

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
					Price (Decreased) E=C-D	Price (Increased) F=C+D
Item 1	●●t	●	●	●	●	●
Item 2	●●t	●	●	●		
Item 3						
Item 4						
Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials	1st month, 2015	2nd month, 2015	3rd month, 2015	4th	5th	6th
Item 1	●	●	●			
Item 2						
Item 3						
Item 4						
Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

Environmental Checklist

Annex B

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) N (c) - (d) N	(a) EIA report has been prepared by conducting environmental impact assessment in accordance with Kyrgyz's EIA implementation regulations and JICA guidelines. (b) The EIA report was submitted to SAFEFF in the middle of March and currently under review. (c) The examination of EIA report will finish at the end of April, 2018. (d) Local administration will implement tree cutting prior to bidding. It is necessary to obtain approval from the Tjass Regional Environmental Protection Department for tree cutting plans.
		(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Contents of the project and the potential impacts were explained to local stakeholders at public consultation meeting, and understanding was obtained from the local stakeholders. (b) Comments from the local residents were recorded in minutes of meeting and reflected to the project design.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Three routes (A-C) other than zero option are considered from the point of stream condition, road alignment, workability, environmental and social impact, construction cost, etc. As a result, route C was selected by reason that stream condition is relatively stable in the future, the sharp curve can be improved sufficiently and high accident prevention effect can be expected, and workability and construction cost are also good.
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that air pollutants emitted from the project related sources, such as vehicles traffic will affect ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken? (b) If air quality already exceed country's standards near the route, is there a possibility that the project will make air pollution worse?	(a) Y (b) Y	(a) Tentatively air quality is expected to deteriorate because of the emission gas arising from construction machinery and vehicles during construction. Monitoring will be conducted and measures to mitigate the impact will be taken. (b) As a result of the baseline survey, air quality of project site shows below environmental standards. At operation stage, emission gas arising from vehicles is expected to affect air quality due to the increase of traffic volume. On the other hand, impact of dust will be mitigated because of the improvement of road surface.
		(2) Water Quality	(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? (b) Is there a possibility that surface runoff from roads will contaminate water sources, such as groundwater? (c) Is there a possibility that the project will contaminate water sources, such as well water?	(a) N (b) N (c) N
	(3) Wastes	(a) In the case of that large volumes of excavated/dredged materials are generated, are the excavated/dredged materials properly treated and disposed of in accordance with the country's standards?	(a) Y	(a) Drilling earth generated by the construction of bridge pier will be disposed at the approved disposal site.

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Environmental Checklist

Annex 8

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	(4) Noise and Vibration	(a) Do noise and vibrations from the vehicle traffic comply with the country's standards? (b) Do low frequency sound from the vehicle traffic comply with the country's standards?	(a) Y (b) Y	(a) Due to the increase of traffic volume, noise level is assumed to deteriorate. Monitoring will be conducted and measures to mitigate the impact will be taken if noise and vibration level exceed the environmental standard. (b) Sensitive facilities such as schools and hospitals are not exist around project site. Since the distance from the end of the bridge to the residential area is more than 100 m, the influence of low frequency sound is not assumed. In addition, standard of low frequency sound is not set in Kyrgyz.
	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas? (a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of bridges and access roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) Is there a possibility that the changes in water flows due to the project will adversely affect aquatic environments in the river? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms?	(a) N (b) N (c) N (d) Y (e) N (f) N	(a) The project site does not encompass primeval forests, tropical rain forests, ecologically valuable habitats. (b) The project site does not encompass the protected habitats of endangered species. (c) Significant ecological impacts are not anticipated. (d) Bridge and road design was carried out considering the movement of livestock. (e) This project is reconstruction and improvement of existing roads and bridges, and significant impact on ecosystem is not expected. (f) River channel transition is expected but impact to ecosystem is not serious because there are few aquatic organisms living in the project site.
	(2) Ecosystem	(a) Is there a possibility that hydrologic changes due to the installation of structures will adversely affect surface water and groundwater flows?	(a) N	(a) River channel transition is expected due to the demolition of existing bridge at the time of flooding, but serious impact is not expected since river channel transition is already assumed in the project plan.
	(3) Hydrology			

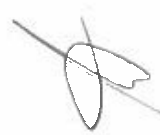
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Environmental Checklist

Annex 8

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(4) Topography and Geology	<p>(a) Is there any soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed?</p> <p>(b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides?</p> <p>(c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?</p>	<p>(a) N (b) N (c) N</p>	<p>(a) The ground of the route is firm and there are no soft ground. (b) Earth cutting is not planned. Embankment is properly constructed and appropriate measures such as surface drainage and protection work etc. are taken. (c) Appropriate measures such as surface drainage and protection work etc. are taken. Besides, manager of the soil-dumping site and borrow pit shall take necessary measures to prevent sediment runoff.</p>
4 Social	(1) Resettlement	<p>(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?</p> <p>(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?</p> <p>(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?</p> <p>(d) Is the compensations going to be paid prior to the resettlement?</p> <p>(e) Is the compensation policies prepared in document?</p> <p>(f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?</p> <p>(g) Are agreements with the affected people obtained prior to resettlement?</p> <p>(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of resettlement?</p> <p>(j) Is the grievance redress mechanism established?</p>	<p>(a) N (b) - (c) - (d) - (e) - (f) - (g) - (h) - (i) - (j) Y</p>	<p>(a) Private land acquisition and involuntary resettlement are not necessary. (b) - (c) - (d) - (e) - (f) - (g) - (h) - (i) - (j) Grievance redress mechanism is established just in case although private land acquisition and involuntary resettlement are not necessary</p>



Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)		
Environment		(a) Where bridges and access roads are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target population? Are adequate measures considered to reduce the impacts, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., increase of traffic congestion and traffic accidents)? (e) Is there any possibility that project will impede the movement of inhabitants? (f) Is there any possibility that bridges will cause a sun shading and radio interference?	(a) N (b) N (c) Y (d) Y (e) N (f) N	(a) This project is reconstruction and improvement of existing bridge and road. (b) There are no possibility that the project will adversely affect the living conditions of the inhabitants. (c) There is a possibility that infectious diseases such as HIV/AIDS spread due to the inflow of construction workers into the Project site during construction. Drug consumption is strictly prohibited and advocacy work for HIV/AIDS prevention and control will be implemented. (d) Negative impact to the traffic condition is expected by moving of construction machinery and speed limit near the Project site. Approval with traffic police is obtained and road signs and information boards is installed properly. (e) Project will not impede the movement of inhabitants because existing bridge is utilized during construction and it will be demolished after opening of new bridge. (f) New bridge will not cause a sun shading and radio interference.		
		(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws? (a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N (a) N	(a) No cultural heritage does exist around the Project site. (a) Although there are no particular landscapes to be considered, since the impact on the landscape due to the cutting of the trees is assumed, the affected trees are transplanted as much as possible, and greening plan is considered for river dike.	
		(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) N (b) N	(a)(b) Kyrgyz is multiethnic country and ethnic minority exist in project site. But impact to the ethnic minority and indigenous minority is not assumed because this project is reconstruction of existing road and bridge.	
		4 Social Environment	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) Y (b) Y (c) Y (d) Y	(a) Compliance with laws and regulations is a first priority issue and consideration should be given to construction supervision. (b) Contractors appropriately implement safety considerations concerning occupational accident prevention. (c) Contractors prepare safety and health plans, and implement safety education for workers. (d) Contractors thoroughly instruct security personnel and supervise them not to violate the safety of the project stakeholders and local residents. Countermeasures and penalties in case of accident by security personnel are prepared in advance.

Environmental Checklist

Annex 8

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) Environmental management plan is prepared as mitigation measures for the impacts during construction. (b) Serious impact to the surrounding ecosystem is not expected since no endangered species and valuable species observed at project site. Trees cut down to the minimum necessary, transplant as much as possible, and obtain permission from local authorities on tree cutting plan. (c) Involuntary resettlement is not necessary and influence on social environment is small. (d) Draft Environmental Monitoring Plan (EMoP) by MOTR was developed during construction and first 2 years of operation stage. MOTR agreed the implementation of monitoring. (e) Draft EMoP was developed referring similar cases and taking into consideration the characteristics of the project site and legislations. Draft EMoP will be reexamined as necessary at the time of detailed design. (f) MOTR agreed the implementation of monitoring. Environmental personnel will be assigned and implement environmental monitoring. (g) MOTR will carry out monitoring quarterly during construction and biannually at operation stage, then compile the result and report to SAIEPP/ JICA with project progress report.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) Y	(a) This project includes the improvement of road and protection dike, pertinent items described in the Roads and River checklist was checked. (b) This project does not include installation of power transmission lines and/or electric distribution facilities
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Forestry Project checklist should also be checked (e.g., projects including large areas of deforestation). (b) Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities).	(a) Y (b) N	(a) Regarding global warming, CO2 emission is expected to increase due to the increase of traffic volume. On the other hand, CO2 emission per vehicle is likely to reduce since CO2 emission goes down due to the proper travel speed, and in the long run, the volume of CO2 emission is expected to decrease.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) Y	

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made.

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which the project is located.

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**КЫРГЫЗ РЕСПУБЛИКАСЫНЫН  
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ТУРГАН ЧӨЙРӨНУ КОРГОО  
ЖАНА ТОКОЙ ЧАРБАСЫ  
МАМЛЕКЕТТИК АГЕНТТИГИ**



**ГОСУДАРСТВЕННОЕ АГЕНТСТВО  
ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И  
ЛЕСНОГО ХОЗЯЙСТВА  
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На № \_\_\_\_\_

Утверждаю

Заместитель директора

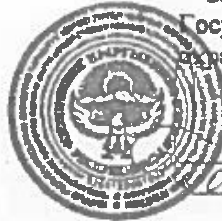
Государственного агентства  
охраны окружающей среды

и лесного хозяйства

при Правительстве КР

А.А. Рыспеков

«04» 04 2018 г.



**ЗАКЛЮЧЕНИЕ**

**ГОСУДАРСТВЕННОЙ ЭКОЛОГИЧЕСКОЙ ЭКСПЕРТИЗЫ**

на Отчет «Предварительная оценка воздействия на окружающую среду»  
проекта реконструкции моста через реку Урмарал на автодороге Тараз-Талас

В Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики (далее – ГАООСЛХ) на государственную экологическую экспертизу представлен Отчет «Предварительная оценка воздействия на окружающую среду» проекта реконструкции моста через реку Урмарал на автодороге Тараз-Талас, подготовленный Министерством транспорта и дорог Кыргызской Республики в 2018 году.

Целью реализации проекта является реконструкция моста через реку Ур-марал на 82 км автодороги Талас-Тараз для бесперебойного и безопасного движения автотранспорта в течение всего года.

Проектный участок расположен на 82 км автодороги международного значения по маршруту Талас-Тараз. Автодорога является единственным транзитным автомобильным маршрутом, обеспечивающим перемещение грузов из западной части Кыргызской Республики и далее в Республику

Казахстан, Республику Узбекистан и Российскую Федерацию. Территориально проектный участок относится к Таласской области, административно – к Бакай-Атинскому району (айыл окмоту).

В проекте предусмотрены следующие компоненты:

- Реконструкция моста через реку Урмарал: 90.5м.
- Спрямление подъездных путей: 1,112 м.
- Обустройство тротуарами по обоим сторонам: 690 м с одной стороны, 510 м с противоположной стороны;
- Спрямление дамбы: Правый берег 180 м, левый берег 120 м.

Проектный участок по реконструкции моста и автодороги находится на высоте 1040 – 1060 метров над уровнем моря. Рельеф участка характеризуется как спокойный, с уклоном в сторону реки Талас.

Протяженность реконструируемого участка автодороги оставляет около 1000 метров с уклоном в сторону поймы реки и перепадом высот в 20 метров. Дорога проходит по окраине с. Ак-Дебе (северо-восточная часть) и делает крутой левый поворот в сторону моста. С юго-западной стороны автодорогу сопровождает русло реки Ур-Марал, на склоне в пойме реки дороги растут деревья (акация, абрикос) и кустарники.

В отчете приведены следующие альтернативные варианты реконструкции моста:

Вариант А: Мост пересекает реку ниже существующего моста;

Вариант В: Замена существующего моста;

Вариант С: Мост пересекает реку, избегая влияния существующей ЛЭП сглаживание кривого поворота ( $R=60$ ) от начальной точки до  $R=150$  (для скорости  $V=60$  км/ч минимальный радиус кривой  $R=150$  или больше).

С учетом направления потока воды в русле реки, состояния моста и опасности возникновения ДТП из-за малых радиусов кривых автодорог и в селе Ак-Дебе, а также проведенной оценки воздействия на окружающую среду выбран базовый вариант С.

Согласно Отчету, на проектной площадке особо ценных древесных пород деревьев (арча, орех) не выявлено. Территория, на которой будет реализовываться проект, не относится к землям ГЛФ и ООПТ. Зона Проекта (автодорога и мост), а так же полоса отчуждения, находятся в ведении Министерства транспорта и дорог КР. Деревья, по мере возможности будут сохранены, под вырубку подпадают только те зеленые насаждения, которые недопустимо исключить и будут пересажены максимально в соответствии с законодательством КР, по согласованию с Таласским территориальным управлением ГАООСЛХ и Бакай-Атинским айыл окмоту. Контроль за приживаемости деревьев будет осуществлять Министерство транспорта и дорог КР и органы МСУ.

В Отчете приведены перечни и требования природоохранного законодательства КР.

Для строительных работ предполагается:

- использовать материал из карьеров, расположенных в восточном направлении примерно в 3,5 км от моста (около 324,0<sup>3</sup>) и в юго-западном

направлении в 8,5 км от моста (около 300,м<sup>3</sup>) по согласованию с соответствующими органами;

- временное размещение строительных материалов осуществлять на территории ДЭП-47 при МТД КР в с. Кызыл-Суу на расстоянии около 1 км от зоны проектных работ. В настоящее время огражденная и охраняемая территория ДЭП-47 служит в качестве стоянки дорожной техники. Общая территория ДЭП-47 около 1 га.

- бетонный завод установить неподалёку от ДЭП-47 (расстояние около 0,5 км) на территории, ранее используемой для хранения битума. Общая территория площадки – около 1 га и т.д.

Согласно Отчету, проведены общественные слушания в селах Кызыл – Сай и Ак-Добо Бакай –Атинского района Таласской области и населенном одобрена данная деятельность.

В отчете рассмотрен предварительный план мероприятий по смягчению воздействия на окружающую среду, по мониторингу состояния окружающей среды, которые будут предусмотрены при проектировании реконструкции моста.

С учетом планируемых мероприятий воздействие на компоненты окружающей среды в период проведения работ по реконструкции моста оценивается как средней продолжительности, локального характера с незначительным воздействием.

Рассмотрев представленные материалы, ГАООСЛХ выносит положительное заключение государственной экологической экспертизы к Отчету «Предварительная оценка воздействия на окружающую среду» проекта реконструкции моста через реку Урмарал на автодороге Тараз-Талас.

При этом Министерству транспорта и дорог КР представить рабочий проект на реконструкцию моста до начала реализации объекта на государственную экологическую экспертизу.

Председатель экспертной комиссии,  
Начальник управления государственной  
экологической экспертизы  
(далее - УГЭЭП):

Бекисев Б.С.

Члены экспертной комиссии:

Начальника Отдела УГЭЭП

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**April 4, 2018, Ref. No.04-4-28/1080**

Approved  
Deputy Director of the  
State Agency on  
Environment Protection  
and Forestry under the  
Government of KR  
/seal affixed/ signed/ A.A. Ryspekov  
April 4, 2018

**CONCLUSION  
OF THE STATE ENVIRONMENTAL EXPERT REVIEW**

to the Report "Preliminary Environmental Impact Assessment" of the Project for Reconstruction of Urmalar River Bridge on Taraz-Talas Road

The Report "Preliminary Environmental Impact Assessment" of the Project for Reconstruction of Urmalar River Bridge on Taraz-Talas Road developed by the Ministry of Transport and Roads of the Kyrgyz Republic in 2018 was submitted to the State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic (hereinafter referred to as the "SAEPF") to conduct the state environmental expert review.

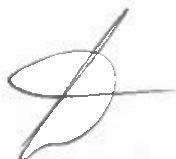
The objective of the Project is to reconstruct the bridge across Urmalar River on 82 km Talas - Taraz Road to secure the smooth and safety traffic flow throughout the year.

The project section is located on 82 km of the internationally important road along the Talas-Taraz route. The road is the only transit automobile route providing cargo transfer from the western part of the Kyrgyz Republic and further to the Republic of Kazakhstan, the Republic of Uzbekistan and the Russian Federation. Territorially, the project section belongs to Talas oblast, administratively it belongs to Bakai-Ata district (ayil okmotu).

The following components are envisaged in the project:

- Reconstruction of the Urmalar River Bridge: 90.5 m;
- Flattening of the access roads: 1.112 m;
- Arrangement of sidewalks on both sides: 690 m on one side, 510 m from the opposite side;
- Flattening of the dam: Right bank - 180 m, left bank - 120 m.

001822



The project section for the bridge and road reconstruction is located at the height of 1,040 – 1,060 m above sea level. The section relief is characterized as smooth with a slope towards the Talas River.

The length of the reconstructed road section leaves about 1,000 meters with a slope towards the river floodplain and a height difference of 20 meters. The road passes the outskirts of Ak-Debe village (north-eastern part) and makes a steep left turn towards the bridge. From the south-western side the road is accompanied by the Urmara river; trees (acacia, apricot) and shrubs grow on the slope in the floodplain of the river.

The following alternative options for bridge reconstruction are presented in the report:

Option A: The bridge crosses the river below the existing bridge;

Option B: Replacing of the existing bridge;

Option C: The bridge crosses the river avoiding the existing TL influence by upgrading the curved turn (R=60) from the starting point to R=150 (for the speed V=60 km/h, the minimum radius of the curve is R=150 or more).

The base option C was selected considering the water flow direction in the riverbed, the condition of the bridge and the risk of an accident due to the small radii of the road curves in Ak-Debe village, and based on the conducted environmental impact assessment as well.

According to the Report, no particularly valuable tree species (archa, walnut) were identified in the project section. The territory, where the project will be implemented, is not related to the lands of the SFF and SPNR. The project area (road and bridge), as well as the right of way are under the jurisdiction of the Ministry of Transport and Roads of the Kyrgyz Republic. The trees, where possible, will be preserved; only those green plantations, which are unacceptable to exclude and which will be transplanted as much as possible in accordance with the legislation of the KR, fall under the cutting down, in agreement with the Talas territorial department of SAEPF and Bakai-Ata ayil okmotu. Control over the survival ability of trees will be made by the Ministry of Transport and Roads of the Kyrgyz Republic and local governments.

The lists and requirements of the environmental legislation of the Kyrgyz Republic are given in the Report.

Construction works envisage as follows:

- to use material from quarries located in the eastern direction approximately 3.5 km from the bridge (about 324 000 m<sup>3</sup>, and in the south-west direction in 8.5 km from the bridge (about 300 000 m<sup>3</sup>) as agreed with the relevant authorities;
- to temporarily place the construction materials on the territory of DEP-47 under the Ministry of Transport and Roads of the Kyrgyz Republic in Kyzyl-Suu village at a distance of about 1 km from the project works area. Currently, the fenced and protected area of DEP-47 serves as a parking lot for road machinery. The total area of DEP-47 is about 1 hectare;
- to install a concrete plant near the DEP-47 (distance of about 0.5 km) on the territory formerly used to store bitumen. The total area of the site is about 1 hectare, etc.

According to the Report, public hearings were held in the villages of Kyzyl-Suu and Ak-Debe, Bakai-Ata district, Talas oblast, and the population approved this activity.

The preliminary action plan to mitigate the impact on the environment and to monitor the state of the environment (which will be envisaged when designing the bridge reconstruction) was considered in the report.



Considering the planned actions, the impact on the environmental components during the bridge reconstruction works is estimated as of average duration, local nature with insignificant influence.

Having considered the submitted materials, SAEPF makes a positive conclusion of the State Environmental Expert Review to the Report "Preliminary Environmental Impact Assessment" of the Project for Reconstruction of Urmara River Bridge on Taraz-Talas Road.

Herewith, the Ministry of Transport and Roads of the Kyrgyz Republic has to submit a working project for reconstruction of the bridge before the start of the facility's implementation for the state environmental expert review.

Chairman of Expert Commission,  
Head of Department of the State Environmental Expert Review  
(DSEER) /signed/ B.S. Sekiev

Members of Expert Commission:

Head of the DSEER Division /signed/ N.K. Abdylasova  
Leading Specialist of DSEER /signed/ M.Sh. Skakov

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### Environmental Management Plan/Environment Monitoring Plan

#### Mitigation Measures and Cost for Mitigation Measures

As a result of impact assessment, significant negative impact is not expected. The expected mitigation measures necessary for the implementation of the Project are shown in Table 1-4-29 Environmental Management Preliminary Plan (EMP), supervising Consultant and Contractor are responsible for EMP implementation. Before starting Project implementation EMP to be revised by Consultant and Contractor. Thereupon approval of MOTR and Talas TREPDP shall be obtained.

Supervising Consultant and Contractor will control all of the activities, disclose issues and give recommendations on how to improve situation, prepare monthly, quarterly and annual environmental reports. MOTR will review the reports and instruct additional measures if necessary. These activities on environmental protection are common for the construction works, therefore all the related expenses except sampling are included into the construction cost.

**Table1-4-29 Environmental Management Preliminary Plan (EMP)**

	Item	Impact	Measure	Implementing Agency	Responsible Agency	Monitoring and Timing
<b>Construction Stage</b>						
1	Air Quality	Air pollution by dust and exhaust gases from operating equipment	<ul style="list-style-type: none"> <li>• Appropriate construction machinery is used and maintained regularly. Unnecessary idling is avoided.</li> <li>• Water spraying is done regularly to avoid raising sand dust.</li> <li>• In case backfilling materials and construction materials are stocked temporarily in the stock yards or the construction site, these materials are covered by sheets to avoid scattering.</li> <li>• Regular monitoring is carried out. In case the values get worse extremely compared to baseline survey's values and environmental standard, the reason shall be found out and necessary measures shall be taken.</li> <li>• Line ministries and organizations are recommended to strengthen restrictions on ill-serviced vehicles.</li> </ul>	Contractor Consultant MOTR	MOTR	Sampling / Quarterly.  Dust control / daily.
2	Water Quality	Water contamination due to construction work	<ul style="list-style-type: none"> <li>• Appropriate construction machinery is used and maintained regularly.</li> <li>• Waste water arising from construction works is discharged after treatment in sand basin and not discharged into the river directly.</li> <li>• Construction machinery is not washed in the rivers.</li> <li>• Regular monitoring surveys are carried out. In case the values get worse extremely compared to baseline survey's values and environmental standard, the reason shall be found out and necessary measures shall be taken.</li> </ul>	Contractor Consultant MOTR	MOTR	Sampling / Quarterly  Discharge control/ daily

	Item	Impact	Measure	Implementing Agency	Responsible Agency	Monitoring and Timing
3	Wastes	Construction waste and human wastes	<ul style="list-style-type: none"> <li>Wastes are recycled and reused as much as possible.</li> <li>Wastes unable to be recycled and reused are disposed to authorized facilities.</li> <li>Prohibition to spoil and to dump wastes into the river.</li> </ul>	Contractor Consultant	MOTR	Waste control/ daily
4	Soil Contamination	Oil and concrete mortar leakage during construction work	Adequate technical maintenance of the machinery. Emergency Plan of Action preparation.	Contractor Consultant	MOTR	Leakage control/ daily
5	Noise & Vibration	Noise and vibration during construction machinery exploitation	<ul style="list-style-type: none"> <li>Appropriate construction machinery is used and maintained regularly.</li> <li>Low-noise construction machinery is utilized.</li> <li>Construction works are done within designated working hours.</li> <li>In case of night work, the permission of is obtained and the notice of the work is notified to local residents in advance.</li> <li>Anti-noise screens are utilized if needed.</li> <li>Regular monitoring surveys are carried out. In case the values get worse extremely compared to baseline survey's values and environmental standard, the reason shall be found out and necessary measures shall be taken.</li> <li>Line ministries and organizations are recommended to strengthen restrictions on ill-serviced vehicles.</li> </ul>	Contractor Consultant MOTR	MOTR	Noise and vibration monitoring / Quarterly  Working hour control/ daily
6	Offensive Odor	Offensive odors due to exhaust gas and human wastes.	<ul style="list-style-type: none"> <li>Appropriate construction machinery is used and maintained regularly. Unnecessary idling is avoided.</li> <li>Line ministries and organizations are recommended to strengthen restrictions on ill-serviced vehicles</li> <li>Daily wastes management is to be organized appropriately with village administration.</li> </ul>	Contractor Consultant	MOTR	Waste control/ daily
7	Ecosystem	Cutting of trees	<ul style="list-style-type: none"> <li>Trees which are not affecting construction work are not cut to the extent possible.</li> <li>Existing trees are replanted as much as possible.</li> <li>Trees cutting plan development demands Talas TREP and Bakai-Ata village administration approval.</li> </ul>	Local Administration Contractor Consultant	MOTR	Review of tree cutting plan/ Before construction  Tree condition/ monthly
8	Hydrology	Construction works in river bed: excavation, bridge piles concrete casting, river bed alignment.	<ul style="list-style-type: none"> <li>River bed construction works plan is developed.</li> <li>Construction management shall be performed considering water flow, such as installation plan for temporary objects not hindering the water flow as much as possible.</li> <li>After Project detailed plan of works developed additional measures for impact reduction might be needed.</li> </ul>	Contractor Consultant	MOTR	Visual observation/ daily
9	Land Use and	Land for gravel pit	Contractor will develop gravel pit utilization plan including quarry schedule	Contractor Consultant	MOTR	Land utilization

	Item	Impact	Measure	Implementing Agency	Responsible Agency	Monitoring and Timing
	Utilization of Local Resources	will be utilized.	and quantity according to construction plan for the period of project implementation.			control / monthly
10	Existing Social Infrastructures and Services	Temporary detour occupies a section of existing road.	<ul style="list-style-type: none"> <li>Approval with Traffic police is obtained.</li> <li>Road signs and information boards is installed properly.</li> </ul>	Contractor Consultant	MOTR	Claims and complains on new operating conditions registration and timely response / as needed
11	Landscape	Cutting of trees	<ul style="list-style-type: none"> <li>Trees which are not affecting construction work are not cut to the extent possible.</li> <li>Existing trees are replanted as much as possible.</li> <li>Greening plan is considered for river dike.</li> </ul>	Local Administration Contractor Consultant	MOTR	Visual observation/ monthly
12	Gender issues	Wage difference of males and females	<ul style="list-style-type: none"> <li>The contract with the contractor prohibits the wage difference by gender.</li> <li>Contractor's employees account book is monitored.</li> </ul>	Contractor Consultant MOTR	MOTR	According to the payment / 1 or 2 times a month
13	Infectious Diseases such as HIV/AIDS	Possible contact with HIV positive person	<ul style="list-style-type: none"> <li>Stringent prohibition of drug consumption</li> <li>Advocacy work implementation</li> <li>Establish communication with medical personnel of local hospital to implement measures for HIV/AIDS prevention and control</li> </ul>	Contractor Consultant	MOTR	Implementation schedule, advocacy work, daily schedule / monthly
14	Working Condition including Occupational Safety	Labors incidents and injures	<ul style="list-style-type: none"> <li>Construction safety regulations provision</li> <li>Installation of adequate safety equipment</li> <li>Utilization of uniform, safety boots, helmets, protective glasses, gloves.</li> <li>First aid provision system is established.</li> </ul>	Contractor Consultant	MOTR	Briefing / weekly
15	Accidents	Incidents during construction works	<ul style="list-style-type: none"> <li>Construction safety regulations provision</li> <li>Safety educations are provided to construction workers. The contract with the contractor stipulates the implementation of the safety educations.</li> <li>Construction workers put on safety equipment such as helmet and safety shoes.</li> <li>Sidewalks separated from carriage ways are installed.</li> <li>Sign boards and road markings with a high regard for safety are placed.</li> <li>Information such as construction plans are disclosed to the public.</li> </ul>	Contractor Consultant	MOTR	Constantly
16	Global Warming	CO <sub>2</sub> emission	<ul style="list-style-type: none"> <li>Appropriate construction machinery is used and maintained regularly. Unnecessary idling is avoided.</li> </ul>	Contractor Consultant	MOTR	Constantly
<b>Operation Stage</b>						
1	Air Quality	Air pollution by exhaust gases from traffic	<ul style="list-style-type: none"> <li>Regular monitoring is carried out. In case the values get worse extremely compared to baseline survey's values and environmental standard, the reason shall be found out and necessary measures shall be taken.</li> <li>Line ministries and organizations are recommended to strengthen restrictions on ill-serviced vehicles.</li> </ul>	MOTR	MOTR	Sampling Every six months

	Item	Impact	Measure	Implementing Agency	Responsible Agency	Monitoring and Timing
2	Water Quality	Water contamination due to spilled oil and dust on the road when raining	<ul style="list-style-type: none"> <li>Regular monitoring is carried out. In case the values get worse extremely compared to baseline survey's values and environmental standard, the reason shall be found out and necessary measures shall be taken.</li> </ul>	MOTR	MOTR	Sampling / Every six months
3	Noise & Vibration	Noise and vibration from traffic	<ul style="list-style-type: none"> <li>Regular monitoring is carried out. In case the values get worse extremely compared to baseline survey's values and environmental standard, the reason shall be found out and necessary measures shall be taken.</li> <li>Line ministries and organizations are recommended to strengthen restrictions on ill-serviced vehicles.</li> <li>In case pot holes and damages on the Project road are found, they are repaired immediately.</li> </ul>	MOTR	MOTR	Sampling / Every six months
4	Hydrology	River channel transition	<ul style="list-style-type: none"> <li>Regular monitoring is carried out. In case any serious problem is observed, the reason shall be found out and necessary measures shall be taken.</li> <li>If driftwood is accumulated, it should be removed immediately.</li> </ul>	MOTR	MOTR	Constantly
5	Landscape	Condition of trees and greening plan	<ul style="list-style-type: none"> <li>Condition of replanted trees and greening plan of river dike are monitored regularly.</li> </ul>	Local Administration MOTR	MOTR	Constantly

### Monitoring Plan

The monitoring plan of the Project in construction stage and first two years of operation stage is as follows. It will be reviewed and modified at the time of Detailed Design (D/D) if necessary. MOTR shall compile the results of monitoring survey and report to SAEPF / JICA every quarter during construction and every half year in operation stage.

Table1-4-30 Environmental Monitoring Plan (EMoP)

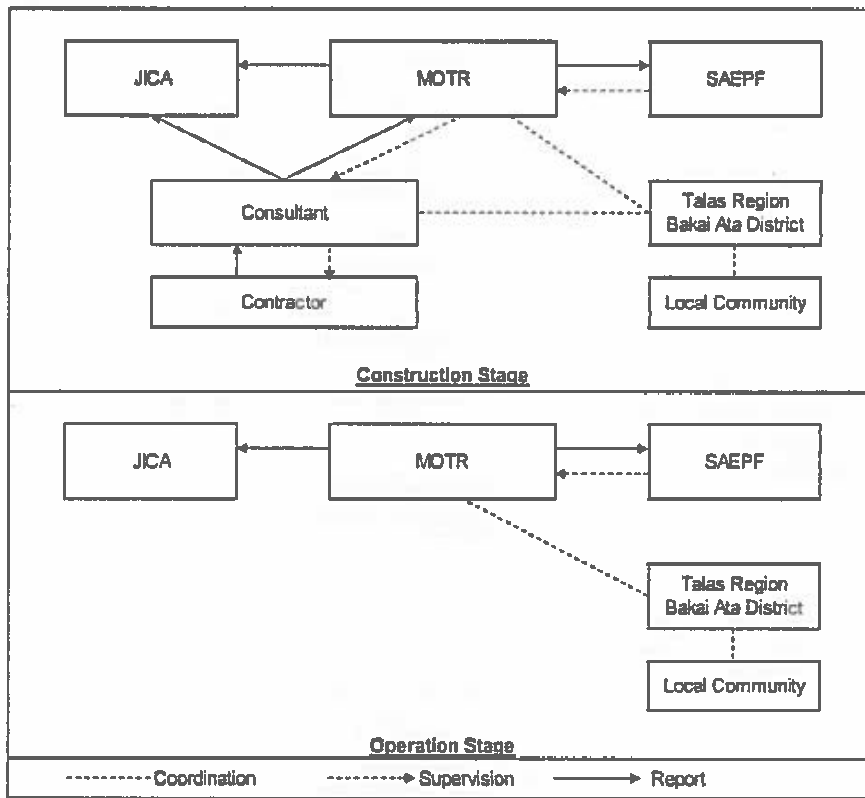
Item	Parameter	Survey Point (same as each baseline survey)	Frequency (Upper: Construction Stage/ 2.5 years) (Lower: Operation Stage/ 2 years)	Implementing/ Responsible agency	Cost (Upper: Construction Stage/ 2.5 years) (Lower: Operation Stage/ 2 years)
Air Quality	NO <sub>2</sub> , SO <sub>2</sub> , CO, TSP, Pb	Ak Dobo (0+400) Kyzyl-Sai (1+160)	Construction stage: Quarterly Operation stage: Biannually	MOTR	1,000\$ x 10 = 10,000\$ 1,000\$ x 4 = 4,000\$
	Dust	In and around construction site	Construction stage: Daily (Visual observation)	Consultant/ MOTR	Included in construction cost
Water Quality	pH, SS, DO, Mineral Oil, Cadmium, Pb, Arsenic, Mercury	Urmalar River	Construction stage: Quarterly Operation stage: Biannually	MOTR	1,250\$ x 10 = 12,500\$ 1,250\$ x 4 = 5,000\$
	Discharge control	In and around construction site	Construction stage: Daily (Visual observation)	Consultant/ MOTR	Included in construction cost
Wastes	Construction waste	In and around construction site	Construction stage: Daily (Visual observation and meeting with contractor)	Consultant/ MOTR	Included in construction cost

Item	Parameter	Survey Point (same as each baseline survey)	Frequency (Upper: Construction Stage/ 2.5 years) (Lower: Operation Stage/ 2 years)	Implementing/ Responsible agency	Cost (Upper: Construction Stage/ 2.5 years) (Lower: Operation Stage/ 2 years)
Soil Contamination	Oil and concrete mortar leakage	In and around construction site	Construction stage: Daily (Visual observation and review of inspection record)	Consultant/ MOTR	Included in construction cost
Noise & Vibration	Noise & Vibration Level	Ak Dobo (0+400) Kyzyl-Sai (1+160)	Construction stage: Quarterly Operation stage: Biannually	MOTR	1,000\$ x 10 = 10,000\$ 1,000\$ x 4 = 4,000\$
	Working hour	In and around construction site	Construction stage: Daily (Review of working record)	Consultant/ MOTR	Included in construction cost
Offensive Odor	Daily wastes	In and around construction site, worker's camp	Construction stage: Daily (Visual observation)	Consultant/ MOTR	Included in construction cost
Ecosystem	Tree cutting plan	-	Before construction: Once or as needed	Consultant/ MOTR	Included in construction cost
	Tree condition	In and around construction site	Construction stage: Monthly (Visual observation and meeting with local administration)		
Hydrology	Water flow	Urmalar River	Construction stage: Daily (Visual observation and review of work plan)	Consultant/ MOTR	Included in construction cost
	River channel transition		Operation stage: Monthly (Visual observation)	MOTR	Included in maintenance cost
Land Use and Utilization of Local Resources	Land utilization	Gravel pit and quarry	Construction stage: Monthly (Visual observation and review of working record)	Consultant/ MOTR	Included in construction cost
Existing Social Infrastructures and Services	Impact to existing road by temporary detour (Complaints handling)	In and around construction site	Construction stage: As needed	Consultant/ MOTR	Included in construction cost
Landscape	Tree cutting plan	-	Before construction: Once or as needed	Consultant/ MOTR	Included in construction cost
	Condition of trees and greening plan	In and around construction site	Construction stage: Monthly (Visual observation and meeting with local administration)		
			Operation stage: Monthly (Visual observation and meeting with local administration)	MOTR	Included in maintenance cost
Gender issues	Monitoring of employees account book	-	Construction stage: According to the payment (1 or 2 times a month)	Consultant/ MOTR	Included in construction cost
Infectious Diseases such as HIV/AIDS	Advocacy work implementation	-	Construction stage: Monthly (Review of schedule and implementation record)	Consultant/ MOTR	Included in construction cost
Working Condition including Occupational Safety	Briefing (safety education) implementation	-	Construction stage: Weekly (Review of implementation record)	Consultant/ MOTR	Included in construction cost
	Accident report (industrial)	In and around construction	Construction stage: As needed		

Item	Parameter	Survey Point (same as each baseline survey)	Frequency (Upper: Construction Stage/ 2.5 years) (Lower: Operation Stage/ 2 years)	Implementing/ Responsible agency	Cost (Upper: Construction Stage/ 2.5 years) (Lower: Operation Stage/ 2 years)
	accident)	site			
Accidents	Accident report (traffic and third party accident)	In and around construction site	Construction stage: As needed	Consultant/ MOTR	Included in construction cost
Global Warming	Regular maintenance of construction machinery and idling stop	In and around construction site	Construction stage: Daily (Visual observation and review of inspection record)	Consultant/ MOTR	Included in construction cost
Total					32,500\$ 13,000\$

**1-1-1 Implementation System of EMP and EMoP**

The implementation structure of EMP and EMoP during construction and operation stage are shown in Figure 1-4-8.



Source: JICA Study Team

**Figure1-4-8 Implementation Structure of EMP and EMoP**

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## Environmental and Social Monitoring Form (For MOTR, Construction stage)

### 1. Mitigation Measures

#### - Air Quality

Item (mg/m <sup>3</sup> )	Survey Point	Measured Value (Mean)	Measured Value (Max)	Baseline Value	Country's Standards (Mean) (Max)		Referred International Standards (Japan)	Remarks (Measurement Point, Frequency, Method, etc.)
SO <sub>2</sub>	0+400			0.001±0.0003	0.05	0.5	0.04 ppm	-Measurement Point: Same with baseline survey -Frequency: Quarterly -Method: Same with baseline survey
	1+160			0.001±0.0003				
NO <sub>2</sub>	0+400			0.04±0.015	0.04	0.085	0.04-0.06 ppm	
	1+160			0.04±0.01				
CO	0+400			1.1±0.22	3.0	5.0	10 ppm	
	1+160			1.6±0.32				
TSP	0+400			<0.1	0.15	0.5	0.10 mg/m <sup>3</sup>	
	1+160			<0.1				
Pb	0+400			<0.0001	0.0003	0.01	-	
	1+160			<0.0001				

#### - Water Quality

Item (Unit)	Measured Value (Mean)	Measured Value (Max)	Baseline Value	Country's Standards	Referred International Standards (Japan)	Remarks (Measurement Point, Frequency, Method, etc.)
pH			7.9	6.5-8.5	6.5-8.5	-Measurement Point: 20m downstream from existing Urmaral river bridge -Frequency: Quarterly -Method: Same with baseline survey
SS (mg/l)			1.0	<0.75	<25	
DO (mg/l)			11.2	>4	>5	
Mineral Oil (mg/dm <sup>3</sup> )			<0.02	<0.3	<0.5 (Sea)	
Cadmium (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.03	
Pb (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.01	
Arsenic (mg/dm <sup>3</sup> )			<0.01	<0.1	<0.01	
Mercury (mg/dm <sup>3</sup> )			<0.003	<0.1	<0.0005	

#### - Noise / Vibration

Item (Unit)	Survey Point	Measured Value (Mean)	Measured Value (Max)	Baseline Value	Country's Standards	Referred International Standards (Japan)	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (dB)	0+400			52-92	75	45-55	-Measurement Point: Same with baseline survey -Frequency: Quarterly -Method: Same with baseline survey
	1+160			45-94			
Vibration level (dB)	0+400			71-98	108	60-65	
	1+160			74-101			



## Environmental and Social Monitoring Form (For MOTR, Operation stage)

### 1. Mitigation Measures

#### - Air Quality

Item (mg/m <sup>3</sup> )	Survey Point	Measured Value (Mean)	Measured Value (Max)	Baseline Value	Country's Standards (Mean) (Max)		Referred International Standards (Japan)	Remarks (Measurement Point, Frequency, Method, etc.)
SO <sub>2</sub>	0+400			0.001±0.0003	0.05	0.5	0.04 ppm	-Measurement Point: Same with baseline survey -Frequency: Biannually -Method: Same with baseline survey
	1+160			0.001±0.0003				
NO <sub>2</sub>	0+400			0.04±0.015	0.04	0.085	0.04-0.06 ppm	
	1+160			0.04±0.01				
CO	0+400			1.1±0.22	3.0	5.0	10 ppm	
	1+160			1.6±0.32				
TSP	0+400			<0.1	0.15	0.5	0.10 mg/m <sup>3</sup>	
	1+160			<0.1				
Pb	0+400			<0.0001	0.0003	0.01	-	
	1+160			<0.0001				

#### - Water Quality

Item (Unit)	Measured Value (Mean)	Measured Value (Max)	Baseline Value	Country's Standards	Referred International Standards (Japan)	Remarks (Measurement Point, Frequency, Method, etc.)
pH			7.9	6.5-8.5	6.5-8.5	-Measurement Point: 20m downstream from existing Urmara river bridge -Frequency: Biannually -Method: Same with baseline survey
SS (mg/l)			1.0	<0.75	<25	
DO (mg/l)			11.2	>4	>5	
Mineral Oil (mg/dm <sup>3</sup> )			<0.02	<0.3	<0.5 (Sea)	
Cadmium (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.03	
Pb (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.01	
Arsenic (mg/dm <sup>3</sup> )			<0.01	<0.1	<0.01	
Mercury (mg/dm <sup>3</sup> )			<0.003	<0.1	<0.0005	

#### - Noise / Vibration

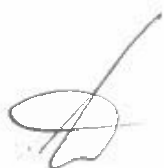
Item (Unit)	Survey Point	Measured Value (Mean)	Measured Value (Max)	Baseline Value	Country's Standards	Referred International Standards (Japan)	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (dB)	0+400			52-92	75	45-55	-Measurement Point: Same with baseline survey -Frequency: Biannually -Method: Same with baseline survey
	1+160			45-94			
Vibration level (dB)	0+400			71-98	108	60-65	
	1+160			74-101			

**2. Natural and Social Environment****- Hydrology**

<b>Monitoring Item</b>	<b>Monitoring Results during Report Period</b>	<b>Necessity of Countermeasures and Measures Taken</b>
River channel transition		

**- Landscape**

<b>Monitoring Item</b>	<b>Monitoring Results during Report Period</b>	<b>Necessity of Countermeasures and Measures Taken</b>
Condition of trees and greening plan		



7

## Environmental and Social Monitoring Form (For Consultant, Construction Stage)

### 1. Mitigation Measures

#### - Air Quality

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Dust		

#### - Water quality

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Situation of waste water discharge		

#### - Waste

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Construction waste disposal situation		

#### - Soil Contamination

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Leakage status		

#### - Noise & Vibration

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Working hours		

#### - Offensive Odor

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Human waste disposal situation		

### 2. Natural Environment

#### - Ecosystem

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Condition of trees		

#### - Hydrology

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Visual observation of river flow		

### 3. Social Environment

#### - Land Use and Utilization of Local Resources

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Land utilization control		

#### - Existing Social Infrastructures and Services

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Impact to existing road (response to claims and complains)		

#### - Landscape

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Condition of trees and greening plan		

#### - Gender

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Monitoring of contractor's employees account book		

#### - Infectious Diseases such as HIV/AIDS

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Implementation status of advocacy work		

#### - Working Condition

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Implementation status of briefing (Safety education)		
Accident report (Occupational accident)		

#### - Accidents

Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Accident report (Traffic accident, third party)		

#### - Global warming


Monitoring Item	Monitoring Results during Report Period	Necessity of Countermeasures and Measures Taken
Maintenance of construction machinery and Situation of idling		

### 4. Claims and complains regarding environmental impact

Number of claims and complains	Content	Correspondence and result

**- Other issues (Free description in the following columns)**

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7


## 7. テクニカルノート 1 運輸道路省

### Technical Note

on the Preparatory Survey on the Project for Reconstruction of Urmara River Bridge  
on Talas-Taraz Road in the Kyrgyz Republic

Ministry of Transport and Roads of Kyrgyz Republic and the joint venture between Katahira & Engineers International and Ingerosec, the consultants for the above-mentioned survey by the Japan International Cooperation Agency (JICA), have agreed on the points listed in the annex hereto regarding the design. However, the contents of the design will be finalized after the survey team has returned to Japan through discussions with those concerned on the Japanese side, such the Head Office of JICA.


June 29, 2017  
Bishkek, Kyrgyz Republic



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The Preparatory Survey on the Project for  
Reconstruction of Urmara River Bridge on  
Talas-Taraz Road in the Kyrgyz Republic  
Chief Consultant

Tsuyoshi YAMAJUKU



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Kyrgyz Republic  
Ministry of Transport and Roads  
Head of Road Department

Melisbek ALYPSATAROV

## ANNEX

This study aims to gather the information required for planning and design of the Urmalar River Bridge on Talas-Taraz Road while checking the contents that were determined during the concept stage of the project. Therefore, the contents of the design will be unchanged in principle. However, the following key points related to the planning and design have been confirmed.

### 1. Scope of Project

The length of the project bridge and road section shall be approximately 1.1km at the moment.



Figure I-1 Location Map

### 2. Road Design Standard

The standard SNIP KR 32-01:2004 in Kyrgyz shall be basically adopted, AASHTO and Road Ordinance in Japan shall be referred as necessary.

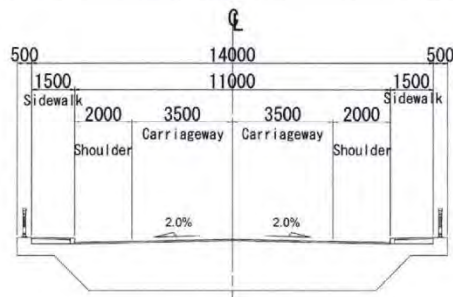
#### (1) Design Speed

Talas-Taraz Road is international road and the design classification of the project road shall be adopted with Class II from SNIP KR 32-01:2004. This project is the improvement of Urmalar river bridge and road. The project area is located in a village

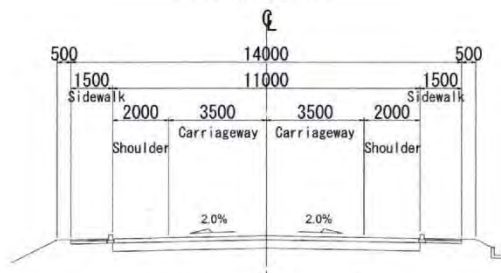
area and limited and the speed limitation of the road in this area is 60km/h. Therefore, design speed 60km/h shall be adopted. However, the alignment of this road shall be tried to be adopted as smooth as possible.

(2) Cross Section

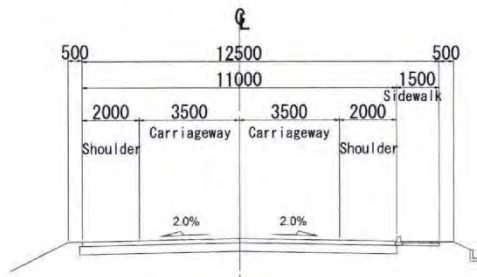
The cross sections of this road shall be adopted with those of road classification II of SNIP KR 32-01:2004. Carriageway :3.5m, Shoulder :1.5m, Sidewalk :2.0m.



Bridge Section



Embankment Section(B)



Embankment Section(A)

Figure 2-1 Typical Cross Section (Draft)



(3) Pavement

Pavement Design Standard shall be basically adopted and its validity shall be verified with AASHTO.

Design duration of asphalt concrete pavement shall be adopted 10years after operation considering the life of pavement.

3. Bridge Design Load

(1) Live Load

Bridge design shall be considered with B type live load on specifications for highway bridges in Japan and armored vehicle load (HK-80) in Kyrgyz.



8. テクニカルノート 2-1 運輸道路省

**Technical Note**

The Preparatory Survey on  
The Project for Reconstruction of Urmal River Bridge on Talas-Taraz Road in the Kyrgyz Republic

Ministry of Transport and Roads of Kyrgyz Republic and the joint venture between Katahira & Engineers International and Ingerosec, the consultants for the above-mentioned survey by the Japan International Cooperation Agency (JICA), have agreed on the points listed in the annex hereto regarding the design. However, the contents of the design will be finalized after the survey team has returned to Japan through discussions with those concerned on the Japanese side, such the Head Office of JICA.

October 11, 2017  
Bishkek, Kyrgyz Republic

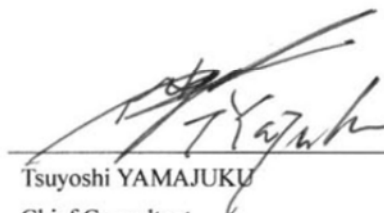
Noted by :



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Melisbek ALYPSATAROV  
Head of Road Department  
Ministry of Transport and Roads  
The Kyrgyz Republic

Noted by :



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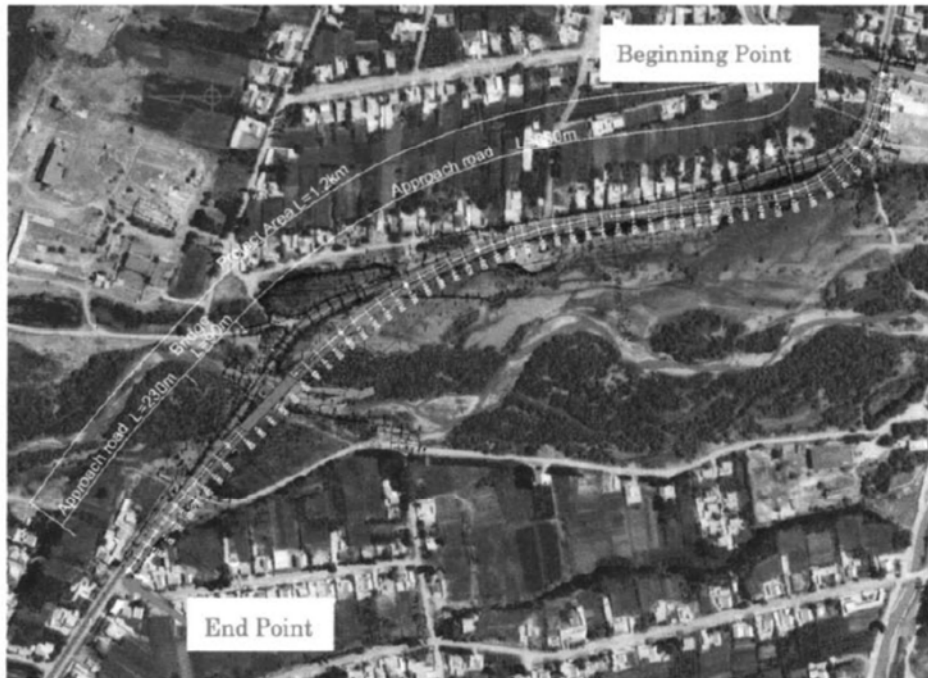
Tsuyoshi YAMAJUKU  
Chief Consultant  
JICA Survey Team

## 1. Scope of the Project and the Project Route

The result of the comparison of the alternative routes, the scope of the project and the project route are shown in Figure 1.

The beginning and end points of the project were agreed with the Study Team, MOTR and the project unite office of IsDB project.

Item	Length
Approach road extension	L=1,112 m
Bridge extension	L=90.5 m
Total extension	L=1,203 m
Pedestrian extension	L=690 m (Both sides sidewalk) L=510 m (One side sidewalk)



## 2. Bridge Design

### (1) Live Load

Bridge design shall be considered with B type live load on specification for highway bridges in Japan and armored vehicle load (HK-80) in Kyrgyz.

(2) Seismic Conditions for Bridge

According to 100gal, 0.1 is adopted as coefficient of the seismic condition for designing the bridge because during the past approximately 100 years, the earthquake more than 100gal is only once, and the others are less than 100gal.

(3) River Conditions for Bridge

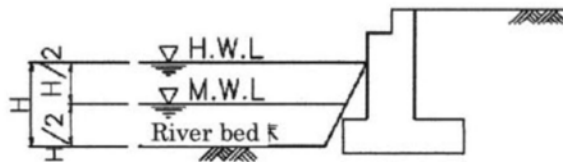
【Setting the Clearance under Girder】

The extracted value which is 60cm according to the design high-water discharge of the target river is added to HWL. In addition, the extracted value which is 50cm is added by the technical standards for erosion control in Japan because this River is steep slope and has much sediment from upstream.

The clearance under girder and the beam of the pier is to be the “60cm + 50cm + HWL” and planned to prevent blockage of the space under the girder with driftwoods.

【Design Water Level】

The design water level used for designing of the substructure is to comply with the Japanese standards (Specifications for the Bridge); normally HWL, but MWL (HWL – design bed height) x 1/2 in the case of earthquake.



Source: Planning manual, MLIT, JAPAN

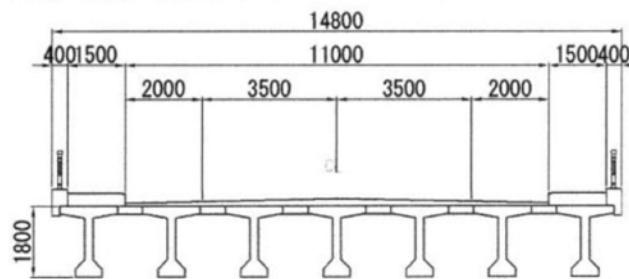
Design Water Level

(4) Ground Conditions for Bridge

Ground conditions are set from the ground survey conducted within this November.

(5) Road Conditions for Bridge

The basic width of the bridge section is as follows.



Basic width of the bridge section



### 3. Environment and Social Consideration

#### (1) Environmental Impact Assessment (EIA) Approval

Necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA) / Initial Environmental Examination (IEE), Social Impact Assessment and information disclosure, etc.) shall be conducted and EIA/IEE report of the Project shall be prepared by the GOKR side. The EIA/IEE approval shall be received from the responsible authorities and submitted to JICA by June 2018 at the latest. Time schedule of EIA/IEE approval is shown below and the GOKR makes maximums efforts to obtain EIA/IEE approval of the Project from the responsible authorities until the due date.

Year	2017				2018					
Month	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Preparation of the EIA Report by Local Consultant		▨	▨	▨						
Review of EIA Report by MOTR and JICA				▨						
Stakeholder Meeting		▲			▲					
Submission of the Finalized EIA Report to MOTR						▲				
Acquisition of EIA Approval from SAEPF									▲	

### 4. Undertaking by Government of Kyrgyz

#### (1) Land for the Project

The land required for the implementation of the Project including land for site office, plant yards, material storing yards, temporary construction yard and waste disposal site shall be secured before the Pre-qualification of tender work. The GOKR shall proceed required actions and procedures in due course.

#### (2) Relocation of Utilities and Other Obstructions

All utilities and other obstructions (Telephone Line pole 7Nos.) located in the project site will be relocated to the outside of the Project site before the Pre-qualification of tender work. MOTR and local administration will be responsible for the relocation of the utilities.

#### (3) Tax exemption

For smooth implementation of the project, the diet approval for the tax exemption of the project shall be obtained by means of preparing in advance as much as possible.

## Technical Note

### The Preparatory Survey on The Project for Reconstruction of Urmalar River Bridge on Talas-Taraz Road in the Kyrgyz Republic

October 10, 2017

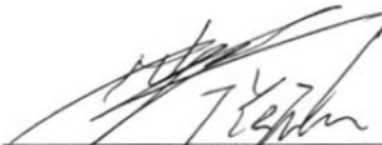
Bishkek, Kyrgyz Republic

Noted by :   


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ALISHEROV Talay  
Deputy Director of Department for the  
prevention and elimination of  
consequences of emergency situations  
Ministry of Emergency Situations  
The Kyrgyz Republic

Noted by :



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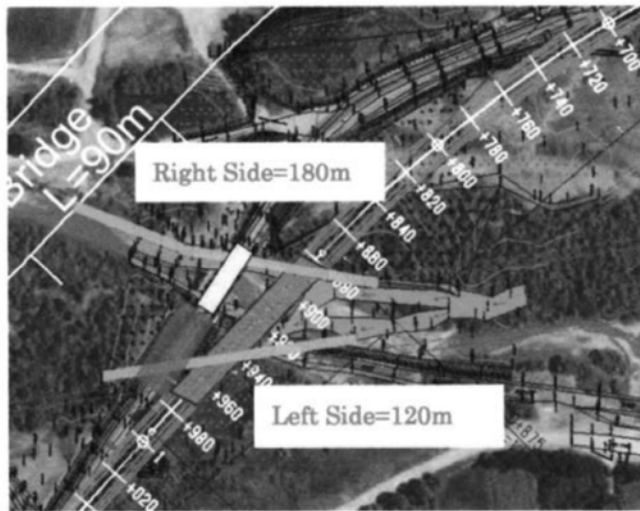
YAMAJUKU Tsuyoshi  
Chief Consultant  
JICA Survey Team

(1) Maximum Flow Volume

The existing protection dike on the left upstream side was designed as maximum flow volume is 94.6 m<sup>3</sup>/s (100-year occurrence probability flow volume). And According to the flow volume data from 1927 to 2015 collected in Urmal River Meteorological Observatory, Talas State, Maximum flow volume during that period was 102m<sup>3</sup>/s. In these point of view, maximum flow volume was adopted to 110 m<sup>3</sup>/s.

(2) Scope of Protection Dike

A new Protection Dike will be constructed by Japan side as scope of below figure.



(3) Removal of Existing Protection Dike

The existing Protection Dike located in the project site will be removed to the outside of the Project site before the commencement of the Project road and bridge construction. MES will be responsible for the removal of the existing Protection Dike.

*T. Seef*

*[Signature]*

## 10. 参考資料／収集資料リスト

1. Annual Planning for road and structure repairs for PLUAD #5, 2017
2. Road Maintenance Annual Budget of MOTR for 2007-2016
3. Decree of the Government of the Kyrgyz Republic N 155 of 12 April 2011 “Regulation on the procedure of exemption of taxes, duties and other payments”
4. Talas Oblast Traffic Police report on road accidents for 2016
5. NATIONAL SUSTAINABLE DEVELOPMENT STRATEGY 2013-2017, Kyrgyz Republic
6. Main Directions of the road sector development for 2016-2025, Kyrgyz Republic
7. Inventory Data for the bridge on Urmalar River, 2016
8. Traffic intensity data for Talas Oblast, 2016
9. Kyrgyz Standards – Highway construction standards, 1998
10. Kyrgyz Standards – Design of Highways SNiP KP 32-01-2004, 2004
11. Kyrgyz Standards – Design of Bridges and pipes SNiP 2.05.03-84
12. Kyrgyz Standards – Design of non-solid road pavements ODN 218.046-01, 2001
13. Urmalar River, topographic mapping data, 2007
14. Project Documentation of Islamic Development Bank for the Phase III project “Rehabilitation of Suusamir-Talas-Taraz Road, Section 73 km – 105 km”, 2011



## 11. モニタリングフォーム

### 環境モニタリングフォーム案(MOTR用、工事中)

#### 1. 汚染対策

##### 一大気質(排出ガス測定値および周辺大気環境測定値)

項目 (mg/m <sup>3</sup> )	測定 場所	測定値 (平均値)	測定値 (最大値)	ベースライン値	現地基準 (平均値)(最大値)		参照した 国際的基 準(日本)	備考(測定場所、頻 度、方法等)
SO <sub>2</sub>	0+400			0.001±0.0003	0.05	0.5	0.04 ppm	・場所:ベースライ ン調査と同地点 ・頻度:四半期毎 ・方法:ベースライ ン調査と同様
	1+160			0.001±0.0003				
NO <sub>2</sub>	0+400			0.04±0.015	0.04	0.085	0.04-0.06 ppm	
	1+160			0.04±0.01				
CO	0+400			1.1±0.22	3.0	5.0	10 ppm	
	1+160			1.6±0.32				
TSP	0+400			<0.1	0.15	0.5	0.10 mg/m <sup>3</sup>	
	1+160			<0.1				
Pb	0+400			<0.0001	0.0003	0.01	-	
	1+160			<0.0001				

##### 一水質(周辺水域環境測定値)

項目(単位)	測定値 (平均値)	測定値 (最大値)	ベースライ ン値	現地基準	参照した国際的 基準(日本)	備考(測定場所、頻 度、方法等)
pH			7.9	6.5-8.5	6.5-8.5	・場所:ウルマラル 川橋梁から約20m 下流 ・頻度:四半期毎 ・方法:ベースライ ン調査と同様
SS (mg/l)			1.0	<0.75	<25	
DO (mg/l)			11.2	>4	>5	
Mineral Oil (mg/dm <sup>3</sup> )			<0.02	<0.3	<0.5(海域)	
Cadmium (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.03	
Pb (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.01	
Arsenic (mg/dm <sup>3</sup> )			<0.01	<0.1	<0.01	
Mercury (mg/dm <sup>3</sup> )			<0.003	<0.1	<0.0005	

##### 一騒音・振動

項目 (単位)	測定 場所	測定値 (平均値)	測定値 (最大値)	ベースラ イン値	現地 基準	参照した国際的 基準(日本)	備考 (測定場所、頻度、方法等)
騒音レベ ル (dB)	0+400			52-92	75	45-55	・場所:ベースライン調査と 同地点 ・頻度:四半期毎 ・方法:ベースライン調査と 同様
	1+160			45-94			
振動レベ ル (dB)	0+400			71-98	108	60-65	
	1+160			74-101			

## 環境モニタリングフォーム案(MOTR用、供用時)

### 1. 汚染対策

#### －大気質(排出ガス測定値および周辺大気環境測定値)

項目 (mg/m <sup>3</sup> )	測定 場所	測定値 (平均値)	測定値 (最大値)	ベースライン値	現地基準 (平均値)(最大値)		参照した 国際的基 準(日本)	備考(測定場所、頻 度、方法等)
SO <sub>2</sub>	0+400			0.001±0.0003	0.05	0.5	0.04 ppm	・場所: ベースライ ン調査と同地点 ・頻度: 半年毎 ・方法: ベースライ ン調査と同様
	1+160			0.001±0.0003				
NO <sub>2</sub>	0+400			0.04±0.015	0.04	0.085	0.04-0.06 ppm	
	1+160			0.04±0.01				
CO	0+400			1.1±0.22	3.0	5.0	10 ppm	
	1+160			1.6±0.32				
TSP	0+400			<0.1	0.15	0.5	0.10 mg/m <sup>3</sup>	
	1+160			<0.1				
Pb	0+400			<0.0001	0.0003	0.01	-	
	1+160			<0.0001				

#### －水質(周辺水域環境測定値)

項目(単位)	測定値 (平均値)	測定値 (最大値)	ベースライ ン値	現地基準	参照した国際的 基準(日本)	備考(測定場所、頻 度、方法等)
pH			7.9	6.5-8.5	6.5-8.5	・場所: ウルマラル 川橋梁から約20m 下流 ・頻度: 半年毎 ・方法: ベースライ ン調査と同様
SS (mg/l)			1.0	<0.75	<25	
DO (mg/l)			11.2	>4	>5	
Mineral Oil (mg/dm <sup>3</sup> )			<0.02	<0.3	<0.5(海域)	
Cadmium (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.03	
Pb (mg/dm <sup>3</sup> )			<0.0002	<0.01	<0.01	
Arsenic (mg/dm <sup>3</sup> )			<0.01	<0.1	<0.01	
Mercury (mg/dm <sup>3</sup> )			<0.003	<0.1	<0.0005	

#### －騒音・振動

項目 (単位)	測定 場所	測定値 (平均値)	測定値 (最大値)	ベースラ イン値	現地 基準	参照した国際的 基準(日本)	備考 (測定場所、頻度、方法等)
騒音レベ ル (dB)	0+400			52-92	75	45-55	・場所: ベースライン調査と 同地点 ・頻度: 半年毎 ・方法: ベースライン調査と 同様
	1+160			45-94			
振動レベ ル (dB)	0+400			71-98	108	60-65	
	1+160			74-101			

### 2. 自然環境、社会環境

#### －水象

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
河道の変動		

#### －景観

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
樹木・緑化の状態		

## 環境モニタリングフォーム案(コンサルタント用、工事中)

### 1. 汚染対策

#### －大気汚染

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
粉塵		

#### －水質

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
排水処理状況		

#### －廃棄物

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
建設廃棄物処理状況		

#### －土壌汚染

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
漏洩状況の監視		

#### －騒音・振動

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
作業時間		

#### －悪臭

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
生活ごみ処理状況の監視		

### 2. 自然環境

#### －生態系

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
樹木の状況		

#### －水象

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
目視による水流確認		

### 3. 社会環境

#### －土地利用や地域資源利用

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
採石場、土取り場の土地利用状況の確認		

－既存の社会インフラやサービス

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
迂回路による既存道路への影響(苦情対応)		

－景観

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
樹木・緑化の状態		

－ジェンダー

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
賃金支払い台帳のチェック		

－HIV/AIDSの感染症

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
啓蒙活動実施状況		

－労働環境

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
ブリーフィング(安全教育)実施状況		
事故報告(労働災害)		

－事故

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
事故報告(交通事故、第三者)		

－越境の影響及び気候変動

モニタリング項目	報告期間中の状況	対策の要否、必要な場合に実施した対策
重機・工事車両の保守点検、アイドリング防止		

**4. 環境影響に係る苦情等**

苦情件数	苦情内容	対応状況及び結果

－その他留意点 (以下の欄に自由記述)

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12. 環境チェックリスト

環境チェックリスト：1.2. 橋梁 (1)

分類	環境項目	主なチェック事項	Yes: Y No: N	具体的な環境社会配慮 (Yes/Noの理由、根拠、緩和策等)
1 許認可・説明	(1)EIAおよび環境許認可	環境アセスメント報告書 (EIAレポート)等は作成済みか。 (b) EIAレポート等は当該国政府により承認されているか。 (c) EIAレポート等の承認は付帯条件を伴うか。付帯条件がある場合は、その条件は満たされるか。 (d) 上記以外に、必要な場合には現地の所管官庁からの環境に関する許認可は取得済みか。	(a) Y (b) N (c) - (d) N	(a) キルギスのEIA実施規則及びJICAガイドラインに従い環境影響評価を行い、EIA報告書が作成されている。 (b) EIA報告書は3月中旬にSAEPPに提出され、審査中である。 (c) 審査のため、付帯条件の有無は不明である。 (d) 樹木の伐採は地元自治体が入札前に実施するが、伐採計画についてはタラス州環境担当部署の承認を得る必要がある。
	(2)現地ステークホルダーへの説明	プロジェクトの内容および影響について、情報公開を含めて現地ステークホルダーに適切な説明を行い、理解を得ているか。 (b) 住民等からのコメントを、プロジェクト内容に反映させたか。	(a) Y (b) Y	(a) 住民説明会を実施し、プロジェクト内容及び影響について説明を行い、理解を得ている。 (b) 住民からの意見を議事録に記録し、プロジェクト内容に反映させている。
	(3)代替案の検討	プロジェクト計画の複数の代替案は (検討の際、環境・社会に係る項目も含めて) 検討されているか。	(a) Y	(a) ゼロオプション及び3ルートを河道状況、道路線形、施工性、環境社会影響、建設コスト等の観点から比較検討し、河道が将来的に比較的安定しており、高い事故防止効果が期待でき、施工性や建設コストにおいて優れた案が選定された。
2 汚染対策	(1)大気質	(a) 通行車両等から排出される大気汚染物質による影響はあるか。当該国の環境基準等と整合するか。 (b) ルート付近において大気汚染状況が既に環境基準を上回っている場合、プロジェクトが更に大気汚染を悪化させるか。大気質に対する対策は取られるか。	(a) Y (b) Y	(a) 工事中は建設重機や車両の稼働等に伴い、一時的に大気質に影響を与える可能性があるが、モニタリングを実施し、影響を緩和するよう対策を講じる。 (b) ベースライン調査の結果、ルート付近の大気汚染状況は環境基準を下回った。本プロジェクトの実施後、交通量の増加の程度によっては大気質への負の影響が見込まれるが、道路の輻輳れが修繕されることにより、粉塵等の影響の緩和が想定される。
	(2)水質	(a) 盛土部、切土部等の表土露出部からの土壌流出によって下流水域の水質が悪化するか。 (b) 路面からの流出排水が地下水等の水源を汚染するか。(道路) (c) プロジェクトによる周辺の井戸等の水源への影響はあるか。	(a) N (b) N (c) N	(a) 切土部は計画されていない。盛土部は張芝等により法面保護を行うため、下流水域の水質を悪化させるような大規模な土壌流出は想定されない。 (b)(c) 路面からの排水は河川へ排水されるため、地下水等の水源や井戸等の水源を汚染することはない。
	(3)廃棄物	(a) 大量の掘削土・浚渫土砂が発生する場合、当該国の規定に従って適切に処理・処分されるか。(河川・砂防)	(a) Y	(a) 橋脚建設に伴い発生する掘削土は、認可を受けた処分場に廃棄する。
	(4)騒音・振動	(a) 通行車両による騒音・振動は当該国の基準等と整合するか。 (b) 通行車両による低周波音は当該国の基準等と整合するか。	(a) Y (b) Y	(a) 交通量の増加の程度によっては騒音の影響が発生する可能性があるが、モニタリングを実施し、環境基準を超える場合は影響を緩和するよう対策を講じる。 (b) 学校、病院等、特に配慮が必要な施設は周辺に存在せず、橋梁端部から住居地域までは100m以上離れているため、低周波音の影響は想定されない。なお、キルギスでは低周波音の基準は設定されていない。

環境チェックリスト：1.2. 橋梁 (2)

分類	環境項目	主なチェック事項	Yes: Y No: N	具体的な環境社会配慮 (Yes/Noの理由、根拠、緩和策等)
3 自 然 環 境	(1) 保護区	(a) サイトは当該国の法律・国際条約等に定められた保護区内に立地するか。プロジェクトが保護区に影響を与えないか。 (a) サイトは原生林、熱帯の自然林、生態学的に重要な生息地（珊瑚礁、マングローブ湿地、干潟等）を含むか。 (b) サイトは当該国の法律・国際条約等で保護が必要とされる貴重種の生息地を含むか。 (c) 生態系への重大な影響が懸念される場合、生態系への影響を減らす対策はなされるか。 (d) 野生生物及び家畜の移動経路の遮断、生息地の分断、動物物の交通事故等に対する対策はなされるか。 (e) 橋梁・道路が出来たことよって、開発に伴う森林破壊や密猟、砂漠化、湿原の乾燥等は生じるか。外来種（従来その地域に生息していないか）病害虫等が移入し、生態系が乱される恐れがあるか。これらに対する対策は用意されるか。 (f) プロジェクトによる流況変化が河川の水域環境に悪影響を及ぼすか。水生生物等への影響を減らす対策はなされるか。（河川・砂防）	(a) N  (a) N (b) N (c) N (d) Y (e) N (f) N	(a) プロジェクトサイトは保護区ではなく、また保護区から十分離れているため保護区に影響を与えない。 (a) プロジェクトサイトは原生林、熱帯自然林、生態学的に重要な生息地を含まない。 (b) プロジェクトサイトは貴重種の生息地を含まない。 (c) 生態系へ重大な影響は及ぼさない。 (d) 家畜の移動に配慮して設計が行われた。 (e) 既存道路・橋梁の改修であり、生態系への影響は小さい。 (f) 河道が変動する可能性があるが、プロジェクトサイトには水生生物がほとんど生息していないため、影響は小さい。
	(3) 水象	(a) 構造物の設置による水系の変化に伴い、地表水・地下水の流れに悪影響を及ぼすか。	(a) N	(a) 既存橋梁の撤去により洪水時に河道が変動する可能性があるが、変動を想定した計画であるため重大な影響は想定されない。
	(4) 地形・地質	(a) ルート上に土砂崩壊や地滑りが生じそうな地質の悪い場所はあるか。ある場合は工法等で適切な処置がなされるか。 (b) 盛土、切土等の土木作業によって、土砂崩壊や地滑りは生じるか。土砂崩壊や地滑りを防ぐための適切な対策がなされるか。 (c) 盛土部、切土部、土捨て場、土砂採取場からの土壌流出は生じるか。土砂流出を防ぐための適切な対策がなされるか。	(a) N (b) N (c) N	(a) ルート付近の地盤強度は担保されており地質の悪い場所はない。 (b) 切土はなく、盛土は適切に施工し、法面排水工、法面保護工等の適切な対策を講じる。 (c) 法面排水工、法面保護工等の適切な対策を講じるとともに、土捨て場及び土取場での土砂流出対策を管理者に徹底させる。

環境チェックリスト：1.2. 橋梁 (3)

分類	環境項目	主なチェック事項	Yes: Y No: N	具体的な環境社会配慮 (Yes/Noの理由、根拠、緩和策等)
4 社 会 環 境	(1) 住民移転	(a) プロジェクトの実施に伴い非自発的住民移転は生じるか。生じる場合は、移転による影響を最小限とする努力がなされるか。 (b) 移転する住民に対し、移転前に補償・生活再建対策に関する適切な説明が行われるか。 (c) 住民移転のための調査がなされ、再取得価格による補償、移転後の生活基盤の回復を含む移転計画が立てられるか。 (d) 補償金の支払いは移転前に行われるか。 (e) 補償方針は文書で策定されているか。 (f) 移転住民のうち特に女性、子供、老人、貧困層、少数民族・先住民族等の社会的弱者に適切な配慮がなされた計画か。 (g) 移転住民について移転前の合意は得られるか。 (h) 住民移転を適切に実施するための体制は整えられるか。十分な実施能力と予算措置が講じられるか。 (i) 移転による影響のモニタリングが計画されるか。	(a) N (b) - (c) - (d) - (e) - (f) - (g) - (h) - (i) - (j) Y	非自発的住民移転や民有地の用地取得は生じない。  (j) 非自発的住民移転や民有地の用地取得は発生しないが、念のため苦情処理の仕組みが構築されている。
	(2) 生活・生計	(a) 新規開発により橋梁・アクセス道路が設置される場合、既存の交通手段やそれに従事する住民の生活への影響はあるか。また、土地利用・生計手段の大幅な変更、失業等は生じるか。これらの影響の緩和に配慮した計画か。 (b) プロジェクトによりその他の住民の生活に対し悪影響を及ぼすか。必要な場合は影響を緩和する配慮が行われるか。 (c) 他の地域からの人口流入により病気の発生 (HIV等の感染症を含む) の危険はあるか。必要に応じて適切な公衆衛生への配慮は行われるか。 (d) プロジェクトによって周辺地域の道路交通に悪影響を及ぼすか (渋滞、交通事故の増加等)。 (e) プロジェクトによって住民の移動に障害が生じるか。 (f) 陸橋等による日照障害、電波障害は生じるか。	(a) N (b) N (c) Y (d) Y (e) N (f) N	(a) 本プロジェクトは既存橋梁・道路の改修である。 (b) 本プロジェクトによりその他の住民の生活に対し悪影響を及ぼすことはない。 (c) 建設工事期間中、建設工事従事者が対象地周辺に流入し、感染症が広がる可能性があるため、薬物使用を禁止し、啓蒙活動・防止対策を行う。 (d) 建設重機の稼働や速度制限により交通への影響が想定されるため、交通警察の許可を得るほか、標識、告知板等を適切に設置する。 (e) 新橋建設中は既存橋梁を利用し、新橋開通後に既存橋梁を撤去するため、住民の移動に障害は生じない。 (f) 特に生じない。
	(3) 文化遺産	プロジェクトにより、考古学的、歴史的、文化的、宗教的に貴重な遺産、史跡等を損なう恐れはあるか。また、当該国の国内法上定められた措置が考慮されるか。	(a) N	(a) 文化遺産は特にない。
	(4) 景観	(a) 特に配慮すべき景観が存在する場合、それに対し悪影響を及ぼすか。影響がある場合には必要な対策は取られるか。	(a) N	(a) 特に配慮すべき景観はないが、樹木の伐採による景観への影響が想定されるため、影響を受ける樹木は可能な限り移植し、護岸には緑化を検討する。
	(5) 少数民族、先住民族	(a) 当該国の少数民族、先住民族の文化、生活様式への影響を軽減する配慮がなされているか。 (b) 少数民族、先住民族の土地及び資源に関する諸権利は尊重されるか。	(a) N (b) N	(a) (b) 「ギ」国は多民族国家であり、事業対象地にも少数民族に属する民族は存在するが、本事業は既存道路・橋梁の改修であり、少数民族・先住民族への影響は想定されない。

環境チェックリスト：1.2. 橋梁 (4)

分類	環境項目	主なチェック事項	Yes: Y No: N	具体的な環境社会配慮 (Yes/Noの理由、根拠、緩和策等)
	(6) 労働環境	(a) プロジェクトにおいて遵守すべき当該国の労働環境に関する法律が守られるか。	(a) Y	(a) 法令遵守は最優先課題であり、施工監理にて配慮する。
		(b) 労働災害防止に係る安全設備の設置、有害物質の管理等、プロジェクト関係者へのハード面での安全配慮が措置されているか。	(b) Y	(b) 請負業者は労働災害防止に係る安全配慮を適切に実施する。
	(1) 工事中の影響	(c) 安全衛生計画の策定や作業員等に対する安全教育(交通安全や公衆衛生を含む)の実施等、プロジェクト関係者へのソフト面での対応が計画・実施されるか。	(c) Y	(c) 請負業者は安全衛生計画を策定し、作業員等への安全教育を計画・実施する。
		(d) プロジェクトに関係する警備要員が、プロジェクト関係者・地域住民の安全を侵害することのないよう監督する。また警備要員による事件事故が生じた場合に備え、対応策及び罰則を計画する。	(d) Y	(d) 請負業者は警備要員への教育指導を徹底し、プロジェクト関係者・地域住民の安全を侵害することのないよう監督する。また警備要員による事件事故が生じた場合に備え、対応策及び罰則を計画する。
5 その他	(2) モニタリング	(a) 工事中の汚染(騒音、振動、濁水、粉じん、排ガス、廃棄物等)に對して緩和策が用意されるか。	(a) Y	(a) 工事中の汚染に対しては、環境管理計画を作成し緩和策を用意している。
		(b) 工事により自然環境(生態系)に悪影響を及ぼすか。また、影響に對する緩和策が用意されるか。	(b) Y	(b) 対象道路周辺に希少種はなく、生態系に深刻な影響を与えることはない。
6 留意点	他の環境チェックリストの参照	(c) 工事により社会環境に悪影響を及ぼすか。また、影響に對する緩和策が用意されるか。	(c) Y	(c) 住民移転は発生せず、社会環境への影響は小さい。工事中は現場周辺の交通への影響が想定されるため、標識、告知板等を適切に設置し、住民への情報提供を行うなど、渋滞・事故防止に努める。
		(d) 事業者から所管官庁等への報告の方法、頻度等は規定されているか。	(d) Y	(d) 住民移転は発生せず、社会環境への影響は小さい。工事中は現場周辺の交通への影響が想定されるため、標識、告知板等を適切に設置し、住民への情報提供を行うなど、渋滞・事故防止に努める。
	環境チェックリストの参照	(a) 上記の環境項目のうち、影響が考えられる項目に対して、事業者のモニタリングが計画・実施されるか。	(a) Y	(a) 工事中及び供用後2年間のMOTRによるモニタリング計画(案)が作成されている。MOTRはモニタリングの実施に合意している。
		(b) 当該計画の項目、方法、頻度等はどのように定められているか。	(b) Y	(b) 類似事例を参考に、事業地の特性及び法規制を勘案してモニタリング計画(案)を作成した。詳細設計時に必要に応じて見直される。
	留意点	(c) 事業者のモニタリング体制(組織、人員、機材、予算等とそれらの継続性)は確立されるか。	(c) Y	(c) MOTRはモニタリングの実施に合意しており、環境担当者を配置してモニタリングを実施する予定である。
		(d) 事業者から所管官庁等への報告の方法、頻度等は規定されているか。	(d) Y	(d) MOTRは工事中は四半期毎、供用後は半年毎にモニタリングを実施し結果を取りまとめ、プロジェクト進捗報告書に添付してSAEPP/JICAに報告する。
	留意点	(a) 必要な場合は、道路、鉄道、林業に係るチェックリストの該当チェック事項も追加して評価すること(大規模な伐採を伴う場合等)。	(a) Y	(a) 本プロジェクトは道路や護岸の改修を含むため、道路及び河川に係るチェック事項を追加した。
		(b) 必要な場合には送变电・配電に係るチェックリストの該当チェック事項も追加して評価すること(送变电・配電施設等の建設を伴う場合等)。	(b) N	(b) 本事業では送電線・配電設備の建設はない。
	留意点	(a) 必要な場合には、越境または地球規模の環境問題への影響も確認する(廃棄物の越境処理、酸性雨、オゾン層破壊、地球温暖化の問題に係る要素が考えられる場合等)。	(a) Y	(a) 地球温暖化への影響の可能性(CO2排出量の増加)に関し、交通量の増加によりCO2排出量が増加する可能性があるが、走行速度の適正化により、1台当たりのCO2排出量が削減され、長期的にはCO2排出量が減少すると見込まれる。

注1) 表中『当該国の基準』については、国際的に認められた基準と比較して著しい乖離がある場合には、必要に応じ対応策を検討する。

注2) 当該国において現在規制が確立されていない項目については、当該国以外(日本における経験も含めて)の適切な基準との比較により検討を行う。

注3) 環境チェックリストはあくまでも標準的な環境チェック項目を示したものであり、事業および地域の特性によっては、項目の削除または追加を行う必要がある。





## 13. 技術資料

- (1) 既存橋調査結果
- (2) 交通量調査結果
- (3) 測量結果
- (4) 地質調査結果
- (5) ステークホルダー会議記録
- (6) 軸重データ
- (7) 舗装設計計算



## (1) 既存橋調查結果

# 1. ウルラル川橋梁

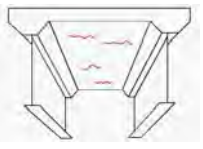
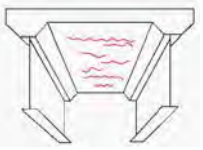
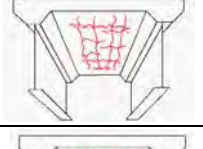
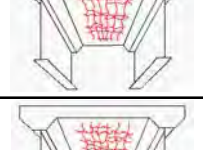

## 1) 調査概要

調査対象橋梁の健全度について、国土交通省の損傷評価基準（a～e）に準拠した点検を実施した。評価基準の内容は以下の通りである。点検方法は主に遠望目視とし、近接が可能な場合は近接目視を行った。また、構造寸法の計測により橋梁の図化を行った。

### 【損傷の状況を判断・記録するもの ※橋梁部材の健全度評価】

工種	部材	材料	損傷の種類	目視点検による確認可否		損傷評価基準 (a～e) (参考:国土交通省)
				遠望目視	近接目視	
上部工	床版	コンクリート	剥離・鉄筋露出	○	○	a:無 b:- c:剥離 d:鉄筋露出(小) e:鉄筋露出(大)
			漏水・遊離石灰	○	○	a:無 b:- c:漏水 d:遊離石灰 e:遊離石灰+錆汁
			床版ひびわれ	○	○	下図参照
			抜け落ち	△	○	a:無 b:- c:- d:- e:有
			うき	△	○	a:無 b:- c:- d:- e:有
下部工	躯体	コンクリート	ひびわれ	○	○	下表参照
			剥離・鉄筋露出	○	○	a:無 b:- c:剥離 d:鉄筋露出(小) e:鉄筋露出(大)
			漏水・遊離石灰	○	○	a:無 b:- c:漏水 d:遊離石灰 e:遊離石灰+錆汁
		護岸	変状・変形	○	○	a:無 b:- c:- d:- e:有

#### 【床版ひびわれ】

区分	一般的状況
a	<p>【ひびわれ間隔と性状】 ひびわれは主として1方向のみで、最小ひびわれ間隔が概ね1.0m以上</p> <p>【ひびわれ幅】 最大ひびわれ幅が0.05mm以下（ヘアークラック程度）</p> 
b	<p>【ひびわれ間隔と性状】 1.0m～0.5m、1方向が主で直行方向は従い、かつ格子状でない</p> <p>【ひびわれ幅】 0.1mm以下が主であるが、一部に0.1mm以上も存在する</p> 
c	<p>【ひびわれ間隔と性状】 0.5m程度、格子状直前のもの</p> <p>【ひびわれ幅】 0.2mm以下が主であるが、一部に0.2mm以上も存在する</p> 
d	<p>【ひびわれ間隔と性状】 0.5m～0.2m、格子状に発生</p> <p>【ひびわれ幅】 0.2mm以上がかなり目立ち部分的な角落ちもみられる</p> 
e	<p>【ひびわれ間隔と性状】 0.2m以上、格子状に発生</p> <p>【ひびわれ幅】 0.2mm以上が目立ち連続的な角落ちが生じている</p> 

#### 【コンクリートひびわれ】

区分	一般的状況
a	損傷無し
b	ひびわれ幅が小さく(RC構造物0.2mm未満)、ひびわれ間隔が大きい(最小ひびわれ間隔が概ね0.5m以上)
c	ひびわれ幅が小さく(RC構造物0.2mm未満)、ひびわれ間隔が小さい(最小ひびわれ間隔が概ね0.5m未満)
d	ひびわれ幅が中位(RC構造物0.2mm以上0.3mm未満)で、ひびわれ間隔が小さい(最小ひびわれ間隔が概ね0.5m未満)
e	ひびわれ幅が大きく(RC構造物0.3mm以上)、ひびわれ間隔が小さい(最小ひびわれ間隔が概ね0.5m未満)

図-1 評価基準 (1/2)

【損傷の有無を判断・記録するもの ※主に橋梁付属物の健全度評価】

工種	部材	損傷の種類	内容	損傷評価基準 (a~e) (参考:国土交通省)
支承部	支承本体	機能障害	激しく腐食している。部品が損傷・硬化・脱落している。	a:無 b:- c:- d:- e:損傷により機能が低下
		異常な音	車両走行時に異常な音がする。	a:無 b:- c:- d:- e:有
	沓座・ モルタル	土砂詰り	土砂や水がたまっている。	a:無 b:- c:- d:- e:有
		変形・欠損	モルタルがひびわれ、部分的に欠損している。	a:無 b:- c:局部的に有 d:- e:著しく欠損
路上	高欄・ 防護柵	変形・欠損	車両の衝突などにより壊れている。 道路利用者の通行に危険と思われる個所がある。	a:無 b:- c:局部的に有 d:- e:著しく欠損
路面	舗装	舗装の異常	穴や大きなへこみ、ひびわれがある。	a:無 b:- c:- d:- e:ひびわれ幅が5mm以上等
		路面の凹凸	道路利用者の通行に危険と思われる個所がある。	a:無 b:- c:2cm未満 d:- e:2cm以上
	伸縮装置	路面の凹凸	大きな段差がある。	a:無 b:- c:2cm未満 d:- e:2cm以上
		遊間の異常	壊れている。	a:無 b:- c:軽微なズレ d:- e:分離or接触。
排水装置	土砂詰り	土砂や舗装のオーバーレイによって詰まっている。	a:無 b:- c:- d:- e:有	
	漏水・滞水	排水装置が壊れていて、排水が桁などにかかる。	a:無 b:- c:- d:- e:漏水・滞水	
橋梁全体	異常なたわみ	通常(死荷重時)では生じないたわみがある。	a:無 b:- c:- d:- e:有	
	沈下・移動・傾斜	基礎、支承等に沈下・移動・傾斜が生じている。	a:無 b:- c:- d:- e:有	
	洗掘	躯体や周辺の土が流水により削られ消失することをいう。	a:無 b:- c:洗掘有 d:- e:著しく洗掘	
	その他	不法占拠、落書き、鳥害、火災による損傷等	記録のみ	

図-2 評価基準 (2/2)

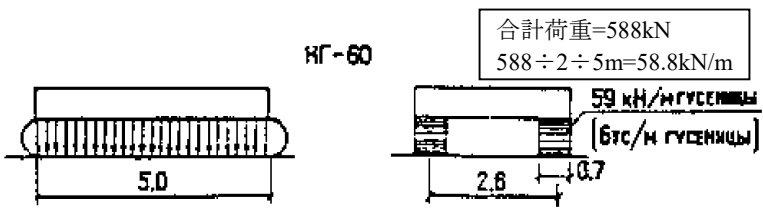

## 2) 調査結果

調査対象橋梁の健全度について、国土交通省の損傷評価基準（a～e）に準拠した点検を実施した。調査の結果、床版部の漏水跡、橋台部（杭を覆うコンクリート部）の剥離、高欄の欠損があるものの、概ね健全であった。ただし、本橋はパイルベント構造であり、パイルベント間に流木の引掛り、それが要因で大きな損傷が生じる可能性がある。そのパイルベント橋脚の1本に関しては、2017年6月の調査時に比べ、杭頭が梁部から大きく離れ、杭の傾きが進行している状態が2017年9月の調査時に確認された。これは、致命的な損傷ではないものの、橋梁を支える橋脚の一部が機能していないため、他の橋脚に負荷が掛かっていることを示している。

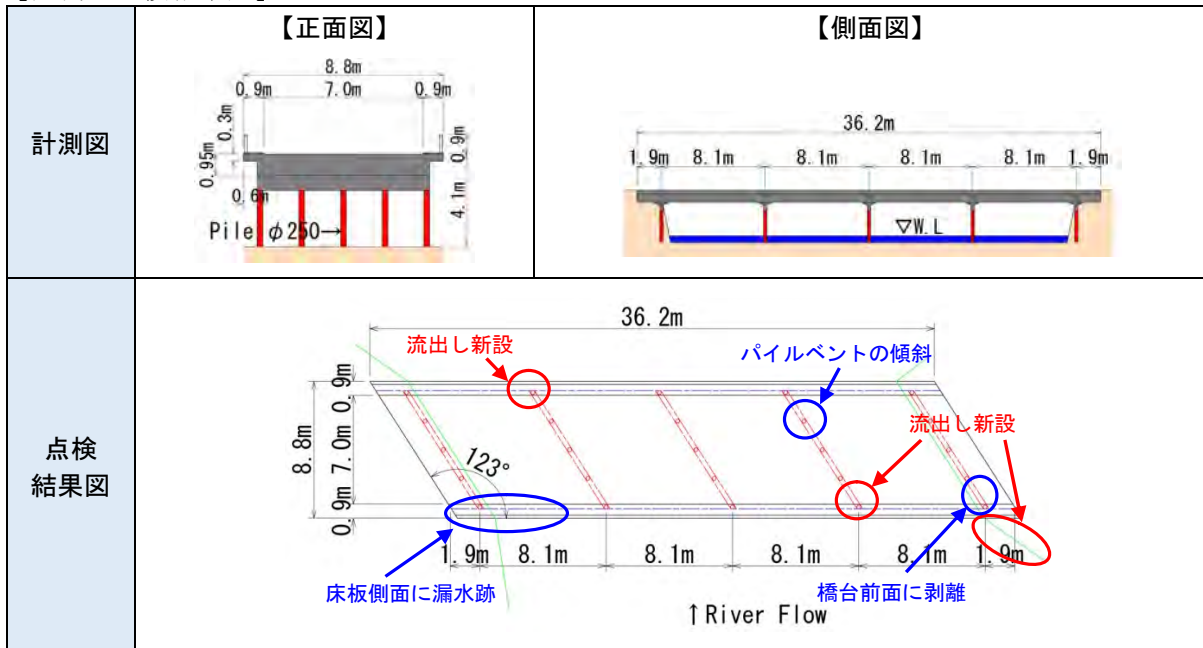
したがって、既存橋は架け替えの必要性がある。また、本プロジェクトでは、既存橋を施工時の迂回路としても使用することから、MOTRに直ちに修復を行うことを申し入れた。

以下に橋梁の諸元、計測・点検結果図、点検結果一覧表を添付する。

### 【橋梁諸元】

建設年	1962年	位置	E:71.9380556 N:42.5541667
標高	1042m	距離	タラス市から西へ20km
有効幅員	7.0m（車道）+0.7m（歩道）×2=8.4m		
設計荷重	НГ-60 		
上部構造	上部構造形式：RC4 径間連結床板橋 橋長：36.2m		
下部・基礎構造	パイルベント・鋼管杭（φ250）		
橋梁写真			
	左：タラス側より 右：右岸下流より		

【計測・点検結果図】



【点検結果一覧表 1：橋梁部材】

工種	部材	損傷の種類	損傷の程度	説明
上部工	床版	剥離・鉄筋露出	a	床板側面から漏水と共にアスファルト成分が溶けだしている。
		漏水・遊離石灰	c	
		床版ひびわれ	a	
		抜け落ち	a	
		うき	a	
下部工	躯体 (橋台)	ひびわれ	a	構造形式は橋脚と同様でパイラメント基礎の前面をコンクリートで覆っており、一部剥離がある。
		剥離・鉄筋露出	c	
		漏水・遊離石灰	a	
	躯体 (橋脚)	ひびわれ	a	
		剥離・鉄筋露出	a	
		漏水・遊離石灰	a	
		(変形) ※追加	e	杭下端が下流側へ傾いている。 杭頭が梁部から外れている。(2017年6月の調査時に比べ変形が進行)
護岸	変状・変形	a	洪水時に流出し新設されている。	

【点検結果一覧表 2：橋梁付属物】

工種	部材	損傷の種類	損傷の程度	説明
支承部	支承 本体	機能障害	—	支承は無い(上下部一体構造)
		異常な音	—	
	沓座・ モルタル	土砂詰り	—	
		変形・欠損	—	
路上	高欄・ 防護柵	変形・欠損	c	支柱が上部構造から外れている。
路面	舗装	舗装の異常	e	穴、ひび割れが所々にある。
		路面の凹凸	a	
	伸縮 装置	路面の凹凸	確認不可	
	遊間の異常	確認不可		
排水装置		土砂詰り	未施工	
		漏水・滞水	未施工	
橋梁全体		異常なたわみ	a	橋脚の傾斜があるが橋梁全体の傾斜は無い。
		沈下・移動・傾斜	a	
		洗掘	a	
		その他	—	



橋梁名	No1			路線名	タラズ—タラス		
部材名	床版（下）			部材名	床板（側面）		
損傷の種類	健全	損傷の程度	a	損傷の種類	漏水	損傷の程度	c
写真説明	排水装置の周囲に漏水跡があるが、床版機能を損なうようなひび割れ等は無く、概ね健全である。			写真説明	床板側面から漏水と共にアスファルト成分が溶けだしている。		
							
部材名	躯体（橋台）			部材名	同左		
損傷の種類	剥離	損傷の程度	c	損傷の種類	同左	損傷の程度	-
写真説明	構造形式は橋脚と同様でパイルベント基礎の前面をコンクリートで覆っており、一部剥離がある。			写真説明	○部は杭である。		
							
部材名	躯体（橋脚）			部材名	同左		
損傷の種類	変形	損傷の程度	e	損傷の種類	-	損傷の程度	-
写真説明	杭下端が下流側へ変形。			写真説明	一体化されていない→変形		
					↑2017年6月に撮影 ↓2017年9月に撮影		
					杭頭が梁部から離れている。		

損傷写真

橋梁名		No1			路線名		タラズ—タラス		
損傷写真	部材名	護岸			部材名	支承部			
	損傷の種類	-	損傷の程度	-	損傷の種類	-	損傷の程度	-	
	写真説明	橋台部の横に橋台を保護するための直壁タイプの護岸を構築している。○部は昨年の洪水で壊れ、新築したものである。			写真説明	無：上部構造と下部構造は一体			
									
	部材名	路上（高欄、防護柵）			部材名	路面（舗装、伸縮装置）			
	損傷の種類	変形・欠損	損傷の程度	c	損傷の種類	舗装の異常	損傷の程度	e	
	写真説明	支柱が上部構造から外れている。			写真説明	舗装の補修跡。			
									
	部材名	排水装置			部材名	橋梁全体			
	損傷の種類	漏水・滞水	損傷の程度	e	損傷の種類	-	損傷の程度	-	
写真説明	排水管無し。			写真説明	橋脚のパイルベント部下端に多くの流木が堆積している。洪水時の損傷要因であり、現状のままで放置することは望ましい状況ではない。				
									



## 2. 近隣橋梁の現状（構造的な傾向、損傷の傾向）

### 1) 調査対象橋梁

対象橋梁の近隣橋梁の現状を把握するため、対象橋梁の同路線にある橋梁と、対象橋梁の上流に位置する2橋について、橋梁諸元の整理、計測及び調査を行う。調査について、前述の橋梁はその健全度に着目し、後述の橋梁は河川状況の把握に着目する。以下に示すウルマルル川に架かる2橋と近隣の橋梁1橋の状況について整理する。



## 2) 同路線にある橋梁

本橋梁は、架け替え対象橋梁より 1.3km タラス市側に位置する。また、「キルギス共和国橋梁トンネル維持管理能力向上プロジェクト（2013年7月～2015年12月）」を通じて発足した道路資産管理課（Road Asset Management Section:RAMS）によりデータ管理されており、そのデータに準拠し以下の諸元を記述する。橋梁の状態は、大きな損傷は無く健全であるが、データ上の設計荷重は架け替え対象橋梁より小さい。

### 【橋梁諸元】

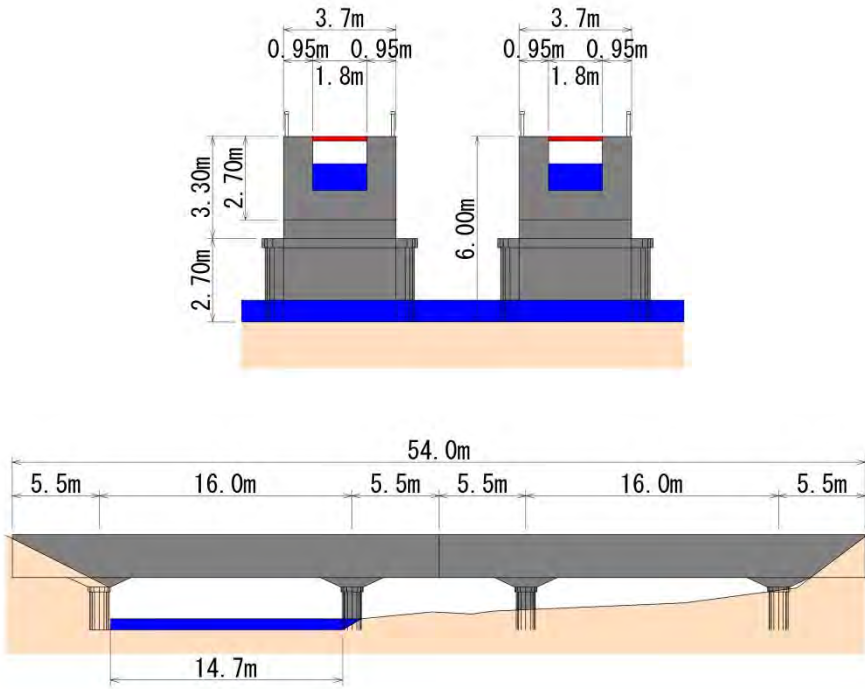
建設年	1963年	位置	E:71.9430556 N:42.5472222
標高	1064m	距離	タラス市から西へ20km
有効幅員	8.0m（車道）		
設計荷重	HI-60 ※インベントリーデータには「HI-30」と記載。入カミスとのこと。		
上部構造	上部構造形式：RC 単純 T 桁橋		
	橋長：13.5m		
下部・基礎構造	重力式橋台		
橋梁写真	【タラス側より撮影】		【タラス側より撮影】
			
	【タラス下流側より撮影】		【タラス下流側より撮影】
			
	【タラス上流側より撮影】		【タラス上流側より撮影】
			



### 3) 上流にある灌漑用橋梁

本橋梁は、後述する「No47-DEP」が管理するウルマラル川に架かる灌漑水路橋であり、架け替え対象橋梁から約 1.1km 上流に位置する。本調査では架け替え対象橋梁が洪水で被害にあった時の状況を現地住民にヒアリングし、また、本橋梁が渡河する河川幅を知るために構造物の寸法計測を行った。ヒアリング結果より、水位が桁下を上回ること無く、また、本橋梁が河川の位置と幅を固定する役割となっていることが推定された。以下に諸元と共に計測結果を示す。

#### 【橋梁諸元】

建設年	1976 年	位 置	E:71.939336 N:42.545283
標 高	1057m	距 離	タラス市から西へ 20km
全幅員	0.9m+1.8m（水路部）+0.9m=2.6m		
上部構造	上部構造形式：RC 単純桁橋（2 連） 全長：54.0m		
下部・基礎構造	小判側橋脚		
計測結果			



橋梁写真

【タラズ側より撮影】



【タラス側より撮影】



【タラス下流側より撮影（河川部）】



【タラズ上流側より撮影】



【タラス上流側より撮影】



【橋上より上流側を撮影】



【橋上より下流側を撮影】



#### 4) 上流にある道路橋

本橋梁は、架け替え対象橋梁より約 10km 上流に位置し、ウルマラル川を渡河する道路橋である。道路はタラス市から本橋の西側にあるウルマラル村へと続き、架け替え対象橋梁の西側へ接続する。橋長は約 45m あり、下流にある架け替え対象橋梁よりも橋長は長い。橋梁形式については、架け替え対象橋梁とほぼ同等の形式で 1 径間分だけ長く構築されている。洪水時の損傷状況を第 3 地方道路維持管理局のチーフエンジニアにヒアリングしたところ、水位は桁上には及んでいないが、左岸上流側の堤防部の越水があったようである。

#### 【橋梁諸元】

建設年	1961 年	位置	E:71.968647 N:42.462967
標高	1195m	距離	タラス市から西へ 20km
有効幅員	8.0m (車道) ※調査団による計測値		
上部構造	上部構造形式：RC5 径間連結床板橋		
	橋長：45m ※調査団による計測値		
下部・基礎構造	パイルベント・鋼管杭		
橋梁写真	【ウルマラル村側より撮影】		【タラス側より撮影】
			
	【ウルマラル村下流側より撮影】		【タラス下流側より撮影】
			
	【ウルマラル村上流側より撮影】		【タラス上流側より撮影】
			

橋梁写真

【橋上より上流側を撮影】



【橋上より下流側を撮影】







## (2) 交通量調查結果

交通量調査結果 (24 時間観測)

(1) 交通量調査の概要

地点 No.	調査地点	実施日
1	Trailas-Taraz 道路 Chon Aryk village 付近	1 回目: 2017 年 7 月 16 日-17 日 (日曜日-月曜日)
2	Bakan Ala-Ken Aral 道路 橋梁付近	2017 年 7 月 19 日-20 日 (水曜日-木曜日)
3	Trailas-Taraz 道路 Akdobo and Ming Bulak 間 ウルマラル川 橋梁付近	2 回目: 2017 年 9 月 16 日-17 日 (土曜日-日曜日)
4	Trailas-Taraz 道路 Ming Bulak Village and Booterek Village 間	2017 年 9 月 19 日-20 日 (火曜日-水曜日)
5	Trailas-Taraz 道路 Chinkent and Kyzyl Adyr 間	
6	カザフスタンの国境付近	

**調査地点図**

凡例  
● : 交通量調査地点  
■ : 観測地点

調査時間・箇所  
■ 平日と休日 24 時間観測 (7:00 - 翌日 7:00)  
■ 6 箇所

車種区分  
■ 機動系: 9 車種区分 (車両十オートバイ)  
■ 非機動系: 3 車種区分 (自転車、歩行者)

(2) 交通量調査結果 (24 時間観測)

2017 年 7 月 16 日 (調査地点 1)

Major category	I. Light vehicles				II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van./ Mini bus	Mini truck	Standard & Large bus	2 axle truck	3 axle truck	Articulated truck	Motorbike	Bike trailer	Bicycle	Tricycle	Animal	Walker	
Hour	160	0	100	13	3	7	3	4	0	0	2	0	0	7	
7:00 ~ 8:00	188	0	93	3	14	10	3	2	0	0	6	0	1		
8:00 ~ 9:00	222	0	137	19	9	4	1	5	0	3	0	1			
9:00 ~ 10:00	269	0	167	21	12	6	4	2	2	2	2	2			
10:00 ~ 11:00	303	0	186	23	11	18	6	14	0	6	0	12			
11:00 ~ 12:00	253	0	187	14	2	15	1	4	0	8	0	4			
12:00 ~ 13:00	265	0	195	19	1	17	4	6	0	2	0	1			
13:00 ~ 14:00	198	0	172	13	0	7	5	3	1	0	0	1			
14:00 ~ 15:00	211	0	167	15	0	6	8	5	1	1	0	2			
15:00 ~ 16:00	165	0	186	12	0	5	4	8	0	0	0	1			
16:00 ~ 17:00	165	0	205	23	0	15	9	10	0	1	0	1			
17:00 ~ 18:00	180	1	124	17	0	7	5	6	0	1	0	2			
18:00 ~ 19:00	186	0	96	18	0	2	5	2	0	1	2	3			
19:00 ~ 20:00	203	1	94	19	0	7	7	2	0	4	0	4			
20:00 ~ 21:00	161	2	120	9	0	2	1	14	0	0	0	1			
21:00 ~ 22:00	131	1	107	9	0	6	5	4	0	1	0	0			
22:00 ~ 23:00	89	0	76	5	1	4	4	4	0	0	0	0			
23:00 ~ 24:00	70	0	60	2	0	5	1	2	0	0	0	0			
24:00 ~ 01:00	50	0	50	2	0	2	0	5	0	0	0	0			
01:00 ~ 02:00	34	0	25	0	0	6	2	4	0	0	0	0			
02:00 ~ 03:00	21	0	10	0	0	0	0	1	0	0	0	0			
03:00 ~ 04:00	15	0	18	1	0	3	0	0	0	0	0	0			
04:00 ~ 05:00	48	0	27	2	0	0	0	3	0	1	0	0			
05:00 ~ 06:00	62	0	38	1	0	6	3	2	0	3	2	2			
06:00 ~ 07:00	3648	5	2640	260	53	160	81	112	4	42	6	46			
Total															

2017年7月16日(調査地点:3)

Major category	I. Light vehicles		II. Medium vehicles				III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others		
	Minor Category	Hours	Sedan/ Wagon	Pick-up/ 4WD	Van./ Mini bus	Mini truck	Standard & Large bus	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker
7:00 ~ 8:00		114	0	0	27	3	2	3	2	4	0	0	0	0
8:00 ~ 9:00		150	0	25	3	0	2	0	1	0	0	0	0	0
9:00 ~ 9:00		135	0	30	3	0	8	3	2	2	0	0	0	0
10:00 ~ 11:00		200	0	26	3	0	0	1	4	0	0	0	0	0
11:00 ~ 12:00		216	0	25	2	1	4	5	9	0	0	0	0	0
12:00 ~ 13:00		151	0	18	4	0	6	0	7	0	0	0	0	0
13:00 ~ 14:00		189	0	13	4	0	6	0	2	0	0	0	0	0
14:00 ~ 15:00		197	0	22	0	0	1	0	0	0	0	0	0	0
15:00 ~ 16:00		151	0	38	2	0	3	3	2	0	0	0	0	0
16:00 ~ 17:00		172	0	19	3	3	6	4	13	0	1	0	3	0
17:00 ~ 18:00		150	0	15	1	1	2	10	10	0	0	0	0	0
18:00 ~ 19:00		167	0	33	2	4	2	1	10	0	0	0	0	0
19:00 ~ 20:00		166	0	24	2	0	4	5	7	0	1	0	0	0
20:00 ~ 21:00		181	0	20	3	3	3	2	4	0	1	0	0	0
21:00 ~ 22:00		172	0	13	3	0	2	2	4	0	0	0	0	0
22:00 ~ 23:00		172	0	19	5	1	5	2	5	0	0	0	0	0
23:00 ~ 24:00		85	0	7	2	1	0	2	4	0	0	0	0	0
24:00 ~ 01:00		60	0	7	1	0	0	0	6	0	0	0	0	0
01:00 ~ 02:00		43	0	3	1	0	0	0	5	0	0	0	0	0
02:00 ~ 03:00		27	0	1	1	0	0	0	4	0	0	0	0	0
03:00 ~ 04:00		23	0	4	0	0	0	0	3	0	0	0	0	0
04:00 ~ 05:00		23	0	5	0	0	0	1	7	0	0	0	0	0
05:00 ~ 06:00		64	0	8	3	0	0	0	2	0	1	0	0	0
06:00 ~ 07:00		83	0	12	19	1	0	1	5	0	0	0	0	0
Total		3091	0	414	70	37	57	44	120	2	4	0	0	3

2017年7月16日(調査地点:2)

Major category	I. Light vehicles		II. Medium vehicles				III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others			
	Minor Category	Hours	Sedan/ Wagon	Pick-up / 4WD	Van./ Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker
7:00 ~ 8:00		5	0	0	1	0	0	0	0	0	0	0	0	3	
8:00 ~ 9:00		28	0	10	3	0	0	1	0	0	0	0	2	2	
9:00 ~ 9:00		35	4	8	1	0	1	0	0	0	0	0	0	0	
10:00 ~ 11:00		48	1	11	1	0	0	0	0	0	0	0	0	0	
11:00 ~ 12:00		40	4	7	2	0	0	0	0	0	0	0	0	0	
12:00 ~ 13:00		42	3	8	3	0	0	0	0	0	0	0	0	7	
13:00 ~ 14:00		30	3	7	4	0	0	0	0	0	0	0	0	0	
14:00 ~ 15:00		29	4	10	1	0	0	0	0	0	0	0	0	0	
15:00 ~ 16:00		32	2	18	1	0	0	0	0	0	0	0	0	0	
16:00 ~ 17:00		31	3	7	0	0	0	0	0	0	0	0	0	0	
17:00 ~ 18:00		32	6	12	1	0	1	0	0	0	0	0	0	3	
18:00 ~ 19:00		26	5	12	2	0	1	0	0	0	0	0	0	0	
19:00 ~ 20:00		31	2	8	2	0	2	0	0	0	0	0	1	3	
20:00 ~ 21:00		42	2	16	5	0	2	0	0	0	0	1	9	6	
21:00 ~ 22:00		30	4	13	2	0	4	0	0	0	0	0	0	0	
22:00 ~ 23:00		26	3	8	0	0	1	1	0	0	0	0	0	0	
23:00 ~ 24:00		15	1	4	1	0	1	0	0	0	0	0	0	0	
24:00 ~ 01:00		11	1	2	0	0	0	0	0	1	0	0	0	0	
01:00 ~ 02:00		11	0	8	0	0	0	0	0	0	0	0	0	0	
02:00 ~ 03:00		0	0	1	0	0	0	0	0	0	0	0	0	0	
03:00 ~ 04:00		4	0	0	0	0	0	0	0	0	0	0	0	0	
04:00 ~ 05:00		2	0	1	0	0	0	0	0	0	0	0	0	0	
05:00 ~ 06:00		4	0	0	0	0	0	0	0	0	0	0	0	0	
06:00 ~ 07:00		10	0	2	0	0	0	0	0	0	0	0	5	1	
Total		564	48	173	30	0	14	1	1	1	1	1	17	25	

2017年7月16日(調査地点 4)

Major category	I. Light vehicles		II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others	
	Sedan/ Wagon	Pick-up / 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker
Hours													
7:00 ~ 8:00	70	1	28	15	1	0	2	4	0	0	0	0	0
8:00 ~ 9:00	80	1	40	13	0	0	3	3	0	0	0	0	1
9:00 ~ 9:00	71	4	32	13	0	4	2	3	2	2	0	0	0
10:00 ~ 11:00	76	7	37	11	8	2	3	4	1	0	0	0	0
11:00 ~ 12:00	109	3	38	7	2	6	4	4	0	0	0	0	0
12:00 ~ 13:00	100	6	40	8	2	2	8	9	0	0	0	0	0
13:00 ~ 14:00	80	5	21	7	5	6	12	3	0	0	0	0	0
14:00 ~ 15:00	98	2	50	15	2	9	11	5	0	0	0	0	0
15:00 ~ 16:00	95	0	54	11	1	10	6	7	0	0	0	0	0
16:00 ~ 17:00	112	2	43	6	3	5	4	6	0	0	0	0	0
17:00 ~ 18:00	84	2	40	9	4	7	3	9	0	2	0	0	0
18:00 ~ 19:00	100	4	46	5	5	3	0	4	0	0	0	0	0
19:00 ~ 20:00	91	0	47	2	1	8	4	3	0	0	0	0	0
20:00 ~ 21:00	77	0	45	6	1	4	2	2	0	0	0	0	0
21:00 ~ 22:00	85	0	43	2	1	2	2	1	0	0	0	0	0
22:00 ~ 23:00	68	0	33	3	1	3	2	1	0	0	0	0	0
23:00 ~ 24:00	31	0	20	0	1	0	3	0	0	0	0	0	0
24:00 ~ 01:00	19	0	12	1	0	1	1	1	0	0	0	0	0
01:00 ~ 02:00	27	0	10	0	0	1	0	2	0	0	0	0	0
02:00 ~ 03:00	17	0	6	0	0	0	3	1	0	0	0	0	0
03:00 ~ 04:00	10	0	3	0	0	1	2	1	0	0	0	0	0
04:00 ~ 05:00	9	0	1	1	0	0	0	1	0	0	0	0	0
05:00 ~ 06:00	20	0	13	5	0	2	0	0	0	0	0	0	0
06:00 ~ 07:00	27	0	24	3	0	2	3	4	0	0	0	0	0
Total	1558	37	726	143	38	76	77	78	3	2	2	0	1

2017年7月16日(調査地点 5)

Major category	I. Light vehicles		II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others	
	Sedan/ Wagon	Pick-up / 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker
Hours													
7:00 ~ 8:00	82	0	11	1	1	1	3	0	0	1	0	0	0
8:00 ~ 9:00	92	0	7	9	0	0	5	0	0	0	0	0	0
9:00 ~ 9:00	127	0	7	9	1	1	1	1	1	0	2	0	0
10:00 ~ 11:00	142	0	5	6	0	0	1	0	0	0	0	5	2
11:00 ~ 12:00	114	0	5	3	0	1	1	1	1	0	0	0	0
12:00 ~ 13:00	94	0	5	7	1	1	1	1	1	0	0	0	0
13:00 ~ 14:00	81	0	8	6	0	4	3	0	0	0	0	0	0
14:00 ~ 15:00	65	0	3	1	0	1	0	0	0	1	0	1	0
15:00 ~ 16:00	86	0	6	7	0	0	3	0	0	0	0	0	0
16:00 ~ 17:00	82	0	8	3	0	1	3	2	0	0	0	0	0
17:00 ~ 18:00	71	3	9	3	0	1	0	1	0	0	0	0	0
18:00 ~ 19:00	82	0	7	3	0	0	2	0	0	0	0	0	0
19:00 ~ 20:00	63	0	8	0	0	1	2	0	0	2	5	4	0
20:00 ~ 21:00	79	0	5	1	0	3	1	1	1	0	2	0	0
21:00 ~ 22:00	78	0	4	0	2	0	1	0	0	0	0	0	0
22:00 ~ 23:00	65	0	1	0	1	0	1	0	0	0	0	0	0
23:00 ~ 24:00	30	0	1	0	1	1	0	1	0	0	0	0	0
24:00 ~ 01:00	23	0	0	0	1	0	0	0	0	0	0	0	0
01:00 ~ 02:00	20	0	0	0	0	0	0	0	0	0	0	0	0
02:00 ~ 03:00	7	0	0	0	0	0	1	0	0	0	0	0	0
03:00 ~ 04:00	6	0	0	0	0	0	0	0	0	0	0	0	0
04:00 ~ 05:00	6	0	0	0	0	1	1	0	0	0	0	0	0
05:00 ~ 06:00	9	0	3	0	3	1	0	2	0	0	0	0	0
06:00 ~ 07:00	28	0	3	0	3	0	1	0	1	0	0	0	0
Total	1532	3	105	59	14	18	31	10	0	8	10	0	7

2017年7月16日(調查地点 6)

Major category	I. Light vehicles		II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others		
	Sedan/ Wagon	Pick-up / 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker	
Hours														
7:00 ~ 8:00	66	0	17	23	0	0	0	3	0	2	0	0	0	
8:00 ~ 9:00	84	0	25	4	0	0	4	5	0	0	0	0	0	
9:00 ~ 10:00	84	0	18	15	0	1	1	0	1	0	1	0	0	
10:00 ~ 11:00	66	0	22	13	0	2	2	4	0	0	0	7	0	
11:00 ~ 12:00	75	0	24	11	0	4	1	2	0	1	0	3	0	
12:00 ~ 13:00	72	0	16	14	0	1	1	2	0	2	0	0	0	
13:00 ~ 14:00	54	0	24	13	0	2	1	1	0	0	0	0	0	
14:00 ~ 15:00	67	0	21	4	0	0	1	1	0	0	0	0	0	
15:00 ~ 16:00	83	0	20	18	0	3	2	3	0	1	1	0	0	
16:00 ~ 17:00	76	0	26	21	0	1	2	1	0	0	0	0	0	
17:00 ~ 18:00	74	0	13	17	0	0	1	3	0	1	0	0	0	
18:00 ~ 19:00	73	0	14	17	0	2	1	4	0	0	0	0	0	
19:00 ~ 20:00	87	1	14	16	0	1	1	1	0	0	0	0	0	
20:00 ~ 21:00	83	0	15	12	0	2	0	1	0	0	0	2	0	
21:00 ~ 22:00	60	0	14	4	0	2	1	3	0	0	0	0	0	
22:00 ~ 23:00	75	0	14	3	0	0	0	4	0	0	0	0	0	
23:00 ~ 24:00	52	0	10	6	0	1	3	5	0	0	0	0	0	
24:00 ~ 01:00	42	0	6	2	0	1	0	2	0	0	0	0	0	
01:00 ~ 02:00	23	0	5	2	0	2	0	0	0	0	0	0	0	
02:00 ~ 03:00	20	0	3	1	0	3	0	0	0	0	0	0	0	
03:00 ~ 04:00	16	0	5	2	0	1	0	6	0	0	0	0	0	
04:00 ~ 05:00	22	0	11	3	1	3	1	0	0	0	0	0	0	
05:00 ~ 06:00	31	0	9	6	0	0	3	2	0	0	0	0	0	
06:00 ~ 07:00	39	0	13	7	0	0	0	1	0	0	0	0	0	
Total	1424	1	595	234	1	32	235	555	0	8	1	12	0	

2017年7月19日(調查地点 1)

Major category	I. Light vehicles		II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others		
	Sedan/ Wagon	Pick-up / 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker	
Hours														
7:00 ~ 8:00	136	1	69	9	0	5	8	6	0	0	0	0	7	
8:00 ~ 9:00	184	1	87	13	0	4	18	7	0	1	0	4	0	
9:00 ~ 10:00	205	1	122	17	0	15	15	8	0	1	0	0	0	
10:00 ~ 11:00	282	1	111	15	0	10	15	8	0	1	0	1	0	
11:00 ~ 12:00	296	0	116	21	0	17	24	0	0	0	0	1	0	
12:00 ~ 13:00	273	0	116	26	0	10	13	6	0	1	0	1	0	
13:00 ~ 14:00	224	1	157	4	0	9	14	0	1	0	0	5	0	
14:00 ~ 15:00	248	0	127	6	0	9	24	6	0	3	0	2	0	
15:00 ~ 16:00	242	0	137	11	0	10	16	2	0	0	0	3	0	
16:00 ~ 17:00	210	1	121	11	0	7	21	6	0	3	0	4	0	
17:00 ~ 18:00	202	0	127	16	0	6	7	1	0	2	0	3	0	
18:00 ~ 19:00	223	2	122	14	0	5	12	4	0	2	0	0	0	
19:00 ~ 20:00	169	0	120	10	0	3	10	5	1	1	1	6	3	
20:00 ~ 21:00	197	1	98	4	0	11	5	5	0	5	2	7	0	
21:00 ~ 22:00	139	0	77	3	0	4	2	2	0	2	0	5	0	
22:00 ~ 23:00	127	0	58	2	0	6	5	1	1	0	0	0	0	
23:00 ~ 24:00	79	0	55	1	0	3	1	4	0	1	0	0	0	
24:00 ~ 01:00	55	0	29	1	0	4	1	0	0	0	0	0	0	
01:00 ~ 02:00	14	0	27	0	0	3	1	5	0	0	0	0	0	
02:00 ~ 03:00	22	0	17	1	0	2	1	4	0	0	0	0	0	
03:00 ~ 04:00	22	0	14	2	0	2	0	6	0	0	0	0	0	
04:00 ~ 05:00	22	0	21	0	0	4	0	8	0	0	0	0	0	
05:00 ~ 06:00	31	0	15	3	0	1	0	5	0	0	1	0	0	
06:00 ~ 07:00	65	0	35	3	0	7	11	9	0	2	3	2	0	
Total	3667	9	1978	193	0	157	224	108	3	25	12	48	0	

2017年7月19日(調查地点 2)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others		
	Sedan/ Wagon	Pick-up / 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker
Hours													
7:00 ~ 8:00	12	2	1	0	0	1	0	0	0	0	1	2	2
8:00 ~ 9:00	37	2	19	3	0	0	1	0	0	0	3	0	5
9:00 ~ 9:00	46	3	18	3	0	1	0	0	0	0	0	0	0
10:00 ~ 11:00	47	2	21	0	0	0	0	0	0	0	2	0	3
11:00 ~ 12:00	39	5	18	1	0	0	0	0	0	0	0	0	1
12:00 ~ 13:00	45	2	15	3	0	0	0	0	0	0	2	0	4
13:00 ~ 14:00	48	2	14	3	0	1	0	0	1	0	0	0	0
14:00 ~ 15:00	47	0	18	0	0	1	0	0	0	0	0	0	0
15:00 ~ 16:00	46	2	18	0	0	0	0	0	1	1	0	3	3
16:00 ~ 17:00	42	3	14	1	0	1	0	0	0	0	0	0	2
17:00 ~ 18:00	40	3	11	2	0	1	0	0	0	0	0	0	0
18:00 ~ 19:00	34	0	6	0	0	2	0	0	0	0	0	0	2
19:00 ~ 20:00	37	2	10	0	0	0	0	0	0	0	0	2	3
20:00 ~ 21:00	35	1	11	2	0	1	0	0	0	0	0	5	8
21:00 ~ 22:00	35	0	12	1	0	1	0	0	0	0	1	0	2
22:00 ~ 23:00	32	0	3	0	0	1	0	0	0	0	0	0	0
23:00 ~ 24:00	22	0	7	1	0	0	0	0	0	0	0	0	0
24:00 ~ 01:00	14	0	8	0	0	0	0	0	0	0	0	0	0
01:00 ~ 02:00	9	0	1	0	0	0	0	0	0	0	0	0	0
02:00 ~ 03:00	8	0	0	0	0	0	0	0	0	0	0	0	0
03:00 ~ 04:00	2	0	0	0	0	0	0	0	0	0	0	0	0
04:00 ~ 05:00	3	0	0	0	0	0	0	0	0	0	0	0	0
05:00 ~ 06:00	4	0	5	1	0	0	0	0	0	0	0	0	0
06:00 ~ 07:00	7	0	2	2	0	1	0	0	0	0	0	6	2
Total	691	29	223	23	0	12	1	0	2	10	15	37	37

2017年7月19日(調查地点 3)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others		
	Sedan/ Wagon	Pick-up / 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Tricycle	Animal	Walker
Hours													
7:00 ~ 8:00	168	2	19	2	0	3	3	1	0	0	0	0	0
8:00 ~ 9:00	196	0	33	1	0	2	2	3	0	0	0	0	0
9:00 ~ 9:00	223	0	35	4	0	2	1	5	0	0	0	0	0
10:00 ~ 11:00	278	0	22	2	0	8	9	4	0	0	0	0	0
11:00 ~ 12:00	213	0	24	6	0	8	4	6	0	0	0	0	0
12:00 ~ 13:00	200	0	32	2	0	9	0	3	1	0	0	0	0
13:00 ~ 14:00	190	0	30	0	0	1	2	4	0	0	0	0	0
14:00 ~ 15:00	200	0	29	1	0	8	5	8	0	0	0	0	0
15:00 ~ 16:00	204	0	26	2	0	5	0	1	0	0	0	0	0
16:00 ~ 17:00	164	0	33	3	1	5	6	3	0	0	0	0	0
17:00 ~ 18:00	214	0	33	1	0	4	5	3	0	0	0	0	0
18:00 ~ 19:00	183	3	28	1	0	4	6	4	0	0	0	0	0
19:00 ~ 20:00	118	0	24	5	2	1	2	13	0	0	0	0	0
20:00 ~ 21:00	189	0	30	5	1	0	0	8	0	0	0	0	0
21:00 ~ 22:00	202	3	19	5	0	3	3	8	0	0	0	0	0
22:00 ~ 23:00	154	0	17	1	1	3	1	5	0	0	0	0	0
23:00 ~ 24:00	105	0	15	1	2	7	0	5	1	0	0	0	0
24:00 ~ 01:00	64	0	7	0	0	3	0	5	0	0	0	0	0
01:00 ~ 02:00	48	0	5	2	0	0	1	1	0	0	0	0	0
02:00 ~ 03:00	31	0	5	2	0	0	0	7	0	0	0	0	0
03:00 ~ 04:00	34	0	3	2	0	0	0	6	0	0	0	0	0
04:00 ~ 05:00	23	0	6	0	0	0	0	3	0	0	0	0	0
05:00 ~ 06:00	27	0	9	2	0	1	0	8	0	0	0	0	0
06:00 ~ 07:00	70	0	25	0	1	0	0	1	0	0	0	0	0
Total	3098	8	509	50	8	77	50	115	2	0	0	0	0

2017年7月19日(調査地点 4)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pickup/ 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Walker
Minor Category											
Hours											
7:00 ~ 8:00	65	0	29	12	1	6	6	8	0	0	0
8:00 ~ 9:00	92	0	29	2	5	6	4	3	0	1	0
9:00 ~ 10:00	113	0	56	4	3	11	0	6	0	0	1
10:00 ~ 11:00	114	1	51	4	0	6	7	4	0	2	0
11:00 ~ 12:00	130	7	53	4	0	5	6	6	0	0	0
12:00 ~ 13:00	134	1	42	1	0	3	10	6	0	0	0
13:00 ~ 14:00	107	1	29	5	0	3	6	7	0	0	0
14:00 ~ 15:00	118	0	40	10	1	5	10	4	0	0	0
15:00 ~ 16:00	108	1	46	8	1	3	12	1	0	0	0
16:00 ~ 17:00	118	1	37	14	5	6	6	2	0	0	0
17:00 ~ 18:00	111	0	28	13	2	3	3	8	0	0	0
18:00 ~ 19:00	103	3	24	9	2	4	9	3	0	0	0
19:00 ~ 20:00	85	0	21	3	0	2	4	9	0	0	0
20:00 ~ 21:00	98	0	25	5	0	2	2	7	0	0	0
21:00 ~ 22:00	72	1	26	2	1	5	1	3	0	0	0
22:00 ~ 23:00	63	0	33	4	0	5	1	3	0	0	0
23:00 ~ 24:00	52	0	19	1	1	8	3	3	0	0	0
24:00 ~ 01:00	35	0	19	2	0	6	0	3	0	0	0
01:00 ~ 02:00	21	0	11	2	0	2	0	2	0	0	0
02:00 ~ 03:00	29	0	21	1	0	4	1	2	0	0	0
03:00 ~ 04:00	22	0	11	1	0	2	0	4	0	0	0
04:00 ~ 05:00	21	0	16	0	0	0	0	2	0	0	0
05:00 ~ 06:00	18	0	15	4	1	3	2	8	0	0	0
06:00 ~ 07:00	28	0	25	5	1	4	0	3	0	0	0
Total	1857	16	706	116	24	104	93	107	0	3	1

2017年7月19日(調査地点 5)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Walker
Minor Category											
Hours											
7:00 ~ 8:00	73	0	3	0	0	2	4	1	0	0	0
8:00 ~ 9:00	145	1	15	5	1	5	2	1	0	2	0
9:00 ~ 10:00	181	1	9	8	0	3	1	2	0	0	0
10:00 ~ 11:00	156	0	6	9	0	3	4	1	0	0	0
11:00 ~ 12:00	186	0	14	6	0	4	5	2	0	0	0
12:00 ~ 13:00	108	0	8	4	0	2	2	4	0	0	0
13:00 ~ 14:00	137	1	10	3	0	7	3	3	0	0	0
14:00 ~ 15:00	159	0	4	2	0	4	5	1	0	0	0
15:00 ~ 16:00	99	0	9	2	0	6	4	1	0	0	0
16:00 ~ 17:00	115	0	6	3	0	5	10	0	0	0	0
17:00 ~ 18:00	97	0	6	1	0	1	3	0	0	0	0
18:00 ~ 19:00	92	0	5	8	0	1	1	3	0	0	0
19:00 ~ 20:00	80	0	9	1	0	5	0	2	0	0	0
20:00 ~ 21:00	74	0	1	2	0	0	0	9	1	0	0
21:00 ~ 22:00	61	0	3	2	1	2	0	4	0	0	0
22:00 ~ 23:00	57	0	5	1	1	4	5	0	0	0	0
23:00 ~ 24:00	29	0	0	0	1	4	1	1	0	0	0
24:00 ~ 01:00	32	0	1	0	0	0	2	2	0	0	0
01:00 ~ 02:00	17	0	1	0	0	1	1	0	0	0	0
02:00 ~ 03:00	14	0	2	0	0	0	1	0	0	0	0
03:00 ~ 04:00	2	0	2	0	0	0	0	0	0	0	0
04:00 ~ 05:00	12	0	5	1	0	0	0	0	0	0	0
05:00 ~ 06:00	11	0	0	0	1	0	4	0	0	0	0
06:00 ~ 07:00	32	0	4	1	1	0	3	0	0	0	0
Total	1998	3	138	59	6	59	70	29	0	2	0



2017年7月19日(調查地点 6)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van/ Mini bus	Mini truck	Standard & Large bus	2-axle truck	3-axle truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker
Hours	57	0	17	9	0	5	0	1	0	0	0
7:00 ~ 8:00	0	0	0	0	0	0	0	0	0	0	0
8:00 ~ 9:00	105	0	15	9	0	0	1	8	0	0	0
9:00 ~ 10:00	86	0	23	7	0	3	0	9	0	0	0
10:00 ~ 11:00	79	0	13	12	0	0	2	2	0	0	2
11:00 ~ 12:00	105	0	25	9	0	0	0	3	0	0	0
12:00 ~ 13:00	89	0	17	7	0	4	5	7	0	0	0
13:00 ~ 14:00	67	0	22	4	0	3	4	5	0	0	0
14:00 ~ 15:00	83	0	26	3	0	2	0	2	0	0	0
15:00 ~ 16:00	79	0	29	18	0	5	3	1	0	0	0
16:00 ~ 17:00	78	0	15	16	0	2	2	15	0	0	0
17:00 ~ 18:00	85	0	21	16	0	1	0	3	0	0	0
18:00 ~ 19:00	78	0	21	8	0	6	0	8	1	0	0
19:00 ~ 20:00	75	0	28	16	0	0	0	9	0	1	0
20:00 ~ 21:00	70	0	8	14	0	1	1	10	0	0	0
21:00 ~ 22:00	70	0	15	7	0	1	0	6	0	0	0
22:00 ~ 23:00	65	0	10	11	0	0	0	6	0	0	0
23:00 ~ 24:00	52	0	7	10	0	0	1	16	0	0	0
24:00 ~ 01:00	36	0	9	5	0	0	0	7	0	0	0
01:00 ~ 02:00	41	0	8	11	1	1	0	7	0	0	0
02:00 ~ 03:00	26	0	3	7	0	0	1	7	0	0	0
03:00 ~ 04:00	42	0	5	5	0	4	0	7	0	0	0
04:00 ~ 05:00	40	0	3	10	1	1	0	0	0	0	0
05:00 ~ 06:00	32	0	8	3	0	2	0	1	0	0	0
06:00 ~ 07:00	25	0	7	12	0	2	3	6	0	0	0
Total	1565	0	355	229	2	43	23	146	1	1	0

2017年9月16日(調查地点 1)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van/ Mini bus	Mini truck	Standard & Large bus	2-axle truck	3-axle truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker
Hours	114	2	57	23	0	7	3	4	0	1	701
7:00 ~ 8:00	207	0	90	44	1	15	1	5	0	0	0
8:00 ~ 9:00	299	1	121	41	0	13	7	6	0	0	1
9:00 ~ 10:00	296	3	130	36	0	15	3	4	0	0	6
10:00 ~ 11:00	290	0	129	20	0	10	6	8	0	0	0
11:00 ~ 12:00	291	3	156	42	0	12	4	8	0	0	4
12:00 ~ 13:00	266	0	107	27	0	13	7	6	0	2	0
13:00 ~ 14:00	211	0	119	30	0	12	7	5	0	1	0
14:00 ~ 15:00	248	2	127	31	0	13	10	8	0	2	0
15:00 ~ 16:00	248	0	145	36	0	16	11	6	0	0	1
16:00 ~ 17:00	262	0	130	45	0	12	9	5	0	0	0
17:00 ~ 18:00	239	0	135	49	0	19	8	4	0	0	1
18:00 ~ 19:00	233	1	92	43	0	8	3	0	0	3	4
19:00 ~ 20:00	180	0	83	30	1	4	3	1	0	0	0
20:00 ~ 21:00	159	0	76	29	0	11	3	8	0	1	0
21:00 ~ 22:00	104	1	47	15	0	9	1	3	0	0	2
22:00 ~ 23:00	79	0	39	7	0	8	3	2	0	0	0
23:00 ~ 24:00	73	0	49	8	0	3	1	5	0	0	0
24:00 ~ 01:00	68	0	50	8	0	1	0	3	0	0	1
01:00 ~ 02:00	43	0	36	2	0	1	0	2	0	0	6
02:00 ~ 03:00	29	0	13	2	0	4	0	6	0	0	0
03:00 ~ 04:00	20	0	12	6	0	5	0	1	0	0	0
04:00 ~ 05:00	29	0	9	14	0	7	1	0	0	0	0
05:00 ~ 06:00	96	2	28	39	0	7	3	1	0	0	0
06:00 ~ 07:00	3986	15	1930	659	2	225	94	101	0	10	705
Total	3986	15	1930	659	2	225	94	101	0	10	705

2017年9月16日(調査地点 2)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van/ Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker
Hours											
7:00 ~ 8:00	19	2	1	0	0	0	0	0	0	0	0
8:00 ~ 9:00	31	5	6	6	2	1	0	1	0	0	6
9:00 ~ 9:00	46	4	17	3	0	0	0	1	0	0	2
10:00 ~ 11:00	56	5	12	2	2	0	0	2	0	0	10
11:00 ~ 12:00	48	1	9	1	4	2	0	1	0	2	1
12:00 ~ 13:00	60	2	10	2	2	1	0	0	0	0	0
13:00 ~ 14:00	53	4	11	7	2	0	0	0	0	1	33
14:00 ~ 15:00	51	3	13	11	2	1	0	0	0	1	0
15:00 ~ 16:00	52	4	9	10	2	2	0	0	1	1	1
16:00 ~ 17:00	48	3	12	5	2	1	0	0	0	2	1
17:00 ~ 18:00	66	9	16	3	0	1	0	1	0	6	1
18:00 ~ 19:00	48	9	3	8	0	2	0	0	0	0	2
19:00 ~ 20:00	49	4	6	4	0	0	1	2	0	0	5
20:00 ~ 21:00	61	5	10	8	0	0	0	0	0	0	0
21:00 ~ 22:00	34	1	6	7	0	0	0	0	0	0	0
22:00 ~ 23:00	20	4	4	6	0	0	0	0	0	0	0
23:00 ~ 24:00	21	0	2	3	0	0	0	0	0	0	0
24:00 ~ 01:00	13	1	0	1	0	1	0	0	0	0	0
01:00 ~ 02:00	12	0	2	2	0	0	0	0	0	0	0
02:00 ~ 03:00	8	0	1	2	0	0	0	0	0	0	0
03:00 ~ 04:00	5	0	0	0	0	0	0	0	0	0	0
04:00 ~ 05:00	2	0	2	1	0	0	0	0	0	0	0
05:00 ~ 06:00	0	0	0	0	0	0	0	0	0	0	0
06:00 ~ 07:00	4	0	0	2	0	0	0	0	0	0	5
Total	807	66	152	94	18	12	1	8	1	13	63

2017年9月16日(調査地点 3)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van/ Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker
Hours											
7:00 ~ 8:00	144	0	35	2	0	4	1	7	0	1	0
8:00 ~ 9:00	187	0	28	0	0	2	5	0	0	0	1
9:00 ~ 9:00	186	4	45	7	0	3	1	3	0	0	0
10:00 ~ 11:00	259	1	60	4	0	7	1	2	1	0	0
11:00 ~ 12:00	196	0	47	12	0	8	3	3	0	0	0
12:00 ~ 13:00	256	0	51	5	0	11	2	10	0	1	0
13:00 ~ 14:00	267	1	51	6	0	2	10	4	0	0	0
14:00 ~ 15:00	247	1	39	0	0	3	4	10	8	0	0
15:00 ~ 16:00	220	0	32	15	0	2	1	4	1	0	0
16:00 ~ 17:00	238	1	60	18	0	7	2	3	0	0	0
17:00 ~ 18:00	239	2	42	23	0	2	5	5	0	1	0
18:00 ~ 19:00	186	0	40	26	0	2	3	2	1	0	0
19:00 ~ 20:00	219	0	45	15	0	11	2	5	0	0	0
20:00 ~ 21:00	210	0	25	14	1	3	8	8	0	0	0
21:00 ~ 22:00	149	0	22	13	0	4	6	11	0	0	0
22:00 ~ 23:00	88	0	12	3	1	1	1	8	0	0	0
23:00 ~ 24:00	81	0	20	10	1	2	8	4	0	0	0
24:00 ~ 01:00	64	0	27	13	0	3	12	4	0	0	0
01:00 ~ 02:00	42	8	22	12	0	1	9	12	0	0	0
02:00 ~ 03:00	69	0	14	8	0	2	6	9	0	0	0
03:00 ~ 04:00	43	0	20	3	0	3	7	6	0	0	0
04:00 ~ 05:00	43	0	30	0	1	4	3	14	0	0	0
05:00 ~ 06:00	52	0	18	0	1	3	10	9	0	0	0
06:00 ~ 07:00	66	0	32	0	0	11	6	15	0	0	0
Total	3751	18	817	209	5	99	113	163	11	3	0

2017年9月16日(調査地点 4)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pickup/ 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Walker
Hours											
7:00 ~ 8:00	90	2	13	11	1	9	3	3	0	0	0
8:00 ~ 9:00	140	5	14	3	0	7	5	6	0	0	0
9:00 ~ 9:00	131	1	14	5	0	5	3	0	0	0	0
10:00 ~ 11:00	160	13	27	1	1	9	9	0	0	0	0
11:00 ~ 12:00	173	13	21	3	1	16	6	3	0	0	0
12:00 ~ 13:00	203	16	29	4	0	13	13	4	0	0	1
13:00 ~ 14:00	197	16	52	8	1	14	7	2	0	0	0
14:00 ~ 15:00	150	8	26	1	2	14	18	6	0	0	0
15:00 ~ 16:00	212	4	28	0	4	5	11	4	0	0	0
16:00 ~ 17:00	210	5	26	5	1	8	3	8	0	0	0
17:00 ~ 18:00	155	2	20	6	2	9	5	5	1	0	0
18:00 ~ 19:00	138	0	33	9	2	3	9	2	0	0	0
19:00 ~ 20:00	170	6	14	5	4	5	8	1	0	0	0
20:00 ~ 21:00	138	0	4	10	4	7	4	8	0	0	0
21:00 ~ 22:00	79	0	3	7	3	1	7	5	0	0	0
22:00 ~ 23:00	74	6	3	5	1	4	2	6	0	0	0
23:00 ~ 24:00	62	0	1	2	2	2	2	5	0	0	0
24:00 ~ 01:00	36	1	1	7	1	3	4	2	0	0	0
01:00 ~ 02:00	35	1	3	5	1	2	3	4	0	0	0
02:00 ~ 03:00	62	0	2	4	0	1	9	2	0	0	0
03:00 ~ 04:00	21	0	0	3	1	1	2	2	0	0	0
04:00 ~ 05:00	22	0	0	3	1	3	0	0	0	0	0
05:00 ~ 06:00	44	0	2	8	0	7	0	2	0	0	0
06:00 ~ 07:00	52	5	2	18	2	6	7	1	0	0	0
Total	2754	104	338	133	35	154	140	81	1	0	1

2017年9月16日(調査地点 5)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van, / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bicycle	Walker
Hours											
7:00 ~ 8:00	182	0	14	7	0	17	3	0	0	0	0
8:00 ~ 9:00	367	2	22	5	1	3	2	3	1	0	1
9:00 ~ 9:00	339	1	11	9	0	1	3	2	0	0	0
10:00 ~ 11:00	268	2	10	3	0	1	5	1	0	0	0
11:00 ~ 12:00	296	3	9	8	0	8	6	2	0	1	1
12:00 ~ 13:00	362	1	17	25	1	9	9	0	0	0	0
13:00 ~ 14:00	318	0	12	6	0	11	8	0	0	0	0
14:00 ~ 15:00	228	0	13	7	0	2	3	0	0	0	0
15:00 ~ 16:00	216	0	13	8	0	1	8	0	0	0	0
16:00 ~ 17:00	128	0	6	0	0	6	3	0	0	0	0
17:00 ~ 18:00	134	0	10	2	0	2	9	1	0	0	1
18:00 ~ 19:00	100	0	14	0	0	3	7	2	0	0	0
19:00 ~ 20:00	108	0	5	2	0	2	9	2	0	0	1
20:00 ~ 21:00	120	0	4	1	0	1	2	6	0	0	0
21:00 ~ 22:00	96	0	5	0	0	0	3	0	0	0	0
22:00 ~ 23:00	48	0	5	0	1	2	2	0	0	0	0
23:00 ~ 24:00	44	0	0	0	1	0	4	0	0	0	0
24:00 ~ 01:00	25	0	2	0	1	0	0	1	0	0	0
01:00 ~ 02:00	31	0	2	0	0	0	2	0	0	0	0
02:00 ~ 03:00	11	0	0	0	1	2	0	0	0	0	0
03:00 ~ 04:00	14	0	0	0	0	0	0	0	0	0	0
04:00 ~ 05:00	17	0	0	0	0	0	3	0	0	0	0
05:00 ~ 06:00	16	0	0	2	3	0	0	0	0	0	0
06:00 ~ 07:00	20	0	2	3	1	1	2	0	0	0	0
Total	3508	9	176	88	10	72	93	20	1	1	2

2017年9月16日(調査地点 6)

Major category	I. Light vehicles		II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van./ Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal	Walker	
Hours	57	0	17	9	0	5	0	1	0	0	0	0	
7:00 ~ 8:00	105	0	15	9	0	0	1	8	0	0	0	0	
8:00 ~ 9:00	86	0	23	7	0	3	0	9	0	0	0	0	
9:00 ~ 10:00	79	0	13	12	0	0	2	2	0	0	0	2	
10:00 ~ 11:00	105	0	25	9	0	0	0	3	0	0	0	0	
11:00 ~ 12:00	89	0	17	7	0	4	5	7	0	0	0	0	
12:00 ~ 13:00	67	0	22	4	0	3	4	5	0	0	0	0	
13:00 ~ 14:00	83	0	26	3	0	2	0	2	0	0	0	0	
14:00 ~ 15:00	79	0	29	18	0	5	3	1	0	0	0	0	
15:00 ~ 16:00	78	0	15	16	0	2	2	15	0	0	0	0	
16:00 ~ 17:00	85	0	21	16	0	1	0	3	0	0	0	0	
17:00 ~ 18:00	78	0	21	8	0	6	0	8	1	0	0	0	
18:00 ~ 19:00	75	0	28	16	0	0	0	9	0	1	0	0	
19:00 ~ 20:00	70	0	8	14	0	1	1	10	0	0	0	0	
20:00 ~ 21:00	70	0	15	7	0	1	0	6	0	0	0	0	
21:00 ~ 22:00	65	0	10	11	0	0	0	6	0	0	0	0	
22:00 ~ 23:00	52	0	7	10	0	0	1	16	0	0	0	0	
23:00 ~ 24:00	36	0	9	5	0	0	0	7	0	0	0	0	
24:00 ~ 01:00	41	0	8	11	1	1	0	7	0	0	0	0	
01:00 ~ 02:00	26	0	3	7	0	0	1	7	0	0	0	0	
02:00 ~ 03:00	42	0	5	5	0	4	0	7	0	0	0	0	
03:00 ~ 04:00	40	0	3	10	1	1	0	0	0	0	0	0	
04:00 ~ 05:00	32	0	8	3	0	2	0	1	0	0	0	0	
05:00 ~ 06:00	25	0	7	12	0	2	3	6	0	0	0	0	
06:00 ~ 07:00	1565	0	355	229	2	43	23	146	1	1	0	2	
Total													

2017年9月19日(調査地点 1)

Major category	I. Light vehicles		II. Medium vehicles			III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van./ Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal	Walker	
Hours	92	2	58	23	0	5	2	5	0	4	700	9	
7:00 ~ 8:00	192	2	97	38	0	11	1	5	0	0	0	0	
8:00 ~ 9:00	253	2	128	43	0	8	4	7	0	2	0	2	
9:00 ~ 10:00	261	4	134	49	0	8	6	5	0	1	0	7	
10:00 ~ 11:00	258	0	127	38	0	4	4	7	0	0	0	0	
11:00 ~ 12:00	244	2	137	42	0	7	3	8	0	0	0	1	
12:00 ~ 13:00	156	0	83	21	0	7	0	10	0	1	0	2	
13:00 ~ 14:00	159	1	74	24	0	5	1	5	0	0	0	1	
14:00 ~ 15:00	200	2	73	25	0	6	3	8	0	1	0	3	
15:00 ~ 16:00	185	4	79	25	0	7	4	6	0	1	0	2	
16:00 ~ 17:00	191	1	105	33	0	4	7	7	0	0	1	2	
17:00 ~ 18:00	185	0	113	36	0	9	3	5	0	0	0	1	
18:00 ~ 19:00	274	0	112	45	0	12	2	1	0	4	6	8	
19:00 ~ 20:00	185	0	92	30	1	9	3	2	0	1	0	2	
20:00 ~ 21:00	145	0	70	24	0	10	1	6	0	0	0	0	
21:00 ~ 22:00	119	0	56	12	0	6	4	4	0	0	0	1	
22:00 ~ 23:00	75	0	39	9	0	7	2	1	0	0	0	0	
23:00 ~ 24:00	50	0	36	14	0	3	1	5	0	0	0	0	
24:00 ~ 01:00	47	0	28	7	0	0	0	5	0	0	0	1	
01:00 ~ 02:00	26	0	23	8	0	0	0	1	0	0	0	0	
02:00 ~ 03:00	16	0	12	7	0	0	0	4	0	0	0	0	
03:00 ~ 04:00	11	0	11	8	0	4	0	2	0	0	0	0	
04:00 ~ 05:00	26	0	11	15	0	5	1	2	0	0	0	0	
05:00 ~ 06:00	62	1	33	42	0	8	2	1	0	2	6	2	
06:00 ~ 07:00	3432	21	1731	618	1	145	54	112	0	17	713	44	
Total													

2017年9月19日(調查地点 2)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van, Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker
Hours											
7:00 ~ 8:00	21	2	6	3	0	1	1	0	0	1	12
8:00 ~ 9:00	33	3	9	3	0	0	0	1	0	3	3
9:00 ~ 9:00	49	3	22	7	0	3	0	1	1	0	1
10:00 ~ 11:00	63	8	21	5	0	2	0	0	0	0	0
11:00 ~ 12:00	55	2	20	6	0	0	0	2	0	0	5
12:00 ~ 13:00	50	5	18	5	0	2	0	1	0	0	1
13:00 ~ 14:00	47	5	14	4	0	0	0	0	0	0	5
14:00 ~ 15:00	47	3	12	4	0	1	0	0	0	0	0
15:00 ~ 16:00	46	10	16	2	0	0	0	0	0	0	5
16:00 ~ 17:00	54	2	12	1	0	5	0	1	0	0	0
17:00 ~ 18:00	57	4	15	7	0	2	1	2	0	1	0
18:00 ~ 19:00	48	7	14	2	0	5	0	1	0	2	0
19:00 ~ 20:00	60	2	6	3	0	1	3	1	0	1	3
20:00 ~ 21:00	37	5	10	2	1	1	0	1	0	0	0
21:00 ~ 22:00	35	4	10	1	0	5	1	1	0	0	1
22:00 ~ 23:00	19	1	7	2	0	1	1	0	0	0	5
23:00 ~ 24:00	16	1	8	1	0	0	0	0	0	0	0
24:00 ~ 01:00	9	1	3	1	0	0	0	0	0	0	0
01:00 ~ 02:00	1	0	1	0	0	0	0	0	0	0	0
02:00 ~ 03:00	0	0	0	0	0	0	0	0	0	0	0
03:00 ~ 04:00	3	0	2	0	0	0	0	0	0	0	0
04:00 ~ 05:00	4	0	0	0	0	0	0	0	0	0	0
05:00 ~ 06:00	1	0	2	0	0	0	0	0	0	0	0
06:00 ~ 07:00	3	1	1	0	0	0	0	0	0	0	5
Total	758	69	229	59	1	26	7	12	1	8	39

2017年9月19日(調查地点 3)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others	
	Sedan/ Wagon	Pick-up/ 4WD	Van, Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker
Hours											
7:00 ~ 8:00	97	1	22	5	1	3	1	12	0	0	0
8:00 ~ 9:00	229	12	26	4	0	2	0	6	0	0	0
9:00 ~ 9:00	276	13	9	36	0	2	2	13	0	0	1
10:00 ~ 11:00	271	13	19	31	1	1	1	6	0	0	0
11:00 ~ 12:00	247	5	16	24	0	1	3	6	0	0	2
12:00 ~ 13:00	231	6	22	10	0	9	5	10	0	0	0
13:00 ~ 14:00	233	4	20	27	0	3	6	7	0	0	0
14:00 ~ 15:00	197	6	12	31	0	7	2	2	0	0	0
15:00 ~ 16:00	226	9	22	24	0	5	3	8	0	0	0
16:00 ~ 17:00	225	4	16	27	0	1	2	5	0	0	0
17:00 ~ 18:00	242	1	19	19	0	5	4	7	0	1	0
18:00 ~ 19:00	192	6	18	21	0	3	6	6	0	0	1
19:00 ~ 20:00	182	9	6	24	0	5	3	10	0	0	2
20:00 ~ 21:00	176	16	15	9	1	5	1	7	0	0	0
21:00 ~ 22:00	138	8	5	7	0	2	2	8	0	0	0
22:00 ~ 23:00	119	3	5	11	0	1	0	7	0	1	0
23:00 ~ 24:00	93	2	0	14	1	2	1	2	0	0	0
24:00 ~ 01:00	67	5	1	11	0	0	0	8	0	0	0
01:00 ~ 02:00	43	5	3	9	0	3	0	8	0	0	0
02:00 ~ 03:00	26	2	10	4	0	5	1	9	0	0	0
03:00 ~ 04:00	34	1	12	9	0	2	3	2	0	0	0
04:00 ~ 05:00	18	1	0	3	0	0	0	7	0	0	0
05:00 ~ 06:00	21	3	3	3	0	1	0	5	0	0	0
06:00 ~ 07:00	56	0	6	6	0	2	0	3	0	1	0
Total	3539	135	287	369	4	70	46	164	0	3	0

2017年9月19日(調査地点 5)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others		
	Sedan/ Wagon	Pick-up/ 4WD	Van/ Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker	
												Hours
7:00 ~ 8:00	68	0	8	3	1	1	2	1	0	0	0	2
8:00 ~ 9:00	153	1	10	4	0	0	4	6	0	0	0	0
9:00 ~ 9:00	214	8	12	11	0	3	4	4	0	0	2	1
10:00 ~ 11:00	202	12	11	12	0	4	4	2	0	0	0	0
11:00 ~ 12:00	157	8	8	2	0	4	9	3	0	0	0	0
12:00 ~ 13:00	182	6	9	3	0	5	9	1	0	0	0	0
13:00 ~ 14:00	167	6	18	2	0	1	10	4	0	0	0	0
14:00 ~ 15:00	106	0	17	0	0	1	13	3	0	4	0	0
15:00 ~ 16:00	135	3	10	6	0	2	7	2	0	0	0	0
16:00 ~ 17:00	121	5	24	0	0	1	8	7	0	0	0	0
17:00 ~ 18:00	143	6	15	2	0	5	7	0	1	0	0	5
18:00 ~ 19:00	107	2	4	2	0	4	8	0	0	0	0	0
19:00 ~ 20:00	87	5	11	3	0	2	2	3	0	0	0	0
20:00 ~ 21:00	105	2	10	0	0	6	3	1	0	0	0	0
21:00 ~ 22:00	68	2	6	1	0	0	2	0	0	0	0	0
22:00 ~ 23:00	50	1	4	1	1	2	4	1	0	0	0	0
23:00 ~ 24:00	47	1	2	2	1	1	2	2	0	0	0	0
24:00 ~ 01:00	20	0	1	0	1	0	0	4	0	0	0	0
01:00 ~ 02:00	11	0	0	0	0	0	2	0	0	0	0	0
02:00 ~ 03:00	15	0	1	0	0	0	0	2	0	0	0	0
03:00 ~ 04:00	5	0	0	0	0	1	0	1	0	0	0	0
04:00 ~ 05:00	6	0	1	0	1	0	0	0	0	0	0	0
05:00 ~ 06:00	9	0	0	0	1	0	0	0	0	0	0	0
06:00 ~ 07:00	14	3	5	3	2	0	3	2	0	0	0	0
Total	2192	71	187	57	8	43	103	49	1	4	2	8

2017年9月19日(調査地点 4)

Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles		V. Others		
	Sedan/ Wagon	Pick-up / 4WD	Van / Mini bus	Mini truck	Standard & Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike Bike trailer	Bicycle Tricycle	Animal Walker	
												Hours
7:00 ~ 8:00	42	0	12	21	0	3	2	5	0	0	0	1
8:00 ~ 9:00	87	4	38	17	1	2	6	0	0	0	0	0
9:00 ~ 9:00	132	0	62	14	0	4	7	15	0	2	0	0
10:00 ~ 11:00	100	0	64	24	0	5	2	10	0	1	0	0
11:00 ~ 12:00	116	2	64	32	0	5	4	6	0	0	0	1
12:00 ~ 13:00	110	0	53	20	0	6	3	9	0	0	0	0
13:00 ~ 14:00	96	0	61	20	1	6	2	13	0	0	0	3
14:00 ~ 15:00	98	0	44	21	0	2	0	9	0	0	0	0
15:00 ~ 16:00	110	1	52	27	0	7	2	7	0	0	0	0
16:00 ~ 17:00	133	0	61	37	0	4	11	7	0	0	0	0
17:00 ~ 18:00	103	0	54	23	0	3	7	8	0	0	0	0
18:00 ~ 19:00	119	0	46	33	0	3	7	4	0	0	0	0
19:00 ~ 20:00	105	2	58	26	0	4	6	13	0	2	0	0
20:00 ~ 21:00	110	1	56	7	1	3	3	5	0	1	0	0
21:00 ~ 22:00	82	0	51	5	0	1	2	11	0	0	0	0
22:00 ~ 23:00	56	0	33	5	1	1	2	6	0	0	0	0
23:00 ~ 24:00	43	0	29	1	1	5	0	5	0	0	0	0
24:00 ~ 01:00	34	0	29	1	0	2	1	4	0	0	0	1
01:00 ~ 02:00	27	0	11	3	0	0	2	8	0	0	0	0
02:00 ~ 03:00	34	0	13	0	0	1	0	7	0	0	0	0
03:00 ~ 04:00	10	0	8	0	0	0	1	2	0	0	0	0
04:00 ~ 05:00	9	0	9	0	1	6	2	6	0	0	0	0
05:00 ~ 06:00	18	0	4	2	1	4	0	5	0	0	0	0
06:00 ~ 07:00	26	0	19	7	0	2	2	4	0	0	2	2
Total	1880	10	931	346	7	35	74	169	0	6	2	8

2017年9月19日(調查地点 6)

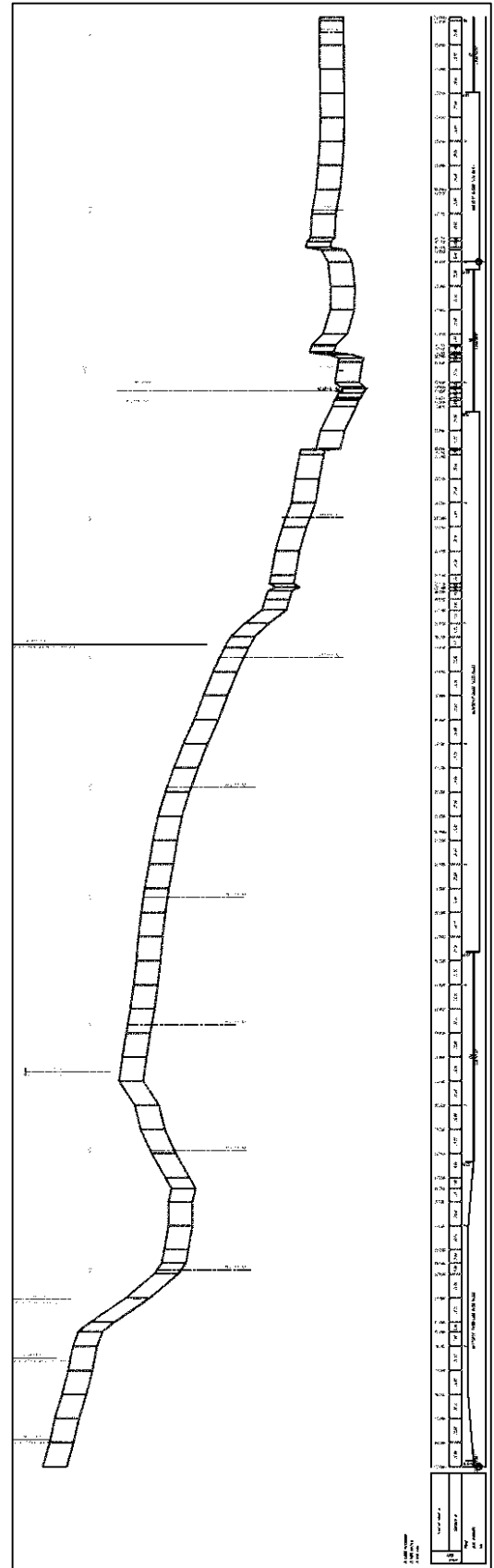
Major category	I. Light vehicles		II. Medium vehicles		III. Heavy vehicles			IV. 2-Wheel vehicles			V. Others		
	Sedan/ Wagon	Pickup / 4WD	Van, / Mini bus	Mini truck	Standard/ Large bus	2-axis truck	3-axis truck	Articulated truck	Motorbike	Bike/motor tricycle	Bicycle	Walker	Animal
Hours													
7:00 ~ 8:00	60	23	11	16	0	2	2	3	0	0	0	0	0
8:00 ~ 9:00	109	27	23	23	1	3	3	9	0	0	0	0	0
9:00 ~ 9:00	90	16	23	27	0	2	4	8	0	0	0	0	0
10:00 ~ 11:00	62	7	25	16	0	6	0	5	0	0	0	0	0
11:00 ~ 12:00	63	6	19	18	1	6	5	8	0	0	0	0	0
12:00 ~ 13:00	61	3	12	12	0	5	3	9	0	0	0	0	0
13:00 ~ 14:00	67	9	13	16	0	2	6	12	0	0	0	0	0
14:00 ~ 15:00	53	2	25	9	0	5	2	5	0	0	0	0	0
15:00 ~ 16:00	80	3	21	13	1	5	5	9	0	0	0	0	0
16:00 ~ 17:00	54	0	26	14	0	6	5	4	0	0	0	0	0
17:00 ~ 18:00	63	3	34	19	0	5	7	12	0	0	0	0	0
18:00 ~ 19:00	87	3	24	17	0	2	2	5	0	0	0	0	0
19:00 ~ 20:00	60	5	18	14	0	3	2	7	0	0	0	0	0
20:00 ~ 21:00	40	2	9	8	0	2	3	8	0	0	0	0	0
21:00 ~ 22:00	48	3	9	9	0	2	1	5	0	0	0	0	0
22:00 ~ 23:00	57	2	8	8	1	1	1	7	0	0	0	0	0
23:00 ~ 24:00	49	0	8	2	0	1	1	20	0	0	0	0	0
24:00 ~ 01:00	47	0	2	11	0	0	0	13	0	0	0	0	0
01:00 ~ 02:00	46	0	5	9	1	1	0	6	0	0	0	0	0
02:00 ~ 03:00	23	0	1	1	0	0	0	3	0	0	0	0	0
03:00 ~ 04:00	36	0	13	8	0	2	0	2	0	0	0	0	0
04:00 ~ 05:00	42	1	15	5	0	0	1	9	0	0	0	0	0
05:00 ~ 06:00	37	1	3	6	0	1	7	5	0	0	0	0	0
06:00 ~ 07:00	30	0	6	10	0	2	1	4	0	0	0	0	0
Total	1364	116	257	291	5	64	61	178	0	0	0	0	0

### (3) 測量結果





測量平面図



測量縦断面図

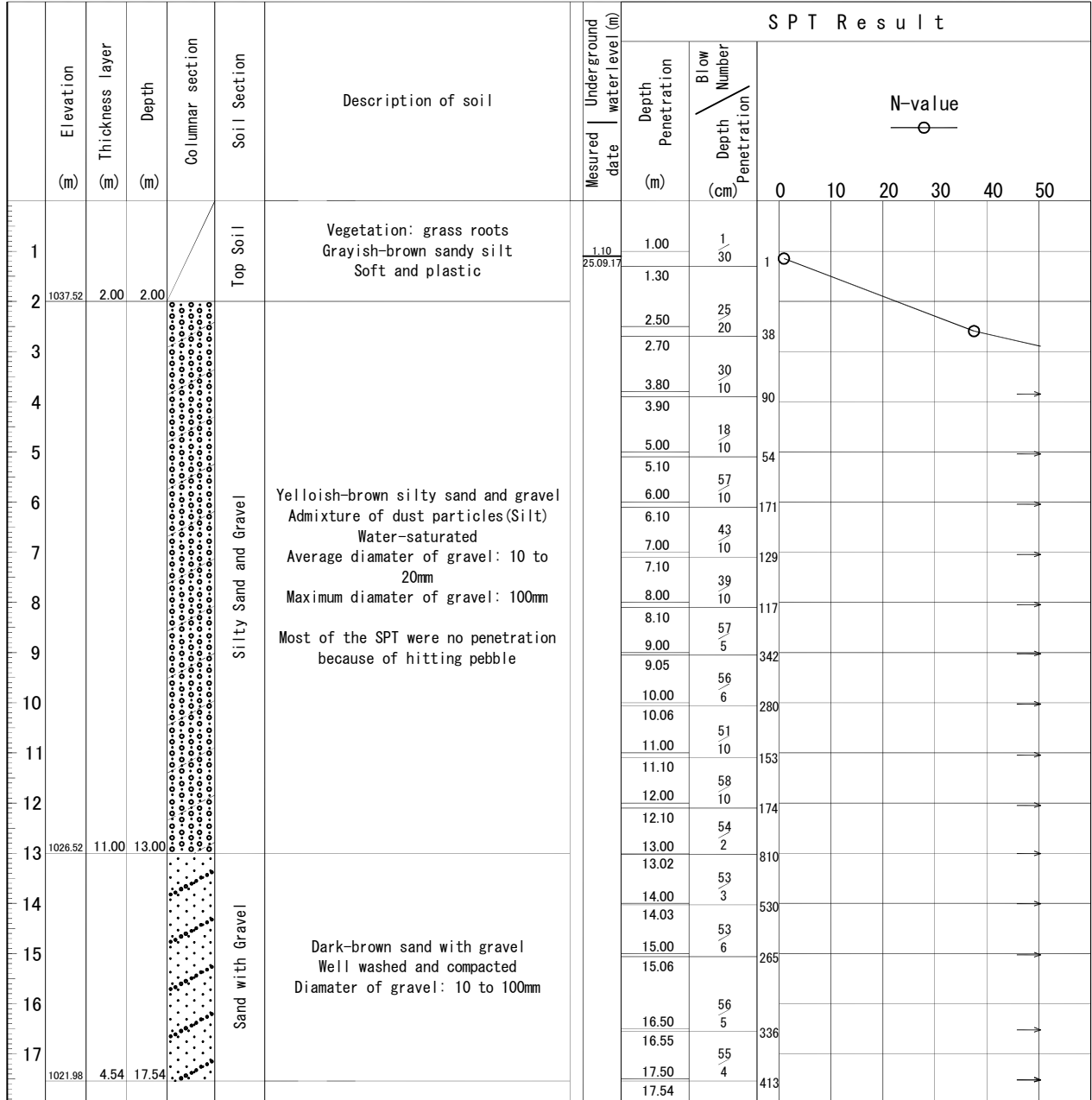
## (4) 地質調查結果

Summary for borcholes

Bore holes

No	Description	Depth, m	Liquid limit %	Plastic limit %	Plastic index %	Specific Gravity		Natural Moisture content, m(%)	Sieve Analysis (retained %)															
						T 84	T 85		75.0	63.0	37.5	31.5	25.0	16.0	8.0	4.0	2.0	1.0	0.5	0.250	0.125	0.075	Bottom	
1	B-1	0.8							9.3	7.1	7.3	11.2	6.3	2.4	17.9	10.2	6.7	1.8	1.1	3.9	6.6	5.6	2.5	
		2	24.69	19.08	5.61				9.3	7.3	8.4	9.8	4.0	2.9	18.6	10.9	7.2	4.4	2.3	2.3	4.3	7.5	0.9	
		4						2.755		14.5	7.2	4.8	17.2	0.5	10.2	12.5	7.3	5.9	4.2	3.0	3.2	1.3	3.8	4.2
		6							11.9	9.2	12.3	1.5	1.1	2.3	14.6	9.1	5.8	3.8	3.0	4.7	9.5	4.7	6.4	6.2
		8							10.6	7.6	10.6	1.7	1.0	1.7	9.0	1.7	5.5	3.9	6.6	4.7	1.7	18.8	12.9	3.1
		10						2.800		7.0	5.3	4.6	2.9	2.6	3.8	12.7	5.2	3.7	6.0	4.9	2.3	11.3	14.4	13.3
		12							7.8	6.0	4.7	2.1	2.2	2.7	6.4	5.0	4.8	5.9	4.1	1.2	4.7	28.2	14.1	
		14							7.4	6.3	4.2	3.0	2.0	3.0	7.6	5.7	5.4	2.9	1.0	14.7	28.1	3.2		
		16						2.726		8.9	7.1	4.8	4.3	3.3	4.0	5.3	2.9	2.9	7.2	5.9	2.0	19.4	2.5	19.4
		18								8.3	6.6	6.4	3.4	9.0	7.5	8.9	7.4	7.1	9.1	2.6	0.5	0.2	12.1	11.0
20																								
2	B-2	0.5																						
		2	24.09	19.41	4.68					9.6	6.3	4.8	3.3	9.2	8.3	9.3	7.1	4.6	1.9	2.2	6.5	0.5	11.6	14.8
		4	21.81	18.52	3.28			2.813		10.1	5.8	6.8	4.6	1.0	2.4	15.1	9.6	6.3	2.0	2.2	6.0	2.8	11.8	13.5
		6	18.94	15.31	3.63					9.1	6.9	5.8	5.1	9.4	7.6	15.5	8.4	4.0	2.3	2.3	4.2	9.3	3.1	7.0
		8	18.03	15.81	2.22					10.1	7.7	6.0	5.0	5.1	4.5	15.1	10.7	7.3	2.0	1.7	2.6	8.0	1.1	12.4
		10	17.11	15.07	2.04					8.7	6.7	6.0	3.9	6.3	5.9	15.8	11.2	7.6	2.4	2.4	2.8	9.2	7.8	3.5
		12								9.4	6.9	6.8	5.3	3.0	2.0	11.9	9.5	8.9	3.5	2.5	3.1	15.6	1.4	10.4
		14								8.7	6.6	6.0	4.0	5.3	3.8	13.7	11.6	9.0	4.3	3.2	2.9	11.4	1.0	8.0
		16	18.36	16.19	2.17			2.757		9.0	6.9	6.4	5.2	3.0	2.5	15.6	9.0	10.2	5.6	4.0	3.4	3.4	8.6	7.1
		18						2.746		10.7	6.7	5.1	5.9	9.6	10.3	14.3	7.8	5.8	3.7	3.8	3.3	0.9	6.4	5.7
20								9.5	7.5	6.3	5.3	6.3	3.4	12.0	9.6	7.3	4.2	3.9	3.7	2.7	5.5	12.9		
3	B-3	0.2																						
		2	18.12	12.77	5.35					10.5	7.2	8.8	6.3	3.9	2.6	21.3	14.5	8.2	4.8	2.8	2.6	4.1	2.3	0.1
		4	18.52	15.5	3.02			2.786		11.3	7.3	6.5	5.4	4.9	4.4	18.0	8.2	6.3	3.0	2.6	2.8	9.3	7.7	2.3
		6								11.4	7.7	6.4	7.1	4.0	7.4	17.4	11.1	7.5	6.0	3.8	2.5	5.1	0.3	2.3
		8								10.6	9.6	6.3	5.1	4.2	1.9	14.1	9.8	6.0	3.6	3.1	2.9	14.2	2.5	6.2
		10								10.3	7.4	6.4	5.5	4.4	3.4	17.7	12.8	8.4	4.7	2.8	2.1	0.6	5.4	8.0
		12						2.768		11.0	7.5	6.9	5.7	5.2	5.1	5.7	7.4	6.4	5.6	2.5	2.5	4.2	10.5	13.6
		14								9.4	8.4	6.3	5.6	3.8	3.1	13.9	9.3	7.3	3.4	3.9	3.6	7.5	0.9	13.1
		16								10.0	7.4	6.7	5.7	5.0	2.2	14.3	7.4	6.7	4.4	3.4	3.1	6.6	14.5	2.7
		18						2.772		12.6	7.9	7.3	5.9	4.0	5.2	11.3	9.4	8.0	3.5	3.6	3.2	9.4	5.1	3.6
20								10.8	8.1	6.9	6.1	4.3	3.4	10.1	6.4	8.2	5.3	3.2	3.2	9.5	10.0	4.5		
4	B-4	2							13.1	11.4	10.0	9.5	4.7	5.9	7.7	7.7	8.4	11.4	3.2	1.7	0.1	3.0	2.1	
		4						2.812		10.2	7.2	6.3	7.4	5.1	5.8	11.4	8.2	8.0	3.5	3.5	2.1	12.3	2.1	6.8
		6							11.5	9.2	8.0	6.3	11.8	7.9	9.4	8.2	6.5	6.2	6.3	2.3	3.5	0.6	2.2	
		8							13.3	9.6	11.0	5.8	4.2	3.7	9.4	5.9	7.0	4.4	4.2	3.0	1.3	11.1	6.1	
		10							11.4	7.4	6.0	5.3	4.1	3.5	15.1	6.1	5.9	3.1	5.6	3.1	6.3	4.5	12.7	
		12						2.785		13.8	9.3	6.8	6.1	7.8	2.4	10.3	9.8	7.4	5.1	4.3	2.3	9.6	0.2	4.8
		14							11.7	7.7	6.5	5.4	5.3	6.9	13.6	7.1	7.6	4.4	4.0	2.8	5.4	1.3	9.3	
		16							12.6	9.2	7.0	5.8	4.6	7.4	6.9	2.3	4.8	5.0	4.8	2.6	5.1	6.5	15.4	
		18						2.775		12.9	11.3	8.2	5.9	7.5	7.4	6.0	5.6	5.7	3.3	2.2	3.1	12.1	3.1	5.6
		20								13.3	9.3	7.1	5.5	8.0	4.7	13.6	6.1	6.5	4.7	3.4	2.1	4.4	1.0	10.4
5	B-5	0.3																						
		2								12.7	7.7	6.9	4.6	4.8	4.9	15.0	11.4	7.8	4.9	3.2	2.9	7.1	2.1	4.0
		4	23.81	16.9	6.91					12.8	7.4	6.7	5.6	8.0	9.7	12.3	11.6	7.9	4.0	2.0	2.2	5.0	3.1	0.5
		6	22.89	16.4	6.49			2.771		12.8	8.3	7.6	6.9	4.2	8.0	15.9	10.2	7.7	3.4	2.5	3.0	4.5	4.0	0.8
		8	23.7	16.09	7.61					14.5	10.1	8.0	6.8	4.2	9.9	4.8	5.3	6.8	1.2	1.9	1.6	16.5	0.8	7.8
		10	18.9	15.5	3.4			2.689		11.0	8.5	6.8	6.2	4.4	6.2	13.3	9.8	5.3	3.4	3.1	3.1	0.6	11.2	7.2
		12								11.4	7.0	4.6	3.9	7.1	9.5	15.1	9.5	6.0	3.3	3.7	2.8	1.9	8.8	5.3
		14								13.9	8.3	7.9	8.2	6.0	4.2	10.2	6.3	5.3	2.8	3.9	2.6	8.2	3.1	9.2
		16								12.1	8.7	6.0	5.7	5.4	5.4	11.6	6.0	5.4	5.7	5.5	3.5	12.3	0.4	6.1
		18						2.734		11.6	8.8	7.2	5.1	7.5	9.3	11.2	5.7	4.7	3.4	4.1	2.5	2.9	11.8	4.4
20								13.9	10.2	8.1	6.2	4.1	3.5	5.2	8.1	6.6	3.3	3.7	2.3	10.0	6.5	8.2		

## Borehole No. 1



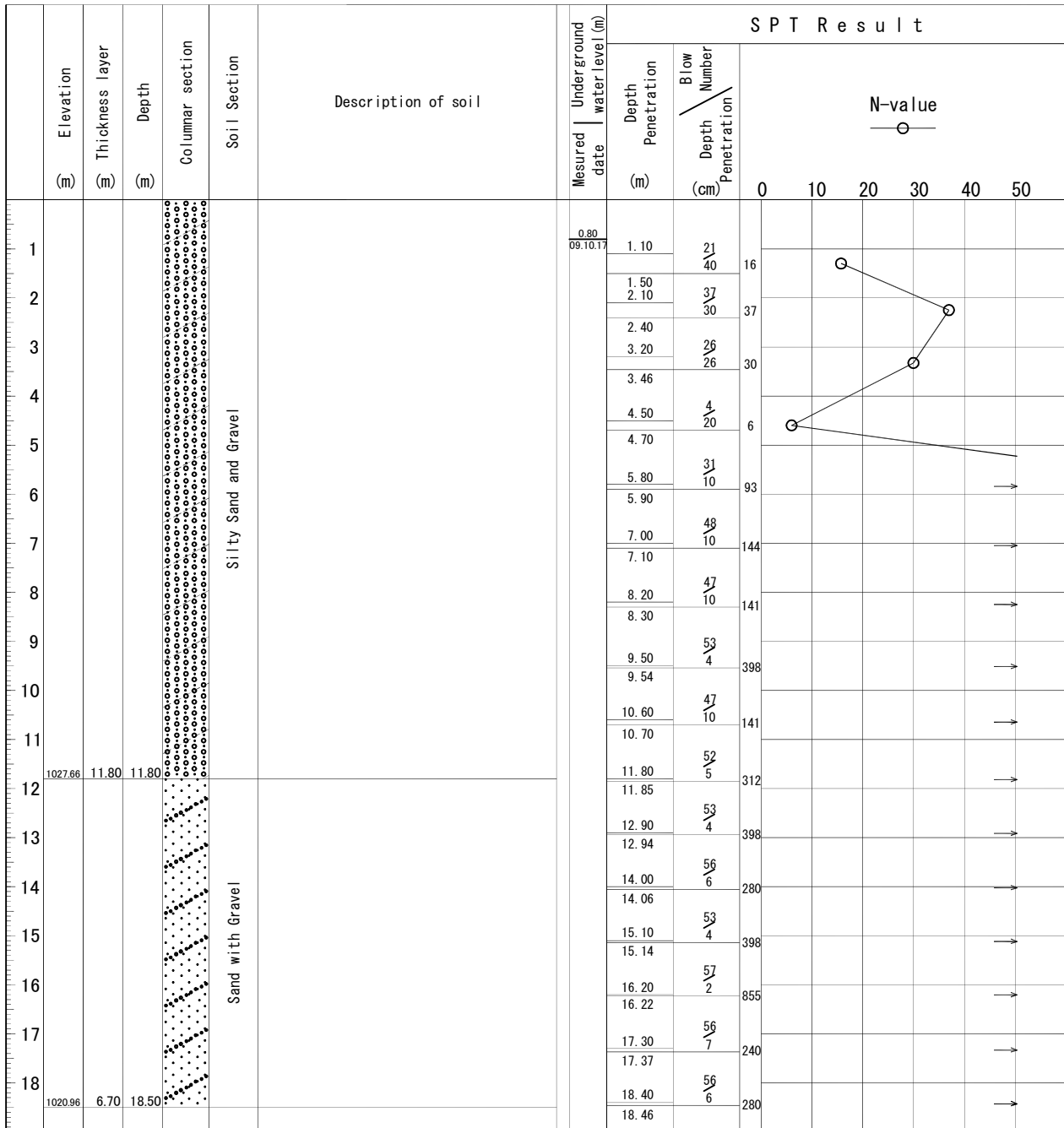
## Borehole No. 2

No.	Elevation (m)	Thickness layer (m)	Depth (m)	Columnar section	Soil Section	Description of soil	Measured date	Underground water level (m)	SPT Result		
									Depth Penetration (m)	Blow Number Depth Penetration (cm)	N-value 
1					Top Soil				1.00	8	8
2	1037.18	2.00	2.00						1.30	13	13
3									2.40	30	13
4									3.50	36	54
5					Silty Sand and Gravel				3.70	20	54
6									4.80	27	27
7									5.10	30	27
8									6.40	52	390
9									6.44	4	390
10									7.50	45	135
11	1028.28	8.90	10.90						7.60	10	135
12									8.70	54	270
13									8.76	6	270
14									9.80	53	265
15									9.86	6	265
16									10.90	56	336
17									10.95	5	336
18	1021.08	7.20	18.10						12.00	55	330
									12.05	5	330
									13.20	55	413
									13.24	4	413
									14.50	53	265
									14.56	6	265
									15.60	55	550
									15.63	3	550
									16.70	52	780
									16.72	2	780
									18.00	51	383
									18.04	4	383

### Borehole No. 3

	Elevation (m)	Thickness layer (m)	Depth (m)	Columnar section	Soil Section	Description of soil	Measured date	Underground water level (m)	SPT Result							
									Depth Penetration (m)	Blow Number / Depth Penetration (cm)	N-value					
									0	10	20	30	40	50		
1					Silty Sand and Gravel		06.10.17	0.50	0.60	32 / 30	32			32		
2				0.90			41 / 10	123								
3				1.90			46 / 20	69								
4				2.00			36 / 10	108								
5				3.10			43 / 10	129								
6				3.30			47 / 10	141								
7				4.10			48 / 10	144								
8				4.20			52 / 7	223								
9				5.30			55 / 3	550								
10				5.40			53 / 4	398								
11				6.50			48 / 10	144								
12				6.60			52 / 7	223								
13				7.70			53 / 8	199								
14	1025.72	13.70	13.70				Sand with Gravel									
15				14.80	53 / 2	795										
16				14.88	55 / 3	550										
17				15.90	51 / 2	765										
18	1021.32	4.40	18.10													

## Borehole No. 4



Dortranservice Ltd

Borehole №5

2017r.

Boring method: core type,  
diameter 112mm with using  
pneumatic hammer ПП-110  
Scale: 1:100

level:1043.01

Point of standard penetration: Д-5  
date penetration: 12.10.17  
Type of equipment: УРБ 2А-2 (навесный)

Layer number	Geological index		Depth stratification, m	Lithological section	Description of material	Underground water level, M		Group number по СНиТ IV-5-82	Homep ИТЗ	Blows number, M	Blows number, CM	n-Blows number	qc, МПа (кгс/см²)
	OT	AO				Apparent date	Measured date						
1	0.0	0.2	0.2	0.0-0.5m - Soil vegetation layer; sandy loam dark brown, hard with pebble up to 15%. Pebble soil layer on the depth 0.5m is wet, from depth 0.5m layer is water-saturated	10.10.17	11.10.17			0.2	3	0	0	
				0.5-2.0m - Pebble soil layer with sand up to 24.2%, with boulder size 200-400 mm up to 20%.					0.5	6	12	1200	
				2.0-4.0m - Pebble soil layer with sandy loam up to 16.8%, with boulder size 200-400 mm up to 20%. LL=23.81%, PL=16.9%, P=6.91%					1.3	12	24	1000	
				4.0-6.0m - Pebble soil layer with sandy loam up to 18.2%, with boulder size 200-400 mm up to 20%. LL=22.89%, PL=16.4%, P=6.48%					1.4	16	32	900	
				6.0-8.0m - Pebble soil layer with sandy loam up to 29.8%, with boulder size 200-400 mm up to 20%. LL=23.7%, PL=16.09%, P=7.61%					1.9	24	48	800	
				in the range of depth 7.4-7.7m layer with a dusty-clay aggregate (sandy loam) up to 20%. Fragmentary material is strong, is well rounded, is represented by sedimentary and igneous rocks					2.0	45	90	700	
				8.0-10.0m - Pebble soil layer with sandy loam up to 28.6%, with boulder size 200-400 mm up to 20%. LL=18.9%, PL=15.5%, P=3.4%, SG=2.698 gm/3.					2.1	53	106	600	
				10.0-12.0m - Pebble soil layer with sand up to 25.9%, with boulder size 200-400 mm up to 20%. LL=18.9%, PL=15.5%, P=3.4%, SG=2.698 gm/3.					3.1	26	52	500	
				12.0-14.0m - Pebble soil layer with sand up to 29.9%, with boulder size 200-400 mm up to 20%.					3.7	34	64	400	
				14.0-16.0m - Pebble soil layer with sand up to 39.5%, with boulder size 200-400 mm up to 20%.					4.7	40	84	300	
				16.0-18.0m - Pebble soil layer with sand up to 29.1%, with boulder size 200-400 mm up to 20%. SG=2.734 gm/3.					5.0	54	108	200	
				18.0-20.0m - Pebble soil layer with sand up to 34.0%, with boulder size 200-400 mm up to 20%.					5.8	44	82	100	
									6.1	52	104	0	
									7.0	48	96	0	
									7.2	55	110	0	
									8.2	44	88	0	
									8.3	52	104	0	
									9.4	41	82	0	
									9.5	54	108	0	
									10.6	55	110	0	
									11.7	53	106	0	
									12.8	54	108	0	
									12.9	54	108	0	
									13.8	56	112	0	
									14.0	56	112	0	
									15.0	57	114	0	
									16.1	53	106	0	
									16.2	53	106	0	
									17.3	52	104	0	
									18.3	53	106	0	
1	7.7	20.0	12.3					IV					



Summary table for pits

Pits

№	Description	Depth, m	Liquid limit %		Plastic limit %		Plastic index %	Specific gravity (fine aggregate) T-84	Specific gravity (coarse aggregate) T-85	MDD g/cm <sup>3</sup>	OMC %	CBR %	Natural Moisture content (%)	Sieve Analysis (retained %)														
			W <sub>L</sub>	W <sub>p</sub>	NP	I <sub>p</sub>								75.0	63.0	37.5	31.5	25.0	16.0	8.0	4.0	2.0	1.0	0.5	0.250	0.125	0.075	Bottom
1	P 1 upper layer	0.36-0.56					2.746	2.780	2.222	4.8	52.0	3.4		75.0	63.0	37.5	31.5	25.0	16.0	8.0	4.0	2.0	1.0	0.5	0.250	0.125	0.075	Bottom
	P 1 lower layer		36.18	25.55	NP	10.63	2.746		2.077	8.9	34.0	6.3																
2	Pit 2	0.2-0.4					2.462	2.844	2.295	7.1	49.0	5.5		10.3	12.5	15.2	13.1	9.8	12.4	9.4	4.8	3.8	2.0	2.1	1.6	1.2	0.9	1.0
3	Pit 3	0.1-0.3					2.778	2.884	2.228	6.7	43.0	4.6		9.1	8.7	7.4	5.5	6.5	7.2	10.9	9.2	7.3	4.6	6.5	5.1	3.6	2.5	5.9
			0.5-0.8	31.23	24.53	NP	6.7	2.804	2.680	2.245	5.5	33.0	8.1		6.7	5.9	2.4	2.2	1.6	5.2	13.6	14.3	10.7	7.7	9.2	5.6	4.0	2.6
4	Pit 4	0.36-0.56					2.738	2.800	2.280	6.1	56.0	4.9		5.4	9.6	10.4	4.6	3.2	6.8	11.2	11.3	10.7	6.4	7.3	4.3	2.5	0.6	5.8
			0.6-0.8	32.44	21.33	NP	11.1	2.894		2.000	11.1	27.0	10.9									9.2	8.5	6.9	4.9	2.7	2.5	1.3
5	Pit 5	0.20-0.50					2.758	2.777	2.270	8.0	62.0	6.6		4.7	8.3	10.4	4.4	5.0	6.9	9.4	8.0	7.8	6.4	8.5	7.5	5.6	2.4	4.7

**Summary table for borrowpits**

Plus

No	Name of Borrowpit	Depth, m	Liquid limit % W <sub>L</sub>	Plastic limit % W <sub>p</sub>	Plastic index % I <sub>p</sub>	Specific gravity (fine aggregate) T-84	Specific gravity (coarse aggregate) T-85	MDD g/cm <sup>3</sup>	OMC %	CBR %	Natural Moisture content (%) %	Sieve Analysis (retained %)														
												75.0	63.0	37.5	31.5	25.0	16.0	8.0	4.0	2.0	1.0	0.5	0.250	0.125	0.075	Bottom
1	AKDobo	2.0-2.2		NP		2.665	2.761	2.218	6.7	42.0	5.2	9.3	9.7	25.2	5.9	5.0	18.9	12.2	4.5	2.4	1.3	1.3	1.5	1.1	0.8	1.1
2	Kumushak	0.5-0.7		NP		2.658	2.832	2.291	7.0	48.0	9.3	11.4	8.7	16.9	8.0	6.1	10.5	7.7	5.5	7.7	5.9	3.0	2.6	3.3	1.7	0.9

**Sieve analysis of material from riverbed**

		6.0	7.7	15.0	15.6	26.1	10.5	4.7	3.7	3.1	1.4	0.8	0.6	0.5	0.3	4.0
Upstream sample for sieve analysis																
Downstream sample for sieve analysis		2.3	6.1	18.0	19.4	24.2	8.9	3.7	3.6	3.1	1.5	1.3	1	0.7	0.8	5.4



## (5) ステークホルダー会議記録

## 第1回

### Protocol of public hearings and consultations in the villages of Kyzyl-Say and Ak-Dobo (Ak-Dobo ayil okmotu) of Bakay-Ata district of Talas oblast

#### Preliminary preparation for public hearings

1. September 22, 2017, during the meeting with the head of Ak-Dobo ayil okmotu, the chief engineer of the Regional Department No. 3 in Talas oblast (Road Management Department under the Ministry of Transport and Roads of the KR), the head of the DEU №47, the date and time of meetings with interested parties persons was decided.
2. September 27, 2017 Chief of the Regional Department № 3 for Talas region (Road Management Department under the Ministry of Transport and Roads of the Kyrgyz Republic) Osmonaliev R.K. sent an official letter addressed to the head of ayil okmotu Orozbaev Zhamalbek to invite all interested persons to public hearings.

#### Participators:

Farmers, teachers, housewives, pensioners, deputies of the aiyl kenesh, First deputy head of the state administration of Bakai-Ata district, Head and staff of Ak-Dobo ayil okmotu, environmental officer of Bakai Ata district, chief engineer of Bakay-Ata electric supply department, Chief Engineer of the Regional Department No. 3 in Talas oblast (Road Management Department under the Ministry of Transport and Roads of the Kyrgyz Republic), Ms. Masako Suzuki, Mr. Takahiko Sato, Osmonalieva Raya, Krivoruchko Sergey.

#### Speakers:

1. The head of Ak - Dobo ayil okmotu - Orozbaev Jamalbek made a welcoming speech.
2. Chief engineer of the Regional Department No. 3 in Talas oblast (Road Management Department under the Ministry of Transport and Roads of the KR) - Sadiraliev Nurkan and the head of DEU # 47 - Sultankulov Talai told about the JICA project.
3. Ecologist - Krivoruchko Sergei and sociologist - Osmonalieva Raya told about the beginning of their research work on the project.
4. Discussion and questions of villagers, their opinions and wishes

Lists of participants in the public hearings are attached below.

#### The purpose of public hearings

Public hearings and consultations were sent to inform residents of 2 villages, all interested parties about the project of JICA "Reconstruction of the bridge across the Urmalar River along the Talas-Taraz highway of the Kyrgyz Republic". Learn the opinions of residents about the benefits of the bridge rehabilitation. In the discussion, the opinions of all those interested were welcomed.

Number of public hearings and consultations	Date	Place and number of participants	Content	Organizers of the hearing, speakers	Language
The first public hearing	2017/10/03  Time: 11:30 – 13:00	Kyzyl-Say village  Number of participators – 36 persons	- On the emergency condition of the bridge - Information about the project. About JICA Grant Project and the reconstruction of the bridge - Speech by the	1. The head of Ak-Dobo ayil okmotu - Orozbaev Jamalbek 2. Chief engineer of the Regional Department No. 3 in the Talas oblast (Road Management Department under the Ministry of Transport and Roads of the Kyrgyz Republic)	<ul style="list-style-type: none"><li>• Kyrgyz and</li><li>• Russian</li></ul>

			ecologist - Speech by the sociologist	- Sadiraliev Nurkan 3. The head of the DEU №47 - Sultankulov Tailai 4. Ecologist - Sergey Krivoruchko 5. Sociologist - Osmonalieva Raya
<b>The second public hearing</b>	2017/10/03  Time: 17:00 – 18:00	Ak-Dobo village  Number of participators – 53 persons	- On the emergency condition of the bridge - Information about the project. About JICA Grant Project and the reconstruction of the bridge - Speech by the ecologist - Speech by the sociologist	1. The head of Ak-Dobo ayil okmotu - Orozbaev Jamalbek 2. Chief engineer of the Regional Department No. 3 in the Talas oblast (Road Management Department under the Ministry of Transport and Roads of the Kyrgyz Republic) - Sadiraliev Nurkan 3. The head of the DEU №47 - Sultankulov Tailai 4. Ecologist - Sergey Krivoruchko 5. Sociologist - Osmonalieva Raya

### The main questions asked by participants of public hearings and consultations

<b>The main questions</b>	<p>Question 1. When will the construction of the bridge begin? Answer 1. Design and survey work for the construction of the bridge began. Now engineering geological work is under way. Sanitary and environmental standards will also be studied. Environmental recommendations will be made. Construction will begin in 2019. A modern bridge and heavy trucks will be built, and all kinds of cars can pass unhindered.</p>
	<p>Question 2. This bridge was built in the 1960s and today its emergency condition does not meet modern requirements. Heavy vehicles pass with difficulty, both towards Kazakhstan and towards Kyrgyzstan. What kind of bridge do the Japanese plan to build? Is it grant or loan money? Answer 2: The project of reconstruction of the bridge over the Urmalar River along the Talas-Taraz highway is carried out by the Japan International Cooperation Agency (JICA). The bridge will be built in the framework of the JICA grant. The project is a free aid to Japan. A bridge will be built that meets modern requirements with electric lighting and with sidewalks on both sides of the bridge. There will be a modern, safe three span bridge with a length of 90 meters 1 km along with the road. The width of the road is 14 meters.</p>
	<p>Question 3. What will happen to the pond? Answer 3. Based on the results of drilling hydrogeologists, it will be determined whether water is suitable for use. There are no results yet.</p>
	<p>Question 4. Who will evaluate the upcoming cutting down of trees? Their cost. Will this amount go to the budget?</p>

	Answer 4. Now it's being studied, whose land is this. We need to determine the boundaries with State Registration Service. The research has just begun
	Question 5. We are pleased that a new modern bridge will be built. But there was a case in the city of Osh, when the new bridge collapsed in a year. What is the lifespan of the new bridge? Answer 5. 40-50 years.
	Question 6. Will the presence of rare plants, rare trees in the vicinity of the bridge construction be studied? Answer 6. Rare trees will be transplanted. Fish in the pond should not suffer. A survey of flora and fauna will be conducted. Then, if there are Plants of the Red Book and rare trees, appropriate measures will be taken to protect them. An environmental assessment will be conducted.
	Question 7. When will the reconstruction of the bridge begin, the road closes? Answer 7. The new bridge will be built next to the old one, during the construction along the old bridge cars will also pass through.
	Question 8. Will the irrigation canal be repaired? Answer 8. Irrigation canal will not be repaired, as it is not included in the project.
	Question 9. After the construction of a new bridge, after his assurance, can you save the old bridge? Answer 9. The Ministry of Transport will decide to remove or leave the old bridge.
	Question 10. On the steep turn bad visibility, because of this there are a lot of accidents. How will this section of the road be built? Answer 10. The sharp turn will be softened and will become safe. It is planned to expand the road on a steep turn, where accidents often occur. Lighting, speed limit signs will be installed.
	Question 11. Will they involve local qualified specialists and workforce during the construction of the bridge? Answer 11. As far as possible.
	Question 12. Will the given road repair interfere with the future construction of the bridge? Answer 12. No, it does not hurt, because the bridge construction project has been discussed in advance with the relevant authorities. The company that is currently repairing our roads is aware that the bridge will be built on this project, so there will be no problems with these.

### **Words of gratitude and wishes to the project designers**

The participants of the public hearings expressed their gratitude for acquainting them with the project. They asked to convey their gratitude to the Japanese people and JICA for their initiative to build a new bridge for them. Grateful to JICA for brotherly help. This will be a safe, modern bridge and will serve the inhabitants of the Talas region for many years.

The participants of the meeting expressed their readiness for assistance during the construction of the bridge, if necessary. They noted that the new JICA bridge for residents of the Talas region is the step of the Japanese people in the region. The bridge will ensure a safe, unhindered communication of the residents of the Talas oblast to the city of Taraz, Dzhambul region (Kazakhstan) and vice versa, also for Kazakh businessmen and residents who come to buy agricultural products and livestock to Talas oblast. All participants of the meeting noted the extremely poor, emergency condition of the bridge.

People in advance expressed their gratitude to all people who are involved and will be involved in the reconstruction of the bridge. It is hoped that the designers of the bridge will observe all technical

standards and requirements, and the bridge will serve them for many years.

They also asked to expand the road on a steep turn, where accidents often occur, set lighting, set signs, speed limit indicators.

Participants suggested that when building a bridge, if possible, involve local qualified specialists and workers.

As shown by public hearings, the bridge on the Urmalar River is of great importance for the residents of the region and there are high expectations with its reconstruction.

**The Protocol prepared: Raya Osmonalieva, Social Assessment Specialist**

**List of participants of public hearings and consultation meeting, Kyzyl-Sai village**

Список участников общественных слушаний и консультативной встречи в Ак - Добо авыл иезмугу Бакай Атинского района, 3 октября 2017.  
Село Кызыл - Сай

No	ФИО	Название организации	Контактные данные
1	Алиханов Ахмед	Башкирская	
2	Садриев И. И.	ИП	
3	Исмаилов Р. И.	ИП	
4	Исмаилов Р. И.	ИП	
5	Исмаилов Р. И.	ИП	
6	Исмаилов Р. И.	ИП	
7	Исмаилов Р. И.	ИП	
8	Исмаилов Р. И.	ИП	
9	Исмаилов Р. И.	ИП	
10	Исмаилов Р. И.	ИП	
11	Исмаилов Р. И.	ИП	
12	Исмаилов Р. И.	ИП	
13	Исмаилов Р. И.	ИП	
14	Исмаилов Р. И.	ИП	
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27	Исмаилов Р. И.	ИП	
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44	Исмаилов Р. И.	ИП	
45	Исмаилов Р. И.	ИП	
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**List of participants of public hearings and consultation meeting, village of Ak-Dobo**

Список участников общественных слушаний и консультативной встречи в Ак - Добо авыл иезмугу Бакай Атинского района, 3 октября 2017.  
17:00 – село Ак - Добо

No	ФИО	Название организации	Контактные данные
1	Исмаилов Р. И.	ИП	
2	Исмаилов Р. И.	ИП	
3	Исмаилов Р. И.	ИП	
4	Исмаилов Р. И.	ИП	
5	Исмаилов Р. И.	ИП	
6	Исмаилов Р. И.	ИП	
7	Исмаилов Р. И.	ИП	
8	Исмаилов Р. И.	ИП	
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**Photos of public hearings**



**Participants of public hearings in the village of Ak-Dobo**



**Participants of public hearings in the village of Kyzyl-Sai**

## Protocol

## Public consultations in Kyzyl Sai and Ak Dobo villages, Bakai Ata region Talas oblast

**Participants:**

- Residents of Ak Dobo and Kyzyl Say
- Head of the state administration of Bakai - Ata district,
- The head of Ak-Dobo ayil okmotu,
- Chief Engineer of the Regional Department No. 3 in the Talas oblast (Department of Road Facilities under the Ministry of Transport and Roads of the Kyrgyz Republic),
- Head of the Department of Economics № 47,
- Mr. Yamajuku (Chief Consultant)
- Mr. Ohashi (Deputy of Chief Consultant)
- Mr. Rasul (Project Coordinator)
- Mr. Konstantin Du (Engineer)

1. The head of Ak - Dobo Ayil Okmotu - Orozbaev Jamal made a welcoming speech.
2. Chief engineer of the Regional Department No. 3 in the Talas oblast (Department of Road Facilities under the Ministry of Transport and Roads of the KR) - Sadiraliev Nurkan and the head of DEU # 47 - Sultankulov Talai informed about the design parameters of the bridge and the importance of the bridge reconstruction.
3. Engineer Konstantin Diu informed about bridge design details and approval of preliminary EIA by SAEPP.
4. The head of Bakai Ata district administration, Mr. Torokulov, informed the villagers about the importance of the bridge reconstruction and expressed gratitude to the international experts.
5. Discussion and questions of villagers.

**Purpose of Public consultations**

The purpose of public hearings and consultations is to inform residents of Ak Dobo and Kyzyl Sai on the current status of the project "Reconstruction of Urmalar River Bridge on Talas-Taraz road in Kyrgyz Republic".

<b>Date</b>	<b>Location</b>	<b>Content</b>	<b>Organizers of the hearing, speakers</b>
April 21 2018  Time: 14:00 – 14:50	Kyzyl- Say village	- Bridge design details information - Approval of preliminary EIA report by SAEPP - Bridge details Information - Answers of Japanese experts on the questions of the local population.	1. Head of Ak-Dobo ayil okmotu - Orozbaev Zhamalbek 2. The head of the administration of Bakai Ata district - Torokulov Cholpon 3. Chief engineer of the Regional Department No. 3 in the Talas oblast (Department of Road Facilities under the Ministry of Transport and Roads of the Kyrgyz Republic) Sadiraliev Nurkan

			4. Head of DEP №47 - Sultankulov Talai 5. Engineer Konstantin Diu
April 21 2018 Time: 15:00 – 15:55	Ak Dobo village	- Bridge design details information - Approval of preliminary EIA report by SAEPF - Bridge details Information - Answers of Japanese experts on the questions of the local population	1. Head of Ak-Dobo ayil okmotu - Orozbaev Zhamalbek 2. The head of the administration of Bakai Ata district - Torokulov Cholpon 3. Chief engineer of the Regional Department No. 3 in the Talas oblast (Department of Road Facilities under the Ministry of Transport and Roads of the Kyrgyz Republic) Sadiraliev Nurkan 4. Head of DEP №47 - Sultankulov Talai 5. Engineer Konstantin Diu

### The questions asked by participants of public hearings and consultations

Question 1. When Bridge construction will start? Answer 1. Construction will start in May 2019 and will be finished in November 2021.
Question 2. Is it possible to involve the local population in the construction of a bridge? Answer 2: The contractor will hire local residents, and residents should have appropriate experience.
Question 3. What is the length of the new bridge? Answer 3. The length of the new bridge is around 90 meters and the length of approach roads is 1 100 meters.
Question 4. What is the width of the new bridge? Answer 4. The width of the new bridge is 14.8 meters; 1.5 meters are allotted to the sidewalks on both sides of the bridge.
Question 5. How Japanese government provides the assistance for bridge reconstruction? Answer 5. The Japanese Government provides gratuitous assistance on a grant basis.
Question 6. What height of the new bridge in relation to the old bridge? Answer 6. The new bridge will be 2.5-3 meters higher than the old one, this will improve visibility of the road from the bridge side. The sidewalk will provide safety for pedestrians crossing the bridge.

The participants of the public hearings were acquainted with the details of the project and the report on the preliminary EIA for the reconstruction of Urmalar River Bridge and expressed their readiness for cooperation during the construction of the bridge. Residents of the villages informed international engineers about the annual problems during spring floods.

Residents Ak Dobo and Kyzyl Say expressed their gratitude to all the participants involved for the reconstruction of the bridge.

List of participants for public hearings and consultation meeting in Ak - Dobo, April 21, 2018.  
Ak-Dobo village.

№	Name	Position	Contact details
1	Torokulov Cholpon	Head of Bakai Ata Administration	
2	Orozbaev Jamalbek	Head of Ak Dobo Ayil Okmotu	
3	Sadyraliev Nurkan	Chief Engineer of RMD №3	
4	Sultankulov T.	Head of DEP №47	
5	Kojorkulov Adylbek	deputy of the local council	
6	Subanova Indira	housewife	
7	Ailchieva Nazira	housewife	
8	Omorkanov Zakir	housewife	
9	Ulbaev Ramis	peasant	
10	Soltoev Ashat	peasant	
11	Umaralieva Cholpon	obstetrician	
12	Omarova G.	tutor	
13	Konoeva K.	housewife	
14	Beshkempirova Z.	housewife	
15	Kermasheva B.	pensioner	
16	Moinokova A.	pensioner	
17	Cuirueva Jibek	housewife	
18	Karabaeva K.	housewife	
19	Rehmankulova G.	pensioner	

List of participants of public hearings and consultation meeting in Kyzyl Sai, April 21, 2018.  
Kyzyl Sai village.

№	Name	Position	Contact details
1	Torokulov Cholpon	Head of Bakai Ata Administration	
2	Orozbaev Jamalbek	Head of Ak Dobo Ayil Okmotu	
3	Sadyraliev Nurkan	Chief Engineer oh RMD №3	
4	Kojorkulov Adylbek	deputy of the local council	
5	Sultankulov T.	Head of DEP №47	
6	Malisov Bakytbek	farmer	

7	Belekov Nurkan	farmer	
8	Mataev Kurmanbek	driver	
9	Esenamaev D.	farmer	
10	Omurbekov Maksat	farmer	
11	Amankulov Bektursun	builder	
12	Malison Nurbek	builder	
13	Malisov Aaly	farmer	
14	Abykan u. Taalai	farmer	
15	Jusupbaeva J.	Teacher	
16	Babyrova N.	Teacher	
17	Amarkanova Jenish	Pensioner	
18	Kultaev Seitkazy	Farmer	
19	Omorkanov Ilyas	Farmer	
20	Kultaev Altynbek	Tractor driver	
21	Omorkanov Esenbek	pensioner	
22	Shukuev Tolon	pensioner	
23	Janchykulova J.	a housewife	
24	Kojobekov A.	pensioner	
25	Jumankulov Jyrgalbek	farmer	

Public consultations

Participants of public consultations in Ak-Dobo





Participants of public consultations in Kyzyl-Sai





## (6) 軸重データ





101	3	5740	8080	7700	21520
102	3	5700	7500	7900	21100
103	3	5300	8440	8320	22060
104	3	4960	8400	8540	21900
105	3	4540	8450	8380	21370
106	3	4200	8340	8400	20940
107	3	4560	8740	8460	21760
108	3	5400	8000	7820	21220
109	3	5300	7300	7400	20000
110	3	5480	8340	8220	22040
111	3	6700	8020	8740	23460
112	3	3500	8480	8580	20560
113	3	4680	8200	8540	21400
114	3	4180	8740	8680	21580
115	3	5360	8340	8200	21900
116	3	5160	8040	8800	22000
117	3	4780	8600	8220	21600
118	3	5380	8720	8540	22840
119	3	5300	7600	7640	20540
120	3	5040	8540	8600	22180
121	3	4380	8480	8420	21280
122	3	5180	8540	8360	22080
123	3	4300	8200	8300	20800
124	3	5560	7860	7600	21020
125	3	5820	7900	7720	21440
126	3	5540	8150	7700	21390
127	3	5080	7340	7128	19548
128	3	5230	7320	7130	19680
129	3	6810	7480	7630	21920
130	3	5360	6140	6840	18340
131	3	5980	6730	6980	19700
132	3	5940	7800	7740	21480
133	3	6180	8240	8220	22840
134	3	5880	8540	8080	22480
135	3	5780	8380	8000	22160
136	3	6580	7620	8000	22200
137	3	4810	7920	7860	20590
138	3	8120	10760	7620	26500
139	3	4400	8360	8560	21320
140	3	6720	8320	7840	22880
141	3	6180	7740	7500	21420
142	3	6120	7800	8000	21920
143	3	5220	7740	7540	20800
144	3	5140	8020	7200	20360
145	3	6140	8100	8000	22240
146	3	4880	8000	8320	21200
147	3	7220	8240	8080	23540
148	3	6100	8700	8580	23380
149	3	5120	7440	7160	19720
150	3	5180	7880	7860	20920
151	3	4340	7480	7320	19140
152	3	5360	7820	7540	20720
153	3	4140	8140	8240	20520
154	3	7680	7070	7140	21870
155	3	6920	7840	8440	23200
156	3	6780	7000	7780	21560
157	3	7400	10300	7780	25480
158	3	6340	10180	6860	23380
159	3	7560	7860	7000	22420
160	3	6740	8520	8190	23450

161	3	8340	8990	5300	22630
162	3	5700	7900	7080	20680
163	3	5320	8220	7720	21260
164	3	7640	7040	7840	22520
165	3	7240	7580	7160	21980
166	3	3440	7260	7080	17780
167	3	5680	7740	7680	21100
168	3	6340	8960	8380	23680
169	3	6180	8440	8400	23020
170	3	6660	8420	7960	23040
171	3	6280	7960	8180	22420
172	3	6280	7960	8380	22620
173	3	4860	8340	8020	21220
174	3	7500	9680	7820	25000
175	3	6900	9360	7180	23440
176	3	5680	10760	7140	23580
177	3	6420	9640	7040	23100
178	3	4660	8700	8640	22000
179	3	7660	10460	7620	25740
180	3	6620	10180	5660	22460
181	3	6700	10340	7500	24540
182	3	6420	8340	8280	23040
Average					
Maximum					

【4軸車】  
調査日時: 2017.09.18~23  
観測所: Kyzyl Adyr Control Station

NO.	Number of axels	Axel Loads (kg)							Total	Remarks
		1	2	3	4	5	6	7		
1	4	6480	6880	10780	6280				30420	
2	4	3500	4000	3000	3000				13500	
3	4	6740	7400	5340	5400				24880	
4	4	5780	9240	7180	9660				31660	
5	4	7200	10700	6980	7520				32400	
Average									6653	26612
Maximum									10780	32400

【5軸車】  
調査日時: 2017.09.18~23  
観測所: Kyzyl Adyr Control Station

NO.	Number of axels	Axel Loads (kg)							Total	Remarks
		1	2	3	4	5	6	7		
1	5	3940	8840	8600	7560	7680			36620	
2	5	6620	9860	7560	7220	7380			38740	
3	5	6850	9100	7260	7320	7220			37750	
4	5	6560	10700	7900	7640	7780			40980	
5	5	6380	8380	8220	7400	7260			37640	
6	5	4550	8700	8220	5400	5300			32170	
7	5	4840	8540	8180	7040	7080			35680	
8	5	4780	8040	8420	7820	7440			36900	
9	5	6400	8340	8460	6020	5700			34920	
10	5	6160	8660	6760	6920	6600			35300	
11	5	6580	8600	8600	5740	8440			37800	
12	5	5920	9860	6240	6440	6480			34940	
13	5	6000	9820	5440	6100	6240			33600	
14	5	7860	10260	6420	6360	6380			37280	
15	5	6380	9860	6000	6300	6060			34600	
16	5	6000	8560	8440	7860	7660			38720	
17	5	7420	10800	7800	9300	8920			44240	
18	5	6280	7480	5840	5700	5700			31000	
19	5	6160	8800	6420	6450	6380			34210	
20	5	6160	8520	7260	7060	7060			36220	

21	5	6240	9220	7240	7280	7220	37200
22	5	4980	8460	8340	7640	7480	36900
23	5	6760	9280	7220	7320	6380	36960
24	5	6740	8820	7320	7300	7140	37320
25	5	6980	8960	7520	7120	7060	37640
26	5	7120	10800	7240	9220	8880	43260
27	5	3600	7580	7400	2800	7060	28440
28	5	5220	8600	8660	8380	8160	39020
29	5	6420	9540	6020	6100	6340	34420
30	5	6060	8060	7920	6760	6740	35540
31	5	4600	7260	7320	7100	7200	33480
32	5	5780	8000	7920	8400	8820	38920
33	5	6920	7980	8020	8780	7160	39460
34	5	6540	9400	7020	7220	7320	37500
35	5	7080	10520	6740	6580	6760	37660
36	5	5820	5080	2260	2380	2380	17920
37	5	6820	9080	6780	6980	7040	36700
38	5	6180	8700	7260	7240	7120	36500
39	5	3900	6020	5960	8140	7780	31800
40	5	5540	9640	6220	7680	7600	36680
41	5	7040	10180	5840	7580	7800	38440
42	5	6340	9420	6720	7100	6840	36420
43	5	6560	9140	6800	6840	6860	36200
44	5	6400	9220	6820	7020	7160	36620
45	5	7640	10540	7760	6640	6360	38940
46	5	6640	8680	7260	7340	7260	37180
47	5	6660	10680	7600	7780	7640	40360
48	5	7320	10380	7780	7700	7620	40800
49	5	6480	10560	5660	8780	8960	40440
50	5	5340	8540	8640	7780	6940	37240
51	5	6420	9440	7660	7560	7440	38520
52	5	7700	7620	6400	7520	7180	36420
53	5	6900	9380	6460	6360	6340	35440
54	5	7140	8700	5360	7140	6960	35300
55	5	6620	9940	7640	7880	8040	40120
56	5	6080	7260	5080	5020	4900	28340
57	5	6420	6090	3620	3460	3500	23090
58	5	6560	9520	5820	6240	5940	34080
59	5	6520	7720	5560	5360	5720	30880
60	5	7020	9120	7140	6840	6480	36600
61	5	5340	7500	3800	5560	5540	27740
62	5	7060	8380	6900	6900	6940	36180
63	5	6920	9340	7100	7280	7280	37920
64	5	6240	8780	6680	6680	6920	35300
65	5	7120	10800	7540	8280	8260	42000
66	5	7440	10580	7660	8040	8060	41800
67	5	6780	10040	7340	7220	7140	38520
68	5	6640	10280	7480	7260	7560	39220
69	5	6500	8240	5800	5180	5360	31080
70	5	6560	10340	6060	6200	5860	35040
71	5	6260	9220	7620	7860	7400	38360
72	5	6860	8800	7140	7160	6800	36760
73	5	6100	9040	7560	7680	7740	38140
74	5	6620	10200	5740	5680	5720	33960
75	5	7120	10000	6720	6620	6800	37260
76	5	3140	9040	7540	7600	7500	34620
77	5	6340	8180	7680	7440	7400	37040
78	5	6440	9600	6960	7100	7080	37200
79	5	6100	9580	7420	6960	7040	37100
80	5	5700	8920	5820	5700	6120	32260
81	5	6540	8980	6760	6780	6820	35880
82	5	7100	9700	6760	7020	6900	37500
83	5	5820	10340	7820	7640	7660	39280
84	5	6500	9740	6800	6720	7320	37080
85	5	6120	6620	3880	3840	3860	24320

86	5	4020	8460	8260	7880	8140	36760
87	5	6300	5640	3560	5920	5720	27140
88	5	7960	10560	6720	9040	9000	43280
89	5	6780	10580	6380	6400	6660	36800
90	5	5220	8040	7900	8320	8520	38000
91	5	6480	8740	4720	4600	4200	28720
92	5	6200	8760	4620	5400	5200	30180
93	5	6820	8720	7420	7360	7160	37480
94	5	7660	10040	6680	8720	8560	41660
95	5	6440	8660	5440	5440	5380	31360
96	5	5980	8560	7000	7400	7380	36320
97	5	6480	8060	6840	6920	7080	35380
98	5	6680	9060	7180	6960	7180	37060
99	5	7020	12040	7540	7260	7260	41120
100	5	6340	10660	7520	7400	7820	39740
101	5	7660	10300	7240	9060	8820	43080
102	5	6780	10800	7200	7160	8380	40320
103	5	6920	9040	7400	6880	6880	37120
104	5	7660	9360	7320	6960	6820	38120
105	5	6480	8940	7380	7400	7300	37500
106	5	6820	10720	7480	7120	7280	39420
107	5	7980	10080	7040	8420	8940	42460
108	5	6280	8180	7300	7660	7380	36800
109	5	7540	10800	5820	5600	5520	35280
110	5	6960	8440	6640	6720	6700	35480
111	5	6720	9660	6400	9440	9440	41960
112	5	6320	7820	4860	4880	5020	28900
113	5	5100	8600	8620	8800	9520	40640
114	5	7840	10520	6920	8920	8940	43140
115	5	4640	8600	8560	7980	8240	38020
116	5	4440	8240	8580	8660	8620	38940
117	5	6480	9260	4280	7080	6760	33660
118	5	7260	10260	7880	7860	7360	40560
119	5	7900	10400	7880	7580	7140	40900
120	5	6760	7180	4360	4360	4240	26900
121	5	6720	8700	6760	6480	6220	34880
122	5	6540	6420	3960	3960	3840	24720
123	5	6180	7520	4340	4180	4420	26640
124	5	6240	6840	2740	2800	2800	21420
125	5	7060	10460	5880	3560	3440	30400
126	5	6240	5860	3600	4080	4160	25500
127	5	6240	5860	3600	3600	3560	22960
128	5	7220	10600	7480	7540	7420	40260
129	5	6240	7440	4200	5440	3520	26940
130	5	7280	9440	6580	6760	6800	36860
131	5	6740	8020	7160	7260	7400	36580
132	5	6560	8900	6980	7100	6800	36340
133	5	5700	8240	7500	7360	7680	36480
134	5	6560	9900	6120	5980	8520	37080
135	5	6960	9520	6980	7120	6940	37520
136	5	6660	10020	7500	6580	6820	37580
137	5	7240	9540	5220	7000	6940	35940
138	5	7080	10300	6940	6940	7000	38260
139	5	6240	8300	4700	7650	7100	33990
140	5	5700	8300	5420	5200	4900	29520
141	5	6620	9640	7420	7540	7320	38940
142	5	6400	8840	7060	7160	7300	36760
143	5	4700	8260	8400	8900	8540	38600
144	5	7200	10660	7260	6980	7520	39620
145	5	7180	10700	6880	7640	7620	40120
146	5	5920	8060	6520	6840	6980	34320
147	5	6700	9060	7260	6940	6680	36200
148	5	5920	9060	7120	7220	6680	36200
149	5	7420	9420	5880	7580	8200	38500
150	5	6540	10220	5780	9100	8960	40600

151	5	6440	9320	7400	7560	7520	38240
152	5	7080	10260	7140	7040	7080	38600
153	5	6400	9850	7500	7460	7400	38610
154	5	7160	10780	7140	9120	9000	43800
155	5	4980	8000	7900	8160	7820	36660
156	5	6420	9180	4560	8300	8360	36820
157	5	6400	8700	7140	7080	6960	36280
158	5	6500	10400	7800	7700	7640	40040
159	5	5940	10060	7800	7780	7800	39380
160	5	6400	10340	7600	7700	7600	39640
161	5	6820	8680	7140	7040	7160	36860
162	5	5900	8880	6420	7240	6680	35120
163	5	6980	10720	4680	7440	6780	36800
164	5	6500	9840	7560	8680	8540	41120
165	5	6200	9400	7320	7260	7200	37380
166	5	6260	9800	7100	7120	7200	37480
167	5	6640	9260	6960	7140	7120	37140
168	5	7060	10340	6800	6760	7120	38080
169	5	6060	7980	7380	7060	7160	35640
170	5	6280	9200	7020	7080	6620	36260
171	5	5940	7680	5460	7100	7060	33260
172	5	8640	9520	6720	7040	7340	39260
173	5	6440	10780	6740	7320	7280	38560
174	5	6980	9220	7240	3400	6300	33140
175	5	6600	7420	6660	7640	7340	35680
176	5	7000	9320	6140	7160	7240	36860
177	5	7020	9980	7320	7080	6980	38380
178	5	6720	10120	6860	7640	8880	40220
179	5	6300	10240	6200	6740	6980	36460
180	5	6880	10140	6840	6980	6760	37580
181	5	6180	9100	7180	7040	7360	36860
182	5	6460	9380	7020	6920	6700	36380
183	5	6700	10300	7540	7640	7600	39780
184	5	5920	8160	7140	7660	7160	35940
185	5	6380	10820	6560	7980	8100	39840
186	5	6940	9540	5720	8100	8340	38840
187	5	6820	10400	7440	8120	7500	40280
188	5	7000	9860	7640	7240	7560	39300
189	5	6800	10460	7020	7300	7080	38660
190	5	6300	8880	7520	7120	7240	37060
191	5	6600	10620	7640	7460	7140	40060
192	5	6920	9600	6860	7000	6970	37350
193	5	6540	8680	7360	7040	6900	36520
194	5	7240	10500	7780	7720	7400	40640
195	5	7680	10320	6920	8520	8700	42140
196	5	6760	9280	6660	6660	6680	36060
197	5	6800	9280	6880	6960	6820	36740
198	5	6540	9040	6580	6700	6780	35640
199	5	7000	9320	7200	7240	7200	37960
200	5	6560	10350	7320	8020	9460	41710
201	5	6300	7120	5360	5360	5320	29480
202	5	6540	8380	7640	7260	7340	37160
203	5	6000	8860	8660	8000	8040	39580
204	5	6440	9360	7160	7020	7100	37080
205	5	7560	9340	7640	7660	8020	40220
206	5	6540	9900	7700	7320	7240	38700
207	5	7540	10400	8000	8580	8400	42920
208	5	5180	8680	8760	8080	9060	39780
209	5	6400	10700	7080	7220	7580	38980
210	5	5600	7780	7880	7480	7880	36620
211	5	5600	10100	7300	7400	7400	37800
212	5	6500	10500	7080	9080	9120	42280
213	5	6780	8700	6760	6540	6480	35280
214	5	3920	6920	6700	5360	5300	28200
215	5	9020	9140	5480	8480	8380	40500

216	5	6080	10100	6260	6320	6420	35180
217	5	6380	8480	7060	6800	6860	35580
218	5	6860	11780	6220	6220	6140	37220
219	5	5980	8660	8480	8380	8400	39900
220	5	6300	9260	6980	6860	6880	36380
221	5	6680	8720	7180	7080	7120	36780
222	5	6940	9980	5780	5700	5520	33920
223	5	7600	10420	6460	8900	8220	41600
224	5	6840	10600	6800	9140	8140	41320
225	5	8260	10800	6960	8920	8320	43260
226	5	5080	8400	8500	8740	9060	39780
227	5	6720	10440	6760	6780	6700	37400
228	5	7280	9960	6640	8880	8200	40960
229	5	6620	8740	7120	7160	6940	36380
230	5	6320	10360	6320	7660	7480	38140
231	5	6840	10680	7780	7220	7620	40140
232	5	7980	10220	7820	9280	8400	43700
233	5	6360	9040	7020	7020	7020	36460
234	5	6400	7900	6420	6280	6440	33440
235	5	7440	10380	6380	8040	8120	40360
236	5	6780	10700	7400	8940	8860	42680
237	5	6620	9680	7860	7800	7520	39480
238	5	7760	10140	6840	9000	8800	42940
239	5	6800	10040	7760	7580	7520	39700
240	5	7640	10040	7140	7360	7280	39460
241	5	6480	10260	7160	7860	7510	39270
242	5	5300	8920	5320	4780	5840	30160
243	5	6960	10380	7220	7500	7300	39360
244	5	6820	10400	7940	7740	7600	40500
245	5	6640	10300	7200	9100	8800	42040
246	5	7280	10080	6340	8340	8800	40820
247	5	6700	10300	6500	8500	8700	40700
248	5	7100	10240	7300	7400	7440	39480
249	5	7200	10400	7400	7440	7500	39840
250	5	6940	10320	7200	8600	8700	41760
251	5	7100	10400	7600	7600	7620	40220
252	5	7200	10500	7800	7500	7440	40240
253	5	6840	8060	6040	5960	5980	32880
254	5	5260	5660	10040	5660	5420	32040
255	5	7300	10300	7500	7600	7640	40340
256	5	7200	10400	7600	7620	7640	40460
257	5	7420	10340	6660	7120	6940	38480
258	5	6700	9440	6640	6620	5280	34680
259	5	9120	10740	6600	6740	9000	42200
260	5	7620	10340	7800	7800	7860	41420
261	5	7300	10400	7100	7200	7200	39200
262	5	7100	10200	7600	7400	7360	39660
263	5	6860	10400	7880	7900	7960	41000
264	5	7040	10600	6740	8460	9360	42200
265	5	6520	8840	7100	6980	7080	36520
266	5	7360	10660	7180	7280	7140	39620
267	5	7500	10480	6420	8920	8640	41960
268	5	6980	10760	7160	7240	7480	39620
269	5	6160	8780	6400	6600	6300	34240
270	5	6340	10360	5500	5600	5560	33260
271	5	7000	9140	7720	7480	7340	38680
272	5	6960	9000	7660	7500	7600	38720
273	5	7100	9240	7260	7500	7080	38180
274	5	6170	6170	7380	8640	8910	37270
275	5	6800	7860	7880	7320	8480	38340
276	5	7500	10220	6800	9060	5120	38500
277	5	7000	7860	4340	4780	4780	28770
278	5	6960	10720	6780	8340	9060	41860
279	5	6780	9800	6980	6800	7020	37380
280	5	5720	10200	7520	7880	7480	38800

281	5	6800	8540	7120	7060	7080	36600		
282	5	7340	8120	7160	7000	7000	36620		
283	5	6240	8720	7160	7080	6940	36140		
284	5	8600	9880	6880	7840	7440	40640		
285	5	1020	5100	2620	2560	2540	13840		
286	5	6380	7140	5720	5040	5060	29340		
287	5	5980	10100	6360	8280	8140	38860		
288	5	6880	10600	6700	7240	6840	38260		
289	5	6480	8920	7420	7460	7420	37680		
290	5	6720	9400	6920	6900	6720	36660		
291	5	5580	10200	6940	8540	8720	39980		
292	5	6960	7260	4760	5360	5380	29740		
293	5	6500	8640	7200	6900	6760	36000		
294	5	7700	10760	6920	6480	6760	38620		
295	5	7400	8840	6940	7180	7160	38520		
296	5	4780	9420	8360	7440	8240	37240		
297	5	7540	10740	7240	8340	8640	42500		
298	5	6080	4840	4660	5300	5280	26160		
299	5	7040	9520	6140	6020	5840	34360		
300	5	7120	9260	7120	6920	6920	37340		
301	5	7700	10380	7000	8180	8520	41780		
302	5	6600	9520	6640	6880	6740	36180		
303	5	6460	9440	7120	7060	7180	37260		
304	5	6220	10100	5640	7060	7100	36120		
305	5	7440	10660	7760	7720	7960	41560		
306	5	7000	9520	7100	6040	6040	35700		
307	5	5100	8280	8400	7140	7920	36840		
308	5	6920	9340	6840	6940	6740	36780		
309	5	6840	9940	6220	6920	7560	37480		
310	5	7260	10260	7240	6500	6420	37680		
311	5	7800	6920	5820	6980	7020	34540		
312	5	6500	8000	7760	7300	7600	37160		
313	5	7200	9980	6740	9000	7920	40840		
314	5	6180	4440	3740	3720	3880	21940		
315	5	6780	9180	6420	6880	6780	36040		
316	5	7140	10260	6660	8340	8860	41260		
317	5	6920	8420	7360	7380	7480	37560		
318	5	6520	8660	7160	6940	7080	36360		
319	5	6340	8560	7160	7220	7240	36520		
320	5	6820	10420	6680	8840	7780	40540		
321	5	9140	8460	8380	6760	6940	39680		
322	5	7670	10000	7560	7500	7520	40250		
323	5	7360	10770	7060	7360	7320	39870		
324	5	7300	10320	6680	8620	8640	41560		
325	5	6700	9840	5400	7640	7940	37520		
326	5	6960	9520	5660	5720	8040	35900		
327	5	6840	10370	6120	7640	8360	39330		
328	5	6840	10320	6120	7640	7360	38280		
329	5	6680	10680	7420	7640	7280	39700		
330	5	7540	10600	7920	7940	7440	41440		
331	5	6840	10310	7640	7360	6870	39020		
332	5	6840	10520	7100	6900	6960	38320		
333	5	6740	9820	6580	8460	8220	39820		
334	5	5880	9640	6040	8840	5060	35460		
335	5	7380	10300	6360	9120	8500	41660		
336	5	6160	9460	7320	7360	7360	37660		
337	5	6480	7500	6060	5920	5840	31600		
338	5	6700	8600	6740	6820	6480	35140		
339	5	7560	10240	7540	9060	9020	43420		
340	5	8060	10720	7440	7840	8260	42320		
341	5	6500	7780	6240	5900	5680	32100		
342	5	6740	9720	6960	7060	7160	37640		
343	5	5880	8220	3960	4360	4340	26780		
344	5	7880	9940	6800	8340	7920	40880		
345	5	8720	9960	6540	8460	8420	42100		

346	5	5840	8150	8090	7180	7750	37010		
347	5	7940	10380	7660	7200	7580	40760		
348	5	7480	10620	7720	7920	7700	41440		
349	5	7060	9560	6000	5960	5840	34420		
350	5	7600	10700	7660	7380	6780	40120		
351	5	6420	10300	8080	8020	7720	40840		
352	5	6440	9100	6520	6620	6860	35640		
353	5	6960	8760	5740	5500	5660	32640		
354	5	3360	5880	5900	7860	7580	30580		
355	5	7740	10420	7380	8340	7840	41720		
Average							7407		37033
Maximum							12040		44240

【6軸車】

調査日時: 2017.09.18~23

観測所: Kyzyl Adyr Control Station

NO.	Number of axels	Axel Loads (kg)							Total	Remarks
		1	2	3	4	5	6	7		
1	6	4360	8620	8700	7220	7220	7280	43400		
2	6	5300	10160	5220	8620	8540	8320	46160		
3	6	7080	8980	8220	7560	7520	7400	46760		
4	6	6920	10060	7920	8640	6720	8060	48320		
5	6	7560	9560	5880	7720	6020	6520	42960		
6	6	3880	6760	6480	5900	5540	5740	34300		
7	6	6600	10040	5740	7760	7740	7580	45460		
8	6	6280	4260	9800	7500	7640	7700	43360		
9	6	5900	4140	9100	7420	7680	7740	41980		
10	6	6700	10440	7300	7600	7660	7500	47200		
11	6	6940	3280	9060	7360	7640	7680	41960		
12	6	6000	10040	5780	7760	7440	7580	44600		
13	6	6400	9240	8160	7250	7200	7450	45700		
14	6	7720	8500	7600	7360	6300	5840	44780		
15	6	7260	8380	6580	7280	6300	5840	41640		
16	6	6120	8660	5500	5460	5480	6220	37440		
17	6	5340	6780	6360	6720	6680	6640	38820		
18	6	6020	6380	6100	6400	6280	6140	37320		
19	6	5420	9860	6220	8000	8020	7900	45420		
20	6	5600	5170	8180	7920	8020	8160	43050		
21	6	7000	9920	6340	6960	7780	7840	45840		
22	6	5540	7960	8580	7000	6900	6980	42960		
23	6	6760	10480	6420	6700	6520	5540	42420		
24	6	4220	3500	5960	5180	5200	5540	29600		
25	6	6420	10620	7640	6160	6160	6880	43880		
26	6	7120	10120	7540	7600	7300	7300	47330		
27	6	5100	3500	7300	7000	7200	7100	37500		
28	6	4060	8380	8200	4940	4460	7800	40840		
29	6	5860	7120	10680	6020	6360	6740	42780		
30	6	6700	7620	4620	5400	6440	7000	37780		
Average							7063		42375	
Maximum							10680		48320	

【7軸車】

調査日時: 2017.09.18~23

観測所: Kyzyl Adyr Control Station

NO.	Number of axels	Axel Loads (kg)							Total	Remarks
		1	2	3	4	5	6	7		
1	7	6840	5880	9100	5640	6420	5240	44100		
Average							6300		44100	
Maximum							9100		44100	

## (7) 舖裝設計計算

### 必要舗装構造指数

舗装構造設計区間		CBR 6
18kip等価単軸載荷荷重	W18	2,306,833
信頼性係数	R (%)	85
標準偏差	ZR	-1.037
荷重及び舗装強度の標準誤差	S0	0.45
初期供用指数	P0	4.2
終局供用指数	P1	2.5
供用指数の差 (P0-P1)	ΔPSI	1.7
路床土CBR値 (%)	CBR	6
路床土復元弾性係数	MR	9,000
舗装厚に必要な目標構造指数	SN	3.565

$$\text{Log}_{10}(W_{18}) = Z_R \times S_0 + 9.36 \times \text{Log}_{10}(\text{SN}+1) - 0.20 + [\text{Log}_{10}[\Delta\text{PSI}/(4.2-1.5)]] / [0.40+1094/(\text{SN}+1)^{5.19}] + 2.32 \times \text{Log}_{10}(M_R) - 8.07$$

仮計算値	$\log_{10}(W18) =$	6.363
	右辺計算値=	6.363

### 提案する新設舗装構造の構造指数

舗装構成 (新設)	排水係数 (m)	層指数 (a)	
舗装構造設計区間			CBR 6
アスコン表層	-	0.440	5.0
アスコン基層	-	0.440	5.0
粒状上層路盤	0.9	0.135	15.0
粒状下層路盤	0.9	0.108	30.0
提案舗装厚の構造指数 (SN)			3.60
判 定			OK

ここに、  $SN = a1 \cdot D1 + a2 \cdot m2 \cdot D2 + a3 \cdot m3 \cdot D3$

