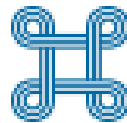


CONTRACT FOR CONSULTANCY SERVICES  
No. 08-389/3 DATED 16.01.2023

SUPERVISION AND LEGAL TRANSACTION ADVISOR FOR  
CONSTRUCTION OF CORRIDOR VIII AND CORRIDOR X-d

**EXECUTIVE SUMMARY OF  
REPORT**

for period 01.08.2024 – 31.08.2024



PUBLIC ENTERPRISE FOR STATE ROADS

AUGUST 2024

ENGINEER

GROUP OF BIDDERS:

*IRD ENGINEERING S.R.L – ROME (IT)*

*EPTISA SERVICIOS DE INGENIERIA S.L (ES)*

*ELEKTRA SOLUTIONS DOOEL - SKOPJE (MK)*

*EURO CONSULT DOO - SKOPJE (MK)*

1. Project Parties:

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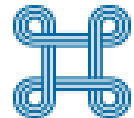
**Contractor:**

BECHTEL ENKA UK 2 Limited



**Employer:**

Public Enterprise for State Roads and the Ministry of Transport on behalf of the Government of the Republic of North Macedonia



**Engineer:**

IRD Engineering s.r.l – Rome (IT) – JV leader JV members:  
EPTISA Servicios de ingenieria s.l; ELECTRA SOLUTIONS DOOEL  
Skopje and EURO CONSULTING DOO  
Skopje



## 1. Project Overview and Key Quantities:

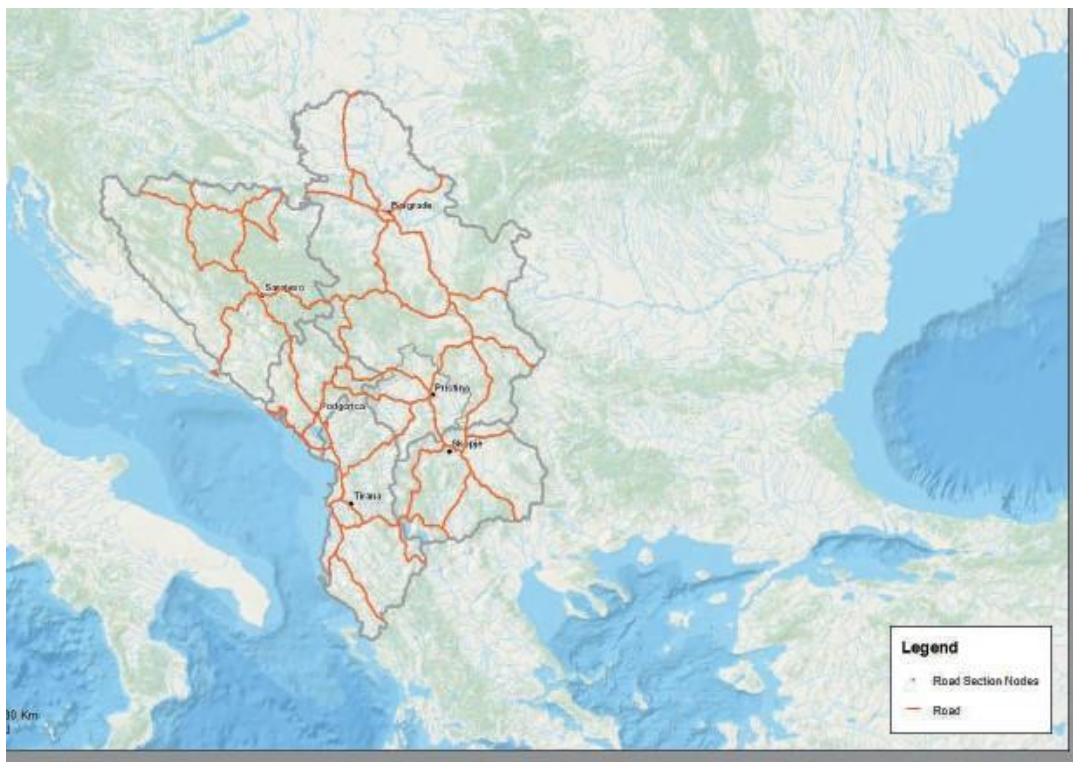
Corridor VIII and X-d project consists of four (4) sections 109 km in total crossing Motorway, railways and, Vardar and Black Drin Rivers along the route.

Corridor VIII is a key component of the Indicative extension of the TEN-T Core and Comprehensive Network to the Western Balkans, connecting the Adriatic Sea and the Black Sea through Albania, North Macedonia, and Bulgaria. Per project scope, Tetovo – Gostivar - Bukojcani and Trebenista – Struga – Kjafasan Motorway sections (Section 1, 2 and 3) will be built.

Corridor X-d is a also part of Indicative extension of the TEN-T Core and Comprehensive Network to the Western Balkans connecting North Macedonia and Greece. Per project scope, Prilep- Bitola section (Section 4) will be built.

These Corridors are connecting the Republic of North Macedonia with the regional infrastructure and ports in Albania, Bulgaria, and Greece.

Below is a picture of the indicative extension of the TEN-T Core and Comprehensive Networks in Western Balkans as provided for by the Commission Delegated Regulation (EU) 2016/7581- Annex I.1

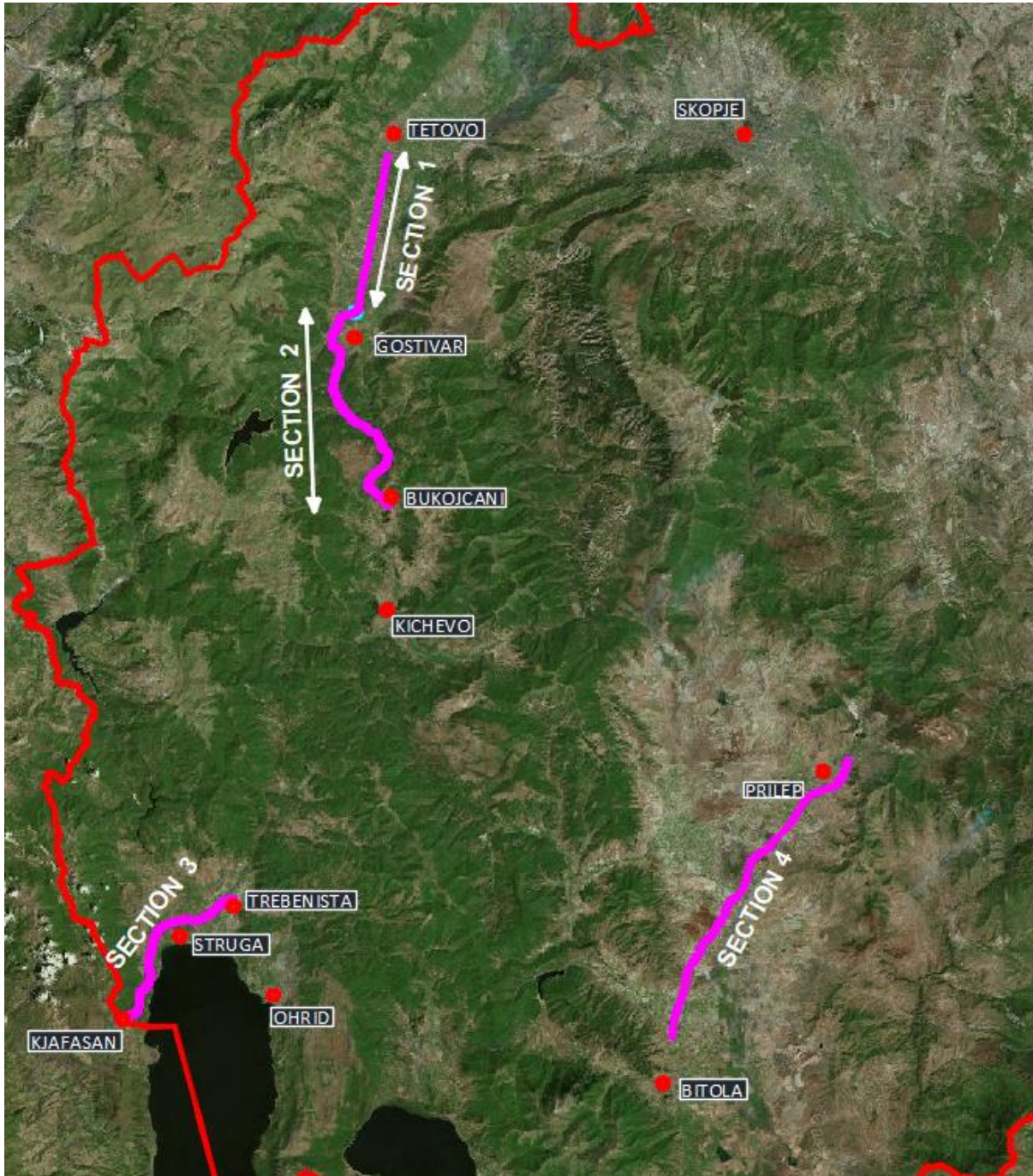


*. Indicative Extension of TEN-T Core and Comprehensive Road Network to the Western Balkans*



REPUBLIC OF NORTH MACEDONIA

INDICATIVE ALIGNMENT PLAN VIEW



**REPUBLIC OF NORTH MACEDONIA**

**GENERAL PROJECT OVERVIEW**

<b>Construction Contract:</b>	Construction of Corridor 8: Tetovo – Gostivar - Bukojcani and Trebenista – Struga - Kjafasan Motorway section and Corridor 10-d: Prilep – Bitola Motorway section		
<b>Construction Contract Number:</b>	No. 09-2234/1 dated 08.03.2023		
<b>Name:</b>	Public Enterprise for State Roads and the Ministry of Transport on behalf of the Government of the Republic of North Macedonia	Bechtel Enka UK 2 Limited operating through BECHTEL ENKA UK 2 LIMITED-Branch Office in North Macedonia Skopje	IRD Engineering s.r.l – Rome (IT) – JV leader JV members: EPTISA Servicios de ingenieria s.l; ELECTRA SOLUTIONS DOOEL Skopje and EURO CONSULTING DOO Skopje
<b>Role:</b>	Collectively called the “Employer”	Contractor	Engineer
<b>Purpose of Construction Contract:</b>	Provision of Construction Services in the capacity of the Contractor to execute and complete the Works in accordance with the Contract.		
<b>Contractual Start Date:</b>	March, 2023	<b>Contractual End Date:</b>	December, 2027

**REPUBLIC OF NORTH MACEDONIA**

The Project's major estimated quantities are shown below. As part of the Work scope, design and design related work is ongoing. Below mentioned quantities shall be subject to change in accordance with project technical requirements.

<b>Total Length (km)</b>	109 km
<b>Total Number of Underpasses (ea)</b>	24
<b>Total Number of Overpasses (ea)</b>	34
<b>Total Length of Bridges (m)</b>	4,500m
<b>Total Excavation (m<sup>3</sup>)</b>	21 million m <sup>3</sup>
<b>Total Fill (m<sup>3</sup>)</b>	10 million m <sup>3</sup>
<b>Total Concrete (m<sup>3</sup>)</b>	620,000 m <sup>3</sup>
<b>Total Subbase (m<sup>3</sup>)</b>	1.2 million m <sup>3</sup>
<b>Total Asphalt (ton)</b>	1.1 million ton

## 2. Environmental, Safety and Health (ES&H):

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During the month of August 2024, the following ES&H activities progressed:

- ES&H inspections of all active sites
- Weekly Project safety talks
- Conducted FLHA (Field Level Hazard Assessments) and JHA (Job Hazard Analysis) reviews in the field
- Continued weekly ES&H walk-downs at various Project locations
- Conducted new hire ES&H inductions

## 3. Work Progress:

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In the period of August 2024, Contractor continued to perform works mainly for geotechnical investigation works, motorway design & specifications, and mobilization works as well as the construction activities mainly for Earthworks and Structures.

By the end of the reporting period, above mentioned activities are ongoing in three (3) Sections namely: Section 1, Section 2 and Section 4.

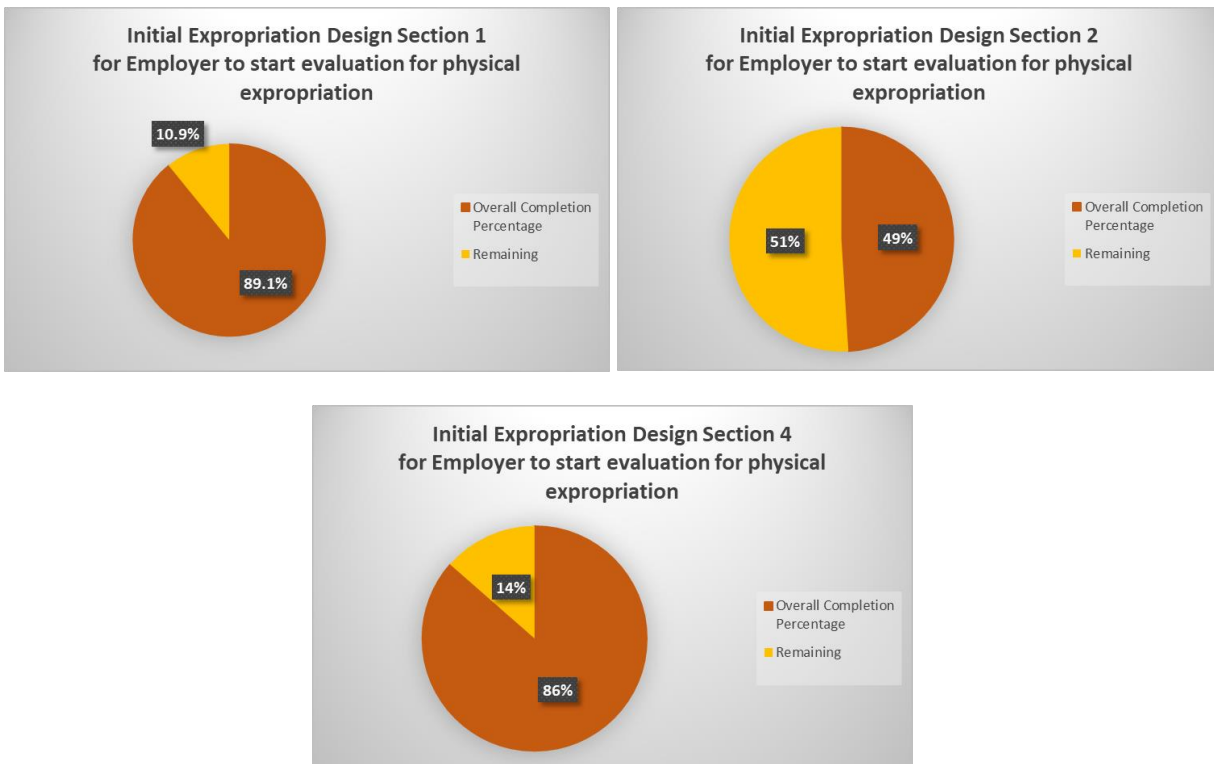
Where applicable Specialist Contractors are engaged to deliver Employer's scope.

### 3.1.Expropriation Design

The design of expropriation is essential for motorway projects as it is the first design required for the commencement of motorway design activities. Expropriation design is prepared as part of the Urban Project for Buildings of Strategic Interest for the Motorway. Expropriation design is Employer’s responsibility for which Specialist Contractors have been engaged.

Progress of Initial Expropriation Design Progress through the end of August 2024, can be seen below, by Section.

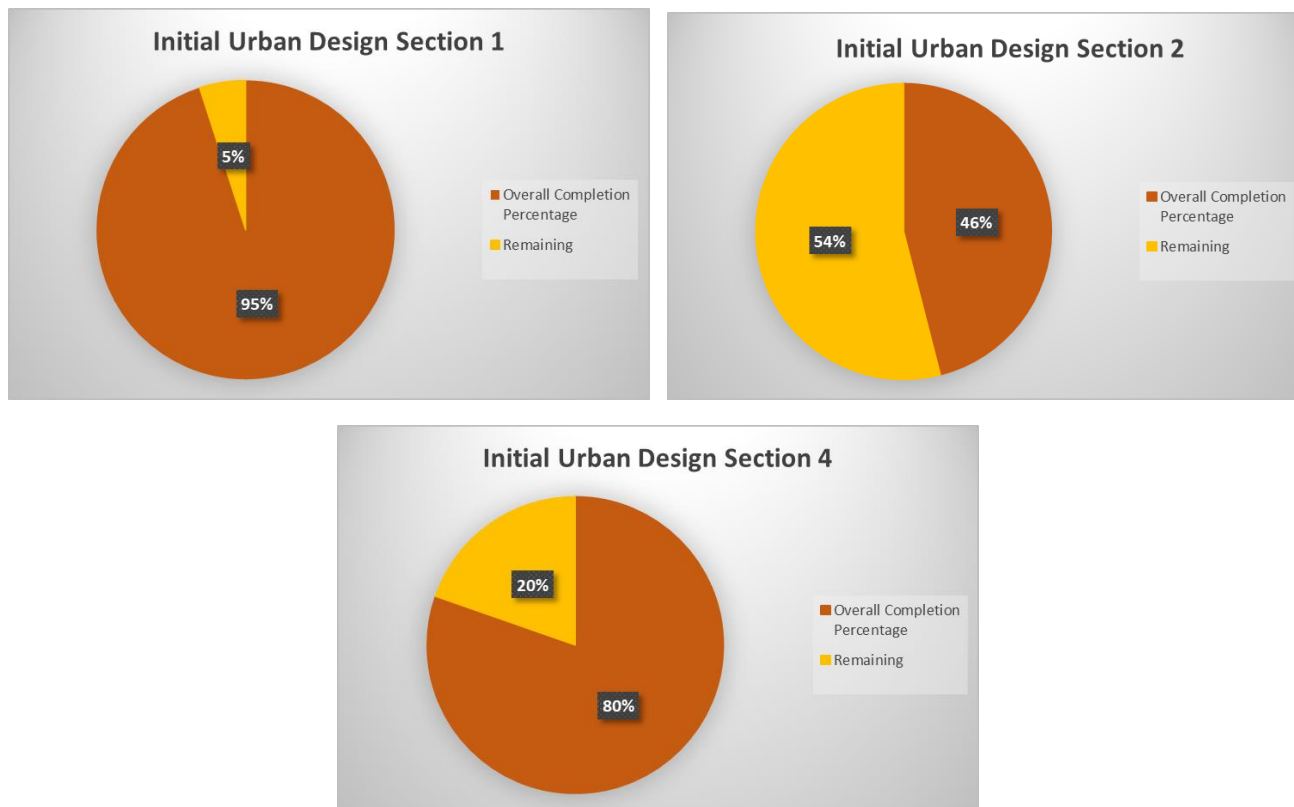
Important Note: This is not progress of Expropriation. Expropriation Design is a step required prior to commencing formal expropriation process. The charts below represent the Expropriation Design Progress against the Initial Urban Project Boundaries approved to date.



Preparation of expropriation design allows Employer to start evaluation process however the expropriation process can only be started once the Urban Project for Buildings of Strategic Interest is approved by the Government of the Republic of North Macedonia.



For this purpose, Urban Designs are developed by Specialist Contractors within the Project. Progress of Urban Design through the end of August 2024, can be seen below, by Section.



Urban project for buildings of strategic interest has been approved by Government of North Macedonia (GoNM) for the following Sections:

Section	Chainage	GoNM Approval
Section 1	37+716 - 53+127	Official Gazette no:229 dated 27.10.2023
Section 2	0+000 - 8+430	Official Gazette no:229 dated 27.10.2023
Section 4	7+840 - 37+060	Official Gazette no:244 dated 20.11.2023
Section 1 Amendments	35+718 – 52+127	Official Gazette no:92 dated 22.04.2024
Section 2 Amendments	0+000 – 14+700	Official Gazette no:120 dated 07.06.2024

Following completion of initial design of motorway, amendments to urban project for building of strategic interest will be prepared by Specialist Contractor Motorway designers and expropriation boundaries will be adjusted as needed.

Employer started initial expropriation process based on approved urban project for building of strategic interest and legal documents are under preparation by relevant authorities in Tetovo, Gostivar, Prilep and Bitola.

### 3.2. Establishment of Geodetic Benchmark Network

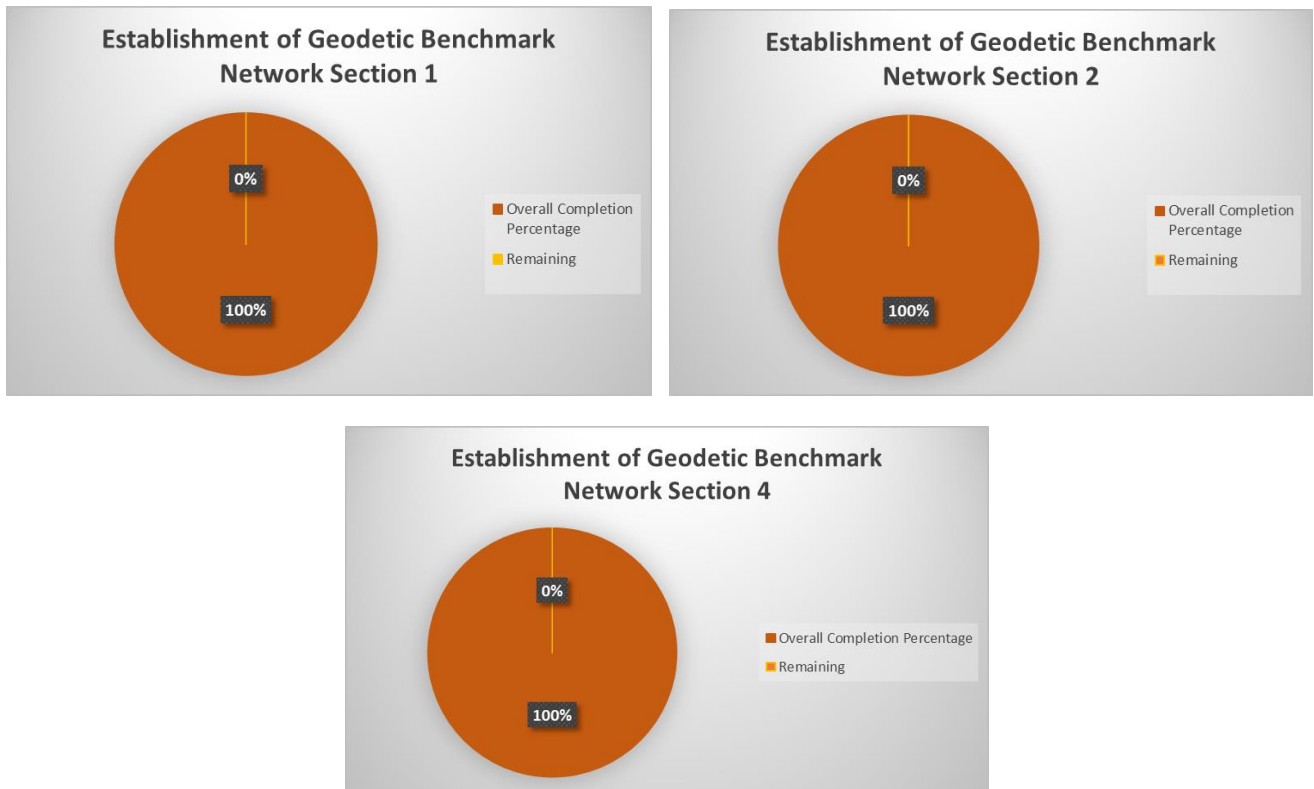
A geodetic network is a network, often of triangles, that are measured precisely by techniques of surveying, such as terrestrial surveying or satellite geodesy.

The establishment, measurement, and calculation of coordinates constitute the stages of network benchmarks.

The use of geodetic network is essential and necessary in motorway projects. It is used in all stages of construction projects to provide topographical measurement for motorway design. Additionally, geodetic network has a key role in demonstrating the compatibility of construction activities with motorway design during the construction phase.

Establishment of Geodetic Benchmark Network is Employer’s responsibility for which Specialist Contractors have been engaged.

Progress of the establishment of Geodetic Benchmark Network through the end of August 2024, can be seen below, by Section against the initially defined Road Corridor.



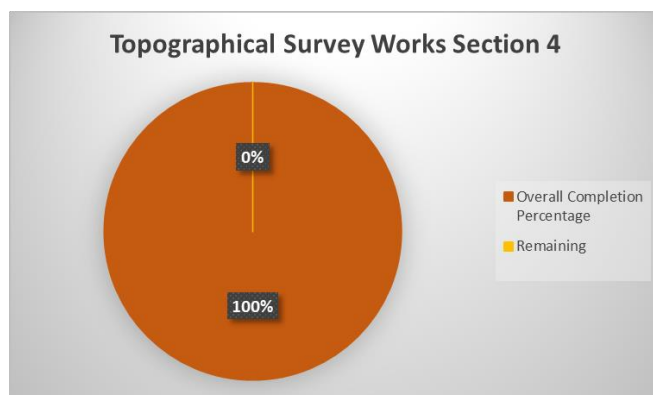
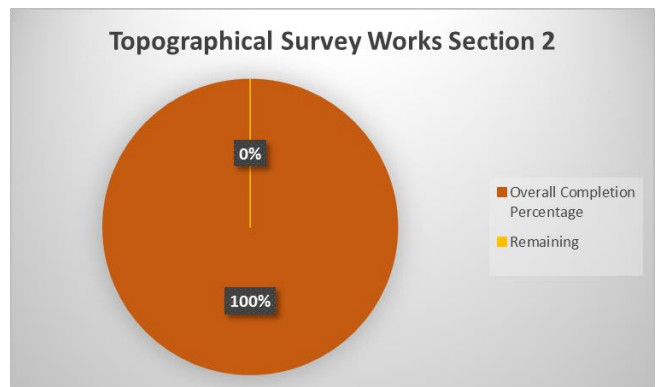
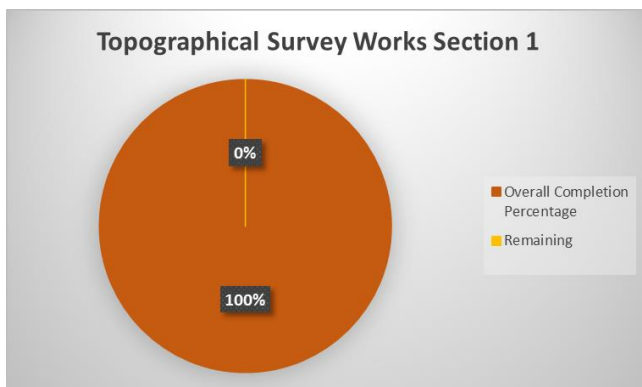
### 3.3. Topographical Survey Works

A topographic survey, also referred to as a land, terrain or topo survey, is a type of survey that maps the boundaries, features, and levels of a site. Topographic surveys are a key component of the design process for a site and should be completed prior to detailed design work.

Topographic surveys are highly beneficial for number of projects, with one of the main benefits being that they aid with planning and decision-making. A topographic survey provides accurate land measurements and gives a clear indication of the arrangements of an existing site, which can be used to make decisions on the planning of motorway design.

Establishment of Topographical Survey Works is Employer's responsibility for which Specialist Contractors have been engaged.

Progress of the Topographical Survey Works through the end of August 2024, can be seen below, by Section against the initially defined Road Corridor.



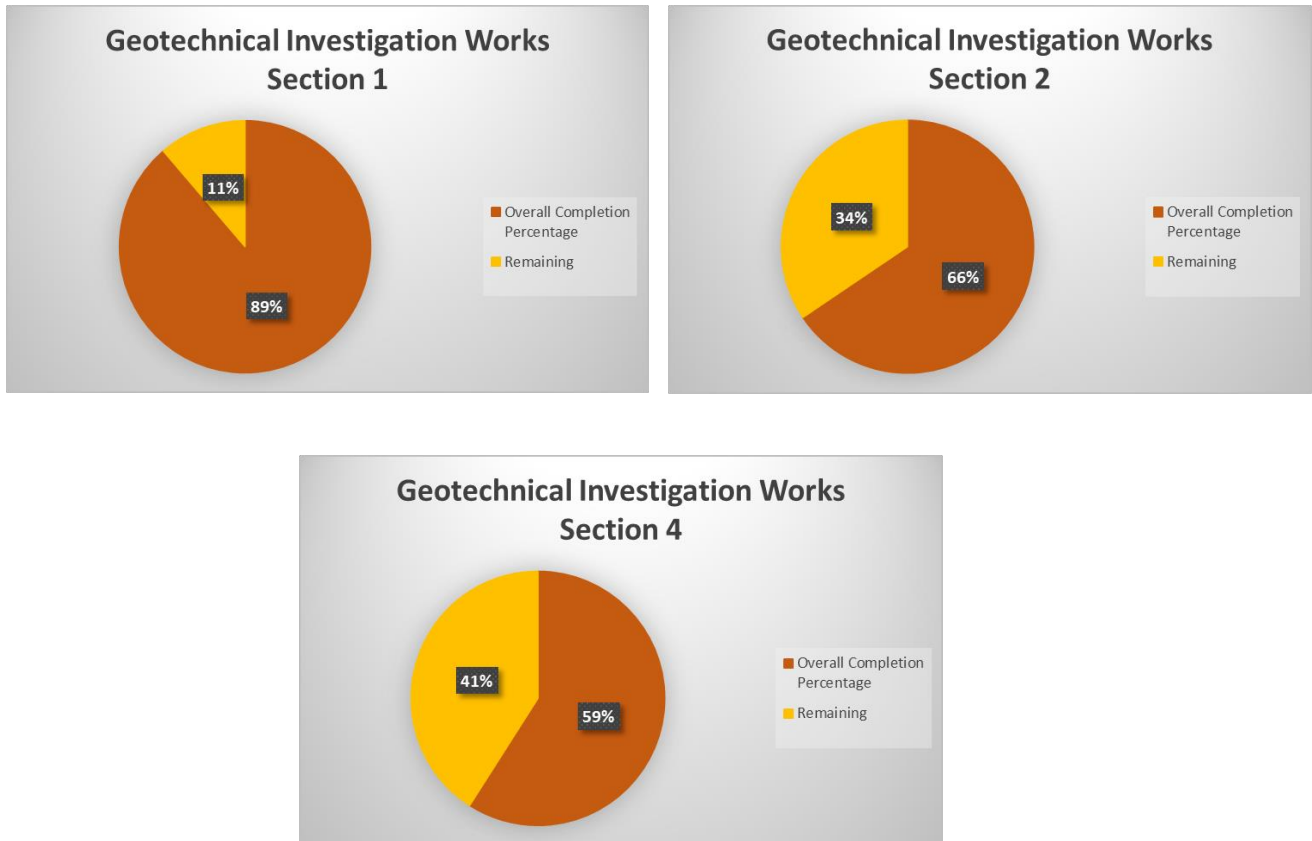
### 3.4. Geotechnical Investigation Works

Geotechnical investigation works are necessary for understanding the engineering geological structure of the terrain. Based on precisely planned geotechnical investigation works and testing's, important data are obtained for further design processes of both the main route of the highway and all accompanying structural facilities. After collecting data from investigative works in the field, primarily through investigative drilling with continuous coring and SPT tests and laboratory tests on soil and rock mass samples, the obtained data are processed, and the prevailing parameters at the location in question are adopted. Based on the obtained results, the conditions prevailing in the field, which are necessary for the design process, are considered. The geotechnical conditions that prevail in the field are of key importance for the further design and adoption of the type and method of foundation, as well as the execution of works on the entire route of the future Motorway. This approach allows for objective observation of the interaction between the planned Motorway construction and the surrounding terrain, which facilitates the optimization of planned constructions and helps avoid potentially problematical terrain, thereby helping to minimise potential additional problems and costs during the execution of the Works.

In order to execute Geotechnical Investigation Works, roads to investigation locations are also required and are executed in a programme according to priorities of the Works and are included in the Geotechnical Investigation Works.

Establishment of Geotechnical Investigation Works is Employer's responsibility for which Specialist Contractors have been engaged.

Progress of the Geotechnical Investigation Works through the end of August 2024, can be seen below, by Section against the initially defined Road Corridor and applied exploration areas for Quarries and Borrow Pits.



### 3.5. Motorway Specifications and Design & Review of Motorway Specification and Design

Motorway specifications and design encompass detailed guidelines and parameters essential for the construction of motorways. Specifications outline requirements for materials, structural integrity, drainage systems, traffic control, and environmental protection. Design considerations involve aligning the motorway route, designing interchanges and structures, determining pavement layers, managing drainage, and addressing environmental impacts. A thorough review of motorway specifications and designs ensures compliance with regulations, accuracy, feasibility, safety, environmental considerations, stakeholder input, value engineering, quality assurance, proper documentation, and continuous improvement practices. By adhering to these processes, motorway projects can be effectively executed, ensuring safety, efficiency, and environmental sustainability.



### 3.5.1. Motorway Specifications and Design

Motorway design encompasses various elements and considerations aimed at creating safe, efficient, and sustainable motorways for high-speed vehicular traffic. Designers carefully plan the route of the motorway, considering factors such as terrain, environmental impact, land use, and anticipated traffic volume. The alignment should minimize disruptions to existing infrastructure and communities while providing the most efficient travel route.

Motorways typically feature multiple lanes in each direction, separated by a central reservation or median barrier. The width of lanes, shoulder widths, and median barriers are designed to meet safety standards and accommodate different types of vehicles. Interchanges and junctions allow vehicles to enter, exit, or change direction on the motorway. These are designed to minimize congestion, facilitate smooth traffic flow, and ensure safety. Different types of interchanges, such as diamond, cloverleaf, or stack interchanges, may be utilized depending on traffic volumes and spatial constraints.

The main parts of motorway design can be categorized into several key components.

- Urban Planning

Motorway urban planning involves the integration of motorways into urban areas in a way that balances the need for efficient transportation with the goals of sustainable development, environmental protection, and community well-being.

- Roadway Design

In motorway design, the design of roadway, drainage, and pavement are critical components that contribute to the safety, durability, and functionality of the motorway.

The integration of well-designed roadway, drainage, and pavement components is crucial for creating a motorway that meets the needs of users while minimizing negative impacts on the environment and maximizing the lifespan of the infrastructure. By carefully considering these elements during the design phase, transportation engineers can create a sustainable and resilient motorway system that serves the community for years to come.

- Motorway Structures Design

Motorway structures refer to various engineered elements that are integral to the design and construction of motorways. These structures serve a variety of purposes, including supporting the roadway, providing safe passage over obstacles, and facilitating efficient traffic flow. Below are some common types of motorways structures:

## REPUBLIC OF NORTH MACEDONIA

- Bridges and Viaducts
- Overpasses and Underpasses
- Interchange Structures
- Retaining Walls

Motorway structures are designed and constructed with meticulous attention to detail to ensure safety, durability, and functionality.

- Utility Design

Utility relocation and protection are crucial aspects of motorway projects, ensuring that existing utilities such as water pipes, gas lines, telecommunications cables, and electrical infrastructure are properly managed to avoid conflicts and disruptions during construction.

Utility relocation and protection designs for motorway projects can minimize disruptions, enhance safety, and ensure the long-term functionality and reliability of utility infrastructure alongside the construction of the motorway.

- Environmental Impact Assessment (EIA)

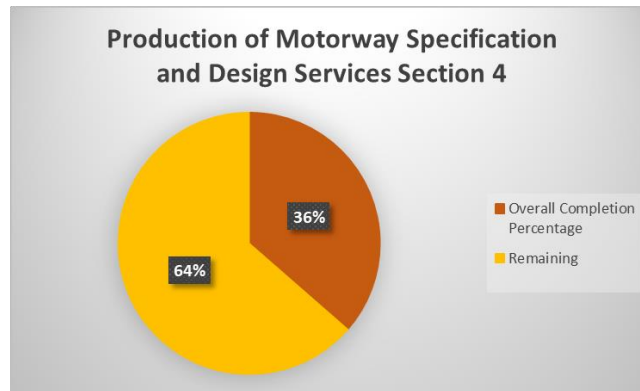
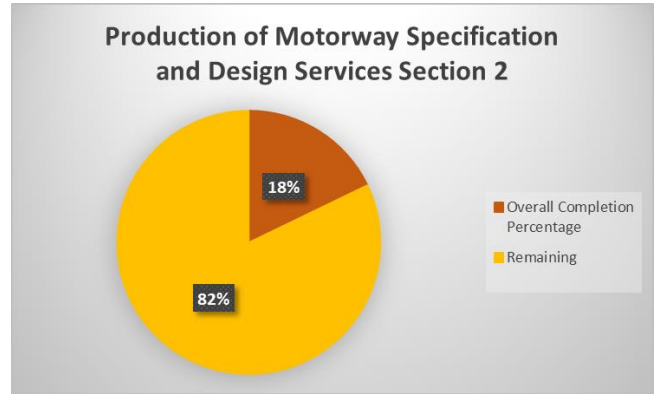
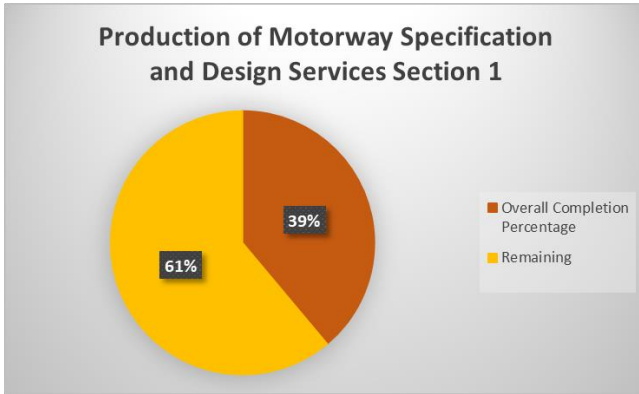
A motorway Environmental Impact Assessment (EIA) is a comprehensive study conducted to evaluate the potential environmental effects of constructing and operating a motorway project. The purpose of the assessment is to identify, predict, and mitigate adverse impacts on the environment, communities, and natural resources, and to inform decision-making processes regarding the project's approval, design, and implementation.

- Technical Specifications

Motorway technical specifications outline the detailed requirements, standards, and guidelines for the construction of motorways. These specifications are typically developed for overseeing motorway projects and are based on industry best practices, engineering standards, and regulatory requirements.

Motorway Specification and Design Works is Employer's responsibility for which Specialist Contractor's have been engaged.

Progress of the Motorway Specification and Design Works through the end of August 2024, can be seen below, by Section against the initially defined Road Corridor.

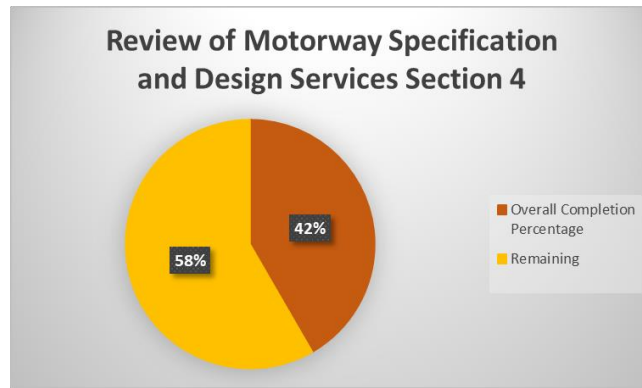
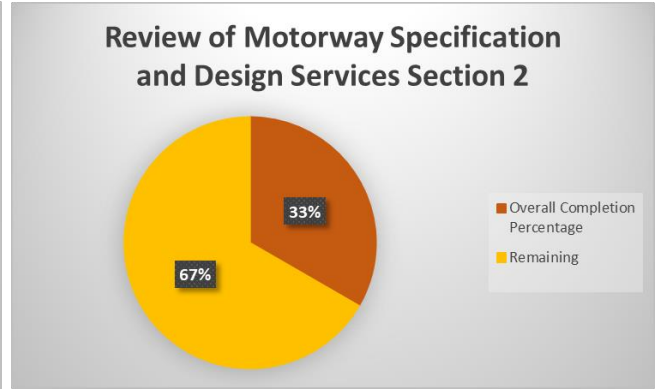
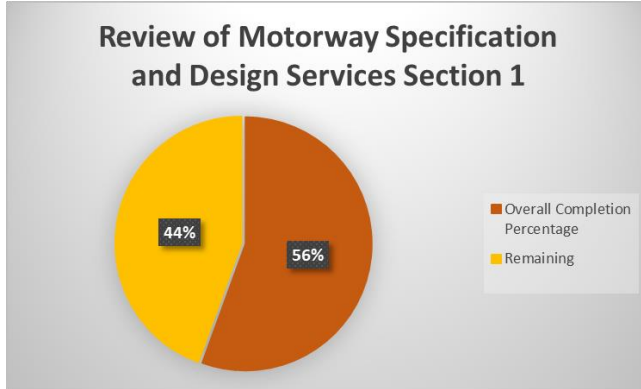


### 3.5.2. Review of Motorway Specification and Design

The review of motorway specifications and designs by technical control involves a comprehensive assessment of the project's technical aspects to ensure adherence to standards, regulations, and best practices. This process includes evaluating geometric design parameters, pavement materials, structural integrity, drainage systems, traffic control features, and environmental considerations. Technical control conducts a thorough examination to verify compliance with established guidelines, accuracy of design documentation, feasibility of implementation, and effectiveness in achieving project objectives. This review aims to identify potential issues, mitigate risks, optimize design solutions, and ensure the quality, safety, and sustainability of the motorway infrastructure.

Review of Motorway Specification and Design Works is Employer's responsibility for which Specialist Contractor's have been engaged.

Progress of the Review of Motorway Specification and Design Works through the end of August 2024, can be seen below, by Section against the initially defined Road Corridor.



### 3.6. Unexploded Ordnance Investigation Service in Section 4

Unexploded ordnance are explosive weapons (bombs, shells, grenades, land mines, naval mines, cluster munition, and other munitions) that did not explode when they were employed and still pose a risk of detonation, sometimes many decades after they were used or discarded.

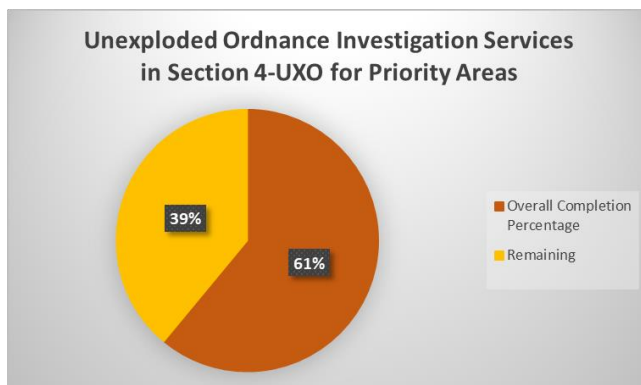
In republic of North Macedonia, protection against Unexploded ordnances (UXO) and explosive substances has been regulated in accordance with the Article 80 from the Law on Protection and Rescue and is a part of the regular competences and scope of activities of the Protection and Rescue Directorate. Protection against Unexploded ordnances (UXO) and explosive substances includes searching of the terrain and detection, discovering unexploded ordnances (UXO), marking and securing the terrain, disabling and destroying of all types of unexploded ordnance and other explosive substances as well as transportation to the determined and prepared place for them to be destroyed [detonated] and providing safety measures during the transportation.

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At the beginning of the Works in Section 4, Unexploded Ordnances are discovered. Following the discovery, immediately Employer and related authorities have been notified. Providing Site and Borrow Pits, Quarries and Waste Areas cleared of any hazardous Wastes or Materials is Employer’s responsibility for which Specialist Contractors have been engaged. According to planned sequence of the Works in Section4, priority areas have been identified and first 100ha of Section4 has been selected for the Unexploded Ordnance Investigation Services. This investigation services includes

- UXO Surveying and Scanning Works
- Clearance Report of the surveyed and scanned area after removal of the items by competent authority (Army of the North Macedonia).

Progress of the Unexploded Investigation Services in Section4 through the end of August 2024, can be seen below against the initially defined Road Corridor. Up to now, surveying and scanning works are completed for the priority areas (100ha). Following clearance activities, second surveying and scanning activities will be conducted for the clearance report. Important Note: Unexploded Ordnance Investigation Services in Section 4 only includes the surveying, scanning and reporting of the area. Any extraction, disabling, transportation, destroying etc is out of scope and it is under complete authority of Army of the North Macedonia.





### 3.7. Construction Progress

#### 3.7.1. Earthworks

On site, Earthworks operations commenced and continue mainly in Section 2 cut area. Current earthworks operations include, clearing and grubbing, topsoil removal, excavation of the suitable material from Alignment Cut and provide suitable material for the Works by means of hauling and also embankment fill. By the end of August 2024, over 370,000 m<sup>3</sup> excavation and 15,000 m<sup>3</sup> embankment fill has been executed.

#### 3.7.2. Structure

Piling operations of bridges and overpasses have commenced and continue in Section 1 and Section 2. By the end of August 2024, 2,000m piling works has been executed.

### 3.8. Personnel / Equipment Records:

	31- August- 24
<b>Personnel Records Total:</b>	<b>1710</b>
<b>Equipment Records Total:</b>	<b>757</b>

### 3.9. Site Status:

Scope of Work	Section 1	Section 2	Section 3	Section 4
<b>Geotechnical Investigation Works</b>	In Progress	In Progress	Not Started	In Progress
<b>Earthworks</b>	In Progress	In Progress	Not Started	In Progress
<b>Structures</b>	In Progress	In Progress	Not Started	Not Started
<b>Drainage</b>	Not Started	Not Started	Not Started	Not Started
<b>Finishing</b>	Not Started	Not Started	Not Started	Not Started
<b>Paving</b>	Not Started	Not Started	Not Started	Not Started

#### 4. Financial Progress of the Project

Financial transaction between Ministry of Transport and Public Enterprise State Roads under road infrastructure financing program is listed below:

Date	Payer Name	Recipient Name	Amount (MKD)
26.04.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	7,254,000,000
23.06.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	3,280,000,000
28.07.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	443,602,000
10.08.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	209,927,500
02.10.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	216,308,513
09.11.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	223,596,680
15.12.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	245,606,294
28.12.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	669,225,176
28.12.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	261,862,793
29.12.2023	Ministry of Transport & Communications	Public Enterprise for State Roads	1,695,871,044

5. Site Photos:

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Photo 1: Section 2 Stock Area



Photo 2: Section 2 Main Alignment Embankment Works



Photo 3: Section 4 Camp Area



Photo 4: Section 4 Quarry



Photo 5: Section 2 B0070 Piling Works



Photo 6: Section 2 Earthworks

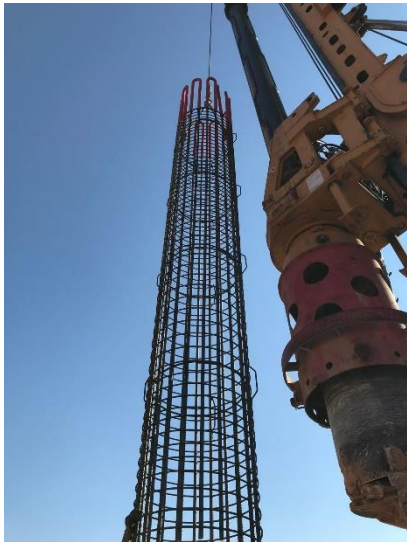


Photo 7: Section 2 B0070 Cage Rebar Installation



Photo 8: Section 2 Slope Protection





Photo 9: Section 2 Beam Yard Filling Works



Photo 10: Section 2 Crusher Area