



ATTIKO METPO A.E.

**TITLE OF THE TENDER: "TECHNICAL CONSULTANT SERVICES
FOR ATTIKO METRO S.A. PROJECTS IN
ATTICA REGION"**

RFP-381/20 A.Σ. 95151

**TECHNICAL INFORMATION ABOUT THE CONSULTANT
PERSONNEL AND SERVICES**

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1. GENERAL DESCRIPTION OF THE COMPANY “ATTIKO METRO S.A.”

ATTIKO METRO S.A. a SINGLE-MEMBER S.A. Company, trading as ATTIKO METRO S.A., was established via Article First of Law 1955/91. The purpose of ATTIKO METRO S.A., which is determined via Article 2 of Law 1955/91, as this is amended through article 35 of L. 3202/03 (and articles 121 and 145 of Law 4070/12 is the design, construction, organization, management, running, operation and development of the Urban Railway Network of Attica and Thessaloniki Regions and, in general, of the Electric Railway of Attica and Thessaloniki Regions with the exception of OSE Railway Network (electrification or non-electrification network) as well as of the TRAMWAY network in whole Greece.

The projects that ATTIKO METRO S.A. implements require high technical expertise, their scopes call for a broad spectrum of specialties, and are co-financed by the European Union.

ATTIKO METRO S.A. is presently involved in the Metro Extension to Piraeus and the Tramway Extension to Piraeus. These projects as well as the projects put to tender and currently at a design stage are described in detail in the following article.

In view of its increased commitments in order to implement and put to tender the aforementioned projects, ATTIKO METRO S.A. needs to be supported by a specialized Technical Consultant.

2. ATTIKO METRO S.A. PROJECTS IN ATHENS

2.1 PROJECTS OVERVIEW

This article provides information on **all ATTIKO METRO S.A. projects in Athens**. The scope of the services to be provided by the Technical Consultant of this contract is described in article 3 of this document. The purpose is to provide:

- an overview of the Metro projects in operation, under construction, under procurement and under design, as well as of the future projects
- an overview about each project’s phase of the works, as well about the individual activities and actions by ATTIKO METRO S.A.in the framework of these projects
- an overview about the technical issues involved
- the framework of the contracts based on which the projects are executed
- ATTIKO METRO S.A. responsibilities, actions, activities and obligations for each of the above

in order to give a clear picture of the framework within which the prospective Consultant to be appointed by this procedure is called upon to respond to.

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2.1.1 Projects in operation

The completed Metro and Tramway projects in operation are presented in the tables below:

Table 1: Completed and Operating Metro Projects

No.	PROJECT	DESCRIPTION
1	Line 2: Sepolia – Syntagma and Line 3: Ethniki Amaryna – Syntagma	13 Km., 13 stations, 1 Depot (Sepolia), 2 park and ride facilities at Katehaki and Ethniki Amaryna (respective capacities 240 and 60 parking spaces)
2	Line 2: Syntagma-Dafni	4.5 Km., 5 stations, 1 park and ride facility at Syngrou-Fix (capacity 642 parking spaces)
3	Line 3: Syntagma-Monastiraki	1.4 Km., 1 station
4	Southbound extension of Line 2: Dafni – Ag. Dimitrios	1.1 Km., 1 station
5	Northbound extension of Line 3: Ethniki Amaryna – Plakentia	6 Km., 2 stations, 3 park and ride facilities, one at Halandri (capacity 280 parking spaces), and two at Doukissis Plakentias (capacity 630 parking spaces)
6	Line 3 connection with Athens Airport	24 Km, 1 terminal station using the suburban railway infrastructure
7	Westbound extension of Line 2: Sepolia – Ag. Antonios	1.4 Km, 1 station
8	Westbound extension of Line 3: Monastiraki – Egaleo	4.3 Km., 3 stations
9	Completion of 3 stations on the northbound extension of Line 3 (Holargos, Nomismatokopio, Aghia Paraskevi)	3 stations, 1 park and ride facility at Nomismatokopio (capacity 604 parking spaces)
10	Line 3 extension: Egaleo – Aghia Marina	1.42 Km., 1 station and 1 park and ride facility at Aghia Marina (capacity 383 parking spaces) and 1 Depot (Eleonas)
11	Extension of Line 2: Aghios Antonios – Anthoupoli	1.9 Km., 2 stations
12	Southbound extension of Line 2: Aghios Dimitrios – Elliniko	1.9 Km., 4 stations
13	Keramikos – Park and Ride Facility	Underground car parking facility (capacity 272 parking spaces)

Table 2: Completed and Operating Tramway Projects

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No.	PROJECT	DESCRIPTION
1	Lines S1 (SEF-P. Faliro) - S2 (Syntagma-P. Faliro) - S3 (P. Faliro-Glyfada), Service Line S3-8	Total length of revenue service double track line 23 km, 2.2 km of service line, 47 stops, 1 Depot at Elliniko
2	Extension of S3 to Voula	700m., 1 terminal stop

The above lines are operated by STATHERES SYGKOINONIES S.A. (STASY S.A.). ATTIKO METRO S.A. responsibility in relation to the above operating projects concerns Contract Administration until their final acceptance; it also provides technical support to STASY S.A. on special issues, as required.

2.1.2 Projects under construction

The Metro and Tramway projects under construction are the following:

Table 3: Metro Projects under construction

No.	PROJECT	DESCRIPTION
1	Line 3 extension: Haidari – Piraeus	<p>The scope of the Project includes:</p> <ul style="list-style-type: none"> • an underground tunnel 7.6 Km long; 6.5 Km shall be constructed using the TBM and the remaining part at the beginning and the end of the Project shall be constructed with underground excavation. • Six (6) stations (Aghia Varvara, Korydallos, Nikea, Maniatika, Piraeus, Dimotiko Theatro) to be constructed using the cut-and-cover method and the underground method using conventional mechanical means (NATM method). • Eight (8) ventilation shafts along the new line.

Table 4: Tramway Projects under construction

No.	PROJECT	DESCRIPTION
1	Westbound extension of the Tramway network to Piraeus (Neo Faliro – Center of Piraeus – Port of Piraeus)	<p>The scope of the Project is the extension of the existing Tramway corridor from NEO FALIRO stop to the end of the line at the existing terminal stop SEF via Mikras Asias, Lambraki, V. Georgiou, E. Antistaseos and O. Skylitsi streets, with a forecast to construct a terminal station at Akti Possidonos in Piraeus (total length approx. 5,350m). Reconstruction of the existing SEF stop is foreseen, as well as the construction of 11 new stops and the construction of the terminal stop at Akti Possidonos. This Project includes reconstruction works to the existing Project (mainly Depot building installations and terminal stop at Syntagma).</p>

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2.1.3 Projects under design and planning

Further to the above projects, the following new projects are under the design stage:

Table 5: Metro Projects under design

	PROJECT	DESCRIPTION
1	Line 4: Alsos Veikou – Maroussi	The existing Athens Metro Development Plan includes Metro Line 4 Alsos Veikou – Evangelismos – Faros – Maroussi, along with its extensions (a) to Vyronas/Ano Ilioupoli and (b) to Petroupoli and the National Road; the total length is 33.5 km., It includes 31 stations in total, while it is made up by five (5) individual distinct sections A, B, C, D and E: <ul style="list-style-type: none"> - Section A: Alsos Veikou – Goudi (12.6 km long and 15 stations) - Section B: Goudi – Maroussi (9.6 km long and 8 stations) - Section C: Evangelismos – Ano Ilioupoli (3.6 km long and 3 stations) - Section D: Alsos Veikou – Petroupoli (3.0 km long and 2 stations) - Section E: Maroussi – National Road (4.4 km long and 3 stations)
2	Northbound extension of Line 2: Anthoupoli - Ilion	This project relates to the north extension of Line 2 from Anthoupoli station by approx. 4 km and includes the construction of 3 stations at the following indicative locations: <ul style="list-style-type: none"> - A station at the intersection of Thivon and Kappadokias streets. - A station at the intersection of Thivon and Eleon streets. - A terminal station at the intersection of Aghiou Nikolaou and Paramythias streets.

Table 6: Metro Projects under tendering process

	PROJECT	DESCRIPTION
1	Line 4, Section A' : Alsos Veikou - Goudi	This Contract refers to the preparation of the General Final Design, the Detailed Final Design, as well as to the construction and commissioning of Metro Line 4 Section A' "Alsos Veikou – Goudi".

Table 7: Tramway Projects under design

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	PROJECT	DESCRIPTION
1	Phase B' - Extension to Piraeus (Neo Faliro – Center – Port of Piraeus)	This Project refers to the connection of the center of Piraeus with Hatzikyriakio and Freatyda. The extension includes a single track line 2.8km long and a double track line 1km long as well as 10 new stops.
3	Extension to Keratsini and Perama	This Project refers to the extension of the Tramway from Piraeus port to Keratsini and Perama, via an underground large section within Keratsini Municipality running along the old alignment of Perama tramway. It consists of 9.4 km of double track line and 11 new stops.

Table 8: Tramway Projects under the Tendering Process

	PROJECT	DESCRIPTION
1	Expansion of the Tramway Depot in the area of Elliniko	This Project concerns the expansion of the Tramway Depot in the area of Elliniko along with the construction of a new shed intended for the tramway vehicles.

2.1.4 Future projects

ATTIKO METRO S.A. is also examining other Projects beyond those mentioned above, in order to further extend the Metro and Tramway networks in the Athens Basin.

2.2 TECHNICAL SCOPE OF ATTIKO METRO S.A. PROJECTS

In summary, the scope of the Projects includes the following works, indicatively and not limited to them:

2.2.1 Surveys and Designs

In the framework of implementing the works of ATTIKO METRO S.A. by Contractors, further surveys and designs are required in order to confirm the results of the available surveys and designs, to supplement those surveys/designs that need to be completed and to prepare the Final Design and/or the Detailed Final Design of the Projects. The surveys and designs include indicatively, but not limited to, the following:

- Survey works - cadastral diagrams / tables
- Geological – Hydrogeological & geotechnical surveys and designs
- Layout and longitudinal profile of the alignment of the line
- Surveys and checking for the positioning and design of Public Utility Organization Network Diversions

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- Traffic and Transport Studies
- Traffic Diversion Studies
- Designs for excavation works, temporary retaining works and permanent structures
- Designs concerning the Special Vulnerability and Relative Risk Assessment of Buildings and Structures
- Designs for the implementation of protection measures for buildings and structures and special studies for sensitive buildings and structures, monuments, buildings for public use etc.
- Geomechanical and Structural Monitoring studies
- Flood Protection design during the Construction and Operation of the Projects
- Noise and Vibration study during the Construction and Operation of the Projects
- Passive Fire Protection study
- Architectural designs (station layouts and architectural finishes)
- Station acoustic studies
- Design of E/M and railway systems (mechanical, E/M, Power and Low Voltage)
- Trackwork designs
- E/M designs for the simulation of Traction Power, Tunnel Ventilation, Station Acoustics, line operation – signaling, etc.)
- Design coordinating Civil Works, Electrical and Mechanical and railway systems
- Project log
- Network Operating Analysis and its maintenance requirements
- Design and organization of the Operation Control Center and the Depot
- Reliability, Availability, Maintainability and Safety (RAMS) study, including a risk analysis
- Compilation of Health and Safety Plan and File
- A study for the rational use and energy saving during the project operation.

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The designs/surveys/studies shall be mandatorily subject to approval by ATTIKO METRO S.A. and, in some cases, by the relevant services and organizations concerned (e.g. PPC, OTE, EYDAP, Municipalities, YPEHODE, Ministry of Culture etc.) before their implementation. The DFDs shall be prepared only after the Final Design has been approved by ATTIKO METRO S.A..

2.2.2 Preliminary Works

The above include the following:

- Review, verification and completion of the existing data (establishment of topographical network of the Project, topographic surveys, geological, hydrogeological, geotechnical, hydrological, urban and environmental studies, PUO network surveys, investigation of the condition of the buildings etc.).
- Prior to the main construction works, relocation of PUO networks will be executed at the stations and other CW locations.
- Issuance of any type of permits.
- Occupations and expropriations.
- Worksite installations.

2.2.3 Archaeological - Traffic Works

Prior to the construction of the stations and the execution of other Civil Works, archaeological excavations will be executed.

2.2.4 Civil Works

In the framework of projects implementation, all Civil Works concerning the scope of each Project shall be constructed. These works include, *inter alia*, the following:

1. Tunnels

The tunnels shall be constructed in the following ways:

- a) Underground mechanical boring using EPB-TBM. The use of EPB-TBM equipped with proper systems shall be applied in order to ensure that buildings and structures located within the Project influence zone will not be affected within the framework of the adherence to the Project time schedule.
- b) Underground excavation using conventional mechanical means.
- c) Cut and cover method.

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2. Stations, Shafts and Crossovers

The construction methods of stations, crossovers and shafts shall include the following techniques:

- a) Cut and Cover method.
- b) Underground boring using conventional mechanical means.
- c) Cover and Cut method.

The design and construction method for each station /Shaft / crossover shall be based on the project description and the specifications. The location of the stations, the accesses and other openings shall be as shown on the alignment drawings.

3. Geomechanical and Structural Monitoring

4. Measures related to ground treatment, as required.

5. Measures related to the protection, propping and strengthening of the buildings etc located adjacent to excavations.

6. Flood Protection.

2.2.5 Architectural works

All architectural finishes of all buildings / structures of the project shall be constructed and there shall be a reinstatement of the worksite surface areas. The following items shall be mainly included in the architectural works:

- Functional layout of the stations, entrances, concourse areas, personnel rooms and other necessary technical rooms and auxiliary rooms.
- Horizontal and vertical connections (corridors, escalators / staircases, lifts, emergency exits) ensuring, on the one hand, the unobstructed circulation of the users and, on the other hand, the evacuation of the station in an emergency case.
- Architectural finishes on floors, (including provisions for PSNs), walls, ceilings, suspended ceilings (made of materials with sound attenuating properties), balustrades, handrails and any external surfaces of stations, entrances, shafts and Depot buildings.
- Reinstatement and configuration of street level surfaces at the worksite locations.
- Signage at stations and shafts.

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Operation equipment for the station master rooms, OCC and the personnel areas at the Stations.

2.2.6 Electromechanical and Railway Systems

The Electromechanical and Railway Systems required in the framework of the Works shall be installed. The scope of these works includes the design, supply, installation, testing and commissioning of the following systems:

1. Ventilation
2. Heating/ Ventilation/ Air Conditioning (HVAC)
3. Traction Power Supply - Medium Voltage - 20KV
4. 230/400V Power Distribution
5. Lighting
6. Fire fighting/ Fire detection
7. Escalators/ Travelators
8. Lifts
9. Earthing, bonding and protection against stray current
10. Lightning Protection
11. Water Supply, irrigation
12. Drainage, sewage
13. Pumping Station
14. 3rd Rail Traction Power System / Overhead Catenary
15. Signaling (Systems: Automatic Train Control (ATC), Automatic Train Supervision (ATS), Automatic Train Protection (ATP), Automatic Train Operation (ATO), Signaling Data Transmission System)
16. Point Machines
17. Road / Railway Traffic Lights
18. Passenger Information System (PIS)
19. Telecommunications (TETRA)
20. Automatic and Direct Phones

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21. Closed Circuit TV (CCTV)
22. Public Announcements (PA)
23. Clocks and Time Distribution System
24. Information Technology (IT) Infrastructure System
25. Broadband WiFi for the passengers
26. Safety and Protection System
27. Intercommunication System
28. Fare Collection System
29. Uninterrupted Power Supply Systems (UPS) - Batteries
30. Building Automation Control System (BACS)
31. Power Remote Control System (PRCS) / SCADA, Cables and Fiber Optics Networks
32. Cable and Fiber Optics Networks
33. Data Central Storage System
34. Data Transmission Systems
35. Trackwork
36. Depot Equipment
37. Rolling Stock
38. Operations Control Center (OCC)
39. Spare Parts and Maintenance Systems
40. Issues pertaining to the interfaces and compatibility with existing systems

Rolling Stock

The rolling stock constitutes a fundamental reference point of all the projects and, therefore, the parameters, the issues and the information referring to the rolling stock affect most of the other scopes of works.

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Testing and Commissioning

All the electromechanical and railway systems, including the rolling stock, require testing and commissioning.

The tests are, generally, of many levels, as follows:

- Factory Acceptance Tests (FAT)
- Stand Alone Tests (SAT)
- System Integration Tests (SIT)
- System Performance Tests (SPT)
- Trial Running (on all installations, new and old)

Commissioning

- Commissioning of the Metro and Tramway extensions
- Commissioning of the Depots
- Commissioning of the Operation Control Centers for the Metro and Tramway networks.

As regards the technical scope of the extensions, it is pointed out that the designs and works for the extensions are not limited geographically only to the areas of the new extensions, but also to stations or facilities of the operating network, as well as to the OCC at Syntagma Station (Athens Metro) and Elliniko Depot (Athens Tramway), depending on the individual scope.

2.3 ATTIKO METRO S.A. ACTIVITIES WITHIN THE FRAMEWORK OF THE ABOVE WORKS

With regard to works stated in paragraphs 2.1.1 to 2.1.4 above, ATTIKO METRO S.A. has undertaken the following activities:

2.3.1 Projects in operation

The main ATTIKO METRO S.A. activities for the Metro and Tramway Projects in operation are as follows:

- Provision of technical support and co-operation with STATHERES SYGKOINONIES S.A. (STASY S.A.) where and when required in order to resolve problems and issues related to failures, non compliance with contractual specifications, requirements for upgrading of systems, etc. Within the same framework, ATTIKO METRO S.A. monitors the operation of the E/M and railway systems and rolling stock, as well as the relevant statistical analyses and it draws conclusions for implementation to new works.
- Organization of the temporary and final acceptances of the works, preparation of the relevant lists of pending issues, recapitulative tables, etc. and implementation of all necessary administrative actions for the Contractual and

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Financial closure of the contracts related to the construction of the works in operation.

2.3.2 Projects under construction

The main ATTIKO METRO S.A. activities related to the Metro and Tramway Projects under construction are as follows:

- Review and approval of the Contractors' designs (usually Final and Detailed Finals Designs).
- Supervision of all phases related to the construction of Civil Works, installation of E/M and railway equipment, construction of architectural finishes in the stations, tests of integrated systems, system performance tests and trial running.
- Enactment of decisions related to the interface points between Contractors on a technical, temporary and contractual level. AM shall have the overall responsibility on the general coordination of the works on a design level as well as on a construction, equipment installation, testing and commissioning level.
- Monitoring and administration of the progress of the works and the relevant contracts in terms of contract, finances and time schedule and organization of the necessary corrective actions where required.
- Ensuring quality control of the Projects.
- Supervision as to the adherence to the health and safety regulations in the worksites.

2.3.3 Projects to be tendered

The main ATTIKO METRO S.A. activities as to the Metro and Tramway Projects to be tendered are the following:

- Organization of the necessary expropriations and temporary occupations
- Ensuring funding of the projects
- Preparation of Preliminary or General Final Designs (GFD) level
- Preparation of the tender documents of the projects and ensuring of the coordination between contractual documents and designs
- Preparation of cost lists and project budgets, as well as their time schedules
- Tendering of the projects for the selection of Contractors.

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2.3.4 Extension Projects under Design

The main ATTIKO METRO S.A. activities for the Metro and Tramway works under design are as follows:

- Preparation of the conceptual designs, preliminary designs and/or final designs of the works required for their tendering. This preparation is carried out either in-house or with the assistance of designers/consultants.
- Ensuring the optimal designs in terms of operation, cost and environment.
- Preparation of the required environmental designs of the Projects either in-house or with the assistance of designers/consultants, which are submitted to the YPEKA for approval.

2.3.5 Scheduled Extension projects:

The main ATTIKO METRO S.A. activities related to the scheduled Metro and Tramway projects are the following:

- Prepares the strategic planning designs on the basis of the transport needs and selects the optimum solution for the expansion of the Metro and Tramway networks, in conjunction with the forecasts on the expansion of the city, the evolution of land uses, the employment, the transport networks and infrastructures, etc.
- Prepares the feasibility studies for the projects in order to secure their funding. Up to now, the above projects have been funded by the EU, the European Investment Bank and the Greek State.
- Prepares the conceptual and/or final designs of the projects and, in general, sees to everything required as per the above paragraph 2.3.4.

2.3.6 Park and Ride Facilities / Transfer Station

In parallel to the Metro extensions, ATTIKO METRO S.A. has also worked out a program for the development of Park and Ride Facilities, which encompasses the construction of underground and surface parking areas at the bus stations in the vicinity of the Metro stations.

ATTIKO METRO S.A. has already constructed and made available to the public nine (9) car park facilities, i.e. five (5) at-grade facilities at four (4) Metro stations (Katehaki, Ethniki Amaryna, Halandri, D. Plakentias) with an overall capacity of 1,210 parking places and four (4) underground parking facilities at Syngrou – Fix, Nomismatokopio, Aghia Marina and Keramikos stations with a total capacity of 1,901 parking places. Thus, the overall car parking places at Metro stations rise to 3,111.

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3. SCOPE OF THE CONSULTANT’S SERVICES

The scope of the Contract includes the provision of services by an experienced Technical Consultant who will possess the necessary know-how to support ATTIKO METRO S.A. in the implementation of the projects “LINE 4 – SECTION A’: ALSOS VEIKOU – GOUDI”, “LINE 3 EXTENSION: HAIDARI – PIRAEUS” and in the the other Metro and Tramway projects in Athens, as these are described under article 2 herein, as well as in the implementation of all the activities forming the technical scope of ATTIKO METRO S.A. and falling within its responsibilities.

3.1 General obligations of the Consultant related to the provision of services

The obligations of the Consultant are summarized as follows:

- 1. Participation in every activity (design, tendering, construction, testing and commissioning) required in the framework of the technical scope of ATTIKO METRO S.A. projects under construction and the new ones, so as to ensure their successful completion.**
- 2. Provision of specialized technical solutions, information and optimization recommendations, based on the evolution of technology, as necessary.**
- 3. Participation in / provision of support to issues related to the design, management and supervision of the projects.**

It is stressed that the Consultant shall have an advisory role. He shall not have managerial duties.

His general duties shall be as follows:

- To monitor the progress of the works, to evaluate the technical choices and solutions proposed during their development, to estimate their effectiveness and to propose improvements, where required.
- To participate in the daily activities of ATTIKO METRO S.A., as regards the advancement of the works, review of designs, supervision of the Project, monitoring of the progress of works, tests, commissioning, etc.) within the existing organizational structure of ATTIKO METRO S.A..
- To support ATTIKO METRO S.A. engineering scope in cooperation with ATTIKO METRO S.A. personnel, as required, in the framework of the various projects related to the Metro, the Tramway, the car parking facilities or other similar projects.
- To recommend changes/modifications through the “Technical Deviation” procedure implemented by ATTIKO METRO S.A..
- To provide special technical information, technical solutions and advice, utilizing all the potential of the companies forming the Consultant’s entity

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(acquired from previous projects, data bases, specifications etc.), as well as their experience gained from monitoring and executing similar projects.

- To develop, through his direct participation in the daily activities of AM, the know-how transfer to ATTIKO METRO S.A...
- To train ATTIKO METRO S.A. personnel in the implementation of the simulation plans for the proper operation of E/M systems in case of allocation of the right of use.
- To propose solutions and technical choices based on the progress of the technology, the international practice in modern Metro and Tramway systems, possible techniques contributing to the reduction in the cost relating to their construction, installation, maintenance and operation, in general.
- To support ATTIKO METRO S.A. on costing related issues for new contracts, compilation of specifications and compilation of tender documents for new contracts.

3.2 Consultant’s Technical Scope of Works

A. Civil Work Designs

- Participation in the review of the designs produced by the Contractors of Civil Works of projects under construction and new projects, especially as regards specific issues of underground structures, as well as the control of constructability, settlements, vulnerability and protection of buildings and structures.
- Designs mean also Technical Specifications, Material Submittal Sheets (MSSs), drawings, dimensioning, calculations, etc.
- Preparation of technical reports containing proposals for addressing special issues of structural and geotechnical character, inclusive of the examination of buildings in cases of extensive damage due to Metro works and increased hazards to buildings, thus, providing support to ATTIKO METRO S.A. in its decision making process.
- Preparation of design related data for permanent and temporary civil works, in cooperation with the pertinent engineering sections of ATTIKO METRO S.A..
- Assistance in the evaluation process regarding results of investigations and geotechnical interpretation reports, which give the parameters necessary for the preparation of the structural and geotechnical designs of the structures.
- Assistance in the preparation of the necessary traffic Transportation Studies and Traffic Management Studies in the framework of the planning for new projects.

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- Assistance in the review of the designs and other documents submitted to ATTIKO METRO S.A.. Review and validation of design parameters during construction stage.
- Assistance in the management and insurance against general risks in the framework of Athens Metro Line 4 and in all other aspects to be deemed necessary by ATTIKO METRO S.A..
- Submission of technical reports on issues related to the Metro projects concerning, as an example without however being limited to it, environmental issues, issues related to the mechanical boring of tunnels using TBM machines etc., in line with the requirements of the Service.

B. Electromechanical and railway system designs

The scope of works includes:

- Participation in the review of designs of the E/M and railway systems/rolling stock for ATTIKO METRO S.A. projects. The term “designs” covers the technical specifications, the Material Submittal Sheets, the drawings, the dimensioning, the calculations, the testing procedures, the simulations, etc.
- Preparation of designs for the various E/M and railway systems and cooperation with the pertinent ATTIKO METRO S.A. Departments.
- Preparation of various simulations with are required for certain scopes of works and projects.
- The consultant shall specifically assist in the technical, spatial and operational cooperation of the designs with an emphasis on:
 - a) the interfaces with Civil Works
 - b) the interfaces of the systems of the already existing Metro network with the systems that are going to be installed.
 - c) the interfaces with systems belonging to third parties (suburban railway, PUO networks, technical projects etc.)
 - d) issues of new technologies related to the existing systems.

C. Organization, Coordination and Supervision of Civil Works

Participation in the organization, coordination and supervision of the Civil works (stations, tunnels, shafts, depots, transfer stations), with emphasis on special subjects related to underground works, such as the use of the NATM method, the use of diaphragm walls, Tunnel Boring Machines (TBM, EPB) and opining on the methods, the cost and the time schedule for the construction of the projects.

D. Organization of Works relating to the Installation of Electromechanical and Railway Systems

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- Organization and management of parallel and successive works for equipment installation, taking into consideration the actual conditions, the progress of the works, their safe performance and functional sequence that is necessary for the various systems.
- Participation in the organization, coordination and supervision of works related to the construction and installation of E/M equipment, the railway systems and rolling stock, signaling systems and BACS in the AM extensions under construction.

E. Testing and Commissioning of the E/M and Railway Equipment

- Participation in the tests at all stages, as described, with special emphasis on the processing of the results of each stage, the determination of the prerequisites for each following stage, the management of the test reports for each stage etc.
- Organization and management of the Trial Operation of the system, as follows:
 - Preparation of the testing procedures of the system’s trial operation, in cooperation with all the E/M Contractors ensuring adherence to AM’s performance specifications.
 - Ensuring the suitable and necessary conditions that will allow the system’s Trial Operation.
 - Management and monitoring of the system’s Trial Operation.
 - Preparation of procedures related to the system behavior testing during emergency passenger safety related issues and monitoring of their proper execution.
 - Compilation of the respective test protocol where it shall be clearly stated that the system can be operated in accordance with the requirements of the operation plan that has already been issued by ATTIKO METRO S.A. with any remarks fully substantiated, so that ATTIKO METRO S.A. may be in a position to proceed with the necessary corrective measures.
- Organization and management of the SPT tests:
 - Preparation of testing procedures for the system “performance” in a manner covering the performance specifications, as they are described in the contractual documents of the Contractor.
 - Preparation of the time schedule for the performance testing, taking into account the actual conditions and the progress of the works.

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- Ensuring the suitable and necessary conditions that will allow the execution of these tests with special emphasis on safety.
- Organization of these tests in cooperation with the Contractor and AM.
- Management and witnessing of these tests.
- Compilation of the respective performance test protocols where it shall be clearly stated that the system has been constructed in accordance with the performance specifications; the protocols shall be accompanied by a Punch List Items fully commented upon and structured in the order of priority, so that ATTIKO METRO S.A. can implement the necessary corrective measures.

F. Consultancy services, control and monitoring of reliability, availability, maintainability and safety (RAMS) of the E/M and railway systems, as well as of the Rolling Stock.

G. For the smooth and timely provision of the Consultant's Services, the specific technical scopes (deliverables) and the time of their delivery to ATTIKO METRO S.A. shall be specified in writing, taking into consideration the Time Schedule of the works and/ or ATTIKO METRO S.A. requirements. Whether deliverables shall be accepted or not within the time of delivery shall be taken into consideration in the Contractor's payment certificates, as per article 4.4 of the Conditions of Contract.

4. DESCRIPTION OF JOB POSITIONS AND QUALIFICATIONS OF THE REQUIRED CONSULTANT'S TECHNICAL PERSONNEL

4.1 Description of job positions and qualifications

Group K1 shall consist of the following executives:

K1.1 Civil Engineer, Head of Consultant and Coordinator

He shall be the head and coordinator of the consultant's executives. His scope of works shall include the review and coordination of designs, ensuring of the Specifications, preparation of designs, reports, etc.. In addition, he will have an advisory role on technical issues and shall participate in the preparation of the designs and the technical tender documents for the new extensions.

K1.2 Civil Engineer - Geotechnical Designs

The scope of works includes the review of the designs, ensuring the specifications of the Civil Works, the assistance in the preparation of geotechnical designs and reports etc. In addition, he will have an advisory role on technical issues related to design review and compliance with the specifications, the preparation of the designs for the extensions, the new specifications and the technical tender documents.

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K.1.3 Civil Engineer or Mechanical Engineer of Trackwork

Technical consultant in the field of trackwork (track systems, 3rd rail systems, walkways/cable ducts, tunnel invert filling concrete, cable conduits, stray current collection grid etc. in tunnels and Depots). In relation to the above, he shall provide technical advice on issues related to design review and compliance with the specifications, he shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents. Moreover, he shall have a consultancy role on issues related to interfaces with other systems, ground-borne noise and vibration, and the corresponding performance audits & tests.

K.1.4 Electrical Engineer - Power Supply

Technical Support Consultant for designs and construction in the fields of power supply. The scope of works includes the assistance on issues pertaining to MV and LV power supply and distribution, lighting, earthing and stray current protection, coordination of electrical systems with other systems in stations, tunnels and Depots, as well as testing and commissioning of E/M equipment and railway systems. He shall have an advisory role on technical issues related to design review and compliance with the specifications, preparation of designs for the new extensions, compilation of new specifications and tender documents.

K1.5 Electrical Engineer - Traction Power Supply

Technical Support Consultant for designs and construction in the fields of traction power. The scope of works includes the assistance of the Consultant on issues related to train traction power systems based on a 750V DC third rail and/or overhead catenary, the evaluation and conducting of relevant simulations and testing and commissioning procedures for E/M and underground railway equipment. He shall have an advisory role on technical issues related to design review and compliance with the specifications, preparation of designs for the new extensions, compilation of new specifications and tender documents for these projects, depending on ATTIKO METRO S.A. needs.

K1.6 Electrical Engineer – Telecommunications and Low Voltage

Technical support consultant on issues related to design and monitoring of telecommunication and low voltage works, testing and commissioning procedures for the respective E/M equipment. He shall have an advisory role on technical issues related to design review and compliance with the specifications, shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents.

K1.7 Electrical Engineer – Automation Systems

Technical support consultant on issues related to design and monitoring of automation systems. He shall have an advisory role on technical issues

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related to the Control Centers of underground railway systems, wired and wireless data communication, SCADA systems and HMI for underground railway systems, traction power, MV power supply for underground railway systems and automations for electrical and mechanical installations (BACS), testing and commissioning procedures for the respective E/M equipment. He shall have an advisory role on technical issues related to design review and compliance with the specifications and he shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents.

K1.8 Electrical Engineer – Signaling

Technical support consultant for designs in the fields of signaling and control systems of trains with or without train attendant. He shall have an advisory role on technical issues related to design review and compliance with the specifications, shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents. The scope includes the coordination of interfaces and the operation among signaling systems, rolling stock, trackwork, traction power and other railway systems, both for the main lines and the Depots.

K1.9 Mechanical Engineer or Electrical Engineer - Rolling Stock

Technical Support Consultant in the field of designs and monitoring of Metro and Tramway Rolling Stock construction and tests. The scope of works includes car-body structure, loads and, mainly, train E/M systems, such as the traction power system and the motors, the auxiliary power supply system, the doors system, the braking system, the HVAC system, the control systems, etc.

K1.10 Mechanical Engineer - Ventilation/ Air Conditioning

Technical support consultant on issues related to tunnel ventilation, station ventilation and air conditioning, testing and commissioning procedures for the respective E/M equipment. He shall have an advisory role on technical issues related to design review and compliance with the specifications, he shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents.

K1.11 Civil Engineer or Mechanical Engineer or Electrical Engineer or Electronic Engineer or Architect, experienced in BIM related issues

Technical Consultant for the application of the BIM system and for supporting ATTIKO METRO S.A. in issues related to the management and coordination of designs, construction, delivery and commissioning of the works under execution in BIM environment. In addition, he shall support ATTIKO METRO S.A. in issues pertaining to the development of BIM's digital environment and to the scheduling and implementation of the future extensions.

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Group K2 shall consist of the following personnel:

K2.1 Civil Engineer – Designs

The scope of works includes the review of the designs, ensuring the specifications of the Civil Works, the participation in the preparation of designs and reports etc.. In addition, he will have an advisory role on technical issues related to design review and compliance with the specifications, the preparation of the designs for the extensions, the new specifications and the technical tender documents.

K2.2 Civil Engineer, Geotechnical Designs

The scope of works includes the review of the designs, ensuring the specifications of the Civil Works, the participation in the preparation of geotechnical designs and reports etc.. In addition, he will have an advisory role on technical issues related to design review and compliance with the specifications, the preparation of the designs for the extensions, the new specifications and the technical tender documents.

K2.3 Civil Engineer, Construction

The scope of his services includes the organization and coordination of the construction and the *in situ* supervision of the civil works execution, as well as ensuring that the works under construction will be executed according to the approved designs and pertinent specifications. With regard to the future extensions, he shall have an advisory role on technical issues related to designs under preparation for these works, depending on ATTIKO METRO S.A.'s needs.

K2.4 Civil Engineer or Mechanical Engineer - Trackwork

Technical support consultant on trackwork related issues (track systems, 3rd rail systems, walkways/cable ducts, invert filling concrete, cable conduits, stray current collection grid, etc. in tunnels and Depots). In relation to the above, he shall provide technical advice on issues related to design review and compliance with the specifications, he shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents. Moreover, he shall have a consultancy role on issues related to interfaces with other systems, ground-borne noise and vibration, and the corresponding performance audits & tests.

K2.5 Electrical Engineer or Mechanical Engineer - Rolling Stock

Technical consultant providing supporting services in issues related to the design and monitoring of Metro and Tramway Rolling Stock construction and tests. The scope of works includes carbody structure, loads and, mainly, train E/M systems, such as the traction power system and the motors, the auxiliary power supply system, the doors system, the braking system, the HVAC systems, the control systems, etc.

K2.6 Electrical Engineer or Mechanical Engineer – Systems

Technical Support Consultant for designs and interfaces between E/M and railway systems. In addition, he shall have an advisory role on issues related to systems' reliability, availability, maintainability and safety (RAMS) and on

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issues related to assessments of systems' safety. Moreover, he shall have an advisory role on technical issues related to design review and compliance with the specifications and shall participate in the preparation of designs for extensions, preparation of new specifications and compilation of tender documents.

K2.7 Electrical Engineer – Telecommunications and Low Voltage

Technical support consultant on issues related to design and monitoring of telecommunication and low voltage works, testing and commissioning procedures for the respective E/M equipment. He shall have an advisory role on technical issues related to design review and compliance with the specifications, he shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents.

K2.8 Electrical Engineer – Signaling

Technical support consultant for designs in the fields of signaling and control systems of trains with or without train attendant. He shall have an advisory role on technical issues related to design review and compliance with the specifications, shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents. The scope includes the coordination of interfaces and the operation among signaling systems, rolling stock, trackwork, traction power and other railway systems, both for the main lines and the Depots.

K2.9 Electrical Engineer – Power Supply Systems

Technical support consultant for designs and construction in the fields of power supply systems. His scope includes the consultant's contribution to issues related to low and medium voltage power supply and distribution systems, lighting, earthing systems and protection against stray currents, coordination of electrical systems with other systems in stations, tunnels and depots, procedures related to testing and commissioning of E/M Equipment and Underground Railway Systems. He shall have an advisory role on technical issues related to design review and compliance with the specifications, he shall participate in the preparation of designs for new extensions, compilation of new specifications and tender documents.

K2.10 Electrical Engineer – Fare Collection

Technical support consultant for designs in the field of fare collection. He shall have an advisory role on technical issues related to design review and compliance with the specifications, shall participate in the preparation of designs for extensions, compilation of new specifications and tender documents.

K2.11 Electrical Engineer, Construction

Technical consultant responsible for the organization and supervision of installation, testing and commissioning of Electrical and Railway Systems. His scope includes the consultant's contribution to the installation of power supply and distribution, train traction power, signaling and automatic protection, operation and supervision of trains, telecommunications, low voltage systems, PRCS systems, etc. In addition, his scope of works includes

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the organization of the supervision of trackwork and E/M equipment installation works, the *in situ* coordination of different contractors, the individual and integrated systems' tests, performance tests and the trial runs.

K2.12 Mechanical Engineer, Construction

Technical consultant responsible for the organization and supervision of the installation, testing and commissioning of Mechanical and Railway Systems. The scope includes the provision of advisory services by the consultant on the installation of ventilation, fire fighting, train operation and supervision systems and other mechanical systems. Moreover, it includes organization of the supervision of the trackwork and the mechanical equipment installation works, on site coordination of different contractors, testing of individual and integrated systems, performance testing and commissioning.

K2.13 Geologist (University Graduate)

Technical Consultant responsible for verifying and further investigating the geological, hydrological and other conditions and the procedures related to surface and underground geomechanical monitoring of the soil and the existing structures in the areas where excavation and retaining works are executed. With regard to the future extensions, he shall have an advisory role on the investigation and evaluation of geological and other data and the identification of the parameters required for the preparation of the structural and geotechnical designs of the works.

K2.14 Quality Engineer

He shall provide consulting services with regard to all individual scopes described below:

- Checking and improvement of the procedures, as regards quality control and quality assurance of the works;
- Providing assistance to the quality control and quality assurance of the Contractor;
- Providing support to ATTIKO METRO S.A. personnel as regards quality control and quality assurance;
- Providing assistance as regards the ISO certification procedures
- Checking of the implementation and submission of proposals as regards the operating procedures of the company.

K2.15 Contracts Engineer

His scope includes the provision of consulting services in contract related issues for the works under construction, as well as the provision of assistance to ATTIKO METRO S.A. in the preparation of tender documents for the future extensions (preparation of documents, etc.).

K2.16 E/M Cost Engineer

His scope includes the provision of consulting services in E/M cost related issues (contractor's compliance with the contract, contractors' requests, RTW, new prices, etc.) for the works under construction, as well as the provision of assistance to ATTIKO METRO S.A. in the preparation of tender documents for the future extensions (preparation of documents, quantities' estimates, costing, etc.).

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K2.17 Time Scheduling Engineer

His scope includes the provision of consulting services in following-up the time schedule of the works under construction, as well as the provision of assistance to ATTIKO METRO S.A. in time scheduling issues for the future extensions.

K2.18 Civil Engineer or Mechanical Engineer or Electrical Engineer or Electronic Engineer or Architect, experienced in BIM related issues

Technical Consultant for the application of the BIM system and for supporting ATTIKO METRO S.A. in issues related to the management and coordination of designs, construction, delivery and commissioning of the works under execution in BIM environment. In addition, he shall support ATTIKO METRO S.A. in issues pertaining to the development of BIM's digital environment and to the scheduling and implementation of the future extensions.

K2.19 Engineer specializing in feasibility studies – financial assessment of transportation works

Technical support consultant on issues related to feasibility studies – financial assessment of transportation works. He shall have an advisory role on technical issues related to the management, coordination and preparation of studies for the financial assessment of projects, he shall participate in the preparation of corresponding designs and/or in the compilation of the relevant specifications and tender documents.

K2.20 Engineer experienced in environmental studies of transportation works

Technical support consultant on issues related to environmental studies for transportation works. He shall have an advisory role on technical issues related to the management, coordination and preparation of environmental studies and/or the compilation of the relevant specifications and tender documents.

K2.21 Civil Engineer or Topographer Engineer, Transportation Engineer for Transport Planning

His scope of works shall include the review and preparation of general transit and transport studies, using strategic planning transportation models and traffic management models. In addition, he shall participate in the preparation of Cost – Benefit Studies for new projects, through the provision of the necessary information about ridership and travels, in general.

K.2.22 Civil Engineer or Topographer Engineer, Transportation Engineer for Transport and Parking related Studies

His scope of works shall include the preparation or the review of traffic management studies, using respective models, parking related studies, environmental impact assessment studies, as well as the preparation of specifications for the tendering of the respective studies. In addition, he shall participate in the planning of Metro park & ride facilities and transfer stations and in issues pertaining to their management.

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K2.23 Civil Engineer or Topographer Engineer, Transportation Engineer for Research Programs

His scope of works shall include participation in work groups developed by ATTIKO METRO S.A. for EU research programs or in other programs in which the Company participates.

K2.24 Civil Engineer or Land Planner Engineer

His scope of works shall include participation in general transport studies for issues concerning town planning and relevant predictions, as well as in issues concerning the positioning of Metro and Tramway facilities, such as depots, stations, park and ride facilities – transfer stations, etc., and solutions for matters concerning the urban planning legislation for securing the positioning of the above.

4.3 Required Experience

The Consultant's technical personnel required experience is presented in detail in the Invitation to Tender and in the following Table 7.

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Table 7: Required Experience of the Consultant’s Technical Personnel

No.	POSITION	No OF PERSONS	MAN-MONTHS	EXPERIENCE - EXPERTISE	ENGINEER’S MINIMUM GENERAL EXPERIENCE
Group K1					
K1.1	Head of the Consultant – Coordinator	1	60	Civil Engineer, Coordinator of the Consultant’s Group, possessing an experience of at least 10 years in the management/administration/coordination of Metro projects.	21
K1.2	Civil Engineer - Geotechnical Designs	1	60	Geotechnical Civil Engineer, possessing an experience of at least 10 years in geotechnical designs or review of geotechnical designs of underground Metro projects.	21
K1.3	Civil Engineer or Mechanical Engineer of Trackwork	1	60	Civil Engineer or Mechanical Engineer possessing an experience of at least 10 years in designs or review of Metro Trackwork related designs.	21
K1.4	Electrical Engineer – Power Supply Systems	1	60	Electrical Engineer possessing an experience of at least 10 years in designs or in the review of designs of power supply systems in Metro projects.	21
K1.5	Electrical Engineer – Traction Power Supply	1	60	Electrical Engineer possessing an experience of at least 10 years in designs or in the review of designs related to train traction power with a 750V DC 3 rd rail and/or a stinger duct, in the evaluation and execution of the relevant simulation tests, in testing and commissioning of E/M Equipment and Underground Railway Systems in Metro projects.	21
K1.6	Electrical Engineer – Telecommunications and Low Voltage	1	60	Electrical Engineer possessing an experience of at least 10 years in designs or review of designs of telecommunications and low voltage or in Metro projects.	21
K1.7	Electrical Engineer – Automation Systems	1	60	Electrical Engineer possessing an experience of at least 10 years in designs or in the review of designs concerning remote-control, wired and wireless data collection systems, SCADA and HMI systems, as well as electrical and mechanical facilities automation in Metro projects.	21
K1.8	Electrical Engineer – Signaling	1	60	Electrical Engineer possessing an experience of at least 10 years in designs or in the review of designs concerning signaling and train control systems in Metro projects.	21
K1.9	Mechanical Engineer or	1	60	Mechanical Engineer or Electrical Engineer possessing an experience of at least 10 years in	21

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	Electrical Engineer of Rolling Stock			designs or in the review of designs related to the Metro Rolling Stock	
K1.10	Mechanical Engineer – Ventilation / Air Conditioning	1	60	Mechanical Engineer possessing an experience of at least 10 years in designs or in the review of designs of ventilation and air conditioning systems in Metro projects.	21
K1.11	Civil Engineer or Mechanical Engineer or Electrical Engineer or Electronic Engineer or Architect experienced in BIM related issues	1	60	Civil Engineer or Mechanical Engineer or Electrical Engineer or Electronic Engineer or Architect, possessing an experience of at least 2 years in BIM related issues.	15
Group K2					
K2.1	Civil Engineer - Designs	3	40	Structural Civil Engineer possessing an experience of at least 7 years in structural designs or in review of structural designs on underground projects.	12
K2.2	Civil Engineer, Geotechnical Designs	2	40	Civil Geotechnical Engineer, possessing an experience of at least 5 years in geotechnical designs or in review of geotechnical designs of Metro underground projects.	12
K2.3	Civil Engineer, Construction	3	40	Civil Construction Engineer, possessing an experience of at least 7 years in the organization and construction of Major Civil Works.	12
K2.4	Civil Engineer or Mechanical Engineer – Trackwork	2	40	Civil Engineer or Mechanical Engineer, possessing an experience of at least 5 years in trackwork designs or in review of trackwork designs, in Metro projects.	12
K2.5	Electrical Engineer or Mechanical Engineer – Rolling Stock	2	40	Electrical or Mechanical Engineer, possessing an experience of at least 5 years in 7 Rolling Stock related issues, of Metro Projects	12
K2.6	Electrical Engineer or Mechanical Engineer – Systems	1	40	Electrical or Mechanical Engineer, possessing an experience of at least 7 years in designs or in review of designs and interfaces related issues for electromechanical and railway systems and in Reliability-Availability-Maintainability and Safety systems related issues.	12
K2.7	Electrical Engineer – Telecommunications and Low Voltage	3	40	Electrical Engineer, possessing an experience of at least 7 years in designs or review of designs concerning telecommunication and low voltage, procedures related to the testing and commissioning of the respective E/M equipment, in railway or major industrial – building projects.	12
K2.8	Electrical Engineer – Signaling	2	40	Electrical Engineer, possessing an experience of at least 7 years in signaling and train control systems.	12
K2.9	Electrical Engineer – Power Supply Systems	2	40	Electrical Engineer, possessing an experience of at least 5 years in designs or in review of designs related to MV and LV power supply – distribution, lighting and earthing systems in Metro projects.	12
K2.10	Electrical Engineer –	1	40	Electrical Engineer, possessing an experience of at least 7 years in fare collection related issues	12

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	Fare Collection				
K2.11	Electrical Engineer, Construction	2	40	Electrical Engineer, possessing at least 7 years of experience in issues related to the organization of the supervision of the electrical equipment installation works, the <i>in situ</i> coordination of different contractors, testing of individual and integrated systems, performance tests and the trial run commissioning activities in railway or major industrial – building works.	12
K2.12	Mechanical Engineer, Construction	2	40	Mechanical Engineer, possessing at least 7 years of experience in E/M works, such as ventilation, escalators, lifts, pumping stations, etc.	12
K2.13	Geologist (University Graduate)	1	40	Geologist (University Graduate), possessing at least 5 years of experience in designs or review of designs related to the investigation and evaluation of geological and other information and in the identification of the parameters required for the preparation of structural and geotechnical designs of Metro Projects.	12
K2.14	Quality Engineer	3	40	Graduate Engineer possessing at least 7 years of experience in Quality Control, Quality Assurance, in the ISO certification related procedures, etc.	12
K2.15	Contracts Engineer	2	40	Graduate Engineer possessing at least 7 years of experience in major public works contract administration.	12
K2.16	E/M Cost Engineer	2	40	Mechanical or Electrical Engineer possessing at least 7 years of experience in major public E/M works costing	12
K2.17	Time Scheduling Engineer	1	40	Graduate Engineer possessing at least 7 years of experience in major public works Time Scheduling	12
K2.18	Civil Engineer or Mechanical Engineer or Electrical Engineer or Electronic Engineer or Architect, experienced in BIM related issues	1	40	Civil Engineer or Mechanical Engineer or Electrical Engineer or Electronic Engineer or Architect, possessing an experience of at least 2 years in BIM related issues.	12
K2.19	Engineer specialized in feasibility studies – financial assessment of transportation works	1	40	Graduate engineer possessing an experience of at least 7 years in the preparation of feasibility studies – financial assessment of works, out of which at least 5 years in transportation works	12
K2.20	Engineer experienced in environmental studies of transportation works	1	40	Graduate engineer possessing an experience of at least 7 years in the preparation of environmental studies of works, out of which at least 5 years in the preparation of respective studies for transportation works	12

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K2.21	Civil Engineer or Topographer Engineer, Transportation Engineer for Transport Planning	2	40	Transportation engineer (Civil engineer or Topographer engineer) possessing an experience of at least 7 years in the preparation of general transit and transport studies, using strategic planning transportation models and traffic management models	12
K2.22	Civil Engineer or Topographer Engineer, Transportation Engineer for Transport and Parking related Studies	1	40	Transportation engineer (Civil engineer or Topographer engineer) possessing an experience of at least 7 years in the preparation of traffic management studies using respective models, as well as parking related studies	12
K2.23	Civil Engineer or Topographer Engineer, Transportation Engineer for Research Programs	1	40	Transportation engineer (Civil engineer or Topographer engineer) possessing an experience of at least 5 years in participation in research programs	12
K2.24	Civil Engineer or Land Planner Engineer	1	40	Urban planner engineer possessing an experience of at least 5 years in the preparation of town-planning studies	12

(*) The engineers' general experience time period is calculated as follows: for the bidders established in Greece, the subject time period is calculated as of the date they obtained their professional license from the Technical Chamber of Greece, while for the foreign bidders, the subject time is calculated as of the date they obtained their professional license from the equivalent authority concerned.