

GENERAL SPECIFICATIONS - VOLUME I

TABLE OF CONTENTS

GS0180	STUDIES & MEASURES FOR DEALING WITH THE ENVIRONMENTAL IMPACT DURING CONSTRUCTION.....	2
GS0200	DESIGN REQUIREMENTS.....	22
GS0400	PROJECT MEETINGS	36
GS0440	PROTECTION OF WORKSITE INSTALLATIONS	40
GS0450	CLEANING WORKS.....	41
GS0460	PROJECT RECORD DOCUMENTS.....	44
GS0500	TIME SCHEDULE REQUIREMENTS	49
GS0510	PLANNING AND PROGRESS REPORTS	52
GS0600	QUALITY ASSURANCE	54
GS0650	QUALITY CONTROL.....	65
GS0750	HEALTH & SAFETY SPECIFICATIONS.....	71
GS1100	ARCHAEOLOGICAL WORKS	77
GS1592	TEMPORARY ATTIKO METRO WORKSITE OFFICES AND EQUIPMENT	79

GENERAL SPECIFICATIONS - VOLUME I

GS0180 STUDIES & MEASURES FOR DEALING WITH THE ENVIRONMENTAL IMPACT DURING CONSTRUCTION

1. GENERAL

- 1.1 The Contractor shall take all necessary measures in order to minimize the impact of the works on the environment and to ensure adherence to National and Community Legislation, to approved Environmental Terms of the Project (Ministerial Decision–MD 9724/21.05.18) and to the provisions of the approved EIA (Environmental Impact Assessment Study for “Athens Metro Line 4 Section A’ – Alsos Veikou – Goudi” – January 2017), as well as to the σ-ES (Environmental Study for the Differentiations that arose during the Consultation Process on the EIA for the Athens Metro Line 4 – October 2017).
- 1.2 The present specification also includes the detailed description of the additional obligations of the Contractor, with respect to covering the environmental requirements.
- 1.3 The proposed actions stated in this Specification aim at mitigating pollution in all affected areas (air, ground, water), at mitigating any kind of disturbance to the natural and man-made environment, as well as at protecting the cultural heritage during the construction of the Project.

2. RELEVANT REQUIRED STUDIES - MONITORING PROGRAMS

- 2.1 The Contractor is responsible for the preparation and implementation of the following relevant studies:

S/N	STUDY / MONITORING PROGRAM
1	Program for the Environmental Monitoring of the term 5.5 of MD 9724/21.05.2018
2	Special Study for Managing Excavation Spoil and Construction Materials
3.1 3.2	Special Study and Program to monitor the emission of particles and NO ₂ Monthly reports on the results
4	Monthly Report with the Results of the sampling activities and the analysis of the chemical composition of the water pumped during the works
5	Special Study for the Protection of Urban Green Areas and Flora and Landscaping - Planting
6	Special Study of Noise and Vibration Control during the Construction
7	Noise & Vibration Control Program (N & V)
8	Monthly Report with the Results of the N & V Monitoring Program
9	Technical report for the leaks of hazardous substances to the soil and water
10	Annual reports on the monitoring of the environmental impact of the term 5.5 of MD 9724/21.05.2018
11	Studies for the renewal and/or amendments of approved environmental terms

GENERAL SPECIFICATIONS - VOLUME I

12	Designs for Compliance with the Technical Planning
13	Technical Environmental Studies (TEPEM) for worksites, in line with the stipulations of MD 9724/21.05.2018
14	Technical Environmental Studies (TEPEM) for accompanying or supplementary works

- 2.2 The content of the above studies and monitoring programs, as well as the time of their submission is described in detail in the following chapters of this Specification.
- 2.3 The above relevant studies / monitoring programs are subject to the approval of AM and YPEN Directorate Concerned for the Environment for those required. Irrespective of this approval, however, the Contractor remains fully responsible for the completeness and implementation of the above stipulations, as per the applicable legislation.
- 2.4 In case the need arises to renew or amend the project’s environmental terms, the Contractor is responsible to prepare the required Environmental Study – Report, in order to obtain the required Approval for the Amendment of the Environmental Terms from the Special Environmental Agency of YPEN, following AM’s approval.
- 2.5 Similarly, the Contractor is responsible for the preparation of Technical Environmental Studies (TEPEM) for worksites and of the designs for the compliance with the technical planning before the implementation of the project, as well as for the required Technical Environmental Studies of associated and other supplementary projects falling under Law 4014/2011 for AM to obtain the environmental approval by the Environmental Agency of YPEN.
- 2.6 It is finally noted that the Contractor is responsible for all delays in the Project’s execution, resulting from the non-timely preparation and submittal of the Environmental Study to the Directorate of environmental Licensing (DIPA), in order to ensure the issuance of the necessary permit.

3 PROGRAM FOR THE ENVIRONMENTAL MONITORING

- 3.1 The Contractor, within fifty (50) calendar days from the execution of the contract, shall submit to AM for approval in five (5) copies and in digital form, a Report presenting in detail the Program for the Environmental Monitoring (PPP). It concerns a description of the overall measures and procedures required to be applied during the construction of the project in order to ensure adherence to the environmental requirements, as these are described in the Ministerial Decision–MD 9724/21.05.18 and in the provisions of the approved EIA (Environmental Impact Assessment Study for “Athens Metro Line 4 Section A’ – Alsos Veikou – Goudi” – January 2017), as well as to the σ-ES (Environmental Study for the Differentiations that arose during the Consultation Process on the EIA for the Athens Metro Line 4 – October 2017) and as they are provided in the National and Community Legislation. The Program Covering the Environmental Requirements shall be directly dependant upon the time scheduling of the construction works and shall be revised on an annual basis; moreover, the Contractor shall submit to AM a Revision Report stating any deviations from the approved PPP.

GENERAL SPECIFICATIONS - VOLUME I

- 3.2 The above Program shall be adjusted to the conditions prevailing in the area of the project, as well as to the type and organization of the construction works. More specifically, it shall include the following parameters:
- a) a detailed presentation of the worksite areas; the following information shall be presented per worksite area: the adjacent uses, along with a photographic depiction and reference to the distances between them, the expected disturbances and the appropriate protection measures.
 - b) summary presentation of the organization and time scheduling of the construction works (e.g. duration of excavations, pile drive works, operation of specific machinery such as air-compressors, etc) and of the required each time actions (e.g. monitoring of noise, particles), as well as of the proper measures, depending on the nature of the environmental problem, as well as the possibilities to have the works properly scheduled, in order to avoid the concurrent execution of high disturbance works.
- 3.3 In particular, the PPP shall also contain, inter alia, a detailed analysis of the following environmental parameters:
- a) Air pollutants and Particles: Description of the preventive measures intended to be implemented and of the equipment and installations intended to avert escape of pollutants into the air. Methods controlling the particles produced in all the areas where construction works and other activities take place. All proposed measures shall be finalized in the framework of the special study and the Monthly Reports for the results of the program for monitoring air pollutant and particles.
 - b) Methods and arrangements controlling noise and vibrations caused by the operation of every kind of mobile and fixed machines, placing special emphasis on construction activities that include to outdoor mechanical installations, pile driving works, hydraulic hammers etc. These proposals shall be finalized in the framework of the special design for noise and vibration control during construction, as specified in para 15.3 of this Specification.
 - c) Description of the preventive measures intended to be implemented and of the equipment and installations intended to avert escape of pollutants to surface and ground water and into the soil.
 - d) Description of the methods for the handling of all kinds of liquid and solid waste, placing special emphasis on any eventual toxic or highly contaminating waste. It is stressed that the Contractor is obliged to register in the Electronic Waste Registry and state in detail all items required by the current Legislation (produced waste quantities, disposal – management companies, etc.).
 - e) Proposals for the complete handling of the excavated materials, placing special emphasis on the measures to be taken during the transportation, as well as on the selection of the dumping places. These proposals shall be finalized in the Special Design for the Handling the Excavation Spoil & Construction Materials, which shall be prepared by the Contractor, as specified in paragraph 6 of this Specification.

GENERAL SPECIFICATIONS - VOLUME I

- f) For each individual worksite area, the Contractor shall submit to AM a “Special Study for the Protection of Urban Green Areas and Flora”, which shall include a topographical diagram of the worksite area, showing the existing trees – bushes – green areas, a detailed description of each existing tree (kind, perimeter, height, age) with photographs, marking of the trees that need to be cut, transferred and/or replaced. This Study shall be incorporated in the Report of the Program Covering the Environmental Requirements.
- g) Addressing emergencies concerning the degrading of the environment and the health & safety of the employees and residents. This concerns existing environmental problems as well as those that may be encountered in the immediate project area (e.g. soil pollution within worksites, formerly accommodating a heavy industrial plant, gas station, etc.), as well of environmental accidents during the project’s construction. For all these cases, the Contractor is responsible to thoroughly examine the problem and propose to AM special measures to address it. In any case, the Contractor is responsible to return the areas in the condition he received them or in the condition specified in the contractual documents.

4 ANNUAL REPORTS ON THE MONITORING OF THE ENVIRONMENTAL IMPACT

- 4.1 These reports shall be submitted to AM for approval in the time period between the contract signing and the Project’s acceptance and, specifically, by the 15th of January of each year.
- 4.2 These reports shall describe the items referred to in the environmental term 5.5 of MD 9724/21.05.18, as well as the following:

- The progress of the works during the last six-month period with detailed data for each worksite.
- The impact from the Project’s construction with emphasis on the environment around the worksite areas. The report shall examine the impact on the natural environment (air, water, soil, flora), on the structured environment (buildings, road network, PUO infrastructure, etc. within or adjacent to the worksite areas and at a short distance around the route of the tunnel) as well as on the quality of life of the residents (e.g. noise, accessibility to areas, properties, shops etc.)
- Quantified and processed data obtained from the monitoring of the environmental impact, such as measurements of noise, vibrations, particles PM₁₀, PM_{2.5}, NO₂, quantity and chemical composition of all liquid waste – including discharge water and water from the settlement tanks – as well as reference to the method and “place” or network of their disposal or channeling, volumes of excavation spoil and disposal areas, volumes and type of solid waste and information regarding their place of dumping.
- The report shall also indicate the problems, special events and/or complaints that came to the surface within the last six-month period, as well

GENERAL SPECIFICATIONS - VOLUME I

as the method they were addressed or are to be addressed. Finally, proposals are presented for further reducing the environmental impact.

5 SPECIAL STUDY FOR HANDLING EXCAVATION SPOIL AND CONSTRUCTION MATERIALS

- 5.1 Prior to the commencement of the works and specifically within a period of three months after contract signing, the Contractor shall prepare and submit to AM a Special Study for Handling Excavation Spoil and Construction Materials.
- 5.2 The above study shall determine the appropriate excavation spoil dumping areas, i.e. the materials that need to be removed and disposed, as well as the worksite areas for their eventual temporary piling, in accordance with MD 9724/21.05.2018.
- 5.3 At the same time, the study shall suggest possible alternative excavation spoil dumping areas in order to cope with special cases when the selected dumping areas are not available. The final selection of the dumping areas shall be based on the updated data, as well as any approved EIAS that may exist for these areas.
- 5.4 This study shall examine the impact from the transportation of excavation spoil using heavy vehicles through the city’s existing road network. This investigation shall be carried out on the basis of traffic and environmental criteria, aiming at proposing a management model which shall allow the minimization of the impact on the environment (atmosphere, ground, acoustic, etc.), as well as at fully implementing the environmental terms of the project.
- 5.5 Wherever this is practical and further to a chemical analysis of their composition, the excavation spoil produced from the execution of the project shall be utilized in the project’s areas reinstatement or landscaping works. The Contractor shall submit to AM for approval the details of all dumping areas which shall accept excavation spoils, depending on their chemical composition, the dumping method, compaction and landscaping, filling with planting earth and planting of the final surface.
- 5.6 In addition, in the framework of the above study it must be determined if there are excavation spoils that are not acceptable for dumping in the foreseen areas, as well as the appropriate method for their handling (e.g. excavation spoils not fulfilling the composition requirements specified with regard to the selected disposal areas, materials resulting from the dismantling of asphalt pavements, demolition of buildings and other installations, as well as other waste materials produced during the METRO construction works, such as slurry, cement, grout, steel reinforcement remnants, network materials remnants, lubricants packing materials, mechanical equipment etc.
- 5.7 In any event, disposal of the spoils in strictly designated areas according to the applicable legislation (as well as all possibly required works preceding or following the disposal, such as temporary storage of the materials, improvement, special treatment, sprinkling, covering, etc.) falls within the Contractor’s technical scope.

GENERAL SPECIFICATIONS - VOLUME I

- 5.8 Finally, in the framework of the above study, consideration shall be given to the optimum method of transporting the construction materials from the areas of production (e.g. lawful quarries and concrete batching plants, steel mills, etc.).
- 5.9 The said study shall be approved by AM before the commencement of the works, the approval granted in the following stages:
- Initially, the Contractor shall submit to AM for approval the study along with all the aforementioned information and proposals of the Contractor concerning the excavation spoil disposal areas.
 - Thereafter, the Contractor is responsible to obtain all necessary permits concerning the areas of disposal of any kind of excavation spoil, as well as of the respective approvals and/or supporting documents demonstrating the acceptance of the disposal of the specific excavation spoils of the Project (concerning the quantity and the qualitative characteristics).
 - During the second and last stage, the Contractor shall submit to AM the relevant permits, approvals and/or supporting documents according to the content of the first stage of the study. In the event that the Contractor fails to obtain the required approvals for disposal at the specific areas approved during Stage 1 of the study, then the Contractor is obliged to investigate the availability of alternative dumping areas, to obtain the aforementioned permits, approvals and/or certificates and to submit same to AM.
 - In any case, the Contractor shall be exclusively responsible for finding an alternative area – whose operation has been licensed – or for ensuring the environmental permit for an area intended for the disposal of excavation spoils, in line with the provisions of the applicable legislation.
 - In any case, the Contractor shall be exclusively responsible for all actions required (e.g. preparation of the required designs), for obtaining the necessary permits, as well as for the overall handling of all materials (transportation- regardless of the distance, disposal, bedding, etc.)
 - The aforementioned obligations of the Contractor shall be fulfilled at his cost and care, while the relevant cost is included in his financial offer in a converted form.
- 6 DUST CONTROL – SPECIAL STUDY AND PARTICLES MONITORING PROGRAM AND NO₂**
- 6.1 The Contractor shall take all necessary preventive actions in order to minimize the dust (particles PM₁₀, PM_{2.5}) raised during the performance of the works related to the construction of the Project and are executed either within or outside the worksite installations.
- 6.2 Special study and program for the monitoring of particles and NO₂
- 6.2.1 Prior to the commencement of the works, the Contractor of the Project shall prepare a special study and a particle PM₁₀, PM_{2.5} and NO₂ monitoring program based on sampling, aiming at minimizing the emission of particles and NO₂.
- 6.2.2 This study shall propose the set of appropriate measures, which the Contractor is obliged to implement. Concurrently, it shall define a program for the monitoring of the dust and the particles, i.e. the methodology for the

GENERAL SPECIFICATIONS - VOLUME I

measurements to be conducted, the special measurement equipment, the method of communicating the results to AM, the measurement frequency depending on the construction works carried out over a specific time period, the data and proposals that must be included in the Monthly Reports of the Results.

6.3 Monthly Reports of the Results

The monthly reports of the results shall contain the results of the measurements conducted each month within every worksite area and aggregate producing areas, an analysis and interpretation of the results and their correlation with the works executed in each worksite over the specific month. In addition, the results shall be evaluated in order to assess the need to implement additional / corrective measures against dust emissions.

6.4 The control of dust emission within each worksite area and in the aggregate producing plants shall be performed according to EU directive 1999/30/EC cabinet act 34/30.05.02 (FEK 125/B).

6.5 The group of measures – which shall be updated and finalized in the framework of the above study and program – shall include at least the following terms and restrictions:

- a) In the execution of any construction or worksite activities possibly causing the emission of dust, the equipment to be utilized should ensure the retaining of dust, while the time of execution of these activities should be minimized.
- b) In concrete batching plants, temporary ventilation plants and ventilation plants for the execution of works in the tunnel, during drilling works or any other activity characterized by a locally generated high volume of particles or dust filters or other equivalent devices should be used in order to limit this kind of emission to the minimum possible extent.
- c) There shall be systematic sprinkling of the excavation spoils, the transportation corridors and the materials in order to limit the dust emission during the execution of the construction works. Moreover, sprinkling shall be carried out during loading and unloading of earth or aggregates on the basis of their dampness.
- d) The relevant machinery shall be utilized in a manner that minimizes the dust emission, while for the same reason the speed of the vehicles within the zone of execution of the works shall be low.
- e) In all cases of transportation of loose materials (e.g. sand, gravel, debris, etc.), it shall be forbidden to overfill the vehicles, while it is imperative to cover the transported materials in order to prevent the dispersion of dust or particles during their transportation.
- f) The mechanical equipment to be used shall secure dust retaining.
- g) The aggregate producing plants, if such plants are need to be activated, must be equipped with dust retaining system.
- h) The ready-made concrete batch plants must be equipped with a dust removal system in order to remove the dust from cement silos, the mixer, the scale and the conveyor belts.

GENERAL SPECIFICATIONS - VOLUME I

7 WASTE CONTROL

The Contractor is obliged to register in the Electronic Waste Registry and state in detail all items required by the current Legislation (produced waste quantities, disposal – management companies, etc.).

7.1 General

The Contractor should:

- a) Regulate the pH of concrete work site liquid waste keeping it within the levels allowed by the EYDAP (Water Supply and Sewage Company).
- b) Strictly adhere to JMD 98012/2001/96 (GGI 40 B’) about the management of site machinery mineral oils and fuels.
- c) Transport the admixtures of concrete, bentonite trichloro-ethylene and any other materials of similar risk according to the special instructions that have to be given in writing to the truck drivers. The packing of the above materials shall not be rinsed but shall be disposed sealed into the areas specially set for the disposal of hazardous waste within the Dumping Places (DP).
- d) The disposal of liquid waste containing trichloro-ethylene residues and other hazardous substances shall be made into the Dumping Places and not into the EYDAP network.

7.2 Discharge Water Controls – Special Hydraulic and Flood Protection

- a) The Contractor shall prepare a Study and shall implement all necessary measures related to the Flood protection of each individual worksite and the area influenced by the Project, according to article 15 of the Design Specifications for Civil Works.
- b) According to article 7 of the Design Specifications for Civil Works, the Contractor shall ensure, as a minimum, using the proper drainage methods, the collection of any volumes of water flowing from the worksite, the areas or facilities occupied by the Contractor outside the perimeter of the work site and its channeling into areas outside the work site, as approved by EYDAP. The water in question shall be directed in a satisfactory way to the nearest available manholes of the permanent local rainwater drainage system and shall not be let flow uncontrolled over the surfaces of roads, pavements and other public areas or private properties outside the worksite. The EYDAP manhole surfaces shall be kept clean of litter or mud coming from the worksites within a breadth of 250 meters from the worksite perimeter or from that of other occupied areas.
- c) At all the worksites where ground water pumping will be carried out, the Contractor shall also construct sumps for the settlement of floating solids with stay time not less than 2 hours and shall carry out regular disposal of the slurry into the Dumping Place. At every worksite, where machine and vehicle washing is carried out, there shall be a sump constructed for the collection and settlement of the water used therein and the sump shall be cleaned of mud at regular intervals and channelled into the appropriate Dumping Place.

GENERAL SPECIFICATIONS - VOLUME I

- 7.3 Retention of Solids and Sumps – Monthly Sampling Result Report
- a) The waste water that will be drained from the worksite or from other areas occupied by the Contractor outside the work site limits shall be, as much as possible, free of floating solids or oil and shall not be polluted or muddy.
 - b) The Contractor shall make arrangements for the retention of solids and shall construct settlement tanks for the protection of the permanent local rainwater discharge network against mud pollution or obstruction. The Contractor shall submit drawings showing these arrangements and tanks to AM for approval.
 - c) The water pumped during the excavation work within the worksite shall be channelled into specially developed sumps where it will stay for at least two hours. Monthly samples shall be taken from the inlets and outlets of the sumps which shall be analyzed as to their pH conductivity parameters, floating particles, thus keeping adherence to the EYDAP Regulations. After its chemical analysis, the water shall be disposed according to the laws in force either into the nearest inlet of the permanent surface water drainage system or into an appropriate Dumping Place. Mud has to be disposed into Dumping Places on a regular basis.
- 7.4 Corrosive Substances
- Water containing corrosive substances should not affect the existing structures or the construction of the works. The Contractor should look into possible measures addressing the corrosion risks. Any arrangements are subject to the approval of AM.
- 7.5 Connection with the EYDAP networks
- Any connection with the city’s rainwater or foul water drainage networks is subject to EYDAP’s permission, which is the only competent Authority, according to the law in force, always under the Contractor’s responsibility and care.
- The Contractor is also responsible to control the adherence to EYDAP regulation. The discharge of hazardous and toxic waste into the EYDAP network is not allowed in any case whatsoever.
- 8 ASSESSMENT OF RISKS FROM ADJACENT POLLUTING USES - LEAKS OF HAZARDOUS SUBSTANCES IN THE SOIL AND WATER**
- 8.1 The Contractor, within the framework of the Office Study Report, should initially check the land uses within the area in question, located at a distance of at least 500m from the Project outline (stations, shafts and the tunnel), placing particular emphasis in the vicinity around the worksite areas. The purpose of this checking is to identify all hazardous uses (existing and previous uses) in this area, such as gas stations and other areas used for keeping, storage, distribution etc. of hazardous chemical substances and which might affect the Project’s construction and operation. The uses identified as hazardous shall be presented on a map with the land uses, which is to be submitted along with the said Report.
- This checking is repeated before the completion of the DFDs for verification and updating reasons.

GENERAL SPECIFICATIONS - VOLUME I

- 8.2 Subsequently, the Contractor shall prepare a Risk Assessment Analysis for each of the potentially hazardous uses on the basis of the various data obtained from field investigations (collection of data concerning the implemented safety measures, age of facilities etc.) and on the basis of an evaluating investigation, such as by taking samples in order to control any leakage of dangerous substances in the soil and the water.
- 8.3 The above analysis shall reveal if preserving the operation of certain uses or if the existing pollution and/or leakage shall give rise to safety problems during the Project's construction and operation. If uses or existing pollution and/or leakage that may jeopardize the Project's construction and operation are located, the Contractor shall propose methods for minimizing and/or addressing the risk as well as special protection measures, such as the implementation of a system for the constant monitoring - control of hazardous chemical substances leakage, cleaning measures if and where required, or even the relocation of the polluting installation or the elimination of the risk resulting from an existing pollution and/or leakage.
- 8.4 All the above steps and the resulting conclusions shall be presented in detail in a Technical Report about Leakage of Hazardous Substances in the Soil and the Water, which the Contractor shall prepare and submit to AM for approval before the submission of the DFDs for the respective parts of the Project, so that these DFDs can also include any required measures rendering possible the construction.
- 8.5 The above investigations and the measures that may be required fall within the Project's technical scope. Similarly, the Contractor is responsible for the preparation, if required, of Special Studies, for obtaining the permits from the competent authorities, as well as for any other required action.

9 INSECT AND RODENT CONTROL

The Contractor shall ensure that no conditions favoring the development of insects or rodents within the worksite areas. This applies also for all areas or facilities occupied by the Contractor even beyond the worksite perimeter throughout their occupation.

In any case of insect or rodent presence, the Contractor shall carry out an insect/mice killing and dis-infection operation following approval by AM.

GENERAL SPECIFICATIONS - VOLUME I

10 MUCK AND DEBRIS CONTROL

- 10.1 Further to the above paragraph 5.1, the Contractor shall take all necessary preventive actions –in the framework of the relevant program for the transportation and disposal- to ensure that demolition or excavation products, loose materials or mud, do not get scattered around or disposed onto pavements, pedestrian ways, parking areas, public areas or other properties outside the worksite. The excavation spoils shall be dumped at appropriate areas determined by the Contractor, in the framework of the relevant study, subject to the approval of the Authorities concerned.
- 10.2 The Contractor shall immediately remove every kind of waste, inappropriate, loose or useless materials disposed by himself, intentionally or unintentionally, at anyone of the aforementioned areas. Any domestic litter shall be immediately placed in covered bins or litterbags for collection by the Municipality Service. Incineration of useless materials is strictly forbidden.

11 POLLUTION CONTROL

- 11.1 The Contractor shall ensure that conditions causing air, water or soil pollution will not occur within the perimeter of the work site from the day of his arrival at the work site until the delivery of the works or within any areas or facilities he occupies outside the perimeter of the work site throughout the duration of their occupation.
- 11.2 If pollution instances occur, the Contractor shall discontinue immediately the works and shall immediately inform AM, in order to receive written instructions with all necessary actions in order to stop such pollution instances and their causes be eliminated.

12 CORROSION CONTROL

- 12.1 The Contractor shall avert corrosion in the worksite or in areas or facilities he occupies beyond the perimeter of the worksite.
- 12.2 The Contractor shall protect the open excavation areas, trenches, backfillings with suitable fences, waterproof covers or other method against rainwater.
- 12.3 If in AM's judgment there is corrosion in the worksite area, the Contractor shall have to reinstate any damage, within a reasonable time period, subject to AM's instructions and approval.

GENERAL SPECIFICATIONS - VOLUME I

13 FLORA AND FAUNA PROTECTION

13.1 General

The Contractor shall protect the existing flora and fauna within the area of his works and, unless otherwise approved by AM, he shall maintain the existing flora within the worksite or in the vicinity of the said worksite.

13.2 Protection of Trees and Plants – Special Study for the Protection of Urban Green Areas and Flora and Landscaping - Planting

The Contractor shall protect and maintain, to the extent that this is feasible, the areas of trees and/or plants within the worksite area or the occupation zone in general.

As it is mentioned in the above clause 4.2(g), the Contractor shall submit to AM for each individual worksite area, or another area to be occupied for the purposes of the Project construction, a Special Study for the Protection of Urban Green Areas and Flora and Landscaping – Planting. This Special Study shall also include, inter alia, data related to the type, age and the perimeter of each tree that must be cut, or replanted aiming at – upon completion of the works – the Flora be reinstated at its previous condition, to the extent possible.

The Special Study shall include detailed proposals for the reinstatement of all worksite areas upon completion of the construction activities. More specifically, the following are recommended: planting of trees (of specific type and age) on all surfaces that can be planted having ensured the appropriate conditions (specifications for the required depth of plant earth, for the installation of irrigation systems and for planting preservation).

13.3 Fencing of worksite areas

The worksite areas shall be fully fenced as per the respective Specification; the fencing shall be subject to AM’s approval. This fencing shall be adequate to prevent access of unauthorized people to the said areas and it will be subject to modifications depending on the needs of the Project.

The Contractor, on a regular basis, shall inspect the fencing and any damage, unintentional or intentional, shall be repaired immediately as soon as the Contractor becomes aware of it or is informed about it.

Upon completion of the works, the fencing shall be removed and the soil, trees and plants of the adjacent area shall be reinstated into their previous condition. The Contractor shall proceed with the above reinstatement work having first taken into account the drawings of the Inventory of the Existing Situation, the proposals of the above study and following AM’s approval.

GENERAL SPECIFICATIONS - VOLUME I

14 NOISE AND VIBRATION CONTROL DURING CONSTRUCTION

14.1 General

14.1.1 This article contains the necessary actions, activities and measures required for controlling the Noise and Vibrations (N & V) caused by the performance of the construction works.

14.1.2 All the activities and works of the Contractor shall be in compliance with the provisions of the Greek Legislation in force regarding Noise and Vibration mitigation (paragraph 2 of the present Specification).

14.1.3 If during the execution of the works and during the construction phase any change is effected to the Greek Legislation, with regard to the limits of the N&V values, the Contractor shall proceed to all necessary actions/ measures in order to comply with them.

14.1.4 Moreover, the Contractor shall comply with the limits set in the decisions approving the environmental terms of the projects, as well as in the relevant approved Environmental Impact Assessment Study, according to which, the maximum total energy level in the perimeter of the worksite area during its operation, should not exceed the value of 50dB(A).

However, exceptionally in cases of specially high ambient noise levels (e.g. traffic), demonstrated through measurements conducted prior to the commencement of construction works, the assumption of non exceeding a noise level equal to the depth noise decreased by 10dB(A) shall be accepted as the highest noise level.

14.1.5 The Contractor should also comply with the British Standards (BS) 5228, Part 4, in determining the relevant methodology for the projections of Noise and Vibration levels during the construction work, as well as with the indices and limits in force.

14.1.6 The British Standards BS 6472 shall be applied when determining the maximum allowable vibration dose value (vdv), which concerns the disturbance caused to people by construction activities.

14.1.7 The British Standards BS 7385 shall apply in the determination of the maximum permissible vibration level for the protection of buildings against structural damage caused by the vibrations.

14.1.8 Where more than one Noise and Vibration limits apply, the Contractor shall adopt the strictest one for compliance and implementation.

14.2 General Measures for Noise & Vibration Mitigation

14.2.1 In addition to the specific limitations imposed on noise levels, as these are specified in this document or as they are to be proposed by the Contractor, the following measures for the mitigation of noise should be implemented in order to minimize as much as possible the air-borne noise levels throughout the areas beyond the worksite.

14.2.2 All the facilities and equipment used by the Contractor at the work site shall have effective sound attenuation with the assistance of appropriate mufflers, silencers, sound lining, shields, sound insulations or plating.

14.2.3 The installation and equipment shall be maintained in good operational order in order to minimize noise emission.

GENERAL SPECIFICATIONS - VOLUME I

- 14.2.4 The installation and the equipment shall be placed as away as applicable, in terms of operation, from neighboring residential buildings.
- 14.2.5 The use of noisy machines (such as air compressors, drilling machines, hammers, piling machines) should be avoided during siesta hours according to MD 1023/2/37/96, GGI 15/B/12.1.96.
- 14.2.6 Before making use of any of the noisy machines, the Contractor shall give notice to the residents of the area adjacent to the work site of the machine operation time and the expected disturbance.
- 14.2.7 Shields, impregnable fences or other kinds of sound attenuating panels of adequate height and mass density (to be designed within the framework of the Special Study on Noise and Vibrations) shall be erected along the perimeter of each worksite, ensuring noise transference to acceptable limits into areas outside the worksite.
- 14.2.8 Alternatively, use can be made of machine sound insulating panels around point noise sources (machines or other activities).
- 14.2.9 Air inlets and exhausts with silencers shall be used in internal combustion machines and in air compressors.
- 14.2.10 Load and unloading and truck circulation shall be effected in such a way as to ensure the lowest possible noise.
- 14.2.11 Worksite machines and vehicles carrying earth, concrete and other materials shall follow routes causing the minimum possible disturbance to the residents in each worksite area.
- 14.2.12 Use of vibration producing machines (such as air compressors, piling machines, vibrating road-rollers, etc.) should be avoided during siesta hours, according to MD 1023/2/37/96, FEK 15/B/12.01.96.
- 14.3 Special Study of Noise and Vibration Control during the Construction
- The Contractor, before the installation and operation of any facility / equipment / tool, shall prepare and submit to AM for approval a “Special Study for the Control of the Noise & Vibration during the construction works”, which shall include a detailed Plan and implementation program of proposed means / methods used in order to monitor and check noise and vibrations during the works. The above study shall be prepared by a specialized Consultant of the Contractor and shall include the following:
- a) Measurements of the existing ground-borne and airborne Noise and Vibration levels of the surrounding area, establishing the basis whereupon to assess any impact on the environment caused by the construction activities.
 - b) Estimation of the fluctuation of the Noise and Vibration levels during the construction works. This estimation shall be based on the aforementioned measurements, the actual geological data, the urban web data and the possible sensitive uses, as well as on the technical characteristics of each installation/equipment/tool intended to be used.
 - c) Assessment of the possible undesirable impact on people and buildings in relation to the Noise and Vibration limits given in paragraphs 14.8 & 14.9 of this document.

GENERAL SPECIFICATIONS - VOLUME I

- d) Proposal about the required noise protection (dimensioning of the sound barriers at the perimeters, partial enclosures for individual worksite machinery, etc.), on the basis of which the necessary technical projects for addressing the airborne noise during the construction works shall be addressed, before the commencement of the works.
- e) A “Detailed Plan for the Control of Noise & Vibration” to be submitted to AM for approval before the installation and operation of the equipment/machinery/tools in any worksite. The contents of this plan are detailed in the following paragraph 14.4.

14.4 Detailed Noise & Vibration Control Plan

14.4.1 The Contractor, in the framework of the above “Special Study concerning the Control of Noise & Vibrations during the construction works”, shall submit a “Detailed Plan regarding the Noise and Vibrations” caused by the operation of each installation/equipment/tool during the construction activities in general at all locations of the worksites.

14.4.2 This plan shall include:

- a) Identification of all buildings, structures and areas of special interests (archaeological sites, museums, hospitals, theatres etc.) and determination on the basis of the applicable international standards of the highest permissible limits of noise and vibration required for the smooth operation of the particular land use.
- b) Assessment of the response / behavior of the geological formations in vibration propagation. The Contractor, on the basis of existing geological data, shall proceed with an assessment of the response/behavior of the geological formations to the propagation of vibrations originating from the construction activities (e.g. pile driving). The assessment shall include the determination of all the buildings/structures/sites found within the Project influence zone and affected by the vibrations caused during construction.

Especially for the areas where the MoC’s monuments will be identified, the Contractor shall prepare a study for assessing the geological formation in the propagation of vibrations. This study shall utilize borehole data and - at a second phase – data to derive during the excavation works’ progress. Based on this study, the need for introducing additional anti-vibration measures shall be assessed for both construction and operation phases.

- c) Establishment of the locations and/or areas for noise and vibration monitoring. These locations shall arise, inter alia, after a combination of data collected from points (a) and (b).
- d) The detailed scheduling of taking readings for noise and vibration, always in relation with the respective time schedule for the construction activities.
- e) The measurement plan shall include the foreseen layout of the measurement instruments, the parameters to be monitored, as well as the presentation of the methodology related to the analysis, processing and transmission of the results to AM.

GENERAL SPECIFICATIONS - VOLUME I

- f) The corrective measures should be implemented in order to avoid and/or to address the problem of exceeding the permissible limits.
- 14.4.3 It is stressed that if the results of the vibration monitoring plan indicate the need for the Contractor to implement active measures for the mitigation of vibrations (as specified in para. 14.7 of this Specification), the materials/tools that are to be used and the work method/methodology to be followed should be detailed and submitted by the Contractor to AM for approval before the installation and operation of any machine / tool / facility.
- 14.4.4 In addition, if the need arises from the results of the Noise & Vibration Monitoring Plan to interrupt the operation of machinery/tools/installations, the Contractor shall propose to AM for approval an alternative construction method, accompanied by sufficient data justifying the effectiveness of the method in respecting the Noise & Vibration levels.
- 14.4.5 Finally, in all cases of special uses, e.g. special research laboratories, concert halls etc., with special requirements for low vibration levels (beyond the limits stated in para. 13.9 herein), the Contractor shall be responsible to propose and implement solutions in order to adhere, during the Project's construction and operation, to the special limits that have been internationally established for each of the above uses.
- 14.4.6 The noise and vibration control plan shall be submitted to AM for approval prior to the installation and operation of the equipment / machinery / tools in any of the worksites.
- 14.5 Vibration Monitoring Limits
- 14.5.1 The Contractor shall install, run and maintain, for as long as necessary, a monitoring system in order to measure, record and follow up the extend of the vibrations caused by any of the vibration producing construction activities (such as from the operation of digging machines, pile driving machines, or road rollers).
- 14.5.2 This system shall monitor the Project locations and/or areas where vibration limits are expected to be exceeded or where special requirements are valid for lower levels of permissible vibrations.
- 14.5.3 In particular, the Contractor shall monitor and record the intensity of the vibrations generated by any construction activity at locations and/or areas where a geological formation with low vibration attenuating property (or even with vibration increasing property) is encountered, according to the results of the Assessment of the geological formation response/behavior to vibration propagation.
- 14.5.4 Similarly, the Contractor shall monitor and record the magnitude of the vibrations generated by any construction activity to buildings of special interest. The vibration monitoring plan shall include all buildings, structures and areas which are sensitive to vibrations, such as hospitals, museums, monuments, schools, special research centers and laboratories, antiquities, archaeological

GENERAL SPECIFICATIONS - VOLUME I

- sites etc., if these buildings exist and if they are located within the Project’s influence zone.
- 14.5.5 The installation (hardware and software) of the monitoring system and the methodology to be followed during the vibration monitoring process shall be approved by AM. AM’s approval must be obtained before the installation of the system and well before the inception of the vibration producing construction activities.
- 14.5.6 Vibration measurements may be also conducted by AM and/or its Consultants, in parallel, jointly or in addition to the measurements conducted by the Contractor.
- 14.6 Monthly Reports on Noise and Vibration Monitoring
- 14.6.1 The Contractor shall submit to AM the Monthly Reports on Noise and Vibration Monitoring, which shall contain the most significant recorded data and shall highlight any incidents of special interest (e.g. recording of high vibrations nearing the alarm limits). This Report shall include the utilized construction method and the measures/actions that were implemented in order to mitigate the vibrations. All such Monthly Reports shall be in agreement with the relevant stipulations of the British Standard BS 5228.
- 14.7 Corrective Measures addressing Excessive Vibrations
- 14.7.1 According to the results of the vibration monitoring plan, whenever there is approaching or transgression of the highest allowable vibration values during the construction period, the Contractor shall initiate passive and/or active measures for the mitigation of vibrations, as directed by AM.
- 14.7.2 Passive measures are measures which result in the transmission of less energy per each time unit in relation to the energy transmitted usually during normal operation of a machine / tool. Passive measures may include, among any other measures, reduction in the production and performance rates of the machines / tools used:
- a) thus reducing the impact energy of the machine / tool and/or,
 - b) reducing the frequency of impact or the number of revolutions per time unit, as required, in machines / tools.
- 14.7.3 Active measures shall be initiated on a temporary basis and should be aimed at the protection of vulnerable buildings / glass panels/ structures/ areas and/or their structural elements against vibrations. The materials and tools to be used, their workmanlike application and the method employed in the use of active measures shall be subject to AM’s approval, which has to be obtained before the implementation of those measures and before the installation and running of any machine / tool. Active measures may include, without however being limited to, the following measures:
- a) Temporary removal of any vulnerable exhibits / ancient memorials and their safe keeping in a secured area, as directed by AM and, then, their installation back at their initial positions, and/or
 - b) Installation of retaining, supporting or stabilizing structures, such as scaffolds, anchors, trussing and embedment, as required.

GENERAL SPECIFICATIONS - VOLUME I

- 14.7.4 In addition to the aforementioned active and passive measures, if the vibration level during the construction period exceeds the highest allowable values, applicable for the features and the vulnerability extent of specific buildings / structures / areas, the Contractor shall stop operating the machines / tools and shall propose to AM for its approval an alternative construction method.
- 14.7.5 The Contractor shall consider the aforementioned active and passive measures as indicative and not exhaustive. The Contractor shall look into, propose and, following AM's approval, shall implement any other measures necessary for the protection of the buildings, structures and areas against vibrations during the construction period.
- 14.8 Noise Emission Limits
- 14.8.1 All the construction machines, tools and methods to be used by the Contractor during the construction work shall be within the noise emission limits, as provided for in the relevant Greek legislation (JMD 37393/FEK/1418/B/Oct.2003) and as required by the applicable Standards.
- 14.8.2 With regard to the above allowable limits of air-borne noise, in force is PD 1180/81, set in the Relevant Regulations of this Specification. Namely, the noise limit of 50 dB(A) shall apply where residential land use prevails, whilst where industrial and/or commercial land use prevails the noise limit is 65 dB(A). However, exceptionally in cases of specially high ambient noise levels (e.g. traffic), demonstrated through measurements conducted prior to the commencement of construction works, the assumption of non exceeding a noise level equal to the depth noise decreased by 10dB(A) shall be accepted as the highest noise level.
- 14.9 Vibration limits
- 14.9.1 All the construction machines, tools and methods used by the Contractor during the construction phase should be within the vibration emission limits, as provided in the relevant Greek legislation and as necessary for the application of the Standards.
- 14.9.2 The construction-generated vibration evaluation factors are as follows:
- The Vibration Dose Value (vdv) shall be calculated and evaluated according to BS 6472. If the vdv evaluation results in “possible” and/or “probable” negative impact on people, the Contractor shall have to propose and, following AM's approval, initiate vibration mitigation measures.
 - The Peak Particle Velocity (ppv), measured in mm per second, is set as the highest speed of a particle which is stimulated to vibrate. The ppv is calculated using the following formula: $ppv = [ppvx^2 + ppvy^2 + ppvz^2]^{1/2}$ where ppvx, ppvy and ppvz are respectively the ppv on axes x, y and z.
- 14.9.3 To determine the highest limits of ppv, as a result of vibrations caused by construction work and influencing buildings/ structures / areas found in the area of the works, the Contractor shall comply with the maximum ppv threshold values provided in the following table.

GENERAL SPECIFICATIONS - VOLUME I

	VIBRATION LIMITS
	Peak Particle Velocity
MEMORIALS, ANTIQUITIES, EXHIBITS IN ARCHAEOLOGICAL SITES OR MUSEUMS	0.2 mm/sec. (at the base of a memorial, antiquity, exhibit, on the floor or the wall of the building as applicable)
SPECIAL BUILDINGS (e.g. hospitals, theatres, schools, libraries, concert halls, hearing halls)	0.5 mm/sec.
OTHER BUILDINGS (Classification according to ISO 4866)	5 mm/sec for continuous vibrations 10 mm/sec for intermitting vibrations

- 14.9.4 The Contractor shall proceed with all the necessary measures in order to ensure that noise and vibrations are kept within the allowable limits during the construction phase. Within this framework, he should implement the aforementioned noise and vibration level-monitoring program on a continuous basis. Where increased noise and vibration levels occur, as related to the allowable limits provided in the legislation in force, special measures shall be implemented to tackle noise and vibrations. Such measures include, as an indication and not exhaustively, the installation of sound panels / sound traps round noisy machines, as well as along the perimeter of worksites, especially in neighbouring residential areas and the proper scheduling of the works so that noisy activities may be avoided during siesta hours. The Contractor shall submit to AM for approval his proposals regarding noise and vibration control prior to the commencement of the works.
- 14.9.5 The Contractor shall fully comply with the provisions in force about siesta hours. Additionally, unless otherwise agreed with AM, the Contractor shall comply with the recommendations in BS 5228 "Code of Practice for Noise Control on Construction and Demolition Sites".
- 14.9.6 All required studies and plans to be prepared and implemented, as well all necessary measures, actions, equipment, etc., that shall be implemented and utilized in the assessment, the monitoring and the mitigation of the noise and vibrations during construction shall be approved by AM prior to their application; However, and regardless their approval, the Contractor shall remain fully responsible for the completeness and the implementation of the entire procedure, as per the provisions of this document and the legislation in force.

15 ELECTROMAGNETIC INTERFERENCE CONTROL

The Contractor's facilities or machines that might cause or are causing interference in radio or television broadcasting services shall be equipped with suppressors, keeping interference down to allowable limits in accordance with the provisions in force.

GENERAL SPECIFICATIONS - VOLUME I

16 ARCHAEOLOGICAL FINDS

Where antiquities are encountered, the actions provided for in the Contractual Documents and the relevant Specifications shall be undertaken.

17 CONTRACTOR'S REQUIRED PERSONNEL

In order to adhere to the Environmental Terms of the Project and to all terms included herein, the Contractor is obligated to appoint a properly trained scientist as responsible for the adherence to the environmental terms and specifications.

This scientist shall be responsible for the briefing of AM's responsible personnel on the progress of the works in combination with the implementation of the environmental terms and the stipulations of this article.

GENERAL SPECIFICATIONS - VOLUME I

GS0200 DESIGN REQUIREMENTS

1. GENERAL

This Specification analyses the design requirements to be needed in the framework of the Project. The designs to be prepared by the Contractor upon the contract signing shall be at the level of General Final Design (GFD) and Detailed Final Design (DFD).

The designs shall cover all sections and scopes of the Project to be included in this contract.

The designs shall be prepared taking into consideration the requirements of the Design Specifications, Materials and Workmanship Specifications, for each scope of the technical description, and the drawings provided in the framework of this Tender, regardless of the detail level they include and the remaining contractual documents.

2. DESIGN CATEGORIES

The scope of works to be examined is classified as follows:

2.1 Civil Works Designs

- Retaining works design
- Topographical designs and works
- Inventory of existing features
- Traffic diversions and signalling design
- Roadworks design
- PUO networks diversions
- Temporary drainage of worksites
- Temporary flood protection of worksites
- Worksite installations design

3. DESIGN SUBMISSION AND REVIEW PROCEDURES

The design submission and review procedures are as follows:

3.1 Copies of the Design

- Each design shall be submitted in copies, as mentioned below:
 - PUO networks coordination drawing: 6 copies
 - Networks diversion drawings: 6 copies
- All drawings and Material Submittal Sheets (MSS) in five (5) copies, with the exception of the traffic diversion drawings to be submitted in fifteen (15) colored copies

GENERAL SPECIFICATIONS - VOLUME I

- All design documents and Construction Methods in 4 copies with 2 additional first pages for stamps-approval
- Structural calculation documents – computer printouts: 3 double-side copies
- Technical Reports for Traffic Diversions and Signalling: 15 copies

All copies (with the eventual exception of the original – for the Contractor’s convenience) of the Design Documents, Calculation Notes, Technical Reports, etc. shall be submitted in double-side printouts.

Each design (drawings and documents) shall be submitted in electronic editable format too (CD or DVD) in 2 copies, including the calculation data input files and their respective results (input-output).

Although, not directly connected with designs, the following shall be also applicable:

- The Field Changes shall be submitted in 5 copies
- The monthly reports and the Health and Safety reports shall be submitted in 3 copies.

3.2 Time for the Submission and Review of the Designs

The designs (design reports, drawings, Construction Methods, Material Submittal Sheets – MSS etc.) shall be submitted in accordance with the approved Project Time Schedule.

The designs shall be submitted in such a way so as their contractually scheduled final approval may be effected prior to the commencement of works.

The review on each submitted design shall be completed within 15 calendar days and shall be transmitted to the Contractor with an Review Code, in line with paragraph 3.3.

Within 15 calendar days as of the receipt of a design coded 2 “APPROVED WITH COMMENTS” or 3 “REVISION AND RESUBMISSION”, the Contractor shall submit the revision of the design to the Project Owner.

In case of second revision of designs and drawings, working meetings with the Contractor will be scheduled for the provision of the necessary clarifications and most expedient settlement of disputes.

3.3 Design Review Codes

The design review codes shall be as follows:

- Code 1 “APPROVED” or “APPROVED AS NOTED”:
The design is approved, the works may be executed. In case of submittals containing comments of minor significance, AM can approve them with

GENERAL SPECIFICATIONS - VOLUME I

code 1 “Approved as Noted”, with no requirement for re-submission; however, the comments must be incorporated into the “As Built” Drawings.

- Code 2 “APPROVED WITH COMMENTS”:
The design is approved with comments. The works can be executed, on condition that the Contractor takes into account the comments and incorporates them into the construction. The design shall be re-submitted for approval in order to be upgraded to code 1 at the latest within 15 days.
- Code 3 “REVISION and RESUBMISSION”:
It is not allowed for the works to be executed.
The design must be revised and resubmitted, taking into account AM’s comments, corrections and notes.
- Code 4 “NO CHECK IS REQUIRED”:
There is no reason for any submittal review.

3.4 Designs Review Procedure

Through formal correspondence, the Contractor shall submit for review, the required designs based on the provisions of the present General Specification, the relevant individual design specifications (and the relevant Material and Workmanship Specifications) for each scope and based on the particular requirements of the Project.

AM shall review the submissions and shall return them for approval or commenting in line with the review codes (see para. 3.3), the deadlines (see para. 3.2) and the following preconditions:

1. All designs (each document and drawing) shall be signed by the corresponding approved Project designers.
2. As regards the MSSs, these shall include materials. For example, in the case of Civil Works, these include concrete, concrete aggregates, concrete admixtures, reinforcement, structural steel, etc..
This category (MSSs) shall also include topographic instruments - software and Geomechanical - Structural Monitoring (GSM) Systems. The above items must be submitted in addition to the corresponding design (in the same or another submittal).

4. DESCRIPTION OF THE SCOPE OF THE DESIGNS

4.1 Introduction

In order to give a better understanding with regard to the scope of the Contractor’s designs (General Final Designs and Detailed Final Designs) and the level of detail depending on the scope, certain lists were prepared containing the deliverable drawings and the contents of the technical reports for each design.

It is clarified that the purpose of presenting the following drawings and contents of the reports is to depict the organization of the general framework for

GENERAL SPECIFICATIONS - VOLUME I

preparing and presenting the designs. The requirements of chapter 4 constitute the minimum deliverables and do not constitute a complete list exhausting the Contractor's obligations for each design level. In this sense, there might be some differentiations related to the number of the required drawings or their scale or subject matter and content of the individual deliverables (drawings or reports) if this is necessary in order to provide better understanding and presentation of the results of the designs.

In any case, the Contractor should refer to the documents of specifications for each scope as regards the requirements and the contents of the designs.

If AM requests the submission of additional information or drawings or clarifications for the better understanding of the designs and the facilitation of work, then the Contractor is obliged to provide same.

4.2 Design Drawings

In the framework of the preparation of the designs (General Final Designs and Detailed Final Designs), the following drawings shall be required per scope, as these are presented in the following table:

GENERAL SPECIFICATIONS – VOLUME I

Scope	Detailed Final Design Drawings (ME – DFD)
Retaining Designs	<p>Submission of detailed drawings concerning Retaining at Detailed Final Design level or of construction drawings, describing precisely and in detail each section, is required along with all necessary information for the effective construction of the retaining system. The minimum requirements of these drawings are shown below:</p> <p>Retaining drawings (drawings showing the dimensions of retaining items. Including alignment data and excavation elevations)</p> <ul style="list-style-type: none"> • Plan views – Views – Excavation drawings [scales: 1:50, 1:100] • Sections [scales: 1:20, 1:10] • Details [scales: 1:20, 1:10, 1:5] <p>Drawing legend Design assumptions, Materials with approved MSSs, instructions for reinforcement bending and covering.</p> <p>More information on the requirements applicable to the drawings are provided under Article 109, para. 3.2.5 of the Design Specifications.</p>
Worksite installations	<ul style="list-style-type: none"> • Diagrams depicting the layout of the worksite areas and their installations, i.e. offices, auxiliary personnel rooms, material-machinery storage rooms, (tower or mobile) crane locations, fencings, vehicle corridors, allowable distances from retaining works for traffic and approaching of vehicles, etc. Moreover, the anticipated surface loads should be noted on the several worksite areas, so that these may be taken into consideration in the designs for any adjacent structures, such as temporary retaining works for open cut excavation works. <p>Diagrams showing the fencing of the worksite area (immediately after its completion) and including the area of the worksite surface that has been fenced.</p>
Traffic diversions	<ul style="list-style-type: none"> • Preparation of detailed drawings for all required traffic diversions (scale:1:200) • Preparation of detailed construction drawings for the final traffic reinstatement (scale: 1:200) (as required). • Roadwork detailed final design drawings, if required.
Worksite temporary drainage	<ul style="list-style-type: none"> • Layout of proposed rain water drainage works, scale 1:200 • Typical details – hydraulic sections, scale 1:25 or 1:50



**“ARCHAEOLOGICAL WORKS AND PUBLIC UTILITY ORGANIZATIONS NETWORK RELOCATIONS
– ATHENS METRO LINE 4, SECTION A’ ALSOS VEIKOU GOUDI”**

RFP-322/17

GENERAL SPECIFICATIONS – VOLUME I

**Worksite temporary flood
protection**

- Layout of water shed, scale 1:5000
- Layout of proposed works, scale 1:200
- Typical details – hydraulic sections, scale 1:25 – 1:50

GENERAL SPECIFICATIONS – VOLUME I

Scope	General Final Design (GFD) Drawings	Detailed Final Design (DFD) Drawings
Topographic designs and works	<ul style="list-style-type: none"> • Topographic diagrams of horizontal and vertical control networks • Topographic diagrams for the inventory of existing features at each location where works are to be performed as described in the Contractual Documents (scale 1:200) • Delivery – acceptance protocols (scale 1:500) • Topographic survey diagrams (scale:1:500) • Topographic diagrams containing the boundaries of the worksite occupations, per individual construction phase. 	<ul style="list-style-type: none"> ▪ Topographic AS BUILT survey diagrams of all Works, e.g. configurations etc. at the phase when they shall be delivered to AM, including archaeological excavations.
PUO diversions	<ul style="list-style-type: none"> • Preparation of coordination drawing for all PUO networks (HORIZONTAL LAYOUT, SCALE: 1:500) and respective sections, where required, due to many adjacent networks. 	<ul style="list-style-type: none"> • Preparation of drawings for all required PUO network diversions • OTE, PPC & EPA Organizations (unless otherwise requested by the Organization) shall prepare their own designs. Co-operation with other PUOs. • Preparation of drawings for the diversion of EYDAP, DIO, street light, ILPAP signaling networks by the Contractor, submittal for approval to the Services. • Detailed construction drawings using the network support and protection method, and the backfilling and compaction method. • Drawings Legend. Design Assumptions, Materials accompanied by approved MSSs. ▪ As built drawings of all PUO networks

GENERAL SPECIFICATIONS – VOLUME I

4.3 Presentation of Design Drawings

4.3.1 General

The drawings numbering and configuration shall be performed based on AM’s Drawing Office Manual and Metro Codification Works (General Specifications – Volume II) which will be made available to the Contractor.

Any possible effort will be made to achieve uniformity in the submitted drawings with regard to their size (e.g. A0 or A1).

All sketches and diagrams needed to be printed in color for better understanding shall be submitted in color.

4.3.2 Detailed Design (DFD)

As to the DFD, all drawings shall be presented per scope in full detail allowing the construction of works or the installation and commissioning of the equipment with the relevant details.

Special attention should be paid to the preparation of typical details for the construction of Civil Works.

4.3.3 “As-built” drawings

Upon completion of works and for the provisional acceptance of the Project it will be required to submit the as-built drawings for each one of the project design scopes. The “as-built” drawings that shall be submitted must be already approved (code “1”: APPROVED) drawings.

These drawings will be the drawings of the DFD, including changes and modifications made during the construction of works and complying perfectly with the final form of structures.

The topographical “As Built” drawings shall be submitted (signed by the Person in Charge of the Topographical Section) for review and approval independently from all remaining “As Built” drawings and shall include the “As Built” survey (using topographical methods) of all items related to the works, of other individual structures, configuration works upon the completion of the works, at any phase works are delivered to AM. The “As Built” survey shall be effected using the horizontal and vertical control networks. The measurements, calculations and the preparation of the “As Built” drawings shall be in line with the stipulations of article 107 of the Design Specifications, while their review and approval by AM shall be effected separately from the remaining “As Built” drawings.

The “As Built” drawings shall be initially submitted for review in three (3) copies and in electronic format (CD or DVD) in two (2) copies. Upon their approval, they shall be submitted in four (4) copies and in electronic format (CD or DVD) in two (2) copies for the Project File. It is pointed out that with regard to the



**“ARCHAEOLOGICAL WORKS AND PUBLIC
UTILITY ORGANIZATIONS NETWORK
RELOCATIONS – ATHENS METRO LINE 4,
SECTION A’ ALSOS VEIKOU GOUDI”**

RFP-322/17

GENERAL SPECIFICATIONS – VOLUME I

approved “AS-built” drawings, the content of the hard copy and the electronic format will be the same.

4.4 Design Reports

Within the framework of the Designs (General Final Designs and Detailed Final Designs), the following issues shall be included in the respective reports per design scope, as listed in the table below:

Scope	Detailed Final Design (DFD) Reports
Retaining Works Design	The required documents/reports shall be prepared, as described in detail in the relevant Article of the Design Specifications.
Traffic diversions	<ul style="list-style-type: none"> • Technical report • Signaling plan
PUO networks diversions	Technical reports of all network diversions’ designs.
Worksite Temporary Drainage	<ul style="list-style-type: none"> • Existing networks – Stormwater receptors • Description of the proposed works • Hydraulic calculations • Construction data
Worksite Temporary Flood Protection	<ul style="list-style-type: none"> • Description of the proposed works • Hydraulic calculations • Construction data

GENERAL SPECIFICATIONS – VOLUME I

Scope	Design Reports General Final Design (GFD)	Design Reports Detailed Final Design (DFD)
Topographic Designs and Works	<ul style="list-style-type: none"> • Design reports concerning the Inventory of existing features and the delivery – acceptance protocols • Design reports for the finalization of the boundaries of the worksite occupations of all works’ areas, per construction phase • Design reports and documents regarding the updating and supplementing of the topographical diagrams and the preparation of new ones • Design reports concerning the establishment and densification of new networks and their connection with the existing longitudinal profile and elevation control networks 	<ul style="list-style-type: none"> ▪ AS BUILT Topographical survey designs and documents for all works, including archaeological excavations and reinstatement further to the completion of the works, at any phase works are delivered to AM.

GENERAL SPECIFICATIONS - VOLUME I

4.5 Other Design Report Issues

Each design report shall also cover the following topics:

- In the framework of the Detailed Final Designs, the following items should be submitted by the Contractor for each individual scope of the project as required, even if it is not explicitly mentioned in these individual scopes:
 - (1) Material Submittal Sheets (MSS)
 - (2) Construction Methodologies
 - (3) Detailed bills of quantities for the quantities of the works
- It shall be required to prepare the relevant Health & Safety Plan (HSP) and Health & Safety File (HSF), as per the applicable legislation.
- Especially, as regards the Material Submittal Sheets (MSSs), if the submissions are incomplete or if additional data or clarifications are required, then AM shall request the Contractor all information required aiming at supplementing each initial submission; upon the submission of the information required, AM shall approve the pertinent MSS.

4.6 Field Change

The Field Change is determined as a small scale deviation from the approved Design, which the Contractor intends to implement during construction related works at no impact on the Project Cost or Time Schedule. Field Changes are usually required for construction purposes (e.g. simplification and/or optimization of work sequence and/or feasibility a specific construction related works, etc.).

It shall be submitted through the Contractor’s specific Form (see “Drawing Office Manual – METRO Works Codification”) of AM (General Specifications – Volume II) in the worksite, as well as through the official correspondence addressed to AM. Field Changes shall be executed further to the approval of the respective Contractor’s requests by AM.

The Field Change shall come along – on a per case basis - with a documentation regarding the necessity of the specific change, a documentation technical report and respective drawings/sketches, any other technical data deemed necessary, depending on the nature of the proposed change, as well as the Designer’s view regarding the efficiency and completeness of the change, in relation to the construction item, as well as the long-term safety of the entire Project.

GENERAL SPECIFICATIONS - VOLUME I

All Field Changes shall be incorporated into the “As Built” drawings.

In any case, all Field Changes in a Project shall be recorded in a relevant log bearing the required codification (per location, etc., see “Drawing Office Manual – METRO Works Codification”) of AM (General Specifications – Volume II).

4.7 Non-Conformance Report

The Non-Conformance Report (NCR) is the Report submitted by the Contractor through a specific form (see Drawing Office Manual – Structural Analysis of Project related Works and Codification of Equipment) in the worksite and through the official correspondence to AM. The subject report shall be prepared by the Contractor either on his initiative or further to the Supervising Engineer’s suggestion in case there is improper use of materials / equipment in the worksite or in case of defective work, which is not in compliance with the Project Specifications or with the already approved designs of the Project. Moreover, the Non-Conformance Report refers to deviation, defect or to negligence, in general, as compared to the Contract, Standards, and Regulations and to relevant instructions given by the Service. In the framework of the Non-Conformance Reports, the impact on the construction quality is evaluated, the required corrective actions that the Contractor must implement are indicated, and the prescribed remedy related deadline along with the person in charge to apply same are referred to. The NCR shall be accepted for specific technical reasons by the Service or shall be rejected on a justified basis, requesting further actions (e.g. additional corrective measures) and/or contractual settlement.

The Contractor is responsible to issue and submit a Non-Conformance Report whenever AM requested so and for any reason whatsoever within one-week time period.

In any case, all Non-Conformance Reports in a Project shall be recorded in a relevant log bearing the required codification (per location, etc., see “Drawing Office Manual – METRO Works Codification”) of AM (General Specifications – Volume II).

4.8 Technical Deviation

Technical Deviation means the deviation from the contractually foreseen Design Specifications and/or Materials and Workmanship Specifications that the Contractor may propose further to the submission of the relevant request in the appropriate form (see “Drawing Office Manual – METRO Works Codification”) of AM (General Specifications – Volume II) t). Technical Deviations can be submitted in the event of ascertained constructibility failure, failure to find materials, means/equipment,

GENERAL SPECIFICATIONS - VOLUME I

laboratories etc., in line with the provisions of the contract or further to the revision of the applicable specifications/ standards.

The Request for Technical Deviation (RTD) shall be accompanied by a report to include the following: sufficient documentation of the reasons for which there is failure to comply with the provisions of the contract; comparative technical report between the proposed solution and the solution foreseen by the contract (clear advantages or at least, its equivalence, as compared to the contractual requirement); reference to the adequacy and completeness of the proposed solution, its compliance with the remaining specifications of the Project and its compatibility with the entire Project. The RDT shall also include analysis and documentation of the cost difference between the proposed solution and the solution foreseen by the contract, if any, as well as impact of the proposed solution on the Project Time Schedule.

Prior to its implementation, the RTD is subject to AM's review and approval. The Technical Deviation must be submitted and approved prior to the submission of the (corresponding) Detailed Design and shall not concern design assumptions.

In any case, all the Technical Deviations in a Project shall be recorded on the relevant log bearing the necessary codifications (per location, etc. see “Drawing Office Manual – METRO Works Codification”) of AM (General Specifications – Volume II).

GENERAL SPECIFICATIONS - VOLUME I

GS0400 PROJECT MEETINGS

1. GENERAL

- 1.1 This Article describes the project meetings procedures. The meetings scheduled by ATTIKO METRO S.A. (AM) for the discussion and solution of matters related to the Project shall be attended by representatives of AM, of the Contractor, representatives of the involved Services, Agencies, Organizations, Public Utility Organizations (PUOs), as required each time and according to the stipulations of the following paragraphs.
- 1.2 The meetings shall be called and chaired by AM.
- 1.3 The meetings shall be held at the Contractor’s Site Offices, unless otherwise specified by AM.
- 1.4 The purpose of these meetings is to resolve technical and procedural matters and, thus, any reference to contractual issues does not establish any obligation for AM and clearly does not amend the Contract. The positions concerning contractual issues shall be communicated through regular formal mail.

2. PRE-CONSTRUCTION MEETING

Upon receipt of the required signed Contract Documents, AM will schedule a pre-construction meeting to be held at its premises. The purpose of this meeting is to introduce AM’s representatives for safety, quality assurance and quality control and construction management to the Contractor’s counterparts and to establish lines of communication among these representatives.

3. INITIAL CONSTRUCTION MEETING

- 3.1 AM shall schedule an initial construction meeting within fifteen (15) days after the Contract signing date and shall be held at its premises.

3.2 Attendees

The meetings shall be attended by:

- The Contractor’s representatives:
The Project Manager, the Worksite Managers, the Quality Management Manager, the Designs Coordinator, the Safety Coordinator and by any other employee deemed necessary..=
- AM’s representatives.
- Representatives of PUOs, Municipalities, Archaeological Departments and/or other Agencies, Organizations, Services involved in the Project, if required.

3.3 Discussion Items:

- Introduction of the attendees and description of their responsibilities.

GENERAL SPECIFICATIONS - VOLUME I

- Issuance of any type of permit
- Scheduling and presentation by order of priority of the Project locations where traffic diversion, archaeological works and PUO networks diversions, after communication with the PUOs concerned, will commence or be continued.
- Time Schedule (sequence of critical designs, works, etc.)
- Temporary occupations, inventory of existing features, delivery-acceptance protocols, topographic designs and works
- Storage and works execution areas, worksite offices
- Payment procedures
- Coordination meetings between representatives of AM, the Contractor, PUOs and other Agencies/Services
- Procedures related to the execution and monitoring of the Archaeological Works
- Quality control, Safety and Health, Environmental-related issues
- Other issues, as necessary.

4. COORDINATION MEETINGS

4.1 Coordination meetings shall be convened by AM on a weekly basis or whenever AM deems necessary. In the framework of any issues related to designs and works for PUO networks diversions, traffic diversions and archaeological works shall be discussed, coordinated and resolved. AM or the Contractor can convene additional meetings.

4.2 Attendees

The meetings shall be attended by:

- The Project Manager, the Worksite Managers, the Designs Coordinator, the Design Engineers and by any other employee required based on the Agenda Items.
- AM's representatives.
- Representatives of the Public Utility Organizations Networks
- Representatives of the Archaeological Department and/or other Services, Agencies, Organizations should their attendance is deemed necessary.

4.3 The Items of the Agenda for the coordination meeting shall be prepared by AM and shall include indicatively but not limited to, the following:

- Introduction of attendees and fields of responsibility.
- Coordination of designs, review of the submitted designs and time schedules. The Contractor shall submit a Time Schedule of the works. The Time Schedule will include comparative data in terms of

GENERAL SPECIFICATIONS - VOLUME I

the approved Time Schedule (critical path, free float of sub-critical works, earned value, time schedule shifting, works forecasting, risk and opportunities assessment, Time Schedule recovery, scheduling of resources, delivery time schedule).

- Discussion of upcoming work, particularly handovers of new areas.
- Other issues as necessary.
- Scheduling of subsequent meeting, as required.

4.4 Each of the inquiries, requests for information, or requests for solution of problems presented during such meetings shall be answered, when possible, during the meeting; those not answered during the meeting shall be resolved, after the close of the meeting.

4.5 The minutes of meeting shall be prepared by AM and signed by AM's Managing Department's Representative, the Contractor's Project Manager or the Worksite Managers, representatives of the PUOs and by representatives of other Organizations, Agencies, Services, if required.

5. PROGRESS MEETINGS

Progress meetings shall be classified in two (2) categories, namely:

- i. Construction Progress Meetings
- ii. Progress Meetings of the Managing Department

5.1 Construction Progress Meetings

The Construction Progress meetings shall be held every two weeks if required or whenever AM deems it necessary. The meetings shall be attended by the representatives indicated in paragraph 3.2, if their attendance is required, on the basis of the Agenda. Regular progress meetings will be held in Contractor's field office. AM or the Contractor may call additional meetings.

5.1.1 The Agenda for construction progress meetings shall be prepared by AM and shall include, indicatively but not limited to, the following:

- Introduction of attendees and fields of responsibility.
- Report on the progress of the PUO networks diversions, traffic deviations, archaeological works, etc.
- Construction, design related issues
- Designs and works pending items
- Examination of the progress achieved on the issues requiring solution based on the Coordination Meetings
- Issues related to Time Schedule, Quality, Environment, Health and Safety - Examination of the progress achieved on these issues requiring solution. The Contractor shall present Schedule Performance Index for each individual work and shall propose

GENERAL SPECIFICATIONS - VOLUME I

corrective measures in case of Time Schedule delay. He shall also present the comparative data in terms of the approved Time Schedule (critical path, free float of sub-critical works, earned value, time schedule shifting, works forecasting, risk and opportunities assessment, Time Schedule recovery, scheduling of resources, delivery time schedule)

- Discussion on upcoming two week-time related works, based on the time schedule
- Scheduling of the subsequent meeting, if required
- Other issues, as required

5.1.2 Each of the inquiries, requests for information, or requests for solution of problems presented during such meetings shall be answered, when possible during the meeting; those not answered during the meeting shall be resolved, after the close of the meeting.

5.1.3 The minutes of construction progress meeting shall be prepared by AM and signed by the Contractor's and the Managing Department's Representatives.

5.2 Progress Meetings of the Managing Department

The Contractor shall attend the progress meetings of the Managing Department, which are held on a monthly basis at a location and time defined by AM. The frequency of the said meetings shall be modified when deemed necessary by AM. These meetings shall be attended by the representatives described in paragraph 3.2.

6. HEALTH AND SAFETY MEETINGS MEETINGS

Meetings on Health and Safety issues shall take place as deemed necessary by ATTIKO METRO, as Specified in “General Specification”, Specification GS0750 “HEALTH AND SAFETY SPECIFICATION”.

GENERAL SPECIFICATIONS - VOLUME I

GS0440 PROTECTION OF WORKSITE INSTALLATIONS

1. GENERAL

The works include provision of all labor, material, equipment and services required for the protection of the worksite installations throughout the execution of the Project from the time the worksite is made available to the Contractor until the completion of the total of the works.

2. PROTECTION - SECURITY

2.1 The Contractor shall provide, throughout the duration of the Project, 24 hours a day, seven (7) days per week, protection / security services for the worksite, the worksite installations and offices, including ATTIKO METRO site offices, through Security Guards who shall be employed on a full-time basis.

2.2 Along with the worksite installation drawings, the Contractor shall submit a worksite protection plan for ATTIKO METRO’s approval to ensure security of all occupied areas. The Plan shall identify the risks to equipment, the installations and the personnel against persons who have not relation with the execution of the Project.

2.3 For site visitors not working in the worksite area (students, schools, individuals, etc.), the Contractor shall prepare a specific procedure entitled “Worksite Visitors” according to the stipulations of the document “General Specifications” article GS 0750.

GENERAL SPECIFICATIONS - VOLUME I

GS0450 CLEANING WORKS

1. GENERAL

1.1 Description of Work

This Article refers to the performing of operations necessary for cleanup and/or dismantling before and during construction, as well as the final cleaning of the facilities and work sites prior to the acceptance of the Project by ATTIKO METRO (AM). The Contractor shall be responsible for cleaning all worksites and to make any dismantling prior to the commencement of works both at ground floor / ground level as well as at other levels, if any.

1.2 The works include provision of all manpower, materials and equipment for clearing or dismantling. Works also include the removal, storage and relocation or other disposition of the features involved in the construction activities.

The works shall be proposed for approval to ATTIKO METRO or other related competent authorities.

The works concern, without however being limited to, the following:

- Bushes, brush, trees, stumps, fallen timber, logs, roots, rubbish, debris within the site(s) limits.
- Any type and composition of concrete (slabs, beams, columns, walls, footings and foundations, either reinforced or not), curbs, gutters, asphalt pavements, concrete driveways, sidewalks, any type of walls (brick, stone walls etc.), steps, memorials, statues etc.
- Street lighting, utility poles, trolley bus lines, parking meters, guard rails, posts, fences, gas valves, electrical boxes, traffic signals and road signs and other like utility or street equipment.

1.3 Contractor shall be responsible for coordinating the work with other parallel works, to be performed by the competent authorities.

1.4 The Contractor shall perform the appropriate sampling and testing to confirm the absence or presence of hazardous materials.

1.5 The Contractor shall notify in writing the local authorities concerned, utility companies and municipality departments on the works, requesting disconnection of services to areas, which will be affected by site(s) preparation works.

1.6 All hazardous waste shall be removed and disposed of in accordance with all pertinent laws/ordinances to approved disposal sites.

2. WORKS IN CONJUNCTION WITH OTHER CONTRACTORS

2.1 The Contractor shall fully clean all working areas prior to the commencement of next phase works. Final cleaning to all areas will be undertaken on completion of all works. Care will require to be taken to

GENERAL SPECIFICATIONS - VOLUME I

ensure the protection of installed equipment from any deleterious cleaning process.

- 2.2 The Contractor shall clean up every part of the Project prior to its delivery to the next Contractor.
- 2.3 The Contractor shall be responsible for the final cleaning of all worksites at ground level before starting works related to the delivery of the area for use.

3. EXECUTION

3.1 Recording

The Contractor shall record and map the existing area of the worksite(s) condition according to AM's specification "Inventory of the existing features".

- 3.1.1 Cleared materials and rubbish shall be removed from the worksite(s). Burying and/or burning the above at the site(s) is not permitted. Salvaged materials shall be stored in a secure location, approved by ATTIKO METRO and shall be repositioned at a location and time to be suggested by AM.

- 3.1.2 The Contractor shall take all necessary precautions to protect features (such as leveling points, reference bases, and adjacent properties) forbidden to be removed/destroyed and which are inside or adjacent to the area of the worksite(s) where cleaning works are being performed.

- 3.1.3 Trees and plants provided for on the Contract drawings / documents or suggested by AM to remain and to be preserved shall be protected against damage by constructing suitable barriers or fences adjacent to the border line of the trees and plants. Vehicles, equipment, materials and debris shall not be placed or parked in these protected areas or under remaining trees. Protected trees and plants shall be maintained and preserved during the construction period.

3.1.4 Clearing and Grubbing

The site(s) shall be cleared within the work site(s) limits. Cleaning materials and refuse shall be removed from the worksite(s).

Tree trunks and roots shall be removed from the excavation areas.

3.1.5 Tree Branches

Tree branches overhanging tracks, access roads and other designated areas of the site(s) shall be cut in the appropriate manner and close to the tree trunk. Scars resulting from tree branch cutting shall be treated with a thick coat of approved asphalt tree paint.

3.2 Clean up during Construction

- 3.2.1 Each worksite shall be kept in a neat and orderly condition, throughout its area and perimeter (inside and outside the border lines and fencing). ATTIKO METRO may, at any time during construction, order a general cleanup of the site(s) as a part of the Work. The Contractor shall provide

GENERAL SPECIFICATIONS - VOLUME I

a general daily cleanup and disposal service for removal of waste and rubbish away from the job site(s). This shall include the provision and emptying of waste skips and baskets located in appropriate areas around the site(s).

3.2.2 Disposal of waste, solid waste, debris and excavation spoil shall be in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Waste and excavated material shall not be allowed to accumulate in any area, particularly in work areas’ access points. Burial of waste material and debris on the site(s) is prohibited. Burning of trash or other materials on the site(s) areas is not permitted.

3.2.3 The Contractor shall frequently perform dust control of excavation, as well as control of the dust resulting from the operation of excavation machinery. The following minimum dust mitigation measures shall be employed:

- a) Periodically dampen soil in the working areas of excavation and backfill to minimize dust.
- b) Wet streets inside work site areas periodically and the main entrances /exits of the worksite(s).
- c) Wash and clean local streets around worksite(s) soiled due to construction activities.

3.2.4 The Contractor shall ensure the necessary area and personnel for washing the wheels of trucks or other machinery exiting the worksite(s) and entering paved public streets. Moreover, all trucks or other machinery shall be cleaned of mud and dirt clinging to their exterior body surfaces.

3.2.5 All trucks bringing items to the site(s) or leaving the site(s) with loose debris and excavation materials shall be loaded in a manner, which will prevent dropping of materials or products during transportation using special truck covers. Spillage resulting from transport operations along streets and any damage caused to the asphalt layer of the streets shall be supervised and reinstated immediately by the Contractor.

3.3 Final Site(s) Cleanup

3.3.1 Prior to final inspection, each site shall be thoroughly cleaned throughout its area and put into a neat, acceptable condition. All waste and/or unused materials, stones, earth, debris and excavation spoils and any item related to the construction works shall be removed from the site(s).

3.3.2 All pavement and asphalt laid and concreted walks shall be hosed down and scrubbed clean where required.

3.3.3 Any mortar droppings on concrete slabs or pavement shall be thoroughly removed. All concrete flat surfaces and exposed vertical surfaces of concrete and masonry shall be hosed down and scrubbed clean.

3.3.4 All drainage systems shall be cleaned and freed and all conduit openings shall be cleaned and protected.

GENERAL SPECIFICATIONS - VOLUME I

GS0460 PROJECT RECORD DOCUMENTS

1. GENERAL

Description

This Article includes specifications for preparation, keeping, completion and submission of project record drawings, specifications and related documents, as required.

Keeping of Project Record Documents

At the jobsite, one copy of the following documents should be kept for record purposes:

- Contract Documents
- Construction Method
- Work Orders
- Project Diary
- Safety Measures Diary
- Field Changes
- Approved Construction Drawings with Clarifications or Explanatory Details and Specifications
- Inspection Reports
- Laboratory Test Results
- Field Test Records
- Non Conformance Reports
- Technical Deviations
- Works progress photos / video recordings
- Material Submission Sheets (MSSs)
- Project Quality Plan (PWP)
- Health & Safety Plan
- Health & Safety File
- SODAYE
- Project correspondence.

Record documents shall be stored in the job site, in an approved location, separate from the documents used for construction.

The Contractor shall provide files and systems for the filing of documents and posting of drawings. Documents shall be kept in a manner ensuring their clean, dry and legible condition. Each document is to be labelled

GENERAL SPECIFICATIONS - VOLUME I

“Project Record” and these documents are to be made available at all times for inspection by ATTIKO METRO.

2. PROJECT RECORD DRAWINGS

The Contractor shall keep and update the construction and record drawings of all works continuously as work progress.

Set of print-outs of the approved construction drawings for each separate part (site) of the Works shall be kept at the jobsite.

During the course of construction, the Contractor shall incorporate the deviations from the Detailed Design (DFD) drawings identifying the actual locations to scale on the Detailed Design drawings of the Project Record for the routings of mechanical and electrical works, including ducts and utilities PUO networks, installed in walls, or otherwise embedded or concealed. Main routings of pipes, ducts, or discharge lines shall be indicated using dimensions and elevations. Any change in the construction elements or any change in the construction related elements deriving from any Field Change as per the stipulations of the Design Requirements of this Document or from AM's instruction shall be surveyed and recorded by the Contractor in the Project Record Drawings. Changes in drawings shall be indicated in detail, while the Contractor shall follow the procedure regarding the updating of the electronic drawings, which will constitute the Project Record and will be documented based on the respective Field Changes.

No work shall be permanently concealed until the required information has been recorded.

“AS BUILT” Drawings

The Contractor shall submit a complete set of the Construction Drawings for all sections of the Works (topographical, PUO networks, etc.) as they were finally implemented on site the Project with their details and their actual data (depths, dimensions, reinforcements, joints, openings, embedded items, etc.). These drawings shall be designated as “As Built” Drawings.

In the “As built” drawings for temporary works – if any, there shall be a clear distinction between all demolished or removed sections and the sections that remain, e.g. piles, anchors, nails, anchoring bolts, etc.

The “As built” drawings shall be based on the approved drawings of the Detailed Design (also called “construction drawings”), indicating all modifications and deviations implemented on site the works, i.e. incorporating all Field Changes applicable thereto with actual data related to dimensions, connections etc.

However, more specifically, the topographical “As Built” drawings (signed by the Topographical Works Person in Charge) shall be submitted for review and approval independently from all remaining “As Built” drawings and shall include the “As Built” topographic survey (using topographical methods) of all items related to the Works, upon their completion, either overall, or up to the stage determined by AM in the relevant instruction.

GENERAL SPECIFICATIONS - VOLUME I

The topographical “As Built” drawings also include the “As Built” topographic survey of the configuration at street level of all areas occupied for the Works’ needs, at the stage where they shall be delivered to AM.

The “As Built” topographic survey shall be made using the horizontal (triangular and polygonometric) and vertical control network, as described in article 107 of the Design Specifications for Civil Works. The measurements, calculations and the preparation of the “As Built” topographical drawings shall be in line with the stipulations of article 107 of the Design Specifications for Civil Works, while their review and approval by AM shall be effected separately from the remaining ones.

A complete record of the “As-Built” drawings shall be signed and updated by the Contractor and shall be incorporated into the Project Log and the HSF as well.

Following completion of each and every independent section of the Project, the relevant “As built” drawings shall be prepared and submitted for review incorporating all Field changes.

The “As Built” drawings, their method of submittal and the number of copies shall be in accordance with the stipulations of article GS0200 of the General Specifications.

“As-Built” drawings shall be submitted for every project section. However, the following drawings shall be excluded:

- Drawings for temporary works, except for the temporary structures that have not been dismantled or removed, e.g. piles, anchors, nails, anchoring bolts, etc.
- Drawings submitted for information.

Initial Submission of the “As-Built” Drawings by the Contractor

Each “As-Built” drawing to be submitted by the Contractor shall meet the following requirements:

- The Contract requirements
- Drawings shall be submitted in both Greek and English.
- The title block shall be re-numbered to conform to AM Drawing Office Manual, Project Work Breakdown Structure and Equipment Codification requirements (Volume II – General Specifications).
- The title block shall include all previous revisions of that drawing.
- The drawing shall be clearly stamped “As-Built” and shall be signed by the Contractor.
- Appropriate cross-references to standard detail drawings will be included, as necessary.
- Submittal of “As-Built” drawings shall follow the AM/Contractor agreed upon schedule for submittals.

GENERAL SPECIFICATIONS - VOLUME I

- Each submittal shall include a sufficient number of drawings in view of facilitating the completion of sections or parts of sections that have been submitted by the Contractor
- A complete index of “As-Built” drawings for each section shall be included in the partial submission for that section.
- Initially, three (3) copies of the “As-Built” drawings shall be submitted to AM for approval.

Review and Approval of “As-Built” Drawings by AM

AM's worksite supervising engineer, together with the Contractor's worksite Manager or their deputies in cooperation with the corresponding engineers of AM and the Contractor (engineers, etc) will check to ensure that the “As-Built” drawing is correct and absolutely represents the finished works, including all field changes, such as instructions, site diary annotations, Non Conformance Reports and Filed Changes on site of the Project, technical deviations, etc.

When satisfied to this extent, AM will sign the approval of the “As-Built” drawing and a copy of the approved “As-Built” drawings shall be transmitted to the Contractor, while the other copies shall remain to AM.

Final Submittal of the “As-Built” Drawings by the Contractor

All approved “As Built” drawings, including the topographical “As Built” drawings, shall be submitted by the Contractor to AM in a digital form (Autocad files) approved by AM, along with five (5) hard copies of these drawings. The approved electronic format shall allow AM to proceed with the precise documentation of any future changes.

Instructions

Changes to the DFD drawings resulting from AM Instructions shall be incorporated on the reproducible set, and these changes shall be identified by Instruction number and effective date. When revised DFD drawings are considered to be the basis of the Instructions, then these shall be incorporated into the record with appropriate annotation. DFD drawings annulled by Instructions will not be part of the record.

3. RECORD FILING SPECIFICATIONS

3.1 Contract Specifications

The Contract's project record specifications shall be filed in envelopes. Information, changes, and notes in the project specifications shall be updated by AM.

The specifications record shall be complete and shall include all Contract Documents.

3.2 Instructions

- 3.2.1** Instructions shall be incorporated into the front part of the record specifications in reverse chronological order.

GENERAL SPECIFICATIONS - VOLUME I

Use shall be made of appropriate page dividers to identify Instructions and to separate Instructions from the Contract Specifications.

3.3 Submission of Record Documents

3.3.1 Upon completion of the Project works, and before the final inspection, the Contractor shall deliver documents to ATTIKO METRO.

3.3.2 Record documents and drawings shall be delivered neatly and carefully packaged. The project drawings shall include a series of drawings in digital format appropriate for re-production and processing (Autocad files) and hard copies of the drawings.

3.3.3 Submission of record documents shall be accompanied with a letter, containing the following information:

- Date of submission
- Project title and number
- Contractor's name and address
- Title and number of each record document. (Construction drawings may be grouped in categories or divisions of work and by box identification)
- Certification that each document, as submitted, is complete and accurate.
- Signature of Contractor, or its authorized representative.

GENERAL SPECIFICATIONS - VOLUME I

GS0500 TIME SCHEDULE REQUIREMENTS

1. TIME SCHEDULE DEFINITIONS

1.1 **Time Schedule** is the Time Schedule for the execution of each individual Contract, submitted by the Contractor, showing the entire scope of the individual Contract.

1.2 **Approved Time Schedule** is the approved version by AM of the time schedule of each individual Contract, which must be prepared by the Contractor in PDM – Preceding Diagram Method, using the Critical Path Method and PRIMAVERA software.

1.3 The Work Breakdown Structure (WBS) will follow the format shown below, will be adapted and analyzed to the specific conditions of each individual Contract and will be finalized by AM.

Level 1: Identifies the specific Project:
Examples are: Line 4 Veikou – Goudi 3rd Individual

Level 2 : Identifies the work location:
Examples are: Project-wise, Veikou Shaft - Washing Plant - Maintenance, Zografou Station, Exarchia Station etc.

Level 3 Identifies the category of work:
Examples are: Designs, PUO Diversion Works Traffic Works, Archaeological Works etc.

2. TIME SCHEDULE TYPE

2.1 The Time Schedule that the Contractor shall submit to AM in accordance with the Conditions of Contract shall be based on the Critical Path Method (CPM) and shall be computerized using **PRIMAVERA** software.

Activities shall be discrete items of work which, when complete, produce definable, recognizable elements or stages within each individual Contract. Activity descriptions shall clearly convey the nature and scope of the activities of Public Utility Organizations, Contractor and any other activities, which may affect progress. Activities with a duration of 30 (thirty) days or longer, other than design lead times, shall be broken down into discreet activities of shorter duration. The activities shall be linked with relationships identifying the sequence of works and the logic of the schedule. Mandatory constraints shall not be used in the time-schedule preparation and updating.

2.2 The Time Schedule will be submitted both in printed and in electronic form (editable format).

GENERAL SPECIFICATIONS - VOLUME I

2.3 At monthly intervals the Approved Time Schedule of each individual Contract is to be updated by the Contractor, taking into account the latest available information on activities having been completed within this time period, activities in progress or not yet started. This monthly updated Time Schedule shall be submitted within the first five (5) days of the subsequent month together with the Monthly Progress Report of the Contract and the progress photographs.

2.4 In addition, the Contractor shall prepare and submit on a monthly basis a rolling time-related four (4)-week bar chart showing in detail all the activities that are in progress or due to start. The activities shown on the bar chart shall be an amplification of the activities in the Approved Time Schedule, with which they shall be compatible in all respects.

3. TIME SCHEDULE SUBMISSION

3.1 Within fifteen (15) days from each individual Contract signing, the Contractor shall submit for approval the Time Schedule, which shall be reviewed by AM in accordance with the provisions of the Conditions of Contract. In addition, it shall also include in detail the design submittals and the requirements for co-ordination with other Contractors and/or Agencies. The Time Schedule shall reflect all activities, the critical path and the contractual deadlines as set in each individual Contract, while it shall be consistent with them. The contractual deadlines shall be confirmed through the Time Schedule logic and the sequence of activities.

3.2 The section of the Time Schedule which concerns the designs shall include preparation by the Contractor and approval by AM or other Agencies (PUOs, Services, etc.) of all designs. Note that for each design, provision shall be made in the Time Schedule of each individual contract and a re-submission as well as a review/approval, i.e. submission – review – re-submission - approval.

The activities included in these designs shall be analyzed to such an extent so as to enable checking and monitoring per Engineering discipline (traffic, archaeological) and per geographical location, where and as required. The section of the Time Schedule which concerns the designs shall specify in detail the dates/deadlines for the exchange of information between various Agencies and the Contractor.

The works/construction section of the Time Schedule shall show, in detail, the worksite installation, execution of the works, the removal of the worksite etc. It shall also show all the interfaces/accesses to Agencies and/or Contractors.

3.3 In preparing the Time Schedule, the Contractor should note in particular the following conditions that will apply:

- Access conditions to the areas of the Project in accordance with the Contract.



**“ARCHAEOLOGICAL WORKS AND PUBLIC
UTILITY ORGANIZATIONS NETWORK
RELOCATIONS – ATHENS METRO LINE 4,
SECTION A’ ALSOS VEIKOU GOUDI”**

RFP-322/17

GENERAL SPECIFICATIONS - VOLUME I

- Estimate of reasonable and realistic duration of activities, such as: archaeological excavations, occupation of areas, network diversions, demolitions, etc. that might be required.
- At certain dates or areas works may be executed in parallel with other Contractors. The Contractor should cooperate with the other Contractors and schedule his works in a way so as not to obstruct the works executed by them.
- Absence of activity durations or dates from the time schedule, if any, shall not prejudice the right of AM to establish itself a reasonable dates or durations for the activities in question.

GENERAL SPECIFICATIONS - VOLUME I

GS0510 PLANNING AND PROGRESS REPORTS

1. GENERAL

1.1 Every month, the Contractor shall prepare and submit to AM three (3) copies of the Monthly Report of the progress of each individual Contract. The report shall be submitted to AM within the first five (5) days of each month and shall cover the execution of the Works of the preceding month.

The report will be prepared in a form which may be defined by AM and shall include, without however being limited to, the following:

- a) Updated approved Time Schedule (in electronic form as well).
- b) Summary presentation of work progress percentages for each geographical location (type of work).
- c) Updated contract drawing list and progress report concerning the submittal of designs specified by the contract.
- d) Corrective actions to be taken by the Contractor in order to maintain the intermediate completion dates.
- e) Labor resources (per type of work), Contractor’s equipment and materials for the period being reported and planned for the next period.
- f) Descriptive planning of the works for the following period based on the activities of the time schedule. Information required by AM during the next period.
- g) Progress photographs.
- h) Recording of the structures.

1.2 The Contractor shall attend Progress Meetings of the Managing Department at monthly intervals, at a time and place to be determined by AM. The frequency of these meetings shall be modified as deemed necessary by AM.

1.3 The Contractor shall attend co-ordination meetings, convened by AM, so that he may be able to participate in discussions and ensure that designs are correctly prepared.

1.4 The Contractor shall attend bi-weekly the construction progress meetings held on site. Construction issues, solutions, safety issues, the progress of a 4(four)-week detailed schedule and other issues will be discussed and resolved (if necessary and possible). The frequency of these meetings shall be changed as deemed necessary by AM.

1.5 The aforementioned meetings stated in points 1.2 – 1.4 shall be held in accordance with the Document “General Specifications – Volume I”, Specification GS0400 “Project Meetings”.

GENERAL SPECIFICATIONS - VOLUME I

2 PROGRESS PHOTOGRAPHS

- 2.1 The Contractor shall ensure the recording of the execution of the Works by photos. These photos shall cover the extent of the Works to be specified by AM in all geographical locations and shall be taken at monthly intervals. The Contractor shall submit the photos to AM on a monthly basis in print and CD/DVD as attached to the Monthly Progress Report.
- 2.2 All prints shall be marked on the reverse side with the ID number, date of exposure (Year / Month / Day) and brief description of the work including kilometric position and/or location and shooting angle.
- 2.3 The copyright of all photographs shall be vested in AM. The photographs shall not be used for any purpose whatsoever without AM's approval.
- 2.4 The shooting of photographs shall start with the commencement of the works (worksite fencing, PUO network relocation etc.) and shall end upon delivery of the area.

GENERAL SPECIFICATIONS - VOLUME I

GS0600 QUALITY ASSURANCE

1. DEFINITIONS

1.1 Quality System Assurance:

The organizational structure, responsibilities, procedures, controls and resources for the Quality Assurance of the generated product or service.

1.2 Quality Assurance:

All scheduled and systematic activities executed within the framework of the quality system and considered necessary in order to ensure that a product or service will meet the given quality requirements.

1.3 Quality Control:

Part of the Quality Assurance System focused on the techniques and activities used in order to meet the quality requirements.

1.4 Quality Inspection:

The systematic, independent and documented conformity control of the activities related to the quality and planned in advance in relation to their effective implementation and suitability for the achievement of the relevant objectives.

2. GENERAL

2.1 All ATTIKO METRO projects, which are constructed in a Quality Management environment based on the rationale of Standard ISO 9001:2015 for the Quality Assurance Management Systems and the Legislation governing the development and application of Project Quality Plans (as per article 158, Law 4412/2016, as applicable). The above shall be also in accordance with the contractual documents.

2.2 Within sixty (60) calendar days as of the Contract signing, the Contractor shall submit to ATTIKO METRO (AM) two copies and the Project Quality Plan (PQP), which shall include the provisions of the Legislation.

2.3 Within the framework of submission of the aforementioned document, the Contractor shall submit to AM for approval the curriculum vitae of the executive who will fill in the position of the person in Charge of the Quality Management.

2.4 Within 10 working days, AM shall return the PQP to the Contractor with any comments that may arise, which the Contractor shall incorporate in the revised versions of the PQP. This shall be submitted to AM for review and approval within twenty (20) calendar days as of the receipt of AM's response.

2.5 In case the Contractor is a Consortium, the Project Quality Plan shall be a universal application document and shall determine all quality procedures and objectives set by the Contracting Consortium.

The Consortium shall be represented by a mutually accepted Person In Charge of the Quality Management, as specified in the CC. The individual participating Companies of the Contracting Consortium may appoint

GENERAL SPECIFICATIONS - VOLUME I

Quality Management Assistant Engineers to be instructed by the Person in Charge of the Quality Management of the Consortium.

- 2.6 In case the Contractor awards a part of the construction works to a Sub-Contractor adhering to the provisions of Law 4412/2016, the Sub-Contractor is obligated to meet the approved Project Quality Plan of the Contractor.
- 2.7 Any modifications to the PQP document proposed by AM must be implemented. Any acceptance of the PQP by AM does not release the Contractor from any modifications proposed at a later stage, arising due to adaptation to the applicable law or due to the necessity for revision recorded through the Quality Inspection. Every provision of the final PQP versions must be in full compliance with the Contract.
- 2.8 The distribution of the final approved quality document (PQP) shall be under control and one out of the checked documents shall be delivered to AM, while the Contractor shall monitor its completeness.
- 2.9 Documents will be formatted and codified as to the Project Quality Plan under AM's instructions.

3. ORGANIZATION CHART OF THE CONTRACTOR – JOB DESCRIPTION SHEETS

- 3.1 The Organization Chart of the Contractor submitted based on the above shall be detailed and shall define, through Job Description Sheets, the Responsibilities, Chain of command and Scope of Works of the personnel.
- 3.2 In the Organization Chart of the Contractor specific reference should be made to the special requirements of personnel in accordance with the contracts Condition document.
- 3.3 The resumes of all the aforementioned executives, as well as of others to be requested as per AM's judgment and considered crucial for the Project, should be submitted to AM for approval.
- 3.4 All the above shall be in agreement with the stipulations of the CC.

4. PROJECT QUALITY PLAN

- 4.1 The Project Quality Plan applies to all activities of the specific Project, aiming at ensuring the requirements of the specific contract.
- 4.2 The structure of the Project Quality Plan should be in compliance with the one indicated in YPEHODE's decision No. ΔΙΠΑΔ/οικ/611/24-07-01, Government's Gazette 1013B/02.08.01, as valid each time. In particular, it includes the following:
- Brief Description of the Project, Quality Policy Statement, Quality Objectives and Action Plans.
 - Construction Methodologies, which should be in accordance with the contractual documents and the Project designs.

GENERAL SPECIFICATIONS - VOLUME I

- Executed Checkings and Tests in the Associated External Laboratories with reference to the Frequency of execution, the applicable Greek and International Standards, the Acceptance Criteria, etc..
- Time Schedule of Works responding to the contract and including all Action Plans.
- Human Resources with the respective Organization Chart, the positions of Executives and the required qualifications in order to cover the positions.
- Approved Suppliers and Subcontractors, as well as the selected Associated Third Parties with reference to the evaluation procedure, their Control and Inspection methods, as well as the methods of Acceptance of the delivered Goods and Services.
- Main Mechanical Equipment required for the implementation of the Project within the limits of the Time Schedule and Measuring Equipment for the needs of the Quality Control and other Controls.
- Document Management Methods with corresponding Lists, as well as methods for their filing in order to ensure the easy search for information and Project Deliverables.
- Non - Conformance / Corrective and Preventive Actions. It defines the method of management of non-conformance that may be identified during the execution of the Project and the corrective actions to prevent its re-occurrence. It also defines the procedure related to the verification of the effectiveness of the measures.
- Quality Inspections. Their definition is given in paragraph 1.4. The PQP defines the implementation method, its frequency and connection with the work phases.
- Action Plans. For every Construction Phase they describe the individual actions required for its completion, the Person(s) in charge, the Checking Points of every action, which are classified in Approval Hold Points and in Attendance Points, the applicable Specifications, Regulations and Standards, the Recording Forms and the Control Agencies.
- Approval Hold Points concerning construction works are the points where the presence of AM aiming at the issuance of a Permit for the Continuation of the Work is deemed obligatory. Similarly, Attendance Points are defined as the points where the presence of AM is not obligatory; however, they constitute important self-control points of the Contractor, aiming at the optimum technical performance of the construction work and ensuring the acceptable preparation of the Approval Hold Points.

GENERAL SPECIFICATIONS - VOLUME I

5. DESIGN MANAGEMENT

- 5.1 The Contractor should include in the Project Quality Plan various procedures related to the management of the detailed designs and the requirements of the quality plans concerning Project designs, in accordance with YPEHODE decision No. ΔΙΠΑΔ / Οικ/ 501/ 1-7-2003, such that they may cover the following:
- The activities related to the selection and award of preparation of the Detailed Design. These activities shall cover the Contractor’s personnel, Independent Associates and engineering firms.
 - The review, verification and validation activities of the Detailed Design.
 - The management and co-ordination of various groups involved in the designs, ensuring an effective communication and allocation of duties.
 - The above shall be also in accordance with the contractual documents and the legislative framework governing the public works.
- 5.2 Any changes or modifications to the design, which are approved by AM, should be addressed through the QMS procedures in order to identify any impact of these modifications on the interfaces with other designs, as well as on other parts of the Project already constructed or under construction. All Null and Void or non-Valid design Versions should be kept in the log file in a safe and clearly distinct way.
- 5.3 The controlled distribution of valid design versions appointing the respective engineers responsible for them should be ensured through a documented way.
- 5.4 In all AM worksites, both in the Contractor’s premises and the premises of the Supervising Authority, a List of Approved Designs and Project Drawings shall be made available and be updated after every modification that may arise.

6. COSTS AND TIME SCHEDULING MANAGEMENT

- 6.1 The satisfactory Cost and Time Scheduling Management is compatible with the requirements of ISO Standard 10005:2005 and constitutes, in combination with other PQP procedures, both an item of Design and Acknowledgement of the Identification and Traceability of the product.
- 6.2 The Contractor, in co-operation with AM, shall prepare and submit during the kick-off meeting of the Project, the Individual Measured Parts through a Hierarchical Analysis of the Works (Segmentation). The Segmentation codes shall constitute the basic traceability item of the Project Files. The above code should appear in all documents of the Project deliverables, so that their filing in separate files may be facilitated.
- 6.3 The Contractor is obligated to implement a monitoring system of the Cost and Time Scheduling based on the aforementioned Project Segmentation, appropriate software and Forms compatible with the

GENERAL SPECIFICATIONS - VOLUME I

legislation requirements. Actions to be provided for in the PQP, within the framework of monitoring of the Cost and Time Scheduling, are as follows:

- Conducting acceptances of deliveries with the participation of AM's representatives.
- Checking of the Accuracy and Recording of acceptance and protocol data.
- Data categorization based on the applied monitoring system of the Individual Measured Parts.
- Software Adjustment for the Time and Financial Scheduling of the Project, by preparing similar Reports.
- Data process through the use of applications.
- Submission of Measurements and Accounts.
- Production of standardized Reports related to the Cost and the Implementation of the Time Schedule.

6.4 In case the Contractor uses a Management Information System, this System should be compatible with the requirements of the Legislation for Public Works and should be submitted to AM for approval prior to its implementation.

6.5 As regards the Project Time Schedule, the pertinent requirements are referred to in the Conditions of Contract.

7. QUALITY CONTROL MANAGEMENT

7.1 As far as the Quality Control of the Structures is concerned, the stipulations of AM's contractual documents shall be valid.

The Quality Control, as a partial fundamental procedure of the Quality Management System, should have characteristics which are, indicatively, as follows:

- Adherence to the Control and Testing Schedule in a controlled way
- Development of a Sample Codification System
- Development of Recording Forms of the test results
- Development of a System for Keeping Quality Control Books and Files
- Keeping a Library of Technical Specifications in a Controlled Form
- Verifications and Calibrations of Measurement and Control Devices

7.2 The Control and Testing Program is submitted for approval by ATTIKO METRO and should implement the checking requirements provided for in all contractual documents, according to the type of works included in the Contract. The said Program will include every checking and test performed at accredited associated certified Laboratories, or is executed on site the Project. The meaning of controls and tests includes both the tests of the usual Quality Control for Civil Works (concrete, earthworks, road paving, asphalt paving etc.) and the tests of incorporated materials

GENERAL SPECIFICATIONS - VOLUME I

- requiring possible use of Independent Accredited Laboratories. In addition, they include on site material and system tests, as well as the trial operation of completed systems. The Program should be strictly monitored and communicated on a daily basis to the Project Supervising Authority through written notification for pre-announced tests.
- 7.3 The basic data recorded in every pre-announced test is the code of the self-measured distinct part where the test is performed, the general information on the sampling location, where necessary, the date and laboratory that carried out the sampling, as well as the date and laboratory that performed the test.
- 7.4 Every sample should be recognized by a distinct code, which will identify both the origin of the sample (concrete, shotcrete, asphalt paving works etc.) and its increasing numbering.
- 7.5 The forms for the recording of results should facilitate the recording of all measured sizes during the test and show in an appropriate manner the inter-relations governing the result with the individual measured sizes. Reference should be also made to the used Standards and Specifications, while the measured sizes should be compatible with them. In addition, they should include the code of the self-measured distinct part where the test was performed, the sample code, the category of work and material origin, the date of receipt of the sample and execution of the test, the signature area in order to confirm the sampling and test, the report of the laboratory which carried out the test, the characterization of the result as acceptable or not and the corrective actions in case of failure.
- 7.6 The test results shall be submitted immediately to AM's Supervising Engineer and at least once a month. The submission of the results shall be accompanied, where required, by statistic analyses and a technical assessment report. The test results constitute supporting documents of the intermediate and final payments. Acceptable results of such controls shall not release the Contractor from his responsibility related to the quality of the Project, according to the contractual documents.
- 7.7 The results' Filing System should ensure their traceability, based on the recorded code of the self-measured distinct part where the test was performed. The Quality Control records, which are kept, constitute a part of the Project deliverables, structured based on the development of the Acceptance Protocols for Non-Apparent Works.
- 7.8 The Technical Library shall be kept under the responsibility and expenses of the Contractor in a way that ensures updating with the valid versions of the Standards and Specifications. Concurrently, the specifications should be distributed to the executives in a guided and controlled way.
- 7.9 The Measurements and Calibrations of the Measurement and Control Devices shall be carried out by independent accredited agencies, except in cases where AM deems that the Contractor has the appropriate equipment and personnel to perform them. All expenses due to the Measurement and Calibration procedure shall be borne exclusively by the Contractor. The measurement and calibration certificates shall include, *inter alia*, the code of the instrument, which is calibrated, the Standard

GENERAL SPECIFICATIONS - VOLUME I

based on which the calibration was performed, the acceptable divergences and the date of the next calibration. The Contractor is obligated to keep a List of the Measurement and Testing Instrumentation with reference to the Instrument code, the date of its calibration and the date of the subsequent calibration. Similarly, every Measurement and Testing Device shall bear a label showing information included in the aforementioned List of Instrumentation.

8. CONSTRUCTION METHODOLOGIES

8.1 In all construction works, the Contractor should submit a Construction Methodology for approval promptly and in a time period considered sufficient for any required preparation. The construction methodologies should be in accordance with the contractual documents and drawings. They should take into consideration the approved Time Schedule, make reference to the respective applicable design versions, the standards and specifications that determine, *inter alia*, the preliminary works, the equipment to be used, the scientific and labor personnel, its training needs, the possible means considered necessary to be provided by AM. In addition, these construction methodologies should provide for and describe the consecutive construction phases by presenting the Approval Hold points and the Attendance Points. The developed Work Control Forms, which constitute forms of the Project Quality Plans, shall be based on the analysis of the construction methodologies.

8.2 The construction methodologies required for the Project should be provided for and included in the initial submission of the Project Quality Plans. Their method of development should be clearly defined in the same submission. All construction methodologies developed at a later stage should be submitted to AM for approval. Any approval of the construction methodology shall not release the Contractor from his responsibility to implement the design based on technical perfection and produce work, which meets the requirements of the rules of Art and Workmanship.

9. REQUIREMENTS CONCERNING THE SUPPLIERS OF MATERIALS AND SERVICES

9.1 The management of the Construction Materials and Services accepted and incorporated into the Project should be clearly defined in detail at the Contractor’s Project Quality Plan. This management includes the evaluation of the Suppliers by the Contractor, the submission and approval by AM, the handling of purchases and contracts with the suppliers and their inspection before and after the delivery.

9.2 Under the responsibility of the Person In Charge of the Quality Management of the Contractor, a record shall be kept including all acceptable suppliers and data related to the supplying/co-operation capability, as well as data of any previous co-operation. Based on this specific record, a “List of Acceptable Suppliers” is formed and updated at regular intervals. The evaluation of the Acceptable Suppliers is performed based on specific criteria, which include, *inter alia*, the following:

GENERAL SPECIFICATIONS - VOLUME I

- Certification according to the ISO 9000 series of standards
- Existence of Quality Control System
- Long-standing co-operation background
- Recommendations and magnitude of the supplier
- Visit for the evaluation of the supplier
- Previous co-operation results.

In particular, with regard to the Suppliers of Constructing Services co-operating in the construction of minor parts of the Project, the evaluation may be based mainly on data concerning previous experience and performance.

9.3 The selection of each supplier of material or system incorporated in the Project shall be subject to final approval by AM, following a respective submission of data concerning the Material and the Supplier. The minimum required criteria for the approval of incorporated materials are as follows:

- Provision of the material in the Project designs and the contractual documents.
- Certificate in accordance with the series of standards ISO 9000.
- Quality Control Certificates of the product (material) issued either by the Quality Control system of the Supplier and/or an independent acknowledged testing or certification agency, according to the requirements of the contractual documents and the standardization legislation.
- Results of a previous Inspection of the Supplier’s facilities by AM.

Based on the aforementioned approvals, the Contractor keeps a “List of Approved Materials of the Project”, which has a unilateral validity for specific parts of the Project or specific applications and cannot be used as a basis for other ΑΤΤΙΚΟ ΜΕΤΡΟ work contracts. The list of Approved Materials includes, *inter alia*, a report of the approval document and constitutes an accompanying item of the already performed payments, as well as an item concerning the Project deliverables.

Upon contract signing, ΑΤΤΙΚΟ ΜΕΤΡΟ shall transmit a letter to the Contractor with the following subject: “Structure of Contractor’s Material Submission Sheets (MSS) for approval”. This letter shall refer to the required data of the MSS documentation, so that the submittal be considered complete.

9.4 The Contractor shall ensure that the purchases are made in a way that it excludes non-conformance of purchases due to erroneous data and specifications during the communication with the suppliers. For this reason, all purchases should be made based on a specific procedure and through the use of a standardized PQP document. The same are applicable and valid for long-term purchase agreements or agreements

GENERAL SPECIFICATIONS - VOLUME I

for the Provision of Services; in this case, special contracts are signed including all the aforementioned data.

Concurrently, where necessary, controls and inspections shall be performed in order to ensure that the purchased goods meet the requirements agreed upon. A record of these controls and inspections is kept by the Person In Charge of the Quality Management of the Contractor.

- 9.5 Within the framework of the Quality Inspections performed by AM, Inspections of the Supplier’s installations may be also included either before and/or after their approval. Any non-conformance identified during the above Inspections is also recorded as Non Conformance of the Contractor’s PQP and is monitored through the method provided for by the PQP.
- 9.6 During the acceptance of the material batches at the Project, the Contractor submits to AM’s Committee, which is appointed further to para. 1, article 159, Law 4412/2016, as valid each time, the quality certificates of the batches in a traceable form with the respective bills of loading (shipping notes etc.). AM reserves the right to order additional quality controls of materials considered critical for the Project.
- 9.7 In case it is identified that there is a divergence of the material batch characteristics from the specifications, the batch as a whole is recorded as non-compliant and the respective procedure related to its handling is followed, as provided for by the PQP and the legislation.

10. QUALITY INSPECTIONS

- 10.1 According to the Legislation, the implementation of the PQP is also checked, *inter alia*, through Interior Quality Inspections. The interior inspections of the Contractor will be executed during pre-determined regular intervals, where it is checked whether the PQP is in accordance with the requirements of the contract specifications for the construction of the Project, the requirements of the standard, as well as the requirements set by the Contractor himself with regard to the quality objectives. During the preparation of the interior inspection program, various data are taken into consideration, such as the current situation, the areas to be checked and the results of previous checkings. In addition, the criteria, the application field, the frequency and the methods used are also determined.

The inspections should be performed in an appropriate way, in order to ensure the objectivity and impartiality, which are achieved through the proper selection of Supervisors who should not check the field of their own responsibility.

- 10.2 As a minimum requirement, the Contractor shall issue an Interior Inspections Program for every semester, which shall include all sections and procedures provided for in the PQP. The trends of the identified Non-Conformances should constitute a basic incoming document in the PQP Reviews by the Management.

GENERAL SPECIFICATIONS - VOLUME I

- 10.3 AM reserves the right to inspect and implement the PQP.
These controls include, as a minimum requirement, the following:
- **Initial PQP Review**, which aims mainly in the identification of any omissions related to the covering of all requirements of the contractual documents and the legislation.
 - **PQP Implementation Inspections**, during which a checking is performed at regular intervals with regard to the implementation of the initially approved PQP of the Contractor through scheduled quality inspections based on the following methodology:
 1. Issuance of an annual program
 2. Preparation of a List of Inspection Points
 3. Preparation of an Inspection Report
 4. Issuance of Non-Conformance Reports (if required)
 5. Scheduling of Re-Inspection in order to check the progress of the corrective actions agreed upon
 6. Report concerning the completion of corrective actions/Non Conformance Reports
 - **Inspections related to Construction Works** using a methodology equivalent to the one developed above. These Inspections are oriented towards the checking of implementation of the Lists of Checking Points of the Construction, focusing on the method of implementation of the Approval Hold Points by AM. With regard to the Attendance Points, they are focused on the evaluation of their sufficiency for the effective monitoring of the Construction. The Construction Work Inspections will be carried out once before, during and after the completion of construction of a distinct part of the Project.
 - **Quality Control Adequacy Inspections**, during which the checking is focused on the following points:
 - Checking of the adequacy of the associated laboratories in relation to the installations, the personnel, the equipment and the recording data. During this checking, the verification and calibration certificates of the equipment are concurrently checked.
 - Ensuring reliable results of laboratory tests through the Inspection of the method of execution of tests.
 - Checking of the operation and efficiency of the worksite and factory concrete and asphalt layer laboratories.
 - Checking of the raw materials, incorporated materials and E/M equipment through Inspections carried out at the batch plants, where necessary, or through the quality certificates of the Supplier and Manufacturer, in combination with the quality control test certificates.

GENERAL SPECIFICATIONS - VOLUME I

- Checking of implementation of the standards, specifications, regulations etc. provided for on a case-by-case basis during the execution of the quality control of the construction.

11. OTHER PROVISIONS

- 11.1 During the execution and upon completion of the E/M installations, at his own responsibility and cost, in the presence of AM Supervising Authority, the Contractor shall execute the necessary tests in order to prove the proper operation and excellent quality of the installations, based on the Specifications. The number and type of tests concerning E/M installations is the one defined in the Contractual Documents. Where there is no provision for the above, these shall be proposed by the Contractor and approved by AM's Supervising Authority.
- 11.2 In case that, during the tests, it is identified that there is an overall or partial damage, exceeding the validity period (overdue payment), defect, poor material quality etc. in all installations or part of them, the Contractor shall repair, supplement, replace immediately and then repeat the tests until the results are considered satisfactory by AM's Supervising Authority.
- 11.3 The same control procedure, in the presence of AM's Supervising Authority, shall be also carried out at the end of the guarantee period concerning the mandatory maintenance of the Project, in order to prove the proper operation of the installations and the Contractor will be also responsible for works related to the repair of damage.
- 11.4 It is pointed out that, in case AM's Supervising Authority discovers any obvious deviations from Regulations or Specifications or obvious defective works, it has the right to implement the provisions on “defective works” of article 159 of law 4412/2016 as valid each time.
- 11.5 The Services concerned of the European Union, in case it co-funds the Project, reserve their right to execute quality controls.
- 11.6 Particular attention is paid to the relevant paragraph 3 Article 158 of Law 4412/2016, which refers to quality controls executed for works constructed with the co-funding of the European Union by a Consultant hired based on a decision of the Ministry of Finance, following the execution of a relevant tender; the Contractor and AM ought to provide to this Consultant data and information in order to facilitate his work and his free access to all construction areas of the Project and the material receipt sources, as well as the unobstructed performance of samplings.
- 11.7 The provisions of the relevant legislation (article 159 of law 4412/2016 as valid each time,, are valid as regards non-conformance of materials and works.

GENERAL SPECIFICATIONS - VOLUME I

GS0650 QUALITY CONTROL

1 GENERAL

- 1.1 Quality Control, both in terms of dimensions, embodied materials and further completed structures of the Project, is performed by virtue of Contractual Documents and Specifications, as well as based on the applicable regulations, specifications and relevant circulars governing similar projects.
- 1.2 The Contractor, within sixty (60) days upon the Contract signing, shall submit to ATTIKO METRO, the Controls and Test Programs to be executed in the framework of Project Quality Plan.
- 1.3 Within the framework of submittal of the aforementioned documents, the Contractor shall also include the CV of the executive to fill in the position of the Quality Control Engineer in charge.

2 CONTRACTOR’S ORGANIZATION CHART

- 2.1 The Contractor’s Organization Chart submitted as per the stipulations of the CC, shall be detailed and define based on Job Descriptions, the Responsibilities, the personnel chain of command and the Scope of Works.

3 QUALITY CONTROL CATEGORIES

Quality Control of materials and constructions is classified into:

3.1 Controls carried out by the Contractor

Controls are carried out by the Contractor, AM being aware of this. These controls constitute a minimum requirement that the materials used and the methods of application of the materials and the constructed items are in accordance with the specifications. ATTIKO METRO has the right to attend the performance of controls, but it can also intervene and request implementation of the specified quality of controls and execution of additional controls as well.

The time needed for the performance of controls is specified in order to minimize the risk of bad workmanship accumulation and, in addition, facilitate and render more effective the improving reforms.

The results of the said controls are evidence of the intermediate and final payments, as well as integrated parts of the measurement documents of the contract work.

With regard to these controls, the stipulations of paragraph 4 of this Specification are applicable.

3.2 Controls carried out by ATTIKO METRO

Controls are carried out at the care of ATTIKO METRO. These controls aim at checking materials and constructions, either by way of precaution

GENERAL SPECIFICATIONS - VOLUME I

or as a complement, in relation to the controls carried out by the Contractor, on the entire construction in order to identify whether there is compliance with the requirements of Regulations/Specifications.

The Contractor shall assist ATTIKO METRO in performing such controls, as well as assist in sampling through his personnel in sampling, where required.

With regard to these controls, the stipulations of paragraph 5 of this Specification are applicable.

3.3 Controls of incoming materials

These controls refer to the control of incoming materials and prefabricated parts as to their geometry and their physical/mechanical properties.

These controls aim at identifying adherence to the approved designs, drawings, materials and determined tolerances.

In case ATTIKO METRO observes any deviation from Regulations/Specifications or obvious bad workmanship, it has the right to instruct immediate stoppage of works and execution of controls described above. In case controls demonstrate defective materials of constructions, the Contractor ought to fully repair the defective constructions and is not entitled to time extension.

With regard to these controls, the stipulations of paragraph 6 of this Specification are applicable.

4 CONTROLS CARRIED OUT BY THE CONTRACTOR

4.1 Responsibility for the performance of controls and request procedure

The request for performing such controls is made by the Contractor and it requires all the necessary tests and sampling as stipulated in Contract documents European standards and applicable regulation etc. In case of negligence demonstrated by the Contractor, ATTIKO METRO may request the execution of controls, or the interruption of the works' execution until such controls are conducted.

In any case, the request form filled in by the Contractor and submitted to AM should include information specifying the scope of control, sampling location, the part of the project concerned, test laboratory and sampling inception time and the time needed to perform the laboratory tests.

Representatives of ATTIKO METRO and the Contractor should attend both sampling procedure and laboratory tests. In case no representative of the Service attends, control schedule is not subject to any modification. In case control is not conducted, any delay in the execution of control and any involved delay in the execution of works, do not form grounds for approval of deadline extension, nor for non-imposing penalty clauses.

GENERAL SPECIFICATIONS - VOLUME I

Request for control should precede by at least five (5) working days the day of commencement of control, in order to notify ATTIKO METRO on time so that its representative could attend control procedure.

4.2 General Control Schedule, specialized personnel and means of the Contractor – Detailed control schedules

4.2.1 The Contractor ought to submit along with the construction time schedule, a general control schedule accompanied by a personnel table.

4.2.2 Detailed control schedules shall be submitted to ATTIKO METRO at least two months before the commencement of the relevant works.

4.2.3 Samples will be transported at the care of the Contractor. ATTIKO METRO will be able to attend samples’ transport.

4.3 Control Laboratories

The Contractor shall cooperate with at least two external Certified Laboratories that will have been approved by ATTIKO METRO. The external Laboratories used by the Contractor cannot be the one used by the Service to carry out controls conducted by ATTIKO METRO.

4.4 Frequency of controls carried out by the Contractor

The minimum number of controls which are carried out by the Contractor, are described in paragraph 4.7 below, per work category.

In case the number of tests stipulated in article 4.7 is different than the required number of tests defined in the respective specification corresponding to each work category, then the higher required number shall prevail.

ATTIKO METRO reserves the right to increase the frequency of controls as follows:

- To the extent required by the specifications, in case of deviation from the desirable results
- Up to 20% of the overall number of tests/controls.

Controls carried out by the Contractor (sampling, tests) concern the project construction period and not the period of preparatory works, so the multiple executed tests for the arrangement of the production concern ATTIKO METRO, but they are subject to the Contractor’s internal controls.

4.5 Log of controls carried out by the Contractor

All data concerning the quality control carried out by the Contractor will be kept at the care of the Contractor at the Controls’ Log of the Contractor. As a minimum, these data will comprise:

1. Copy of the General Schedule (as per paragraph 4.2)
2. Copy of the control request form
3. Copies of the records of sampling (as per paragraph 4.6)
4. Copies of the results of the tests

GENERAL SPECIFICATIONS - VOLUME I

5. Any other data deemed advisable by ATTIKO METRO or the Contractor.

The Contractor’s Control Log will be kept at the worksite office of the Contractor. ATTIKO METRO may keep a copy of the above. The Contractor’s Control Log should ensure traceability of the results, as described in article -GS0600 “*Quality Assurance*”.

Data included in the Contractor’s Control Log will correlate with measurement data in a two-way and biunique manner.

4.6 Sampling Records for the tests

For all required controls and tests, the Contractor shall prepare and a sampling record. For all controls carried out, when sampling is needed, ATTIKO METRO will indicate its location or the sample. Sampling will be generally carried out at locations which present the adverse image for the quality behavior of the Project.

Then, the sampling record will be signed by the Contractor and by ATTIKO METRO, in case of presence of its Supervisor Engineer during sampling procedure.

4.7 Minimum Frequency of Controls carried out by the Contractor

The minimum number of controls/tests to be carried out per work category is the following:

4.7.1 Concrete

The concrete to be used in the Project shall be in line with the Concrete Technology Codes 2016.

4.7.2 Control of the characteristics of the MARSHALL type asphalt-concrete

For each layer and for each laying day

5 CONTROLS CARRIED OUT BY ATTIKO METRO

AM Rights and Contractor Responsibilities

ATTIKO METRO has the right carry out controls/tests on any work, material and part of the structure. The Contractor has the obligations mentioned below:

- a. Conduct the described controls based on the frequency stipulated in paragraph 4.7 of this Specification.
- b. Make his equipment and personnel available for the performance of controls/tests requested by ATTIKO METRO.
- c. Assist ATTIKO METRO and the independent laboratory, which ATTIKO METRO may be contracted with in the execution of controls/tests.
- d. Attend sampling and tests in case ATTIKO METRO requests so, according to the procedure stipulated in paragraph 4.1

GENERAL SPECIFICATIONS - VOLUME I

5.1 Notification of the Contractor for the execution of controls

With regard to controls carried out by ATTIKO METRO it is not required to notify the Contractor accordingly unless his assistance is requested (personnel, equipment, transport of samples etc.). In this case the procedure described in paragraph 4.1 of this Specification will be adhered to.

The notification of the outcome of the controls, of materials and works to the Contractor falls within the obligations of the ATTIKO METRO, irrespective of the outcome. The notification of the results will be effected immediately and depending on the outcome, the respective measures will be taken.

6 CONTROLS FOR INCOMING MATERIALS

6.1 Control of incoming materials and/or prefabricated parts is classified into:

- a. Control related to quality, natural and mechanical properties of the materials, as per the Contractual Technical Specifications, the international Regulations/Specifications and the approved designs.
- b. Checking of the correct dimensions and their response to the approved design.

6.2 With regard to controls related to the category and the materials and/or prefabricated parts, such as reinforcing steel, metal elements, piles, masonry materials, architectural finishes, glass panels, electrical material, railway material, pipes, mechanical material and any other kind of material to be incorporated in the construction of the project, the following steps should be taken at the care of the Contractor:

- a. Set into implementation the procedure related to ATTIKO METRO’s notification as per paragraph 4.1 of this Specification, upon completion and submittal of the Material Submittal Sheet by the Contractor.
- b. Checking of attached certificates as per EN 10204 CE, laboratory tests in certificated laboratories, etc.
- c. Elaborate the outcome of the controls and prepare a protocol of control mentioning as a minimum:
 - The type and manufacturer of materials, the place of their provisional storage
 - Date of control
 - The names of the representatives of ATTIKO METRO and the Contractor
 - The quantity of the batch that has been checked or the number of the samples that have been checked
 - The results of the measurements per measured unit
 - The average and the typical deviation

GENERAL SPECIFICATIONS - VOLUME I

- d. Keep a Log of Materials’ Control based on the above information in compliance with the provisions of paragraph 4.6 of this Specification.

**7 QUALITY CONTROL AND RESPONSIBILITY OF THE CONTRACTOR
AS TO THE QUALITY AND PERFECTION OF THE MATERIALS AND
CONSTRUCTIONS OF THE PROJECT**

- 7.1 Any type of quality control of the Project does not release the Contractor from any responsibility, since he solely bears full responsibility for the quality and perfection of the materials and constructions of the Project, as well as for the safety of the construction.
- 7.2 In case the results, which arise from quality control, do not meet the requirements of the specifications, a procedure related to the rejection of defective works will be initiated as per the applicable legislation and the terms of the Contractual Documents.
- 7.3 For any case stated in paragraph 7.2 of this Specification, the Contractor is obliged to keep a record of controls similar to the one stated in paragraph 4.5 and this log constitutes necessary documentation attached to the Provisional Acceptance Protocol of the Project.

GENERAL SPECIFICATIONS - VOLUME I

GS0750 HEALTH & SAFETY SPECIFICATIONS

NOTE: Safety means Health and Safety at Work

1. GENERAL

The Contractor is exclusively and unreservedly responsible before ATTIKO METRO A.E. (AM) to ensure that the workers, work crews, consultants, representatives, his suppliers, self-employed, visitors, third parties, throughout the time period that they are involved in Athens Metro in the framework of the execution of the “TITLE OF THE PROJECT” (as stated in detail in the Technical Description), shall comply in all respects with the Applicable Legislation, the present Contract, the provisions and the regulations concerning safety, health and fire safety, as well as with AM’s regulations. In case the pertinent Greek Law or the Law of the European Union keeps silent, the best current practice shall apply.

2. BASIC REQUIREMENTS

The Contractor shall be exclusively responsible for adhering to the rules regarding Health and Safety of his Employees, the persons engaged in any way whatsoever in the Project under any type of relationship, any work crews of the Contractor, AM personnel, any persons authorized by AM, as well as any third party, in the areas where Project related works are executed.

The Contractor shall execute his works so as to always ensure the safety of his employees, AM and third party employees.

AM shall bear no responsibility whatsoever for labor accidents to the Contractor’s workers. The Contractor is exclusively responsible for labor accidents or damage to third party property caused by/due to his own activities or omissions.

The Contractor shall report **immediately** to AM any incident causing injury to his personnel or third parties’ personnel, or any damage to property, irrespective of severity or significance, as well as any hazardous incidents caused by his own activities or omissions.

The Contractor shall keep detailed accident and injury records and shall submit to AM a monthly summary of the accidents’ statistics.

Should the Contractor receive a notification for inspection or a notification of deficiencies further to the inspection carried out by the responsible AM Department or by any State Authority, he shall immediately notify AM by transmitting copies of the relevant notifications (unless the notification has been issued by AM) and shall proceed with all necessary corrective actions, in line with the relevant requirements of AM’s Department or any State Authority.



**“ARCHAEOLOGICAL WORKS AND PUBLIC
UTILITY ORGANIZATIONS NETWORK
RELOCATIONS – ATHENS METRO LINE 4,
SECTION A’ ALSOS VEIKOU GOUDI”**

RFP-322/17

GENERAL SPECIFICATIONS - VOLUME I

AM reserves the right to request stoppage of works, removal of the Contractor's Personnel and Equipment and/or expulsion of Work Crews if it is substantiated that the Safety measures provided for by the Contract and foreseen by the Legislation are not adhered to. AM can require that any person who systematically violates the safety procedures, in AM's substantiated opinion, be removed from the work area. This person cannot return to the work area without AM's prior written consent.

Should an act or omission of the Contractor result in the imposition of fines to AM by any State Authority or this act or omission burdens AM with expenses related to the implementation of the applicable legislation concerning safety, then the Contractor shall pay and/or compensate AM for all the relevant costs and expenses.

Administrative fines imposed by State Authorities due to the failure of the Contractor, his work crews or his Suppliers to comply with the above, shall be exclusively borne by the Contractor.

The entire equipment of the Contractor should be as specified by the European Legislation and bear the “CE” marking, as dictated by the relevant Legislation, as well as the relevant documents (e.g. maintenance manuals) proving ability of the equipment to operate safely. The Contractor shall ensure that the equipment shall undergo all safety tests, measurements and inspections foreseen by the Law. Copies of the certificates shall be made available to AM upon request.

The Contractor shall deliver to AM the “Materials Safety Data Sheet” for all hazardous materials to be (eventually) used in the subject PROJECT. The relevant approvals must be obtained for each material included in this category, every time such a material is used in the PROJECT.

It is advisable that the Contractor provides the employees with work clothing labeled with the Contractor's name.

The Contractor shall be exclusively responsible to implement his employees health monitoring systems.

The Contractor shall provide properly equipped hygiene, cleaning, lunch, first aid and locker rooms.

The Contractor shall provide full access to all relevant files (e.g. accident investigations, accident statistics, omission reports, disciplinary violations etc.) and documentation (training, minutes of internal safety meetings, certificates, measurements, evaluations, maintenance manuals, Safety Coordinator and/or Safety Technicians contracts, etc.) and shall duly assist AM in monitoring the implementation and performance of the Organization and Management System for Safety and Health at Work (SODAYE). AM reserves the right to carry out onsite inspections or detailed inspections whenever deemed advisable.

The Contractor shall prepare the relevant SODAYE, Health and Safety Plan (HSP) and Health and Safety File (HSF).

GENERAL SPECIFICATIONS - VOLUME I

All expenses related to the implementation of the health and safety provisions, the costs for the measures, means, certificates, measurements, systems and organization required for meeting the aforementioned obligations and responsibilities of the Contractor shall be borne by the Contractor and should have been taken into consideration in the preparation of his offer and included therein in a converted form.

All Contractor’s obligations are transferred unchanged and apply to the Contractor’s work crews that may be engaged in the Project.

3. ORGANIZATION AND MANAGEMENT SYSTEM FOR SAFETY AND HEALTH AT WORK (SODAYE)

3.1 GENERAL

The Contractor shall develop his own “Organization and Management System for Safety and Health at Work” (SODAYE) for the **specific** Project in accordance with the provisions of the decision No. ΔΙΠΑΔ/οικ/889/14.01.2003 and the instructions of ELOT 1801 Standard. SODAYE shall present in detail the way in which persons (employees and others), property and procedures are protected against any risks ensuing from the Contractor’s activities. SODAYE shall include the policy, organization chart, control systems (training programs, certifications, risk analysis, risk assessment, procedures), measurement/ monitoring methods and the relevant revision programs (See Annex 1).

SODAYE shall be an autonomous and independent system, while it shall not be part or annex of another system e.g. quality system, environmental system etc.

Thirty (30) calendar days prior to the commencement of the works, the Contractor shall submit to AM the initial SODAYE in a printed and digital format. If AM is not satisfied with the submitted SODAYE (presenting its relevant justification in a complete and reasonable manner within 15 calendar days), the Contractor must revise, modify and resubmit the revised SODAYE within a reasonable time frame and, in any case, not later than 7 calendar days after his official notification.

4. HEALTH AND SAFETY PLAN (HSP) AND HEALTH AND SAFETY FILE (HSF)

The Contractor shall prepare the Health and Safety Plan (HSP) for this **specific project** as well as the corresponding Health and Safety File (HSF) in line with the provisions of PD 305/96 and the relevant Ministerial Decisions of YPEHODE.

At least 30 calendar days prior to the commencement of the works, the Contractor shall submit to AM the Health and Safety Plan (HSP) and the Health and Safety File (HSF) in a printed and digital format. AM shall review the above within a period of 15 calendar days.

Any additional modifications or supplementation to the HSP must be submitted prior to the commencement of works presupposing the submission

GENERAL SPECIFICATIONS - VOLUME I

and acceptance of these additions and modifications. Should, at any given time, the HSP is considered insufficient, based on AM's reasonable and substantiated opinion, or revision / modification thereof is required for ensuring safe execution of works or protection of all employees, third parties and visitors, then AM can instruct the Contractor to revise and resubmit the HSP to AM for review within 7 calendar days.

The Contractor shall implement the principles and the procedures provided for in the HSP, as well as any modification or additions to it which have been accepted by AM and shall ensure that the proper personnel shall undertake its implementation.

The Contractor is obliged to update the HSF with all necessary data for the file to be complete. Upon completion of the Contracting Works, the Contractor shall revise the HSF to include the actual, “as built” data concerning the Contracting Works. The completeness and accuracy of the HSF constitutes an integral part in view of the acceptance of the Project by AM.

5. SPECIAL REQUIREMENTS

5.1 ORGANIZATION FOR SAFETY AT WORK BY THE CONTRACTOR

5.1.1 The Contractor shall notify the name of the Safety Coordinator during construction to the Health & Safety at Work Department (DYAE) **prior** to the commencement of the works, further to AM's approval. The Safety Coordinator shall be exclusively engaged in the project on a full-time basis. The Safety Coordinator shall necessarily be a member of the Technical Chamber of Greece (TEE) with at least five (5) years of proven experience on safety related matters – in the framework of a relevant scope of works – exclusively engaged in the project and not working on a part-time or occasional basis. The relevant experience shall be demonstrated by the submission of the relevant employers' certificates and announcements made to DYAE with a reference number. If the Safety Coordinator comes from an Independent Protection and Prevention Service, then he shall meet the aforementioned preconditions.

5.1.2 The Contractor shall appoint a representative to DYAE to act as Safety Technician as per Law 1568/85, L. 3850/2010 and Presidential Decree 17/96. The Safety Technician shall necessarily be a member of the Technical Chamber of Greece (TEE), with at least 5 years of proven experience on safety related matters – certainly in a relevant scope of works - exclusively engaged in the project and not working on a part-time or occasional basis. The relevant experience shall be demonstrated by the submission of the relevant employers' certificates and announcements made to DYAE with a reference number. If the Safety Coordinator comes from an Independent Protection and Prevention Service, then he shall meet the aforementioned preconditions. The announcement to the local Labour Inspection Authority of the assignment of duties to the Safety Technician shall be made **prior** to the commencement of the works by the Contractor and further to AM's approval.

5.1.3 The Contractor shall appoint to DYAE an Occupational Doctor (if required), as per Law 1568/85, L. 3850/2010 and Presidential Decree 17/96. The

GENERAL SPECIFICATIONS - VOLUME I

announcement of the assignment of duties to the Occupational Doctor shall be made **prior** to the commencement of the works by the Contractor and further to AM's approval.

- 5.1.4 The Contractor shall appoint Safety Officers. The Safety Officer supports the Project Manager, the Safety Coordinator and the Safety Technician on safety related matters. The Safety Officer substitutes for the aforementioned persons on safety related matters whenever and wherever they cannot be present. The Safety Officer is entitled to intervene and interrupt all works he/she considers to be hazardous. Other duties may also be assigned to the Safety Officer. Further to a written assessment, the Safety Coordinator shall propose their number and specialties. AM shall approve or reject based on a reasonable justification.
- 5.1.5 The Contractor shall notify in writing the engineers in charge (civil engineer / mechanical engineer / electrical engineer) who shall sign in the Safety Measures Log when required by the Law.
- 5.1.6 All work crews/employers shall appoint - following AM's approval – a Safety Technician in line with the provisions of the legislation.
- 5.1.7 All work crews/employers shall appoint - following AM's approval – an Occupational Doctor (if required by the legislation) in line with the provisions of the legislation.
- 5.1.8 All employers/work crews shall keep a medical record for all employees working at the worksite, irrespective of whether an occupational doctor is available or not.
- 5.1.9 All employers/work crews shall appoint Safety Officer(s) to be present at the worksite during the execution of the Contracting Works.
- 5.1.10 The Contractor shall train and organize Fire-Safety Groups. Their number and equipment shall depend on the nature and the number of activities. However, full coverage of the worksite (in terms of both location and time) should be ensured based on the Safety Coordinator's written assessment. This written assessment shall be officially submitted to AM for approval.
- 5.1.11 The Contractor must always ensure (in terms of both location and time) – based on the written assessment of the Occupational Doctor and/or the Project Manager – the availability of first aid by properly trained personnel. This written assessment shall be officially submitted to AM for approval.
- 5.1.12 The time period of the employment of the Safety Technician and the Occupational Doctor is foreseen by the applicable legislation
- 5.1.13 All worksite employees shall wear HiVi clothing.
- 5.1.14 Use of wooden self-made ladders is prohibited in the worksite.
- 5.1.15 Use of plastic mesh for fencing purposes is prohibited, because this mesh is used as signange.

5.2 MONTHLY REPORT ON HEALTH AND SAFETY AT WORK

The Contractor shall submit to AM the Monthly Report within the first ten days of the following month at the latest. This report shall be prepared by the Safety Coordinator and shall be signed by the Project Manager.

The Monthly Report on Health and Safety at Work shall be drafted in a standardized form according to AM's instructions/samples to be made available to the Contractor 20 calendar days as a minimum prior to the commencement of the works.

GENERAL SPECIFICATIONS - VOLUME I

5.3 SAFETY MEETINGS

The Safety Meetings between the Contractor and AM shall be conducted on a fortnight and/or monthly basis, depending on the nature and the progress of the works, in accordance with the procedure to be made available to the Contractor by AM, at least 20 calendar days prior to the commencement of the works.

5.4 WORKSITE ID

The Contractor must issue a worksite ID for all his employees. The issuance of the worksite ID presupposes that the employee has a proven record of completed medical examinations before commencing the works, has completed the relevant training and that he is equipped with the required Personal Protection Means. It is underlined that entrance to the work area is allowed only upon demonstration of the worksite ID. This ID is valid for a period of two (2) years, when medical examinations are repeated.

5.5 PROTECTION OF THE WORKSITE

The Contractor shall guard the worksite with security personnel on a 24/7 basis.

5.6 WORKSITE INSTALLATION DRAWINGS

Apart from the data foreseen in the remaining articles of the Contract, the Worksite Installation Drawings shall include as a minimum the following: Worksite Fencing (concrete base (block) and corrugated laminated sheet), guarding plan, locations/range of activities of building cranes (if any), sanitary – lunch – first aid areas, locker rooms, fire extinguishers positions, vehicle washing plants, car parking areas and mechanical equipment storage areas, hazardous and/or inflammable materials storage area, signage in line with the applicable legislation, etc.

5.7 METHOD STATEMENTS – SAFE WORK METHODS

For all works to be executed, the Contractor must prepare method statements and the corresponding safe work methods and submit them in due time to AM for approval. Safe work methods accompany the method statements and are not presented a posteriori. In essence, the Safe Work Methods serve as DFDs on safety issues

5.8 SAFETY MEASURES LOG

The Contractor shall appoint and communicate in writing to AM specific members from his management staff to be advised of the entries made on the Safety Measures Log upon signing of the relevant documents.

GENERAL SPECIFICATIONS - VOLUME I

GS1100 ARCHAEOLOGICAL WORKS

1. INTRODUCTION

The works described in this specification concern:

- Organization and execution of archaeological excavations in the areas where it will be required to execute such works throughout the course of works, according to the instructions issued by the Archeological Department concerned and ATTIKO METRO (AM) until soil without any antiquities is encountered.
- Configuration, organization, maintenance, safekeeping and obtaining of necessary worksite(s) equipment for the archaeological excavations intended to be carried out for this Project.

2. DESCRIPTION OF THE WORKS

2.1 The archaeological excavation shall be executed under the supervision and guidance of the Archaeological Service, according to the scientifically applicable permissible ways and methods of excavation.

2.2 The Contractor is responsible for the execution and the co-ordination of excavations, providing the appropriate manpower, materials, tools and mechanical means required based on the terms of the Contract for the correct, workmanship-like and safe execution of works.

The removal, temporary storage, safekeeping and relocation or transfer of the finds to the central warehouses of the Archaeological Service or wherever specified by the Archaeological Service fall also within the Contractor’s obligations.

The manpower required for the staffing of each worksite on a permanent basis shall be hired upon concurrence of the Archaeological Service and following ATTIKO METRO’s approval.

2.3 The Contractor ought to carry out all works and designs to be required in the course of excavation works, as indicatively stated below:

- Topographical survey and design
- Creation and maintenance of worksite accesses
- Retaining design and construction of excavation slopes
- Loading, unloading and transfer of excavation spoils from the worksite to an authorized disposal site.

2.4 Moreover, the Contractor shall submit to the Service for approval the Organization Chart of the personnel, who will execute all works related to the archaeological excavations for the Metro works, In line with the provisions of the Conditions of Contract. The Organization Chart shall be re-submitted upon every modification.

GENERAL SPECIFICATIONS - VOLUME I

- 2.5 The Contractor should be prepared to relocate at no extra compensation its equipment or personnel from the one work face to another, thus, reducing any delays due to archaeological investigations.
- 2.6 When materials/items of equipment (e.g. small structures) must be removed from one location of the Project to another, then this removal shall be reported in writing by the Contractor, so that any checking related to the above relocation can be feasible.
- 2.7 The above will be executed according to the requirements specified under the corresponding article of the “Conditions of Technical Description”.

3. ARCHAEOLOGICAL MATERIALS AND EQUIPMENT - PROCEDURES

The purchase or leasing of materials and/or items of equipment required for the execution of the Archaeological Works shall be effected through Archaeological Instructions, while the following necessary procedures for checking and managing these materials and/or items of equipment shall be observed.

1. Compilation and submission of the Archaeological Instruction to AM
The archaeological instruction shall include the location of the Project requiring the supply of the items of equipment and/or material(s), description of materials/equipment and quantities.
2. Review of the Archaeological Instruction by AM. AM may specify a price ceiling which shall result from the market research, through the submission of at least three (3) offers, from which the average price shall be extracted.
3. Transmission of the Archaeological Instruction, as approved, to the Contractor for implementation.
4. Upon each purchase or leasing of materials and/or items of equipment, the pertinent Delivery – Acceptance Protocol shall be signed between the Contractor and AM; this Protocol shall include the location of the Project requiring the supply of the equipment and/or material and the archaeological instruction whereupon the order were placed for the aforesaid materials / equipment.
5. In case an item of equipment or a material is destroyed or damaged at such an extent that it cannot be repaired, then a Destruction Protocol shall be compiled and signed by both contracting parties.
6. The person authorized to sign the aforementioned Protocols on behalf of ATTIKO METRO shall be one of the Engineers supervising the execution of the Archaeological Works. The Contractor ought to appoint the respective Graduate Civil Engineer on his part.
7. In case materials or items of equipment are stolen, then the Contractor shall follow the pertinent legal procedure (i.e. reporting of the theft to the Police Department) and notify AM in writing.

GENERAL SPECIFICATIONS - VOLUME I

GS1592 TEMPORARY ATTIKO METRO WORKSITE OFFICES AND EQUIPMENT

1 GENERAL

1.1 The Contractor shall provide and install site Offices for ATTIKO METRO (AM) (one central and two standard worksite offices) at the Project locations to be indicated by AM. The site Offices shall be situated in the working areas at locations approved by AM and shall serve AM's Project-related needs.

1.2 Each site Office shall be an independent building unit complete with water supply, drainage, electric power supply, air conditioning, communications facilities and parking area.

1.3 The site Offices shall be fully furnished, as described in the following paragraphs, and ready for occupancy four (4) weeks after the Contractor receives in writing the Notice from AM to Proceed with the implementation of the worksite installations drawing.

The Contractor shall submit to AM the drawing in question within two weeks after contract award.

1.4 The site offices and the parking areas shall be maintained and cleaned by the Contractor daily, during the project construction activities and until the completion of the Project. At regular intervals, insect killing and mice killing activities shall be performed at the care of the Contractor, when all employees working in the areas in question are absent.

The Contractor shall remove or dispose of the Site Offices to an appropriate area, enabling him to freely execute the cleaning works and any necessary reconfiguration works in the areas he had occupied.

If deemed necessary in the course of the works, the site offices can be transferred to another work site location on the responsibility of the Contractor, once approved by AM.

The final removal of the worksite offices shall be subject to AM's approval, taking into account AM's supervision needs.

2. FIELD OFFICES

The surface areas mentioned below are the minimum required.

In each worksite office provision must be made for parking area for AM's vehicles.

2.1 Central Worksite Office:

- 1 Site Construction Manager Office 15 m²
- 3 Field Engineer Offices 9 m² each
- 1 Archaeologists Office 9 m²
- 1 Secretary Room 9 m²

GENERAL SPECIFICATIONS - VOLUME I

•	1	Filing Room	9 m ²
•	1	Sanitary Area & Lockers Room	10 m ²
•	1	Meeting Room	20 m ²
•	1	Kitchen Room	<u>9 m²</u>
		Total	108 m²

2.2 Standard Worksite Office:

•	1	Field Engineer Office	9 m ²
•	1	Sanitary Area & Locker Room	10 m ²
•	1	Kitchen Room	<u>9 m²</u>
		Total	28 m²

3. WORKSITE OFFICES’ SPECIFICATIONS

3.1 The Contractor shall submit to AM for approval drawings and manufacturer’s specifications for the site offices, prior to commencing construction or ordering materials.

3.2 Each site office shall be **new** when delivered and shall have the following features and facilities:

3.2.1 Exterior and interior surfaces, other than factory finished, shall be painted with two coats of a material and colour approved by AM. No painting is required on aluminium or stainless steel surfaces. All interior walls and ceilings shall be panelled with finished plywood or gypsum wallboard of not less than 13 mm thickness. Walls and ceilings shall be thermally insulated.

3.2.2 Floors covered with resilient flooring material, such as vinyl tiles, constructed to withstand a live load of 6 kN/m².

3.2.3 Sanitary / Locker Rooms

i) These shall include two Sanitary Rooms (WC) – men/women - equipped with porcelain seat, lavatory cistern, toilet roll holder, etc. and a shower equipped with a soap dish, sockets for tissues, shower bath, cold/hot water shower battery, etc. Each area shall be fully equipped with ventilation system or a window.

ii) These shall include two washbasins with hot/cold water supply, cabinets, mirrors, soap dishes/soap dispenser, socket for tissues, litter bins and a water-heater.

The windows shall be equipped with sieve screen against insects.

3.2.4 Kitchen Room

Each kitchen room shall include a bench with a stainless steel sink, cabinets and hot and cold water supply. Cabinets shall be made of MDF

GENERAL SPECIFICATIONS - VOLUME I

lined with bakelite; they shall be placed over & underneath the aforesaid bench and throughout its length.

- 3.2.5 Lighting should provide a minimum of 350 Lux at desk height uniformly in all areas for daytime or nighttime use except rest rooms/WCs, where lighting may be less.
- 3.2.6 Air conditioning / heating & cooling shall be provided in each office to enable a temperature between 18⁰C and 25⁰ C to be maintained at all times.
- 3.2.7 The Contractor as required shall provide water, sewer, and electrical connections, as required.
- 3.2.8 For each Worksite Office \geq two (2) PSTN lines and one (1) Interconnection Circuit ADSL 24Mbps or faster shall be provided.
- 3.2.9 Structured voice and data cabling according to TIA/EIA 568 B standard.

The voice and data cabling shall terminate in separate patch panels within a rack. At each working post one (1) voice plug and one (1) data plug shall end. The number of the working places shall be equal to the anticipated number of working places of each installation (N) plus additional working places for the connection of peripherals, according to the following table:

NUMBER OF WORKING PLACES (N) PER INSTALLATION		+ Locations (Server, printers, fax, etc.)
Central Worksite Office	10	4
Standard Worksite Office	2	1

Sockets every some 3m and voice/data plugs shall be provided in the areas of all the offices, the meeting room and the filing room.

- 3.2.10 Adequate access from public streets to the Field Offices with gravel or concrete or asphalt layer.
- 3.2.11 The parking areas shall be constructed in such a manner so as to ensure full drainage and they shall be surfaced with gravel, concrete or asphalt and covered for sun and rain protection.
- 3.2.12 All locks shall be provided with three (3) keys.
- 3.2.13 Frames (windows and doors) made of aluminium fully insulated against all weather conditions, which shall be closed-locked, shall be provided to all the site offices. Safety bars shall be installed at the windows that are vulnerable to damage. The windows shall be equipped with double-glazing panels, shades, as well as sieve screen rollers against insects and external blinds.
- 3.2.14 The Contractor shall provide each Site Office with one electric appliance with bottle for the supply of drinking water – cold and hot – and shall be responsible for the supply of the bottles in question as well as for the maintenance and replacement of such equipment.

GENERAL SPECIFICATIONS - VOLUME I

- 3.2.15 The Contractor shall cover all expenses related to the supply, use and removal of telephone, water supply, power supply and sewage networks.
- 3.2.16 The Contractor shall provide always security and guarding measures for AM Site Offices and shall be responsible for immediate repair of any damage or thefts.

4 FIELD OFFICE EQUIPMENT

The Contractor will provide the following office furniture and Equipment, as mentioned in the following paragraphs, which will be distributed to the sites according to AM requirements. The equipment shall be new when delivered.

Central Worksite Office

Office furniture:

Description	Quantities
Desks 160x80cm with three lockable drawers	1
Desks 140x70cm with three lockable drawers	10
Desk for meeting room 100 x180 cm	2
Swivel, rolling, height adjustable chairs	6
Visitors chairs	17
Book cases 90x200cm with four selves	6
Filing cabinets 50x150cm with four drawers	6
Coat racks	6
Wardrobes 90x200 cm	6
Meeting white boards (2m long)	1

Office equipment:

Description	Quantities
Telephone apparatuses compatible with the respective infrastructure of the installation	10
Telephone switchboard with capacity of 16 internal and ≥ 2 external connections	1
Internet connection through an ADSL line (24Mbps) with Ethernet LAN interface and UPS 600VA line interactive	1
24 port Data Switch 1000 Mbps	1
A Central P/C (from an established manufacturer i.e. HP, DELL, Lenovo) with the following minimum requirements: Processor Intel Core i7, RAM 8GB (DDR3 or DDR4), two (2) HD 1 TB (RAID layout), SATA, 19" TFT Monitor, graphic cards 2 GB, DVD \pm RW, keyboard, mouse optical, UPS 600VA, line interactive , , . Operating System Microsoft Windows Server of most recent version.	1
Desk lamps	6
All-in-one photocopy machine with automatic document feeder with the following minimum requirements: Double face photocopying, 5 trays for paper loading, large paper capacity, heavy duty, high productivity, paper sizes A3, A4, A5 and B4, Zoom up to 200%.	1
Black and White printer A4 Laser HP P2035N (30p/sec) or more recent at least of the respective specifications, which shall have the capacity of	1

GENERAL SPECIFICATIONS - VOLUME I

connection with the local Ethernet data network.	
Multi-function machine with printer, scanner, fax and Laser photocopier, USB connection, HP M2727NF or more recent at least of the respective specifications.	1
P/Cs (from an established manufacturer i.e. HP, DELL, Lenovo) with the following minimum requirements: Processor Intel Core i5, RAM 4GB (DDR3 or DDR4), HD 500GB (min), SATA, 19” TFT Monitor, graphic card 2 GB, DVD RW, keyboard, mouse optical, network card 1000 Mbps, and UPS 600VA line interactive. Operating System Microsoft Windows of most recent version for PC network environment. Microsoft Office (Word, Excel, Powerpoint, Access) of the latest version.	10
Refrigerators: 10 cubic feet	1

Standard Worksite Office

Office furniture:

Description	Quantities
Desks 140x70cm with three lockable drawers	2
Swivel, rolling chairs with adjustable height seat	2
Visitors chairs	3
Book cases 90x200cm with four shelves	2
Coat trees	1
Wardrobes 90x200 cm	1

Office equipment:

Description	Quantities
Telephone apparatuses compatible with the respective installation infrastructure	2
Telephone switchboard with capacity of 16 internal and ≥ 2 external connections	1
Internet connection through an ADSL line (24Mbps) with Ethernet LAN interface and UPS 600VA line interactive	1
Data Switch ≥ 8 ports 1000Mbps	1
PCs (from an established manufacturer i.e. HP, DELL, Lenovo) with the following minimum requirements: Processor Intel Core i5, RAM 4GB (DDR3 or DDR4), HD 500GB (min), SATA, 19” TFT Monitor, graphics card 2GB, DVD RW, keyboard, mouse optical, network card 1000 Mbps, UPS 600VA line interactive. Operating System Microsoft Windows Pro of most recent version for PC network environment. Microsoft Office (Word, Excel, Powerpoint, Access) of the latest version.	2
Desk lamps	2
Multi-function machine with printer, scanner, fax and Laser photocopier, USB connection, HP M2727NF or more recent at least of the respective specifications.	1
Refrigerators: 10 cubic feet	1

GENERAL SPECIFICATIONS - VOLUME I

ANNEX 1

1. BASIC DATA – SODAYE

1.1. SAFETY POLICY

This is a declaration signed by high-ranking employees of the Contractor officially stating his commitment to the health and safety of the employees and any third parties affected by his activities.

The Safety Policy must cover the general intentions, trends and targets of the Contractor, as well as the criteria and principles on which his actions/reactions are based.

1.2 ORGANIZATION: DUTIES & RESPONSIBILITIES

In order to achieve the Safety Policy targets, it is essential to define the management structure and the allocation of the safety related duties and responsibilities at all company levels.

This part of the SODAYE must include the following, namely:

- **Organization Chart**

This organization chart presents the structure of the Contractor per level, including highest and medium management, safety specialists and workers.

- **Duties**

The safety related roles and duties of the personnel with administrative and executive tasks must be defined and substantiated, so that each member of this personnel is aware of his/her obligations.

- **Other arrangements**, such as the appointment of the Safety Coordinator, the Safety Technician, Safety Officers, the Occupational Doctor, nursing staff (if required), etc., acknowledgment of health and safety matters, training on safety issues, etc.

1.3 PLANNING & IMPLEMENTATION: RISK IDENTIFICATION AND CHECKS

For implementing the Safety Policy, a structured and systematic approach is required. The purpose is to identify risks, assess their hazardousness and set priorities for their minimization and reduction. Performance standards are established and are used for assessing the targets.

This part of the SODAYE must include as a minimum the following, namely:

- **List of activities**

This list must cover all activities required for the safe execution of the contracting works. The description of the activities should include data, such as equipment & machinery, materials, special procedures, etc.

- **Anticipated risks per activity**

GENERAL SPECIFICATIONS - VOLUME I

The risks and the persons exposed to them must be identified and systematically examined.

- **Safety measures implemented for reducing hazardousness**

Implemented measures may be collective (guards, signs, etc.), personal (provision of Personal Protection Means), organizational (procedures, work instructions, supervision, training) or combination of the above. The procedures stated herein should be included at the Safety Procedures Manual. (ANNEX 2)

1.3.1 PERFORMANCE MEASUREMENT: SAFETY MONITORING

It is required to carry out performance measurements, as compared to agreed targets, through active and a posteriori monitoring in order to define when and where improvement is needed. Active monitoring shows how effective is the operation of the safety management system, while the a posteriori observation reveals the causes of the system failures.

This section should include any tools and systematic frameworks for monitoring, as well as the following as a minimum:

- **Safety inspections**
- **Incident Investigation and Analysis**
- **Safety Meetings.**

1.3.2 REVIEW & REVISION

This final element helps the Contractor to capitalize on the entire experience and to implement this knowledge. The commitment for continuous improvement requires constant development of policies, systems and risk control techniques.

The minimum requirement for this part of SODAYE is the procedure related to the revision of the submitted text.

ANNEX 2

SAFETY MANUAL

The Safety Manual must constitute part of the submitted documentation concerning SODAYE/HSP.

The said procedures must be standardized and must include apart from the numbering/ codification the following:

Purpose – Field of Application - Definitions – References to the applicable legislation
- Duties / Description of procedure (clearly defined roles and actions (who is doing what, when and how) – Forms / Check Lists (a documentation method must be foreseen in all Safety Procedures).

The list of the Safety Manual – to be constantly updated with any procedures to arise / to be required based on the analyses of activities/ corresponding risks and written risk assessments – includes as a minimum the following:

- Incident reporting/analysis and Record keeping based on the legislation
- Dealing with Emergencies – First Aid
- Personal Protection Means (PPM)
- Training of Personnel on safety related matters
- Employees medical examinations
- Disciplinary Procedure
- Entrance to the worksite - Worksite ID
- Guarding of the Worksite
- Worksite Visitors
- Checking of Machinery used in the Project at the worksite gate
- Written assessment of professional risk
- Fire Safety
- Safety Meetings

The above list will be supplemented whenever AM justifiably requires it.