



ΑΤΤΙΚΟ ΜΕΤΡΟ Α.Ε.

REGISTERED IN KIMDIS

**TITLE OF THE TENDER: “EXPANSION OF THE TRAMWAY
DEPOT IN THE AREA OF ELLINIKO”**

RFP-360/19 (Α.Σ. 86960)

CLARIFICATIONS DOCUMENT 2



CLARIFICATIONS DOCUMENT 2

This Clarifications Document is issued in line with the provisions of paragraph 2.4 of the Invitation to Tender and includes responses to the questions submitted, supplementary responses to Clarifications Document 1 and a CD containing drawings of existing projects.

As regards Chapter B, it is hereby clarified that, for reasons of completeness and in view of facilitating reading, the questions and the initial responses to the questions of Clarifications Document 1 are repeated and supplementary responses are added hereto.

The content of Clarifications Document 2 constitutes an integral part of the Invitation to Tender.

A. RESPONSES TO QUESTIONS

Question 1

According to the Design, Performance, Materials and Workmanship Specifications for Trackwork (**TR_S_DP340000**), **page 46** (SPARE PARTS IN REDUNDANCY FOR TRACKWORK), it is stated that “...AM shall have in redundancy (“as stock”) pieces of spare parts corresponding to at least 1% of the installed ones. In no case will there be less than one piece for feature at the end of the guarantee period”.

Kindly clarify what provision must be made as regards spare parts for the turnouts mentioned in **page 6** of document **TR_S_DP340000**.

Response 1

The Contractor shall provide spare parts for the turnouts that shall include the following: 1 piece for each type of fixing the turnouts in ballast and 1 piece for each length of sleeper.

Question 2

In document TR_S_DP270001 (Wi-Fi System), in §4.1, it is stated that “*The workstation to be installed by the Contractor... shall have installed the management software which is compatible with the vehicle’s software...*”. Kindly provide us information about the software installed on vehicles and let us know whether a special communication protocol is required for data input-output related to repair and maintenance works per train.

Response 2

The existing WiFi network in the existing area serving the TRAMWAY vehicles stabling needs uses Mikrotik BaseBox 2 (RB912UAG-2HPnD-OUT) system, which interface with the MAN data backbone network. The technical characteristics of the system are available at the manufacturer’s site.

The WiFi system was activated to serve the needs of the new Telematics (Contract CON003/12) and it transmits wireless data among the old tram vehicles Series I – SIRIO; the same will be implemented for the new 25 vehicles Series II – ALSTOM (Contract GEN-060/18), supplementing approximately 15 additional hotspots in the existing facilities for the tramway vehicles stabling and repair related needs. The information related to the new vehicles shall be routed wireless to a new server that supports maintenance and diagnostics of the new vehicles. Further information, communication protocols, software, etc. shall be provided to the Contractor of this contract during the Detailed Final Designs preparation phase.

It is also reminded that OASA has installed a independent WiFi communication system in the existing stabling area, in the framework of the electronic ticketing, that serves as a means of transmission of the relevant fare related data, as regards the old SIRIO vehicles; the same

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will be effected for the new ALSTOM vehicles. It is anticipated that OASA will install new hotspots in the new shed for its own use in view of transmitting the relevant fare related data.

In the framework of this tender, the requested system and software of the WiFi system of the new shed should be of open architecture, so as to enable communication with the relevant equipment of both the existing and the new vehicles, as mentioned above (except the applications intended for the fare).

Question 3

In document TR_S_DP015250 (Signaling and Point Machine Control System & Depot Management System & Vehicle Identification System (RFID)), in §1.3.7.2, it is stated that “*The Contractor shall take all necessary actions and shall substantiate the operation compatibility between the existing and the new rolling stock to be supplied*”. Kindly inform us about the characteristics of the existing and the new rolling stock to be supplied, such as wheel dimensions, (electro)magnetic brake etc.

Response 3

Certain information about the vehicles is included in the Design, Performance, Materials and Workmanship Specifications for Trackwork. Detailed information about the vehicles (Series I and II) shall be provided to the Contractor of this contract.

Question 4

In document TR_S_DP015250 (Signaling and Point Machine Control System & Depot Management System & Vehicle Identification System (RFID)), in §1.3.12.1, it is stated that “certain older vehicles have already been equipped with transceivers acknowledging the vehicle at the network stops. As concerns these vehicles, their compatibility with the existing system must be checked”. Kindly inform us about the characteristics of the existing RFID system.

Response 4

As regards the Tramway Vehicle Identification System (RFID), kindly be advised on the following:

- The existing Tramway Vehicle Identification System is installed only at “ASKLIPIO VOULAS” terminal stop;
- There is no system for the identification of the position of vehicles in the Depot area and, thus, there is no interface with the Turnout Control System;
- The justification of the Tramway Vehicle Identification System at “ASKLIPIO VOULAS” terminal stop is integrated in the electronic files attached hereto for information purposes;
- The communication of the RFID interrogators (Infinity 510) with the OCC is effected through the existing MAN data network (Ethernet, TCP/IP);
- The old vehicles are equipped with standardized passive RFID tags, while a number of these have been either destroyed or lost. The compatibility of the new tags with the old ones is deemed neither feasible nor necessary;
- The selection of equipment to be appropriate for railway applications and to feature good performance related references is desirable.

Due to several problems over time to the existing RFID system to both the older tramway vehicles, from which plates have been cut and lost or have been destroyed and do not operate, and to terminal stops, the implementation, on the basis of the old depot management system and vehicle identification system, shall require the detailed investigation, on the part of the Contractor of this contract, about the options of the old

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system to adapt to the new system for it to function as an integrated system ensuring the safe and correct operation on the old and new vehicles and on the fixed-track infrastructure that must be installed. In case the above cannot ensure the required operation, the Contractor should then propose a new system, which is included in the scope of the project and the respective Lump Sum Price (LSP).

Question 5

In document TR_S_DP015250 (Signaling and Point Machine Control System & Depot Management System & Vehicle Identification System (RFID)”, in §1.3.13.1, it is stated that “*The Uninterrupted Power Supply (UPS) system shall be dimensioned so as to feed efficiently the systems included in this specification, as well as the existing signaling and point machine control systems...*”. Kindly inform us about the electrical loads of the existing Signaling and Point Machine Control System, which should be supported by the UPS to be installed.

Response 5

The electrical loads of the Signaling System in the Depot area are as follows:

- DEPOT MANAGER PC in the OCC: 1000W
- PLC Simatic S7-300 in the computer room: 500W
- Hanning and Kahl entry turnout Controller: 1500W
- Hanning and Kahl exit turnout Controller: 1500W

Question 6

In the graph containing the new track layout, kindly clarify those lines not integrated into the electrical network.

Response 6

All new tracks-lines shall feature a 750V DC overhead catenary system.

Question 7

Kindly let us know whether we can place the new switch and the new traction power supply switchboard in a new very small shelded area near the existing one.

Response 7

The contractual layout drawing of the Traction Sub-station shows the locations of the new fields within the Sub-station, There is no reason for positioning same in an outdoor new area and this is not accepted.

Question 8

Turnout sleepers: In Document TR_S_DP340000, DESIGN, PERFORMANCE, MATERIAL AND WORKMANSHIP SPECIFICATIONS FOR TRACKWORK, and, more specifically, in its (prevailing) design specifications section, no reference is made to a specific type of wood for the turnout sleepers. Further on, in the document’s materials specifications section, reference is made to AZOBE sleepers for this use. Due to rarity of the AZOBE sleepers, kindly let us know whether sleepers made of OAK or concrete sleepers will be accepted.

Response 8

Apart from AZOBE sleepers, accepted can also be concrete sleepers, on condition that they are properly dimensioned and manufactured under the responsibility of the turnouts’ manufacturer and that they be sent together with the turnouts/crossovers.

OAK sleepers are not accepted.

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Question 9

Gauge increase: Kindly confirm whether a gauge increase is required or not in turnout and transition curves, their radius being $R=25$ m.

Response 9

Gauge increase would be preferred in the aforementioned cases as well. In order to facilitate the gauge increase in turnouts, a proposal/evaluation of the turnouts' manufacturer shall be submitted based on the layout of the vehicle's axes.

Question 10

The type and cross-section of the diagonals are shown neither in the metal shed nor in drawing “S3GFDDRSTRDPALLPL001A”. Kindly provide us with the relevant information.

Response 10

The type and cross-section of the diagonals are HEA 240; however this should be confirmed by the Detailed Final Design to be prepared by the Contractor of this contract and be submitted to ATTIKO METRO S.A. for approval.

Question 11

In the same drawing “S3GFDDRSTRDPALLPL001A”, at the point of connection of IPE 450, mid-space, a deep beam of unknown cross-section is shown. Kindly let us know the type and the cross-section of the subject beam.

Response 11

The type and cross-section of the beam are HEA 140; however this should also be confirmed by the Detailed Final Design to be prepared by the Contractor of this contract and to be submitted to ATTIKO METRO S.A. for approval.

Question 12

Kindly provide detailed information about the existing signaling system accompanied with drawings, detailed description and characteristics of the items of equipment in operation.

Response 12

With regard to the Signaling and Point Machine Control System, please be advised as follows:

The electronic equipment and the point machines are manufactured by HANNING&KAHL (H&K). In the field, there is a controller under drawing title “Athen Depot Part-1 HN-SA 302-1”, controlling the turnouts entering the Depot, and a controller under drawing title “Athen Depot Part-2 HN-SA 302-2” controlling the turnouts exiting the Depot and entering the workshops. In the computer room there is a data collector that has been implemented through a PLC S7-300 (one CPU 314, one Communications processor CP 342-5 and one IE/PB Link Gateway are also included). The data collector communicates with each controller via a Siemens Gateway (DP/RS232C Link) installed within the controller. Access to S7-300 by the existing Depot Manager is effected via ethernet and OPC interface. Drawings showing both controllers are included in the files attached hereto.

The Contractor of this contract can either use the existing facility, by expanding it in order to integrate new controllers too, or replace it as a whole or any parts thereof in order to achieve the required result, without changing the existing controllers. In any case, a system **integrated** with the Tramway Vehicle Identification System at the Depot must be provided in order to control from the OCC all itineraries within the Depot.

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As regards the signalling system, relevant drawings have been provided with the Clarifications Document 1. The required detailed information should be proposed by the Contractor of this contract during the preparation of the Detailed Final Designs of the project based on the thorough investigation that he shall make collecting more detailed information by STASY S.A., the existing equipment on site the project and his suppliers.

Question 13

In the “Technical Description”, paragraph 4.1.11, page 40, it is stated that: “*4.1.11 Signalling and Point Machine Control System ... Point machines The Contractor shall install nineteen (19) point machines in nineteen (19) turnouts of the trackwork. The point machines shall be complete, with all their spare parts, accessories and control equipment. The Contractor shall also install similar turnout position indicators near the respective point machines that shall indicate the position of the switch-rails*”, whereas in document TR_S_DP015250 – “SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, paragraph 1.3.5.1, page 8, it is stated that: “*...The Contractor shall install twenty-two (22) point machines in twenty-two (22) turnouts of the trackwork of the new expansion of the Depot and one (1) point machine for the temporary replacement of the existing point machine no.6 at the entrance of the Depot, as described in the Technical Description*”. Kindly specify which of the two requirements applies.

Response 13

Valid shall be the requirements of the Specification Document TR_S_DP015250 – “SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, i.e.:

- 11 electrically operated point machines
- 11 manually operated point machines
- 1 manually operated spring back point machine (if required, i.e. in case failure to control point machine No.6 **still stands** prior to the commencement of works and, thus, its replacement shall be necessitated). In all other cases, the Contractor of this contract shall supply and temporarily install a new manually operated spring back point machine in replacement of the electrically operated mechanism of point machine No. 6. Upon completion of works, the electrically operated mechanism of the point machines shall be re-positioned and the manually operated mechanism shall be integrated into the spare parts of the project as an additional spare part, within the Lump Sum Price (LSP).

Question 14

In the “Technical Description”, paragraph 4.1.11, page 40, it is stated that: “*Signalling and Point Machine Control System ... Point machines The Contractor shall install nineteen (19) point machines in nineteen (19) turnouts of the trackwork. The point machines shall be complete, with all their spare parts, accessories and control equipment. The Contractor shall also install similar turnout position indicators near the respective point machines that shall indicate the position of the switch-rails....*”, whereas in document “TR_S_DP015250 – SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, paragraph 1.3.6.1, page 9, it is stated that: “*...The Contractor shall install eleven (11) turnout position indicators of two (2) indications, near an equal number of electric point machines*”. Kindly confirm the number of the turnout position indicators.

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Response 14

Valid shall be the requirements of the Specification Document “TR_S_DP015250 – SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, i.e.

- Eleven (11) turnout position indicators.

Question 15

In the “Technical Description”, paragraph 4.1.11, page 41 and in document TR_S_DP015250 – “SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, *paragraph 1.3.7* “Tramway vehicle detection system” reference is made to track circuits and/or mass detectors. Kindly clarify whether the reference is binding or whether it is possible to use another Tramway Vehicle Detection method.

Response 15

Depending on the technical solution to be proposed for the route locking and the electrical interlocking of the point machines, use shall be made of either track circuits combined with mass detectors or of only track circuits.

Question 16

In document TR_S_DP015250 – “SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, paragraph 1.3.9 “Depot Management System”, page 11, it is stated that: “...*The Contractor shall install a Depot Management System equipped with all interfaces to the other systems. The system shall incorporate all the existing and new equipment of the Depot regarding the routing of the tramway vehicles, the display of the condition of the field equipment, the connection with the general Vehicle Identification System for existing and new parking positions...*”, as well as that the basic functions performed by the System are *inter alia* the following:

- it transmits routing commands to the Point Machine Control System.
- it receives and displays the field equipment operating condition.
- it manages through the tramway vehicle identification system the maximum shunting and movements flow inside the Depot.
- it records history data.
- it is connected to the tramway vehicle identification system to display the tramway vehicle identifiers at the parking positions.
- it is connected to all the systems to ensure information of the OCC personnel.
- In order to satisfy the above requirements, kindly provide detailed information on the existing Depot equipment for each of the following system operations without however being limited to them:
 - manufacturing house and type of equipment for integration
 - manufacturing house and type of system ensuring interface between the equipment and the OCC
 - communication protocols between the control units of the interface system and the central PC
- a complete list with all systems which the Depot Management System should be interfaced with, in order to ensure information of the OCC personnel, as well as all communication protocols.

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Response 16

The requested information shall be examined by the Contractor of this contract during the preparation of the Detailed Final Designs of the project on the basis of a thorough investigation that he will perform collecting detailed information by STASY S.A. and the existing equipment on site the project.

See also responses 29 and 79 of the Clarifications Document.

Question 17

In document TR_S_DP015250 – “SIGNALLING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & VEHICLE IDENTIFICATION SYSTEM (RFID)”, paragraph 1.3.12 “Tramway Vehicle Identification System (RFID)”, page 13, it is stated that: “Certain older vehicles are already equipped with transceivers which identify the tramway vehicle at the network stops. The compatibility of these vehicles with the existing system must be checked ...”. Kindly provide detailed information on the existing equipment, as well as drawings of the Tramway Vehicles - old and new ones - in order to investigate the possibility of installing radio broadcasting equipment.

Response 17

See response 4.

Question 18

In document TR_S_DP342400 "TRACTION POWER SYSTEM AND CATENARY", paragraph 2.4.3, it is stated that “Cable ducts shall be made of copper; they shall be single core or stranded, of annealed copper, and of high conductivity. Aluminium ducts are prohibited. On the contrary, in drawing “Traction Power System – Single Line Diagram and Plan View” no. S3GFDDRELTDPSTSDI001A it is shown that both the new power supply cables – from the new power supply field of Line 6 in the 750 VDC switchboard to the new local pillars near the shed and the return cables – from the local pillars to the NIS field of the 750VDC switchboard – are aluminium cables of a standard cross section of 500mm² and 150mm². Kindly confirm that the new power supply and return cables to/from the new lines for tramway vehicles in the Depot must be made of aluminum and shall be of a standard cross section of 500mm² and 150mm², as indicated in the drawing “Traction Power System – Single Line Diagram and Plan View” no. S3GFDDRELTDPSTSDI001A.

Response 18

It is confirmed that the aforesaid cables can be aluminium cables. Their dimensions shall be determined in the Detailed Final Design. Uniformity with the existing operating system must be also assessed.

Question 19

In the “Technical Description”, paragraph 4.1.10, it is stated that “The Contractor shall modify accordingly the central PC in the OCC to display the new shed on the BMS”. Due to the number and the importance of the interfaces, a multitude of technical data is required concerning the installed equipment in order to identify the technical solution; such data are not included in the documentation of the Invitation to Tender. In detail, the following minimum information is required, which, once provided, may give rise to the following questions:

- i. Detailed technical description of the installed Building Management System
- ii. Technical data of the equipment at the local control unit of building 4 and the central PC in the OCC
 - manufacturing house and type of control units

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- manufacturing house and type of the central PC at the OCC
 - Communication protocols between the control units and the central PC
 - Expandability options of the building 4 local control unit system
 - Expandability options of the central PC at the OCC
- iii. Detailed data on the software used for the Building Management System
- Manufacturing house of the software and its version
 - Operation manuals of the system, so as to ascertain if and in what way the data of the new equipment can be added by another manufacturer or interventions are only permitted by the existing supplier
 - Expandability options of the system.
- iv. Restrictive technical data on the interface with the existing system, such as control/data cables, fiber optics, etc. which must be use based on the installed equipment of the Building Management System.

Response 19

Information about the Building Management System – BMS have been provided through the Clarifications Document 1, while additional information is given in Chapter B, through the Supplementary Responses to Clarifications Document 1. (Response #2).

It is also stated that the entire hardware and software composing the BMS system is manufactured by the Company Jonson Controls and is based on modular and expandable architecture. Kindly refer to the responses to Question #2 of Clarifications Document 1, as well as to the additional information provided through this Clarifications Document. Further information about this type of equipment can be collected through the internet or the local market.

All requested data should be investigated by the Contractor of this contract during the preparation of the Detailed Final Designs of the Project, based on the thorough investigation that he shall make collecting more detailed information by STASY S.A., the existing equipment on site the project and his suppliers.

Question 20

In “Technical Description”, paragraph 4.2 “Special issues related to H/M and railway systems to be taken into account during the Depot construction and operation”, it is stated that “The Contractor is required to deliver a sufficient amount of spare parts for all new systems, with minimum quantity one (1) piece per type of equipment”. Kindly clarify per system the type of the equipment for which spare parts are required.

Response 20

In line with the last paragraph of article 4.2 of the “Technical Description”, *“the quantity of spare parts to be provided shall be proposed by the suppliers of the systems, based on the foreseen Mean Time Between Failures (MTBF) and the requirement for 3-years coverage, with minimum quantity one (1) piece per type of equipment”*. On the basis of the aforesaid requirement, the bidders shall assess the requested quantity of spare parts.

Question 21

With regard to the content of paragraph 3.1.14 “Irrigation Shaft – Water jet drilling” of the Document entitled DESCRIPTION OF CIVIL WORKS AND TRACKWORK, kindly notify to

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us the maximum daily water related requirements and the volume of the existing Water Tank.

Response 21

In line with the provisions of Article 3 “DESCRIPTION OF CIVIL WORKS AND TRACKWORK”, paragraph 3.1.14 “Irrigation Shaft – Water jet drilling”, the Contractor of this contract shall see to the complete sealing of the subject shaft – height-wise and to the construction of a new water-jet drilling, as described in the subject paragraph, as well as in Article 01052 “Water-Jet Drilling” of the Document entitled “Material and Workmanship Specifications for Civil Works”.

For information reasons, kindly be advised that the volume of the existing water tank is 60m³. As regards the Depot, It is estimated that approximately 400m³ of water are consumed in total on a monthly basis.

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B. SUPPLEMENTARY RESPONSES TO QUESTIONS OF CLARIFICATIONS DOCUMENT 1

CLARIFICATION DOCUMENT 1

Question 1

In the document “Design, Performance, Materials and Workmanship Specification for: POWER DISTRIBUTION – LIGHTING / 4.5 PERIMETER LIGHTING OF THE LAND PLOT”, page 12/40, it is stated that:

“As long as the existing electrical installation can support the operation of all lighting fixtures (old and new) of the new fencing, these shall be connected to the existing electrical installation of the perimeter lighting. For this purpose, a design shall be submitted proving the adequacy of the cables, the adherence to the voltage drop limits etc. In this case, the high voltage and earthing networks shall be extended. Otherwise, the lighting fixtures of the new fencing shall be connected to the new switchboard, wherefrom the ON / OFF command shall be given for the lighting fixtures of the existing installation, using a cable other than the cable used to feed the lighting fixtures”.

Please provide us information about the existing Electrical installations (Plan Views, Switchboard Diagrams, Calculations).

Response 1

As concerns the information available to ATTIKO METRO S.A. until the present date, kindly see the CD (File ASB.LIG.DEPOT). As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 1

	RESPONSE	REFERENCE 1 TO CD
1	There is not any calculations design available for the subject system. The important items of the existing electrical installations design are depicted on the single-line diagrams of the lighting switchboards and on the general layout drawing for the lighting of the Depot.	SWITCHBOARDS DIAGRAMS AsB_EPS_DP_DIA_0016_0.dwg LIGHTING – GENERAL LAYOUT OF THE DEPOT AsB_LIG_DP_PLA_0001_0.dwg

Question 2

In the document “Design, Performance, Material and Workmanship Specification for: POWER DISTRIBUTION – LIGHTING / 4.5 PERIMETER LIGHTING OF THE LAND PLOT”, page 16/40, it is stated that:

“a. Switching ON and OFF the lighting fixtures of the atrium lighting and the lighting of the Depot perimeter, as configured in its new form, shall take place along with the lighting fixtures of the existing installation of the perimeter lighting.

b. Switching ON and OFF the lighting fixtures of the general lighting of the shed shall take place by operating 3-position (ON-OFF-AUTO) switches, either from the switchboard (ON and OFF), or remotely via the existing BMS system and/or from another point of operation or automation (position AUTO). To this end, the BMS system shall be extended via a new installation or by modifying the existing BMS system, enabling it to also control – monitor the aforementioned lighting fixtures. The distribution of the lighting fixtures, their separation into different circuits and their controls shall enable the lowering of the shed’s lighting level as a percentage (0.5, 0.25) of the full lighting, maintaining at the same time a satisfactory level of uniformity, either locally or remotely”.

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Please provide us details about the existing BMS system (Plan Views, Diagrams, List of control points, Manufacturer, type of equipment etc.).

Response 2

As concerns the information available to ATTIKO METRO S.A. until the present date, kindly see the CD (File ASB.BMS.DEPOT.LIG.DEPOT). As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 2

	RESPONSE	REFERENCE 2 TO CD
2	<p>We hereby enclose a brief description of the BMS TRAM, a General Description of the control system and a Drawing showing the terminal boxes to control the air-conditioning/heating systems of the heating-plant (building 4) and the perimeter lighting (PILLAR 5).</p> <p>In our view, there is no space available in the existing switchboard to cover the new needs.</p>	<p>Description_BMS.pdf User Manual (METASYS)-S4-OTH-OM-ELM-DP-BMS-GE001-A.pdf DRAWING SHOWING THE TERMINAL BOXES TO CONTROL BMS ΠΜΕ4 BUILDING 4.pdf</p>

Question 3

In the document “Design, Performance, Material and Workmanship Specification for: POWER DISTRIBUTION – LIGHTING / 8 DISTRIBUTION NETWORK – SWITCHBOARDS 8.1 POWER SUPPLY - DISTRIBUTION”, page 22/40, it is stated that:

“A new automatic electronic switch as well as the necessary monitoring and control tools shall be installed on the existing General Low Voltage Switchboard (GLVS)”, similar to or fully compatible with the tools meant to control and monitor the existing lines,.

Please provide details about the existing GLVS (Diagrams, Manufacturer, type of breakers etc.).

Response 3

As concerns the information available to ATTIKO METRO S.A. until the present date, kindly see the CD (File ASB.LIG.DEPOT). As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 3

	RESPONSE	REFERENCE 3 TO CD
3	<p>The General Low Voltage Switchboard (GLVS) is manufactured by GENERAL ELECTRIC, of type GEA plus 2.0. As regards the cables’ departures panel at hand, the types of the switches are RECORD PLUS FE 160A and RECORD DH 400A.</p>	<p>GEAPlus 2.0 switchboard.pdf</p>

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Question 7

In the document “TECHNICAL DESCRIPTION 3.6 Works inside the Running Shed – Inspection Pits, page 27/47, it is stated that:

“The Contractor shall execute Civil and E/M Works inside the Tramway Depot current Running Shed, in the areas of tracks 2, 5, 6 and 7. More specifically:

A. Track 7

All along the entire length of track 7, a new inspection pit shall be constructed....”

Please provide all technical information on the existing networks of the Running Shed which shall serve the new pits, such as:

- Plan view drawings of the following installations: Water Supply, Compressed Air, Sewage-Drainage of industrial waste
- Electrical plan view drawings showing tray routing, Diagrams of the Switchboards feeding the new pits and Technical details of the Lighting and Earthing equipment.

Response 7

As concerns the information available to ATTIKO METRO S.A. until the present date, kindly see the CD (Filesplu.Rev.0 WATER SUPPLY, ASB.DRN.DEPOT RAINWATER DRAINAGE – RAIN WATER SEWAGE, ASB.INDUSTRIAL WASTES, ASB.WAW.DEPOT.SEWAGE, ASB.LIG.DEPOT - LIGHTING, ASB.LVS.DEPOT – LOW VOLTAGE ASB.LVS.LIGHTNING ROD). As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 7

	RESPONSE	REFERENCE 7 TO CD
7	The data related to the existing compressed-air network are depicted on the attached drawing. The earthing drawing is in file ASB.EPS.DEPOT (ASB.DR.ERT.DP.ERT.1002.dwg) that you have.	COMPRESSED AIR AsB_CAR_DP_PLA_1003_1004_A.dwg

Question 16

In the document TR_S_DP342400 "TRACTION POWER SYSTEM AND OVERHEAD CONTACT LINE", in paragraph 2.1, it is stated that:

- i. A new field for the overhead contact line feed shall be added and connected on the existing General DC Switchboard (750V DC) as an extension of the busbar of the switchboard already feeding the Depot.*
- ii. Additional equipment for the termination and connection of new return cables shall be installed on the Return Current Main Switchboard.*
- iii. Installation and termination of the new feeding and return cables to and from the new stabling lines of the Depot.*
- iv. Modifications and additions of equipment, cabling and software for the connection of the new Traction equipment with the new SCADA system of the Tramway and modifications to the existing SCADA system”.*

Given the multitude and the importance of the interfaces, a large amount of technical data is required concerning the already installed equipment or the equipment to be installed, in order to determine the technical solution; this type of data are not included in documents

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provided to us. More specifically, at least the following information is required, which, once provided, may generate additional questions:

- i. As regards the General DC Switchboard (750V DC):
 - Technical description of the Traction Power system
 - Technical description of the data transmission system
 - Specifications and MSS of the entire existing equipment of the Traction Power system (manufacturer, technical data etc.)
 - Specifications and MSS of the data transmission system
 - Circuit diagrams for all existing equipment in substation 15, which communicates with SCADA system (DC switchboard, MV switchboard, rectifier, auxiliary voltage supply, transformer etc.)
 - Mechanical drawings of the General DC Switchboard (750V DC)
 - Logic diagrams for all existing equipment of the Traction Power system
 - Logic diagrams and IP addresses assignment for all existing equipment of the SCADA system, both at a local and central levels
 - Logic diagrams for PLCs and/or relays, where used and communicating with the SCADA system
 - manufacturing firm and type of logic controllers (PLC) and/or relays, where used and communicating with the SCADA system
 - manufacturing firm and type of routers (Router / Switches) that may be used
 - Communication protocols of logic controllers (PLC) and/or relays, where used and communicate with the SCADA system.
- ii. For the traction system, in general:
 - Drawings for the routing of power supply cables (traction, LV, MV) and control in and out of the substation.
 - Earthing drawings
 - Architectural “AS BUILT” drawings of the Substation.

Response 16

As concerns the information available to ATTIKO METRO S.A. until the present date, kindly see the CD File ASB.EPS.DEPOT. As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 16

	RESPONSE	REFERENCE 16 TO CD
16	<p>i. The data available as concerns the requested information are included in electronic format in the file TRACTION POWER SYSTEM. The switches used for the communication of the local computers of the Sub-stations with the remaining SCADA network are of NORTEL Baystack 380. Other data relating to the SCADA system shall be provided to the Contractor at the phase of the designs preparation by him.</p> <p>ii. Drawings available for cable routing and earthing of individual items of equipment are included in electronic format in the file “TRACTION POWER SYSTEM”, along with</p>	<p>TRACTION POWER SYSTEM AsB_DR_TPS_GN_ERT_1142_0 AsB_ARC_DP_PLA_6001.dwg AsB_ARC_DP_SEC_6001.dwg AsB_ARC_DP_VIE_6001.dwg</p>

CLARIFICATIONS DOCUMENT 2

	an earthing drawing of a typical Traction Substation and “As Built” architectural drawings of the Traction Substation 15.	
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Question 29

Document TR_S_DP015250 – "SIGNALING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & RFID", Article 1.3.9.1, please clarify the interfaces with other systems. More specifically, present in detail the communication protocols in terms of hardware and software.

Response 29

The Depot Management System (DMS) shall be interfaced with the RFID and their interface shall be determined by the Contractor/Supplier of the associated systems. The DMS shall be interfaced with the new Signaling and Point Machine Control System and their interface shall be determined by the Contractor/Supplier of the associated systems. The DMS shall be also interfaced with the existing Signaling and Point Machine Control System and their interface shall be implemented by the Contractor based his proposed technical solution. The DMS is expected to receive signals concerning the status of the existing field equipment. As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 29

	RESPONSE	REFERENCE 29 TO CD
29	<p>Part1: With regard to the existing Signaling and Point Machine Control System, please be advised as follows: The electronic equipment and the point machines are manufactured by HANNING&KAHL (H&K). In the field, there is a controller under drawing title “Athen Depot Part-1 HN-SA 302-1”, controlling the turnouts entering the Depot, and a controller under drawing title “Athen Depot Part-2 HN-SA 302-2” controlling the turnouts exiting the Depot and entering the workshops. In the computer room there is a data collector that has been implemented through a PLC S7-300 (one CPU 314, one Communications processor CP 342-5 and one IE/PB Link Gateway are also included). The data collector communicates with each controller via a Siemens Gateway (DP/RS232C Link) installed within the controller. Access to S7-300 by the existing Depot Manager is effected via ethernet and OPC interface. Drawings showing both controllers are included in the files attached hereto. The Contractor can either use the existing</p>	<p>HANNING-KAHL CONTROL - COMMUNICATIONS</p>

CLARIFICATIONS DOCUMENT 2

<p>facility, by expanding it in order to integrate new controllers too, or replace it as a whole or any parts thereof in order to achieve the required result, without changing the existing controllers. In any case, a system integrated with the Tramway Vehicle Identification System at the Depot must be provided in order to control from the OCC all itineraries within the Depot. Part 2: See Response 4.</p>	<p>RFID</p>
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Question 30

Document TR_S_DP015250 – "SIGNALING AND POINT MACHINE CONTROL SYSTEM & DEPOT MANAGEMENT SYSTEM & RFID", Article 1.3.9.2, please provide detailed information about the existing train identification system.

Response 30

Currently, there is no automatic train identification system in the Depot. Only some of the 34 old vehicles are equipped on-board with an RFID system (the subject equipment has been either dismantled, or lost or damaged). This system has been designed to operate with terminal stops, while the Contractor shall inspect and utilize it, if so chooses. As regards the 25 new vehicles, the Contractor shall install his own new train identification system on these vehicles. Both these groups of vehicles shall cooperate with the new automatic train identification system to be supplied, installed and commissioned by the Contractor in the Depot. As concerns the remaining data that are still pending, you will be relatively informed through a Clarifications Document to follow.

Supplementary Response 30

See Supplementary Response 29.

Question 87

Design, Performance, Material and Workmanship Specifications for E/M and Railway Systems (page 120/174 (8/17) para. 3.10)

The Contractor should ensure compatibility with the existing Wi-Fi system.

In order to ensure compatibility with the existing equipment and then estimate its cost accordingly, all relevant information must be provided to us, along with the network topology. Kindly clarify.

Response 87

Kindly see Response #86.

In addition, sufficient details and information have already been provided in the chapter of the document describing the existing systems. Besides, the subject system is new and the interfaces with the existing WiFi system concern the requirement for the new system to be of open architecture, so as the communication between them be facilitated, if so required. Further information available by ATTIKO METRO S.A. shall be provided to the Contractor during the design phases of the project.

Supplementary Response 87

See Response 2 of Clarifications Document 2.

CLARIFICATIONS DOCUMENT 2

C. CD CONTAINING DRAWINGS OF EXISTING PROJECTS

The interested parties can take delivery of the CD with the files containing Supplementary Information – drawings of existing projects, as these are referred to in responses 1, 2, 3, 7, 8 and 16 of this Document, at the postal address indicated in paragraph 1.3 of the Invitation to Tender, further to relevant communication.