

REQUEST FOR EXPRESSIONS OF INTEREST

CONSULTING SERVICES – FIRMS SELECTION

Republic of Serbia

The Western Balkans Trade and Transport Facilitation Project (WBTF)

Project ID No. P162043

Assignment Title:

Technical Review of Designs and Supervision Services for the Deployment of Intelligent Transport Systems (ITS) on A1 motorway

Reference No. SER-WBTF-QCBS-CS-23-24

The Republic of Serbia (RoS) has received financing in the amount of EUR 35 million loan from the International Bank for Reconstruction and Development (IBRD) toward the cost of the Western Balkans Trade and Transport Facilitation Project (WBTF), and it intends to apply part of the proceeds to payments for consulting services to be procured under this project.

Scope of Work

The Consultant shall be responsible for overall coordination, supervision and technical control of design and implementation programme for two (2) ITS deployment projects that will be conducted in parallel with this assignment:

- i. ITS Deployments on A1 motorway of Republic of Serbia,
- ii. Integrated Slopes Monitoring and Traffic Management on the Grdelica gorge (Grdelička klisura) on A1 motorway

The Consultant is expected to perform following activities as a part of the consultancy service, grouped into two phases, as follow:

PHASE 1 – TECHNICAL CONTROL OF ITS DESIGNS

Activity 1.1: Analysis of works contracts' conditions

Activity 1.2: On-site visits

Activity 1.3: Review of Conceptual Design

Activity 1.4: Review of Preliminary ITS Designs

Activity 1.5: Review of Detailed ITS Designs (design of construction permit, design for construction)

Activity 1.6: Work Plan Update and Projects Deployment Risk Plan

PHASE 2 – SUPERVISION OF ITS DEPLOYMENT WORKS

Activity 2.1: Horizontal Supervision Activities

Activity 2.2: Procurement of Software and Hardware Equipment

Activity 2.3: Supervision of On-site Installation and Control Centre Works

Activity 2.4: Supervision of Training Sessions

Activity 2.5: Pilot Operation Period (POP)

Activity 2.6: Site Acceptance Tests (SAT)

Activity 2.7: Final Works

Overlapping of phases is possible and this will depend on the work dynamic to be prepared by the works contractors to be selected.

The **period of implementation** of the contract will be **one hundred six (106) weeks** starting from the commencement date. The period includes:

- (i) **Four (4) weeks** for the completion of the Inception Report and by ensuring that all initial work contract activities have been completed at this stage in order to proceed on the design phase of the work contracts,
- (ii) **Thirty-five (35) weeks** for the completion of technical control and approval of ITS designs for both work contracts activities as well as the completion of Phase 1 Conclusion Report, and
- (iii) **Sixty-seven (67) weeks** for the supervision of works, successful completion of Site Acceptance Tests of both ITS deployment works contracts and the submission of the Final Report to the Client.

The detailed Terms of Reference for the above referenced consulting services is posted on the website of the Ministry of Construction, Transportation and Infrastructure (MCTI) <https://www.mgsi.gov.rs/en/dokuments/request-expression-interest-consulting-services-firm-selection>

The Central Fiduciary Unit (CFU) of the Ministry of Finance now invites eligible Consultants to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services.

The assignment will require a qualified consulting company or consortium that can demonstrate extensive experience in technical design control and supervision services.

The following shortlisting criteria will be applied to all consulting firms that have submitted EoI:

- i) The Consulting firm must be a legal entity;
- ii) The consultant (individual company or joint venture altogether) has implemented and successfully completed, during the last ten years (from the January 2014 up to the deadline for the receipt of applications indicated below):
 - at least one (1) contract related to design and/or design technical control for ITS equipment installation. Contracts for design and/or design technical control for construction / reconstruction / rehabilitation of motorways and/or tunnels which included ITS equipment installation, as well, shall be considered acceptable for this criterion. Participation of the Consultant should be minimum 60% of the contract brought as reference;
 - and
 - at least one (1) contract related to supervision of ITS deployment works. Contracts for supervision for construction/reconstruction/rehabilitation of motorways and/or tunnels which included ITS equipment installation, as well, shall be considered acceptable for this criterion. Participation of the Consultant should be minimum 60% of the contract brought as reference
- iii) Experiences in road sector in Republic of Serbia will be advantage.

As a proof, the Consultant firm shall prepare a table listing following information: name of the relevant assignment, name of a firm that conducted the assignment, short scope of work, year of contract implementation, country/region, contact reference (name, e-mail, phone number), total value of the contract brought as reference and % of consultant's participation.

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint

venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected. Furthermore, Eols of JVs will be evaluated based on composition of JV submitted whereas experience of other firms not included in the JV, including proposed sub consultants, will not be considered in the evaluation.

Key Experts' CV are not required and will not be evaluated at the shortlisting stage.

The attention of interested Consultants is drawn to the requirement specified in the Section 5.3 Required Licenses of the ToR: ***The Consultant and the project team members shall possess required licenses not later than two months after the announcement of the intention to award the Contract, otherwise the contract shall not be signed.***

MoCTI, as the Client, intends to shortlist up to eight eligible firms to whom a subsequent Request for Proposals (RFP), both technical and financial, shall be sent. In the event that more than eight firms fulfil all the qualifying criteria above, the MoCTI shall use the following criteria to rank the firms and the top eight shall be invited to submit proposals: (i) the number of contracts in a field related to these Services brought as reference in para (ii, bullet 2) above, and in case of equality on this criterion, then the value of the eligible part (the value of the activities carried out by the firm) of the projects found eligible in para (ii, bullet 2).

The Consultant firm will be selected in accordance with QCBS (Quality-and Cost-Based Selection) method set out in the World Bank's Procurement Regulations for IPF Borrowers (July 2016, revised November 2017).

The attention of interested Consultants is drawn to paragraphs 3.14, 3.16 and 3.17 of the Regulations, setting forth the World Bank's policy on conflict of interest.

Further information can be obtained at the address below during office hours 09:00 to 15:00 hours.

Expressions of interest in English language must be delivered in a written form to the email below, by **April 12, 2024**, 12:00 hours, noon, local time.

Contact:	E-mail:	Address:
To:	zorica.petrovic@mfin.gov.rs Ms. Zorica Petrovic Procurement Specialist	Ministry of Finance Central Fiduciary Unit Balkanska 53 11000 Belgrade, Serbia Tel/Fax: (+381 11) 765 2587
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**Western Balkan Trade and Transport Facilitation Project
(Part referred to Republic of Serbia)**

TERMS OF REFERENCE

for

**Technical Review of Designs and Supervision Services for the
Deployment of Intelligent Transport Systems (ITS) on A1 motorway**

SER-WBTTF-QCBS-CS-23-24

Table of Contents

List of Abbreviations	3
Definition of ToR Terminology	5
1. Background information.....	7
1.1 Background	7
1.2 General information	7
1.3 Current state of affairs in the relevant sector	8
2. Objective, purpose and expected results.....	10
1.1 Overall objective.....	10
1.2 Objective of the assignment.....	10
1.3 Results to be achieved by the Consultant	11
3.1 General.....	12
3.2 Specific activities	13
3.2.1 Phase 1 – Technical Control of Designs.....	14
3.2.2 Phase 2 - Supervision of Supply and Installation	18
4.1 Location	22
4.2 Commencement date and period of implementation	22
5. Requirements	23
5.1 Personnel	24
5.1.1 Key experts	25
5.1.2 Non-key experts (NKE).....	26
5.2 Office accommodation	26
5.3 Required Licenses.....	27
6. Deliverables	28
7. Terms of Payments	32

List of Abbreviations

Term	Explanation
ANPR	Automatic Number Plate Recognition
CCTV	Closed-Circuit Television
CEFTA	Central European Free Trade Agreement
CO ₂	Carbon Dioxide
DSRC	Dedicated-Short Range Communication
EIA	Environmental Impact Assessment
ESMF	Environmental and Social Framework
ESS	Environmental and Social Standards
FAT	Factory Acceptance Tests
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technologies
IFI	International Financial Institution
IPF	Investment Project Financing
ITS	Intelligent Transport System(s)
KS	Koridori Srbije d.o.o
LED	Light-Emitting Diode
LLC	Limited Liability Company
MoCTI	Ministry of Construction, Transport and Infrastructure
NKE	Non-Key Experts
OCC	Operating Control Centers
PERS	Public Enterprise Road of Serbia
PIU	Project Implementation Unit
POP	Pilot Operation Period
PTZ	Pan-tilt-zoom
QA	Quality Assurance
QCBS	Quality-and Cost-Based Selection
RCT	Railway Level Crossings
RoS	Republic of Serbia
SAT	Site Acceptance Tests
SCADA	Supervisory Control and Data Acquisition

TCT	Transport Community Treaty
TETRA	Terrestrial Trunked Radio
TMC	Tunnel Management Centre
ToR	Terms of References
WB	World Bank

Definition of ToR Terminology

- a. **Contracting Authority/Client:** Ministry of Construction, Transport, and Infrastructure of Republic of Serbia (MoCTI).
- b. **Beneficiaries:**

For Works Contract 1 - Public Enterprise Roads of Serbia (PERS)

For Works Contract 2 - Koridori Srbije d.o.o. Beograd (KS)
- c. **Consultant:** The appointed Consulting company that will implement the Services defined in this ToR. The Consultant will provide services for (i) Technical Control of ITS designs and (ii) supervision of Supply and Installation for two (2) works Contracts.
- d. **Type of works Contracts:** The term “works Contract” refers to two in-parallel independent contracts for design, procurement and installation, configuration, testing and delivery of integrated on-site and Control Centre equipment (hardware, software). Within this ToRs the works Contracts will be mentioned as “Design, Supply and Installation” of two (2) ITS projects. In cases that there is a differentiation on scope of works between the two in-parallel works Contracts, it is explicitly mentioned in the ToR.
- e. **Contractor(s):** The appointed Contractor(s) for the Design, Supply and Installation of two (2) ITS projects.
- f. **Works Contract 1, ITS Deployments on state road A1 motorway of Republic of Serbia:** The Contractor shall be responsible to prepare (a) conceptual design, (b) preliminary and detailed designs, (c) purchase and install on-site and Control Centre equipment and (d) execute works activities until satisfactory completion of the Site Acceptance Tests (SAT) and Pilot Operation Period (POP) tests.
- g. **Works Contract 2, Integrated Slopes Monitoring and Traffic Management on the Grdelica gorge (Grdelička klisura):** The Contractor shall be responsible to prepare (a) detailed designs, (b) purchase and install on-site and Control Centre equipment and (c) execute works activities until satisfactory completion of the Site Acceptance Tests (SAT) and the Pilot Operation Period (POP) tests. The conceptual and preliminary designs will be prepared and approved by the KS and made available to the Contractor as part of tender documentation for Works Contract 2
- h. **ITS design phases:** Table below presents the required design procedures in Republic of Serbia (RoS) in alignment with ITS design phases defined in the Contract.

ITS Design Phases defined on the Contract	Design Procedures in accordance to Republic of Serbia Legislation
Conceptual Design (System Concept)	1. Conceptual design / Schematic design (IDR)* <ul style="list-style-type: none"> Approval by Beneficiary
Preliminary Design	2. Preparation of preliminary design (IP)* <ul style="list-style-type: none"> Approval by the Consultant and Beneficiary
Detailed Design	3. Preparation of design for construction permit (PGD) <ul style="list-style-type: none"> Documentation for construction permit by Consultant and Beneficiary

ITS Design Phases defined on the Contract	Design Procedures in accordance to Republic of Serbia Legislation
	<ul style="list-style-type: none"> ▪ The Beneficiary shall submit permit for approval on a digital system called CEOP (Central Electronic system of Requests) based on <ul style="list-style-type: none"> - Preliminary design - Location conditions - Conditions and requirements by owners of existing infrastructure or other facilities, - Requirements by holders of public authority condition from public entities, - Realized Technical control of documentation, - Proof of solved property issues on the land where construction is planned (Act of expropriation, contract with previous owners of land) <p>Receive approval by a state entity about permission of construction or approval for execution or construction (depending on facility).</p> <p>4. Prepare design for construction (PZI)</p> <ul style="list-style-type: none"> ▪ Approval of detailed design by Consultant and Beneficiary ▪ Approval of Ministry of Interior ▪ Proceed on system supply and installation
As-built Design	<p>5. As built-design (PIO)</p> <ul style="list-style-type: none"> ▪ To be submitted after the completion of Pilot Operation Period (POP) tests. ▪ Approval of detailed design by Consultant and Beneficiary

** For Works Contract 2, the conceptual design and preliminary design will be conducted by the Beneficiary (KS)*

1. Background information

1.1 Background

The International Bank for Reconstruction and Development (IBRD) launched the Multiphase Programmatic Approach to facilitate the achievement of the Western Balkans Governments' goal of reducing trade costs and increasing transport efficiency.

For the purpose of financing of the Western Balkans Trade and Transport Facilitation Project (Project), IBRD has granted to the Republic of Serbia (RoS) EUR 35 million loan to support a combination of investments, technical assistance and regulatory and institutional reforms.

At the regional level, the Secretariat for Transport Community Treaty (TCT) will play the role of the regional coordination and liaison office for the Western Balkans Six, for all the transport related dimensions of the Project. The CEFTA Secretariat will play the same role for the trade elements of the Project.

At the national level, Project Implementation Unit (PIU), within the MoCTI, has primary responsibility for Project execution ensuring that the Project development objectives are met.

These Terms of References (ToR) refers to the services of consulting company who will be responsible for (i) Technical control of designs for the installation of ITS equipment and (ii) supervision of supply and installation for two work Contracts. The Contracting Authority/Client for this Contract is Ministry of Construction, Transport, and Infrastructure of Republic of Serbia (MoCTI), and Beneficiaries are: Public Enterprise Roads of Serbia (PERS) and Koridori Srbije d.o.o. Beograd (KS).

1.2 General information

Intelligent Transport Systems (ITS) can be considered valid and cost-efficient tools for the improvement of management and operation of transportation services. ITS is a broad range of information and communication technologies applied to transportation systems in order to enhance the safety, efficiency and cost-effectiveness of these systems for the movement of people, goods and services, while also reducing adverse impacts on the environment. The technologies utilized involve disciplines such as transportation engineering, telecommunications, computer science, financing, electronics and automobile manufacturing.

Therefore, the deployment of ITS can contribute to the following outcomes:

- a major reduction in road casualties;
- travel time savings (an estimated total of one year over an average lifetime) by providing valuable information services for transport users;
- enhancement of roads level of service and road management efficiency without new construction;
- significant reductions in CO₂ emissions;
- an increase of service reliability and infrastructure management.

The range of systems now available is extensive. Indicative applicable ITS services are traffic management, travelers' information, incident management, law enforcement, public transport management, emergency and response, electronic fee pricing, freight and

fleet management and cooperative services. To be able to exploit their maximum potential, it is important that these systems work in a coordinated way across the whole road network.

1.3 Current state of affairs in the relevant sector

A variety of advanced ITS systems have been developed on the inter-urban road network of RoS, but the nationwide ITS geographical coverage is not extensive and is conducted usually without the necessary integration and interoperability among different systems at national level.

There are many advanced ITS applications that are currently in operation on the motorways for tunnel management but also for some segments of the open motorway sections. The focus of ITS deployment is on category state 1A roads, but higher coverage and system density is still needed upon the motorway network.

The key stakeholders such as PERS and KS have recognized their needs based also on a strategic document published in 2021 (Concept of Intelligent Transport System Development on State Road Network of the Republic of Serbia) about the next ITS deployment steps and are proceeding on gradual implementation. Moreover, a National Transport Strategy for the period 2023-2030 is currently conducted in RoS that includes as an integral part a ITS Programme and Action Plan. It is envisaged that these documents are completed in first half of 2024.

An overview of on-site ITS infrastructure in RoS are presented in Figure 1:

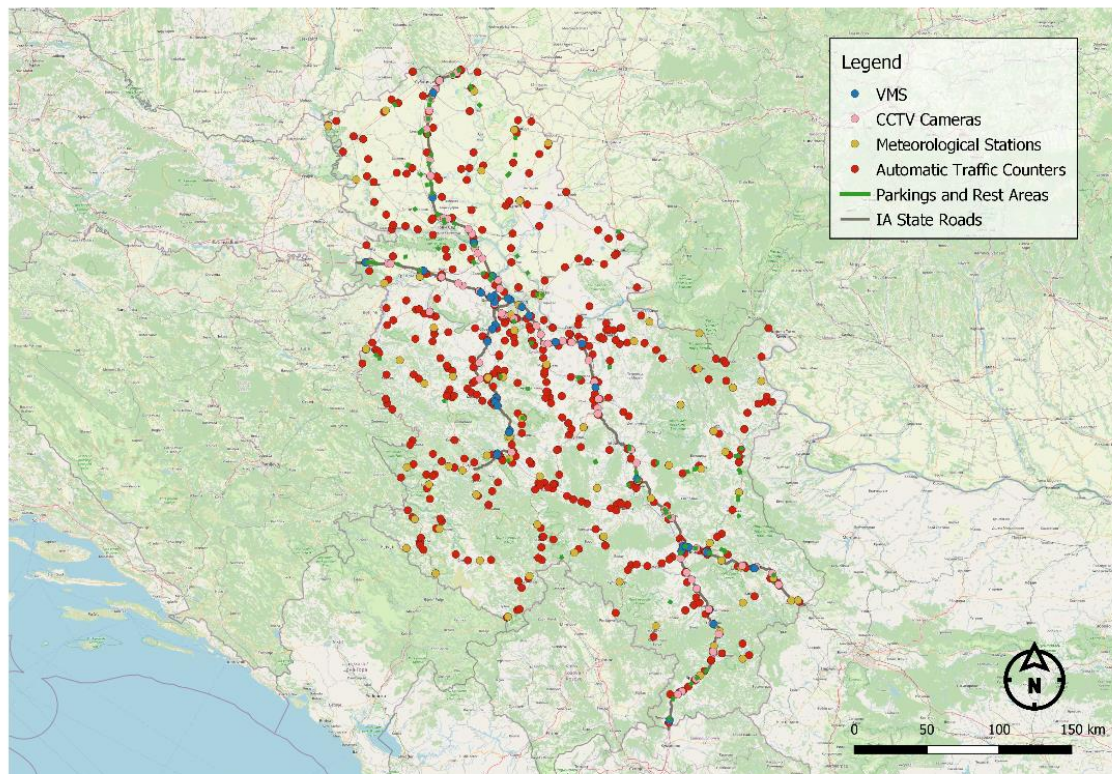


Figure 1: Existing ITS on-site infrastructure in Republic of Serbia

A brief overview of the existing ITS conditions in Serbia per ITS function:

- i. **Traffic Detection Systems.** There are installed 418 automatic traffic counters on road category IA, IB and IIA state roads. The system is based on inductive loops

and is powered with solar power supply and batteries. The data collected is used for vehicle classification, vehicle speed calculation, road maintenance purposes, analysis and forecasts for new road sections and speed analysis for the traffic police. Those systems are currently used for traffic statistic purposes only.

- ii. **Traffic and Incident Management.** Traffic management activities are conducted from PERS by: (i) Regional Center – Niš (ii) four Operating Control Centers (OCC) in Belgrade, Takovo, Niš-Dimitrovgrad Operations and Control Centre (OCC), Grdelička gorge Operations and Control Centre (OCC) and, (iii) two Tunnel Management Centre in Brančić and Bancarevo Tunnel Management Centre (TMC).

The following systems are centrally managed:

- Tunnel Management based on central SCADA system (Supervisory Control and Data Acquisition).
 - Traffic detection system in tunnels.
 - Variable Message Signs of different sizes before and within tunnels as well as other critical interchanges.
 - Weather stations.
 - General-purpose video surveillance (CCTV) to monitor the traffic situation and detect potentially dangerous events at tunnels and interchanges.
 - Special-purpose video surveillance for automatic incident detection at tunnels and interchanges.
 - Safe and security systems in tunnels (air ventilation, air quality, lighting systems, fire alarm).
 - Mobile applications and Radio communication via TETRA network.
- iii. **Electronic Toll Collection.** An automatic electronic system based on Dedicated-Short Range Communication (DSRC) technology has been installed in a closed system and distance-based system on all completed motorway sections.
- iv. **Law enforcement.** Automatic Number Plate Recognition (ANPR) cameras are used for speed calculation purposes on parts of the state road network (the motorway network). ANPR cameras are also used for toll collection enforcement purposes, for recognizing violators by vehicle who drive through a closed barrier at a tolling plaza.
- v. **Vehicle in motion axle load measurement.** A few systems have been recently introduced for measuring in real-time trucks weight axle loads per traffic lane on the state 1-A roads.

The management and operation of the pre-mentioned ITS systems is conducted by PERS.

2. Objective, purpose and expected results

2.1 Overall objective

Objective of the Western Balkans Trade and Transport Facilitation Project (Project) is to reduce trade costs and increase transport efficiency in RoS. The Project consists of the following parts:

- i. **Component 1: Facilitating movement of goods across the Western Balkans.** The component focuses on (a) the design and adoption and implementation of the National Single Window (NSW); (b) implementation of Electronic Data Interchange (EDI) for railways.
- ii. **Component 2: Enhancing transport efficiency and predictability.** This component will focus on (a) the adoption of an Intelligent Transport System (ITS), (b) the improvement of Railway Level Crossings (RLC) and c) development of National Transport Strategy.
- iii. **Component 3: Improve market access in services and foster regional investments** (this Component is covered by grant resources from other development partners, which complements the support from the World Bank Group) and
- iv. **Component 4: Support project implementation unit (PIU)** and provide additional technical support, including for policy coordination, operating costs, and monitoring and evaluation of the Project.

The Service described under this Terms of Reference is expected to be conducted as a part of the ‘Component 2: Enhancing transport efficiency and predictability’ with special focus on the implementation of the Intelligent Transport Systems (ITS) in Serbia.

The Consultant shall support the successful implementation of the Project to time, quality and cost constraints thereby to ensuring the proper and smooth design, supply and installation of two ITS projects in Serbia.

The foreseen ITS services and activities that will be conducted in the context of the two ITS works contracts are described in Appendix 2 of this ToR.

2.2 Objective of the assignment

It should be noted that as mentioned in the ToR terminology: (i) the term “works Contract” refers to two (2) in-parallel independent ITS projects that relate to Design, Supply and Installation and (ii) the term “Contractors” refers to the appointed Contractors that will execute the Design, Supply and Installation of both in-parallel work contracts. In cases where there is a differentiation in scope of works between the two works contracts, it is explicitly mentioned in the ToR.

The main purpose of this Contract is to engage a highly qualified consultancy company to perform the following services:

- Services for technical review, control and approval of ITS designs to be prepared by the works contractors. The Consultant shall support the Beneficiaries during the design phase and ensure the proper completion of those activities that they will be also in line:

- (i) with national legislation requirements,
 - (ii) international standards per type of equipment,
 - (iii) the objectives of each works contracts,
 - (iv) each works contracts' Terms of Reference and the Contractors' technical bids,
 - (v) the Beneficiaries' requirements per system (work contract),
 - (vi) the designs schedule(s),
 - (vii) the contractor's time-schedule and respectively of defined deadlines.
- Supervision services is to ensure the on-site work contracts implementation, i.e., to supervise all deployment phases and corresponding activities of the two ITS projects by:
 - (i) ensuring compliance with the project documentation and approved designs.
 - (ii) ensuring that works are implemented in accordance with the provision of work contracts(s) specifications, the available technical documentation provided by the Beneficiaries as well as the resulting Beneficiary requirements from the technical meetings.

Two (2) separate ITS design, supply and installation work Contracts will be conducted on A1 motorway (and Grdelica gorge). The activities determined in this ToR will be conducted in parallel with the two works contracts to be assigned to the corresponding Contractors.

2.3 Results to be achieved by the Consultant

The Consultant shall be responsible for the following results / deliverables:

- i. Technical Reports after control of technical design for each system included on each of the two ITS work contracts;
- ii. Ensure that high quality of design(s) in accordance with regulations, standards and technical/location conditions using engineering skills and knowledge is achieved;
- iii. Problems that had arisen during design preparation and/or change of solutions, in respect of ToR and Contractors technical bid, if any, are solved;
- iv. Approvals for the ITS design, supply and installation of the two work Contracts by submitting also the required technical reports (Section 6 of ToR);
- v. Ensure Compliance with World Bank Environmental and Social Framework (ESMF), Serbian pertinent legislation¹ and that Project documents developed comply with the WB ESF;
- vi. Ensure the proper deployment of all works contracts that will be carried out;
- vii. High quality ITS deployment is achieved and (all) works contracts is conducted timely and in full compliance with the engineering design, technical specifications and other works contracts' documents;

¹ Where gaps between the World Bank Environmental and Social Standards (ESS) and the national requirements are identified the more stringent one will prevail

- viii. Timely identification and assistance in the resolution of issues (be they legal, technical, financial, environmental, social), and any resulting disputes and complaints arising in connection with the works contracts ensured;
- ix. Other tasks on an ad hoc basis, per request of the Client, executed.

The minimum list of relevant Republic of Serbia regulation is presented in Appendix 1.

3. Scope of the Services

3.1 General

The Consultant shall be responsible for overall coordination, supervision and technical control of design and implementation programme for two (2) ITS deployment projects that will be conducted in parallel with this assignment:

- i. ITS Deployments on A1 motorway of Republic of Serbia.
- ii. Integrated Slopes Monitoring and Traffic Management on the Grdelica gorge (Grdelička klisura) on A1 motorway.

The foreseen ITS services and activities that will be conducted in the context of ITS work contracts are listed in Appendix 2 of this ToR. The exact ITS implementation area for both work Contracts will be defined on the preliminary design stage of the two work contracts.

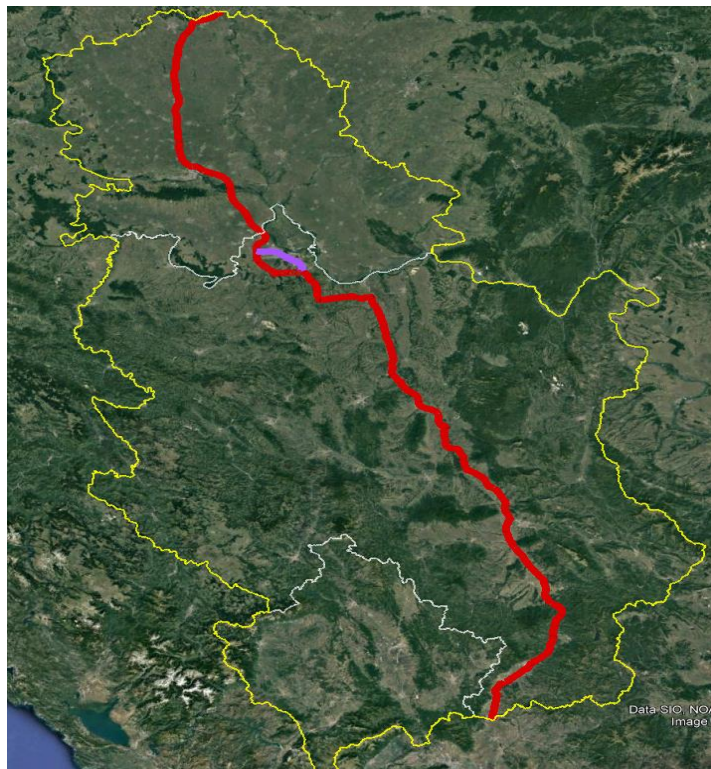


Figure 2: A1 Road Corridor

Contractors to be selected will be responsible per each project to execute following works:

- i. **Works Contract 1, ITS Deployments on state road A1 motorway of Republic of Serbia (Beneficiary: PERS):** To prepare (a) conceptual / schematic designs, (b) preliminary and detailed designs (design for construction permit, design for construction), (c) purchase and installation of on-site and Control Centre equipment and (d) execute works activities until satisfactory completion of the Site Acceptance Tests (SAT) and Pilot Operation Period (POP) tests. The Procedure for selection of the Contractor for the works contracts will be initiated in second quarter of 2024.
- ii. **Works Contract 2, Integrated Slopes Monitoring and Traffic Management on the Gredelica gorge (Beneficiary: KS):** To prepare (a) detailed designs (design for construction permit, design for construction), (b) purchase and installation of on-site and Control Centre equipment and (c) execute works activities that will demonstrate the successful Factory Acceptance Tests (FAT) of the products and execute all required works until the satisfactory completion of the Site Acceptance Tests (SAT) and Pilot Operation Period (POP) tests. The conceptual design and the preliminary designs will be prepared and approved by the KS. The Procedure for selection of the Contractors for the works contracts will be initiated in second quarter of 2024.

The Consultant shall support the Beneficiaries during the design phase activities. At the end of the works Contracts, the Consultant shall also verify the as-built designs that will be prepared by the Contractors.

For both works Contracts, the corresponding Beneficiary should also approve the on-site location of the equipment(s). Furthermore, the location of hosting the hardware and software into the Control Centers shall be depicted by the Beneficiaries. Site visits and access on the implementation areas (both on-site and Control Room) will be provided by the Beneficiaries.

3.2 Specific activities

The Consultant is expected to perform following activities as a part of the consultancy service, grouped into two phases, as follow:

PHASE 1 – TECHNICAL CONTROL OF ITS DESIGNS

Activity 1.1: Analysis of works contracts' conditions

Activity 1.2: On-site visits

Activity 1.3: Review of Conceptual Design

Activity 1.4: Review of Preliminary ITS Designs

Activity 1.5: Review of Detailed ITS Designs (design of construction permit, design for construction)

Activity 1.6: Work Plan Update and Projects Deployment Risk Plan

PHASE 2 – SUPERVISION OF ITS DEPLOYMENT WORKS

Activity 2.1: Horizontal Supervision Activities

Activity 2.2: Procurement of Software and Hardware Equipment

Activity 2.3: Supervision of On-site Installation and Control Centre Works

Activity 2.4: Supervision of Training Sessions

Activity 2.5: Pilot Operation Period (POP)

Activity 2.6: Site Acceptance Tests (SAT)

Activity 2.7: Final Works

Overlapping of phases is possible and this will depend on the work dynamic to be prepared by the works contractors to be selected.

3.2.1 Phase 1 – Technical Control of Designs

The Consultant shall conduct technical control of the ITS designs activities in compliance with the laws of Republic of Serbia.

The objective of Phase 1 is conducting the design review of the two in-parallel works Contracts and to ensure that all technical deliverables are of a high standard, establish quality standards based upon best practice and in a timely fashion as well as to ensure that the project can immediately and safely progress to the deployment phase. Review of available technical documentation and on-site visits shall be conducted.

The Consultant activities for technical control of the designs will include the following:

- i. **Works Contract 1: ITS Deployments on A1 motorway of Republic of Serbia.**
The relevant works contractor will prepare the conceptual design, the preliminary design, the detailed designs (design for construction permit, design for construction) and the as-built design (that is conducted at Phase 2 of the works contract).
- ii. **Works Contract 2: Integrated Slopes Monitoring and Traffic Management on the Grdelica gorge (on A1 motorway).** A detailed design (design for construction permit, design for construction) and as-built design (that is conducted at Phase 2 of the works contract) will be prepared by the relevant works contractor. The conceptual design and the preliminary design will be prepared and provided by the Beneficiary.

Furthermore, the Consultant shall provide technical assistance, whereas requested, regarding the commencement of the two ITS works contracts in order to ensure systems and data communication between the on-site ITS equipment and existing Operational Control Centers. The Consultant shall provide technical support to Beneficiaries in order to ensure that all required actions are received to enable proper operation of the Control Centers where the systems of the two works contracts will be centrally managed. The location of the Control Centers will be determined per project by the Client and Beneficiaries.

The main activities of Phase 1 are described below. Within the duration of Phase 1, the Consultant shall provide regular monthly progress reports and comments regarding the performance of the Contractors and highlight the main deviations and any risks identified. Bi-weekly (every two weeks) meetings, as minimum, or more frequently if required during critical stages of either Works project, shall be conducted between the Consultant and works Contractors; Beneficiaries and PIU shall be invited on those meetings. The Consultant shall prepare minutes of meetings.

The Consultant shall have the required licenses, depicted in Section 5.3 of ToR.

3.2.1.1 Activity 1.1 Analysis of the works Contracts' conditions

The Consultant will undertake a detailed review of the two in-parallel ITS works contracts. Technical requirements and proposed work-plan shall be reviewed.

The Consultant is expected to have an in-depth understanding regarding the contract implementation methodology and the technical/ technological solutions provided. The Consultant shall (a) understand the project scope and objectives, (b) understand the technical requirements and (c) preliminary identify potential technical implications or other risks associated with the in-parallel works Contracts implementation.

The available documentation for the two ITS works Contracts shall be Terms of Reference, technical bids of the Contractors, any initiation study after contacts signings as well as other technical documentation that will be provided by the Beneficiaries (such as the preliminary design for the project Slopes Monitoring and Traffic Management on the Grdelica gorge for Works Contract 2).

From the beginning of assignment and within the entire period of the Contract, the Consultant shall establish a frequent communication with the ITS works contractors and conduct any necessary meetings for coordination, provision of comments and inquiries, proposals for amendments and receipt of any clarifications.

3.2.1.2 Activity 1.2 On-site Visits

The Consultant shall also conduct on-site visits on the ITS implementation area of the two works Contracts. The on-site visits can be made in coordination with the corresponding Beneficiaries and the works contractors.

The scope of the on-site visits at Phase 1 is that the Consultant gain a better understanding of the existing road and ITS infrastructure and have an initial overview of the needs. On-site visits will be required during the entire assignment duration and especially during on-site ITS and Control Centre equipment installation and testing activities, i.e., during Phase 2.

Based on various sources of information used during Activity 1.1 and 1.2, the Consultant is expected to prepare an Inception Report (for each works contract separately) that will include the detailed assignment implementation methodology, a detailed work plan and description of assignment outputs. All undertaken activities and outcomes should be determined in detail. The Consultant is expected to review the work plans of the in-parallel works contracts and provide any comments or issues that require special attention. Identified risks and mitigation measures shall be included regarding the specific assignment as well as the in-parallel works contracts. The Consultant shall also review and provide comments for the works contractors organization chart during the design, supply and installation period in order to optimize all project resources and ensure proper and prompt implementation.

3.2.1.3 Activity 1.3 Review of Conceptual Design

The Consultant shall review the Conceptual Design for **Works Contract 1** (ITS Deployments on A1 motorway of Republic of Serbia). The Consultant shall monitor all activities conducted for the development of the conceptual design, including the user requirements activity that will be held with personnel of the Beneficiaries.

The Consultant shall prepare a brief report regarding the activities taken, remedial actions and the approval of the systems concept.

This Activity, respectively Activity 1.3. Review of Conceptual Design will not be conducted for **Works Contract 2**.

3.2.1.4 Activity 1.4 Review of Preliminary ITS Designs

The Consultant shall review, comment and approve the preliminary ITS design prepared by the Contractors of **Works Contract 1**. It shall be ensured:

- i. The preliminary designs are in accordance with requirements from national legislation, technical specification and Contractors' technical bid and the implementation programme.
- ii. All intended system functions are satisfied.
- iii. The systems architecture and technology solutions are compliant with the technical specifications and requirements from national legislation.
- iv. The locations for the installation of on-site equipment are appropriate and no significant risks are identified. It should also be aligned with the desired outcome of the system users (i.e., Beneficiaries). All data provided by the works contractors for selection of equipment per project and system shall be thoroughly reviewed and agreed.
- v. Proposals for amendments should be justified and provided, if necessary.
- vi. Any other issues identified will be reported and communicated to all involved parties.

The Consultant shall prepare a brief report regarding the activities taken, remedial actions and the approval of the preliminary ITS designs.

This Activity will not be conducted for **Works Contract 2**.

3.2.1.5 Activity 1.5 Review of Detailed ITS Designs

The Consultant shall conduct, as minimum requirements, the following design control activities for both ITS works contracts:

- i. Review the technical documentation required for obtaining the construction permits in compliance with the national legislation.
- ii. Review and provide comments to improve the design provided by the works contractors.
- iii. Carry-out site visits when this is required.
- iv. Ensure that the design is fully in compliance with the requirements of national legislation.
- v. Review and provide comments regarding the data provided by the works contractors for the final installation locations of the equipment for each contract.
- vi. Review and provide comments on system architecture, functional architecture, physical architecture, communication architecture as well as data flow (input and outputs) from each system.
- vii. Review the design of the spatial arrangement of the ITS equipment, software and hardware, that shall be installed on-site and on the Control Centers; the location of the installation of equipment on Control Centers will be determined by the Client and Beneficiaries.
- viii. Review and provide comments on traffic management plans or other precautionary actions and measures required for the installation of road-site ITS equipment.
- ix. Review and provide comments regarding the works contractor's plan for ensuring the safety of both workers and traffic during the installation, configuration and

testing of works. It shall be ensured that all precaution measures have been considered during the design phase.

- x. Ensure that the final system specifications are compliant with the functional and technical requirements, as initially defined in works Contracts and further updated technical documentation.
- xi. Ensure that the final system specifications comply with international ITS standards and system integration is feasible in order for the Beneficiaries to receive integrated systems for use and operation per ITS work contract.
- xii. Ensure that telecommunication and electrification equipment is installed in accordance with the designs prepared. In case any actions are required before deployment that shall be timely identified and communicated to all involved parties.
- xiii. Ensure that the detailed designs level and the prepared drawings are appropriate for the design of constructions.
- xiv. Review and provide comments upon the drawings prepared by the works contractors.
- xv. Identify any deviations arising from the initial technical specifications (and preliminary design) and propose effective solutions.
- xvi. Prepare a clear path for the required approvals that will be required during the installation stage of the two works contracts.
- xvii. Approve the final detailed designs provided by the works contractors. The approval includes all foreseen activities both on-site and at the Control Centre.
- xviii. Approve the final deployment methodology that shall be prepared by works contractors following the conclusion of ITS designs.

The Consultant shall for each works Contract prepare separately a report regarding the activities taken, remedial actions and the approval of the detailed ITS designs.

At the end of this Activity, the design for construction permit and the design for construction should be completed and approved in accordance with the national legislation.

3.2.1.6 Activity 1.6 Work Plan Update and Projects Deployment Risk Assessment Plan Preparation

Following the approval of detailed designs (design for construction permit, design for construction) of both in-parallel works Contracts, and upon the Contractor(s) obtain all required permits from the relevant authority for works execution, the Consultant shall update and revise a detailed work plan for this assignment as well as the ITS deployment projects. The works contractors shall provide all necessary information for this assignment. The updated work-plan shall be provided to the Client and Beneficiaries for approval.

Furthermore, the Consultant shall also develop a risk assessment for the deployment works of the two in-parallel work contracts. The main risks should be identified, quantified and assessed by including a risk mitigation strategy. The Client and the Beneficiaries shall approve the risk assessment plan. The Consultant shall identify promptly any pre-requisite action that shall be taken either from the Beneficiaries or the works contractors.

It is expected that after the completion of Phase 1 and with the Consultant approval, the procurement and deployment of ITS can initiate and any issues of conflicts or clarification have been resolved between the involved parties.

The Consultant shall prepare a conclusion Phase 1 report that will contain all pre-mentioned aspects and recommendation for the initiation of the procurement and deployment actions.

All correspondence during the execution of the Services between the Consultant and works contractors shall be made exclusively in writing in Serbian with translation on English language, and with copy to the Client, PIU and Beneficiaries. The official Contract language is English but technical designs and control reports shall be submitted in Serbian language.

Beneficiaries shall ensure monitoring of design preparation and activities on technical control, as well as provide clarification of requirements given in the ToRs, when needed, and timely inform the Client and PIU on any identified major issue that might negatively impact on foreseen dynamic of Contract execution.

3.2.2 Phase 2 - Supervision of Supply and Installation

The Consultant is responsible for the day-to-day supervision of the supply and installation of both works contracts within the duration of this assignment. The objective is that both works contract activities will be conducted promptly and in a proper fashion in accordance with the technical requirements of both works contracts.

The Consultant will set up an adequate organization, including monitoring system, to meet requirements for an efficient supervision of procurement, installation and configuration activities as well as administration aspects. In this respect, the Consultant shall be required to establish and follow detailed supervision procedures based on sound international practice to monitor the completion of the works contracts within the agreed program and budget and to the quality standards and environmental provisions stipulated in the works contracts. The supervision of works shall be implemented in compliance with the requirements of the relevant national legislation and WB environmental and social requirements.

Wherever is appropriate and not in conflict with the works contracts, the Consultant shall exercise every reasonable care to protect the interests of the Client.

The Consultant shall have the required licenses, depicted in Section 5.3 of ToR.

The two ITS works contracts shall include separate deployment stages as follows: (i) procurement of software and hardware equipment (that includes also the FAT tests), (ii) installation and configuration of the hardware and software equipment both on-site and at the Control Centre (iii) systems integration and central system configuration and calibration, (iv) training of Beneficiaries nominated staff, (i) Pilot Operation Period (POP), (vi) Site Acceptance Test and Delivery of the Contract tests and (vii) Final Works for works contracts completion. The Consultant will be responsible for the supervision of all supply and deployment stages for both works contracts.

The duties, as minimum of the Consultant in the context of supervision of both ITS supply and deployment works, are described into the following paragraphs.

3.2.2.1 Activity 2.1 Horizontal Supervision Activities

The Consultant shall undertake a supervision of works according to the national legislation, WB environmental and social requirements, obtained construction approval, signed contracts, approved designs, technical specifications, general and special conditions, drawings and breakdown of the overall contract price of the works contracts.

i. Support to Project Management:

- Elaborate on the project organizational structure of the two work contracts and ensure proper coordination between the Beneficiaries, the Consultant and the works contractors during the entire time span of project deployment. The Contractor shall review and provide comments on the project organization chart to ensure effective and timely implementation.
- Review and provide comments and guidance on both work contract's progress and performance.
- Conduct regular controls and checks, both on-site and in the office, during the deployment period.
- Review and comment on the project implementation and quality assurance plan prepared by both works contractors.
- Organize of the bi-weekly (every two weeks) site meetings, and ad hoc site meetings, whenever necessary, with the Contractors and other involved parties (Client, Beneficiaries), if any, to monitor the progress of works to ensure sound and timely completion of the works in the desired quality;
- Control both work contracts and performance and identify time and/ or technical deviations on the implementation programme. The Consultant shall propose mitigation measures if needed. Such aspects shall be communicated to all involved parties and addressed by special reports or by regular reports, where appropriate. In case of postponement of the completion date, the Consultant shall determine the causes, evaluate the implications for the contract and submit the report on the consequences of such postponement to the Client with recommendation of actions to be taken by the Client (approve/reject the postponement).
- Record the work site daily events and quantities to pay.
- Amicably resolve the disputes.
- Prepare regular monthly technical and administrative progress reports and submit them to the Client and the Beneficiaries. The progress report shall include progress reporting, photos, physical and financial progress schedules and minutes of meetings related to the reporting period.
- Support Client and Beneficiaries on the approval of the various deployment stages as it will be depicted on the two work contracts.
- Ensure that deployment is compliant to Environmental, Social, Health and Safety measures as depicted on the national legislation and WB safeguard policy.

ii. Support to Financial/ Invoice Management:

- Recording of work site daily events and quantities/works for payment.
- Pre-approval of the interim payment application and sending it to the Beneficiaries and PIU for the final approval.
- Pre-approval for the draft final statement of account and submission of final statement of account to the Beneficiaries and PIU for its final approval.
- Review and certify interim payment certificates.
- Analysis of the claims submitted by the Contractor and report upon whether the claims have been submitted in accordance with dispute procedures of their contracts.

iii. Support to Contract Management:

- Give approval for the sub-contractors for the works, if any.
- Provide Commencement Order.

- Control of the validity of the contractors' documents such as insurance policies, bank guarantees, transport documents etc.
 - Recommendation to the Client for approval of any change of the key personnel of the Contractors that is listed in the works contracts;
- iv. **Other tasks (as needed)** and responsibilities assigned to the supervision in the related works contracts.

3.2.2.2 Activity 2.2 Procurement of Software and Hardware Equipment

- i. Support the procurement process of software and hardware equipment that will be ordered with the successful completion of Phase 1 for each work Contract.
- ii. Support the Beneficiaries with inspection checks for providing sufficient evidence regarding the Factory Acceptance Tests (FAT) of the supplied products as well as system crucial elements and system to operate as an integrated unit. Documentation on FAT testing shall be supported with the declaration of compliance of the equipment to ensure that the equipment is in compliance with the specified characteristics.
- iii. For works Contract 2 and apart of inspection of the required documentation for the successful FAT of the products, the Consultant shall support the Beneficiary in the process of FAT tests on operating conditions in terms of functioning, safety and compliance and performance testing.

3.2.2.3 Activity 2.3 Supervision of On-site Installation and Control Centre Works

- i. Support the Beneficiaries and works contractors in providing the required licenses or approvals for traffic management measures, installation of equipment, civil works and other activities conducted on site.
- ii. Regular inspections of the installations at site and within the Control Centre.
- iii. Control of the quantity, quality and type of equipment delivered and installed in the ITS implementation areas of the two works contracts.
- iv. Supervision of installation activities to ensure compliance with technical specifications and required civil works required measures.
- v. Supervision and verification that the deployment is conducted based on the approved technical documentation of designs for construction.
- vi. Ensure that the required supporting works for installation and proper operation of the equipment are conducted properly such as installation of gantries, telecommunication works, electrification works.
- vii. Supervision of both contractors in all matters concerning health and safety and care of works.
- viii. Ensure that the systems are integrated to satisfy central management and operation.
- ix. Recording of work site daily events.
- x. Approval of on-site installation and Control Centre works for each work contract.

3.2.2.4 Activity 2.4 Supervision of Training Sessions

- i. Review and comment training programme what will be provided to nominated Beneficiaries personnel.
- ii. Monitor the actual training programme conducted for each work contract.
- iii. Review and comment on the training material provided to the Beneficiaries.
- iv. Assess training sessions.

3.2.2.5 Activity 2.5 Supervision of Pilot Test Period

- i. Supervise the trial operating periods and performance tests.
- ii. Review and provide comments on the pilot test plan that will be prepared by works contractors.
- iii. Monitor and supervise activities conducted on-site and at Control Centers regarding testing and pilot operation of the systems installed.
- iv. Ensure that system integration tests are conducted successfully.
- v. Review the testing reports and measurements that will be conducted during the pilot systems operation period. Tests shall include both performance and operational status of the central system and the system components, both on-site and at the Control Centres.
- vi. Supervision of both Contractors in all matters concerning health and safety and care of works.
- vii. Review and approve the pilot tests period conducted of each works contract in accordance to the applicable special conditions and monitor the achievement of KPIs for performance of the system that are defined into each work Contract.
- viii. During systems delivery period to review all related information and documentation on the maintenance and operation of the systems and its components (instruction manuals for installation/operation/maintenance, proposal of test and maintenance procedures, test certificates, guaranties, performance plans, etc.) in accordance with the Contract and/or other agreements in this respect.
- ix. The Consultant should report about the findings and provide assistance and recommendations prior to the system delivery period to the Client. Provide brief report that outlines the main activities conducted and the corresponding results for each work contract.
- x. Verification of “as-built designs” that shall be prepared by the works contractors after the installation of the systems

3.2.2.6 Activity 2.6 Site Acceptance Tests (SAT)

- i. Review and provide comments on the programme of both ITS deployment works commissioning.
- ii. Review the testing reports and measurements that will be conducted during the SAT.
- iii. Support the Beneficiaries for the Site Acceptance Tests, System Integration Tests and delivery of the equipment. Support should be accompanied with an outline of the tested reports as well as the main results identified in a reported form.
- iv. Include the findings and results of SAT tests into the Final Completion Report.

3.2.2.7 Activity 2.7 Final Works

Before the works contract completion a Final Works Completion Report shall be prepared by the Consultant providing the content of the ToR compared with the activities implemented, the achieved results, encountered problems and lessons learned.

The main technical documentation that justifies the control of supervision activities and the as built designs shall be included.

The Consultant shall obtain the specific approval of the Client in the performance of his duties before taking the following actions:

- i. Issuing the order to commence the works.
- ii. Agreeing or determining any matter which will change the Contract Price of the works contracts.
- iii. Giving consent to a Sub-contractor for which a different sub-contractor is named in the works contracts.
- iv. Agreeing or determining time extension for the works contracts.
- v. Instructing an administrative order which is expected to change the Contract Price for works contracts or in any change in the scope, quantity, character or quality of the works. No Administrative Order shall be given by the Consultant without the consent of the MoCTI regardless of whether it will change the price or not (including the change of materials, equipment and/or design).
- vi. Issuing an administrative order for the use of the provisional sums/contingencies/dayworks.
- vii. Issuing a Completion Certificate.
- viii. Issuing a suspension of Performance of Works or an instruction to resume the Works, following a Suspension.

If the Consultant does not fulfil its obligations, it will assume full financial and legal responsibility of such fault.

All correspondence during the execution of the Services between the Consultant and works contractors shall be made exclusively in writing in Serbian with translation on English language, and with copy to the Client, PIU and Beneficiaries. The official Contract language is English but technical designs and control reports shall be submitted in Serbian language.

Beneficiaries shall ensure monitoring of works supervision activities as well as provide clarification of requirements given in the ToRs, when needed, and timely inform the Client and PIU on any identified major issue that might negatively impact on foreseen dynamic of Contract execution.

4. Logistic and Timing

4.1 Location

The Contract shall be implemented in Serbia. Local travel of the Consultant personnel is required for both phases of this contract.

4.2 Commencement date and period of implementation

The intended commencement date is June 2024, but the actual commencement date will be defined with the signature of the Contract. Implementation period is one hundred-six (106) weeks. The period includes:

- (i) **Four (4) weeks** for the completion of the Inception Report and by ensuring that all initial work contract activities have been completed at this stage in order to proceed on the design phase of the work contracts.
- (ii) **Thirty-five (35) weeks** for the completion of technical control and approval of ITS designs for both work contracts activities as well as the completion of Phase 1 Conclusion Report.

- (iii) **Sixty-seven (67) weeks** for the supervision of works, successful completion of Site Acceptance Tests of both ITS deployment works contracts and the submission of the Final Report to the Client.

The Consultant will conduct the services in line with a detailed time schedule to be submitted as part of his draft view on project time life, which might be changed following communication with both works contractors considering his design and deployment (supply and implementation) work plan. The Consultant shall prepare a proposed detailed activity schedule as a part of his technical offer.

The Consultant shall take into consideration that:

- i. The works contractors will obtain all required approvals (built permit design, permits for execution of designs) necessary for the installation and civil works of the ITS infrastructure (on-site, Control Centre), subject of the two work contracts within **thirty-two (32) weeks** from the works contracts' effective date. In case the approvals are received earlier than estimated, the Consultant shall revise his plan accordingly,
 - 1. For Works Contract 1, upon the acceptance of Preliminary Designs, the works contractor shall no later than **twenty (20) weeks** prepare detailed design (design for construction), subject to approval of the Consultant.
 - 2. For Works Contract 2, where the Beneficiaries will already provide preliminary design, the works contractor shall no later than **twenty (20) weeks** prepare detailed design (design for construction), subject to approval of the Supervision Consultant.
- ii. For each in-parallel works Contract 1 and 2, the implementation period (i.e., Phase 2) shall start immediately after the approval of the detailed designs (designs for construction) and Phase 1 Completion Report, independent of the progress made in the other works contract. Hence, each works contract can have different time progress between the different Phases and Activities, but it shall be ensured that both works contracts will be properly completed and approved **until 01 March 2026**. The tentative duration of Works Contract 1 is one 102 weeks and Works Contract 2 is 90 weeks.
- iii. Both works contractors shall organize their work according to these time requirements, where the Client strongly suggests executing design works for different systems per work contract in parallel in order to obtain required approvals for implementation and start with execution of works (installation, civil, electrification etc.) at the ITS implementation areas and complete them successfully from the project Commencement Date until March 2026.
- iv. The works contractors shall provide the as-built designs after the system installation period. The as-built designs shall be no later reviewed and approved by the end of the Pilot Operation Period (section 3.2.2.4).

5. Requirements

The Consultant firm will be selected in accordance with QCBS (Quality-and Cost-Based Selection) method set out in the World Bank's Procurement Regulations for IPF Borrowers (July 2016, revised November 2017).

The assignment will require a qualified consulting company or consortium that can demonstrate extensive experience in technical design control and supervision services for ITS deployment projects/contracts.

5.1 Personnel

The Consultant shall establish his Team in accordance with the needs and requirements of this ToR. The Team shall consist of a core team made of key experts with the qualifications and skills defined in the Table 2, below and non-key experts, as needed. Engagement of the Key experts will be as such as to cover both phases, respectively whole Contract. Non-key experts will be engaged according to the needs to be identified by the Consultant in his methodology and work plan.

Moreover, considering the ITS implementation area upon the A1 Road corridor that connects Serbia with Hungary and North Macedonia, the Consultant is expected to be flexible in terms of travelling and to ensure proper implementation of both phases.

The Team, as a whole, shall include experts familiar with RoS' regulations. The Client will welcome the employment of local experts.

The Consultant's team members shall have sufficient expertise and shall retain required licenses for designs/review of designs and supervision as given in article 5.3 Required Licenses of this ToR. The experts should have appropriate licenses issued by the competent authority and under the Laws of the Republic of Serbia or a declaration stating that they will apply for and obtain the license in no more than two months after the announcement of the intention to award the contract. The Consultants can provide in the technical proposal an equivalent license from the origin country. However, this shall not release him of obligations to obtain an appropriate license issued by the competent authority in the Republic of Serbia.

The total input for experts, both key and non-key, are given indicatively for the purpose of this Contract. The team organization, proposed staff availability and number of working days assigned to specific activities and backup will be evaluated as one of the criteria within the evaluation of the proposed methodology and time schedule.

Table 1 Indicative total inputs for experts (Indicative)

SN	Key Expert Position	Working Days (indicative)
1	Team Leader	260 days
2	Key Experts	350 days
1&2	Key Experts, total	610 days
	Non - Key Experts	Working Days (indicative)
3	Senior Experts	340 days
4	Junior Experts	320 days
3&4	Non-key experts, total	660 days

Civil servants and other staff of the public administration of the beneficiary country (Republic of Serbia) cannot be proposed as experts.

The Project language is English. Serbian language is used where there is a specific reference in the Terms of Reference.

The Consultant shall provide adequate administrative staff (secretary, translators, drivers accountant) needed to support the expert team.

5.1.1 Key experts

All experts who have a crucial role in implementing the contract are referred to as key experts. Team Leader shall be appointed from one of the key experts and shall have experience in managing at least two ITS projects as Team Leader (Project Manager). Deputy Team Leader shall be appointed from one of the key experts. Further, Team Leader or Deputy Team Leader shall be familiar with the relevant national legislation, more closely specified in Appendix 1 of this ToR.

During Phase 2 of the project implementation, each key expert shall be at minimum 70% of their working time in Serbia and on the location of the works for the assignment purposes.

The Consultant should clearly describe and provide their input within his Methodology and Work Plan.

The profiles of the key experts for this contract are given below.

Table 2 Key Experts

Title	Qualifications/Experience	Skills
ITS Expert	<p><u>Education:</u> Have as a minimum B. Sc. Degree in Civil, Electrical, Mechanical or Transport Engineering or other relevant discipline</p> <p><u>Overall professional experience:</u> At least 10 years of general professional experience in transport or information technology sector.</p> <p><u>Specific professional experience:</u> At least 7 years of experience on Intelligent Transport System field. Experience in design and/ or deployment and/or supervision of Intelligent Transport Systems projects would be significant advantage. Previous work on IFI projects will be advantage.</p>	<p>Excellent command of the English language. Computer literacy. Communication, coordination and managerial skills. Knowledge of Serbian language will be an advantage</p>
Roads Engineer	<p><u>Education:</u> Have as a minimum B. Sc. Degree in Civil Engineering</p> <p><u>Overall professional experience:</u> At least 10 years of general professional experience in the transport sector.</p> <p><u>Specific professional experience:</u> At least 7 years' experience on road design and/or construction and/or supervision of construction. Experience in Intelligent Transport Systems project would be considered a strong advantage Previous work on IFI projects will be advantage.</p>	<p>Computer literacy. Communication skills, Excellent command in English Knowledge of Serbian language will be an advantage</p>

Title	Qualifications/Experience	Skills
Geotechnical Engineer	<u>Education:</u> Have as a minimum B. Sc. Degree in Civil engineering or other relevant discipline <u>Overall professional experience</u> At least 10 years of general professional experience in geotechnical engineering <u>Specific professional experience:</u> At least 7 years of experience in supervision and/or construction of protection measures for geotechnical purposes. Previous experience in the design and/or deployment of landslide ICT equipment on road sector would be considered a strong advantage. Previous work on IFI projects will be advantage.	Computer literacy. Communication skills, Excellent command in English Knowledge of Serbian language will be an advantage
Electrical Utilities Engineer	<u>Education:</u> Have as a minimum B. Sc. Degree in Electrical Engineering or other relevant discipline <u>Overall professional experience:</u> At least 10 years of professional experience in electrical utilities supervision projects for infrastructure or experience in information and communication technologies (ICT) on infrastructure projects <u>Relevant professional experience:</u> Experience in at least one contract for design and/ deployment and/or supervision of Intelligent Transport Systems project. Previous work on IFI projects will be advantage.	Computer literacy. Communication skills, Excellent command in English Knowledge of Serbian language will be an advantage

5.1.2 Non-key experts (NKE)

The Consultant is expected to include in their proposals other positions that they consider necessary for the assignment. CVs for non-key experts should be submitted in the proposal. However, they would not be subject to evaluation. The pool of non-key experts is expected to support/complement all the activities of the key experts.

The Consultant is expected to select and hire other experts as required according to the expertise identified in the Organization & Methodology including but not limited to civil engineer, telecommunication expert, mechanical engineer, traffic engineer and Intelligent Transport Systems experts.

The Consultant shall include an Environmental specialist and Social specialist for this contract.

The Consultant must indicate clearly which expert positions they have so it is clear which fee rate in the budget breakdown will apply. All experts must be independent and free from conflicts of interest in the responsibilities they take on.

5.2 Office accommodation

The Consultant shall ensure that experts are adequately supported and equipped. In particular, the Consultant shall ensure that there is sufficient administrative, secretarial and interpreting supports to enable experts to concentrate on their primary responsibilities.

The Consultant shall undertake the Services in Serbia by ensuring appropriate office(s) and equipment to ensure proper implementation of activities. In this respect, the

Consultant shall be responsible to ensure proper office space and required equipment during Phase 1 of this Contract, while for Phase 2, the works contractors shall be responsible to ensure office space(s) on the site, and the Consultant shall be responsible to ensure equipment and all other means (e.g., hardware, software, vehicles, hamlets, etc.) required for successful execution of his tasks.

No equipment is to be purchased on behalf of the neither Client (MoCTI), PIU nor Beneficiaries (PERS, KS) as part of this service contract or transferred to the Client or Beneficiaries at the end of this Contract.

5.3 Required Licenses

The Consultant and the project team members shall possess required licenses not later than two months after the announcement of the intention to award the Contract, otherwise the contract shall not be signed.

It shall be ensured that at least the following licenses are possessed by the Consultant:

- P131G2: Design of road projects for state roads of the first and second order, road facilities and traffic connections to these roads and border crossings
- I151E3: Construction on electronic communication facilities, i.e., networks or assets that are built on the territory of two or more local self-government units.

OR

P151E3: Design of the electronic communication facilities, i.e., networks or assets that are built on the territory of two or more local self-government units

- P131S1: Design of the traffic and traffic signalization for the state road of the first and second category, road objects and traffic connections to those roads and border crossings.

It shall be ensured that at least one of the following categories of licenses are possessed by the Consultant's project team members, i.e., key and/or non-key experts:

- License GP 04-01(Serbian Chamber of Engineers: 310): Responsible designer of building construction **OR** License GP 04-01.1 (Serbian Chamber of Engineers: 410): Responsible contractor of building constructions and construction - craft works on high-rise construction, civil engineering and hydro-construction facilities.
- License EP 05-01 (Serbian Chamber of Engineers: 350/352): Responsible designer of low and medium voltage power installations **OR** License EP 05-01.1 (Serbian Chamber of Engineers: 450): Responsible contractor of low and medium voltage power installations.
- License EP 05-03 (Serbian Chamber of Engineers: 353 or 369): Responsible designer of telecommunication networks and systems (or Responsible designer of telecommunications traffic and networks) **OR** License EI 05-03.1 (Serbian Chamber of Engineers: 453): Responsible contractor of telecommunication networks and systems.

License SP 07-01 (Serbian Chamber of Engineers 370): Responsible designer of traffic and traffic signalization **OR** License SI 07-01.1 Serbian Chamber of Engineers: 470): Responsible contractor of traffic and traffic signalization.

Hence, the entire Consultant project team shall ensure that in total at least one of the pre-mentioned individual licenses are possessed, as minimum requirement.

6. Deliverables

Considering the Scope of the Services, described in the Section 3, work of the Consultant and consequently outputs as result of his work, will be split into two Phases. The Consultant shall prepare below listed documents. It should be noted that within each report should be a clear distinction and analysis of each ITS design, supply and installation works contracts.

Table 3 List of deliverables

SN	Deliverables	Description	Due date	Format
Phase 1: Technical Control of ITS Designs (39 weeks)				
1	Inception Report	Preparation of the plan to establish and follow detailed ITS design, supply and deployment supervision procedures based on sound international practice to monitor the completion of the two parallel works contracts within the agreed time and budget and to the quality standards and environmental provisions stipulated in the works contracts. Required for both works contracts separately	No later than 4 weeks after the commencement of services	Digital and three (3) hard copies English and Serbian language
2	System Concept Report Approval for Works Contract 1	Report outlining the activities taken, remedial actions provided, amendments made, and the technical approval of the systems concept prepared by works contractor.	No later than 2 weeks after delivery of the System Concept Report by the Works Contractor	Digital and three (3) hard copies English and Serbian language
3	Preliminary Design Approval Report for Works Contract 1	Report outlining the activities taken, remedial actions, amendments made, main data and processes made for control and the technical approval of the preliminary ITS design prepared by works contractor. Approval of technical documentation for the start of the Design for the Construction Permit	No later than 2 weeks after delivery of the Preliminary ITS Designs by the Works Contractor	Digital and three (3) hard copies English and Serbian language
4.1	Detailed Design Approval Report for Work Contract 1	Report outlining the activities taken, remedial actions, amendments made, main data and processed made for control and the technical approval of the detailed ITS designs (design for construction permit, design for construction) by works contractors. Approval of technical documentation for the execution designs	No later than 2 weeks after delivery of the Detailed ITS Designs by the Works Contractors	Digital and three (3) hard copies English and Serbian language
4.2	Detailed Design Approval Report for Work Contract 2			

SN	Deliverables	Description	Due date	Format
5.1	Phase 1 Conclusion Report for Work Contract 1	Report that provides an update of the approved detailed work plan and risk assessment for both ITS deployment works also considering the information provided by the work Contractors. After the completion of this Report, the procurement and deployment stage of both work Contracts will be initiated and any issues of conflicts will have been resolved.	No later than 3 weeks after delivery of the Detailed ITS Designs by the Works Contractors	Digital and three (3) hard copies English and Serbian language
5.2	Phase 1 Conclusion Report for Work Contract 2			
6	Consultant Monthly Progress Reports	The key issues to be addressed in this report are the brief description of the quantitative progress (completion, disbursements, milestones reached) and major bottlenecks for each works contract (not more than 10 pages). Required for both works contracts separately	Not later than 1 week after the end of month	Digital and three (3) hard copies English and Serbian language
7	Consultant Quarterly Progress Reports	Description of progress (technical and financial) including problems encountered; planned activities for the next 3 months (up to 50 pages) The key issues to be addressed in the quarterly report are the progress of the activities as detailed under Section 3 of this ToR including the measures subject to the supervision activities such as environment protection, safety, quality, progress, work programme, resources, contract management and cost control. The report must detail delays and difficulties encountered, the proposed mitigation measures and provide future projections for the implementation of the activities. The financial section must contain details of the time inputs of the experts and of the provision for expenditure verification. Required for both Works Contracts separately	No later than 15 days after the end of each 3-month period	Digital and three (3) hard copies English and Serbian language
Phase 2: Supervision of ITS Deployment (67 weeks)				
8	Quality Assurance (QA) Dossiers	In addition to the Completion Report the Consultant shall submit for each works contract, a comprehensive QA Dossier containing all original requests for inspection, approval, test forms and certificates relating to the construction of the works, materials and equipment incorporated into the works. Documentation in the QA Dossier must include but not necessarily be restricted to: ○ All manufacturer's test certificates for equipment if any	The QA Dossier will be compiled during the course of each works contract, and it must be available for inspection by the MCTI at any reasonable time.	Digital and three (3) hard copies English and Serbian language

SN	Deliverables	Description	Due date	Format
		<ul style="list-style-type: none"> Performance test certificates and warranty agreements where applicable for mechanical and electrical equipment, Requests for inspection (if any), approvals and test results. Required for both works contracts separately		
9.1	Pilot Testing Report for Works Contract 1	After completion of pilot testing period by the works contractors, the Consultant shall outline the main activities conducted, the pilot test plans, the results and main fine/tuning activities carried out	No later than 2 weeks after the end of successful Pilot Test Period of the works contract	Digital and three (3) hard copies English and Serbian language
9.2	Pilot Testing Report for Works Contract 2			
10.1	Training Assessment Report for Works Contract 1	After completion of training system sessions by the works contractors, the Consultant shall prepare a brief report containing the activities conducted regarding review of training programme, review of the provided training material and an assessment of training sessions	No later than 2 weeks after the end of training session conducted by the Works Contractors	Digital and three (3) hard copies English and Serbian language
10.2	Training Assessment Report for Works Contract 2			
11	Consultant Monthly Progress Reports	The key issues to be addressed in this report are the brief description of the quantitative progress (completion, disbursements, milestones reached) and major bottlenecks for each works contract (not more than 10 pages). Required for both works contracts separately	Not later than 1 week after the end of month	Digital and three (3) hard copies English and Serbian language
12	Consultant Quarterly Progress Reports	Description of progress (technical and financial) including problems encountered; planned activities for the next 3 months (up to 50 pages) The key issues to be addressed in the quarterly report are the progress of the activities as detailed under Section 3 of this ToR including the measures subject to the supervision activities such as environment protection, safety, quality, progress, work programme, resources, contract management and cost control. The report must detail delays and difficulties encountered, the proposed mitigation measures and provide future projections for implementation of the activities. The financial section must contain details of the time inputs of the experts and of the provision for expenditure verification.	No later than 15 days after the end of each 3-month supervision period	Digital and three (3) hard copies English and Serbian language

SN	Deliverables	Description	Due date	Format
		Required for both works contracts separately		
13	Final Completion Report	<p>Upon finalization of both Site Acceptance Tests of both works contracts, within 15 days the Consultant shall submit a Final Completion Report.</p> <p>The main report must contain:</p> <ul style="list-style-type: none"> ○ Copies of the successful SAT and project commissioning. ○ Completed and signed FAT and SAT reports. Tests shall be performed successful ○ Verified "as-built" designs showing all revision to the design of the works ○ A complete analysis of the completion cost of the works ○ An overview of the actual progress of the works detailing reasons for delays and/or extensions of time ○ Commissioning report for the various mechanical and electrical components of the works ○ Details of technical difficulties encountered and how these were overcome ○ Details of all permits required for the operation of the works ○ An overview of site safety procedures, any problems in this regard and recommendations for improvement ○ An overview of the Consultant's working practices and resources ○ An assessment of the quality of equipment and workmanship any problems in this regard and recommendations for improvement ○ Details of administrative difficulties encountered and how these were overcome <p>Required for both works contracts separately</p>	No later than 15 days after issue the successful completion of Site Acceptance Test and Project Commission	Digital and three (3) hard copies English and Serbian language
14	Consultant Final Report	<p>There must be a final report for the Contract, final invoice and the financial report at the end of the period of execution. Extensive description of progress (technical and financial) including problems encountered.</p> <p>It must describe, in detail, technical design control, technical progress of works, it must compare in detail the actual progress with the agreed work programs, it must describe the achievements and the suggestions for future similar works (up to 60 pages)</p>	No later than 1 month before the end of the implementation period.	Digital and three (3) hard copies English and Serbian language

During both, Phase 1 and 2, the draft version of the reports (electronic copy) shall be submitted to PIU and Beneficiaries for preliminary review and comments, before submission to the Client for approval. The commenting period by the PIU and Beneficiaries for the outputs is 1 week, and the Client 2 weeks. In case of no-reaction by the Client to the submitted reports such status will be interpreted as “no objection” and shall be deemed as approved. In the course of Contract execution, the Consultant shall organize relevant meetings and ensure translation services for them, prepare the Minutes of Meetings for all meetings held with the works contractors, both on Serbian and English, and shall include clear decisions, persons in charge and deadlines. The Consultant will distribute Minutes of Meetings to the works contractors, PIU and the Beneficiaries. MoM must be commented on within 5 calendar days by participants. MoM for the biweekly progress meetings will always be on the agenda of the next biweekly meeting to be approved and followed up.

All deliverables will be sent as electronic copies to the Client/PIU and Beneficiaries depending on the works contracts.

Hard copies will be sent to the following addresses:

- Project Implementation Unit (PIU), 1st Omladinskih brigada, Office 555, Omladinskih brigada street, 11070, New Belgrade, Serbia.
- Public Enterprise of Roads of Serbia, 282nd Boulevard Kralja Aleksandra, 11000 Belgrade, Serbia
- Koridori Srbije d.o.o. Beograd, 21st Kralja Petra, 1100, Belgrade, Serbia

7. Terms of Payments

The Consultant shall be paid for this assignment as follows:

- i. Lump-sum for Phase 1 - payments will be made with milestones against submission of deliverables.
- ii. Time-based for Phase 2 - payments will be made against the experts' mobilization and real-time engagement during the Contract execution and contracted remuneration rate for each expert position.

Appendix 1 Relevant Republic of Serbian Regulations

1. Law on Planning and Construction, "Official Gazette of RS", No. 72/2009, 81/2009 – corr., 64/2010 - CC decision, 24/2011, 121/2012, 42/2013 - CC decision, 50/2013 - decision of the CC, 98/2013 - decision of the CC, 132/2014, 145/2014, 83/2018, 31/2019, 37/2019 - other law, 9/2020 and 52/2021))
2. Law on Roads (Official Gazette of RS No. 41/18 and 95/18-other law)
3. Law on Traffic Safety on Roads (Official Gazette of RS No. 41/09, 53/10, 101/11, 32/13-CC, 55/14, 96 / 15- other law and 9/16 - decision of the CC, 24/18, 41/18, 41/18-other law, 87/18, 23/19 and 128/20).
4. Law on Mining and Geological Research ("Official Gazette of RS", No. 101/2015, 95/2018 - other law and 40/2021)
5. Law on Environmental Impact Assessment ("Official Gazette of RS", No. 135/04; 36/09),
6. Law on Environmental Protection (Official Gazette of RS No. 135/04, 36/09, 36/09-other law, 72/09-other law, 43/11-US, 14/16, 76/18 and 95/18-other law)
7. Law on Strategic Environmental Impact Assessment (Official Gazette of RS No. 135/04 and 88/10)
8. Law on Environmental Noise Protection ("Official Gazette of RS", No. 96/2021)
9. Law on Nature Protection ("Official Gazette of RS", No. 36/2009, 88/2010, 91/2010 - amended, 14/2016, 95/2018 - other law and 71/2021)
10. Law on Waste Management (Official Gazette of RS No. 36/09, 88/10, 14/16 and 95/18-other law)
11. Law on Mining and Geological Research ("Official Gazette of RS", No. 101/2015, 95/2018 - other law and 40/2021)
12. Law on Energy ("Official Gazette of RS", No. 145/2014, 95/2018 - other law and 40/2021)
13. Law on Efficient Use of Energy ("Official Gazette of RS", No. 25/2013 and 40/2021 - other law)
14. Law on Air Protection ("Official Gazette of RS", No. 36/2009, 10/2013 and 26/2021 - other law)
15. Law on Waters (Official Gazette of RS No. 30/10, 93/12, 101/16, 95/18 and 95/18-other law)
16. Law on Forests (Official Gazette of RS No. 30/10, 93 / 12.89 // 15 and 95/18-other law)
17. Law on Cultural Heritage ("Official Gazette of RS", No. 71/94, 52/2011 - other laws, 99/2011 - other law, 6/2020 - other law and 35/2021 - other law and 129/2021 - other law)
18. European Convention on the International Carriage of Dangerous Goods by Road - ADR 2013 (Annexes A and B) ("Official Gazette of the RS - International Agreements", No. 14/2013, 2/2014 - amended, 22/2015, 6/2017, 15/2019 and 19/2021)
19. Law on Safety and Health at Work (Official Gazette of RS No. 101/05, 91/2015 and 113/2017 - other law)
20. Law on Water Regime ("Official Gazette of the SRY", No. 59/98 and "Official Gazette of the RS", No. 101/2005 - other law)
21. Law on Integrated Prevention and Control of Environmental Pollution ("Official Gazette of RS", No. 135/2004, 25/2015 and 109/2021)

22. Rulebook on traffic signaling (Official Gazette of RS No. 85/17 and 14/21), Article 5 (Traffic design content), article 75 (variable message signs for traffic regulation onto traffic line)
23. Rulebook on the manner of regulating traffic on roads in the works zone (Official Gazette of RS No. 134/14)
24. Rulebook on the content and manner of performing technical inspection of the facility, constitution of the commission, content of the commission's proposal on determining the suitability of the facility for use, monitoring of soil and facility during construction and use and minimum warranty periods for certain types of facilities ("Official Gazette of RS", no. 29/2016, 27/2015 and 78/2019)
25. Rulebook on conditions that must be met by road facilities and other elements of public road from the aspect of traffic safety (Official Gazette of RS No. 50/11)
26. Rulebook on the content, manner and procedure of preparation and manner of control of technical documentation according to the class and purpose of facilities ("Official Gazette of RS", No. 73/2019),
27. Rulebook on the manner of exchange of documents and submissions electronically and the form in which acts related to the unified procedure are submitted (Official Gazette of RS No. 113/15)
28. Rulebook on the procedure for conducting the unified procedure electronically (Official Gazette of RS No. 68/19)
29. Decree on limit values of priority and priority hazardous substances that pollute surface waters and deadlines for their achievement (Official Gazette of RS No. 24/14)
30. Decree on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement (Official Gazette of RS No. 50/12)
31. Decree on protection regimes (Official Gazette of RS No. 31/12)
32. Decree on ecological network (Official Gazette of RS No. 102/10)
33. Decree on monitoring conditions and air quality requirements (Official Gazette of RS No. 11/10, 75/10 and 63/13)
34. Decree on limit values for emissions of pollutants into the air (Official Gazette of RS No. 6/16 and 67/2021)

Appendix 2 Brief Description of ITS Work Contracts

i. ITS Works Contract No. 1: ITS Deployment on A1 motorway of Republic of Serbia

The project refers to the design (preliminary and detailed design), procurement and deployment of an Intelligent Transport System (ITS) upon the A1 motorway of Serbia. This motorway connects Hungary borders (in Subotica, North) to North Macedonia (in Preserve borders, south) and crosses Novi Sad, Belgrade and Nis. The system shall be submitted to the Beneficiary ready for real-time operation.

The total corridor length is approximately 590 km however the implementation is shorter. The deployment area includes the installation of ITS equipment in 21 intersections upon the A1 motorway.

Indicatively, the main foreseen ITS components of this project are summarized below:

- **Automatic traffic counters.** Automatic Traffic Counters will be permanently installed at suitable locations along the A1 motorway to record traffic flows and composition of traffic in both directions of traffic. The recorded data will be transmitted to the Control Centre and processed by a software system.
- **Variable message signs.** Variable message signs will be installed with the support of gantries at suitable locations along the A1 motorway to provide real-time on-trip information about traffic conditions, traffic events and incidents to travelers. Data and messages will be received in real-time by dedicated software system which will be hosted in Control Centre.
- **General-purpose video surveillance.** CCTVs/ PTZ cameras will be installed at suitable locations along the A1 motorway to visually monitor in real-time by the Control Centre the traffic conditions, traffic events and incidents.
- **Programmable logic controllers.** Local equipment will be installed on-site to collect and receive data at local level by the installed ITS equipment. The data will be transmitted to the Control Centre. Telecommunication aspects and electrical supply will be addressed based on installed on on-site cabinets.
- **Central Traffic Management System.** A central traffic management software will be installed that shall integrate (i) the equipment installed on-site in the context of this project and (ii) with existing installed systems such as CCTV/PTZ, variable message signs, road weather stations and traffic counters.

The works contractor will be responsible for all required supplies, supporting equipment and connections so that an integrated system will be installed and ready for operation.

The location of the Control Centre will be determined by the Client and Beneficiary.

ii. ITS Works Contract No. 2: Integrated Slopes Monitoring and Traffic Management on the Grdelica gorge (on A1 motorway).

The project refers to the design (Design for Construction and As Built Design), procurement and deployment of an integrated system for slopes monitoring and traffic management on the Grdelica gorge that is a part of the A1 motorway between the “Grdelica” intersection,” Predejane” intersection, and “Vladičin Han” intersection, a section of total length approx. 24 km.

On subject section of the highway, there are eight (8) slopes that could possibly threaten the actual traffic flow if landslides are activated. In that case, sections should be equipped with modern ITS equipment to ensure traffic management on the road in case of an accident and ensure the safety of travelers and public. Any potential problems identified at the slopes by landslide sensors and at bridges by structural monitoring sensors will be transmitted in real-time to the operator in the Traffic Operational Centre (TOC) of “Manajle” that is located southern to the pre-mentioned implementation area.

The type of landslide sensors and the data recorded will be defined by the preliminary design that is currently provided by the Beneficiary. The final solution will be also determined by the preliminary design.

Indicatively, the main foreseen ITS components of this project are summarized below:

- **General-purpose video surveillance.** CCTVs/ PTZ cameras will be installed at suitable locations along the implementation area to visually monitor by the TOC “Manajle” the traffic conditions, traffic events and incidents.
- **Variable message signs.** Variable message signs of different sizes will be installed with the support of gantries at suitable locations on the implementation area to provide real-time information about traffic conditions and incidents.
- **Access control system to the main alignment of the motorway.** An access control system should be installed in suitable location on the implementation area that will include:
 - Traffic lights of LED technology with pole holder, power supply and telecommunication installation, grounding, and foundation
 - Barriers of different dimensions with foundation, power supply and telecommunication installation, and grounding.

The system should be activated in case of major traffic incidents on the implementation area (e.g., landslide, major accident).

- **System(s) to detect parameters that cause landslide.** Landslides geotechnical sensors will be installed at existing anchors to measure the tensile force and to provide warnings about reaching the limit conditions. It will be also installed piezometers, as well as inclinometers, and metrological stations at suitable locations. The technology and the data collected for the slopes stability monitoring will be determined on the preliminary design that will be provided by the Beneficiary. System should be installed at eight (8) slopes that are included within the Grdelica gorge area.
- **Bridge stability monitoring system.** Sensors will be installed in two bridges “Dzemin Do” and “Vrla” to receive indications regarding the stability of the bridges. The technology and the data collected by the bridges for stability

monitoring will be determined on the preliminary design that will be provided by the Beneficiary.

- **Central management system.** A central management system shall be installed that will manage the ITS systems installed in the context of this project and will be also integrated with on-site equipment with landslide and stability monitoring systems for slopes as well as stability monitoring system for mentioned bridges either on center-to-center integration and center to on-site equipment integration.

Appendix 3 Quarterly Progress Report

The Consultant shall consider following measures in his reports:

Safety: An update of accidents at works, an appraisal of the safety of the contractor's working practices, and how many safety transgressions may be remedied.

Quality: A summary of the quality of the contractor's work and materials and any problems related thereto with recommendations for improvement. A summary of all samples and tests carried out on materials, equipment and works.

Progress: A summary of the progress of the works with particular reference to major activities and those on the critical path for completion. The report shall detail delays and difficulties encountered and propose measures to alleviate them.

Environmental Management: A summary of the remedial actions for environmental protection as addressed in the EIA report.

A copy of the contractor's program marked up to show actual progress to date shall be included in the report.

Specific progress details for major activities and those on the critical path shall be presented showing a comparison between actual and scheduled progress.

Resources: A schedule of the contractors' labor, staff and equipment resources with an updated appraisal as to whether or not these are adequate to complete his Contract on time.

Contract Management and Cost: a revised projection of the final cost of the works, which takes into consideration but is not necessarily restricted to the following:

- value of interim payment certificates to date
- anticipated decreases or increases in the contract price
- valuation of any variation of orders issued by the contractor
- substantiation and valuation of any claims submitted by the contractor
- cost implications for any time overruns with or without extensions of time being granted to the contractor.

The values of the completed works shall be presented in graphical form showing a comparison between actual and proposed schedules values from commencement of the works.

Tabulated summaries of:

- Submittals of the contractor and approvals of the Consultant
- Site Instructions issued to date
- Administrative Orders for Modifications issued to date
- Claims notified by the contractor
- Interim Payment Certificates certified by the Consultant with the tabulation clearly showing the date on which the contractor has received payment, the

outstanding amount to be paid of any advance payment, and the amount of retention held

- Provisional sums or contingencies used to date
- Authorized day-works to date
- Other contractual issues e.g.; claims made on the insurance policies

The quarterly progress report shall contain the minutes of the bi-weekly (every two-weeks) site meeting and any other contractual meetings, and a copy of the latest interim payment certificate.

The Quarterly Report shall also summarize the activities of the Consultant as:

- An appraisal of the working relationship with the Beneficiaries and the Contractor, detailing any specific administrative, supervision and inspection problems (including significant changes vs initial scope) encountered with the recommendations and how these may be overcome.
- Financial and technical summary of the work carried out by the Consultant during the period as well as in the previous periods
- Planned activities for the next period
- A schedule of the Consultant's staff in this service and any other relevant information, for example, visits to site by the Beneficiaries, PIU or the Consultant, meetings held, availability of the facilities etc.
- Any significant issue that has occurred and any significant risk may affect the project's operation
- A summary, in a tabulated format, of the disbursement made to the Consultant.