

Semi-annual environmental monitoring report

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July - December 2023

The Kyrgyz Republic.

Central Asian Regional Economic Cooperation Corridor 3 Improvement Project (Bishkek-Osh Road), Phase 4, Bishkek-Kara-Balta section (km 8.5 - km 61).

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Prepared for:
Ministry of Transport and Communications of the Kyrgyz Republic.

Endorsed by: [Full name and signature of Executive Agency employees]

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Abbreviations

ADB	-	Asian Development Bank
CAREC	-	Organization of Central Asian Regional Economic Cooperation
CSC	-	Construction Supervision Consultant
EMP	-	Environmental Management Plan
PIU	-	Project Implementation Unit
Km	-	kilometer
KR	-	Kyrgyz Republic
MPC	-	Maximum permissible concentration
MPL	-	Maximum permissible level
MoTC KR	-	Ministry of Transport and Communications of the Kyrgyz Republic
MoF KR	-	Ministry of Finance of the Kyrgyz Republic
MoNRETS	-	Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
KR	-	
DDPTSSSES	-	Department of Disease Prevention and State Sanitary-Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic
TS	-	Technical Specification
CEMWP	-	Construction Environmental Management Work Plan
AP	-	Asphalt Plant
SCP	-	Stone crushing plant
CBP	-	Concrete batch plant
SAEPF	-	State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic
SIETS	-	State Inspectorate for Environmental and Technical Safety under the Government of the Kyrgyz Republic

1. INTRODUCTION.

1.1 Preamble.

1. Roads are essential for the Kyrgyz Republic, in this regard, the Government of the Kyrgyz Republic appealed to the Asian Development Bank (ADB) to assist in funding for the implementation of CAREC Corridor 3 (Bishkek-Osh Road) Improvement Project, Phase 4.
2. The report is the **thirteenth** semi-annual environmental monitoring report covering period from July to December 2023, under the being implemented CAREC Corridor 3 Improvement Project (Bishkek-Osh Road), Phase 4. The monitoring report contains environmental issues, mitigation and monitoring measures taken by the Contractor and monitored by the national environmental specialist (Tatyana Volkova) of the construction supervision consultant Temelsu. Road rehabilitation works included: reconstruction of six bridges, replacement of culvert pipes, construction of underpasses, taking out of old asphalt, preparation of new road lanes in the eastern and western directions, construction of sidewalks and drainage ditches, tree planting, and operation of asphalt and concrete plants, stone crushing plant for the processing of inert materials.
3. The report contains information about the work progress and changes related to the prevention of environmental impacts. The results are based on numerous site visits conducted by the Consultant's national environmental specialist from July to December 2023, wherein the main focus was on monitoring over compliance with the environmental and safety requirements during the road construction, construction of bridges, and culvert pipes, seedling planting, and traffic management.

1.2 Headline Information.

4. The Bishkek-Osh Road represents about one-fourth of the international road network in the Kyrgyz Republic, and links the country to Kazakhstan in the north, Uzbekistan, and Tajikistan in the south, and the People's Republic of China in the southeast. The road crosses four of seven regions of the country and serves about 2 million people. It is the only direct surface link between the southern and northern parts of the country making it crucial for maintaining the country's social, political, and economic integrity. The Bishkek-Osh Road is part of the Central Asia Regional Economic Cooperation (CAREC) Corridor 3, which runs from the west and south Siberian region of the Russian Federation through Kazakhstan, Kyrgyz Republic, Tajikistan, Afghanistan, and Uzbekistan to the Middle East and South Asia.
5. The CAREC Corridor 3 Improvement project (Bishkek-Osh Road), Phase 4, (Bishkek-Kara-Balta section, 52.5 km long) aims to improve the connectivity and market access in the Kyrgyz Republic. The project's output will be efficient movement of freight and passenger traffic along the Bishkek-Osh Road, improved safety for both road users and pedestrians, as well as mitigation of the road impact to the environment in terms of noise impact from passing traffic by upgrading asphalt pavement.
6. In 2016 during the bidding process, a China Railway No.5 company was selected for the implementation of project component 1. On March 28, 2017, a Civil Works Contract was signed between the Ministry of Transport and Roads of the Kyrgyz Republic and China Railway No.5. The total contract price is 70,239,899.29 USD. In the course of extensive contract negotiations, the work group managed to change the fixed escalation coefficient to an increase, i.e., from 0.15 up to 0.51 – thus, minimizing price escalation. On April 3, 2017, the Consultant issued a Notification for Commencement of Works. The construction works commenced on 3 April 2017.

7. The cost of the contract between the MoTC of the Kyrgyz Republic and General Contractor China Railway No.5 was 70 239 899,29 US Dollars, i.e., there was spare funds up to 22M USD. In 2019, the saved funds were planned to use for construction of the remaining road section (8.5 km – 15.9km). By the method of direct contract award, the contract was awarded to China Railway No. 5. Notification for Commencement of Works was issued on November 19, 2020.

8. On May 31, 2020, a contract with the consulting company Eptisa was completed. Following the bidding process, Temelsu International Engineering Services INC.(Turkey); Desh Upodesh Ltd. (Bangladesh) and e. Gen Consultants Ltd. (Bangladesh) new Joint Venture consulting company was selected. New Consultant started to work on May 11, 2020.

Revision of the Bishkek-Kara-Balta Road Rehabilitation Project.

9. Initially the road's designed length was 52,5 km length. Feasibility Study (FS) was prepared by the Consultant Kocks Consult as part of ADB Technical Assistance, the purpose of which was to identify the economic soundness of the Project. Feasibility Study set out approximated cost of the Project based on the preliminary topographic survey at a scale of 1:2000 and geotechnical studies conducted. Following the FS, ADB decided to allocate 100 M USD, 65M USD of which was a loan money and 35M USD - grant. Co-financing by the Government of the Kyrgyz Republic was 20.8M USD. Out of this, the Project provides 92.06M USD for civil works. The detailed design preparation was carried by Consultant Eptisa, and detailed topographic survey (at the scale of 1:1000) was conducted including additional geotechnical and other surveys which allow specifying engineering costs of the Project. Based on the results of the detailed design, the Civil Works cost was about 115.1M USD. Thus, there was a lack/deficit of funds in the amount of 23.06M USD. In this regard, the Ministry of the Transport and Roads of the Kyrgyz Republic decided to revise the design within the available funds for Civil Works.

10. As a result, through the agreement with ADB, it was decided to decrease the project road by 7.4 km and to deem the road starts at 15.9 km instead of 8.5 km on Bishkek-Osh Road. Thus, initially the overall length of the project road was 45.1 km. The decision about the reduction of the specified section was taken before the announcement of the tender for the procurement of Civil Works.

11. The cost of the contract between the MoTC of the Kyrgyz Republic and General Contractor China Railway No.5 was 70,24 US Dollars, i.e., there was spare funds up to 22M USD. In 2019, the saved funds were planned to use for construction of the remaining road section (8.5 km – 15.9km). By the method of direct contract award, the contract was awarded to China Railway No. 5. Notification on Commencement of Works was issued on November 19, 2020.

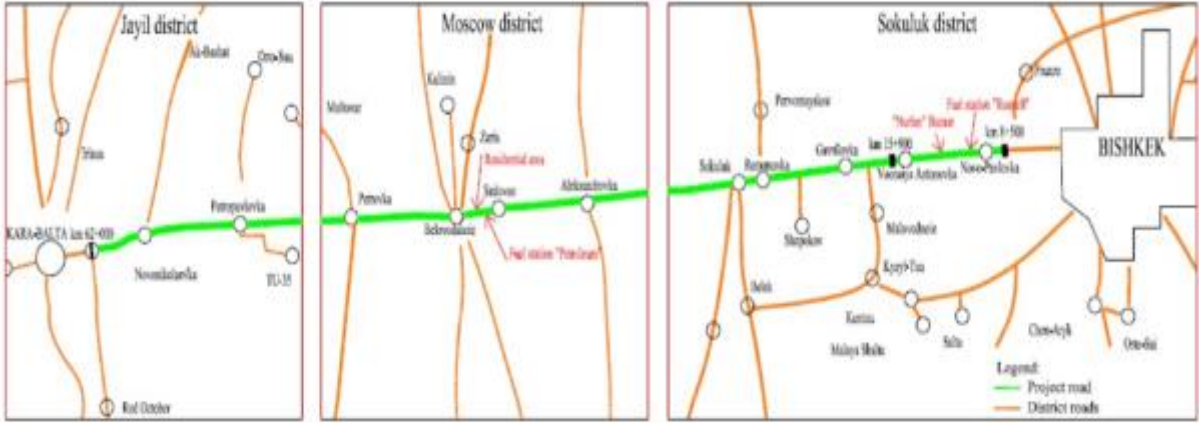


Figure 1 Administrative districts of project road



Figure 2 Bishkek Kara-Balta project road section from km 8.5 - km 61

2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES.

2.1 Project Description.

2.1.1 Location of the project site and main design. 8.5 km - 61 km section of the Bishkek Kara-Balta project road.

12. The being implemented project will improve connectivity between north and south in the Kyrgyz Republic. The project's output will be efficient movement of freight and passenger traffic along the Bishkek-Osh Road. According to the classification of the ADB Safeguard Policy Statement, the project classified as Category B. Improvement of the Bishkek-Osh Road section (Bishkek-Kara-Balta section) will connect important, but densely populated areas, what will ultimately provide better access to services, goods and markets; improve regional connectivity and increase road safety for all road users in general.

13. The project provides for the rehabilitation of 52.5 km of the Bishkek-Osh Road. The project site is located between Bishkek and Kara-Balta cities and between 8.5 km and 61 km of the Bishkek-Osh Road. At km 61, at the roundabout, the Bishkek-Osh Road turns to south, and marks the end of the project site.

14. The terrain across the site can be classified as a foothill plain with a height of 750-800 m above sea level and steadily gaining altitude southward toward the Tian Shan Mountain range.

15. The road reconstruction should meet the laws and legislation of the Kyrgyz Republic. This rehabilitation will bring the geometric parameters of the road to the required category, becoming a 4-lane highway for the entire length to Kara Balta, increasing the radii of curvatures in the vertical and horizontal alignment.

16. In order to improve drainage systems, the work includes reconstruction and replacement of majority of degraded culvert system, and addition of new cross-drainage structures. Existing bridges were totally replaced, and it will be constructed more than 64 km of sidewalks and six underpasses.

17. Environmental impact resulting from the rehabilitation of the Bishkek-Osh Road is short-term and local, since the most of construction work is carried out along the existing right-of-way. The project includes number of appropriate activities, such as the development of borrow-pits, operation of asphalt plant, crushing and screening plant, arrangement of work camps and storages of the contractor, etc.

18. The environmental impact includes:

- noise impact, as well as vibration, which is particularly important within localities near the Project Road and in the areas where sensitive receptors are located, such as schools, hospitals, mosques, etc.
- Impact to the air;
- Impact to water courses and rivers;
- Impact resulting from sourcing of aggregates in borrow-pits;
- Impact on soil and vegetation, including tree stands near the project road, due to site clearing work;
- Impact resulting from bridge rehabilitation works;
- Impact of asphalt production plants and aggregates crushing plants;
- Impact of Contractor's workers camps.

19. Due to the serious resettlement issues and the need to address them before commencement of construction period, such a sequence of construction works was planned, where the works primarily covered those sections where there were no any or there were minor resettlement issues.

Table 1 Road sections where the construction work started in 2017

Section No.	Start of the section, km	End of the section, km	Length of the section, km
1	15.900	21.300	5.400
2	35.500	40.580	5.080
3	45,600	51,600	6.000
4	54.200	59.350	5.150

Table 2 . Road sections where the construction work started in 2018

Section No.	Start of the section, km	End of the section, km	Length of the section, km
5	21+300	35+500	14+200
6	40+580	45+600	5+020
7	51+600	54+200	2+600
8	59+350	60+926	1+576

Table 3 km 8.5-km 15.9 road section where construction has been started in the period from 2020

Section No.	Start of the section, km	End of the section, km	Length of the section, km
1	8.500	15.900	7.400

20. According to the Technical specifications, the road pavement was designed for an initial design life of 10 years with structural overlay options for 15 and 20 years of designed operation life.

2.2 Project Contracts and Management.

Table 4 Project Contracts and Management

Project	Central Asia Regional Corridor 3 (Bishkek-Osh Road) Improvement Project Phase 4
Contractor	: China Railway No.5 for Component 1 implementation
Road Section:	: 15.9 km – 61 km, the overall length is 45.1 8.5 km – 15.9 km, the overall length is 7.4
Donor:	Asian Development Bank.
Contract Sign Date	28/03/2017 – 45.1 km section 20/07/2020 – 7.4 km section
Executive Agency	: Ministry Transport and Communications of the Kyrgyz Republic
Notice to Commence	03/04/2017– 45.1 km section 19/11/2020 – 7.4 km section
Completion Date	: 45.1 km section: 18 March, 2020; October 16, 2020 (VO 9); 16 July, 2021 (VO 11), 18 th November 2021 (VO 17) 7.4 km section: 19 November 2022
Time for Completion – Days	: 45.1 km section: 1080 days, 1292 days (VO 9); 1565 days (VO 11) 1690 days (VO 17); 7.4 km section: - 730 days
Extension of Time – Days	: 45.1 km section: 212 (VO 9) + 273 (VO 11) + New: 125 (VO 17); 7.4 km section: none
Defect Liability Period – Days	: 365
Contract Amount	: 45.1 km section: USD 73 675 821.86; 7.4 km section: USD 17 763 085,66
Minimum Amount of Interim Payment USD (2%Addendum N0.1 dated on 30.04.2020)	: USD 1,404,797.99
Total Amount of Advance Payment	: 15% Percentage of the Accepted Contract Amount
Amount of Performance Security	: %20 of Accepted Contract Price
Amount of Third-Party Insurance	: 500,000 USD per occurrence with the number of occurrence unlimited
Periods for submission of insurance	28 days
a) evidence of Insurance	28 days
b) relevant policies	28 days
Delay damages for the Works	0.05% of the Accepted Contract Amount for each lot, which is in delay, per day in USD
Maximum amount of delay damages	10% of the Accepted Contract Amount
Repayment Amortization of Advance payment	22%
Limit of Retention Money	10% of Accepted Contract Amount
Percentage of Retention	5% of Value of Works certified for Payment

Table 5 List of Consultant's staff

Consultant's staff

International staff	
male	
Highway Engineer/Team Leader	Kenan Kose
Pavement and Materials Engineer	Eray Gamgam
Road Safety Engineer	Md.Mustafizur Rahman
Contract Specialist	Mahmut Nedim Altay
Social Development and Resettlement Specialist	Md.Nurul Hoque
Environment Specialist	Dr.Md. Mohsin Almaji
PBM Engineer	Seyfettin Akinci
National staff	
male	
Pavement and Materials Engineer	Nurlan Sadykov
Bridge/Structural Engineer	Sherikbek Turdubaev
Road Safety Specialist	Soolot Begaliev
Quality Assurance Engineer	Sadyrbek Mamyrkulov
Quantity Surveyor	Turatbek Bokonbaev
Social Development and Resettlement Specialist	Yuriy Dolgov
PBMC Consultant	Nurbek Jumaliev
female	
Environmental Specialist	Tatyana Volkova

2.2.1 Scope of work according to contract.

21. This section of the road was designed according to the standards of Technical Category 1-b (main urban arteries) with the following geometrical features:

- Number of lanes – 4 and 6
- Lane width – 3,5 - 3,75m;
- Carriageway width – 2x7,5;
- Shoulder width – 2.5m
- Carriageway shoulder breakpoint stabilization – 1.0m
- Axle design weight – 11,5 tones.

22. Along the entire project site, the two layers of the asphalt-concrete pavement (14 cm thick) laid, the upper one is 5 cm and the lower one is 9 cm thick, with underlying black crushed stone course (9 cm thick).

23. The Right of Way width is 50 - 60 meters. The design provides for construction and repair works in the following engineering structures and the communications as well as scope of the work.

Pavement Construction Quantities at 45.1 km section:

- Wearing course 5cm thick – 46,692m³;
- The same in junctions 5cm thick – 4,169m³;
- Binder course 9cm thick – 84,046m³;
- The same on junctions 9cm thick – 7,505m³;
- Asphalt treated base course 9cm thick – 86,906m³;
- Base 15cm thick – 157,257m³;
- Sub-base 28cm thick – 448,920m³;
- Asphalt-concrete course on sidewalks 4cm – 9,754m³;

In addition, it also includes:

- Bridge repairs with widening– 6 units;
- Minor engineering structures – 548 units;
- For water diversion, reinforced-concrete ditches – 77661 linear meters;
- Intersections and junctions – 477 units;
- The design provides for parking areas next to market places – 4 units;
- Auto pavilions – 115 units;
- Sidewalks – 81 285 meters;

Road safety features:

The design provides for repair of 4 existing underpasses and construction of 6 new underpasses;

- Marker posts – 515 units;
- Metallic foot-walk guard rails – 3980 linear m;
- Parapet fencing – 1158 units;
- Median fencing – 14 887 units;
- Retaining walls – 3669 linear m;
- Traffic lights – at 20 intersections.

Reconstruction of the Utilities

- VL-10kV – 43 poles
- VL-0,4kV – 166 poles
- Communication lines –507 poles
- Lighting poles – 2190 pcs
- Gas casings – 650 linear m.

Pavement Construction Quantities at 7.4 km section:

- Tree planting - 1000 Ea.
- Hard shoulder - 10,00 km.
- Concrete border stone/curb BR100.30.18 - 5,54 km.
- Bridge instead of D2X1.5m pipe culvert - 1,00 km.
- Longitudinal ditches - 11,9 km.
- Sidewalk
 - clearance and subbase course - 11,7 km,
 - curbstone - 11,7 km,
 - pavement - 11,7 km.
- Bus Stop - 20 Ea.
- Junction base - 83 Ea.
- Junction binder course - 83 Ea.
- Junction wearing course - 83 Ea.
- Junction shoulder – 83 Ea.
- Traffic lights
 - Pole foundation - 9 pcs.
 - Pole installation - 9 pcs.
 - Lamp installation - 9 pcs.
 - Cable connection - 9 km.
- Road Signs - 384 pcs.
- Road marking - 14,80 km.
- Lights reflecting element of parapet - 7,40 km.
- Protection concrete slope of pipe culvert - 8,00 Ea.

Vegetation Planting

24. Almost throughout its' entire length the project road was planted with trees on both sides, most of which were cut down during the rehabilitation of the road. Tree cutting was a "forced" measure. At km15,9 – km61 section under forced cutting fell trees located in areas of roadbed widening, construction of sidewalks and drainage ditches. At 45.1 km section a total number of trees fell under forced cutting amounted to 5 812. At 7.4 km road section, 504 trees were cut down. As compensation measures, to restore the number of green spaces, planting of new seedlings was provided at ratio of 1:2.

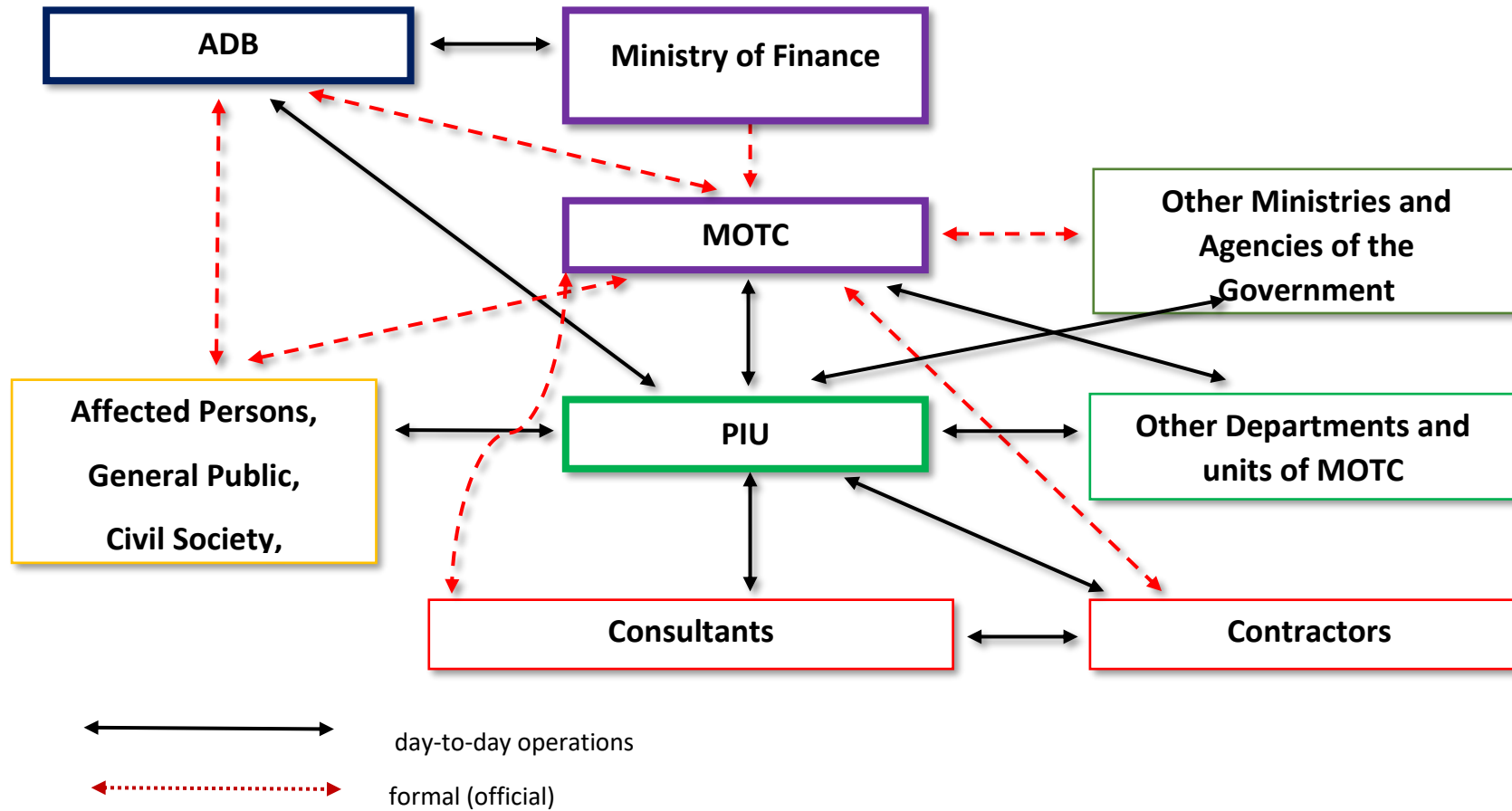
25. At the end of the project, 13 325 pieces of young seedlings were planted, including 12 325 at 45.1 section and 1000 at 7.4 km section. In the autumn of 2023, in total 1000 seedlings were planted, including 700 at 45.1 km section and 300 at 7.4 km section.

26. Partially, seedlings were distributed to local authorities (aiyl okmotu) since they asked to give them seedlings for planting in organized park areas and schools, on sections of the road that are located on their territories, while further work on planting and caring for seedlings will be carried out by aiyl okmotu themselves.

Land Acqution and Ressetlemnt Plan.

27. The project site passes along densely populated areas. The design provides for the demolition of commercial services, pavilions, billboards, service stations, gas stations, fences and houses affected by the project in areas where the road widened and new sidewalks would cosntructed. A Resettlement Plan was drawn up, based on which compensation was paid to 106 affected persons at 45.1 km section and to 54 affected persons at 7.4 km section, including owners and users of land, business owners, tenants and employees.

ORGANIZATION STRUCTURE



2.2.2 Main Organizations Involved in the Project.

28. The following organizations are involved in the project implementation:

- *Ministry of Finance of the Kyrgyz Republic (MoF)* - the authorized state body responsible for coordinating actions with the ADB and other donors on external assistance issues.
- *Ministry of Transport and Communications of the Kyrgyz Republic (MoTC)*, responsible for the development of the transport sector, and is the Executing Agency (EA) of the project. MoTC is bearing responsibility for the planning, design, implementation and monitoring of the project. PIU works under the MoTC and implements the tasks assigned by MoTC.
- *Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic (MNRETS)*, – ensuring environmental safety, strengthening environmental protection measures and reducing climate risks, it is the leading environmental state agency responsible for the state's policy in this area and coordinating the actions of other state bodies in these matters. Its functions include:
 - development of environmental policy and its implementation;
 - conducting a state environmental expertise;
 - issuance of environmental licenses;
 - environmental monitoring;
 - provision of environmental information services.
- *Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic* - supervises the sanitary and epidemiological welfare of the population, the safety of goods, products, environmental objects and conditions, and the prevention of harmful impact of environmental factors on human health.

Table 6 Main Organizations involved in the project and related to the environmental safeguards.

No	Organization Name	Role in project	Responsible person for the environmental safeguards	Contacts
1	ADB	Environment Specialist	Ninette R. Pajarillaga	npajarillaga@adb.org
2	ADB's Kyrgyz Republic Resident Mission (KYRM)	Consultant	Sultan Bakirov	Sbakirov.consultant@adb.org
3	PIU under MoTC KR	Executive Agency	Asylbek Abdygulov	asylbeka@piumotc.kg
4	Temelsu	Consultant	Tatiana Volkova	volkova_ti55@mail.ru
5	The limited liability company "China Railway Engineering Group No. 5»	Contractor	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
6	Subcontractor LLC «Ishmer»	Supply and construction of bus stops	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
7	Subcontractor LLC «Ren Stad»	Installation of road signs	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
8	Subcontractor LLC «Aiser Torg»	Installation of traffic lights	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
9	LLC «Chuan Syang»	Application of road marking	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
10	LLC «Vokko»	Installation of road signs	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru

29. At the end of December 2023, EHS specialists of the Contractor and Consultant were demobilized.

2.3 Project activities during the current reporting period.

Table 7 Work progress. KM 8,5 – KM 61,128 section

Section	Activity list	Unit	Total Quantity	Completed quantity	Completion %	
Km 8+500 - Km 15+900	1	Planting trees	Ea.	1000	1000	100,00%
	2	Hard Shoulder	km	10,00	10,00	100,00%
	3	Concrete border stone/curb BR100.30.18	km	5,54	5,54	100,00%
	4	Bridge instead of D2X1.5m pipe culvert	Ea.	1,00	1,00	100,00%
	5	Longitudinal ditches	km	11,9	11,9	100,00%
	6	Sidewalk	km			
		clearance and subbase course	km	11,7	11,70	100,00%
		curbstone	km	11,7	11,70	100,00%
		pavement	km	11,7	11,70	100,00%
	7	Bus Stop	Ea.	20	20	100,00%
	8	Junction base	Ea.	83	83	100,00%
	9	Junction binder course	Ea.	83	83	100,00%
	10	Junction wearing course	Ea.	83	83	100,00%
	11	Junction shoulder	Ea.	83	83	100,00%
	12	Traffic lights				
		Pole foundation	Ea.	9	9	100,00%
Pole installation		Ea.	9	9	100,00%	
Lamp installation		Ea.	9	9	100,00%	
Cable connection		km	9	9	100,00%	
13	Road Signs	Ea.	384	384	100,00%	
14	Road marking	km	14,80	14,80	100,00%	
15	Lights reflecting element of parapet	km	7,40	7,40	100,00%	
16	Protection concrete slope of pipe culvert	Ea.	8,00	8,00	100,00%	
KM15+900- KM61+128	1	Sidewalk	km	82,12	82,12	100,00%
	2	Bus Stop	Ea.	113	113	100,00%
	3	Junction	Ea.	385	385	100,00%
	4	Road marking on Junctions	Ea.	385,00	385,00	100,00%

2.3.1 Road construction works

30. During the reporting period, the following construction works were carried out at **45.1 km section (km15.9 – km 61)**:

- construction of sidewalks;
- installation of drainage ditches, curbstones;
- construction of bus stops and asphaltting of bus bay area;
- continuation of construction work at junctions;

- laying expansion joints and waterproofing of sidewalks on bridges;
- on underpasses work continued to ensure drainage from outside at the portals;
- installation of metal guardrails;
- strengthening of shoulders;
- removal of deformed asphalt and laying new asphalt, where rutting was developed;
- planting, care, and watering of seedlings.

31. Regular visual monitoring over compliance with environmental legislation and requirements of CEMWP in road construction by environmental specialists of the Consultant, Contractor and PIU was carried out throughout the reporting period.

32. During the reporting period work continued to remove soil waste near parapets. Soil accumulated near the parapets was cleaned and removed.

33. Work was carried out to remove deformed asphalt and lay new asphalt where rutting was developed.



Figure 3 Milling and laying wearing course, removing rutting



Figure 4 Construction of sidewalks



Figure 5 Construction of junctions

- 34. Jointing walkways were constructed to connect pedestrian crossings and sidewalks.
- 35. Steps were constructed at walkways with a large slope.



Figure 6 Construction of jointing walkways



Figure 7 Construction of jointing walkways with steps

- 36. Curbstones were installed at bus stop areas.



Figure 8 Installation of curbstones at bus stop areas



Figure 9 Painting parapets and curbstones

37. Installation of metal guardrails was continued.



Figure 10 Installation of metal guardrails

38. Anti shock buffers were installed on the carriageway to prevent traffic accidents and prevent loss of life. 50 buffers had been installed.

39. The buffers are filled with sand, have a height of 80 cm, a diameter of 55 cm and a weight of 200 kg. The buffers were placed next to parapet on the carriageway, have a reflective film and are therefore visible from afar at night.

40. In case of an accident, the buffers can withstand impacts and deformations, reducing damage to vehicles and ensuring the safety of passengers.



Figure 11 Installation of anti shock buffers. Application of road marking

41. In the autumn period, debris, stones, and grass were cleared near parapets and on drainage ditches.



Figure 12 Removing debris on drainage ditches and parapets

42. At 7.4 km section the following works were carried out:

- construction and concreting of bus stops;
- paving curbstones;
- strengthening slopes and removing debris on curbstones and slopes;
- construction of shoulders,
- construction of sidewalks,

- construction of junctions to adjacent streets;
- construction and finishing work on underpasses;
- installation of metal guardrails;
- installation of road signs;
- application of road marking.

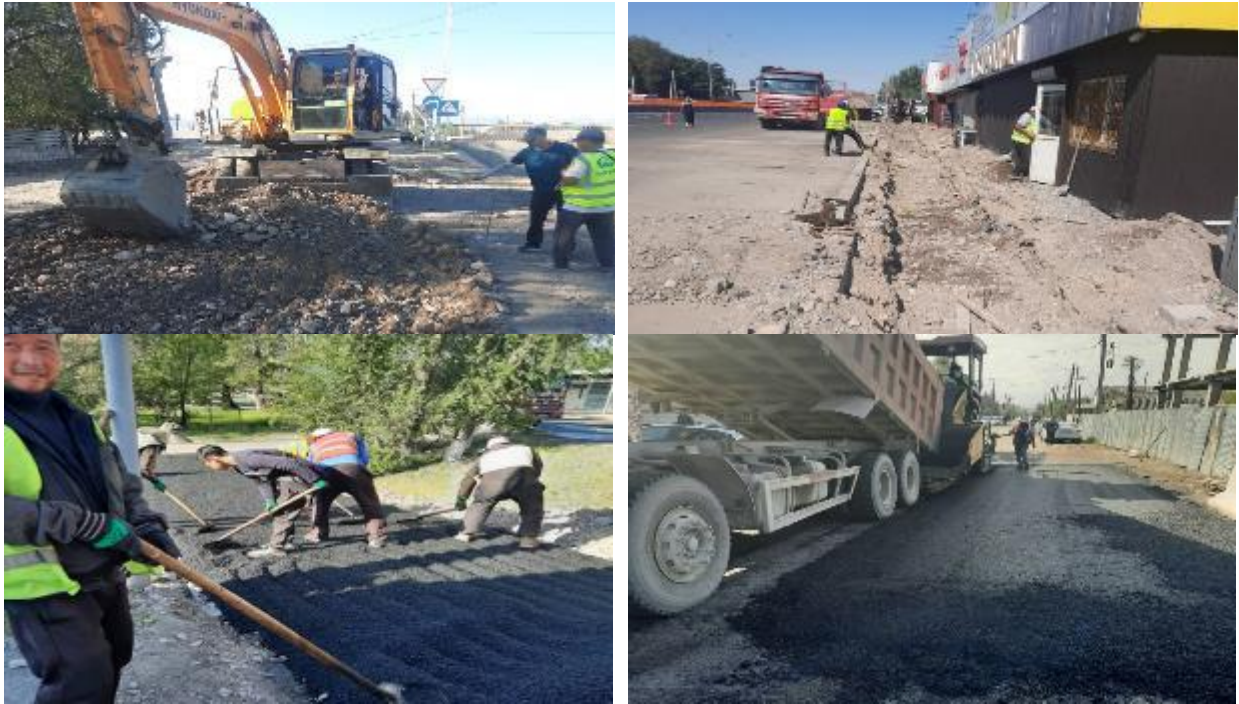


Figure 13 Construction of sidewalk



Figure 14 Installation of curbstone



Figure 15 Cleaning and strengthening of shoulders

41. Bus stops were constructed and area around it was paved.



Figure 16 Construction of bus stops and paving area around it

43. Work continued on underpasses. Roofings were built up, walls and steps were finished, and concrete pavement perimeter was constructed.



Figure 17 Work on underpasses



Figure 18 Installation of road signs





Figure 19 Application of road marking



Figure 20 Installation of metal guardrails



Figure 21 Installation of “Sapojok” type parapets

2.3.2 Borrow pits.

44. Originally, 6 areas were allocated for borrow-pits at the project road (Bishkek – Kara-Balta section, km 15.9 – km 61). The Contractor obtained all necessary permits for borrow-pits mining from local authorities, the State Committee for Industry, Energy and Subsoil Use and State Agency for Environmental Protection and Forestry (SAEPF).

45. The stocks of inert materials needed for the project were explored and calculated in the course of preparatory work at the project sites, in accordance with which permits were obtained for the right to develop subsoil in the State Committee for Industry, Energy and Subsoil Use of the Kyrgyz Republic.

46. Prior to commencement of development, a Borrow Pit Management Plan was prepared and submitted to PIU and ADB for approval.

47. Five of the eight borrow pits were existing ones and have been developed for many decades. These are quite large areas. Only Jelamysh borrow pit, Saz borrow pit and Belek borrow pit were the new ones. Prior to the commencement of work, the soil layer was removed and stored in all borrow pits, which after completion of the work, was used for reclamation.

48. Table 8 gives main detail information about borrow pits at the time of preparation of report.

Table 8 Details of borrow pits at the time of preparation of the report

	No. of borrow pit	Km of turn to the borrow pit on the B-O Road	Approximate distance from the B-O Road to the borrow pit (km)	Volume, (m3)	Area (Ha)	Note
1	No.1 «Jelamysh»	21+280	11	242 093	10,77	Reclaimed and handed over based on Act dd 22.12.21
2	No.2 «Sokulul-1»	28+420	3,3	185 000	9,02	Not developed.
3	No.3 «Sokuluk-2»	28+420	7,7	185 000	9,7	Handed over based on Act on non-violation of the integrity of the land dated 10.11.21
4	No.4 «Ak-Suu-1»	45+700	2,5	210 000	11,89	Reclaimed and handed over based on Act dd 08.07.2023
5	No.5 «Ak-Suu-2»	45+700	8,6	850 000	68,19	Reclaimed, prepared for hand over to the reclamation commission
6	No.6 «Kara-Balta»	60+180	3,5	275 323	73,70	Reclaimed and handed over based on Act dd 24.08.21
7	No.7 «Saz»	27+720	16	197 600	5,23	Reclaimed and handed over based on Act dd 09.06.2023
8	No.8 «Belek»	Km 27+000	8	180000	10,31	Reclaimed, prepared for hand over to the reclamation commission

49. **Ak Suu 2 borrow pit.** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Moskovsky district, as well as to the territory of the production site for crushing and stockpiling. Road to the Ak Suu 2 borrow pit bypasses settlements.

50. During the reporting period, no work on the extraction of inert materials was carried out at the borrow pit. Reclamation works were carried out at the borrow pit.



Figure 22 Ak Suu2 borrow pit after reclamation

51. **Belek borrow pit.** On the road section km 8.5 - 15.9, a permit was obtained for temporary use of a land plot of 10 hectares for the development of a sand and gravel mixture in the village of Belek. During the reporting period, work on the extraction of inert materials was carried out at this borrow pit. Material was supplied directly to the road construction site for levelling works.

52. During the reporting period, no work on the extraction of inert materials was carried out at the borrow pit. Reclamation work was carried out at the borrow pit.



Figure 23 Belek borrow pit after reclamation

2.3.3 Plants.

53. Production site is located in the territory of Sokuluk ayil okmoty, close to Ak-Torpok village. The area belongs to the production and communal zone. Total land area - 10 hectares.

54. The following buildings and structures are located on the site: console control building, stone-crushing plant (SCP), asphalt-bitumen plant (asphalt plant), concrete batch plant (CBP), silos - bin for cement, workers camp, office, eating room, car parking; parking for trucks; storage for fill materials - crushed stone and sand; transformer substation, a platform for the the placement of garbage containers, concrete cesspit pit for sewage.



Figure 24 Production site. Concrete mixing plant. Asphalt Bitumen Plant

55. Water on the territory of the production site is supplied from an existing well on the basis of Agreement No. 38 "On the provision of a well for temporary use" dated October 10, 2017. The well was restored by the Contractor, and a pipeline was laid to the plant. The well area is fenced. There were no problems with water during the operation of the plant.



Figure 25 Restored well to supply the plant with water

- 56. During the reporting period, asphalt and concrete mixture were produced at the production site, which were used mainly on the construction sites.
- 57. Currently, structures at the plant are being dismantled.
- 58. After completion of the project, the Contractor will remove the equipment within six months, starting in February 2024, and will level the territory; probably only washing pits for concrete mixers will remain, as well as an earthen embankment which was used to load material into the crusher.



Figure 26 Dismantling of equipment on the production site

- 59. The workers' camp is also being dismantled. There are a few containers left for specialists.



Figure 27 Dismantled camp for workers on the territory of the production site

60. In the *Sokuluk Residential Camp* there are offices of the Contractor and the Consultant, as well as the living quarters of the specialists. Household waste and sewage from septic tanks are removed in a timely manner, and all protective measures for sanitary hygiene are observed. On the territory of the residential camp, all necessary maintenance measures are observed. The Consultant regularly checks compliance with the environmental requirements.

61. After the completion of the project, the Contractor within six months, starting from February 2024, will remove the repair shops and storage facilities. All other premises, as well as toilets, septic tanks, showers will remain unchanged.

2.3.4 Tree management.

62. Trees at km 15.9 to km 61 road section were cut down from 2017 to 2019. The total number of trees fell under forced cutting amounted to 5812 pcs.

63. Cutting of trees on the project site was carried out in accordance with the legislation of the Kyrgyz Republic, namely, all the necessary permits were obtained from the State Agency for Environmental Protection and Forestry. Also, on the part of the State EcoTechInspection under the Government of the Kyrgyz Republic, inspections were carried out to control the presence of all permits for cutting trees. As compensation measures, to restore the number of green spaces, planting of new tree seedlings was provided for at a ratio of 2:1.

64. Starting 2019, the China Railway No. 5 contracting company has started a phased planting of tree seedlings at selected sites in the Petrovka and Poltavka villages, where the main road works such as construction of sidewalks and installation of drainage ditches have been completed.

65. On 7.4 km road section (km 8.5 - 15.9), in total 504 trees were cut down in 2020 - 2021.

66. Trunks of cut down trees were taken out by the Contractor to storage areas allocated by local administrations and handed over by acceptance acts to local administrations. The Contractor is not responsible for the further disposal of cut down trees.

67. Planting of seedlings on 7.4 km section have been started in the spring of 2023.

68. As at the end of 2023, in total 13 325 seedlings have been planted, including 12 325 on 45.1 km section and 1 000 on 7.4 km section. In the autumn of 2023, in total 1 000 seedlings were planted, including 700 on 45.1 km section and 300 on 7.4 km section.

69. Partially, the seedlings were distributed to local authorities, according to their requests to give them seedlings for planting in organized park areas and schools, on sections of road that are

located on their territories, while further work on planting and caring for the seedlings they will carry out themselves.

2.3.5 Road maintenance in winter 2023.

70. In the winter period of the 4th quarter of 2023, the Contractor carried out road maintenance work.

71. The winter period of the year is the most difficult for road operation and traffic management.

72. Winter maintenance is a complex of measures that should ensure uninterrupted and safe movement of cars and includes the following:

- protection of road from snow drifts;
- clearing road from snow; control of winter slipperiness;
- control ice on the road.

73. These works are aimed to ensure uninterrupted and safe movement of vehicles.



Figure 28 Sand sprinkling on the road. Control of ice

2.3.6 Information about personnel.

74. During the contract negotiations with the Contractor on the composition of the personnel within the Bishkek-Karabalta Road rehabilitation project, an agreement was reached according to which:

Composition of administrative and engineering personnel:

- 60% - foreign personnel,
- 40% - local personnel;

Non-qualified working staff:

- 20% - foreign working staff,
- 80% - local working staff.

75. In the second half of 2023, the Contractor had a maximum of 94 people working on the road construction, of which 68 were local ones, 15 were citizens of the PRC and 11 were citizens of Pakistan.

2.4. Description of any project changes.

76. Initially, the length of the project section was 52.5 km (km8.5 – km61). Under an agreement with ADB, it was decided to shorten the project road by 7.4 km and establish the beginning of the project road at km 15.9 instead of km 8.5 of the Bishkek-Osh Road. Thus, the total length of the project road according to the contract was 45.1 km, the decision to reduce the above section was taken before the tender for civil works. The Detailed Design was prepared by the previous consultant. Due to finance savings, in July 2018 MOTC and ADB agreed to add back the road section from km 8.5 to km 15.9. In 2020, the contract was awarded to the contractor China Railway no.5 by direct contract award method. An additional Supplementary Initial Environmental Examination (IEE) was conducted for this road section that has been disclosed at ADB website in November 2018.

77. Notice for commencement of work on Section 2 was issued to the contractor on November 19, 2020.

78. Initially, 6 areas were allocated for borrow-pits on the project road. In particular, Sokuluk-1 and Sokuluk-2 borrow-pits were intended for mining during work on the territory of the Sokuluk district. The contractor has obtained all the necessary permits for the development of these borrow-pits from local authorities, the State Committee for industry, energy and subsoil use and the State Agency for environmental protection and forestry.

79. However, during the conclusion of agreement with Krupskoy ayil okmotu, on the territory of which Sokuluk-1 and Sokuluk-2 borrow-pits are located, it turned out that when allocating areas for these borrow-pits, the borrow-pit area was overlapped with the area of neighboring adjacent borrow-pit, and therefore development of the Sokuluk-1 borrow-pit was refused, and the area of the Sokuluk-2 borrow-pit was reduced to 1.73 ha.

80. After testing the quality of the material of the Sokuluk-2 borrow-pit by the Quality Assurance engineer and Materials engineer, it was found that the material contains a large amount of humus and it cannot be used for the construction of roadbed, in this regard, the development of the Sokuluk-2 borrow-pit was suspended. For construction works it was necessary to find a new borrow-pit.

81. Saz borrow-pit was proposed, located on the territory of the Sazskiy ayil okrug of the Sokuluk district, and which was developed during the work on the territory of the Sokuluk district.

82. Since at km 8.5 - km 15.9 section there is no place for installing street lighting poles on both sides of the road, the designer decided to instal street lighting poles along the central axis between the central blocks of the parapets. This decision ensured more safety than if poles would install on the road sides. The bill of quantities provided for steel poles, which means that overhead cables cannot be used, so it was decided to use a different type of poles than the one specified in the BoQ, due to the fact that there will be 2 lamps fixed and 2 arms and a wind load will be 2 times stronger. Underground cables had to be used, not overhead as provided for in the BoQ. The foundation of the poles is concrete with anchor bolts.

83. This solution is safer in terms of road safety.

84. Taking into account the cramped conditions, in order to ensure road safety at km 8 + 500 -10 + 900, the safety zone on the central axis of the road was reduced from 4 meters to 2.6.

85. The side safety zone has been reduced from 1 meter to 0.5 meters on both sides of the road between km 8+500 - km 10+900. On this section, on both sides of the road, it was decided to remove the shoulders and install curbstones.

86. On km 8 + 500 - km 10 + 900 section due to the lack of place for relocation of water supply pipe, which was under the carriageway, the water pipe was relocated under the drainage ditches after agreement with local authorities and design author.

2.5 Changes to project design and construction method.

87. In 2017, earth works at section 3 in the village of Petrovka were suspended by the ADB until the winter season, due to complaints of the local residents - 17 homeowners at Tsentralnaya Street for vibration coming from construction equipment when compacting materials using vibration, in particular, from rollers.

88. PIU and EPTISA have found that the most effective and least costly solution was to exclude compaction with vibration at all road sections where there are residential houses.

89. EPTISA's consultant (materials engineer) conducted a study to verify the possibility of compaction without vibration. The study was conducted on fill materials, unbound materials and binders.

90. The study has shown that it is possible to compact available materials without vibration using a reasonable number of passes.

91. It was decided not to use vibration in the future during the compaction of materials. Soil compaction works as directed by the ADB (letter dated 23.05.2018) were carried out without vibration at all road sections, except for section km 15.9-19.8 km where there are no settlements. These changes in the accepted construction methods resulted in an increase in the cost of the work performed.

92. During the reporting period, earthworks on the road sections were carried out without vibration. Supervision over the fulfillment of this requirement was constantly carried out by the inspectors of the Consultant, construction supervision consultant, environmental specialist of the Consultant. Vibration control is also carried out by laboratory monitoring.

93. In 2019, the Consultant developed a mix design of wearing course that meets the requirements of local standards and the British standard. This mix design also includes the noise reduction requirements recommended in the "Noise Modeling report. During the reporting period, the laying of the wearing course on the roadbed using a mix design continued and completed on October 1, 2021.

3. ENVIRONMENTAL SAFEGUARD ACTIVITIES.

3.1 General description of environmental safeguard activities.

94. During the reporting period, regular visual monitoring over compliance with environmental requirements during construction work at all sections of the road was carried out by a local environmental specialist, construction supervision consultant TEMELSU, an environmental specialist of the MoTC Projects Implementation Unit, and an environmental specialist of the Contractor.

95. Visual monitoring over compliance with the requirements of environmental legislation during construction work on the Bishkek-Karabalta Road in the reporting period had been carried out until December 2023. Visual monitoring included one-day visits and inspections of all road work sites, borrow pits, workers' camps and plants.

3.1.1 Road construction works.

96. The main impact on the environment during excavation work in the previous periods was increased dust formation. In the reporting period, there were only single cases of dust formation, about which the Contractor was immediately warned. Because of the small amount of work on the road construction sites, the cases of increased dust formation were rarely observed. No complaints were received from the local population and local government bodies concerning dusting and environmental issues during the reporting period.

97. The following construction works were carried out on the road section from **km 8.5 to km 61** during the following period:

- construction of sidewalks;
- installation of bus stops and asphaltting of bus bays;
- construction of junctions continued;
- work continued to strengthen the road shoulders;
- removal of the deformed asphalt and laying new asphalt, where rutting was developed;
- work continued to clear debris and stones on ditches and soil waste near parapets;
- planting, care and watering of seedlings.

98. During the reporting period, work continued to clean soil waste near parapets. Soil accumulated near parapets was cleaned and removed.



Figure 29 Cleaning and removal soil waste near parapets

99. During the monitoring in July, it was found that on the road shoulders, where work was carried out on strengthening the parapets, there were not removed soil waste which was stored in small

piles. The contractor was warned with an indication of timing to fix this violation. In due time, soil waste was collected on the shoulders and removed. Further, the soil accumulated near the parapets was cleaned and removed in a timely manner.

100. In July, new drainage ditches were installed and on the previously installed ones' stones and debris were removed.



Figure 30 Cleaning drainage ditches

101. Jointing walkways were constructed to connect pedestrian crossings on the carriageway and sidewalks.

102. Parapets and curbstones were painted.



Figure 31 Painting parapets and curbstones

103. Steps were constructed on jointing walkways with large slopes.



Figure 32 Construction of jointing walkways

104. During the reporting period, road shoulders were cleaned and strengthened.



Figure 33 Cleaning and strengthening shoulders

105. During the reporting period, completing works were carried out on underpasses. Walls and steps were covered with finishing tiles. The walls were finished, a concrete pavement perimeter was constructed, and a roof was extended on underpasses to prevent icing on steps.

106. Adults and children are currently crossing the road using underpasses. Lighting connected in all underpasses.



Figure 34 Underpass in the Sokuluk village

107. Anti shock buffers on the carriageway were installed to prevent traffic accidents and prevent loss of life. 50 buffers were installed at 45.1 km section and 7 buffers at 7.4 km section.



Figure 35 Installation of anti shock buffers. Application of road marking

108. Metal guardrails were installed on the top of the parapets near underpasses, in crowded places, and near schools, markets and supermarkets. This was done to prevent road accidents and

prevent deaths in especially dangerous places, and to prevent people from jumping over the parapets creating an emergency situation.



Figure 36 Installation of metal guardrails near underpasses and in crowded places

3.1.2 Borrow pits.

109. At the time of preparation of the report, all borrow pits used in the road construction had been reclaimed and handed over to the reclamation commission, with the exception of the Belek and Ak-Suu 2 borrow pits.

110. **Belek borrow pit.** During the reporting period, no work on extraction of inert materials was carried out at the borrow pit. Reclamation has been done. The borrow pit is prepared for handing over to Reclamation commission. The borrow pit should be handed over to the Reclamation Commission by February 2024.



Figure 37 Belek borrow pit after reclamation

111. **Ak Suu 2 borrow pit.** During the reporting period, no work on extraction of inert materials was carried out at the borrow pit. Reclamation work was done. The borrow pit is prepared for handing over to Reclamation commission. The borrow pit should be handed over to the Reclamation Commission by February 2024.



Figure 38 Ak Suu 2 borrow pit after reclamation

3.1.3 Activities on the area where plants are located.

112. During the reporting period, a concrete mixture was produced at the production site, which was partially used at the concrete batching plant for the manufacture of reinforced concrete structures and partially on the road as needed.

113. Also, as necessary, an asphalt mixture was produced, which was transported to construction sites on the project road.

114. After completion of the project, the Contractor will remove the equipment within six months, starting in February 2024, and will level the territory; probably only washing pits for concrete mixers will remain, as well as an earthen embankment which was used to load material into the crusher.

115. Currently, partial dismantling of structures at the plant is being carried out.





Figure 39 Dismantling of equipment on the production site

3.1.4 Camps for workers' residence

116. *Camp for the residence of workers at the territory of production site.* Initially, the workers' camp was designed for 50 places. There are kitchen room, equipped place for eating, shower rooms, washbasins, toilets at the camp. 2 fire shields were installed on the territory of the camp.

117. Currently, most of the residential containers have been removed. The camp is being dismantled. There are a few containers left for specialists.



Figure 40 Workers' accommodation camp on the territory of the production site



Figure 41 Dismantled camp for workers on the territory of the production site

118. In the camp, a sewage water is discharged into an existing septic tank by pipelines.

119. *In the Sokuluk residential camp*, household waste and sewage from septic tanks are removed in a timely manner, all protective measures for sanitary hygiene are observed.

120. Sanitary and hygienic and anti-epidemic requirements for ensuring favorable living conditions in residential camps have been established in order to preserve the health of workers and contribute to optimizing their life activities.

121. Personnel were warned about the mandatory isolation of persons with high body temperature and signs of an infectious disease. During the reporting period, there were no cases of Covid-19 among the contractor's personnel.

3.1.5 Tree management.

122. Trees on km 15.9 - km 61 section were cut down from 2017 to 2019. The total number of trees that fell under forced cutting amounted to 5812 pcs.

123. Trees on km 8.5 to km 15.9 section were cut down from 2020 to 2021. Total number of trees that fell under forced cutting amounted to 504.

124. According to the terms of the current contract between the MOTC KR and China Railway No. 5, the contractor should plant new seedlings to replace the cut trees, as well as carry out maintenance (watering, replacing dried seedlings with new ones) until the end of the defect's liability period.

125. As compensation measures, to restore the number of green spaces, planting of new tree seedlings is provided for at a ratio of 2:1.

126. Starting 2019, the China Railway No. 5 contracting company has started a phased planting of tree seedlings at selected sites in the Petrovka and Poltavka villages, where the main road works on the construction of sidewalks and installation of drainage ditches have been completed.

127. Starting in the spring of 2023, the China Railway No. 5 contracting company has started a phased planting of tree seedlings on km 8.5 to km 15.9 section in separate areas, where there were places free from growing trees.





Figure 42 Planting seedlings in autumn 2023

128. To date, 13 325 seedlings have been planted, including 12 325 on 45.1 km section and 1 000 on 7.4 km section. In the autumn of 2023, in total 1 000 seedlings were planted, including 700 on 45.1 km section and 300 on 7.4 km section.

129. Partially, the seedlings were distributed to local authorities, according to their requests to give them seedlings for planting in organized park areas and schools, on sections of the road that are located on their territories, while further work on planting and caring for the seedlings they will carry out themselves.

130. Control and monitoring over the planting of seedlings, watering of seedlings, as well as monitoring of the survival rate of seedlings on an ongoing basis is carried out by the environmental safeguard specialists of the Construction Supervision Company, Contractor company, and representatives of MoTC KR.

131. When monitoring the survival rate of seedlings in the village of Poltavka, it was found that the seedlings are in critical condition. A large number of cows, goats and sheep are grazed in the places where seedlings are planted. As a result, young shoots on seedlings are eaten by animals. A large number of seedlings are broken by children. According to representatives of the local aiyl okmotu, despite holding constant explanatory conversations with the population, grazing continues.

132. During the period of high temperatures in 2022 - 2023, for unknown reasons, the Contractor did not water the seedlings for a long time despite repeated verbal and written warnings. As a result, there are dead seedlings.





Figure 43 Livestock grazing on the plots of planted seedlings in the villages of Poltavka and Petrovka

133. When burning dead wood in the villages of Poltavka and Voенno-Antonovka, the fire spread to seedlings. More than 195 seedlings died.



Figure 44 Burnt seedlings in the village of Poltavka

134. In the spring of 2023, as a result of a site visit by the ADB Environmental Consultant and the Environment Specialist of the MOTC PIU, it was found that a significant number of planted seedlings planted directly on the project road were dried, burned, or subjected to vandalism. According to the inventory of seedlings planted on the project road about 700 seedlings died due to the fault of the Contractor to water the seedlings in a timely maner.

135. The contractor was instructed to urgently begin watering the planted seedlings, as well as restore 700 dead seedlings in the autumn of 2023.

136. In October 2023, the Contractor purchased and planted 700 seedlings. The seedling planting plan was fulfilled. Unfortunately, there is a chance that planted seedlings may also dry up due to the lack of watering in the summer of 2024

3.2 Site audits.

137. During the reporting period, regular monitoring over compliance with the requirements of environmental legislation during construction work on the Bishkek-Karabalta Road was carried out. During the reporting period, 31 site visits to the project road were conducted.

Table 9 Monitoring of construction site in July 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
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1	03.07	T. Volkova	Monitoring of construction sites on the project road. Site visit to places for storage of unsuitable soil at 7.4 km section.	During the visit of places for storage of unsuitable soil at 7.4. km section. No violations found
2	11.07	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	No violations found during the inspection
3	18.07	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit places of planting seedlings in the village of Poltavka	Visit places of planting seedlings in the village of Poltavka, with a representative of the Poltavka administration to monitor the condition of seedlings planted in the spring 2022
4	26.07	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit the Belek borrow pit together with the Contractor's environmental specialist	During the visit of the Belek borrow pit, together with the Contractor's environmental specialist, no violations were found
5	31.07	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Meeting with the Contractor	A meeting was held with the Contractor. Discussing of problems of watering seedlings.

Table 10. Monitoring of construction site in August 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	01.08	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit the Ak-Suu2 borrow pit.	During the visit of the Ak-Suu2 borrow pit, together with the Contractor's environmental specialist, it was found that the development of inert materials is not being carried out. Prepared material is being transported
2	03.08	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit places of planting seedlings in the village of Petrovka	Visit the places of planting seedlings in the village of Petrovka, with a representative of the Petrovka administration to monitor the condition of seedlings planted in the spring 2022
3	11.08	T. Volkova.	Monitoring of construction sites on the project road.	No violations were found during the inspection
4	18.08	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit the production site	When visiting the production site together with the Contractor's environmental specialist, it was found that a stone crusher was not operating. There was no dusting
5	23.08	T. Volkova	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.
6	29.08	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit the Belek borrow pit together with the Contractor's environmental specialist	During the visit of the Belek borrow pit, together with the Contractor's environmental specialist, no violations were found

Table 11. Monitoring of construction site in September 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	05.09	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	It is found that the seedlings are poorly watered. It is necessary to make regular watering of seedlings every 3 days. A verbal warning made to the Contractor
2	07.09	T. Volkova	Monitoring of construction sites on the project road.	During the visit the place of storage of unsuitable soil at the 7.4 km section, no violations observed, leveling works were carried out
3	14.09	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	No violations were found during the inspection
4	19.09	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.
5	20.09	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.
6	26.09	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	When visiting the production site together with the Contractor's environmental specialist, no violations were found.
7	28.09	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	During the visit the place of storage of unsuitable soil at the 7.4 km section, no violations observed, leveling works were carried out.

Table 12. Monitoring of construction site in October 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	05.10	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.
2	09.10	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit the Belek borrow pit together with the Contractor's environmental specialist	During the visit the Belek borrow pit, together with the Contractor's environmental specialist, no violations were found during the development of inert materials
3	13.10	T. Volkova	Monitoring of construction sites on the project road.	No violations were found during the site visit of 7.4 km section
4	17.10	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	During the visit of the production site, together with the Contractor's environmental expert it was found that the stone crusher was operating on moistened material. Dusting not observed.
5	20.10	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. Seedlings are being planted.
6	26.10	T. Volkova	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.

Table 13. Monitoring of construction site in November 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	03.11	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.
2	10.11	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Visit the Belek borrow pit together with the Contractor's environmental specialist	During the visit of the Belek borrow pit together with the Contractor's environmental specialist, it was found that the reclamation was completed.
3	14.11	T. Volkova	Monitoring of construction sites on the project road.	No violations were found during the site visit of 7.4 km section
4	16.11	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	During the visit of the production site together with the Contractor's environmental specialist, it was found that equipment was being dismantled.
5	22.11	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.
6	28.11	T. Volkova	Monitoring of construction sites on the project road.	Monitoring of all construction sites. Collecting information for semi-annual report
7	30.11	T. Volkova	Monitoring of construction sites on the project road.	Monitoring of all construction sites. No violations found.

3.3 Issues tracking (based on the list of non-compliance).

138. During the reporting period, if environmental issues were observed, first of all the Contractor was warned with a specified deadline. Basically, all issues were resolved in a timely manner.

Table 14 Report on non-compliance with environmental requirements (July - December 2023).

No	The issue of non-compliance, defined by Temelsu	CEMWP Number and date of notification Temelsu	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of Temelsu Inspection	Status as of December 31, 2023
1	Problem of planted seedlings	CEMWP № 2.5.1 0541 BOC3 55/3350-00612 dd 30.07.23	Annex 10 Tree Management Plan	It was found that despite repeated written and oral warnings, the seedlings were not watered. There are newly dried seedlings	Contractor's letter No. CAREC – GZ161 dd 27.07.2023	Watering of seedlings has been started	Watering of seedlings has been started

3.3.1 Overview and description of issues tracking during the current period.

139. During the reporting period, Temelsu's national environmental specialist conducted regular monitoring over compliance with the requirements of the EMP and CEMWP during construction work on the Bishkek-Kara-Balta Road section. The specialist visited the site 31 times. Some visits were conducted together with the Contractor's environmental specialist. The CEMWP prepared by the contractor was used as a checklist. The results of field monitoring in the reporting period generally did not differ from the results of monitoring conducted in the previous period. Problems remain constant throughout the construction period. In the reporting period, the volume of construction work on the 45.1 km section, due to the completion of work, was much less than in previous periods. The main work on 7.4 km section was also completed.

140. Environmental specialists of PIU MoTC conducted separate inspections focusing on specific issues, such as safety during construction work, local complaints, and seedling planting and caring.

3.3.2 Issues tracking.

141. During the reporting period, the main focus was on the following issues:

- Disposal of construction waste;
- Violation of safety precautions, occupational safety and health;
- Planting and caring of seedlings;
- Borrow-pit management;
- Material's manufacturing plant.

3.4 Trends

142. During the same period in 2019, 21 non-compliance issues were recorded and 17 of them were resolved during the reporting period. During the same period in 2020, 11 non-compliance issues were recorded and 10 of them were resolved during the reporting period. In the same 2021 reporting period, 4 non-compliance issues were reported and all were resolved. The elimination of two issues from the first half year of 2022 has been postponed to the second half of 2022. During the specified reporting period, these problems were eliminated. During the first half of 2023, 3 non-compliance issues were recorded. These are problems of untimely disposal of construction waste, watering of seedlings, and dust in a stone crushing plant. Every year there are fewer non-compliance letters. This is due to the fact that the main construction work on the project road has already been completed and most of the found non-compliances were discussed verbally with the Contractor. A due date was discussed, including identification of mitigating measures to be applied to address the found problem and, if the violation was not corrected in time, a letter was sent.

143. In this report, the number of non-compliance letters has decreased. 1 letter of non-compliance was sent. It was related to the problem of watering seedlings.

144. In the reporting period, the problem of watering and caring for seedlings was not being solved by the Contractor despite constant warnings from the Consultant.

145. The issues noted in the non-compliance letters are mostly repeated in each reporting period. The contractor had to take into account these shortcomings in the management of these issues in the further work. The reason for the non-compliance issues is that, although a specific problem was resolved within a specified period, the same non-compliance was repeated further, such as waste management, violations of safety precautions during construction work. The contractor explains the

problem of untimely removal of construction waste by the lack of equipment and workers. And non-compliance with safety precautions by the irresponsible attitude of workers to their health.

3.5 Unanticipated Environmental Impacts or Risks.

146. No unforeseen environmental impacts or risks were identified during the reporting period.

4. RESULTS OF ENVIRONMENTAL MONITORING

4.1 Overview of Monitoring Conducted During Current Period

147. Monitoring of environmental components, such as air quality, noise impact, vibration impact on the Bishkek-Kara-Balta Road section in the second half of 2023 was not carried out, since the main construction work was generally not carried out during the reporting period.

4.2 Summary of appeals and complaints

148. During the reporting period, 25 appeals were received from local residents. The appeals mainly concerned the installation of parapets, opening of additional junctions, new traffic lights and bus stops, requests for the provision of conclusions on the boundaries of the project impact on land plots, and installation of additional crossings and road signs. There were also requests from local governments to assist in resolving various issues. All appeals were duly registered in the GRM log and were resolved in a timely manner. There were no complaints related to environmental issues.

149. The Consultant's engineers checked the design solutions and considered all issues raised in appeals. At the end of the reporting period, all appeals were "closed" and all applicants were provided with a justified response.

Table 15 Summary table of appeals and complaints for the reporting period

#	Date Received	section	Name & contact of Complainant	Complaint Category	Complaint Description	Resolution Description	Resolution	Resolution Date
1	2023.07.03	Section 1	resident of the Petrovka village	Restriction or loss of access	request to entrance to the Predtechenka village	it was decided to ensure entrance at the indicated place	Accepted	2023.07.06
2	2023.07.03	Section 2	head of the Petrovsky ayil okmotu	Restriction or loss of access	requests from residents of the village of Petrovka to provide exits to households	after completion of all the main works on the site, exits to households will be provided	Accepted	2023.07.07
3	2023.07.10	Section 3	head of the Voyeno-Antonovka ayil okmotu	Restriction or loss of access	Request regarding the provision of entrances to houses 151, 153, 153a and 112a	Entrances to the households are ensured	Accepted	2023.07.14
4	2023.07.14	Section 1	Jaiyl district administration	Other	Request regarding the provision of drainage in the village of Petropavlovka on 77 Lenin Street	drainage in this area was provided	Accepted	2023.07.20
5	2023.07.17	Section 3	Medservice.KG LLC	Restriction or loss of access	Request regarding the arrangement of convenient access to a pharmacy for persons with disabilities	the suitable entrance to a pharmacy for persons with disabilities is already ensured.	Accepted	2023.07.24
6	2023.07.18	Section 2	Sokuluk District State Administration	Road Upgrading	Request for the construction of public transport stops near the intersection of Kirova St. - Frunze in the village of Sokuluk and in front of the shopping center "Asia" in the village of Novopavlovka	Construction of bus stop is provided for by the design	Accepted	2023.07.24
7	2023.07.18	Section 3	Novopavlovskiy ayil okmotu	Road Upgrading	Request for a pedestrian crossing at the intersection of st. Frunze - Lavrovyykh, with the installation of a traffic light with a push button	in the village of Novopavlovka (km 10+530), a pedestrian crossing equipped with signs, provided for by the design, was built and is functioning We consider it inappropriate to install a traffic light	Rejected	2023.07.24

8	2023.07.21	Section 3	Head of Voенno-Antonovka ayil okmotu	Restriction or loss of access	Request regarding the provision of exits to houses 151, 157, 112 and the SADIK store	Entrances to the households are ensured	Accepted	2023.07.31
9	2023.08.16	Section 3	Owner of the Teremok store Voенno-Antonovka village, st. Frunze, 107	Restriction or loss of access	Request regarding the opening of an alternative entrance to the store	<p>Engineer checked the place and spoke with the applicant that is not possible to give entrance directly from the newly constructed Road due to the safety side parapet installed because of height difference is over than 2 meters.</p> <p>There are 2 alternative entrances to above mentioned store from the junction road.</p> <ul style="list-style-type: none"> - First is not in our wright of way which is the wright of Voyенno-Antonovka Ayil Okmotu. - Second is sidewalk can be used as entrance to Teremok store. Owner of store doesn't want to use this alternative due to safety reasons which is true. <p>Engineer is thinking that to give entrance to the store from junction road but since this place is not in our wright of way, Engineer suggests to Teremok store owner to take a permission from Ayil Okmotu to construct entrance themselves Which is accepted by Teremok store owner.</p>	Rejected	2023.08.18
10	2023.08.21	Section 1	resident of the Petrovka village	Restriction or loss of access	Request regarding the construction of entrance to the household	Entrance to the household will be ensured in the near future, concrete ditches with a length of 26 m will be installed according to the design. Also, stairs to the pedestrian crossing will be constructed.	Accepted	2023.08.22
11	2023.08.18	Section 3	head of the Voyeno-Antonovka ayil okmotu	Restriction or loss of access	Request regarding the construction of entrances to households located on 163 Frunze Street and 183 Frunze Street.	Entrances to households located on 163 Frunze Street and 183 Frunze Street will be provided.	Accepted	2023.08.23

12	2023.08.28	Section 1	Resident of the Poltavka village of Moskovsky district	Restriction or loss of access	Request regarding widened of entrance to a household	Existing entrance to the households will be widened by installation of additional 3 concrete slabs.	Accepted	2023.08.29
13	2023.09.01	Section 2	deputy head of the Petrovka ayil okmotu of Moskovsky district	HSE Concerns	Request regarding the arrangement of an organized pedestrian crossing at the intersection of Tsentralnaya st. - Pervomayskoye st. in the village of Poltavka (km 45+300).	Engineer considers it possible to arrange the organized pedestrian crossing at the specified intersection of the project road.	Accepted	2023.09.08
14	2023.09.06	Section 3	head of the Voyeno-Antonovka ayil okmotu	Restriction or loss of access	Appeal regarding the arrangement of entrances to households.	Entrances to households will be arranged.	Accepted	2023.09.11
15	2023.10.06	Section 1	Chairman of the Board of "Red October" Belovodskoye village, Frunze str.-325 (km 41+080)	Road Upgrading	Appeal regarding the arrangement of a pedestrian crossing, installation of slabs through the design drainage ditch and arrangement of a parking areas for cars	these works were not included in the design, and there is a parking for cars located nearby (km41+105) and at a distance of 160 meters a fully equipped pedestrian crossing was built and is functioning (km 41+240)	Rejected	2023.10.09
16	2023.10.10	Section 3	Voенно-Antonovsky village okmotu	Restriction or loss of access	Appeal regarding access to households.	Access to households will be ensured by installing three slabs.	Accepted	2023.10.18
17	2023.10.11	Section 1	Sokuluk ayil okmotu of Sokuluk district	HSE Concerns	Request regarding the reclamation of a borrow pit located on the territory of the Sokuluk ayil okmotu of the Sokuluk district	Contractor has signed an agreement with the company which is responsible for the designing of the borrow pit's reclamation, but work was temporarily suspended due to the visit of Russian to Kyrgyzstan in October. The plan of borrow pit reclamation is currently being prepared and will be completed soon.	Accepted	2023.10.25
18	2023.10.11	Section 2	Sokuluk ayil okmotu of Sokuluk district	Road Upgrading	Request regarding the construction of asphalt concrete pavement on sidewalks.	The continuation of sidewalk was made through the bus stop (combined), since the land plot behind the bus stop is privately owned. In this regard, no	Accepted	2023.10.18

						sidewalk was constructed behind the bus stop.		
19	2023.10.11	Section 3	Novopavlovka municipal enterprise	Restriction or loss of access	Request regarding the possibility of opening water supply wells located on project sidewalks.	The opening of water supply wells will be ensured.	Accepted	2023.10.18
20	2023.10.26	Section 3	Head of Voенno-Antonovsky ayil okmotu of Sokuluk district	HSE Concerns	Request regarding the installation of a traffic light at the intersection of Frunze and Pushkin streets in the village of Voенno-Antonovka.	<p>Construction of a traffic light facility at the intersection of Frunze and Pushkin streets in the village of Voенno-Antonovka (km 12+820) is not possible, since it was not provided for by the design.</p> <p>To ensure the safe passage of pedestrians at this intersection, a fully equipped pedestrian crossing provided for by the design has already been arranged and is functioning, that is, 4 pieces of "Pedestrian Crossing" road signs were installed, and "Zebra" road marking was applied.</p>	Rejected	2023.10.30
21	2023.11.03	Section 2	Head of the Sokuluk district state administration	Road Upgrading	Request regarding the construction of a bus stop for public transport in front of the "Bolot " market, located on Lenina Street in the village of Sokuluk	<p>Construction of bus stop at the above location does not relate to our project, since it will be located along the local "Sokuluk - Zhylamysh" road.</p> <p>But, near the "Bolot" market, at the intersection of Lenina and Frunze streets in the village of Sokuluk (km 25+880), in accordance with the requirements of SNiP (construction standards), a bus stop for public transport was constructed and is operating.</p>	Rejected	2023.11.09
22	2023.11.10	Section 2	Head of Belovodsky ayil okmotu of the Moskovskiy district	Road Upgrading	Request regarding the installation of a traffic light at the intersection of Frunze and Oktyabrskaya streets in the village of Belovodskoye	<p>Installation of a traffic light facility at the intersection of Frunze and Oktyabrskaya streets in the village of Belovodskoye (km 41+550) is not possible, since it was not provided for in the design.</p> <p>To ensure the safe crossing of pedestrians at the specified intersection, a fully equipped</p>	Rejected	2023.11.23

						pedestrian crossing provided for by the design was constructed and is functioning, that is, 4 pieces of "Pedestrian Crossing" road signs were installed; "Zebra" road marking was applied; and also, 2 pcs. of special rumble strips were applied.		
23	2023.12.07	Section 1	resident of the Novonikolaevka village	Road Upgrading	Request regarding the construction of a sidewalk at km 59+460 RHS.	The sidewalk was not constructed since this land plot is privately owned by "Bubusara" store, the owner of which was against the construction of the sidewalk. However, there is a sidewalk along the petrol station.	Rejected	2023.12.11
24	2023.12.08	Section 3	Head of Voенno-Antonovsky ayil olmotu of Sokuluk district	Road Upgrading	Request regarding the operation of street lighting.	The street lighting was restored on December 8, 2023. Further monitoring over the provision of street lighting will be carried out	Accepted	2023.12.11
25	2023.11.11	Section 2	Head of the Sokuluk district state administration	Road Upgrading	Request regarding installation of metal fences on top of parapets in the village of Sokuluk. And a request regarding the operation of street lighting.	installation of metal fences on top of parapets in the village of Sokuluk is not possible, since all work on this section has been completed and carried out according to the design. As for street lighting, restoration work was carried out in the village of Voенno-Antonovka, and street lighting in the villages of Gavrilovka, Sokuluk, Krupskaya and in Shopokov town was handed over to the balance of the Department of Road Facilities under the Ministry of Transport and Communications of the Kyrgyz Republic.	Partially Acpt/Rjct	2023.11.11

4.3 Summary of monitoring outcome

150. During the reporting period, the Consultant's environmental specialist continued to conduct visual monitoring of construction sites for compliance with the requirements of environmental legislation during construction work on the Bishkek – Karabalta Road.

151. Based on the results of regular monitoring in this reporting period, it was noted that the Contractor tries to mitigate the impact on the environment as much as possible during construction work, by timely solving the issues of timely disposal of construction waste, dust suppression, disposal of old asphalt, which were the main topical problems in previous periods.

152. Despite the fact that the total number of observed non-compliances is decreasing, the Contractor, for unknown reasons, in the hottest period of the year has stopped watering the seedlings despite repeated warnings from the Consultant. As a result, some of the seedlings planted in the spring of 2022 died. Monitoring of the survival rate of seedlings was carried out by the Contractor's environmental specialist in the spring of 2023.

153. According to the inventory of seedlings planted on the project road, due to the fault of the Contractor, about 700 seedlings died because of untimely watering.

154. The contractor was instructed to urgently start watering the planted seedlings, and also in the autumn of 2023 to restore the dead seedlings in the amount of 700 pieces.

155. In the autumn of 2023, in total 1000 seedlings were planted, including 700 at 45.1 km section and 300 at 7.4 km section.

156. At the end of 2023, in total 13 325 seedlings were planted, including 12 325 at 45.1 km section and 1000 at 7.4 km section.

157. Partially, the seedlings were distributed to local authorities, according to their requests for the provision of seedlings for planting in organized park areas and schools, on sections of the road that are located on their territories, while further work on planting and caring for the seedlings they will carry out themselves.

4.4 Materials/Recourses utilization.

158. The utilization of electricity, water and any other materials were not included in the CEMWP for monitoring.

4.5 Waste management.

159. During construction works, a large amount of waste is generated, including construction waste, production waste, household waste. The Environmental specialist of the Consultant constantly supervises timely removal and disposal of waste to places agreed with the local administration.

4.6.1 Construction waste.

160. During construction work, waste of asphalt, unsuitable soil, and reinforced concrete waste is accumulated on the road. With the start of road works, there were problems with crushing old asphalt to a size of 20x20 during excavation. During the project implementation, on the km 15.9 - 61 section, considering that in the villages there is no equipment for leveling large pieces of old asphalt, the problem arose of taking out of uncrushed old asphalt for backfilling rural streets proposed by the local authorities. Given that the asphalt was taken out to the road in large pieces, some local administrations refused to bring the removed asphalt to rural streets.

161. During the reporting period, on the km 15.9 - 61 road section, in places where rutting was developed, the wearing course was removed by milling. The removed asphalt was taken out and stored on the territory of the production site for further use.

162. With the start of road works at 7.4 km section, the local residents and representatives of aiyl okmotu, represented by the heads of Novopavlovsky and Voенno-Antonovka aiyl okmotu, sent a letter to take out the old asphalt to the territory of Aiyl aimags, explaining that they needed the removed old asphalt for patching, as well as for filling the internal and field roads in the villages of Novopavlovka and Voенno-Antonovka. Previously, a lot of work was done to improve the internal roads of the residential areas "Altyn Ordo", "Ata Zhurt", "Kelechek" and "Dachi" in the village of Voенno-Antonovka. There were no complaints from the local population regarding the disposal of the removed asphalt.

163. During the reporting period, old asphalt at 7.4 km section was not removed.

164. The specialist of the Contractor **Koichumanov Adilet** is responsible for the disposal of old asphalt at 7.4 km section.

165. Asphalt wasn't transported to wetlands. A letter received from the ADB stating that in order to avoid harm to the health of local residents, it is prohibited to give old asphalt to local residents for their own use. This requirement has been met.



Figure 45 Streets paved with old asphalt at 7.4 km section

166. Unsuitable soil during the construction of the road was taken to the sites allocated by the local authorities.

167. At the soil storage site, the soil layer was initially removed and stored. Then the unsuitable soil in the villages of Voенno-Antonovka and Novopavlovka was stockpiled in dumps. Then the unsuitable soil was relocated to a prepared site in a ravine. Partially it was levelled. After completion of all work, the soil was evenly spread on the surface of the dumps.



Figure 46. Storage of unsuitable soil for further use in the villages of Voенno-Antonovka

168. Information on recycling and removal of asphalt waste and unsuitable soil during construction work throughout the construction period on the project road from km 8.5 to 61 km is shown in Table 16.

Table 16 Information on recycling and removal of asphalt waste and unsuitable soil

Section	Recycling and removal of asphalt waste-m3	Recycling and removal of unsuitable soil-m3
Km 15,9 – km 61	103455.59	308457.8692
Km 8,5 – km 15,9	33328.69	144751.08

169. The contractor disposed of 7947.24 m3 of reinforced concrete construction waste.

170. Later, large volumes of unsuitable soil were disposed to the dump area in the village of Voенno-Antonovka. Upon completion of the main construction work, the Contractor levelled the area and spread a soil layer.



Figure 47 Levelled dump area for soil

4.6.2 Production waste.

171. Production waste is also accumulated during road construction. This is used engine oil, old tires, empty bitumen barrels. According to the Contractor, this waste is handed over to local companies for further recycling.

172. In the previous period of work, a large number of barrels with bitumen were delivered to the production site for the preparation of asphalt mix. After bitumen was used, empty barrels were stored on the territory, creating a problem with transportation. During the reporting period, bitumen was delivered by bitumen trucks from rented bitumen pits, barrels with bitumen were not delivered.



Figure 48 Filling of asphalt plants' tanks with bitumen using bitumen trucks

4.6.3 Household waste.

173. Household waste is mainly generated in workers' camps. Both solid and liquid household waste is generated.

174. Household solid waste consists of packaging materials made of paper and cardboard, dry waste, plastic and glass, as well as food waste, which is pre-collected in plastic bags. Household liquid waste is waste water from living premises and kitchens.

175. Solid household waste is collected unsorted in garbage bins with a capacity of 1m³ and is taken out weekly by Sokuluk and Moscovskiy utility plants, with which service contracts have been concluded. During the reporting period 146 garbage bins with solid waste were cleaned, about **146 m³** of solid waste was removed. Liquid household wastewater accumulates in septic tanks, which pumped into tankers with a capacity of 3.5 m³ belonging to district waste transportation companies,

and is transported to district wastewater treatment plants. During the reporting period 96 trips of the cesspool age truck were made and **336 m³** of wastewater were removed.

Table 17 Volumes of solid waste and wastewater removal from the territories of Sokuluk base and production site in 2023

Locality	Month, date	Quantity of garbage bins, trips of cesspool age truck	Amount, KGS
Sokuluk	July	30 garbage bins, 10 trips of cesspool age truck	23500
Sokuluk	August	32 garbage bins, 14 trips of cesspool age truck	27900
Sokuluk	September	32 garbage bins, 7 trips of cesspool age truck	21950
Sokuluk	October	36 garbage bins, 16 trips of cesspool age truck	36800
Sokuluk	November	12 garbage bins, 13 trips of cesspool age truck	19550
Sokuluk	December	17 garbage bins, 16 trips of cesspool age truck	22100
		Total:	151800
Total:		146 garbage bins, 96 trips of cesspool age truck	135788

4.7 Health and Safety.

4.7.1 Workers' health and safety.

176. In July 2022, Dosmambetov Yerkin, an occupational health and safety specialist, was hired and started working.

177. This specialist developed a program for HSE briefings. Introductory, primary, repeated, unscheduled briefings, briefings at the workplace and testing the knowledge of company employees are carried out in a timely manner.

178. Inspection tours were carried out on a regular basis. At the construction sites, constant monitoring over compliance with HSE measures was carried out. Unscheduled briefings, briefings at the workplace, first aid for victims of accidents were carried out.

179. Information about compliance with fire safety at the workplace and during production work is brought to the attention of the Company's personnel. The territories of the camp and the asphalt plant are equipped with the necessary number of fires fighting equipment.

180. In total, in the 2nd half of 2023, 128 workers underwent introductory briefing for hired employees. Refresher briefing was carried out every 3 months.

181. Workplace seminars were held to prevent injuries to workers. During this half year, no accidents were recorded in the course of construction work involving our workers.

182. Information about compliance with fire safety at the workplace and during production work is brought to the attention of the Company's personnel. The territories of the base and the asphalt plant are equipped with the sufficient number of fires fighting equipment.

183. The sanitary and epidemiological situation in the Company is in a satisfactory condition.

184. There is a stock of medical masks, sanitizers, conversations are held with workers on the prevention of acute respiratory diseases.



Figure 49 Logs for registration of briefing conducted at the workplace

185. During the reporting period, several joint visits were conducted by a local environmental specialist of Consultant with a Contractor's OHS specialist. The briefing was conducted at the construction sites.





Figure 50 Briefings at workplaces

186. In order to comply with safety requirements, workers have been issued respiratory protection means (masks). However, there are cases when workers show carelessness when using protective means, especially when wearing protective helmets. The contractor's OHS specialist is constantly monitoring and talking to employees about the need to use helmets.

187. But, despite the regular training of workers, the construction supervision consultant noted non-compliance with safety precautions, especially during work at height and installation of drainage ditches. Also, there were noted non-compliances when moving load by crane. The workers were in the crane operation area without personal protective means. Cases of non-compliance with safety precautions were noted both at the site for the manufacture of reinforced concrete structures and during installation of ditches. Verbal and written warnings were repeatedly given to the Contractor. Despite repeated verbal and written warnings to the Contractor, violations recurred.



Figure 51 Failure to comply with safety precautions when moving load with a crane

188. The contractor was recommended to regularly check the workers knowledge of the requirements of occupational safety and health and, if necessary, to conduct repeat training on OHS.

4.7.2 Community health and safety.

189. During the reporting period, no problems with the health and safety of the local population were registered.

4.8 Ensuring of road safety at the project site:

190. The Consultant's road safety specialist monitors the Contractor's road safety on a regular basis. Constant site visits, monitoring of the state of the carriageway, bypass roads, pedestrian crossings, and underpasses are carried out. There is also a constant monitoring over the condition of the relevant road signs, road markings, fences installed to fence work sites and at the places of oncoming traffic. All road signs have been installed. Road marking applied at all required places.



Figure 52 Installation of road signs and application of road marking

191. Road safety specialist gave a written instruction to the Contractor on the installation of road signs according to the approved locations, in areas where asphalt laying and installation of fences on the dividing strip have been complete.

192. Consultant registries road accidents occurred at the project site only if the accident occurred due to the fault of the Contractor, namely insufficient implementation of road safety measures (lack of fences, signs, pits, etc.).

193. During the reporting period, accidents that occurred due to the fault of the Contractor or as a result of construction work were not registered. The Consultant constantly monitors the situation and, if non-compliance is observed, sends a written instruction to the Contractor with a requirement to immediately fix the problem.

4.9 Trainings

194. During the reporting period, trainings related to environmental protection were not conducted. If necessary, consultations were held with the Contractor's environmental specialist. At the beginning of work on the project road, trainings were held regularly from 2017 to 2020 by an international environmental specialist Geza Teleki for the Contractor's personnel. More than 10 trainings were held. At the trainings, the Contractor's management was explained about a more responsible attitude to environmental issues, and on the need to follow the CEMWP. Without constant reminders, remove construction waste in a timely manner, carry out water-sprinkling in the construction sites, as well as in borrow-pits and a stone crushing plant, and take a more responsible attitude to safety and health issues for workers. The contractor should also not forget about the responsibility for planting seedlings, replacing cut down trees and regularly caring for them.

5. FUNCTIONING OF THE CEMWP.

5.1 CEMWP review.

195. The Construction Environmental Management Work Plan (CEMWP) is a form prepared by the Contractor based on the EMP and designed to encourage the Contractor to read the EMP and rethink the requirements that need to be met. The CEMWP describes the various activities proposed under this Project and designed to prevent, minimize, or compensate environmental impacts that occur as a result of the Project. The mitigation measures provided in the CEMWP are sufficient, effective and acceptable. The CSC has prepared 14 annexes to the CEMP that address all major specific potential environmental impacts.

196. The Contractor's Environmental Specialist – Uzbekov Kanatbek, implements the construction mitigation measures. The Contractor's compliance with environmental requirements is supervised by Consultant's environmental specialist, Tatyana Volkova. If any violations are detected, Consultant notify the Contractor verbally or in writing on the need to eliminate this violation within the specified time frame.

197. During the reporting period, the main focus was on the following issues:

- Disposal of construction waste;
- Disposal of old asphalt;
- Violation of safety precautions, occupational safety and health requirements;
- Planting and watering seedlings;
- Borrow-pit mining and management;
- Materials manufacturing plant (dusting at crusher, bitumen and chemical leakages).

198. No serious violations were observed during the reporting period. All violations found were addressed in a timely manner.

199. Currently, the main issue of CEMWP implementation remains planting seedlings instead of cut trees and its care. Considering climatic conditions, it is better to plant seedlings in the autumn, in October – November and in March - April. Planting of seedlings was planned to start in autumn 2018, but by the scheduled time, the Contractor had not completed construction of sidewalks, side culvert ditches and replacement of utilities on the site planned for planting seedlings that is why planting of seedlings had to be postponed until a later date. The first 300 seedlings were planted in autumn 2019.

200. To date, 13 325 seedlings have been planted, including 12 325 on 45.1 km section and 1 000 on 7.4 km section. In the autumn of 2023, in total 1 000 seedlings were planted, including 700 on 45.1 km section and 300 on 7.4 km section.

201. Since the project section of the road passes through settlements, where, given the expansion of the road, there is little space for planting new seedlings, it was necessary to decide where and when the remaining seedlings will be planted. Given that there were practically no places left on the project road for planting new seedlings, local ayil okmoty proposed places for planting seedlings located at a distance of 1-2 km from the project road. These are sites near water intakes, territories of schools, clubs. Watering of seedlings is carried out by residents of local ayil okmoty. Also, from some local administrations and the mayor's office of Kara-Balta requests were received to provide them with seedlings for planting in organized park areas while they will undertake further work on planting and watering.

6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT.

6.1 Good practice.

202. The mitigation measures provided in the CEMWP are sufficient, effective and acceptable.

203. One of the good practice examples is the installation of anti shock buffers on the carriageway in order to prevent traffic accidents and prevent loss of life. 50 buffers were installed at 45.1 km section and 7 buffers at 7.4 km section.

204. The buffers are filled with sand, have a height of 80 cm, a diameter of 55 cm and a weight of 200 kg. The buffers were installed next to parapets on the carriageway, have a reflective film and are therefore visible from afar at night.

205. In case of an accident, buffers can withstand impacts and deformations, reducing damage to vehicles and ensuring the safety of passengers.

206. Metal guardrails were installed on the top of the parapets near underpasses, in crowded places, and near schools, markets and supermarkets. This was done to prevent road accidents and prevent deaths in especially dangerous places, and to prevent people from jumping over the parapets creating an emergency situation.

6.2 Opportunities for Improvement.

207. In 2017, earthworks in the village of Petrovka were suspended by the ADB until the winter season due to the complaints received from the local residents from 17 homeowners at the Centralnaya street because of the vibration coming from construction equipment when compacting materials using vibration, in particular from road rollers.

208. IPIG and EPTISA found that the most effective and least costly solution was to eliminate vibration compaction on all road sections where there were any accommodations.

209. It was decided not to use vibration in the further work when compacting the material. Soil compaction works at the direction of the ADB (letter dated May 23, 2018) were carried out without the use of vibration on all sections of the road, with the exception of the section 15.9-19.8 km, where there are no settlements. These changes in the accepted methods of construction have resulted in an increase in the cost of the work performed.

210. Supervision over compliance with this requirement was constantly carried out by the Consultant's inspectors, the construction supervision consultant, the Consultant's environmental specialist. Vibration control is also carried out by laboratory monitoring.

211. During the reporting period, there were no any earthworks carried out using vibration on the construction sections.

212. In 2019, the Consultant developed a mix design for the wearing course that complies with local standards and British Standards. This design mix also takes into account the noise reduction requirements that were recommended in the Noise Modeling report. On the 45.1 km section of the road, the laying of the wearing course on the roadbed was completed using a mix design.

213. During the reporting period, at the km 15.9 - 61 road section, in the places where rutting was developed, the wearing course was removed by milling. The removed asphalt was taken out and stored on the territory of the production site for further use.

214. At km 8.5 - km 15.9 section, given that there is no space for installing street lighting poles on both sides of the road, the designer decided to instal street lighting poles along the central axis

between the central blocks of the parapets. This will ensure more safety than if poles will be installed on the sides. The bill of quantities provided for steel poles, which means that overhead cables cannot be used, so it was decided to use a different type of poles than the one specified in the BoQ, due to the fact that there will be 2 lamps fixed and 2 supporting arms and a wind the load will be 2 times stronger. Underground cables must be used, not overhead as provided for in the BoQ. The foundation of the poles should be concrete with anchor bolts (see Figure 19).

215. This solution is safer in terms of road safety.

216. Taking into account the cramped conditions, in order to ensure road safety at km 8 + 500 - 10 + 900, the safety zone on the central axis of the road was reduced from 4 meters to 2.6.

217. The side safety zone has been reduced from 1 meter to 0.5 meters on both sides of the road between km 8+500 - km 10+900. On this section, on both sides of the road, it was decided to remove the shoulders and install curbstons.

7. SUMMARY AND RECOMMENDATIONS.

7.1 Summary.

218. The problem of crushing old asphalt to a size of 20x20 remains unresolved. During the reporting period, old asphalt at 7.4 km section was not transported. Unsuitable soil was taken to dumps for the further use and for backfilling ravines.

219. During the construction period, the Contractor did not properly supervise the already constructed structures. Previously constructed drainage ditches were overgrown with grass and filled with construction waste. According to the explanation of the contractor, the construction and installation of the ditches has not been completed; upon completion of the construction and installation of the drainage ditches, it will be cleaned and, if necessary, additional levelling of the area will be carried out. In spring 2022, the partially cleaning of drainage ditches from stones, debris and grass has been started, and in 2023 the cleaning of ditches continued.

220. Dust control measures during the reporting period have been improved compared to previous reporting periods. This is probably due to the fact that there were fewer construction sites on the road compared to last year and watering machines managed to water construction sites in a timely manner.

221. Caring and watering seedlings instead of cut down trees remained a problem. To date, 13 325 seedlings have been planted, including 12 325 on 45.1 km section and 1 000 on 7.4 km section. Given that there are practically no places left on the project road for planting new seedlings, local ayil okmoty proposed places for planting seedlings located at a distance of 1-2 km from the project road. These are sites near water intakes, park areas, school grounds. Watering of seedlings will be carried out by residents of local ayil okmotu.

222. In July 2022, a new health and safety specialist was hired by the Contractor. With the arrival of this specialist, regular training, briefing and testing of the knowledge of the company's employees continued. Inspection tours were carried out on a regular basis. Identified violations were eliminated on the spot. The situation with the constant and timely provision of workers with overalls and protective equipment was monitored.

223. The introductory briefing for the newly hired employees was held for 128 workers. The repeated briefing is carried out every 3 months. In order to exclude injuries with workers, seminars were held at the workplace. There were no accidents recorded in the production place with the participation of our workers during the half-year.

224. Bitumen in metal barrels on the asphalt plant was fully used. Empty barrels were removed from the production site. During the reporting period, bitumen was delivered by bitumen trucks from rented bitumen pits, barrels with bitumen were not delivered.

225. The stone crushing plant operated mainly on wet material, but there were cases of dusting.

7.2 Recommendations.

226. Given the fact that during the construction period, the Contractor does not always eliminate the violations in the specified time, and the Consultant is unable to apply any measures other than the suspension of work, it is necessary to take into account this experience and "include" additional impact mechanisms in the preparation of the contractor's draft contract in future projects, such as imposition of penalties for non-compliances of environmental safeguards measures in order to have more effective "leverage" to influence the Contractor to take the necessary environmental measures without repeated warnings and prevent negative consequences in advance.

227. The contractor needs to be more responsible in watering and caring for seedlings. Letters were repeatedly sent to the Contractor about the need to allocate a watering machine, which would only be used to water the seedlings, but the seedlings were not watered regularly. As a result, some of the seedlings were dried.

228. Before the end of the defect's notification period until February 2024, it is necessary to complete all reclamation work in borrow pits and hand over to the district commission, to dismantle equipment at the production site and in the Contractor's camp in Sokuluk.

Post construction audit report

Project number: 45169-001

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Kyrgyz Republic.

Central Asian Regional Economic Cooperation Corridor 3 Improvement Project
(Bishkek-Osh Road), Phase 4, Bishkek-Kara-Balta section (km8.5 – km 15.9)

Prepared by: Joint Venture Temelsu International Engineering Services Inc., E. Gen Consultants Ltd., and Desh Upodesh Ltd. in association with Kyrgyz TREC International, Ltd. for the Ministry of Transport and Communications of the Kyrgyz Republic and the Asian Development Bank

Prepared for:

Ministry of Transport and Communications of the Kyrgyz Republic

Endorsed by: [Full name and signature of Executive Agency employees]

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Abbreviations

ADB	-	Asian Development Bank
CAREC	-	Organization of Central Asian Regional Economic Cooperation
CSC	-	Construction Supervision Consultant
EMP	-	Environmental Management Plan
PIU	-	Project Implementation Unit
km	-	kilometer
KR	-	Kyrgyz Republic
MPC	-	Maximum permissible concentration
MPL	-	Maximum permissible level
MoTC KR	-	Ministry of Transport and Communications of the Kyrgyz Republic
GRM	-	Grievance Redress Mechanism
MoF KR	-	Ministry of Finance of the Kyrgyz Republic
MoNRETS KR	-	Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
DDPTSSSES	-	Department of Disease Prevention and State Sanitary-Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic
TS	-	Technical Specification
CEMWP	-	Construction Environmental Management Work Plan
AP	-	Asphalt Plant
SCP	-	Stone crushing plant
CBP	-	Concrete batch plant
SAEPF	-	State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic
SIETS	-	State Inspectorate for Environmental and Technical Safety under the Government of the Kyrgyz Republic

1. INTRODUCTION

1.1 Preamble.

1. Roads are essential for the Kyrgyz Republic, in this regard, the Government of the Kyrgyz Republic appealed to the Asian Development Bank (ADB) to assist in funding for the implementation of CAREC Corridor 3 (Bishkek-Osh Road) Improvement Project, Phase 4.
2. This post-construction audit report covers a construction period of the project road from 2020 to 2023 under the ongoing CAREC Corridor 3 (Bishkek-Osh Road) Improvement Project, Phase 4.
3. Road rehabilitation works included reconstruction of bridges, replacement of culvert pipes, construction of underpasses, removal of old asphalt, preparation of new traffic lanes in the east and west directions, construction of sidewalks, installation of drainage ditches, planting trees, as well as the operation of an asphalt and concrete plant, and stone crushing plant for the processing of inert materials.
4. The main task for conduction of post-construction audit is to determine whether all environmental safeguards are fully implemented and that there are no unresolved issues, and that all obligations developed during the design and impact assessment period are fully met.
5. The second task is to give information on the lessons learned that will be useful in the future projects.
6. This report contains information about work progress and changes related to the prevention of environmental impacts. The results are based on numerous site visits between 2017 and 2023 conducted by the Consultant's national environmental specialist.

1.2 Headline information.

7. The Bishkek-Osh Road represents about one-fourth of the main international road network in the Kyrgyz Republic, and links the country to Kazakhstan in the north, Uzbekistan, and Tajikistan in the south, and the People's Republic of China in the southeast. The road crosses four of the seven regions of the country and serves about 2 million people. It is the only direct surface link between the southern and northern parts of the country making it crucial for maintaining the country's social, political, and economic integrity. The Bishkek-Osh Road is part of the Central Asia Regional Economic Cooperation (CAREC) Corridor 3, which runs from the west and south Siberian region of the Russian Federation through Kazakhstan, Kyrgyz Republic, Tajikistan, Afghanistan, and Uzbekistan to the Middle East, and South Asia.
8. The CAREC Corridor 3 (Bishkek-Osh Road) Phase 4 Improvement Project aims to improve connectivity and market access in the Kyrgyz Republic. The reporting road section starts at km 8.5 and ends at km 15.9 and has a total length of 7.4 km. The project's output will be efficient movement of freight and passenger traffic along the Bishkek-Osh Road, improved safety for both road users and pedestrians, as well as mitigation of the environmental impact of the road in terms of noise impact from passing traffic by upgrading asphalt pavement.



Figure 1 Bishkek – Kara-Balta project section km 8,5 – km 61

2. PROJECT DESCRIPTION AND PROJECT WORKS.

2.1 Project description.

2.1.1 Location of project site and main design. Km 8.5 – Km 15.9 section of the Bishkek – Kara-Balta Road.

9. The being implemented project improves the connectivity between north and south in the Kyrgyz Republic. The project's output will be efficient movement of freight and passenger traffic along the Bishkek-Osh Road. According to the classification of the ADB Safeguard Policy Statement, the project classified as Category B. Improvement of the Bishkek-Osh Road section (Bishkek-Kara-Balta section) will connect important, but densely populated areas, what will ultimately provide better access to services, goods and markets; improve regional connectivity and increase road safety for all road users in general.

10. Initially, during the preparation of the feasibility study for the "CAREC Corridor 3 (Bishkek-Osh) Improvement Project, Phase 4", the first field environmental surveys were carried out in November 2012 on the road section from km 8.5 - km 61. After determining the preliminary cost of the project, the road section from km 8.5 - km 15.9 was excluded. As part of the preparation of the feasibility study, work was carried out on a desk study of the regulatory framework, project description and initial environmental data. Available literature was studied, design and statistical data, maps and aerial photographs were collected. Comprehensive site visits to collect data on the physical and biological environment were conducted in the spring, March and April 2013. Based on field observations and studies, environmental impacts were identified and appropriate mitigation measures were prepared.

11. Due to the fact that the Project involves rehabilitation of an existing road, and taking into account that there are no specially protected natural zones within the Project impact areas, the resulting environmental impacts are mainly limited to the construction phase. In 2018, additional field survey work was carried out to clarify the previously obtained information. Based on the data received and further field inspections, the Supplementary IEE was prepared in accordance with the legislation of the Kyrgyz Republic and the ADB's Safeguard Policy Statement.

12. In 2018, sensitive receptors located along this section of the road were identified and baseline indicators were measured. In 2013, consultation meetings with the representatives of public were organized, where residents of the surrounding area took part.

13. Initially the road's designed length was 52,5 km length. Feasibility Study was completed by the Consultant Kocks Consult as part of ADB Technical Assistance, the purpose of which was to identify the economic soundness of the Project. The Feasibility Study set out approximated cost of the Project based on the preliminary topographic survey at a scale of 1:2000 and geotechnical studies conducted.

14. As a result, through agreement with ADB, it was decided to decrease the project road by 7.4 km and to deem the road starts at 15.9 km instead of 8.5 km of Bishkek-Osh Road. The reduction of the specified section was taken before the announcement of the bid for the procurement of Civil Works.

15. The cost of the contract between the Ministry of Transport and Communications of the Kyrgyz Republic and General Contractor China Railway No.5 amounted to 70,24 US Dollars, i.e., there was spare funds up to 22M USD.

16. In 2019, the saved funds were planned to use for construction of the remaining road section (8.5 km – 15.9 km). By the method of direct contract award, the contract was awarded to China Railway No. 5. MOTC has prepared a Supplementary Initial Environmental Examination (IEE) for the 7.4 km section. Given that the IEE, including the Environmental Management Plan (EMP), which was developed and approved in 2015,

covered a 52.5 km section, no additional clearances from environmental authority were required for 7.4km section. Notification for the Commencement of Works was issued on November 19, 2020.

17. The section of the road passes between km 8.5 and 15.9 km of the Bishkek - Osh Road. The section begins at the end of the administrative border of Bishkek at 8.5 km. The existing road surface is asphalt concrete, the width of the paved part is 15 - 20 m, it has a 6-lane carriageway configuration, which then turns into a 4-lane. The width of the shoulder ranges from 1.5 to 3.0 m. The site extends to the west, passing through several settlements interspersed with agricultural land. The width of the paved part is 8-12 m, and the width of shoulders is 1.5-3.0 m. Villages located along the road merge into a relatively continuous strip along the roadway. The relief throughout the site can be classified as flat with an altitude of 750-800 m above sea level.



Figure 2 Project road section on the M39 motorway

18. In the section from km 8.5 to km 13 there are residential buildings, social and cultural facilities (school, pharmacy, government agencies, etc.), retail outlets (shops, oil change stations, etc.). The plots of land located along the road from km 15 to km 15.9 (on the Left side 900 m, on the Right side 100 m) are used mainly for agricultural purposes. Cultivated crops on the site are mainly represented by wheat, fodder and industrial crops, various types of vegetables (potatoes, peppers, carrots, watermelon, eggplant) and fruit plants (apples and apricots).

19. The terrain throughout the site can be classified as a foothill plain with a height of 750-800 m above sea level and steadily gaining altitude southward toward the Tian Shan Mountain range.

20. The road reconstruction should meet the laws and legislation of the Kyrgyz Republic. This reconstruction will bring the geometric parameters of the road to the required category.

21. In order to improve drainage systems, the work includes the reconstruction and replacement of majority of the degraded culvert system, and addition of new cross-drainage structures. A bridge was constructed instead of a D2X1.5m culvert pipe, more than 11.7 km of sidewalks, 11.9 km of drainage ditches, and 20 bus stops were constructed, three underpasses were repaired.

22. Environmental impact resulting from the rehabilitation of the Bishkek-Osh Road is short-term and local, since the most of construction work is carried out along the existing right-of-way. The project includes number of related activities, such as the development of borrow-pits, operation of the asphalt plant, crushing and screening plant, arrangement of work camps and warehouses of the contractor, etc. The IEE was updated and cleared by ADB in 2018. In November 2018, an updated IEE was disclosed on the ADB website.

23. According to the IEE, the environmental impact includes:

- noise impact, as well as vibration, which is particularly important within localities near the Project Road and in the areas where sensitive receptors are located, such as schools, hospitals, mosques, etc.
 - Impact to air;
 - Impact resulting from sourcing of aggregates in borrow-pits;
 - Impact on soil and vegetation, including tree stands near the project road, due to site clearing work;
 - Impact resulting after bridge rehabilitation works;
 - Impact of asphalt production plants and aggregates crushing plants;
 - Impact of Contractor's workers camps.
24. According to Technical specifications, the road pavement designed for an initial design life of 10 years with structural overlay options for 15 and 20 years of design life.

2.2 Project contracts and management.

2.2.1 Scope of work according to the contract.

25. The project section was designed according to the standards of Technical Category 1-b (main urban arteries) with the following geometrical features:
- Number of lanes – 4 and 6
 - Lane width – 3,5 - 3,75m;
 - Carriageway width – 2x7,5;
 - Shoulder width – 2.5m
 - Carriageway shoulder breakpoint stabilization – 1.0m
 - Axle design weight – 11,5 tones.
26. Over the entire project site, two layers of the asphalt-concrete pavement (14 cm thick) laid, the upper one is 5 cm and the lower one is 9 cm thick, with underlying black crushed stone course (9 cm thick).
27. The Right of Way width is 50 - 60 meters. The design provides for construction and repair works in the following engineering structures and utilities as well as parameters of the work scope.

Table 1 Work progress. Serton (KM 8,5 – KM 15,9)

Section	Items	UoM	Total quantity	
km 8+500 - κκmm 15+900	1	Tree planting	pcs	1000
	2	Strengthened shoulder	km	10,00
	3	Concrete curb stone / curb BR100.30.18	km	5,54
	4	Bridge instead of D2X1.5m culvert	pcs.	1,00
	5	Longitudinal ditches	km	11,9
	6	Sidewalk	km	
		Cleaning and subbase	km	11,7
		Curb stone	km	11,7
		pavement	km	11,7
	7	Bus stop	pcs.	20
	8	Junction base	pcs.	83
	9	Junction binder course	pcs.	83
10	Junction wearing course	pcs.	83	
11	Junction shoulder	pcs.	83	
12	Traffic light			
	Pole foundation	pcs.	9	
	Pole installation	pcs.	9	

	Installation of lamps	pcs.	9
	Cable connection	km	9
13	Road signs	pcs.	384
14	Road marking	km	14,80
15	Reflective elements on parapets	km	7,40
16	Protective concrete slope on culvert	pcs.	8,00

Vegetation planting

28. Almost throughout the entire length of the project road there were trees on the both sides, most of which were cut down during the road rehabilitation. Tree cutting is a "forced" measure. Trees located in areas of roadbed widening, construction of sidewalks and drainage ditches fell under "forced" cutting. The total number of trees that fell under forced cutting was 504 pcs. As compensatory measures, to restore the number of green spaces the planting of new tree seedlings was provided for. The total number of trees planted at 7.4 km section amounted to 1000 pcs.

Land Acquisition and Resettlement Plan.

29. The project site passes along densely populated areas. The design provides for the demolition of commercial services, pavilions, billboards, service stations, gas stations, fences and houses which are affected by the project, in the sections of road widening and sections of construction of new sidewalks. A Resettlement Plan was drawn up, based on which compensation was paid to 54 affected persons, including owners and users of land, business owners, tenants and employees.

2.2.2 Main organizations involved in the Project, and related to the environmental safeguards.

Table 2 Main organizations involved in the Project, and related to the environmental safeguards

No	Organization Name	Role in project	Responsible person for the environmental safeguards	Contact details
1	ADB	Environment Specialist	Ninette R.Pajarillaga	npajarillaga@adb.org
2	ADB's Kyrgyz Republic Resident Mission (KYRM)	Consultant	Sultan Bakirov	Sbakirov.consultant@adb.org
3	PIU under MoTC KR	Executive Agency	Asylbek Abdygulov	asylbeka@piumotc.kg
4	Temelsu	Consultant	Tatiana Volkova	volkova_ti55@mail.ru
5	The limited liability company "China Railway Engineering Group No. 5»	Contractor	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
6	Subcontractor LLC «Maksat»	Supply and installation of street lighting facilities at 45 km section.	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
7	Subcontractor LLC «Svyaz Proekt»	Relocation of the underground cable at 45 km section	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
8	Subcontractor LLC «Ishmer»	Supply and installation of bus stops at 45 km section	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
9	Subcontractor LLC «Ren Stad»	Installation of road signs at 45 km section	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru
10	Subcontractor LLC «Aiser Torg»	Installation of traffic lights at 45 km section	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru

2.3 CEMWP review.

30. Construction Environmental Management Work Plan (CEMWP) - a form prepared by the Contractor based on the EMP and intended to encourage the Contractor to read the EMP and rethink its requirements to be met. The CEMWP describes the various activities proposed under this Project, and designed to prevent, minimize or compensate the adverse environmental impacts that occur as a result of the Project. The mitigation measures provided for in the CEMWP are sufficient, effective and acceptable. The Contractor, together with the CSC, prepared 14 Annexes to the CEMWP, which addresses all the main specific potential environmental impacts.

31. The CEMWP should be developed and agreed upon before the start of construction work. The Contractor had developed a Construction Environment Management Work Plan (SEMWP), after approval of which, in December 2020, permission was received to carry out work on this section of the road.

2.4 Grievance Redress Mechanism

32. The Grievance Redress Mechanism (GRM) was developed to respond to appeals, grievances and requests from local residents in a timely and properly manner. During public hearings, study, compensation payment and Project implementation the affected people were fully informed about their rights and the procedures for consideration of grievances submitted orally or in writing.

33. All those affected by the project may file grievances relating to their rights and responsibilities, including legal regulations and procedures for compensation payment, income-generating land acquisition, resettlement, and other related programs determining eligibility for recovery support. The grievance may be related to labor protection and inconvenience caused by ongoing construction works and other safety issues in accordance with ADB safety provisions and the legislation of the Kyrgyz Republic.

34. The mechanism consists of a grievance consideration process at two levels: local and central. A Grievance Redress Group (GRG) was created at each level.

2.5.1 GRM Log

35. The GRM log has been maintained since 2016 - from the beginning of the implementation of the CAREC Corridor 3 Improvement Project (Bishkek-Osh Road), Phase 4.

36. An innovative electronic form of the GRM Log was proposed by ADB. The log automatically records the timing of registration and results of decision.

37. Environmental and social safeguards officers of the PIU MOTC KR and of the Consultant participated at special training conducted by ADB about the registration, recording, consideration of grievances and data processing to optimize GRM processes. The log is published in the cloud and is always available for viewing.

38. Each grievance or appeal is registered in one of 13 categories.

- Inclusion in LARP
- Compensation Rate
- Restriction or loss of access
- Crop Compensation
- Loss of business
- Registration / Ownership Status
- Disturbance: Noise / Vibration / Dust
- Damage to Infrastructure / Assets
- Utilities Relocation
- HSE Concerns

Recruitment / Employment
 Road Upgrading
 Other

39. Environmental issues are related to grievances of two categories: Disturbance: Noise / Vibration / Dust and HSE Concerns.

40. During the reporting period, 47 grievances were received from local residents. Most of the grievances related to the installation of parapets, opening of additional junctions, new traffic lights, there were requests to give information on the boundaries of the project’s impact on land plots, and construction of additional pedestrian crossings and road signs. There were also requests from local authorities to provide assistance in resolving various issues. All requests were duly recorded in the GRM Log and were reviewed in a timely manner. There were no grievances related to environmental issues.

41. During the reporting period, all types of construction work were carried out within the framework of design decisions (without impact on households). All construction work is organized to ensure uninterrupted traffic flow and movement of people.

42. No unexpected impacts of the project on households have been found.

Table 3 Number of grievances received from local residents during the construction period

Year	Number of grievances	Accepted	Rejected
2021	18	10	8
2022	11	8	3
2023	18	9	9

2.6 Construction works on the road.

43. Construction work on the project road was carried out mainly within the ROW of the existing road, thus minimizing the environmental impact. The design included a number of related activities, such as development of borrow pits, operation of an asphalt plant and a crushing and screening plant, setting up work camps and contractor's warehouses, etc.

44. Regular monitoring over compliance with the requirements of environmental legislation during construction work on the Bishkek-Kara-Balta Road has been conducted.

45. The entire 7.4 km road section was completed and opened for public use. The work was completed on November 19, 2022 and the defect’s notification period had been started until February 15, 2024.

46. During the reporting period, the following construction works were carried out on the road section from km8.5 – km 15.9:

- cutting and grubbing of trees;
- clearing and grubbing;
- excavation of soil into the dump;
- excavation and disposal of unsuitable material from existing road;
- formation of embankment using common soil from borrow pit;
- removal of existing asphalt;
- construction of asphalt pavement, laying subbase and asphalt;

- installation of parapets (small concrete fencing /dividing barriers);
- construction of bridges;
- repair of underpasses;
- construction of culvert pipes;
- construction of sidewalks;
- installation of reinforced concrete drainage ditches;
- installation of bus stops and asphaltting of bus bays;
- works on junctions;
- construction of trenches and passages;
- construction of shoulders;
- installation of street lighting poles;
- installation of traffic lights and road signs;
- application of road marking;
- planting, care and watering of seedlings.

2.7 Permits

47. Many types of work in various fields of activity require certain permits and clearances in order to have a legal right to the activities. Among them there are such as environmental permits, cutting down trees, using borrow-pits and others.

Table 4 Name of issued permits

No.	Name of permit	Date of issue
	Permission for the demolition of trees and shrubs from environmental authorities	
1	Voenno-Antonovka village – 321 pcs.	12.12.2020
2	Novopavlovka village -1 pcs.	02.08.2021
3	Novopavlovka village -30 pcs.	28.09.2021
	Voenno-Antonovka village – 151 pcs.	28.09.2021
	Permits for emissions and disposal of waste from environmental authorities	
1	Permit No. 001790; on the emission of pollutants into the atmosphere by stationary sources of pollution. Permit No. 0000162; on the emission of pollutants into the atmosphere by stationary sources of pollution.	From 20.09.2022 to 31.12.2022 from 13.03.2023 to 31.12.2023
2	Permit No. 000079; on waste disposal in the environment.	From 16.03.2023 to 31.12.2023r
	Permits for development of borrow-pits from local authorities	
1	Permission to develop Belek borrow pit	30.05.2021
2	Permission to develop Ak-Suu 2 borrow pit	01.06.2017
	Permits for storing soil, tree trunks, and the use of water intakes from local authorities	
1	Permit of Voenno-Antonovka ayil okmotu for the organization of dumps for soil with an area of 4.0 hectares No. 64 dated 20.10.2020	20.10.2020
2	Permission of the Chui-Regional Territorial Administration of the Ministry of Natural Resources Ecology and Technical Supervision for the organization of dumps for soil with an area of 4.0 hectares No. 05/2153	26.07.2021

3. RESULTS OF MONITORING OVER COMPLIANCE WITH THE REQUIREMENTS OF ENVIRONMENTAL LEGISLATION DURING CONSTRUCTION WORKS ON THE BISHKEK – KARA-BALTA ROAD SECTION.

3.1 Cutting and grubbing of trees.

48. Almost throughout the entire length the project road was planted with trees on the both sides, majority of which were cut down during the road rehabilitation. Cutting down of trees was a "forced" measure. Under the "forced" cutting fell trees located in the areas of widening the roadbed, construction of sidewalks and drainage ditches.

49. **Tree management plan.** The most obvious environmental zone along the 7.4 km project section (from km 8.5 border of Bishkek to km 15.9), is a strip of tree plantations, which provides protection and shade. There are different types of trees such as mature elm, poplar and white acacia at the age of 40-60 years.

50. Trees are not only providing shade in summer and being a windproof forest belt in winter, but also elaborate a large amount of CO₂ in the process of photosynthesis.



Figure 3 Road section before cutting down trees

51. Roadside trees, over the past 40 - 50 years has become a habitat for birds and small mammals. This was lost as many of the trees needed to be cut down to organize place for the road widening.

52. The total number of trees that fell under forced cutting amounted to 504 pcs. As compensation measures, to restore the number of green spaces, it was planned to plant new tree seedlings. As of the end of 2023, the total number of planted trees amounted to 1000 pcs.



Figure 4 Tree cutting at km 8,5 – km 15,9 section

53. Prior to the commencement of tree cutting works, Tree Planting Plans were prepared for all sections where cutting was planned to be done. These Plans were submitted to ADB, and only after receiving permission to start work from the Bank, it was possible to start cutting trees.

54. Initially, the Contractor, together with topographers, marked the trees. A List of trees to be cut down was prepared, which was agreed with the Consultant. Then, the list of trees to be cut down was agreed with environmental agencies.

55. After obtaining all the permits, it was possible to start cutting down trees. The work was regularly supervised by the Consultant. In the course of the work carried out by the Contractor, the Consultant gave comments on the quality of fuel in chainsaws, on the order of cutting down tall trees, on dust suppression, on road safety, which were taken into account by the Contractor.

56. Demolished tree trunks were taken out to the sites allocated by local administration and were handed over based an act to the balance of local administrations. Root residues were also brought to allocated sites.



Figure 5 Marking of trees



Figure 6 Tree cutting



Figure 7 Cut down trees and roots on special sites

3.1.1 Planting and caring for seedlings.

57. Trees on the section from km 8.5 to km 15.9 were cut down from 2020 to 2022. The total number of trees that fell under forced cutting amounted to 504 pcs.

58. According to the terms of the current contract between the MOTC KR and China Railway No. 5, the contractor should plant new tree seedlings to replace the cut ones, as well as carry out maintenance (watering, replacing dried seedlings with new ones) until the end of the defect's liability period.

59. Starting in the spring of 2023, the China Railway No. 5 contracting company began the phased planting of tree seedlings in certain areas, where there were places free of growing trees.



Figure 8 Seedlings planted in October 2023

60. To date, 1000 pieces of young seedlings have been planted.

61. Taking into account that there are practically no places left on the project road for planting new seedlings, local administration (ayil okmotu) proposed places for planting seedlings in organized park areas that are located on their territory, while they will undertake further work on planting and care. Given the lack of places for seedling planting along the project road, these proposals have been approved by ADB. 930 seedlings were transferred to local administrations on this section of the road.

62. Control and monitoring over the planting of seedlings, watering of seedlings, as well as monitoring of the survival rate of seedlings on an ongoing basis is carried out by the environmental safeguard specialists of the Construction Supervision Company, Contractor, and representatives of MoTC KR.

3.2 Excavation of soil into the dump.

63. At the end of the uprooting of stubs, the top soil was removed, which was brought to the sites allocated by local authorities.

64. Water was sprinkled by a watering machine at work sites, as needed.



Figure 9 Removal of topsoil with water sprinkling



Figure 10 Dumps with removed and disposed soil

65. Unsuitable soil in large volumes was subsequently taken out to the sites intended for storage of the removed soil in the village of Voенno-Antonovka. Upon completion of the main construction works contractor leveled the site and backfilled it with a soil layer.

3.3 Borrow-pits.

66. On the project road (Bishkek - Kara-Balta section, km 8.5-15.9), 2 borrow pit areas were allocated - Belek borrow pit and Ak-Suu2 borrow pit. The Contractor has received all the necessary documents/approval from local authorities, the State Committee for Industry, Energy and Subsoil Use and the State Agency for Environmental Protection and Forestry to develop these borrow pits.

Table 5 Characteristics of borrow pits at the time of preparation of the report

	No. of borrow pit	Km of turn to the borrow pit area on the B-O road	Approximate distance from the B-O road to the borrow pit (km)	Volume, (m3)	Area (Ha)	Note
1	№5 «Ak-Suu 2»	Km 45+700	8,6	850 000	68,19	Reclaimed, prepared for hand over to the reclamation commission

2	№8 «Belek»	Km 27+000	8	180000	10,31	Reclaimed, prepared for hand over to the reclamation commission
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67. **Belek borrow-pit.** On the project road section from km 8.5 to km 15.9, a permit was obtained for temporary use (2 construction years) of a 10-hectare land plot for the development of a sand-gravel mixture in the village of Belek.

68. The borrow pit was used for the collection and taking out of inert materials for the construction of road at 7.4 km section. The territory of the production site of the borrow pit, as well as the road leading to the borrow-pit constantly sprinkled with water. During the work a dusting was minimal.

69. To date, the development of borrow pit was completed. It was reclaimed. Subsequently, the borrow pit will be handed over to the Reclamation Commission.



Figure 11 Development of Belek borrow pit



Figure 12 Water sprinkling on the access road to the Belek borrow pit



Figure 13 Belek borrow pit after reclamation works

70. ***Ak-Suu 2 borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road, as well as to the territory of the production site for crushing and stockpiling. Road to Ak Suu 2 borrow pit bypasses settlements.

71. In order to avoid dusting, both on the territory of the borrow pit's production site and on the road leading to the borrow pit, 2 watering machines were allocated for permanent water sprinkling of the borrow pit site, and on the road leading to it. Dust during the performance of works was minimal.



Figure 14 Development of Ak-Suu 2 borrow pit on moistened material

72. Dust was suppressed regularly on the access road to Ak-Suu 2 borrow pit.



Figure 15 Water sprinkling on the access road to Ak-Suu 2 borrow pit

73. The borrow pit has operated until the completion of work on the 7.4 km section. Subsequently, the borrow pit was reclaimed and will be handed over to the reclamation commission.



Figure 16 Ak-Suu2 borrow pit after reclamation works

3.4 Construction of pavement.

74. Taking into account the fact that this section of the road is overloaded with vehicles and there is no way to make bypasses, it was decided to remove the old asphalt, prepare for asphalt and to lay asphalt alternately along the lanes.



Figure 17 Levelling of roadbed in the village of Voенno-Antonovka

75. Soil compaction works at the direction of the ADB (letter dated May 23, 2018) were carried out without the use of vibration on all sections of the road. Supervision of compliance with this requirement was

constantly carried out by the Consultant's inspectors, the construction supervision consultant, the Consultant's environmental specialist. Vibration control was also carried out by laboratory monitoring.



Figure 18 Rolling, compaction of soil and asphalt paving of the carriageway

76. Work was carried out on the preparation and laying of asphalt at junctions to the adjacent streets. 83 junctions were constructed.



Figure 19 Construction of junctions to adjacent streets

77. On all sections of the project road where construction work was carried out, dust suppression (water sprinkling) works were regularly carried out. Dust suppression works were carried out according to an agreed schedule to eliminate dusting.

78. No complaints from the local population about the dust have been registered.



Figure 20 Dust suppression works (water sprinkling) on construction sites

79. Sidewalk construction works included installation of curbs, preparation works and further asphaltting. 13.366 km of sidewalks were constructed.





Figure 21 Construction of sidewalks

3.5 Construction of bridges.

80. There is no any permanent watercourse on the project road section. On this section there is a Discharge canal crossing the road in the village of Novopavlovka. The discharge canal in the village of Novopavlovka was a flood gate of the daily runoff pond located above the road and the village. Currently, the canal is not functioning.



Figure 22 Discharge canal in the village of Novopavlovka

81. At km 11+200 m, a bridge was constructed instead of a culvert D2X1.5m. The existing old slab bridge has been replaced with a single-span bridge with a solid slab.

82. In order to ensure road safety, all areas of work were fenced, fencing barriers and traffic safety signs were installed. New lighting fixtures were installed. Informational boards were installed with an appeal to drivers to treat with understanding the inconveniences on the road in areas where construction work is underway.



Figure 23 Construction of bridge

3.6 Construction of culvert pipes.

83. As part of the construction, repair, reconstruction and replacement of old culverts were carried out, as well as the construction of new culvert pipes. All pipes have a sufficient diameter to prevent clogging, and are long enough, taking into account the additional lanes of the carriageway. As for the new culvert pipes, their number was determined after receiving proposals from local residents.

84. All pipes are designed on a cast in situ concrete foundation. Pipe blocks – are precast concrete, prefabricated.

85. The design provides for the construction on the road section:

- culvert pipes (0,5x0,5) - 83 pcs;
- culvert pipes (1,0x1,0) - 6 pcs;
- culvert pipes (1,5x1,5) - 10 pcs

86. The inlet and outlet of the pipes are strengthened with cast in situ concrete on a gravel layer: at the inlet - with cast in situ concrete of 8 cm thick on a gravel layer of 10 cm thick, at the outlet - with cast in situ concrete of 12 cm thick on a gravel layer of 10 cm thick.

87. In addition, a rock riprap is placed at the outlet - the diameter of the stone is 25 cm.

88. Replacement of culvert pipes on the road section from km 8.5 to km 15.9 had been started in the spring of 2021.



Figure 24 Construction of culvert pipes

89. For the traffic safety purpose, all work areas were fenced off, protective barriers and traffic safety signs were installed.

90. Bitumen for waterproofing pipes was melted on the spot. Dry firewood was given to the workers. The smoke was minimal.



Figure 25 Bitumen melting for waterproofing of pipe

3.7 Construction of drainage ditches.

91. The design provided for drainage ditches to drain storm water from the road. The total length of the dishes was 12.583 km.

92. Drainage ditches were installed by a subcontractor.



Figure 26 Construction of drainage ditches and OP- 1 slabs above the ditch

93. During the reporting period, work was also carried out on the road to clean previously installed drainage ditches from stones and debris.



Figure 27 Cleaning of drainage ditches

3.8 Installation of parapets and curbs

94. To prevent traffic accidents, as well as for the safety of drivers, reinforced concrete parapets and curbs were installed on the road. "New Jersey" and "Sapojok" type dividing parapets were installed. In total, 2 463 pieces of parapets and 3 220 meters of curbs were installed.

95. Installation, cleaning and strengthening of parapets included welding works, works on concreting of passages between parapets.



Figure 28 Installation of New Jersey type barriers



Figure 29 Installation of "Sapojok" type parapets.

96. During the monitoring, it was found that on the road shoulders, near parapets, a soil waste is accumulated. The contractor was warned about the timely removal of waste. Further, the soil waste was collected from the shoulders in a timely manner and taken out.



Figure 30 Cleaning of parapets from soil waste and removal of waste from the road

97. Road curbs were installed.



Figure 31 Installation of curbs

3.9 Construction of underpasses.

98. There were 3 underpasses at this section. Underpasses were in unsatisfactory condition; major repairs were required.

- existing underpass (km13+426);
- existing underpass (km11+840);
- existing underpass (km10+107).

99. At the underpasses, walls and steps were covered with finishing tiles. The floors were built up and a concrete perimeter pavement was done.



Figure 32 Construction works at the underpasses

100. Metal gratings were installed near constructed underpasses, in the area of markets, and other crowded places, in some place gratings were put on the top of parapets.



Figure 33 Installation of metal grating in road construction sites

3.10 Construction of bus stops

101. Bus stops were constructed and bus bays were asphalted in the project road section. In total, 20 bus stops were constructed.



Figure 34 Construction of bus stops

3.11 Installation of road signs and traffic lights, application of road markings.

102. On the project road section, work was carried out on the installation of road signs and traffic lights, and application of road markings. In total, 9 traffic lights and 384 road signs were installed.



Figure 35 Installation of road signs and traffic lights

3.12 Street lighting

103. Considering that there is no place on both sides of the road for the installation of street lighting poles, it was decided to use a different type of poles, other than at 45.1 km road section.

104. The street lighting poles are located along the central axis between the central parapets, and as a result, more safety was ensured than when the poles were installed on road side.

105. Steel poles were provided for, which means that air cables cannot be used. Underground cables were provided.

106. The foundation of the poles is concrete with anchor bolts.

107. Due to the fact that 2 lamps and 2 supporting arms are fixed to the poles, the wind load increases by 2 times.

108. In total, 274 pieces of lighting poles were installed, 7.4 km of underground cables were laid.



Figure 36 Foundation of street lighting poles and installation of metal poles

3.13 Plants.

109. Production site is located in the territory of Sokuluk ayil okmoty, close to Ak-Torpok village. The area belongs to the industrial and communal zone. Total land area - 10 hectares.

110. The following buildings and structures are located on the site: console control building, stone-crushing plant (SCP), asphalt-bitumen plant (asphalt plant), concrete batch plant (CBP), silos - bin for cement, workers camp, office, eating room, car parking; parking for trucks; storage for fill materials - crushed stone and sand; transformer substation, a platform for the placement of garbage containers, concrete cesspit for sewage.



Figure 37 Production site. Concrete mixing plant. Asphalt bitumen plant

111. Water on the territory of the production site is supplied from an existing well on the basis of Agreement No. 38 “On the provision of a well for temporary use” dated October 10, 2017.

112. The well was restored by the Contractor, a pipeline was laid to the plant. Currently, there are no problems with water at the plant.



Figure 38 Restored well to supply the plant with water

Concrete batch plant.

113. Area of concrete batch plant is intended for the manufacture of reinforced concrete products. Technological process for the manufacture of reinforced concrete structures includes preparation of a concrete mixture and its transportation to the object under construction, its supply, distribution, laying and compaction in the structure, curing of concrete.



Figure 39 Manufacture and preparation of reinforced concrete structures

114. Various reinforced concrete products are manufactured for usage on the road (concrete rings, drainage ditches, curbs, New Jersey type fences, etc.).

Stone-crushing plant.

115. At the production site where plants are located, work is carrying out to crush sand and gravel raw materials and prepare stocks of materials. Raw materials for production of crushed stone and sand are delivered to the stone-crushing plant from Ak-Suu 2 borrow-pit by dump trucks. Crushing of raw material is carried out in crush lines of crushers. Water sprinkling should be done during the crushing, which reduces the emission of inorganic dust by 70%. Sieving is carried out with washing - on vibrocribble screens, transportation is carried out by belt conveyors. The nearest villages are located at a great distance from the production site. There is no impact on the population of villages because of the operation of the plant.



Figure 40 Operation of a stone crushing plant on moistened raw materials

116. *Problems with the stone crusher.* It has been repeatedly found that the stone crushing plant operates without water sprinkling, thus polluting the territory of the plant and the territory adjacent to the plant, causing harm to health and the environment. Several letters of non-compliance were sent to the contractor, but the violation continued. The contractor explained the current situation by breakdowns in pipelines.



Figure 41 Dust in stone crushing plant and the surrounding area

117. At the same time, the requirements of the general conditions of the Contract-Technical Specifications, paragraph 1.2.10 (j), were violated: “Crushing plants should only work with dust control devices”.

118. Water supply has been restored. But this problem recurred periodically throughout the entire construction period.





Figure 42 Preparation of gravel material for the production of concrete and asphalt

Concrete mixing plant.

119. Concrete mix is prepared at a concrete mixing plant and delivered in the finished state for the construction. Concrete production involves mixing cement, sand, gravel and water in the right proportions. Transportation of concrete mix from the place of preparation to the place of unloading or directly to the concreting unit is carried out by road.



Figure 43 Filling the concrete mixing machine with concrete

120. Washing of concrete mixers is carried out on a specially designated site. Wash water is discharged into a special three-section sump. Further, washing water, after settling, is used to sprinkle it on the territory of the production site.

121. Asphalt mixture is prepared in forced mixing asphalt mixers with periodic action and preliminary drying, heating and dosing of mineral materials. The finished asphalt mixture is loaded into dump trucks and transported to road sections.





Figure 44 Washing of concrete mixers

Asphalt bitumen plant.

122. Asphalt mixture is prepared in forced mixing asphalt mixers with periodic action and preliminary drying, heating and dosing of mineral materials. The finished asphalt mixture is loaded into dump trucks and transported to road sections.



Figure 45 Loading of asphalt mixture into dump trucks and unloading into asphalt pavers

123. Initially bitumen was delivered in metal barrels. The barrels were installed on a specially prepared concrete platform.

124. There were problems with the disposal of empty bitumen barrels.



Figure 46 Bitumen in metal barrels stored on a prepared site

125. Further, bitumen pits were rented for the production of asphalt and bitumen was delivered to the territory of the plant by bitumen trucks.

126. During the operation of the plant, all soil around the containers with chemicals must be protected from runoff and spills of hazardous materials by an impenetrable protective coating.

127. The Contractor was recommended to protect the soil around the containers with chemicals from runoff and spills of hazardous materials with an impenetrable protective coating. These recommendations were taken into account and implemented by the Contractor.



Before

After

Figure 47 Impenetrable protective coating around chemical containers

128. Currently, partial dismantling of structures at the plant is being carried out.

129. After completion of the project, the Contractor will remove the equipment within six months, starting in February 2024, and will level the territory; probably only washing pits for concrete mixers will remain, as well as an earthen embankment which was used to load material into the crusher.





Рисунок 48 Dismantling of equipment on the production site

Workers' accommodation camp at the territory of production site.

130. *The camp for specialists and workers* of the Contractor was originally designed for 50 people. Each room is designed to accommodate two workers. There are kitchen room, equipped place for eating, shower rooms, washbasins, and toilets at the camp.



Figure 49 Workers' camp on the territory of the production site

131. In the camp sewage water is discharged into an existing septic tank by pipelines.

132. After the completion of the project, the Contractor within six months, starting from February 2024, will remove equipment, level the territory, probably only washing pits for concrete mixers will remain, as well as earth-deposits that served to load the material into the crusher.

133. The workers' camp is currently being dismantled. Only a few containers left for specialists.



Figure 50 Dismantled camp for workers on the territory of the production site

134. The Contractor's and Consultant's office space, as well as the specialists' accommodation rooms are located at the *Sokuluk Residential Camp*. Household waste and sewage from septic tanks are removed in a timely manner, all protective measures for sanitary hygiene are observed. On the territory of the residential camp, all necessary maintenance measures are observed. The Consultant regularly checks compliance with environmental requirements.

135. After the completion of the project, the Contractor within six months, starting from February 2024, will remove the maintenance facilities and storage facilities. All other premises, as well as toilets, septic tanks, showers will remain unchanged.

136. *Residential camp in the Belovodskoe village*. The contractor leased the camp area until the beginning of 2022.

3.14 Construction waste.

137. During construction work, a large amount of waste was accumulated, including both construction and household waste.

Construction reinforced concrete waste

138. Construction reinforced concrete waste was accumulated during the dismantling of bridges and culvert pipes.

139. In the spring of 2021, together with the local authorities, places were determined for the placement of old reinforced concrete products. Mostly, it were the areas where already been pits.



Figure 51 Reinforced concrete construction waste

Old asphalt

140. During the construction period – **33328,69m³** of old asphalt was removed and taken out. Also **75513,94 m³** of suitable for reuse soil and **1902,41m³** of unsuitable soil was taken out.

141. With the beginning of road works on 7.4 km section, the local population and representatives of local administration, represented by the heads of Novopavlovsky and Voенно-Antonovsky local administration, sent a letter about the removal of old asphalt to the territory of villages, explaining that they needed the removed old asphalt for patching, as well as for backfilling internal and external field roads in the villages of Novopavlovka and Voенно-Antonovka. Earlier, a lot of work was done to improve the internal roads of residential areas "Altyn Ordo", "Ata Zhurt", "Kelechek" and "Dachi" in the village of Voенно-Antonovka.

142. In the process of excavating the old asphalt concrete pavement, the problem of crushing the old asphalt to a size of 20x20 remained unresolved. Given that the villages do not have equipment for leveling large pieces of old asphalt, the problem arose to take out uncrushed old asphalt for backfilling rural streets proposed by local authorities.



Figure 52 Taking out of removed asphalt in the Voенно-Antonovka village

143. Later, by an agreement with the local authorities, it was decided to take out the old asphalt to the streets proposed by the local administration. The problem was that large pieces of uncrushed asphalt remained on the sides of the backfilled roads. Considering this fact, the Contractor leveled the old asphalt with its own equipment. Separate places were noted where, after the backfilling and levelling works, uncrushed pieces of asphalt left on the roadsides. The contractor was given instructions to correct and bring to the proper condition the found shortcomings. There were no complaints from the local population regarding the disposal of the removed asphalt.





Figure 53 Streets backfilled with old asphalt

144. The specialist of the Contractor *Koichumanov Adilet* was responsible for the disposal of old asphalt on the 7.4 km section.

145. A letter was received from the ADB stating that in order to avoid harm to the health of local residents, it is prohibited to give old asphalt to local residents for their own use. This requirement has been met. Asphalt was also not taken out to wetlands.

Unsuitable soil and soil suitable for reuse

146. During the reporting period, the top soil was removed and taking out, as well as unsuitable soil was removed. Soil unsuitable for road construction was taken out to areas allocated by local authorities.

147. At the soil storage site, the soil layer was initially removed and stored. Then the unsuitable soil in the villages of Voенно-Antonovka and Novopavlovka was stockpiled in dumps. Then the unsuitable soil was relocated to a prepared site in a ravine. Partially it was levelled. After completion of all work, the soil was evenly spread on the surface of the dump.





Рисунок 54 Storage and levelling of unsuitable soil in the villages of Voенно-Antonovka



Figure 55 A levelled site for taking out of soil in the village of Voенно-Antonovka

Production waste

148. On the territory of the asphalt plant, waste was accumulated during the production of asphalt. Basically, these were empty barrels from used bitumen. The barrels were partly used for construction work on the road, most of them were sold for scrap. There were problems with the disposal of barrels.





Figure 56. Waste on the territory of the asphalt plant. Waste barrels and metal drum lids

149. Later, it was decided to deliver bitumen by bitumen trucks from rented bitumen pits; bitumen no longer was delivered in barrels.



Figure 57 Filling of asphalt plants' tanks with bitumen using bitumen trucks

150. Production waste also included old car tires and scrap metal waste, which were removed and disposed of under an agreement with specialized companies.



Figure 58 Old car tires to be recycled

Household waste

151. Household waste is mainly accumulated in workers' camps. Both solid and liquid household waste are accumulated.

152. Household solid waste consists of packaging materials, paper and cardboard, dry waste, plastic and glass, as well as food waste, which is pre-collected in plastic bags. Liquid household waste is wastewater from living rooms and kitchens.

153. Solid household waste is collected unsorted into garbage containers with a capacity of 1 m³ and taken out weekly by Sokuluk and Moskovskiy checkpoints with which a service agreement has been concluded. Liquid household sewage is collected in septic tanks, pumped into tank trucks owned by the district waste transportation companies and transported to the district wastewater treatment plants.

3.15 Review of monitoring conducted during the reporting period

Review of visual monitoring carried out during the reporting period

154. During the reporting period, regular visual monitoring was carried out to monitor compliance with the requirements of environmental legislation and the requirements of the SEMWP during construction work on the Bishkek-Kara-Balta Road. Monitoring was carried out by environmental specialists of the Consultant, Contractor and PIU. The number of visits to the project road by these specialists is shown in Table 6. The table shows only joint visits by the Contractor's and Consultant's specialists. In fact, the Contractor's specialist regularly visited construction sites.

Table 6 Number of visits to the project road by environmental specialists

Year	Consultant's Environmental Specialist	Joint visits by environmental specialists of Contractor and Consultant	PIU's Environmental Specialist
2021	52	78	42
2022	41	62	43
2023	24	12	16

Review of laboratory monitoring conducted during the reporting period

155. Taking into account that the environmental monitoring is an important component of the CEMWP, laboratory monitoring of environmental components started on the project road before construction in 2013 in order to determine baseline indicators such as air quality, noise impact, vibration impact. Environmentally sensitive receptors located along the project road have been determined and measured throughout the construction period.

156. In order to monitor environmental components such as air quality, noise impact, vibration impact during the construction period on the Bishkek-Kara-Balta Road section, applications were sent to several laboratories and their prices were analyzed.

157. Based on the analysis of the prices for laboratory study, the following laboratories were selected:

- *Air quality*: Department of Environmental Monitoring under State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic;
- *Noise impact*: Private laboratory LLC "ProfiLab";
- *Vibration impact*: Private laboratory LLC "ProfiLab";

158. Since 2020, the Department of Environmental Monitoring under State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic has been renamed into the laboratory of the Department of Environmental Monitoring under the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic.

159. In 2019, the Consultant transferred the functions of environmental monitoring to the Contractor.

Air quality monitoring

160. Air quality monitoring had been conducted from 2013 to 2023. Sampling points were chosen at sites where construction work was carried out, taking into account the points of environmentally sensitive receptors.



Figure 59 Air quality monitoring

161. *Conclusion based on the results of air quality measurements:* according to the results of air quality tests, the maximum permissible concentration (MPC) was exceeded for nitrogen dioxide up to 2.5 MPC. This excess was observed regularly from the very beginning of the monitoring on the project road, starting in 2013, even before the start of construction.

162. In almost all samples taken, dust content was exceeded.

163. The contractor was informed that the more effective dust control measures need to be taken.

164. It should be noted that the excess of dust content in the air was also observed in 2013 before the start of construction work on the road, in this regard, it cannot be said that the cause of this excess is only construction work.

Surface water quality monitoring

165. Monitoring of surface water quality at 7.4 km section was not carried out due to the absence of watercourses in this section.

Noise and vibration associated with earthworks and road works

166. During the construction period, noise and vibration monitoring was regularly conducted in the areas of construction work by the private laboratory of ProfiLab LLC.

167. Noise and vibration monitoring was also carried out in the workers' camp on the territory of the plant. In the workers' camp on the territory of the asphalt plant, during the operation of the concrete mixing plant, no noise level was exceeded.



Figure 60 Noise and vibration monitoring

168. *Conclusion based on the results of measurements of background noise and vibration level:* at the time of the measurements, the background noise level at the measurement points at a distance of 5–41 m from the edge of the road when vehicles were passing was 61–83 dBA while maximum permissible level is 75 dBA. When the construction equipment was operated, the excess of the sanitary norm was from 5 to 10 dBA, and when the construction equipment was turned off, the noise level exceeded the sanitary norm by up to 2 dBA. These indicators were short-term.

169. According to the results of instrumental measurements, the vibration level during the operation of the drum roller is from 83 to 101 dBA, and when it was turned off, it ranges from 78 to 82 dBA. Background vibration is between 76 and 79 dBA. Note: vibration level except for residential area and workplaces is not standardized.

170. *Conclusions:* When analyzing the results of monitoring of environmental components, it is necessary to take into account that the project road section is located in a densely populated area with a large flow of vehicles. Therefore, when analyzing the impact of construction work on the environment, it was necessary to take into account indicators of background levels.

171. Having analyzed the results of the monitoring carried out, and taking into account the background levels, the construction works did not have a significant impact on the environment. Taking into account the

annual increase of vehicles on the project road section, indicators of background levels of environmental components will grow every year.

Table 7 Dates of environmental components monitoring during construction work on the 7.4 km section

Air quality monitoring	Noise impact monitoring	Vibration monitoring
Laboratory of DEM 14.05.2021	Laboratory "Profilab" 28.04.2021	Laboratory "Profilab" 28.04.2021
Laboratory of DEM 16.11.2021	Laboratory "Profilab" 01.09.2021	Laboratory "Profilab" 01.09.2021
	Laboratory "Profilab" 29.11.2021	
Laboratory of DEM 07.07.2022	Laboratory "Profilab" 29.04.2022	Laboratory "Profilab" 29.04.2022
Laboratory of DEM 20.09.2022	Laboratory "Profilab" 02.09.2022	Laboratory "Profilab" 02.09.2022
Laboratory of DEM 10.05.23	Laboratory "Profilab" 17.05.2023	

DEM - Department of Environmental Monitoring under the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic

4. INFORMATION ABOUT CONSTRUCTION PROGRESS ON THE 7.4 KM SECTION. INFORMATION ABOUT THE GOOD PROCESSES AND PROBLEMS OCCURED DURING CONSTRUCTION.

172. To date, all necessary actions to finish the project activities were completed. The outstanding works on the construction of sidewalks, bus stops and junctions were completed. Application of road markings on junctions completed (see Table 8).

Table 8 Work progress at 7.4 km section

Section	Items	UoM	Total quantity	Completed quantity	% of completion	
km 8+500 - km15+900	1	Tree planting	pcs.	1000	1000	100,00%
	2	Strengthened shoulder	km	10,00	10,00	100,00%
	3	Concrete curb stone / curb BR100.30.18	km	5,54	5,54	100,00%
	4	Bridge instead of D2X1.5m culvert	pcs.	1,00	1	100,00%
	5	Longitudinal ditches	km	11,9	11,9	100,00%
	6	Sidewalk	km			
		Cleaning and subbase	km	11,7	11,70	100,00%
		Curb stone	km	11,7	11,70	100,00%
		pavement	km	11,7	11,70	100,00%
	7	Bus stop	pcs	20	19	100,00%
	8	Junction base	pcs	83	83	100,00%
	9	Junction binder course	pcs	83	83	100,00%
	10	Junction wearing course	pcs	83	83	100,00%
	11	Junction shoulder	pcs	83	83	100,00%
	12	Traffic light				
		Pole foundation	pcs	9	9	100,00%
Pole installation		pcs	9	9	100,00%	
Installation of lamps		pcs	9	9	100,00%	
Cable connection		km	9	9	100,00%	
13	Road signs	pcs.	384	384	100,00%	
14	Road marking	km	14,80	14,80	100,00%	
15	Reflective elements on parapets	km	7,40	7,40	100,00%	
16	Protective concrete slope on culvert	pcs.	8,00	8,00	100,00%	

173. Until the completion of work on 7.4 km section activities will continue at the plants' location site and in the Contractor's camp in the village of Sokuluk.

174. With the start of road works, there were problems with crushing old asphalt to a size of 20x20 during excavation. Given that the asphalt was taken to the road in large pieces, and that in the villages there is no equipment for leveling large pieces of old asphalt, the problem arose of taking out of uncrushed old asphalt for backfilling rural streets proposed by the local authorities. In this regard, some local administrations refused to taking out the removed asphalt to rural streets. There was a problem in choosing sites for storing the removed asphalt.

175. Another problem was the untimely removal of construction and production waste. It was necessary to give instruction to the Contractor, both verbally and in writing, about the removal of accumulated waste.

According to information from the Contractor, the problem of timely removal of accumulated construction waste was because of busyness of the contractor's equipment at the main works.

176. During the construction period, dusting was periodically observed at the stone crushing plant. The main cause of dusting during the operation of the crusher was clogging of spray nozzles or failure of water pipes.

177. Throughout the construction period, there were cases of non-compliance with safety precautions, especially when working under a crane and working at height. On the part of the consultant, constant monitoring was carried out on a regular basis for compliance with safety precautions. Regular safety trainings were conducted, however, on the part of the contractor's working personnel, the requirements for compliance with safety precautions during the performance of work were ignored.

178. A positive example in the construction of the project road was planting of tree seedlings. Considering that there are practically no places left on the project road for planting new seedlings, with the approval of ADB, the local administration and the mayor's office of Kara-Balta city proposed places for planting seedlings such as park areas and school areas, while further work on planting and caring for seedlings was undertaken to be carried out by themselves. The total number of seedlings handed over was 930 pieces.

179. Another positive example is that the problems found during the operation of the road were eliminated, which improved the quality of the constructed structures. An example is extended roofs on underpasses to prevent icing on the steps, installed metal gratings above the parapets in particularly dangerous places to prevent the population from jumping over the parapets, creating an emergency situation on the road, built steps with handrails on slopes in pedestrian crossings.

180. Also, good practice example is that anti-shock buffers were installed on the road to prevent traffic accidents and prevent loss of life. 7 buffers were installed at the project section.

181. The buffers are filled with sand, have a height of 80 cm, a diameter of 55 cm and a weight of 200 kg. The buffers are installed next to the parapet on the road, have a reflective film and are therefore visible from afar at night.

182. In case of an accident, buffers can withstand hits and deformations, reducing damage to vehicles and ensuring the safety of passengers.





Figure 61 Examples of good practices

5. CONCLUSIONS AND RECOMMENDATIONS.

183. The Contractor did not fully or timely implement the environmental protection measures provided for in the CEMWP, despite regular trainings conducted by the Consultant's international environmental specialist. After analyzing the observed noncompliance, we can conclude that in the future, in order to exclude such facts, contractors involved in similar projects need to build a clear chain of command and compliance with the CEMWP requirements.

184. According to the terms of the contract, the observed noncompliance and requirements to eliminate the found violations were given by the Consultant to the Contractor on a regular basis in writing and orally.

185. Taking into account the fact that the Contractor, during the construction work, did not always eliminate the found noncompliance within the specified time frame, the Consultant was not able to apply any measures other than the suspension of work. It is necessary to take into account this experience and “include” additional impact mechanisms when preparing contracts in future projects in order to have more effective “leverage” to encourage the Contractor to take the necessary environmental measures without repeated warnings and prevent negative consequences in advance. One of such effective mechanisms can be clauses in the contractor's contract regarding the application of penalties, which will increase the contractor's responsibility for compliance with environmental requirements.

186. Future contracts should take into account the conditions for the removal and disposal of old asphalt. It is advisable to send it for reuse, so it is important to record the sizes of the removed pieces of asphalt that will be possible to use.

187. Until December 2023, the Contractor should hand over Ak-Suu-2 and Belek borrow pits to the reclamation commission. To dismantle equipment at the production site where plants are located and the Contractor's camp site in the Sokuluk village.