advance Steel is a CAD software application for 3D modeling and detailing of steel structures and automatic creation of fabrication drawings, bill of materials and NC files.



Allplan Engineering is the ultimate BIM solution for civil and structural engineers. From buildings to bridges, Allplan Engineering supports the entire BIM process with efficient and straightforward workflows



Autodesk Civil 3D is a civil engineering design and documentation solution that supports BIM workflows on a variety of civil infrastructure project types, including roads and highways, land development, rail, airports, and water.

Water Analysis Software

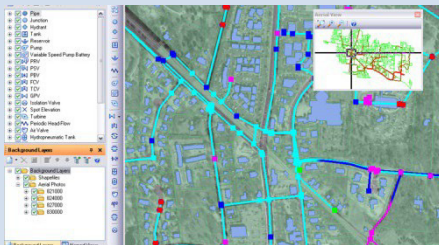


WaterCAD is an easy-to-use hydraulic and water quality modeling application for water distribution systems. Utilities, municipalities and engineering firms trust WaterCAD as a reliable, resource saving, decision-support tool for their water infrastructure.



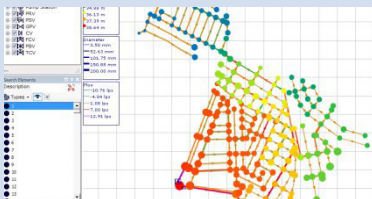
HEC-RAS is an open flow analysis program that allows the user to perform one-dimensional steady flow, unsteady flow, sediment transport/mobile bed computations and water temperature modeling. It is mainly used for analyzing flood control problems.

6



HAMMER is a transient analysis and water hammer modeling product used for:

- Simulate any transient condition
- Trim construction, operation and maintenance budgets
- Model any surge protection device
- Minimize wear and tear on pipes
- Prepare for power failures and minimize service interruptions



EPANET is software that models water distribution piping systems, including the flow of water in each pipe, the pressure at each node, the height of the water in each tank and the type of chemical concentration throughout the network during a simulation period, water age, source, and tracing.

Our Core Values

Mavrakis Consulting Engineers S.A. is client relationship-based company.

Our reputation is one of our most valuable assets and is fundamental for our long-term success. We focus on building strong, long term relationships with our clients, based on honesty, respect, transparency and integrity. We focus on our clients needs.

Our strength comes from our people.

In Mavrakis Consulting Engineers S.A. we believe that our people are our most valuable asset. We provide comfortable working environment, invest in team building and outdoor activities and strongly encourage innovation and fresh ideas. We make sure that our people receive training in new technologies and standards. Finally we provide all available means and the best available tools (Software, Hardware, Knowledgebase) to enhance our effectiveness and continuously improving our performance.

Quality assurance maintains our reputation.

A good reputation is hard won but easily lost. A decision without thinking or a misunderstanding between our teams could have a serious impact across the whole group. In Mavrakis Consulting Engineers S.A. we follow high standard quality assurance policies to ensure the integrity of our deliverables. On every project we strive to fulfill our clients needs in the best way, as word of mouth is our best advertising.

Quality Assurance System

In Mavrakis Consulting Engineers S.A. we follow high standard quality assurance policies to ensure the integrity of our deliverables. Our system is certified by TUV AUSTRIA according to EN ISO 9001:2015, EN ISO 14001:2005 and ISO 45001:2018.



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