Semi-annual environmental monitoring report

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January - June 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 KR	-	Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
DDPTSSES	-	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 **twelvths** semi-annual environmental monitoring report covering period from January to June 2023, under the ongoing 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 January to June 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 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.

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 benefits 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 China Railway No.5 company was selected for the implementation of project component 1. On March 28, 2017, Civil Works Contract was signed between the Ministry of Transport and Roads of the Kyrgyz Republic and China Railway No.5 for civil works. The overall 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. 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 amounts to 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 on Commencement of Works was issued on November 19, 2020.

8. On May 31, 2020, the 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 11-5-2020.

Revision of Bishkek-Kara-Balta Road Rehabilitation Project.

9. Initially the road's designed length was 52,5 km length. Feasibility Study (FS) 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. Feasibility Study set out approximated cost of the Project based on the preliminary topographic survey at a scale of 1:2,000 and geotechnical studies conducted. Following the FS decided to allocate 100 M USD, 65M USD out of which is loan money and 35M USD - grant. Co-financing by the Government of the Kyrgyz Republic is 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 1:1,000) 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 connection, 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 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, the overall length of the project road is now 45.1 km. The reduction of the specified site 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 amounts to 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.

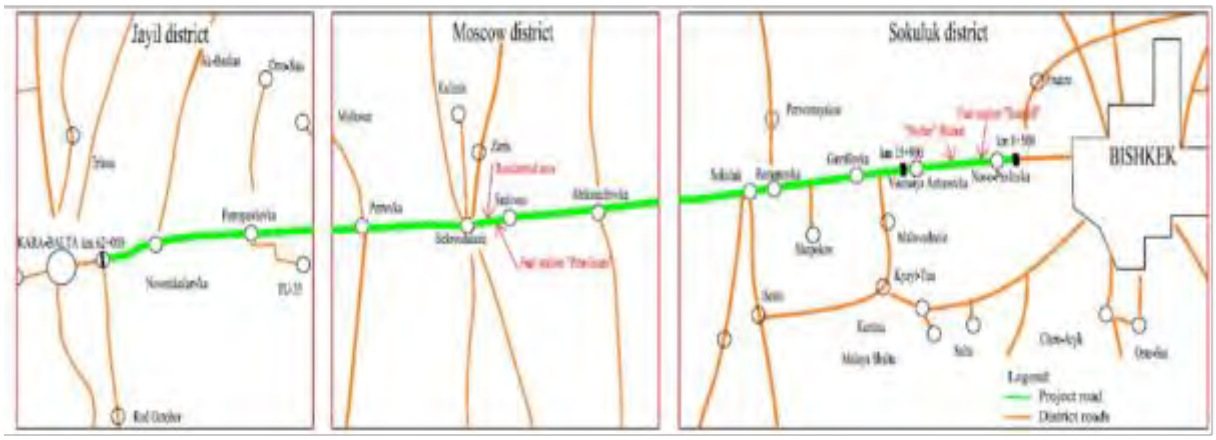


Figure 1 Administrative districts of project road

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 reconstruction 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 the asphalt plant, crushing and screening plant, arrangement of work camps and warehouses 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 recipients 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 are no or there are 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 will be 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.

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), 18th 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 a) evidence of Insurance b) relevant policies		28 days 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

INTERNATIONAL STAFF	
Resident Engineer-Team Leader	Kenan Kose
Pavement and Materials Engineer	Eray Gamgam
Social Development and Resettlement Specialist	Md. Nurul Hoque
Contract Specialist	Mahmut Nedim Altay
Environment Specialist	Dr. Md. Mohsin Almaji
PBM Engineer	Seyfettin Akinci
NATIONAL STAFF	
Social Development and Resettlement Specialist	Dolgov Yirii
Road Safety Specialist	Begaliev Soolot
Materials Engineer	Sadykov Nurlan
Quality Assurance Engineer	Mamyrkulov Sabyrbek
Structural Engineer	Turdubaev Shekirbek
Inspector	Choibekov Bazarbek
Surveyor	Bokonbaev Turatbek
Surveyor	Baiguchukov Manas
Quantity engineer	Abylbekov Abai
laboratory assistant	Zholdoshev Ruslan
laboratory assistant	Minazarov Dyikan
laboratory assistant	Abdykaparov Pamir
Estimator – quantity engineer	Kozevnikova Setlana
Translator	Glinov Vyacheslav
Office manager	Kalil uulu Suiun
Environmental Specialist	Tatiana 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 – 2.5м
- Carriageway shoulder breakpoint stabilization – 1.0m
- Axle design weight – 11,5 tones.

22. Over 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:

- Wearing course 5cm thick – 46,692m3;
- The same in junctions 5cm thick – 4,169m;
- 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 chutes – 77661 linear meters;
- Intersections and junctions – 477 units;
- The design provides for parking lots 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 posts
- Lighting poles – 2190 pcs
- Gas casings – 650 linear m.

Vegetation Planting

24. Almost throughout its' entire length the project road was planted with trees on both sides, most of them were cut down during the rehabilitation of the road. Tree cutting is a "forced" measure. Trees located in areas of roadbed widening, construction of sidewalks and drainage ditches are fall under "forced" cutting at km15,9 – km61 section. The total number of trees that fell under forced cutting was 5 812 at 45.1 km section. On the 7.4 km road section, 504 trees were cut down. As compensation measures, to restore the number of green spaces, it was planned to plant new tree seedlings at the ratio of 1:2. To date, 12325 tree seedlings have been planted, including 11625 on the 45.1 km section and 700 pieces on the 7.4 km section. In the spring of 2023, in total 2125 seedlings were planted.

Land Acquition and Ressetlemnt Plan.

25. The project site passes through densely populated areas. The project provides for the demolition of commercial services, pavilions, billboards, service stations, gas stations, fences and houses that will be 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 106 affected persons, including owners and users of land, business owners, tenants and employees.

2.2.2 Main Organizations Involved in the Project.

26. 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 Communictaions 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* – ensuring environmental safety, strengthening environmental protection measures and reducing climate risks, 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 environmentals 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 «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
11	LLC《Chuan Syang》	Application of road signs	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru

12	LLC《Vokko》	Installation of road signs	Uzbekov Kanatbek	kanatbek.uzbekov.88@mail.ru

2.3 Project activities during the current reporting period.

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

Section		Activity list	Unit	Total Quantity	Completed quantity	Completion %	Remark
Km 8+500 - Km 15+900	1	**Planting trees**	Ea.	1000	700	70,00%	300 Pcs will be arranged at Oct.
	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	Remaining clean-up	0,00%	
	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	19	95,00%	1 isn't decided yet
	8	**Junction base**	Ea.	83	83	100,00%	
	9	**Junction binde rcourse**	Ea.	83	83	100,00%	
	10	**Junction wearing rcourse**	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	350	91,15%	
	14	**Road marking**	km	14,80	14,30	96,62%	Just 218 pcs arrows left 10 days work
	15	**Lights reflecting element of parapet**	km	7,40	7,40	100,00%	
	16	**Protection concrete slope of pipe culvert**	Ea.	8,00	7,00	87,50%	
	1	**Sidewalk**	km	82,12	82,12	100,00%	

KM15+900-KM61+128	2	**Bus Stop**	Ea.	113	113	100,00%	
	3	**Junction**	Ea.	385	385	100,00%	additional work (2 Junctions)
	4	**Road marking at Junction**	Ea.	385,00	385,00	100,00%	
Defects	1	**Road Signs**	Ea.	repairing the broken ones due to the accident,102 pcs			
	2	**Road marking**	km	repairing the road marking at rutting area			

2.3.1 Road construction works

27. In January 2023, the Consultant's local environmental specialist prepared eleventh semi-annual environmental monitoring report, which has been submitted to ADB for consideration and approval.

28. 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;
- construction of bus stop pavilions and asphalting of bus bay area;
- continuation of construction work at junctions;
- laying expansion joints and waterproofing of sidewalks on bridges;
- at the underpasses work continued to ensure drainage from outside at the portals;
- strengthening of shulders;
- removal of deformed asphalt and laying new asphalt, where rutting was developed;
- planting, care, and watering of seedlings.

29. During the reporting period, work continued to clean area near the parapets from soil waste. Soil accumulated near the parapets during the winter period was cleaned and removed.

30. Deformed asphalt where rutting was developed was removed and the new asphalt was laid.

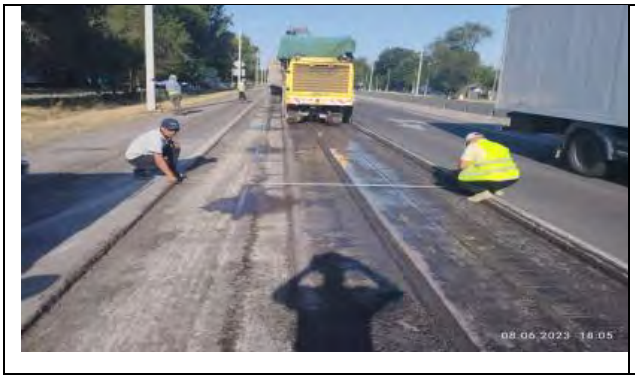


Figure 3 Milling and laying wearing course, removing ruts on the road

31. On the bridges over the Sokuluk River, Jelamysh River, and mudflow canal, expansion joints were laid and sidewalks were waterproofed.

Figure 4 Construction work on the Jelamysh bridge and on the mudflow canal

Figure 5 Construction work on the bridge over Sokuluk River

32. Bus stop pavilions were installed and bus bay area was asphalted.

Figure 6 Construction of bus stop

33. Jointing passages were constructed to connect pedestrian crossings and sidewalks.

34. Where there are sidewalks with large slopes steps were constructed.

Figure 7 Construction of jointing walkways

35. During the reporting period, work continued to strengthen road shoulders.

Figure 8 Stregthening of shoulders

36. Application of road marking was continued.

Figure 9 Application of road marking

37. At the **7.4 km** section the following works were carried out:
- construction and concreting of bus stops;
- installation of drainage ditches,
- construction of shoulders,
- construction of sidewalks,
- construction of junction to adjacent streets;
- construction and finishing work at the underpasses;
- application of road marking.

38. Sidewalks were constructed, the works included installation of curbs, preparation of area and asphalting.

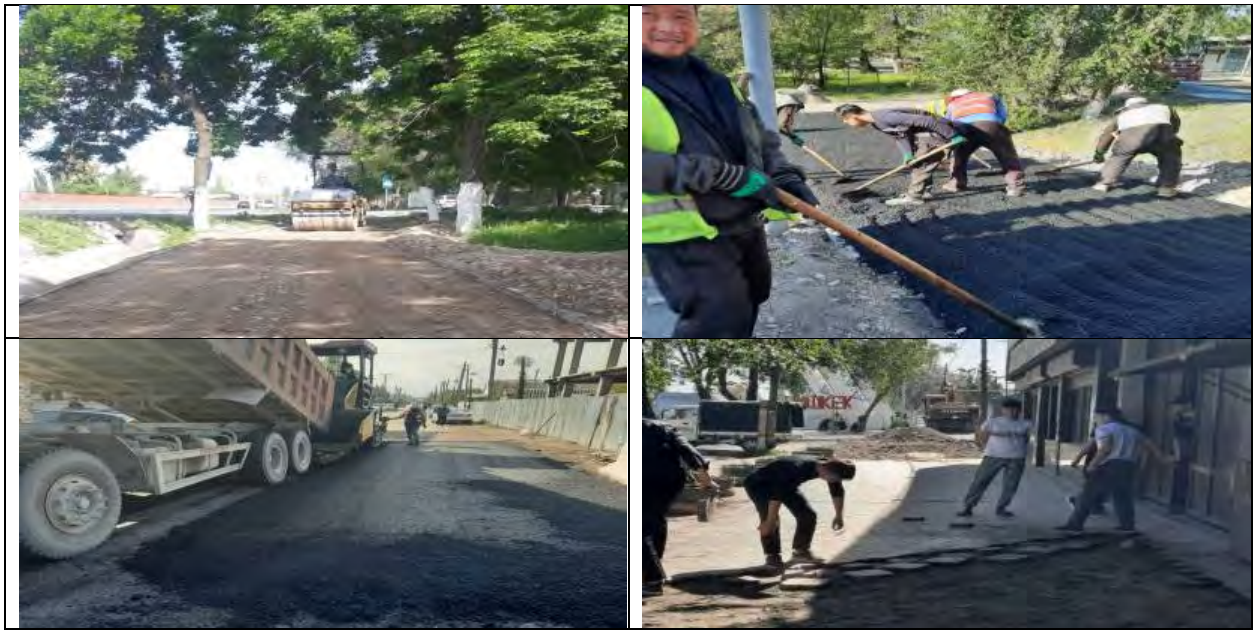


Figure 10 Construction of sidewalks

39. Subcontractor continued to install drainage ditches.

Figure 11 Installation of drainage ditches and OP-1 slabs above the ditches

40. Installation of curb stone also continued.

Figure 12 Installation of curb stones

Figure 13 Intallation of curbs of Sapojok type

41. Construction of junctions to adjacent streets continued.

Figure 14 Construction of junctions to adjacent streets

42. Bus stops were constructed and bus stop areas were asphalted.

Figure 15 Construction of bus stops

43. Work continued on underpasses. Roofings were built up, walls and steps were finished, and surrounding area was concreted.

Figure 16 Work at the underpasses

44. Road signs and traffic lights were installed, and road marking was applied on the project road section.

Figure 17 Installation of road signs and traffic lights

2.3.2 Borrow pits.

45. 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 the borrow-pits mining from local authorities, the State Committee for Industry, Energy and Subsoil Use and State Agency for Environmental Protection and Forestry (SAEPF).

46. The number 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.

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

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

49. Table 8 gives main detail information about borrow pits.

Table 8 Borrow pit details

No. of borrow-pit	Stocks (m^3)	Area (ha)	Distance from the road (km)
No.1 «Jelamysh»	242 093	10,77	11
No.2 «Sokuluk -1»	185 000	9,02	3,3
No.3 «Sokuluk -2»	185 000	9,7	7,7
No.4 «Ak-Suu -1»	210 000	11,89	2,5

No.5 «Ak-Suu -2»	850 000	68,19	8,6
No.6 «Kara-Balta»	275 323	73,70	3,5
No.7 «SAZ»	197 600	5,2	14.5

50. During the conclusion of agreement with Krupskoy aiyl 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 mining of Sokuluk-1 borrow-pit was rejected, and the area of Sokuluk-2 borrow-pit was reduced to 1.73 ha.

51. After testing the material quality of Sokuluk-2 borrow-pit by 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 the roadbed, in this regard, the mining of Sokuluk-2 borrow-pit was suspended.

52. For mining, a Saz borrow-pit was proposed, which is located on the territory of the Saz area of the Sokuluk district.

53. Ak-Suu-1, Ak-Suu-2, and Karabalta borrow pits belong to self-reclaimed category borrow pits since they are located in floodplains of rivers that are subject to mudslides.

54. ***Saz borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Sokuluk district.

Figure 18 Development of Saz borrow pit

55. In May 2023, the borrow pit was reclaimed, and on June 9, 2023, the reclaimed Saz borrow pit was handed over to the Reclamation Commission.

56. ***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. The road to the Ak Suu 2 borrow pit bypasses settlements.

57. At the beginning of borrow pit development, dusting was observed both on the territory of the borrow pit area and on the road leading to the it. After written warnings, the Contractor allocated 2 watering machines for regular water sprinkling at the borrow pit area, and on the road leading to it. In the reporting period, dusting was not observed during work at the borrow pit.

Figure 19 Dusting during work at the Aksuu 2 borrow pit. In the foreground, the removed soil layer.

Figure 20 Development of the Ak-Suu 2 borrow pit on moistened material

58. The borrow pit will operate until the completion of work on the 7.4 km section. Subsequently, it will be reclaimed and handed over to the Reclamation Commission until November 2023.

Figure 21 Water sprinkling on the access road to the Ak-Suu2 borrow pit.

59. ***Ak-Suu 1 borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Moskovskiy district. To date, the borrow pit has been reclaimed and is ready to be handed over to the Reclamation Commission.

Figure 22 Ak-Suu1 borrow pit. Further, the removed soil layer was used for reclamation

60. ***Kara-Balta borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Jayilskiy district. On August 24, 2021, the reclaimed land on the Kara-Balta borrow pit was handed over to the reclamation Commission.

61. ***Jelamysh borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Sokuluksiy district.

62. To develop the borrow pit, it was necessary to repair the technological road of more than 10 km long - its condition was unsatisfactory. In addition, it was necessary to replace with a new one or repair the old bridge, with a carrying capacity of 25 tons (for the passage of loaded dump trucks). Access road and bridge were repaired before development of borrow pit.

Figure 23 Jelamysh borrow pit before development

Figure 24 Jelamysh borrow pit after reclamation

63. After the completion of the borrow pit development, a Borrow pit reclamation plan was prepared, according to which it was reclaimed.

64. The reclaimed borrow pit was handed over to the commission in December 2021.

65. **Kara-Balta borrow pit**. The reclaimed land on the Kara-Balta borrow pit was handed over to the reclamation Commission on August 24, 2021.

66. Ak-Suu1 and Ak-Suu2 borrow pits should be reclaimed before the completion of the project and handed over to the Reclamation Commission. Given that the defect liability period for the CAREC 3 Transport Corridor Improvement Project (Bishkek-Osh Road), Phase 4, 45.1 km Section, has been extended until August 30, 2023, the reclamation of these borrow pits will begin in the spring of 2023.

67. During the reporting period at km 8.5 - 15.9 (7.4 km section) inert materials were extracted only at the **Belek borrow pit**.

68. **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. The material was supplied directly to the construction of road for levelling works. Subsequently, it will be reclaimed and handed over to the Reclamation Commission until November 2023.

Figure 25 Development of Belek borrow pit

Figure 26 Dust suppression (water sprinkling). Road to the Belek borrow pit

2.3.3 Plants.

69. 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.

70. 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 27 Production site. Concrete mixing plant. Asphalt Bitumen Plant

71. 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, a pipeline was laid to the plant. Currently, there are no problems with water at the plant. In the photo, the fenced area of the well.

Figure 28 Rehabilitated well to supply the plant with water

Concrete Batch Plant.

72. Area of concrete batch plant is intended for the manufacture of reinforced concrete products. The technological process for the manufacture of reinforced concrete structures, includes the 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.

73. During the reporting period, a concrete mixture was produced at the production site, which was mainly used at the concrete batching plant for the manufacture of reinforced concrete structures.

Figure 29 Manufacture of reinforced concrete structures at the plant

74. Various reinforced concrete products are manufactured for use on the road (concrete rings, ditches, curbs, fences such as "New Jersey", etc.)

Stone-crushing plant.

75. At the production site where plants are located, work is being carried 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.

76. During the reporting period, the stone crushing plant operated on moistened raw materials without dusting. Moistening of inert material before crushing is sufficient for dust suppression. The nearest villages are located at a big distance from the production site. There is no impact on the population of villages because of the plant operation.

Figure 30 Stone crushing plant

Figure 31 Preparation of gravel material for the production of concrete and asphalt

Concrete mixing plant.

77. 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 32 Filling the concrete mixing machine with concrete

Asphalt bitumen plant.

78. 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 33 Loading of asphalt mixture into dump trucks and unloading into asphalt pavers

79. Lease agreement for the territory of production site with the Ministry of Emergency Situations completes at the end of 2024. 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, a septic tank, and the remnants of inert material will remain, as well as an earthen bank that served to load the material into the crusher.

Camps for workers residence.

80. The workers' accommodation camp is located on the east side of the production site in accordance with the requirements of safety and sanitary and hygienic standards. During the reporting period, 16 workers and specialists lived in the camp.

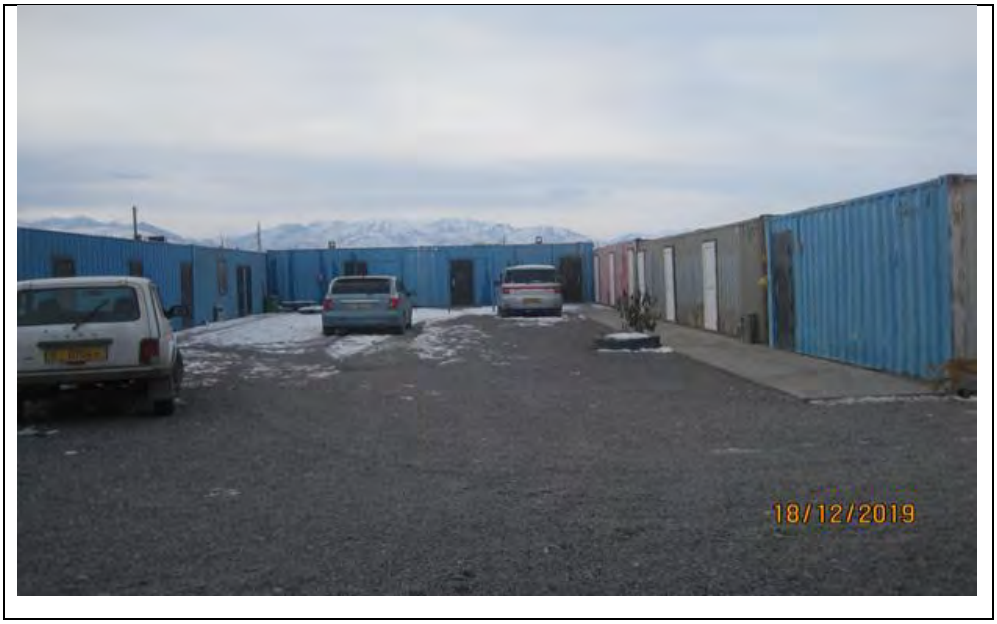


Figure 34 Workers ' accommodation camp on the territory of the production site

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

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

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

84. 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 measures for maintenance are observed. The Consultant regularly checks compliance with the environmental requirements.

85. 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.

86. *Residential camp in the village of Belovodskoye*. Contractor leased the camp area until early 2022. At the end of the specified period, the territory was handed over to the landowner.

87. Sanitary and hygienic and anti-epidemic requirements for ensuring favorable living conditions in the camps are established in order to preserve the health of workers and contribute to optimizing their livelihoods.

2.3.4 Tree management.

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

89. 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. On the part of the State EcoTechInspection under the GKR, checks were also carried out to control the presence of all permits for cutting trees. As compensation measures, to restore the number of green spaces, it was planned to plant new tree seedlings at ratio of 2:1.

90. 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, where the main road works such as construction of sidewalks and installation of drainage ditches have been completed.

91. To date, 12 325 young seedlings have been planted.
In March 2023, in total 2 125 seedlings were planted, including 700 on the 7.4 km section.
92. In total,

93. 8 480 seedlings were given to the local authorities (ayil okmotu) and major office of Kara-Balta city, according to their applications to give seedlings for planting in organized park areas and schools, on road sections that are located on their territories, while they will carry out further work on planting and caring for seedlings themselves.

Figure 35 Planting of seedlings in spring 2023

94. 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 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 manner.

95. It has also been found that, to date, the Contractor has not watered the seedlings, as specified in letter No.0541BOC3 55/3350-00592 dd 24.04.2023.

96. 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.

2.3.5 7.4 km section (km 8,5 – 15,9).

97. As of June 2023, in total 504 trees were cut down on this section of the road.

98. Trunks of cut down trees were taken out by the Contractor to storage areas alocated 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.

99. In the spring of 2023, in total 700 seedlings were planted on the 7.4km section.

2.3.6 Road maintenance in winter 2023.

100. In the winter period of the 1st quarter of 2023, the Contractor carried out road maintenance work.

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

102. 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.

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

Figure 36 Sand sprinkling on the road. Control of ice

2.3.7 Information about personnel.

104. 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.

105. In the first half of 2023, maximum 179 people worked for the Contractor on the road construction, of which 154 are local workers, and 25 are citizens of China.

2.4 Description of any project changes.

106. 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 under the 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 Suplementary Initial Environmental Examination (IEE) was conducted for this road section that has been disclosed at ADB website in November 2018.

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

108. 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.

109. However, during the conclusion of agreement with Krupskoy aiyl 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.

110. 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.

111. Saz borrow-pit was proposed, located on the territory of the Sazskiy ayil okrug of the Sokuluk district, and the development of which was carried out during the work on the territory of the Sokuluk district.

112. At km 8.5 - km 15.9 section, given that 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 will ensure more safety than if poles will be installed 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 should be concrete with anchor bolts.

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

114. 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.

115. 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.

116. On the 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.

117. 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.

118. 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.

119. 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.

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

121. 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.

122. 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.

123. 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.

124. 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.

125. Visual monitoring over compliance with the requirements of environmental legislation during construction work on the Bishkek-Karabalta Road in the reporting period have been carried out starting March 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.

126. 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 during the reporting period.

127. 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 drainage ditches;
- installation of bus stops and asphalting of bus bays;
- construction works on junctions continued;
- laying of expansion joints and waterproofing of sidewalks on bridges;
- at the underpasses work continued to ensure drainage at the portals;
- work continued to strengthen the road shoulders;
- removal of the deformed asphalt and laying new asphalt, where rutting was developed;
- planting, care and watering of seedlings.

128. During the reporting period, work continued on the road to clean parapets from soil waste. Soil accumulated near the parapets during the winter period was cleaned and removed.

Figure 37 Cleaning parapets from soil waste and removal of waste from the road

129. During the monitoring, it was found that on the road shoulders, where the work was carried out to strengthen 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 taken out. In the future, the soil accumulated near the parapets was cleaned and removed in a timely manner.

130. During the reporting period, new drainage ditches were installed and previously installed ones were cleaned from stones and debris.

Figuure 38 Cleaning drainage ditches

131. Welding work was carried out on the parapets, and concreting cuts on the passages between the parapets.

Figure 39 Works on concreting cuts on passages between parapets

132. Jointing passages were constructed to connect pedestrian crossings on the carriageway and sidewalks.

Figure 40 Construction of jointing walkways

133. Steps were constructed on passages with large slopes.

134. During the reporting period, completion works were carried out on the underpasses. Walls and steps were covered with finishing tiles. Ceilings were built up, walls were finished, and a concrete pavement perimeter was constructed. The area around the underpass near the school in the village of Novonikolaevka (km 59+640) was in an unsatisfactory condition. It was difficult for schoolchildren to go down to this underpass, especially in icy conditions, which could cause falls and injuries. A letter was sent to the contractor to eliminate these violations.

135. The violations were eliminated. A reinforced concrete pavement perimeter was constructed around the crossing, and the roof of the ceiling was built up. Metal gratings were installed on the road near the crossing.

Before **After**

Figure 41 Violations near the underpass opposite the school in the village of Novonikolaevka

Figure 42 Installation of a metal grating near underpasses

136. Adults and children are currently crossing the road using underpasses.

Figure 43 Underpass in the Sokuluk

137. After the completion of the construction work, a large amount of soil, construction waste, and reinforced concrete structures remained in the Jelamysh riverbed.

138. A letter was sent to the contractor to remove all construction waste from the riverbed as soon as possible. The issue was resolved, construction waste was removed from riverbed.

3.1.2 Borrow pits.

139. **Belek borrow pit.** During the reporting period, the extraction of inert materials was carried out only at the Belek borrow pit at km 8.5 - 15.9 section (km 7.4 section). The material was delivered directly for the construction and levelling the road. The area of the borrow pit and the road leading to it are regularly sprinkled with water in order to suppress dust.

Figure 44 Development of Belek borrow pit

140. ***Saz borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Sokuluk district.

141. In May 2023, the borrow pit was reclaimed, and on June 9, 2023, the reclaimed Saz borrow pit was handed over to the Reclamation Commission.

142. ***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. The road to the Ak Suu 2 borrow pit bypasses settlements.

143. The borrow pit will operate until the completion of work on the 7.4 km section. Subsequently, it will be reclaimed and handed over to the Reclamation Commission until November 2023.

144. ***Ak-Suu 1 borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Moskovskiy district.

145. Currently, there are no works on the extraction of inert materials. The borrow pit has been reclaimed, it is necessary to hand over the borrow pit to the commission.

3.1.3 Plants.

146. Territory of the plant is located in the bed of the Ak-Suu River on a pebble foundation, which is characterized by a high value of the filtration coefficient. To exclude soil contamination on the production site with bitumen and other chemical reagents that can get into the underground aquifer, the contractor was given clear instructions on the need to immediately clear the areas of bitumen and other chemical reagents leaks. This issue is under constant control by the Consultant.

Activities on the area where plants are located.

147. At the production site where plants are located, work was carried out to crush sand and gravel raw materials and prepare stocks of materials.

148. During the reporting period, the stone crushing plant operated mainly on moistened raw materials without dusting.

149. On May 22, 2023, it was found that the stone crushing plant was operating without water sprinkling. The dust spread not only within the territory of the plant, but also beyond it, causing harm to the health of the plant's workers and the environment. The contractor explained the current situation by breakdowns in water supply pipelines.

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

Figure 45 Stone crushing plant without water sprinkling

151. It was also found that a large amount of waste accumulated on the territory of the stone crushing plant.

Figure 46 Large amount of waste in the territory of the stone crushing plant

152. The Contractor had to restore water sprinkling and clear the area of the stone crushing plant from accumulated waste as soon as possible. Violations were corrected within the specified time frame.

153. At the production site, manufacture of welded reinforcing meshes, frames for the production of reinforced concrete structures, pouring of various reinforced concrete products for the road needs (concrete rings, ditches, curbs, New Jersey-type fences, etc.) was also carried out. Workers are claimed that they are not provided with sufficient number of personal protective equipment.

Figure 47 Production of reinforcing welded meshes, frames for the production of reinforced concrete structures

154. Concrete mix is prepared at a concrete mixing plant and delivered in finished state for the construction. Transportation of concrete mix from the place of preparation to the place of unloading or directly to the concreting unit is carried out by concrete mixer trucks.

Figure 48 Refueling of concrete mixer trucks

155. Washing of concrete mixers is carried out on a specially designated area. The flushing water is discharged into a special three-section sump. Further, the flushing water, after settling, is used for water-sprinkling the area of the production site.

Figure 49 Washing of concrete mixer trucks

Figure 50 Watering of the production site with flushing water

156. During the reporting period, the concrete mix was mainly used for the manufacture of reinforced concrete structures and for the construction works on the road.

157. At the site for the manufacture of reinforced concrete products, various reinforced concrete products were manufactured for needs on the road (concrete rings, ditches, curbs, New Jersey fences, etc.).

Asphalt bitumen plant.

158. 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.

159. 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 cover.

Figure 51 Impenetrable protective coating around chemical containers

160. 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.

3.1.4 Camps for workers' residence

161. *Camp for ther residence of workers at the territory of production site*. Due to the proximity to the main gas pipeline, in 2018 the relevant services have repeatedly issued orders to relocate the residential sector outside the sanitary protection zone. Once the land plot owner's (Emergency Control Ministry) permission was obtained, in 2019 the residential area was relocated to a safe distance and placed on the east side of the industrial zone in accordance with safety requirements and hygiene standards.

Figure 52 Workers' accommodation camp on the territory of the production site

162. Initially, the workers' camp was designed for 50 places. Currently, some of the residential containers have been dismantled. 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.

Figure 53 Fire shields in the camp

Figure 54 Dining and kitchen area

163. Water at the production site is supplied from an existing well on the basis of the Agreement No.38 “On the provision of the well for temporary use” dated October 10, 2017. The well was restored to supply the plant with water. The contractor laid a pipeline to the plant. There are no problems with water on the territory of the production site.

164. The figure below shows the fenced area of the well.

Figure 55 Restored well to supply the plant with water

165. 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, a septic tank, and the remnants of inert material will remain, as well as earth-deposits that served to load the material into the crusher.

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

Figure 56 Dismantled camp for workers on the territory of the production site

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

168. *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.

169. 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.

170. 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

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

172. As compensation measures, to restore the number of green spaces, it is planned to plant new seedlings at a ratio of 2:1.

173. 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.

174. 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, where the main road works on the construction of sidewalks and installation of drainage ditches have been completed.

175. To date, 12 325 seedlings have been planted, including 11 625 at 45,1 km section and 700 at 7,4 km section. In the spring of 2023, in total 2 125 seedlings were planted.

176. Part of the seedlings were given to ayil okmotu, according to their applications to give them seedlings for planting in organized park areas and schools, on road sections located on their territories, while they will do further work on planting and caring for seedlings themselves. Local administration (ayil okmotu) suggested places for planting seedlings located at a distance of 1-2 km from the project road. These are two places near water intakes in the Poltavka village. Watering of seedlings is carried out by residents of local ayil okmotu. Also, from some aiyl okmotus and the mayor's office of Kara-Balta requests were received to give them seedlings for planting 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. During the ADB mission, environmental specialist Ninette R. Pajarillaga visited the seedling planting sites at the water intakes in the Poltavka village and positively assessed the condition of seedlings.

177. 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.

178. 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.

179. During the period of high temperatures in 2022, 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 57 Livestock grazing on the plots of planted seedlings in the villages of Poltavka and Petrovka

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

Figure 58 Burnt seedlings in the village of Poltavka

181. 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 timely maner.

182. It has also been found that, to date, the Contractor has not carried out regular watering of seedlings, as specified in letter No.0541BOC3 55/3350-00592 dd 24.04.2023.

183. 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.

3.2 Site audits.

184. 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, 24 site visits to the project road were carried out.

Table 9 Monitoring of construction site in March 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	07.03	T. Volkova	Monitoring of construction sites on the project road. Site visit to the 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	17.03	T. Volkova K. Uzbekov	Visit to the nursery "Zherdev sad" for the selection of seedlings	Seedlings were studied. The nursery has both ornamental and fruit seedlings.
3	24.03	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road	No violations were found when during the inspection
4	27.03	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road Site visit to the Belek borrow pit together with the Contractor's environmental specialist	During the visit to the Belek borrow pit, together with the Contractor's environmental specialist, no violations were observed during the development of inert material
5	31.03	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 abount watering of seedlings.

Table 10 Monitoring of construction site in April 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	14.04	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road Visit to the Ak-Suu2 borrow pit.	During the visit to 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. Material is being transported
2	18.04	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road Visit to the places of planting seedlings in the village of Petrovka	Visit to the places of planting seedlings in the village of Petrovka, with a representative of the Petrovsky administration to monitor the condition of seedlings planted in the spring 2022.
3	20.04	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road	No violations were found when during the inspection
4	24.04	T. Volkova	Monitoring of construction sites on the project road	During the visit to 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	25.04	T. Volkova	Monitoring of construction sites on the project road. Planting of seedlings.	Monitoring of all construction sites and seedling planting places.
6	28.04	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road Visit to the Belek borrow pit together with the Contractor's environmental specialist	During the visit to the Belek borrow pit, together with the Contractor's environmental specialist, no violations were found during the development of inert materials

Table 11 Monitoring of construction site in May 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	02.05	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	03.05	T. Volkova	Monitoring of construction sites on the project road.	During the visit to place of storage of unsuitable soil at the 7.4 km section, violations have been observed. The old asphalt is taken out to dumps. A warning made to the Contractor.
3	10.05	T. Volkova K. Uzbekov	Joint visit with the laboratory to monitor the quality of atmospheric air	Atmospheric air sampling was taken on the project road
4	11.05	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road. Monitoring the condition of seedlings	It was 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
5	17.05	T. Volkova K. Uzbekov	Joint visit with the laboratory ProfiLab LLC	Participation in laboratory monitoring of noise and vibration
6	22.05	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road	During the visit to the production site, together with the Contractor's environmental specialist, it was found that the stone crusher was operating without wetting the material. Dusting observed on stone crusher. A letter was sent to the contractor.
7	26.05	T. Volkova K. Uzbekov	Joint visit with the laboratory to monitor the quality of atmospheric air	Atmospheric air sampling was taken on the project road
8	30.05	T. Volkova	Monitoring of construction sites on the project road.	During the visit to places for storage of unsuitable soil at 7.4. km section no violations found

Table 12 Monitoring of construction site in June 2023

No.	Date	Auditors name	Propose of audit	Summary of any significant findings
1	09.06	T. Volkova K. Uzbekov.	Monitoring of construction sites on the project road. Monitoring the condition of seedlings	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	16.06	T. Volkova K. Uzbekov.	Monitoring of construction sites on the project road Visit to the Belek borrow pit together with the Contractor's environmental specialist	During the visit to the Belek borrow pit, together with the Contractor's environmental specialist, no violations were found during the development of inert materials
3	20.06	T. Volkova	Monitoring of construction sites on the project road	During the visit to the 7.4 km section no violations observed
4	23.06	T. Volkova K. Uzbekov.	Monitoring of construction sites on the project road	During the visit to 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	29.06	T. Volkova K. Uzbekov	Monitoring of construction sites on the project road.	Monitoring of all construction sites. Collection of information for the semi-annual report

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

185. During the reporting period, if environmental issues were noted, a warning was initially issued to the Contractor with a specified deadline. If the Contractor did not eliminate the identified environmental issue, a letter was sent. Basically, all problems were resolved in a timely manner.

Table 13 Report on non-compliance with environmental requirements (January-June 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 June 30, 2023
1	**Air pollution**	**CEMWP № 2.2.1** 0541BOC3 55/3351-00135 dd 22.05.23	Annex 9 Air Quality Management Plan	The stone crushing plant operates without water sprinkling. Dust spreads not only within the territory of the plant, but also beyond it, causing harm to the health of plant workers and the environment.	It has been found that water sprinkling is used Contractor's letter CAREC – GZ143 dd 30.05.2023	During monitoring, it was found that water sprinkling is used **Completed**	Water sprinkling is used
2	**Waste disposal problem**	**CEMWP № 2.6.2.** 0541BOC3 55/3351-00135 dd 22.05.23	Annex 5 Waste Management Plan	A large amount of waste has accumulated on the territory of the stone crushing plant	The waste was removed on time. Contractor's letter CAREC – GZ143 dd 30.05.2023	During monitoring, it was found that all waste was removed. **Completed**	The territory is cleaned
3	**The problem of planted seedlings**	**CEMWP № 2.5.1**	Annex 10 Tree Management Plan	According to the inventory of seedlings planted on the project road, due to the fault of the	Contractor's letter CAREC – G0971 dd 03.06.2023	Watering of seedlings has been started	Watering of seedlings

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 June 30, 2023
		0541 BOC3 55/3350-00607 dd 30.05.23		Contractor, about 700 seedlings died due to untimely watering. It has also been found that so far, the Contractor has not started watering the seedlings, as specified in the letter №0541BOC3 55/3350-00592 dd 24.04.2023.			has been started

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

186. 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 24 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 was carried out on the 7.4 km section.

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

3.3.2 Issues tracking.

188. 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 mining and management;
- Material's manufacturing plant;

3.4 Trends

189. 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 hal year of 2022 has been postponed to the second half of 2022. During this reporting period, these problems were eliminated. 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 identified non-compliances were discussed verbally with the Contractor. A due date was discussed, including identification of mitigating measures to be applied to address the identified problem and, if the violation was not corrected in time, a letter was sent.

190. During the previous period, the number of non-compliance letters decreased. 1 non-compliance letter was sent. This was about the problem of watering seedlings.

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

192. 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 in the future, such as waste management, safety violations 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.

193. 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

194. In 2019, the consultant transferred the environmental monitoring functions to the Contractor. To monitor environmental components such as atmospheric air quality, surface water quality, noise impact, vibration impact during the construction period at the Bishkek –Kara-Balta Road section in the second half of 2022, the Contractor concluded contracts with the following laboratories:

- **Air Quality:** Laboratory of the Department of Environmental monitoring of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic;
- **Noise impact:** Private laboratory LLC «ProfiLab»;
- **Vibration impact:** Private laboratory LLC «ProfiLab».

195. After conclusion of agreements, applications were submitted for the measurement of vibration, noise and air sampling at the sites where construction equipment operates. Monitoring of surface water quality was impractical, since construction work on the rivers was not carried out and during the reporting period there was practically no water in the rivers.

4.1.1 Monitoring of noise and vibration levels

196. Monitoring of noise and vibration levels was carried out only once on May 17, 2023 by a specialist of the ProfiLab operational laboratory, in the presence of the Contractor's and the Consultant's environmental specialists. Noise and vibration levels were measured at road construction sites, as well as background measurements. The measurements were conducted using "Ecophysics - 110A" device.

197. Regulatory documentation in accordance with which the measurements were carried out: GOST 23337-2014 Noise. Methods for measuring noise in the residential area and in the premises of residential and public buildings.

Regulatory documentation for the standards: Sanitary standards 2.2.4 / 2.1.8.562-96 “Noise at workplaces, in premises, in residential public buildings and on the territory of residential buildings”.

Name of measuring instrument	Number	Verification certificate		Verified before
		Number	Дата	
Ecophysics – 110A	AB 130044	0053	15.03.2022	12 months

198. Regulatory documentation in accordance with which the measurements were carried out: GOST 313119-2006 "Vibration. Measurement of general vibration and assessment of its impact on a person. Requirements for measurements at workplaces".
Regulatory documentation for standards: Sanitary standards 2.2.4./2.1.8.566-96 "Industrial vibration in rooms, residential and public buildings". Environmental conditions: temperature + 31°C, humidity: 33%, atmospheric pressure: 692 mm Hg.

Figure 59 Noise measurement points

Table 14 Noise level measurements in the morning, afternoon and evening

Measurement results in the morning

No.	Location	nature of the noise						Sound pressure levels in dB in octave bands with geometric mean frequencies in Hz									Sound level (dBA)
		By spectrum		By time interval													
		wideband.	voice-f...	Constant	waver	intermitten...	impulse	31,5	63	125	250	500	1000	2000	4000	8000	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Novopavlovka village, next to the vulcanization north side of the road, time 09:00																
	Latitude: 42º 52′31″; Longitude: 74º29′31″. Background noise level.																
1	Leq							68	66	59	59	55	58	55	42	38	**68 actual**
	Slow max																**79**
	Voenno-Antonovka, near the mosque, south side of the road, time 09:15																
	Latitude:42º52'24" Longitude:74º25'45". Background noise level.																
2	Leq							57	58	55	56	57	55	48	38	39	**70 actual**
	Slow max																**77**
	Gavrilovka, next to the kindergarten 21+500, time 09:29																
	Latitude:42º51'55" Longitude:74º21'02". Background noise level.																
3	Leq							70	72	64	59	54	54	50	44	48	**66 actual**
	Slow max																**78**
	Sokuluk, storey buildings 26+240 км, time 10:05																
	Latitude:42º51'25" Longitude:74º17'39". Background noise level.																
4	Leq							67	79	74	73	77	72	66	57	51	**71 actual**
	Slow max																**82**
	Belovodskoe, near the house No.201 42+450km, north side of the road, time 10:27																

	Latitude:42°50'3" Longitude:73°6'7". Background noise level.																
5	Leq							77	72	70	71	64	59	53	44	40	**72 actual**
	Slow max																**80**
	Poltavka, next to the school 55+380 km., south side of the road, time 11:17																
	Latitude:42°50'16 Longitude:73°55'19. Background noise level.																
6	Leq							71	81	69	64	63	66	62	56	47	**74 actual**
	Slow max																**82**
	Novonikolaevka, next to the school 59+55 km, time 11:40																
	Latitude: 42° 50'16"; Longitude: 73°55'19". Background noise level.																
7	Leq							67	68	61	58	57	57	51	44	37	**67 actual**
	Slow max																**74**
	Novopavlovka, next to the vulcanization, north side of the road, time 13:00																
	Latitude: 42° 52'31"; Longitude: 74°29'31". Background noise level.																
8	Leq							68	74	67	64	62	60	58	52	41	**61 actual**
	Slow max																**71**

Measurement results in the afternoon

No.	Location	nature of the noise						Sound pressure levels in dB in octave bands with geometric mean frequencies in Hz									Sound level (dBA)
		By spectrum		By time interval													
		wideband.	voice-frequency	Constant	waver	intermitten	impulse	31,5	63	125	250	500	1000	2000	4000	8000	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Voenno-Antonovka, near the mosque, south side of the road, time 13:15																
	Latitude:42°52'24" Longitude:74°25'45". Background noise level.																
9	Leq							70	76	70	69	65	64	60	61	41	**75 actual**
	Slow max																**80**
	Gavrilovka, next to the kindergarten 21+500, time 13:30																
	Latitude:42°51'55" Longitude:74°21'02". Background noise level.																
10	Leq							61	63	56	56	55	51	51	52	40	**60 actual**
	Slow max																**71**
	Sokuluk, storey buildings 26+240km, time 14:15																
	Latitude:42°51'25" Longitude:74°17'39". Background noise level.																
11	Leq							66	62	57	55	54	51	52	48	40	**61 actual**

	Slow max																**70**
	Belovodskoye, next to house No. 201 42 + 450 km., North side of the road, time 14:40																
	Latitude:42º50'3" Longitude:73º6'7". Background noise level																
12	Leq							63	71	65	67	66	64	61	54	47	**64 actual**
	Slow max																**74**
	Poltavka, next to the school 55+380 km., south side of the road, time 15:31																
	Latitude:42º50'16 Longitude:73º55'19. Background noise level.																
13	Leq							70	71	61	63	61	60	52	52	40	**64 actual**
	Slow max																**76**
	Novonikolaevka, next to the school 59+55 km, time 16:00																
	Latitude: 42º 50′16″; Longitude: 73º55′19″. Background noise level.																
14	Leq							77	76	68	68	66	67	69	59	48	**76 actual**
	Slow max																**81**
	Novonikolaevka, next to the school 59+55 km, time 17:00																
	Latitude: 42º 50′16″; Longitude: 73º55′19″. Background noise level.																
15	Leq							72	71	66	64	58	58	58	55	45	**66 actual**
	Slow max																**75**
	Poltavka, next to the school 55+380 km., south side of the road, time 17:30																
	Latitude:42º50'16 Longitude:73º55'19. Background noise level.																
16	Leq							71	65	60	66	64	63	59	57	48	**65 actual**
	Slow max																**77**

Measurement results in the evening time

No.	Location	nature of the noise						Sound pressure levels in dB in octave bands with geometric mean frequencies in Hz									Sound level (dBA)
		By spectrum		By time interval													
		wideband.	voice-frequency	Constant	waver	intermittent	impulse	31,5	63	125	250	500	1000	2000	4000	8000	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Belovodskoye, next to house No. 201 42 + 450 km., North side of the road, time 18:20																
	Latitude:42º50'3" Longitude:73º6'7". Background noise level.																
17	Leq							60	69	60	57	60	60	61	54	48	**64 actual**
	Slow max																**71**

	Sokuluk, storey buildings 26+240 km, time 18:40																
	Latitude:42º51'25" Longitude:74º17'39". Background noise level.																
18	Leq							65	60	60	67	66	63	61	55	48	**66 actual**
	Slow max																**70**
	Gavrilovka, next to the kindergarten 21+500, time 18:58																
	Latitude:42º51'55" Longitude:74º21'02". Background noise level.																
19	Leq							76	79	71	68	65	65	62	56	49	**70 actual**
	Slow max																**75**
	Voenno-Antonovka, near the mosque, south side of the road, time 19:15																
	Latitude:42º52'24" Longitude:74º25'45". Background noise level.																
20	Leq							72	73	70	63	60	63	60	57	50	**70 actual**
	Slow max																**77**
	Novopavlovka, next to the vulcanization, north side of the road, time 19:30																
	Latitude: 42º 52′31″; Longitude: 74º29′31″. Background noise level.																
21	Leq							70	72	68	67	59	61	62	55	47	**64 actual**
	Slow max																**73**

199. ***Conclusion on the results of measurements of background noise level:*** at the time of the measurements, the background noise level at the measured points when vehicles were passing along the road was from 61 dBa to 76 dBa. There was a single excess of the background noise level at the measurement point in the village of Novonikolaevka at 16:00 - 76 dBa (while maximum permissable level is 75 dBa). These indicators were short-term.

Figure 60 Laboratory monitoring of the background noise level

200. Air quality monitoring was carried out on May 05, 2023 by laboratory specialists of the Department of Environmental Monitoring under the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic in the presence of the Contractor's environmental specialist and the Consultant's environmental specialist. Samples were taken for *the determination of pollutants in the atmospheric air*.

201. Samples were taken in the following six settlements on the km 8.5–km 61 section: in Novopavlovka, Voenno-Antonovka, Govrilovka, Shopokov, Sadovoe village, and Novonikolaevka.

202. Regulatory document: GOST 17.2.4.06 - 90 “Nature Protection. Atmosphere. Methods for determining the speed and flow rate of gas and dust flows from stationary sources of pollution. GOST 17.2.4.07 - 90 “Nature protection. Atmosphere. Methods for Determining Pressure and Temperature of Gas and Dust Flows from Stationary Pollution Sources. GOST 33007-2014; GOST 17.2.4.06-90.

Figure 61 Air quality measurement points

Figure 62 Laboratory monitoring of air quality

Table 15 Results of air quality measurements

1. Novopavlovka 42º 87ʹ 44ʺ N;74 º47ʹ 84ʹ 91ʺ E;

Name of the determined indicator	**Normative Document for the test method**	**Sample code**	**Point analysis data, mg/m3**	**MPC * Max., mg/m3**
sulphur dioxide	РД 52.04.186-89	03-48-22	*0,042±0,005*	**0,5**
nitrogen dioxide	РД 52.04.186-89	03-48-22	***0,161±0,029***	**0,045**
carbon monoxide	СТП ДЭМ 03-01-2021, СТП ДЭМ 03-02-2021	03-48-22	*0,2±0,04*	**5,0**
suspended solids	РД 52.04.186-89	03-48-22	*1,5±0,3*	**0,5**

2 Voenno-Antonovka 42º 87ʹ 23ʺ N; 74º 43ʹ 12ʺ E;

Name of the determined indicator	**Normative Document for the test method**	**Sample code**	**Point analysis data, mg/m3**	**MPC * Max., mg/m3**
sulphur dioxide	РД 52.04.186-89	03-49-22	*0,048±0,006*	**0,5**
nitrogen dioxide	РД 52.04.186-89	03-49-22	***0,115±0,021***	**0,045**
carbon monoxide	СТП ДЭМ 03-01-2021, СТП ДЭМ 03-02-2021	03-49-22	*0,13±0,03*	**5,0**
suspended solids	РД 52.04.186-89	03-49-22	*2,0±0,4*	**0,5**

3 Gavrilovka 42º 86ʹ 57ʺ N; 74º 35ʹ 06ʺ E;

Name of the determined indicator	**Normative Document for the test method**	**Sample code**	**Point analysis data, mg/m3**	**MPC * Max., mg/m3**
sulphur dioxide	РД 52.04.186-89	03-52-22	*0,024±0,003*	**0,5**

nitrogen dioxide	РД 52.04.186-89	03-52-22	***0,207±0,037***	**0,045**
carbon monoxide	СТП ДЭМ 03-01-2021, СТП ДЭМ 03-02-2021	03-52-22	*0,5±0,1*	**5,0**
Взвешенные вещества	РД 52.04.186-89	03-52-22	*2,0±0,4*	**0,5**

4 Shopokov city 42º 86′ 49″ N, 74º 33′ 56″ E;

Name of the determined indicator	**Normative Document for the test method**	**Sample code**	**Point analysis data, mg/m3**	**MPC * Max., mg/m3**
sulphur dioxide	РД 52.04.186-89	03-50-22	*0,024±0,003*	**0,5**
nitrogen dioxide	РД 52.04.186-89	03-50-22	***0,207±0,037***	**0,045**
carbon monoxide	СТП ДЭМ 03-01-2021, СТП ДЭМ 03-02-2021	03-50-22	*0,5±0,1*	**5,0**
Взвешенные вещества	РД 52.04.186-89	03-50-22	*2,0±0,4*	**0,5**

5 Sadovoe 42º 84′ 64″ N, 74º 15′ 79″ E;

Name of the determined indicator	**Normative Document for the test method**	**Sample code**	**Point analysis data, mg/m3**	**MPC * Max., mg/m3**
sulphur dioxide	РД 52.04.186-89	03-51-22	*0,048±0,006*	**0,5**
nitrogen dioxide	РД 52.04.186-89	03-51-22	***0,115±0,021***	**0,045**
carbon monoxide	СТП ДЭМ 03-01-2021, СТП ДЭМ 03-02-2021	03-51-22	*0,13±0,03*	**5,0**
suspended solids	РД 52.04.186-89	03-51-22	*2,0±0,4*	**0,5**

6 Novonikolaevka 42º 83′ 15″ N, 73º 89′ 83″ E;

Name of the determined indicator	**Normative Document for the test method**	**Sample code**	**Point analysis data, mg/m3**	**MPC * Max., mg/m3**
sulphur dioxide	РД 52.04.186-89	03-53-22	*0,042±0,005*	**0,5**
nitrogen dioxide	РД 52.04.186-89	03-53-22	***0,161±0,029***	**0,045**
carbon monoxide	СТП ДЭМ 03-01-2021, СТП ДЭМ 03-02-2021	03-53-22	*0,2±0,04*	**5,0**
suspended solids	РД 52.04.186-89	03-53-22	*1,5±0,3*	**0,5**

203. ***Conclusion on the results of air quality measurements:*** the results of the tests conducted on the air quality showed that the exceedance of maximum permissible concentration (MPC) is maximum single, and was found in the following indicators:

- at the Novonikolaevka village for nitrogen dioxide - 1.9 times;
- at the Sadovoe village for nitrogen dioxide - 1.3 times;
- at the city of Shopokov for nitrogen dioxide – 2 times;
- at the Gavrilovka village for nitrogen dioxide - 1.8 times;
- at the Voyenno-Antonovka village for nitrogen dioxide - 2.4 times;
- at the Novopavlovka village for nitrogen dioxide - 1.2 times.

204. Exceeding of this indicator was observed regularly from the very beginning of monitoring on the project road, starting from 2015, before the start of construction.

205. When analyzing the data of the results of monitoring of environmental components, it should be taken 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 is necessary to take into account indicators of background levels.

206. Having analyzed the monitoring results and taking into account the data of background levels, construction works do not have a significant impact on the environment. Taking into account the annual increase the traffic on the project road section, indicators of background levels of environmental components will grow every year.

4.2 Trend.

207. During the second half of 2023, it is planned to monitor the background levels of air quality, noise impact at the 7.4 km section. Construction work on the bridges has been completed, so monitoring of surface water quality is not necessary.

4.3 Summary of appeals and complaints

208. 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, requests for 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 considered in a timely manner. There were no complaints related to environmental issues.

209. There are appeals to clarify the boundaries of the project ROW and confirm the absence of impact on commercial properties.

210. 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 16 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
286	2023.02.06	Section 3	Novopavlovka ayil okmotu	Other	Request for the construction of a pedestrian sidewalk 1800 meters long on the Krupskaya Street in the village of Novopavlovka	Krupskaya Street in the village of Novopavlovka is located outside the right of way of the road and no work is provided for within the Bishkek-Kara-Balta Road rehabilitation project	Rejected	2023.02.08
287	2023.02.20	Section 2	Resident of Sokuluk village	Other	Request to dismantle slabs put above the drainage ditches, clear the ditches and change the drainage channel.	After strengthening the slopes, slabs will be dismantled. Clearing of ditches is carried out on the entire section from km 61 to km 15.9. The drainage channel is located on private lands and is not included in the scope of project work	Accepted	2023.02.22
288	2023.03.16	Section 2	Member of the Government of the Kyrgyz Republic	HSE Concerns	Safety request: removal of parapets and open passages, installation of fences, road signs and markings.	The answer is provided that all design solutions comply with safety requirements.	Rejected	2023.03.22
289	2023.04.13	Section 3	head of the Voenno-Antonovsky ayil okmotu	HSE Concerns	Request to install additional 24 road signs “No parking”	installation of additional 24 road signs, is not possible, since this type of additional work was not provided for by the current design, therefore, special funds were not allocated for these purposes.	Rejected	2023.04.17

#	Date Received	section	Name & contact of Complainant	Complaint Category	Complaint Description	Resolution Description	Resolution	Resolution Date
290	2023.04.17	Section 3	residents of Novopavlovka village, Sokuluk district	HSE Concerns	Request to close openings on the dividing strip at km10 + 500 and km 10 + 700	appeal of only 8 residents of the Novopavlovka village cannot be a serious basis for considering this issue.	Rejected	2023.04.27
291	2023.04.18	Section 3	appeal of the Novopavlovskaya secondary school-gymnasium in the Sokuluk district	Other	Request to construct passage through the ditches near the school	Construction of passage through the ditches near the school is provided for in the design and will be completed in the near future.	Accepted	2023.04.24
292	2023.04.18	Section 2	administration of the Sary-Ozon market in the village Sokuluk	Other	to install an additional storm drainage collection pit with a diameter of 1.5 and a depth of 1.5.	Engineer decided to install an additional storm drainage collection pit with a diameter of 1.5 and a depth of 1.5.	Accepted	2023.04.27
293	2023.04.19	Section 2	Sokuluk ayil okmotu	Other	Request to install ditches in front of Jibek Jolu Market.	Engineer decided to construct collection pits D=500mm and Depth 500mm every 10 meters' interval at the whole section in front of Jibek Jolu Market.	Accepted	2023.04.27
294	2023.04.24	Section 3	head of the Novopavlovskiy ayil okmotu	Other	regarding the installation of reinforced concrete parapets along the Bishkek-Kara-Balta Road from Kirova St. to Shkolnaya St. in the village of	the design does not provide for the installation of reinforced concrete parapets on the above place.	Rejected	2023.04.27

#	Date Received	section	Name & contact of Complainant	Complaint Category	Complaint Description	Resolution Description	Resolution	Resolution Date
					Novopavlovka, to fence the places of the future square			
295	2023.04.27	Section 3	local resident of Voeno-Antonovka village	Other	Request to increase the longitudinal profile of sidewalk	Engineer found that the construction work is being carried out according to the design, and increasing the soil level is not possible	Rejected	2023.05.10
296	2023.05.02	Section 3	the head of the Voeeno-Antonovska ayil okmotu	Other	Request to increase the longitudinal profile of sidewalk	Engineer found that the construction work is being carried out according to the design, and increasing the soil level is not possible	Rejected	2023.05.04
297	2023.05.02	Section 1	the deputy head of the Gavrilovsky local administration of the Sokuluk district	HSE Concerns	Request regarding the installation of additional road signs “Cattle Drive” at the intersection of Frunze St. and Yubileynaya St. in the village of Romanovka and at the intersection of Frunze St. and St. Drujba in the village of Gavrilovka	in order to resolve this issue, the applicant should apply to the Main Traffic Safety Inspectorate of the Ministry of Internal Affairs of the Kyrgyz Republic in the prescribed manner	Rejected	2023.05.03
298	2023.04.28	Section 3	head of the Voenno-Antonovskiy ayil okmotu	HSE Concerns	Request regarding the installation of traffic light at the intersection of Frunze St. and Pushkin St. in the village of Voyenno-Antonovka, at km 12 +	in order to resolve this issue, the applicant should apply to the Main Traffic Safety Inspectorate of the Ministry of Internal Affairs of the Kyrgyz Republic in the prescribed manner	Rejected	2023.05.04

#	Date Received	section	Name & contact of Complainant	Complaint Category	Complaint Description	Resolution Description	Resolution	Resolution Date
					820 of the Bishkek-Kara-Balta Road			
299	2023.05.10	Section 1	local resident of the Sadovoe village	Restriction or loss of access	Request to relocate the bus stop	it was impossible to relocate the bus stop, and it was decided to reduce the length of the bus stop from 20 m to 13 m, thereby ensuring entry to the household	Accepted	2023.05.12
300	2023.05.11	Section 3	head of the Voeeno-Antonovska ayil okmotu	Other	Request regarding the laying of an additional asphalt concrete pavement in front of the ayil okmotu building and in the “Jenish” park	Engineer agrees the laying of additional asphalt concrete pavement	Accepted	2023.05.15
301	2023.05.23	Section 2	head of the department for ensuring road traffic of the Department of Internal Affairs of the Sokuluk district	HSE Concerns	Request regarding the installation of an additional fence on top of the parapets installed on the dividing strip of the carriageway on the area from Lenina St. to Kalinina St., Frunze St. in the village of Sokuluk (km 25 + 770 to km 26 + 100), as well as the installation of additional road signs “Cattle	1. metal fence has already been installed on both sides of the carriageway in this place, according to the approved design. 2. Installation of additional road signs, is possible only after making appropriate changes and additions to the approved locations of road signs by the Main Traffic Safety Inspectorate of the Ministry of Internal Affairs of the Kyrgyz Republic in the prescribed manner	Rejected	2023.05.29

#	Date Received	section	Name & contact of Complainant	Complaint Category	Complaint Description	Resolution Description	Resolution	Resolution Date
					Driving" at the intersection of Frunze St. and Yubileynaya St. in the village of Romanovka and at the intersection of Frunze St. and Druzhba St. in the village of Gavrilovka.			
302	2023.05.24	Section 3	Voenno-Antonovsky ayil okmotu	Restriction or loss of access	Request regarding the installation of slabs above the drainage ditches and ensuring access to the households of residents living at Frunze 126 and 128.	installation of slabs is provided for by the design and will be installed.	Accepted	2023.06.01
303	2023.05.25	Section 2	Sokuluk ayil okmotu	Other	Request regarding the laying of asphalt concrete pavement at the entrance to the administrative building	Engineer agrees to lay asphalt in this section.	Accepted	2023.06.07
304	2023.05.29	Section 1	resident of the Aleksandrovka village	Other	Request regarding the giving of information about the location of the store.	to date at this place construction work was completed, therefore the object is not interfered to the construction.	Accepted	2023.06.02
305	2023.05.30	Section 2	resident of the Sadovoye village	Other	Request regarding the giving of information	to date at this place construction work was completed, therefore the object is not interfered to the construction.	Accepted	2023.06.02

#	Date Received	section	Name & contact of Complainant	Complaint Category	Complaint Description	Resolution Description	Resolution	Resolution Date
					about the location of the pavilion.			
306	2023.06.01	Section 1-3	State Traffic Safety Inspectorate of the Ministry of Internal Affairs of the Kyrgyz Republic	HSE Concerns	Request to install additional road signs	installation of road signs required by the State Traffic Safety Inspectorate is not possible, as it contradicts certain relevant requirements of the Traffic Rules of the Kyrgyz Republic and GOST R 52289 -2019	Rejected	2023.06.12
307	2023.06.02	Section 2	Sokuluk ayil okmotu	Other	Request to lay asphalt concrete pavement at the entrance to the administrative building	Engineer agrees to lay asphalt in this section	Accepted	2023.06.07
308	2023.06.07	Section 1	resident of the Petrovka village	Restriction or loss of access	Request to make a junction to the household	Engineer decided to make a junction	Accepted	2023.06.19
309	2023.06.19	Section 2	resident of the Sokuluk village	Restriction or loss of access	Request to ensure entry for cars into the territory of the old building "Dom Byta" in the village of Sokuluk	Contractor has removed two lines of parking spaces near the exit to ensure unimpeded entry of cars to this facility.	Accepted	2023.07.03
310	2023.06.27	Section 1	resident of the Aleksandrovka village	Other	Request to give information about the location of the store.	Currently, the construction work at the specified location has been completed and the store does not interfere with the construction of the road.	Accepted	2023.07.07

4.4 Summary of monitoring outcome

211. Based on the results of regular monitoring over compliance with the requirements of environmental legislation during construction work on the Bishkek-Karabalta Road 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, 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.

212. 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.

213. 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.

214. 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.

215. The Consultant's environmental specialist will continue to carry out visual monitoring of construction sites in the next half year.

216. When analyzing the results of the laboratory 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 environmental impact of construction work, it is necessary to consider background levels.

217. Having analyzed the monitoring results, it can be noted that, given the data of the background levels, construction work does not have a significant impact on the environment. Taking into account the annual increase of traffic on the project road section, indicators of background levels of environmental components will grow every year.

218. The main problem when organizing and conducting monitoring is the insufficient number of laboratories in the region. To conclude agreements for monitoring environmental components, the same state laboratories are offered, which carry out both private and state orders, and has an insufficient number of personnel. To date, the monitoring of air quality in Kyrgyzstan, can be done by only one laboratory. In this regard, each visit to the site for sampling must be agreed in advance and sometimes it is needed to wait several weeks. Air quality monitoring on the project road was carried out on May 10.

219. When monitoring noise and vibration, it was easier to work with the private laboratory of Profilab LLC, whose employees were available when necessary. During the reporting period, the laboratory conducted noise monitoring at the project road section on May 17.

220. Considering that no construction work was carried out on the rivers, as well as the lack of water in the rivers, monitoring of surface water quality was not conducted.

4.5 Materials/Recourses utilization.

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

4.6 Waste management.

222. 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.

223. 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.

224. During the reporting period, on the km 15.9 - 61 road section, in the places where the 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.

225. 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 Voenno-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 Voenno-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 Voyenno-Antonovka. There were no complaints from the local population regarding the disposal of the removed asphalt.

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

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

228. Asphalt was not transported to wetlands. 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.

Figure 63 Streets paved with old asphalt at 7.4 km section

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

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

Figure 64 Storage and levelling of unsuitable soil for further use in the villages of Voenno-Antonovka

231. During the construction works throughout the entire construction period on the project road from km 8.5 to km 61, **122 037.73 m3** of old asphalt was removed. **385 670.84 m3** of unsuitable soil was taken out.

4.6.2 Production waste.

232. Production waste is also accumulated during road construction. This is used engine oil, old tires, empty bitumen barrels. According to the Contractor's information, the used oil is reused in the

operation of some types of equipment, the rest is handed over to a local company for further processing.

233. 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.

4.6.3 Household waste.

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

235. 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.

236. Solid household waste is collected unsorted in garbage containers 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 129 containers with solid waste were cleaned, about **129 m^3** of solid waste was removed. Liquid household wastewater accumulates in septic tanks, is pumped into tankers with a capacity of 3.5 m^3 belonging to district waste transportation companies, and is transported to district wastewater treatment plants. During the reporting period 80 trips of the cesspool age truck were made **280 m^3** 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	January	17 garbage bins,16 trips of cesspool age truck	22100
Sokuluk	February	19 garbage bins, 6 trips of cesspool age truck	14600
Sokuluk	March	22 garbage bins, 17 trips of cesspool age truck	25450
Sokuluk	April	22 garbage bins, 14 trips of cesspool age truck	26500

Sokuluk	May	23 garbage bins, 20 trips of cesspool age truck	28500
Taza Ayil	May	6 garbage bins	2688
Sokuluk	June	20 garbage bins, 7 trips of cesspool age truck	15950
Total:		**129 garbage bins, 80 trips of cesspool age truck**	**135788**

4.7 Health and Safety.

4.1.1 Workers' health and safety.

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

238. 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.

239. 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.

240. 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.

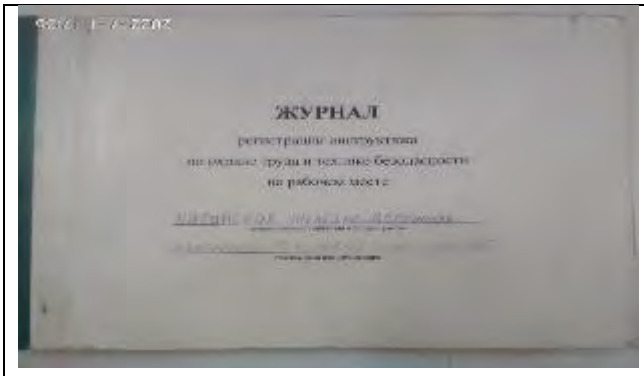
241. In total, in the 1st half of 2023, 159 workers underwent introductory briefing for hired employees. Refresher briefing was carried out every 3 months.

242. 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.

243. 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 necessary number of fires fighting equipment.

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

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



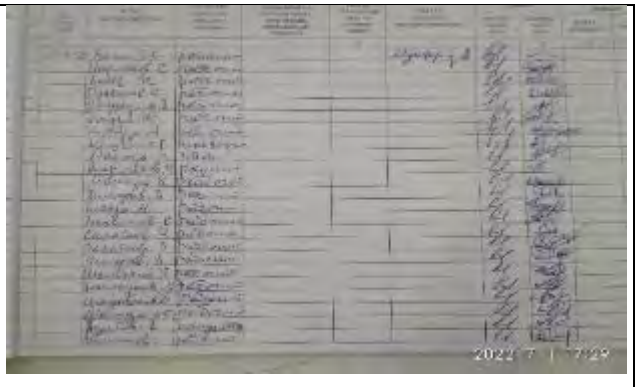


Figure 65 Logs for registration of briefing conducted at the workplace

246. 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.

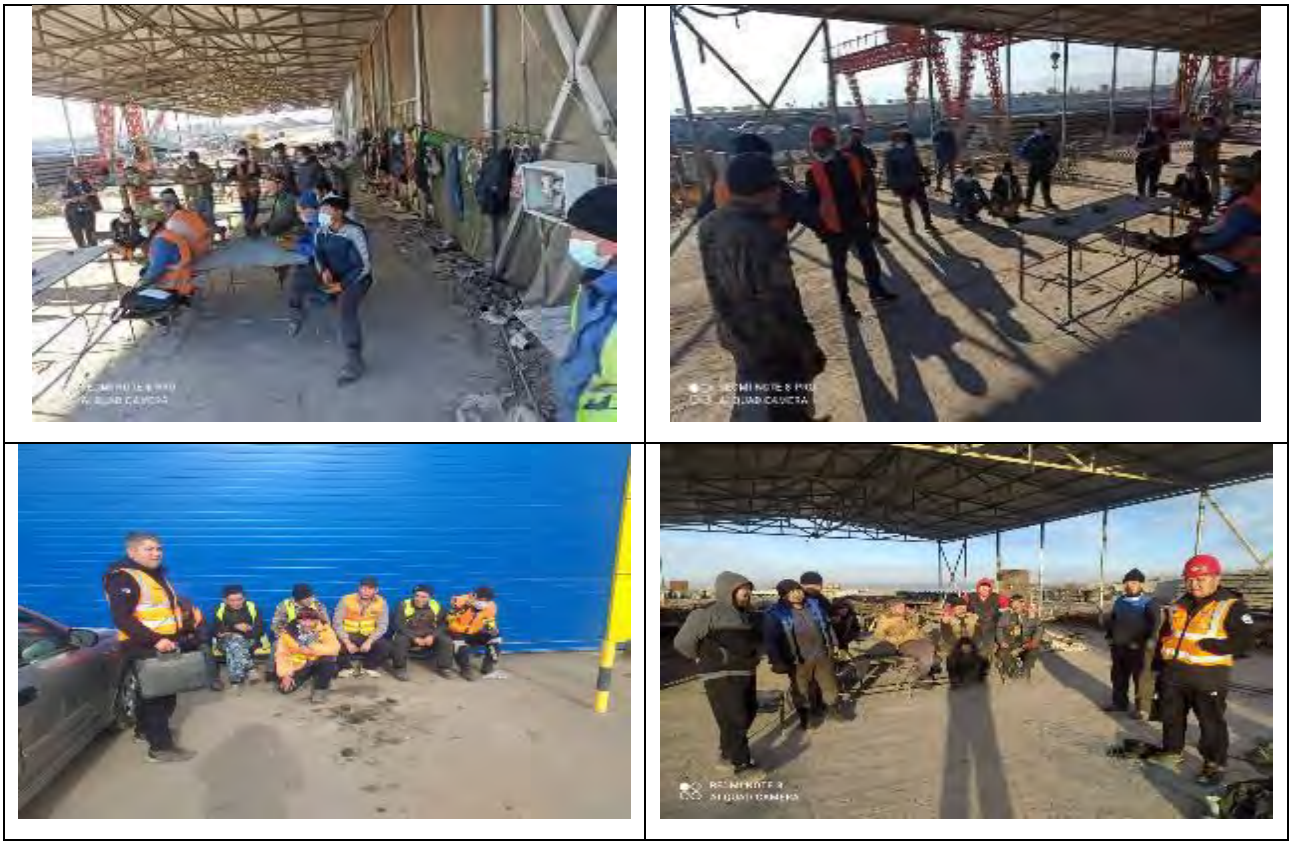


Figure 66 Briefings and seminars at the workplaces

247. 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.

248. 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, but violations continue.

Figure 67 Failure to comply with safety precautions when moving load with a crane

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

4.7.2 Community health and safety.

250. 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:

251. The Consultant's road safety specialist monitors the Contractor's road safety on a regular basis. There are 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 of the condition of the relevant road signs, road markings, fences installed to fence work sites and at the places of oncoming traffic.

Figure 68 Installation of road signs and application of road marking

252. Road safety specialist has given 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 completed.

253. 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.).

Road safety campaign

254. A subcontractor for the road safety awareness campaign developed scripts for short videos. 5 short videos were released, 5 stories were filmed and posted on TV and social networks.

255. Audio clips have been recorded and placed on radio channels. Road safety posters were placed in all schools alog project road. After agreeing on the materials, surveys and trainings were conducted among schoolchildren.

Figure 69 Posters placed in schools


Aleksandrovka village


Belovodskoe village


Novopavlovka village


Shopokov city

Petrovka village

Sadovoe village

Figure 70 Road safety training in schools

256. During the reporting period, there were no accidents recorded due to the fault of the Contractor or construction works. On the part of the Consultant, the situation is constantly monitored and, if non-compliances are found, a written notification is sent to the Contractor with a demand for immediate elimination.

4.9 Trainings

257. During the reporting period, trainings related to environmental protection were not conducted. If necessary, consultations were held with the Contractor's environmental specilaist. 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. 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 to replace cut trees and regularly care for them.

5. FUNCTIONING OF THE CEMWP.

5.1 CEMWP review.

258. 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 that are 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.

259. 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.

260. 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).

261. 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. To date 12 325 seedling have been planted. In March 2023, in total 2 125 seedlings were planted, including 700 at the 7,4 km section.

262. 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 is necessary to decide where and when the remaining seedlings will be planted. To date, 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, 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 that are located on their territory, while they will undertake further work on planting and watering.

263. In the summer of 2023, the Contractor needs to continue watering the newly planted seedlings.

6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT.

6.1 Good practice.

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

6.2 Opportunities for Improvement.

265. In 2017, earthworks in the village of Petrovka were suspended by the ADB until the winter season due to the complaints recieved 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.

266. 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.

267. 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.

268. 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.

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

270. In 2019, the Consultant developed a mix design for the wearong 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.

271. 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.

272. 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).

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

274. 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.

275. 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.

276. The problem of crushing old asphalt to a size of 20x20 remains unresolved. During the reporting period, old asphalt was transported for backfilling rural streets only at 7.4 km section. Unsuitable soil was taken to dumps for the further use and for backfilling ravines.

277. During the construction period, the Contractor did not properly supervise the already constructed structures. Previously constructed drainage ditches are 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.

278. 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.

279. To date, the care and watering of seedlings instead of cut trees remains a problem. 12 325 seedlings were already planted. To date, 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. Planting of seedlings has started at the 7.4 km section. 700 seedlings planted. The remaining 300 seedlings will be planted in autumn 2023.

280. 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.

281. The introductory briefing for the newly hired employees was held for 159 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.

282. Bitumen from 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.

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

7.2 Recommendations.

284. 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 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.

285. As of June 2023, 12 325 seedlings were planted, including 11 625 on the 45.1 km section and 700 pieces on the 7.4 km section. In the spring of 2023, in total 2 125 seedlings were planted. The contractor needs to be more responsible for watering and caring for seedlings. It is necessary to allocate a watering machine, which will be occupied only for watering seedlings.

286. In the autumn of 2023, the contractor should complete planting of seedlings on the 7.4 km section.

287. The Contractor's environmental specialist should regularly monitor the condition of planted seedlings, the condition of constructed structures such as ditches, and culvert pipes.

288. At present, it is necessary to bring into proper condition and establish permanent supervision over previously constructed ditches and culvert heads, and regularly clean them from stones and plants.

289. Before the completion of defect's liability period in 2023, it is necessary to complete all reclamation work in borrow pits that will not be used and hand over to the district commission.

ANNEX 1. Certificate of acceptance and transfer of Saz borrow pit

с. Сокулук 09.06.2023 года

АКТ
приемки-передачи рекультивированной земли карьера Саз

Комиссия по приемке-передаче рекультивированной земли карьера Саз, назначенной распоряжением Сокулукской районной государственной администрации Чуйской области № 375-Т от 19.12.2022 года, в составе:

Адиев К.А. – первый заместитель главы Сокулукской районной государственной администрации, председатель комиссии;

Керимова Дж.Э. – ведущий специалист отдела экономики, промышленности и аграрного развития, секретарь комиссии;

Осмоналиев С.А. – директор Сокулукского филиала ГУ «Кадастр»;

Майрыков С. – старший инспектор Чуйского регионального управления Министерства природных ресурсов, экологии и технического надзора (по согласованию);

Исаков Д.Ю. – начальник отдела чрезвычайных ситуаций по Сокулукскому району;

Ибраев К.И. – представитель министерства транспорта, архитектуры, строительства и коммуникаций КР;

Хан Фаньюни – заместитель директора ФКсОО «Китайской инженерной групповой компаний № 5» в Кыргызской Республике;

Джумагулов А.А. – старший инспектор службы экологического и технического надзора Министерства природных ресурсов;

Садыков Б.Ш. – начальник управления аграрного развития Сокулукского района;

Бозов М.К. – начальник Сокулукского районного управления водного хозяйства и мелиорации;

Бокоев Р. – главный инспектор Чуй-Бишкекского Межрегионального управления по земельному и водному надзору;

Кожокматов У.С. – глава Сазского айыл окмоту;

Есеналиев Т. – главный специалист по землеустройству Сазского айыл окмоту.

Комиссия составила настоящий акт о следующем:

Произведен осмотр выполненных работ согласно условиям о технической рекультивации на карьере и установлено:

1. Очистка поверхности рекультивируемого участка земли от валунов;
2. Уступы карьера приведены в безопасное состояние;
3. Грубая планировка поверхности площадок после вывоза с их территории отвалов;
4. Чистковая планировка рекультивируемых поверхностей.

Биологическая рекультивация не проводилась ввиду природных условий (ввиду малопродуктивности земель, отсутствия плодородного слоя и невозможности проведения землевания и воздействия поверхностных водотоков и паводков, площадь карьера, отчуждаемая под добычные работы,

расположенная в ущелье Сокулук на склоне горы напротив села Конуш, подверженности селевым явлениям, относится к категории «**самовосстанавливающихся**»).

Китайская инженерная групповая компания № 5 передает рекультивированную землю карьера Саз площадью в 5,2 га, переданную временным разрешением ГКПЭН КР № 04-4/11443 от 11.09.2018 года для разработки ПГС, Сазскому айыл окмоту.

Председатель комиссии:

Адиев К.А.

Члены комиссии:

Осмоналиев С.А.

Майрыков С.

Исаков Д.Ю.

Ибраев К.И.

Хан Фаньюни

Джумагулов А.А.

Садыков Б.Ш.

Бозов М.К.

Бокоев Р.

Кожокматов У.С.

Есеналиев Т.

Секретарь комиссии:

Керимова Дж.Э.

Sokuluk village 09.06.2023

Certificate of acceptance and transfer of reclaimed land of Saz borrow pit

Commission for the acceptance and transfer of reclaimed land of Saz borrow pit, appointed by order of the Sokuluk district state administration of the Chui region No. 375-T dated December 19, 2022, consisting of:

K.A. Adiev - First Deputy Head of the Sokuluk District State Administration, Chairman of the Commission;

J.E. Kerimova - leading specialist of the Department of Economics, Industry and Agrarian Development, Secretary of the Commission;

S.A. Osmonaliev - Director of the Sokuluk branch of the State Institution “Cadastre”;

S. Mairyov - senior inspector of the Chui regional department of the Ministry of Natural Resources, Ecology and Technical Supervision (as agreed);

D.Yu. Isakov - Head of the Emergency Situations Department for Sokuluk District;

K.I. Ibraev - representative of the Ministry of Transport, Architecture, Construction and Communications of the Kyrgyz Republic;

Khan Fangyung - Deputy Director of the "China Railway Engineering Group No. 5" in the Kyrgyz Republic;

A.A. Dzhumagulov - Senior Inspector of the Environmental and Technical Supervision Service of the Ministry of Natural Resources;

B.Sh. Sadykov - Head of the Department of Agrarian Development of the Sokuluk District;

M.K. Bazov - Head of the Sokuluk District Department of Water Resources and Land Reclamation;

R. Bokoev - chief inspector of the Chui-Bishkek Interregional Department for Land and Water Supervision;

U.S. Kozhokmatov - head of the Saz aiyl okmotu;

T. Yesenaliev - chief specialist in land management of the Saz aiyl okmotu.

The Commission has drawn up certificate on the following:

The inspection of the completed works was carried out in accordance with the terms of technical reclamation at the borrow pit and it was found:

1. Surface of the reclaimed land is cleared of boulders;
2. The ledges of the borrow pit are brought to a safe condition;
3. Rough leveling of the surface of areas after the removal of dumps from their territory;
4. Finishing levelling of reclaimed surfaces.

Biological reclamation was not carried out due to natural conditions (due to the low productivity of the land, the lack of a fertile layer and the impossibility of excavation and the impact of surface watercourses and floods, the borrow pit area allocated for mining operations, located in the Sokuluk gorge on the mountainside opposite the village of Konush, is exposure to mudflows, and belongs to the category of **self-reclaimed** borrow pits).

China Railway Engineering Group No. 5 transfers the reclaimed land of the Saz borrow pit with an area of 5.2 hectares, transferred by temporary permission of the State Committee on Environmental Protection of the Kyrgyz Republic No. 04-4/11443 dated September 11, 2018 for the development of the sand and gravel mixture, to the Saz aiyl okmoty.

Chairman of the Commission:

K.A. Adiev

Members of the Commission:

S.A. Osmonaliev

S.Mayrikov

D. Yu. Isakov

K.I. Ibraev

Khan Fangyung

A.A. Djumagulov

B. SH. Sadykov

M.K. Bozov

U.S. Kozhomatov

T. Esenaliev

Secretary of the Commission:

Dj. E. Kerimova

Annex 2.

Post construction audit report

Project number: 45169-001
Loan number: ADB Loan 3056-KGZ (SF)
Grant number: 0366-KGZ (SF)

Kyrgyz Republic.

Central Asian Regional Economic Cooperation Corridor 3 Improvement Project (Bishkek-Osh Road), Phase 4, Bishkek-Kara-Balta section (km 15.9– km 61).

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
DDPTSSES	-	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 the construction period of the project road from 2017 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 ditch trays, planting trees, as well as the operation of an asphalt and concrete plant, 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 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 section starts at km 15.9 and ends at km 61 and has a total length of 45.1 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.

9. In 2016 during the bidding process China Railway No.5 company was selected for the implementation of project component 1. On March 28, 2017, Civil Works Contract was signed between the Ministry of Transport and Roads of the Kyrgyz Republic and China Railway No.5 for civil works. The overall contract price is 70,239,899.29 USD. On April 3, 2017, the consulting company issued a notice about commencement of construction work.

10. On May 31, 2020, the 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.

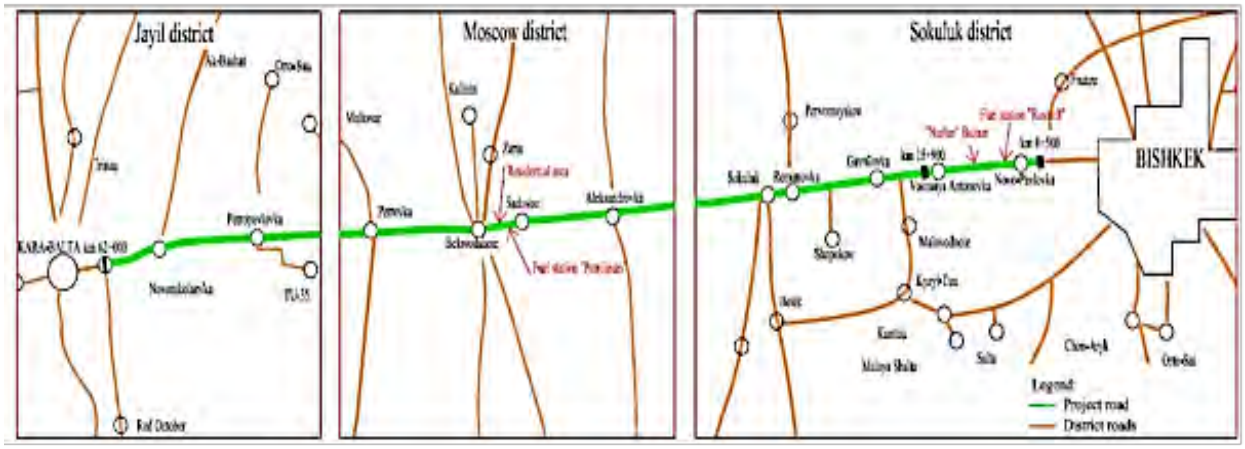


Figure 1 Administrative districts of the project road.

Figure 2 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 15.9 – Km 61 section of the Bishkek – Kara-Balta Road.

Figure 3 Bishkek Kara-Balta project road section, km 15. 9 – km 61 before construction

11. 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.

12. Initially the road's designed length was 52,5 km length. Feasibility Study (FS) 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. Feasibility Study set out approximated cost of the Project based on the preliminary topographic survey at a scale of 1:2,000 and geotechnical studies conducted. Following the FS decided to allocate 100 M USD, 65M USD out of which is loan money and 35M USD - grant. Co-financing by the Government of the Kyrgyz Republic is 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

connection, the Ministry of the Transport and Roads of the Kyrgyz Republic decided to revise the design within the available funds for Civil Works.

13. 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. Thus, the overall length of the project road is now 45.1 km. The reduction of the specified site was taken before the announcement of the tender for the procurement of Civil Works.

14. The cost of the contract between the MoTC 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.

15. 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. 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), developed and approved in 2015, covered a 52.5 km section, no additional clearances from environmental authority were required for 7.4km section.

16. Taking into account that the construction works at 7.4 km section have not been completed, this audit report considers the completion of rehabilitation works only at 45.1 km section of the Bishkek-Osh Road. The project site is located between Bishkek and Kara-Balta cities; starts at km 15.9 km and ends at 61 km. The total length of the road is 45.1km. At km 61, at the roundabout, the Bishkek-Osh Road turns to south, and marks the end of the project site.

17. 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.

18. 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, becoming a 4-lane highway throughout the entire length until Kara Balta, increasing the radii of curvatures in the vertical and horizontal alignment.

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

20. Environmental impact resulting from the rehabilitation of the Bishkek-Osh Road is short-term and local, since 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.

21. 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 recipients are located, such as schools, hospitals, mosques, etc.
- Impact to 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 after bridge rehabilitation works;
- Impact of asphalt production plants and aggregates crushing plants;
- Impact of Contractor's workers camps.

22. 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.

23. 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 – 2.5м
- Carriageway shoulder breakpoint stabilization – 1.0m
- Axle design weight – 11,5 tones.

24. 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).

25. 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:

- Wearing course 5cm thick – 46,692m3;
- The same in junctions 5cm thick – 4,169m;
- 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 pcs;
- Minor engineering structures – 548 pcs;
- For water diversion, reinforced-concrete ditches – 77661 linear meters;
- Intersections and junctions – 477 pcs;
- The design provides for parking lots next to market places – 4 pcs;
- Auto pavilions – 115 pcs;
- 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 pcs;
- Metallic foot-walk guard rails – 3980 linear m;
- Parapet fencing – 1158 pcs;
- Median fencing – 14 887 pcs;
- Retaining walls – 3669 linear m;
- Traffic lights – at 20 intersections.

Reconstruction of Utilities:

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

Vegetation planting

26. Almost throughout the entire length of the project road there were trees on both sides, most of which were cut down during the rehabilitation of the road. 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 5 812. As compensatory measures, to restore the number of green spaces the planting of new tree seedlings is provided. As of June 2023, the total number of trees planted at 45.1 km section was 11,625.

27. Based on the results of an inventory of the survival rate of seedlings carried out in May 2023, it was found that the total number of seedlings handed over to the local authorities (ayil okmotu) and the mayor's office of Karabalta amounted to 8,480 pieces.

28. On the km 15+900-km 61+120 project road section for the period from 2019 to 2023, the total number of seedlings planted was 3145. Of these, 382 pieces dried out, 594 pieces were broken and dried out, 195 pieces burned.

Land Acquition and Ressetlemnt 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 that will be 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 106 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 1 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 Project activities during the current reporting period.

Table 2 Scope of works as per Contract. 45.1 km section.

	Technical category:	**1-b (urban main street)**
	Number of lanes	4 and 6
	Width of lanes	3,5 - 3,75 m
	Width of carriage way	2x7,5
	Width of shoulder	3,75m
	Carriageway shoulder breakpoint stabilization	0,75m
	Design axle load	11,5 t
	Pavement works:	
	Wearing course 5cm thick	46 692 m3
	Same on junctions 5 cm thick	4 169 m
	Binder course 9 cm thick	84 046m3
	Same on junctions 9 cm thick	7 505 m3
	ATB 9 cm thick	86 906 m3
	Base 15cm thick	157 257m3
	Subbase 28cm thick	448 920 m3
	a/c mix on sidewalks, layer 4cm thick	9 754 m3
	In addition, design provides for:	
	Bridge repairs with widening	6 pcs
	Minor engineering structures	548 pcs
	For water diversion, reinforced-concrete ditches	77661 l/m
	Intersections and junctions	477pcs

	Parking near market	4pcs
	Auto pavilions	114 pcs
	Sidewalks	81 285 m
Road safety means		
	Repair of existing underpasses	4 pcs
	Construction of new underpasses	6 pcs
	Marker posts	515 pcs
	Metallic foot-walk guard rails	3980 r/m
	Parapet fencing	1158 pcs
	Median fencing	14 887 pcs
	Retaining walls	3669r/m
	Traffic lights	at 20 intersections
Reconstruction of utilities		
	OL-10kV	43 poles
	OL-0,4kV	166 poles
	Communication lines	504 poles
	Lighting poles	2190 pcs, length 45 km
	Gas casings	650r/m

2.4 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, has prepared 14 Annexes to the CEMWP, which addresses all the main specific potential environmental impacts. The CEMWP should be developed and agreed upon before the start of construction work. The CEMWP for the project road section was approved in June 2017. In August 2017, PIU endorsed the SSEMP, which made adjustments to the CEMWP to exclude the use of vibration during the operation of equipment in the road construction

2.5 Grievance Redress Mechanism

31. The Grievance Redress Mechanism (GRM) has been developed to respond to appeals, grievances and requests from 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. Measures will be taken to prevent the occurrence of grievances in order to avoid lengthy processes for their consideration.

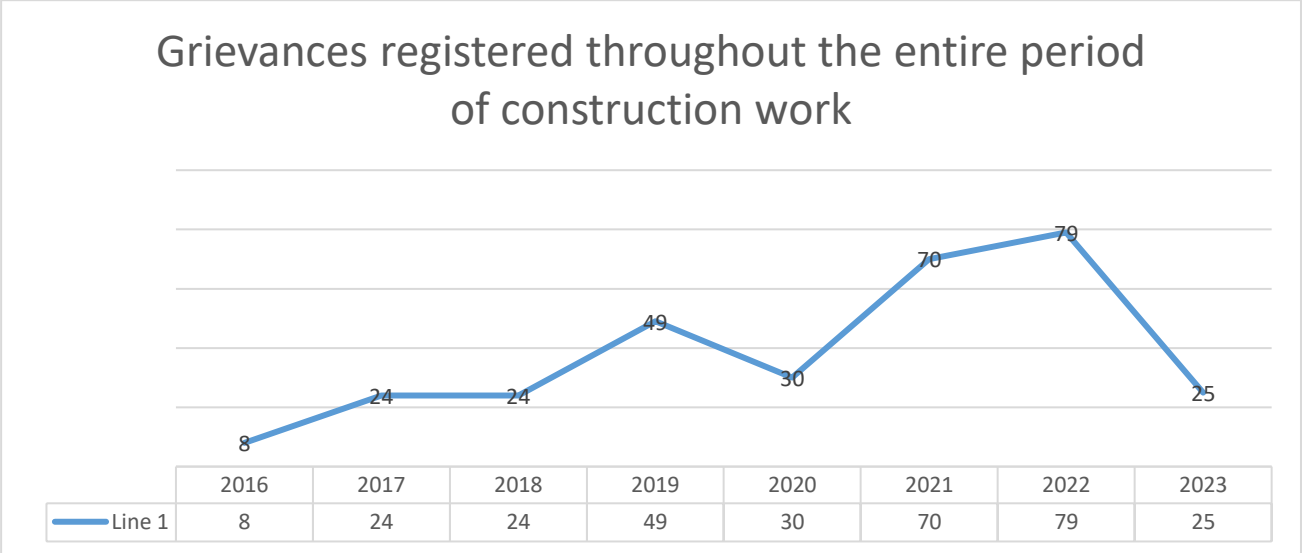
32. All those affected by the project may file grievances relating to their rights and responsibilities, including legal regulations and procedures for compensation payment, income-generating land acquisition, resettlement, and other related programs determining eligibility for recovery support. The 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.

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

2.5.1 GRM Log

34. 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.

35. As of June 30, 2023, in total 310 grievances and appeals were registered, including by years: 2016 - 8; 2017 - 24; 2018 - 25; 2019 - 49; 2020 - 30; 2021 - 70; 2022 - 79; 2023 – 25.



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

37. 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

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

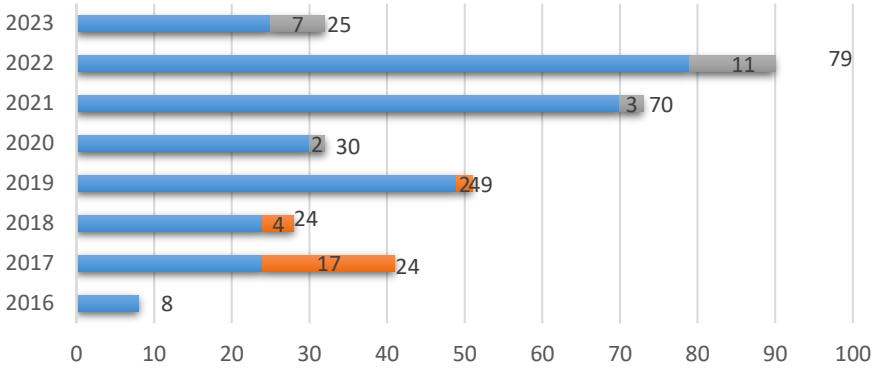
39. In the category Disturbance: Noise / Vibration / Dust, in total 19 grievances were registered: in 2017 - 17 and in 2019 - 2.

40. In addition, several oral appeals were received in 2018:

1) Residents of the nearby villages of Kyzyl-Tuu and Ismail have requested more frequent sprinkle the water at the dirt road to reduce dust from trucks. The contractor took measures to increase the water sprinkling at the dirt road.
2) The owners of "KAMAZ" brand trucks applied with a request to employ them for the transportation of crushed stone during the development of a borrow pit. The contractor hired about 10 drivers of "KAMAZ" trucks for temporary work.
3) There was a verbal grievance about the night work of heavy trucks carrying crushed stone. The Consultant and the Contractor have taken measures to reduce the impact of noise from the operation of equipment and to reject night work.
4) In 2018, there was an appeal from local residents with a request for assistance in furniture and leveling a dirt road to the sheep house. The Contractor helped them.

41. In total 23 grievances were registered in the Health, Safety and Environment (HSE) Concerns category: in 2020 - 2, in 2021 - 3; in 2022 - 11 and in 2023 - 7. But in this category, grievances were actually related only to road safety issues. This category considered the issues of road marking, pedestrian crossings (including underground), installation of traffic lights and road signs, opening and closing of dividing parapets to make passages and crossings, etc.

42. According to the chart below, the share of registered complaints related to environmental issues category - Disturbance (Noise / Vibration / Dust); category - Health, safety and environment concerns is minor. At the time of preparation of this report there are no pending or unresolved grievances.



	2016	2017	2018	2019	2020	2021	2022	2023
total number of registered grievances	8	24	24	49	30	70	79	25
category Disturbance (Noise/Vibration/Dust)		17	4	2				
category Health, safety and environmental concerns					2	3	11	7

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 started in March 2017.

45. The entire 45.1 km road section has been completed and opened for public use. The work was completed on November 18, 2021 and the defect notification period had been last until November 18, 2022. The defect notification period has been extended until August 30, 2023. The validity period of the bank performance guarantee has been extended until August 30, 2023.

46. During the reporting period, the following construction works were carried out on the road in the section from km 15.9 to km 61 (km 45.1):

- 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;
- construction of underpasses;
- construction of culvert pipes;
- construction of sidewalks;
- installation of reinforced concrete drainage ditches;
- installation of bus stops and asphalting 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 are such as environmental permits, such as cutting down trees, using borrow-pits and others.

Таблица 3 Name of given permits

No.	**Name of permit**	**Date of issue**
	Permission for the demolition of trees and shrubs from environmental authorities	
1	Novopavlovka village -1 pcs.	02.08.2021
2	Novopavlovka village -30 pcs.	28.09.2021
3	Belovodsk village -494 pcs.	28.01.2019
4	Belovodsk village -22 pcs.	08.05.2018
5	Belovodsk village -125 pcs.	16.10.2017
6	Kyzyl-Tuu village -348 pcs.	18.10.2017
7	Kyzyl-Tuu village -56 pcs.	11.07.2017
8	Kyzyl-Tuu village -32 pcs.	19.09.2017
9	Kyzyl-Tuu village -348 pcs.	18.10.2017
10	Sadovoe village -125 pcs.	07.12.2018
11	Sadovoe village -496 pcs.	16.10.2017
12	Sadovoe village -64 pcs.	23.18.2018
13	Petrovka village -1105 pcs.	05.06.2017
14	Petrovka village -282 pcs.	24.08.2018
15	Petrovka village -130 pcs.	31.01.2019
16	Novonikolaevka village -247 pcs.	14.08.2017
17	Novonikolaevka village -144 pcs.	28.08.2018
18	Petropavlovka village -351 pcs.	14.08.2017
19	Poltavka village -430 pcs.	14.08.2017
20	Poltavka village -254 pcs.	27.08.2018
21	Gavrilovka village -134 pcs.	18.10.2017
22	Gavrilovka village -218 pcs.	19.06.2018
23	Sokuluk village -4 pcs.	04.06.2018
24	Sokuluk village -206 pcs.	06.11.2018
25	Sokuluk village -282 pcs.	23.11.2018
26	Shopokov -69 pcs.	19.06.2018
27	Aleksandrovka village -151 pcs.	28.11.2018
28	Shopokov -69 pcs.	19.06.2018
29	Aleksandrovka village -151 pcs.	28.11.2018
	Permits for emissions and disposal of waste from environmental authorities	
1	Permit No. 032623; on the emission of pollutants into the atmosphere by stationary sources of pollution	from 11.05.2018 to 01.01.2019

2	Permit No 032654; on the emission of pollutants into the atmosphere by stationary sources of pollution	from 20.06.2018 to 01.01.2019
3	Permit No 000350; on the emission of pollutants into the atmosphere by stationary sources of pollution	from 11.08.2020 to 01.01.2021
4	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
5	Permit No 000079; on waste disposal in the environment.	from 16.03.2023 to 31.12.2023
	Permits for development of borrow-pits from local authorities	
1	Permission to develop Ak-Suu 1 borrow pit	01.06.2017
2	Permission to develop Ak-Suu 2 borrow pit	01.06.2017
3	Permission to develop Jelamysh borrow pit	01.06.2017
4	Permission to develop Kara-Balta borrow pit	01.06.2017
5	Permission to develop Saz borrow pit	11.09.2018
	Permits for storing soil, tree trunks, and the use of water intakes from local authorities	
1	Jayil district, At-Bashi village local authority	15.08.2017
2	Jayil district, Kyzyl-Dyikan village local authority	17.08.2017
3	Jayil district, Poltavka village local authority	28.08.2017
4	Moskovskiy district, Petrovka village local authority	06.09.2017
5	Moskovskiy district, Petrovka village local authority	19.06.2017
6	Moskovskiy district, Sadovoe village local authority	12.10.2017
7	Sokuluk district, Gavrilovka village local authority	16.11.2017
8	Sokuluk district, Kyzyl-Tuu village local authority	16.11.2017
9	Sokuluk district, Krupskaya village local authority	01.06.2018

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 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. Roadside trees, over the past 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.

Before **After**

Figure 4 Road section before and after tree cutting

50. Initially, on the road section from km 15.9 to km 61, the number of trees subject to forced cutting was 5916, but after additional study of the project site and changing of sidewalks design, it became possible to save 104 trees.

51. The total number of trees that fell under forced cutting was 5 812. As compensation measures, to restore the number of green spaces, it was planned to plant new tree seedlings. As of June 2023, the total number of trees planted was 11 625.

52. 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.

53. 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.

54. 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 overall cloths of workers, on the quality of fuel in gas chainsaw, on the procedure for cutting down tall trees, on dust suppression, on road safety, which were taken into account by the Contractor.

55. Demolished tree trunks were taken out to the sites allocated by the 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

56. On the road section km 15.9 - km 61, initially the number of trees falling under forced cutting was 5916, but after additional study of the project site, the design of sidewalks was changed, thereby it saved 104 trees. The total number of trees that fell under forced cutting amounted to 5 812 pcs.

57. Trees on the section from km 15.9 - km 61 were cut down from 2017 to 2019. The total number of trees that fell under forced cutting amounted to 5 812 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 2019, the China Railway No. 5 contracting company has started a phased planting of tree seedlings at selected sites in the Petrovka and Poltavka, where the main road works on the construction of sidewalks and the installation of drainage ditches have been completed.

Figure 8 Planting of seedlings in October 2019

60. To date 11 625 young seedlings have been planted:

Figure 9 Planting of seedlings in November 2022

61. Given that there are practically no places left on the project road for planting new seedlings. Local administration (ayil okmotu) proposed places for planting seedlings located at a distance of 1-2 km from the project road. Also, from some local authorities and the mayor's office of Kara-Balta requests were received to provide them with seedlings for planting 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. During the ADB mission, environmental specialist Ninette R. Pajarillaga visited the seedling planting sites at the water intakes in the Poltavka village and positively assessed the condition of the seedlings.

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 company, and representatives of MoTC KR.

63. 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 were eaten by animals. A large number of seedlings were broken by children. According to representatives of the local authorities, despite holding constant explanatory conversations with the population, grazing continues.

Figure 10 Livestock grazing on the plots of planted seedlings in the vllages of Poltavka and Petrovka

64. When burning dead wood in the fields of Poltavka village, the fire spread to seedlings. 45 seedlings died. In the Voyenno-Antonovka village 150 seedlings burned.

Figure 11 Burnt seedlings in the Poltavka village

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

66. In the spring of 2023, the inventory of seedlings was conducted which were planted from 2019 to 2023. The results are as below:

- The total number of seedlings handed over at the request of the local authorities and the mayor's office of the Karabalta city was 8 480 pieces.
- 3 145 seedlings were planted at the Bishkek-Kara-Balta Road section from km15+900 to km61+120.

- Of these, 976 pieces are broken and dried up, 195 pieces burned down. As a result, there were 1 974 surviving seedlings on this section of the road.

67. According to the inventory of seedlings, due to the fault of the Contractor to water in timely manner, about 700 seedlings died out of a total of 3 145 seedlings planted along the road.

68. In October 2023, the contractor will restore all the dead seedlings in the amount of 700 pieces. The planting is planned to be carried out jointly with local authorities. The seedlings will be handed over to local authorities for planting in the territory of the villages to ensure their safety and further care.

3.2 Excavation of soil into the dump.

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

70. Given that the road has been in operation for decades, it was likely that the roadside topsoil was contaminated with oil products and heavy metals, especially lead. Therefore, laboratory monitoring of soil samples was conducted. Eighteen soil samples were examined for lead and oil content along the entire project road approximately 5 m from the edge of the carriageway. As a result, multiple excesses of maximum permissible concentration were observed for these ingredients in each sample. Consequently, these soils could not be used for any agricultural purpose, neither in playgrounds nor in school recreation areas.

71. At the initial stage of work, dusting was observed during the removal of the soil layer. The contractor was warned in writing about the elimination of this violation.

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

Figure 12 Dusting observed durig the removal of topsoil

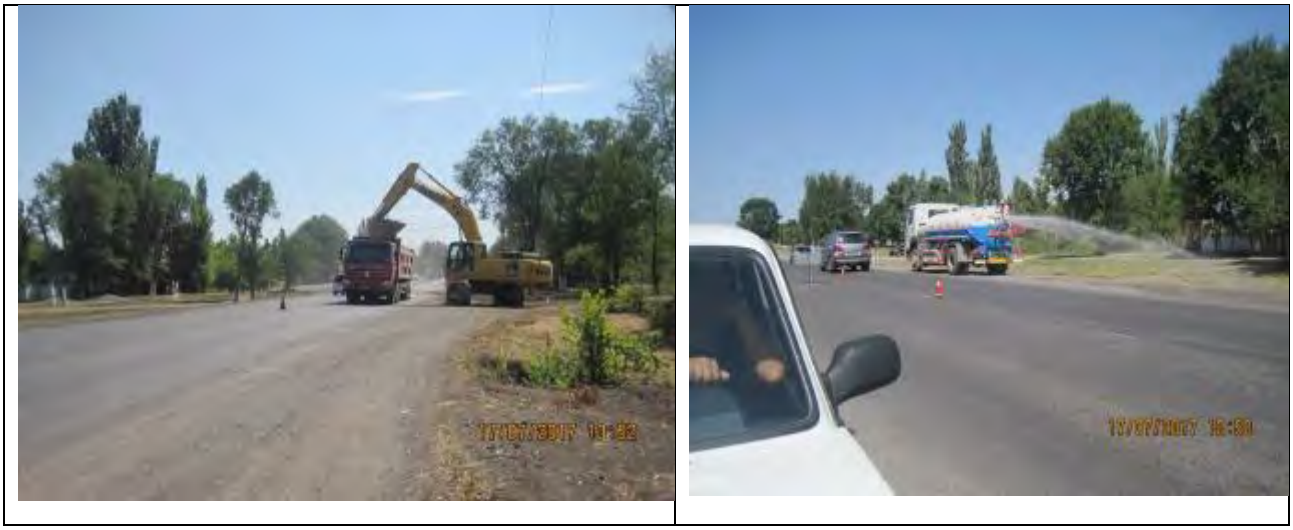


Figure 13 Removal of the topsoil with water sprinkling

Figure 14 Road shoulders with removed topsoil

Figure 15 Dumps with removed and disposed soil

73. Unsuitable soil in large volumes was subsequently taken out to the sites intended for storage of the removed soil in the village of Petrovka. Upon completion of the main construction works, the Contractor had to taking out all the soil.

74. In 2022, during the negotiations, local administration of Petrovka village decided to use this unsuitable soil for its own needs. In particular, to use unsuitable material for backfilling large pits. Local administration of Petrovka village took responsibility for taking out of soil. The Contractor provided assistance to the local administration in allocating the required amount of diesel fuel to perform these works. According to the agreement the fuel was handed over by the Contractor to the local administration of Petrovka village.

3.3 Borrow-pits.

75. On the project road (Bishkek - Kara-Balta section, km. 15.9-61), 6 land plots were initially allocated for borrow pits. The contractor has received all necessary documents/approvals from local authorities, the State Committee for Industry, Energy and Subsoil Use and the State Agency for Environmental Protection and Forestry for the development of these borrow pits.

76. 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.

77. Prior to commencement of borrow pit development, a Borrow pit Management Plan was prepared and submitted to PIU and ADB for approval.

78. Five of the six areas allocated for borrow pits have been developed for many decades. These are quite large objects. The new borrow pit areas were the Jelamysh borrow pit and the Saz borrow pit. Prior to the start of work, the soil layer in all borrow pits was removed and stored, which, after completion of the work, was used for reclamation.

79. Main information about borrow pits is given below in Table 4.

Table 4 Details of borrow-pits

No. of borrow-pits	Stocks (m^3)	Area (ha)	Distance from the road (km)
№1 «Jelamysh»	242 093	10,77	11
№2 «Sokuluk-1»	185 000	9,02	3,3
№3 «Sokuluk-2»	185 000	9,7	7,7
№4 «Ak-Suu -1»	210 000	11,89	2,5
№5 «Ak-Suu -2»	850 000	68,19	8,6
№6 «Karabalta»	275 323	73,70	3,5
№7 «Saz»	197 600	5,2	14.5

80. During the conclusion of agreement with local administration of Krupskoy village, 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 Sokuluk-1 borrow-pit was rejected, and the area of Sokuluk-2 borrow-pit was reduced to 1.73 ha.

81. After testing the quality of material at Sokuluk-2 borrow-pit by 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 the roadbed, in this regard, the mining of Sokuluk-2 borrow-pit was suspended.

82. For mining, a Saz borrow-pit was proposed, which is located on the territory of the Saz area (okrug) of the Sokuluk district.

83. Ak-Suu-1, Ak-Suu-2, and Kara-Balta borrow pits, due to their location in floodplains of rivers subject to mudflows, are classified as self- reclaimed.

84. ***Saz borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Sokuluk district.

Figure 16 Development of Saz borrow-pit

85. In May 2023, the borrow pit was reclaimed, and on June 9, 2023, the reclaimed Saz borrow pit was handed over to the Reclamation Commission.

86. ***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.

87. At the beginning of the borrow pit development, dusting was observed both on the territory of the production site and on the road leading to the borrow pit. After written warnings, the Contractor allocated 2 watering machines for permanent water sprinkling on the territory of the borrow pit, and on the road leading to it. Dust during the performance of works has become minimal.

Figure 17 Dusting during work at the Ak-Suu 2 borrow pit. In the foreground, the removed soil layer

Figure 18 Development of the Ak-Suu 2 borrow pit on moistened material

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

89. The borrow pit will operate until the completion of work on the 7.4 km section. Subsequently, it will be reclaimed and handed over to the Reclamation Commission.

Figure 19 Dusting on the access road to the Ak-Suu 2 borrow pit

Figure 20 Water sprinkling on the access road to the Ak-Suu 2 borrow pit

90. ***Ak-Suu 1 borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Moskovskiy district.

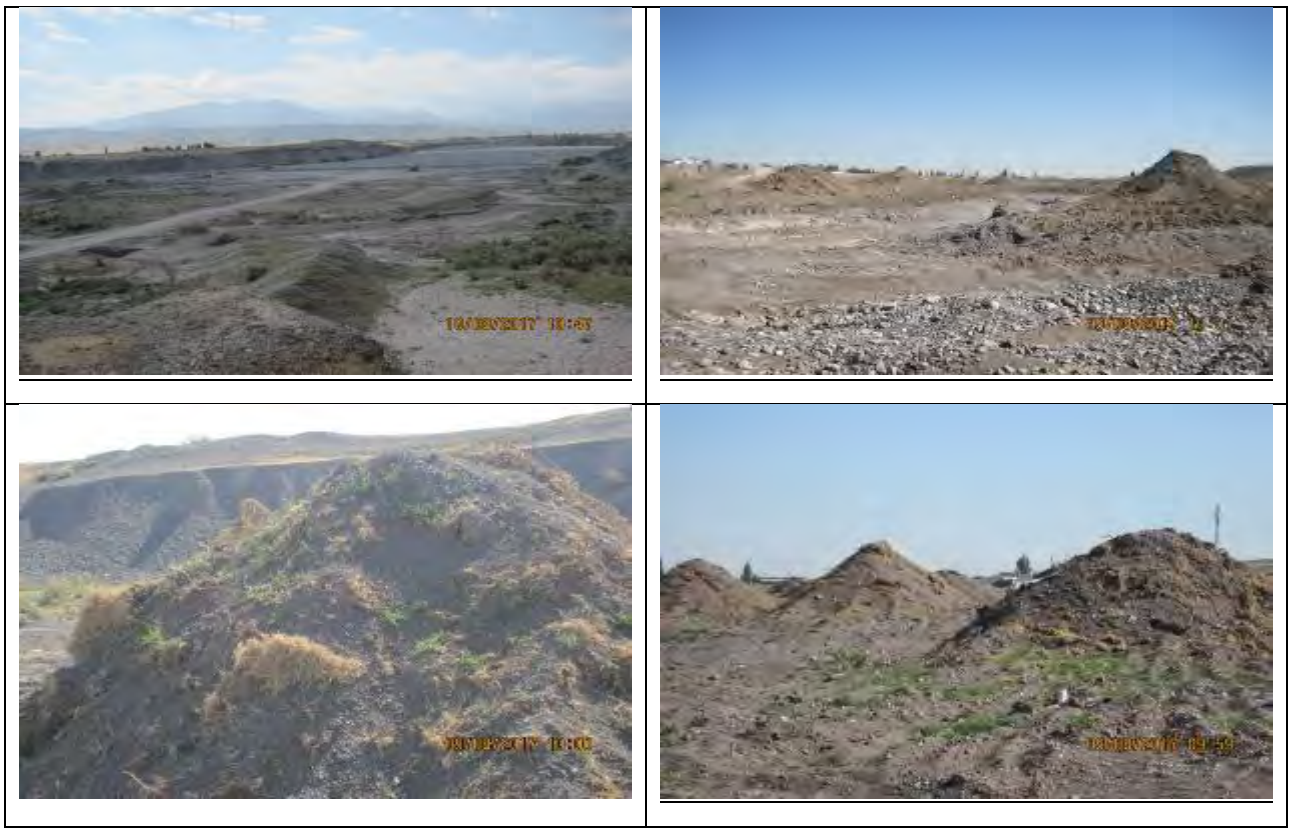


Figure 21 Ak-Suu 1 borrow pit. The removed soil layer was later used for reclamation.

91. ***Kara-Balta borrow pit.*** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the territory of the Jayil district. On August 24, 2021, the reclaimed land of the Kara-Balta borrow pit was handed over to the Reclamation Commission.

Figure 22 Development of Kara-Balta borrow pit

92. **Jelamysh borrow pit.** The borrow pit was used for the collection and taking out of inert materials for the construction of road in the Sokuluk district.

93. To develop the borrow pit, it was necessary to repair the technological road with a length of more than 10 km; it was in unsatisfactory condition. In addition, it was necessary to replace with a new one or repair the old bridge, with a bearing capacity of 25 tons (for the passage of loaded dump trucks).

Figure 23 Jelamysh borrow pit before development

Figure 24 Jelamysh borrow pit after completion of development work

Figure 25 Jelamysh borrow pit after completion of reclamation work

94. Development of the borrow pit from the very beginning was carried out in violation of the design, about what the Contractor was repeatedly warned in writing. Considering that the borrow pit's field is located on a slope, the development of deposit had to be carried out in layers with ledges of 5 m, starting from the upper part. In fact, the development of inert materials in the borrow pit was carried out from the bottom part with a ledge height of more than 10 m in violation of design solutions and safety precautions.

95. On May 3, 2018, the borrow pit development work was suspended until the situation was corrected. To continue work at the borrow pit, it was necessary to cut ledges, starting from the top part, with a height of 5 m and a width of at least 20 m. After fulfilling all the requirements on May 24, 2018, permission for further development of the borrow pir was received.

96. After the completion of the borrow pit development, a Reclamation Plan was prepared, according to which the borrow pit was reclaimed. The handover of the reclaimed borrow pit to the commission was carried out in December 2021.

97. At the time of preparation of the report, out of the previously allocated 7 borrow pits: 2 borrow pits were not developed, 4 borrow pits were reclaimed and handed over to district commissions, 1 borrow pit will be used until all work on the 8.5 km. 15.9 km section is completed.

Table 5 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)	Notes

1	No.1 «Jelamysh»	21+280	11	242 093	10,77	Reclaimed and handed over based on the Act dd December 22, 2021.
2	No.2 «Sokuluk-1»	28+420	3,3	185 000	9,02	Not developed. Handed over based on the Act on non-violation of the integrity of the land dated dd 10.11.21
3	No.3 «Sokuluk-2»	28+420	7,7	185 000	9,7	
4	No.4 «Ak-Suu -1»	45+700	2,5	210 000	11,89	Reclaimed and handed over based on Act dd 03.07.2023
5	No.5 «Ak-Suu -2»	45+700	8,6	850 000	68,19	Used for works at 7.4 km section. Will be handed over upon completion of reclamation work
6	No.6 «Karabalta»	60+180	3,5	275 323	73,70	Reclaimed and handed over based on the 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.

3.4 Construction waste.

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

Construction reinforced concrete waste

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

100. Initially, construction waste was promptly removed to the allocated by DEP-9 (Road maintenance unit) places for the storage of old reinforced concrete products. With the increase of construction work, the allocated places could not accommodate all the waste, and a problem arose with determining the storage places for reinforced concrete waste. In the spring of 2019, together with the local authorities, places were allocated for the storage of old reinforced concrete products. Basically, these were areas where there were pits and which the local authorities planned to use for commercial purposes. Removed unsuitable soil was also taking out to these places.

Figure 26 Construction reinforced concrete waste

Old asphalt

101. In the process of excavating the old asphalt concrete pavement, the problem of crushing the old asphalt to a size of 20x20 remained unresolved. Therefore, the problem of disposal arose. 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. Partially at the request of residents, the removed asphalt was taken out to make embankments on private sites. The levelling of private land plots was carried out by the owners themselves. Asphalt was not taken out to wetlands.

Figure 27 Old asphalt removed from the roadbed

102. Later, by 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 remain on the roadsides. The contractor was given instructions to correct and bring to the proper condition the found shortcomings.

103. At the request of the mayor's office of the Shopokov city, all the streets of the "Yntymak" residential area were completely backfilled with old asphalt and leveled. A lot of work has been done to improve the internal roads of the whole residential area.

Figure 28 Taking out of old asphalt to the territory of the "Yntymak" residential area at the request of residents and representatives of the Mayor's Office of Shopokov

104. The local residents and representatives of the local administration, represented by the head of Aleksandrovskiy local administration, addressed the Contractor with a letter to take out the old asphalt to the production areas of this village, explaining that they need this old asphalt for patching roads inside the village of Alexandrovka. Therefore, the old asphalt in the village of Alexandrovka was taken out and stored at specially allocated places. Further, this asphalt will be used as necessary for the improvement of streets.

105. During the construction period – **88709,04m^3** of old asphalt was removed and taken out. Also, **308457.84m3** of unsuitable soil was taken out.

Figure 29 Streets backfilled with old asphalt

Figure 30 Storage of unsuitable soil for further use

Production waste

106. 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.

Figure 31 Waste on the territory of the asphalt plant. Waste barrels and metal drum lids

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

Figure 32 Old car tires to be recycled

Household waste

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

109. 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.

110. Solid household waste is collected unsorted into garbage containers with a capacity of 1 m^3 and taken out weekly by Sokuluk and Moskovskiy checkpoints with which a service contract 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.

3.5 Construction of pavement.

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

112. The British company MRCL conducted a study on the intensity and distribution of vibration. The aim of the study was to observe vibration in different places to determine the magnitude of the risk depending on the distance from the source of vibration and the condition of houses along 45.1 km of the Bishkek-Kara-Balta Road. The focus was on quantifying the impact of vibration compaction on nearby houses and recommendations for practical mitigation measures to avoid these impacts and reduce the risk of damage.

113. This study was the starting point for the implementation of the vibration impact contour map.

114. Also, additional data were obtained from field measurements of seismic vibrations that occur during the operation of the rollers. Literature related to existing vibration calculation methods from soil preparation and compaction was reviewed, and it was documented what vibration damage thresholds were set for low, medium and high-risk building classes based on recognized international standards. Vibration modelling report was prepared.

115. In the specific vibration study, various mitigation options were proposed, such as limiting vibratory rollers to predetermined sections of road with high vulnerability dwellings and using deep trenches to protect

vulnerable structures from vibration compaction. Although this report contains useful limiting parameters for cosmetic and structural damage due to ground vibration, IPIG and EPTISA determined that the most effective and least costly solution was to eliminate vibration compaction on all sections of the road where there were any habitations.

116. EPTISA's Consultant (Materials Engineer) carried out a study to verify the possibility of compaction without vibration. The study was conducted on bound, unbound and binder materials.

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

118. It was decided not to use vibration in the further work on compaction of 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 accepted construction methods have led to an increase in the cost of the work performed.

119. Throughout the construction period, earthworks on the construction sections of the road were carried out without the use of vibration. 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.

120. In 2019, the Consultant developed a mix design for the wearing course that complies with local standards and British Standards. This mix design also takes into account the noise reduction requirements that were recommended in the Noise Modeling report.

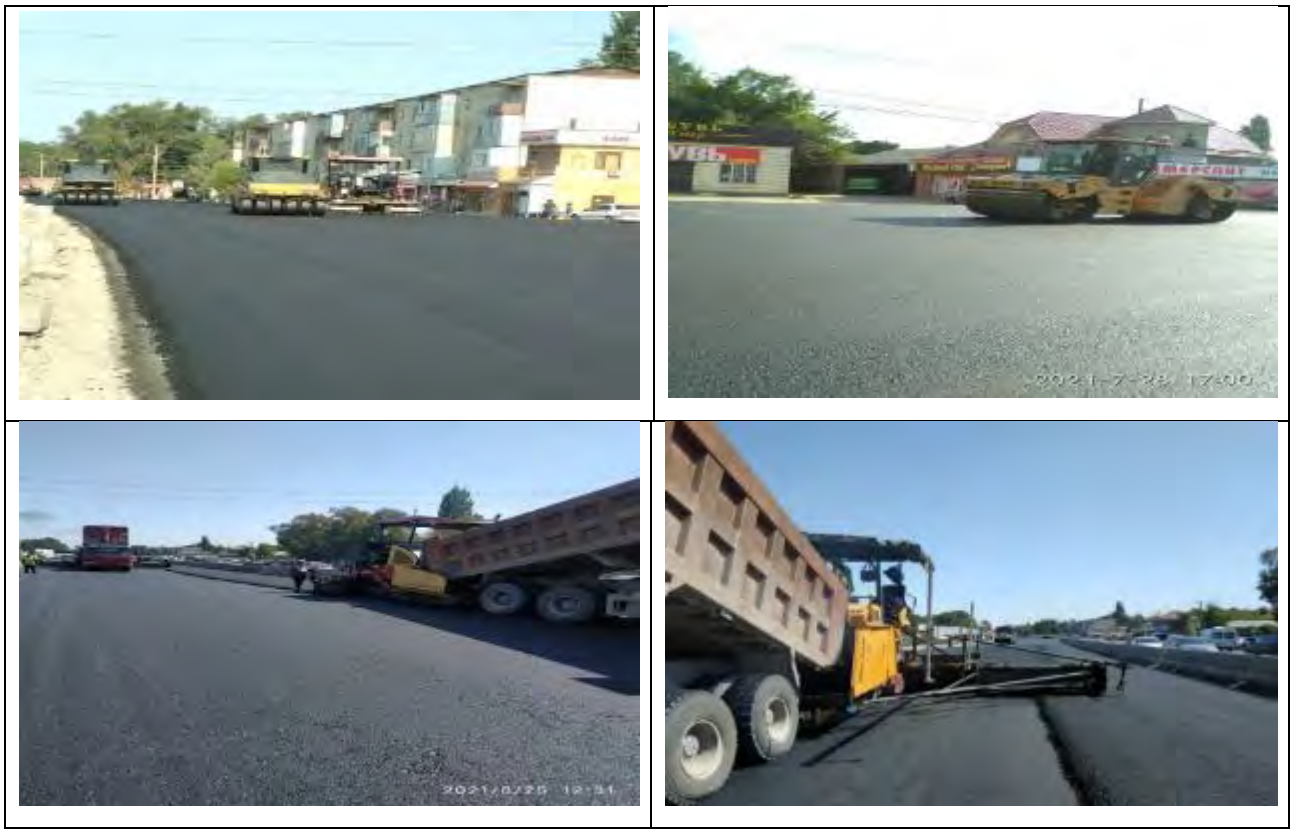


Figure 33 Asphalt paving km 15.9 to km 61

121. On October 1, 2021, asphalt pavement was completed on the main road from km 15.9 to km 61.

Figure 34 Completion of asphalt pavement on the main road from km 15.9 to km 61

122. Work was carried out on the preparation and laying of asphalt at junctions to the streets adjacent to the road.

Figure 35 Laying asphalt at junctions to the streets adjacent to the road in the village of Aleksandrovka

Figure 36 Laying asphalt at junctions to the streets adjacent to the road in the village of Petrovka

123. Pavement construction works included installation of curbs, preparation of area and asphalting.

Figure 37 Construction of sidewalks

3.6 Construction of bridges.

124. The design provided for the repair of 6 bridges with widening.

Bridge across the Jelamysh river

125. The bridge is located in a non-populated settlement. The length of the bridge is 17.95 m.

126. The main design solution for the reconstruction of this bridge is the reconstruction of existing buried abutment with installation of a "reinforced concrete jacket"

127. Also, it included the construction of a new bridge deck, construction of new monolithic sidewalks with a width of 0.75 m on a strengthened slab of the superstructure. Installation of reinforced concrete parapet barriers on the bridge and on the approaches.

128. After the completion of construction works, a large amount of soil, construction waste, and reinforced concrete structures remained in the riverbed of the Jelamysh River.

129. A letter was sent to the contractor, to remove all construction waste from the riverbed as soon as possible.

Figure 38 Riverbed of Jelamysh River before and after waste disposal

Bridge across the Sokuluk river

130. This bridge structure across the Sokuluk river is located in the center of the Sokuluk village. The method of bridge construction is bore piling. Bentonite was used as the drilling fluid. The aqueous solution with bentonite remained after use was discharged into a special pit and, after dehydration, was taken out from the construction site to a place (pit) specially allocated by the local administration.

Figure 39 Construction of a bridge across the Sokuluk river. Bentonite pit

Figure 40 Cleaning the Sokuluk riverbed from construction waste

131. A bypass road was not constructed during the construction of the bridge across the Sokuluk River. The construction of the bridge did not affect to traffic. Traffic passed along the main road.

132. Sidewalks were fenced off by high curb blocks of BO-2 type and bordered by a sidewalk curb on the shoulders side.

133. In order to determine the impact on residents living near the bridge, on June 8, 2018, noise and vibration monitoring was carried out by the Profilab laboratory in the bridge construction area. Surveys were carried out at several points in the bridge construction area and in a nearby house.

134. At the time of the measurements, the noise level coming from the rock drill and percussion machine at all measured points exceeded the sanitary standard from 2 dBa to 16 dBA. During the operation of the rock drill, the noise level exceeded the sanitary norm from 1 dBA to 13 dBA, when the percussion machine and the rock drill were turned off, the noise level exceeded the sanitary norm from 1 dBA to 11 dBA, and in the bedroom of the house at the 231 Frunze St. does not exceed the sanitary standard.

135. The results of instrumental measurements of the vibration level showed that the vibration level is not constant. In the bedroom of the house at the 231 Frunze St. during the operation of the percussion machine and rock drill, the vibration level exceeded the sanitary standard by 5 dBa, and during the operation of only the rock drill and when all machines were turned off, it did not exceed the sanitary standard.

136. These indicators were short-term during the construction of bridge.

Bridge across the Ak-Suu River

137. This bridge structure across the Ak-Suu River is located on the outskirts of the Belovodskoe village.

138. Construction of the bridge has affected to traffic. Traffic passed along a bypass bridge across the river.

139. Construction of the bypass bridge was supervised by road safety specialists.

140. Construction of the bridge on the left bank of the river was carried out by a subcontractor. Construction method was drilling.

Figure 41 Construction of a bridge across the Ak-Suu river by drilling on the left bank

141. On the right bank of the river, the work was carried out by the Contractor using the bore piling method. Bentonite is used as drilling fluid. The riverbed was blocked. Water has been diverted from the site where construction work was underway. The bentonite pit was located directly in the riverbed.

Figure 42 Construction of bridge across the Aksuu river

142. After removal of equipment, the clay pit in the riverbed remained uncleaned.

143. The flow of water eroded a pit with used clay located in the riverbed, which caused pollution of the river. The contractor was given several warnings about the urgent need to clean up the riverbed.

144. The riverbed was cleared of bentonite clay only in the spring of 2019.

Figure 43 Residue of clay in the Ak-Suu riverbed

145. Sidewalks on the bridge were constructed on the same level as the carriageway and fenced off by a high 750mm curb block BO-1*.

146. From the side of the riverbed, sidewalks are fenced off with metal railings.

Bridge on the mudflow canal of the Aksuu river

147. At the exit from the Belovodskoye village, on the border with the village of Petrovka, there is a bridge structure, which serves to pass part of the maximum flood passing along the Aksuu river, it is a mudflow canal of the Aksuu river.

148. The water flow of the Aksuu River, passing under the railway bridge located 4 km above the road, is divided into two streams, forming a second channel.

149. Sidewalks are constructed at the level of the carriageway and fenced off by a curb block 75 cm high.

Bridges across the Jantai Canal and the Krepostnoy Canal

150. Existing bridges were replaced with culvert pipes.

151. The Jantai canal passes on the border of Romanovka and Sokuluk villages (km 24+110), which is originating from the water intake facility on the Sokuluk river, in the foothill zone. The canal is designed to pass water volumes for irrigation of farmlands and agricultural fields of villages located below the road. The canal was also designed to pass mudflows formed in the foothill zone as a result of heavy rainfall. The throughput of the canal is up to 6-8 m3/s. However, at present, the function of the canal is very limited due to the fact that the canal bed is silted with sediment, and the area below the road is built up with residential buildings.

152. The dimensions of the pipe of the Jantai canal are taken in accordance with the calculated maximum water flow. Consumption is 18 m3. Designed pipe with an opening of 6.0x2.0 m.

Figure 44 Construction of a bridge on the Jantai Canal

153. Work during the construction of the bridge on the Jantai canal was carried out with gross violations of safety precautions. There were no special means for working at height.

154. Within the given period, ladders and scaffolds were installed.

Figure 45 Safety violations during the construction of the bridge on the Jantai Canal

155. Krepostnoy Canal, crosses the road at the entrance to the Belovodskoe village. The canal is intended not so much for irrigation of farmland, downstream villages, but for the discharge of areal (mudflow) runoff formed in the foothill zone during heavy rainfall.

156. The dimensions of the pipe of the Krepostnoy canal are designed in accordance with the calculated maximum water flow rates. Consumption is 20 m3. Designed pipe with an opening of 6.0x2.5 m.

Figure 46 Construction of bridge on the Krepostnoy canal

157. Construction of the bridge was carried out with gross violations of safety precautions. There were no special means for working at height, ladders and equipped scaffolds. The area around the bridge was littered.

158. A letter was sent to the contractor with instructions to take measures to eliminate the found violations. Within the specified timeline, the violations were eliminated. Garbage removed; ladder made for work at height.

Figure 47 Safety violations during the construction of bridge on the Krepostnoy Canal

159. The pedestrian bridge on the Krepostnoy Canal was in an unsatisfactory condition prior to construction. A letter was sent to the contractor to strengthen the existing bridge before the construction of the new bridge.

160. Within the specified timeline, the bridge structure was strengthened. The bridge was covered with a concrete layer.

Figure 48 Pedestrian bridge on the Krepostnoy canal before the construction of a new bridge

Figure 49 Pedestrian sidewalk on the new bridge at the Krepostnoy canal

3.7 Construction of culvert pipes.

161. The road crosses a number of permanent and intermittent watercourses along its length. The problem of water drainage is solved by using culvert pipes.

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

163. The design provides for the construction on the main road:

- round pipes with a diameter of 1.5m
- rectangular: with an opening of 0.8x0.8m, 2.0x2.0 m, 6.0x2.0 m

164. Reinforced concrete rectangular pipes with an opening of 0.5x0.5m are designed at the junctions for the passage of storm water.

165. 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.

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

Figure 50 Construction of culvert pipes.

167. For the traffic safety purpose, all work areas were fenced off, protective barriers and traffic safety signs were installed. New lighting fixtures have been installed. Stands were installed with an appeal to drivers to treat with understanding the inconveniences on the road in areas where construction work is underway.

168. Bitumen for waterproofing pipes was melted on the spot. Taking into account that the Contractor does not allocate dry firewood for these purposes, the workers were forced to burn bitumen. The poisonous black smoke emitted at the same time adversely affected the health of workers and villagers. Repeated letter was sent to the contractor specifying the violation.

Before After

Figure 51 Bitumen melting for waterproofing of pipe

169. The situation has been fixed. Dry firewood was given to the contractor.

170. During the construction of some culvert pipes, groundwater was wedged out. A letter was sent to the contractor that in order to divert groundwater, it was necessary to build a drainage ditch, and after completion of construction work, to level the area. Recommendations have been implemented.

Figure 52 Wedging out of groundwater during the construction of culvert pipes

3.8 Construction of drainage ditches. Installation of parapets.

171. The design provided for the installation of drainage ditches to drain storm water from the road.

Figure 53 Construction of darinage ditches

172. Installation, cleaning, and strengthening of New Jersey type parapets included welding, concreting of ditches on passages between parapets.

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

Figure 54 Cleaning of drainage ditches

174. To prevent traffic accidents, as well as for the safety of drivers, reinforced concrete parapets were installed on the road.

Figure 55 Installation of New Jersey type barriers.

Figure 56 Installation of "Sapojok" type road curbs

175. During the monitoring, it was found that on the road shoulders, where parapets strengthened, there were soil wastes that were not removed, and stored in small piles. The contractor was warned with an indication of timing for the elimination of this violation. In due time, soil waste was collected from the road shoulder and taken out. In the future, the soil accumulated near the parapets was cleaned and removed in a timely manner.

Figure 57 Cleaning of parapets from soil waste and removal of waste from the road

176. During the construction of drainage ditches, as well as during the installation of parapets, despite constant warnings, there was problem of regular violation of safety precautions when moving loads with a crane (see Figure 47). Workers were in the area of the crane without personal protective equipment. These

non-compliance of safety precautions were observed both at the site for the manufacture of reinforced concrete structures, and when laying drainage ditches. Repeatedly, the Contractor was given oral and written warnings.

3.9 Construction of underpasses

177. There were 4 underpasses on the existing road. They were in an unsatisfactory condition; major repairs were required.

178. The construction of new underpasses was also designed. Location of pedestrian crossings in the design was determined taking into account the intensity of transport and pedestrian traffic within the intersection, determined by the estimated 15-minute flow at rush hour.

179. The design provided for the construction of 6 new pedestrian crossings:

- new underpass (km33+091) Aleksandrovka village;
- new underpass (km37+313) Sadovoe village;
- new underpass (km42+800) Belovodskoe village;
- new underpass (km55+410) Poltavka village;
- new underpass (km57+410) Petropavlovka village;
- new underpass (km59+640) Novonikolaevka village;
- existing underpass (km22+726) Shopokov city;
- existing underpass (km25+880) Sokuluk village;
- existing underpass (km30+481) Aleksandrovka village;
- existing underpass (km32+194) Aleksandrovka village.

180. During the construction of some underpasses, there were problems with high groundwater levels. It was necessary to carry out intense waterproofing. Also, during operation, it was found that storm flows enter the underpasses, it was decided to build up the roof on the underpass and make a concrete pavement around the passages.

Figure 58 Cosntruction works at the underpasses

181. Metal gratings were installed near constructed underpasses, in the area of markets, water facilities, gratings were put on the top of parapets and in other places of mass residence of the population.

Figure 59 Installation of metal grating in road construction sites

182. The area around the underpass near the school in the Novonikolaevka village (km 59+640) was in an unsatisfactory condition. It was difficult for schoolchildren to go down to this underpass, especially in icy conditions, which could cause falls and injuries. A letter was sent to the contractor to eliminate these violations.

183. In December 2022, the violations were eliminated. A reinforced concrete platform was constructed around the underpass, and roof installed. Metal gratings are installed on the road near the underpass.

Before **After**

Figure 60 Violations near the underpass in front of the school in the Novonikolaevka village

184. Adults and children are currently using underpass to cross the road.

Figure 61 Underpass in the Sokuluk village

3.9 Plants.

185. 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.

186. 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 pit for sewage.

Figure 62 Production site. Concrete mixing plant. Asphalt bitumen plant

Concrete batch plant.

187. Area of concrete batch plant is intended for the manufacture of reinforced concrete products. Technological process for the manufacture of reinforced concrete structures includes the 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 63 Manufacture and preparation of reinforced concrete structures

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

Stone-crushing plant.

189. 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.

Figure 64 Operation of a stone crushing plant on moistened raw materials

190. *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. All warnings from Eptisa were ignored. The contractor explained the current situation by breakdowns in pipelines.

Figure 65 Dust in stone crushing plant

191. 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”.
192. Water supply has been restored. But this problem recurred periodically throughout the entire construction period.

Concrete mixing plant.

193. 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 66 Filling the concrete mixing machine with concrete

194. 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.

195. 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 67 Washing of concrete mixers

Asphalt bitumen plant.

196. 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 68 Loading of asphalt mixture into dump trucks and unloading into asphalt pavers

197. In the spring of 2018, a large amount of bitumen in plastic packages was brought to the territory of the plant, which were stored directly on the ground. Bitumen leaks began to appear due to cracks in the packages. As the temperature increased, bitumen leakage to the ground constantly increased. There was an unmanageable situation that could be corrected only after using all the bitumen. Several letters were sent to the contractor with recommendations to appoint a responsible employee to control bitumen leaks and timely clean it from the ground.

198. At the end of September 2018, all the bitumen located on the territory of the asphalt plant was used up. All bitumen leaked on the ground was collected and stored in barrels. Concrete site prepared for storage of bitumen.

Figure 69 Bitumen in plastic packages. Bitumen leaks to the ground

199. The next batch of bitumen was delivered in metal barrels. The barrels were installed on a specially prepared concrete platform. Partially the barrels were installed on a dense polyethylene film.

Figure 70 Bitumen in metal barrels stored on a prepared site

200. The problem was in the disposal of empty barrels and caps. Empty barrels from bitumen were stored on the territory of the asphalt plant and the Contractor had to constantly be reminded on the need for its disposal.

Figure 71 Empty barrels from used bitumen

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

202. 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 cover.

203. 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 72 Impenetrable protective coating around chemical containers

Workers' accommodation camp at the territory of production site.

204. Due to the proximity to the main gas pipeline, in 2018 the relevant services have repeatedly issued orders to relocate the residential sector outside the sanitary protection zone. Once the land plot owner's (Emergency Control Ministry) permission was obtained, in 2019 the residential area was relocated to a safe distance and placed on the east side of the industrial zone in accordance with safety requirements and hygiene standards.

Figure 73 Workers' accomodation camp on the territory of the production site

205. *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.

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

207. 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, a pipeline was laid to the plant. Currently, there are no problems with water at the plant. The figure below shows the fenced area of the well.

Figure 74 Restored well to supply the plant with water

208. 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.

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

Figure 75 Dismantled camp for workers on the territory of the production site

210. 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.

211. 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.

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

3.10 Review of laboratory monitoring conducted during the reporting period

Review of visual monitoring carried out during the reporting period

213. 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.

Таблица 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
2017	114	93	48
2018	169	143	46
2019	113	86	49
2020	94	82	44
2021	99	78	42
2022	74	62	43
2023	24 for the first half year	12	16

Review of laboratory monitoring conducted during the reporting period

214. 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, surface water quality, noise impact, vibration impact. Environmentally sensitive receptors located along the project road have been determined and measured throughout the construction period.

215. At the beginning of construction work on the Bishkek-Kara-Balta Road section in 2017, the functions of monitoring environmental components were transferred to the Consultant.

216. In order to monitor environmental components such as air quality, surface water quality, noise impact, vibration impact, the existing content of heavy metals in the soil during the construction period on the Bishkek-Kara-Balta Road section, applications were sent to several laboratories and their prices were analyzed.

217. 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;
- *Surface water 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";
- *Soil:* Department of Environmental Monitoring under State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic.

218. 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;

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

Air quality monitoring

220. Air quality monitoring was 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 76 Air quality monitoring

221. *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.

222. In almost all samples taken, dust content exceeded.

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

224. It should be noted that the excess of dust content in the air was also observed in 2013-2017 before the start of construction work on the road, in this regard, it is impossible to say that the cause of this excess is only construction work.

Surface water quality monitoring

225. Monitoring of surface water quality was carried out in 2017 and 2018 during the period of bridge construction with the appearance of water in the rivers, upstream and downstream. These are the Sokuluk and Ak-Suu rivers, there was no water in the Jelamysh river during the construction period. Monitoring was carried out on the following indicators: BOD5, oxygen content, oil products, suspended solids.

Conclusion on the results of surface water quality measurements.

226. The results of the monitoring showed that on both rivers there was no impact of construction work in the samples behind the bridge along the Sokuluk and Ak Suu rivers. Subsequently, in 2019 and later, water did not enter the rivers and was taken apart for irrigation.

Before bridge **After bridge**

Figure 77 Water sampling on the Sokuluk river

Before bridge **After bridge**

Figure 78 Water sampling on the Ak-Suu river

Monitoring of topsoil

227. Sampling of topsoil at the construction sites was carried out in 2017 and 2018 at places where it was planned to remove and store topsoil during the widening of the road. The samples were taken in order to monitor the topsoil for the content of lead and oil products. Soil is one of the main concentrators of chemical pollutants, including heavy metals, which, when present in excess, spread it toxic properties.

Figure 79 Topsoil sampling

228. Soil was monitored in order to determine the possibility of its further use. Samples were taken from the top layer of soil from a depth of no more than 10 cm. Background samples were taken in areas remote from the road. According to the results of the monitoring, there was excess lead content and a high content of oil products. In the future, this soil can be used for backfilling slopes, if necessary. When such soil is used for lawn purposes or as soil for planting trees, it is necessary to mix the contaminated top layer with uncontaminated soil.

Noise and vibration associated with earthworks and road works

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

230. 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.

231. Also on June 8, 2018, noise and vibration monitoring was conducted in the Sokuluk bridge construction area, where pile driving was carried out, which could cause vibration in nearby houses. The laboratory measured noise and vibration in a nearby house, as well as in the surrounding area. The noise level measured in the bedroom of the house at 231 Frunze Street during the operation of the equipment did not exceed the sanitary standard.

Figure 80 Noise and vibration monitoring

232. *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.

233. 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.

234. *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.

235. 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 monitoring of environmental components during construction work on the 45.1 km road section

Air quality monitoring	Noise impact monitoring	Vibration monitoring	Surface water quality monitoring	Soil monitoring
Laboratory of Chui-Bishkek Department of Environmental Protection 03.10.2017	Laboratory of DDPSES 14.06.2017		Laboratory of Chui-Bishkek Department of Environmental Protection 27.04.2017	Laboratory of Chui-Bishkek Department of Environmental Protection 13.10.2017
Laboratory of Chui-Bishkek Department of Environmental Protection 09.06.2017	Laboratory of DDPSES 23.06.2017			
Laboratory of Chui-Bishkek Department of Environmental Protection 04.07-05.07.2018	Laboratory "Profilab" 19.06.2018	Laboratory "Profilab" 19.06.2018	Laboratory of DDPSES 30.07.2018	Laboratory of Chui-Bishkek Department of Environmental Protection 30.07.2018
	Laboratory "Profilab" 24.09.2018	Laboratory "Profilab" 24.09.2018		
Laboratory of Chui-Bishkek Department of Environmental Protection 06.08.2019	Laboratory "Profilab" 26.07.2019	Laboratory "Profilab" 26.07.2019	Laboratory of Chui-Bishkek Department of Environmental Protection 06.08.2019	
	Laboratory "Profilab" 28.05.2020	Laboratory "Profilab" 28.05.2020		
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			

Chui-Bishkek Department of Environmental Protection

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

DDPSES - Department of Disease Prevention and State Epidemiological Surveillance

4. INFORMATION ABOUT PROCESSES THAT WERE GOING WELL AND ABOUT ASPECTS THAT WAS WORSE DURING CONSTRUCTION.

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

Table 8 Progress on 45.1 km section

Section		Name of works	UoM	Total quantity	Completed quantity / status	% of completion
km 15+900-km 61+128	1	Sidewalks	km	82,12	82,12	100,00%
	2	Bus stops	Pcs.	114	114	100,00%
	3	Junctions	Pcs.	385	385	100,00%
	5	Road marking on junctions	Pcs.	385,00	385,00	100,00%

237. Until the completion of work on 7.4 km section activities will continue at the production site, at the Ak Suu 2 borrow pit, in the Contractor's camp in the village of Sokuluk.

238. 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.

239. 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.

240. 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.

241. 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.

242. 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, water intake areas, and school territories located at a distance of 1-2 km from the project road, 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 8480 pieces.

243. 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.

244. Also, good practice example is that anti-shock buffers were installed on the road to prevent traffic accidents and prevent loss of life. 50 buffers were installed.

245. 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 the parapet on the road, have a reflective film and are therefore visible from afar at night.

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

Figure 81 Examples of good practices

5. CONCLUSIONS AND RECOMMENDATIONS.

247. 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.

248. 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.

249. 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.

250. 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.

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