

# ALMATY-BISHKEK ECONOMIC CORRIDOR (ABEC) REPORT ON THE TWO PRIORITY ROAD BORDER CROSSING POINTS (BCPs)

**AK- JOL** / KORDAY & **AK-TILEK** / KARASU



## KYRGYZ REPUBLIC REPORT

This Report should be read with Kyrgyz Republic Report by Radomir Djuric of September 2018

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## 1. ABBREVIATIONS

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ADB	Asian Development Bank
ALPR	Automatic Licence Plate Recognition
ANPR	Automatic Number Plate Recognition
BCP	Border Crossing Point
CAREC	Central Asia Regional Economic Cooperation
CIS	Commonwealth of Independent States
EAEU	Eurasian Economic Union
MEDT	Ministry of Economic Development and Trade
MSR	Machine Readable Documents
MTC	Ministry of Transport and Communications
OSS	One-Stop-Shop
RPM	Radiation Portal Monitor
TIR	Transport Internationaux Routiers

## 2. EXECUTIVE SUMMARY

### 2.1. Scope

Kyrgyz Republic is a landlocked country, but there are two Transport Corridors crossing it:

- CAREC 1-c from PRC
- CAREC 3-b from Tajikistan and Uzbekistan

There are 8 Border Crossing Points along the border between Kazakhstan and Kyrgyz Republic and they cannot meet the rapidly increasing traffic capacity.

The Almaty Bishkek Economic Corridor under CAREC follows a multi-sector approach to create one economic space without barriers to allow exporting goods and services across and outside the region.

Part of this project is this proposal for the improvements to Ak-Tilek and Ak-Jol BCP's

These two border crossings have their reciprocal equivalents on the Kazakh side across the Kara-Suu river that is the border between these two countries.

- Ak-Tilek on the Kyrgyz side with Kara-Suu on the Kazakh side
- Ak-Jol on the Kyrgyz side with Korday on the Kazakh side

The separate report addresses the Kazakh BCP's, but inevitably the overlapping parts are the linking roads and the bridges across the Chuy River (Suu/Shu River in Kazakhstan) and operational procedures are linked to the reciprocal BCP across the border, therefore facilities at both sides of the boundary are shown on presented site plans.

### 2.2. The proposal

The traffic analysis and its improvement proposal has been recently completed and it addressed all components such as:

- > Ak-Tilek and Ak-Jol BCP operational processes
- > Existing traffic, both vehicular and pedestrian
- > Proposed traffic operation modes – inbound and outbound directions
- > Infrastructure improvements including the bridges

### 2.3. Services provided

This Report outlines the proposal to improve the BCP's functions with the level of information provided equal to the Project Preparatory Technical Assistance.

### 2.4. Summary

- The intention of this proposal is to improve the border crossing vehicular traffic and checking points, but to save the existing major BCP processing infrastructure.

This 'fit for purpose' approach will help to maintain the facility to remain operational during the construction period and allow for more funds to be spent on processing equipment that can optimize the speed of the clearance. This will improve the trade facilitation and border security.

- The proposal addresses:
  - Provision for dedicated lanes for each type of vehicular traffic.

- Secondary Inspections for buses and cars located off the lane in order not to block the traffic.
- Additions/changes to the BCP's main infrastructure.

The functional arrangement for the proposed Secondary Inspection & Special Procedures premises - including staff and customers amenities - has not been shown at this stage.

## **2.5. Further recommendations**

### **2.5.1. Environmental issues**

Energy efficient appliances, water and waste management strategies are to be considered.

### **2.5.2. Infrastructure services**

The water and power supply are from the local municipality network. The stand-by generator and underground water tanks are proposed for the supply shortages periods.

The sewage disposal has to be linked to the municipal sewer main and the coordination with the municipal public services departments are to be done at the design stage.

### **2.5.3. Cost estimate**

At this stage only, the rates-based cost estimate is proposed.

### **2.5.4. Seismic conditions**

Structural design would address the seismic conditions of the sites and select the most suitable solution according to the International Standards and in compliance with Kyrgyz Building Codes.

### 3. EXISTING AK-JOL BCP

#### 3.1. Operational services at Ak-Jol

When looking from the direction of Kyrgyz outbound traffic going towards Kazakhstan, the road slightly curves to the right and, after the Police Road Checkpoint, the road is divided by hard concrete blocks into two directions, except at one point, where vehicles can make the U-turn and return back. This area can hold two parallel lanes of vehicles in each direction and is at least 120 meters long. The vehicle queue stops at the First Checkpoint with a Boom Gate, operated by a Border Officer, who allows 3-4 vehicles to go to the Control Facility, when there is free space available.

#### 3.2. BCP facilities current layout

The main Control Area, from left (west) to the right (east) consists of two inbound lanes and two outbound lanes with the Main Administration Building located in the median. Outbound pedestrians have a fenced and roofed passage running on the outside of the outbound road lanes. The inbound pedestrians have a fenced and roofed passage up to the BCP and the fenced but not roofed passage that continues further. Both passages terminate at the check point located approx. 100 m from the BCP. The northern outer part of the BCP zone is fenced and behind the fence there are Border Guards auxiliary administrative buildings and staff parking.

There are two smaller barracks containing the pedestrians processing facilities, but they operate only in the peak traffic time. Most of the time the central Administrative Building is used for processing pedestrians both outbound and inbound and due to its central position pedestrians have to cross the vehicular lanes in four locations- two per direction.

Layout below shows photos of Ak-Jol BCP taken during the Field Work 23-30 Sept.2018







### 3.3. BCP facilities current vehicular movements arrangement

Personal vehicles are currently the predominant type of the vehicular traffic in this BCP.

In the Questionnaire completed by the Kyrgyz Border Guards and Kazakh Border Guards for 2017 out of almost 300,000 vehicles 86% were passenger cars.

The predictions are that the passenger vehicles number will substantially increase in the near future, as there is a weight limit of 10T imposed on the trucks crossing this BCP.

Current BCP facilities layout allows for future increase of the traffic with the changes proposed in the Report by Radomir Djuric.

Below photos illustrate the traffic increase potential that can be implemented with minor changes to the existing BCP infrastructure.



 <p><b>3</b></p> <p>CHECK-BOOTH ON ACCESS ROAD APPROX. 100 M. FROM AK-JOL BCP</p>	 <p><b>2</b></p> <p>Metal grid fence with road guardrail barrier separates inbound and outbound lanes</p>
<p>Check booth and boom gates on approach road to be removed</p>	<p>Fence dividing traffic lanes to be removed</p>
 <p><b>6</b></p> <p>FIRST CHECK-BOOTH IS LOCATED APPROX. 100M FROM THE BCP MAIN FACILITIES</p>	 <p><b>10</b></p> <p>INBOUND TRAFFIC DIRECTION FOR BUSES/TRUCKS AND PASSENGER VEHICLES</p>
<p>Check point booth and boom gates to be removed</p>	<p>RPM's to remain if not obstructing the proposed traffic lanes</p>
 <p><b>7</b></p> <p>OUTBOUND TRAFFIC DIRECTION FOR BUSES/TRUCKS AND PASSENGER CARS</p>	 <p><b>11</b></p> <p>OUTBOUND TRAFFIC DIRECTION. ROAD WIDTH ALLOWS FOR 4 VEHICULAR LANES &amp; 4.0 M WIDE EACH</p>
<p>RPM's to remain if not obstructing the proposed traffic lanes</p>	<p>Sufficient road width for 4 vehicular lanes in each direction</p>
 <p><b>15</b></p> <p>INBOUND PEDESTRIANS HAVE TO CROSS THE VEHICULAR LANES TO GET TO THE PROCESSING FACILITIES</p>	 <p><b>16</b></p> <p>THE INBOUND PEDESTRIANS ARE CROSSING THE INBOUND VEHICULAR LANES TO GET TO THEIR PROCESSING FACILITIES</p>

<p>Pedestrians processing to be on the pedestrian passages</p>	<p>Pedestrians to be separated from the vehicular traffic</p>
	
<p>Prevent pedestrians crossing the vehicular lanes</p>	<p>Pedestrians passage and processing to be a separate lane</p>
	
<p>Remove barriers separating vehicular lanes</p>	<p>Separate lanes for various types of vehicular traffic to be created</p>

Existing vehicular traffic through Ak-Jol Border Crossing Point layout shown below is based on the consultant's Field Work measurements and the Google Earth data.

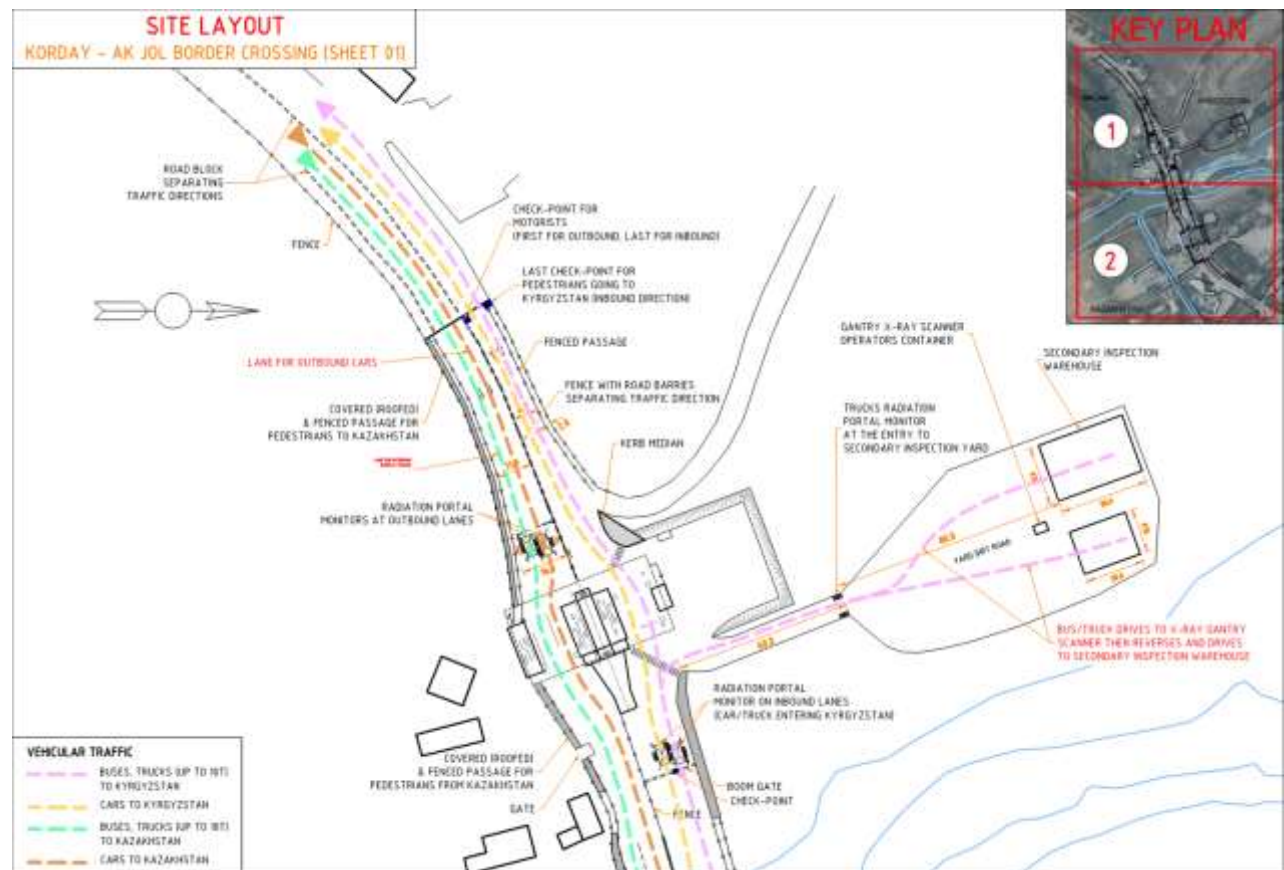
Radiation Portal Monitors on outbound and inbound direction are placed before vehicles enter the BCP control facilities. This is a correct arrangement for the security reason.

The detail layout of the ground level of the Main Administration and Border Processing building is in Appendix 1

The complete existing border crossing site plan including the Kyrgyz side with Ak-Jol BCP and the Kazakh side with Korday BCP is shown in Appendix 2

The current operational arrangements for traffic control and traffic management on each BCP are clearly visible on this site plan. In theory the vehicles should have been using their dedicated lanes – as it is shown on the site plan. However, it has been noted during the Field Work that they are directed to the first available lane.

There is enough space under the canopies on both BCP's to create dedicated lanes for increased traffic and separating cars from buses/trucks.





## **4. PROPOSED AK-JOL BCP IMPROVEMENTS**

### **4.1. Operational services at Ak-Jol**

Both countries are members of the CIS and EAEU and contribute to the development of the big regional market that unites more than 180 million people.

In addition, both Kyrgyz Republic and Kazakhstan are contracting parties to the UNECE International Convention on the Harmonization of Frontier Controls of Goods (1982).

Logistics Report by Radomir Djuric addressed the proposed operational changes to the BCP procedures in order to eliminate the traffic congestion and slowing of the movement through the BCP processing. These changes will facilitate the introduction of the OSS Joint Integrated Road BCP. This would require a cooperation between MEDT and MTC of both countries.

### **4.2. BCP proposed vehicular movements arrangement:**

The major part of the proposed changes is to create dedicated lanes for each type of the vehicular traffic and separated pedestrian movements through the BCP.

Number of the lanes is based on the current traffic data and the anticipated growth of trade between these two countries and the transit cargo movement – see Report by Radomir Djuric for details.

Vehicle trucking software has been used to determine the lanes configurations. Trucks turning paths resulted in local lanes widening – see Appendix 7 with detail Ak-Tilek BCP.

‘Fit for purpose’ approach has been adopted in this proposal, therefore efforts are made to keep as many of the existing BCP facilities and building structures as possible.

### **4.3. BCP proposed facilities and traffic arrangement**

The resettlement and land acquisitions most likely do not apply to the additional area required for the proposed BCP traffic arrangement, however the confirmation would be required at the next stage of the Project development.

#### **4.3.1. Main BCP Administration and processing building**

Located on an island between two traffic directions. it is possible to introduce 10 traffic lanes & 4.0m wide each going through the main processing zone and keep the main administration facilities. With selected facilities removed there is enough open space under the Kislovodsk canopy for 3 inbound and 3 outbound lanes for cars and one car lane and one bus/trucks lane are bypassing the canopy frame external supports on each side. See Appendix 3

#### **4.3.2. Pedestrians/passengers processing facilities**

Separate prefabricated framed barracks are proposed to be disassembled and rebuilt in locations adjacent to the new pedestrian passages.

#### **4.3.3. New joint check booths**

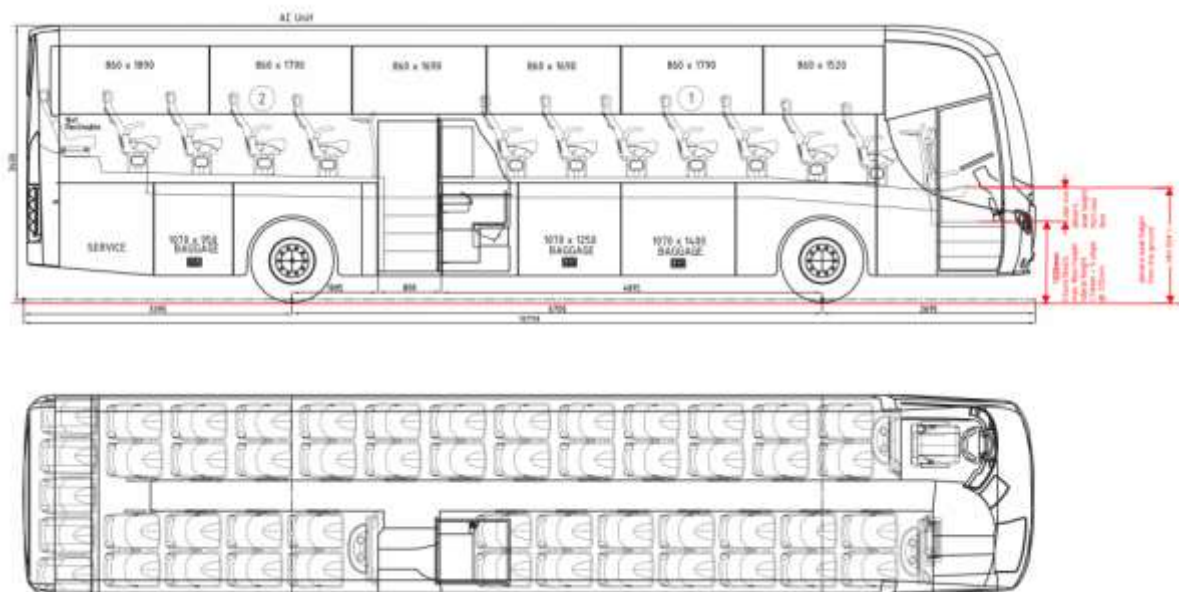
All existing check booths to be removed to clear the space for the proposed dedicated vehicular lanes

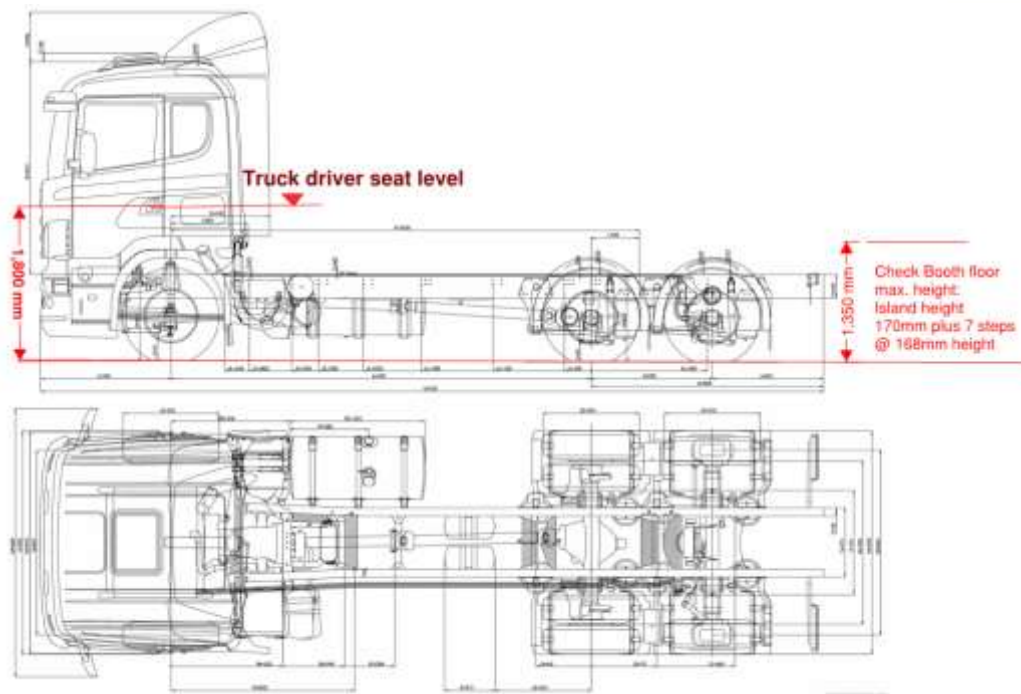
The check booths are proposed to be large enough for two Border Officers – one Kyrgyz and one Kazakh. The check booths for cars to have windows on both sides for the reverse traffic.

- **Check booths for buses/trucks lanes** to have the Border Officer seat at the level of the truck/bus driver seat. These two vehicles have drivers' seats at different levels; truck driver seat height @1.80 from the ground and bus/coach driver seat & 1.5m from the ground. The average Border Guard seat height of 1.65m from the ground is adopted. The check booth floor is 1.2m from the ground (deducting the chair height of 0.45m from the seat height)



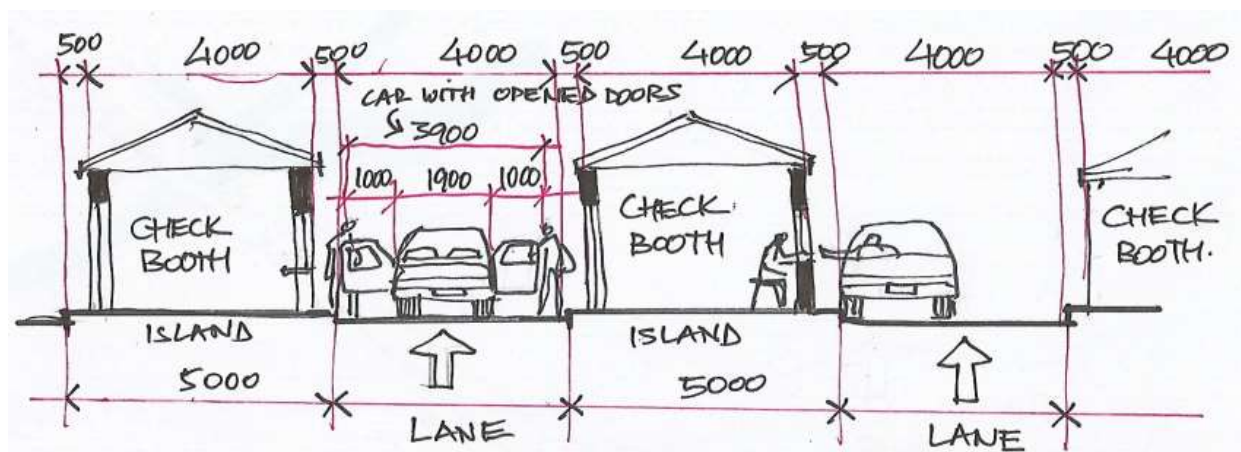
*Elevated check booths sample for trucks and buses.*





- Check booth isles to be 5.0 m wide to allow for the angled car parking behind the check booth for cars requiring a secondary inspection. This way such cars will not be obstacles on the lane and guarantee a steady flow of vehicles.
- Reverse traffic option created on the car's lanes. This requires the angled car parking on the opposite side of the check booths. See also Appendix 4
- Proposed documents control on the car lanes does not require the driver to step out of his vehicle. See Report by Radomir Djuric for detail description of these procedures.

The lane width between the check booths allows for a car with doors open at both sides to be inspected by the Border Officer and decide to release the vehicle, or direct to the angled parking space for a secondary inspection. Lane remains clear for the next car.





Using ALPR/ANPR and MSR (Mobile Passport Readers) will guarantee Border security and significantly increase the processing speed.



*Mobile Passport Reader for bus passengers*

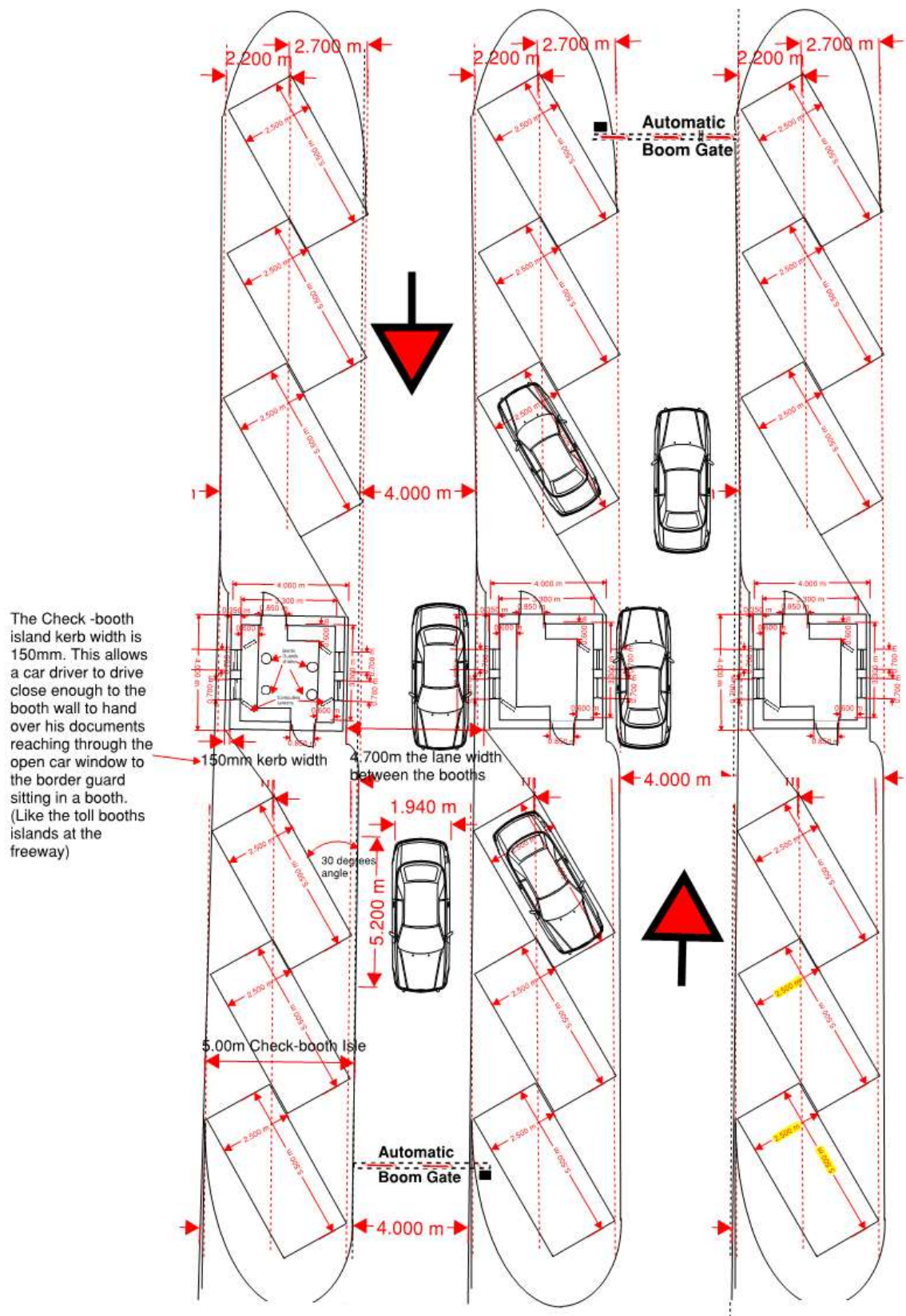


*Automatic Licence Plate Recognition*

Example of the 'falling leaves' or rainbow type of traffic lanes arrangement on a large-scale Laredo BCP, Texas USA.



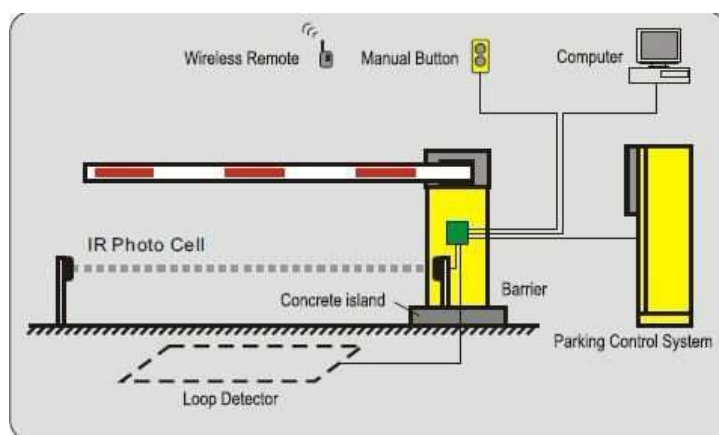
Traffic lanes and processing/checking islands arrangement for the improved traffic arrangement to all 4 BCP's (Ak-Jol & Korday and Ak-Tilek & Kara-Suu).





#### 4.3.4. Boom gates.

All existing boom gates are to be removed. New ones to be located at the end of each car's secondary inspection angled parking bays – see page above. Upon completion of the entry check the Border Officer of the entry country will open the automated boom gate.



*Automatic boom gate sample*

#### 4.3.5. Radiation Portal Monitors.

These are installed on the existing BCP on inbound and outbound direction. It is proposed to keep them where they would not obstruct the new dedicated traffic lanes arrangement, or remove and re-install them where required.

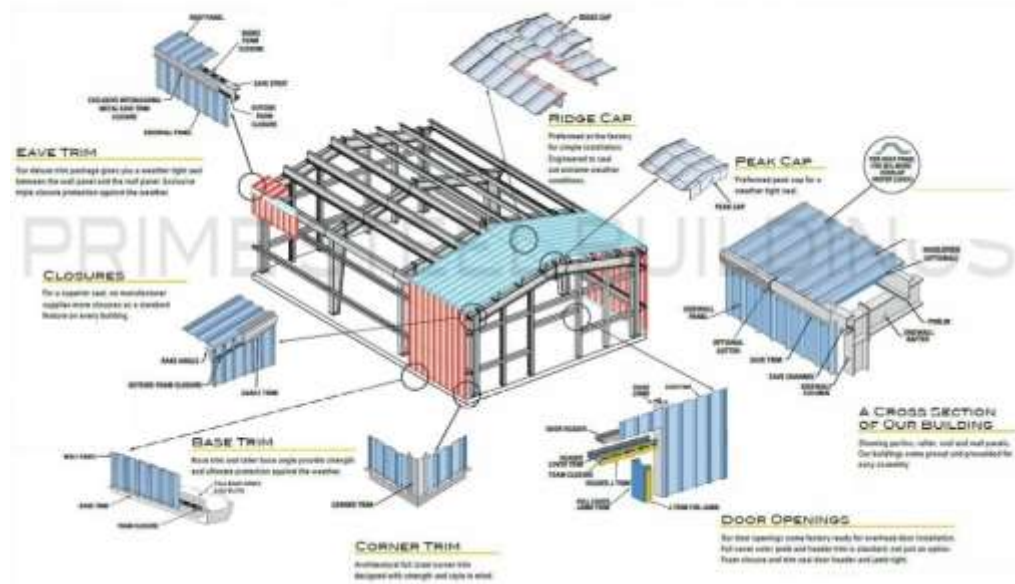


#### 4.3.6. Secondary Inspection facilities for buses.

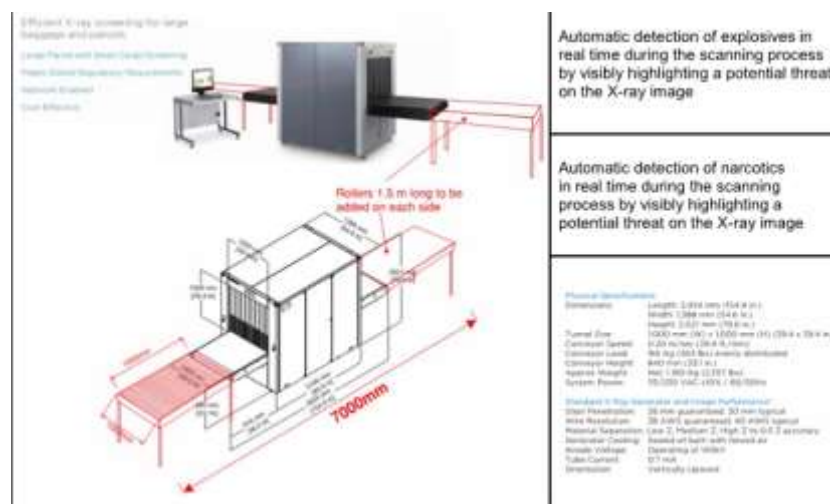
They are proposed to be located adjacent to the bus parking bays to facilitate the inspections. The large baggage X-Ray scanners and Cargo X-Ray conveyor for trucks (10T max) are to be installed in them. Staff and customers sanitary facilities are to be included as well. Metal framed and clad warehouse should be used for these facilities.

Thermal insulation should be provided to comply with the local health and buildings' standards requirements.





Secondary Inspection warehouse for buses/trucks



Cargo X-Ray Scanners inside the Secondary Inspection warehouse

- Cargo X-ray conveyor scanner for oversized bags up to 3000kg weight:



#### 4.3.7. Canopy over the new check booths

Limited protection against the weather conditions should be provided in the Primary Inspection area where the check booths are located. At least part of the Secondary Inspection angled car parking bays should also be under the canopy. It is proposed to use the standard galvanized metal space frame roofing – Kislovodsk, or equivalent.



- The front of the canopy should contain the basic information for the drivers and indicate the lanes to select. This is important when during the peak traffic time a mutual decision of both BCP's traffic control officers is made to increase the number of lanes in one direction by reducing their number in the opposite direction. Above head signs on the canopy will update this changed traffic arrangement accordingly.
- Trucks movement through BCP is controlled by the Passport check that is completed as with the cars. The control cabin should be at the same level as the truck cabin and on the left hand-side. No other documents are to be checked as the BCP is inside the Eurasian Customs Union, not at the external border and carnet system similar to TIR is to be applied.

#### 4.4. Proposed traffic to the border line Kyrgyz Republic-Kazakhstan on the bridge

- The area between the BCP facilities and the border line on the Chuy River is large enough to accommodate the proposed 8 vehicular traffic and the pedestrian passages at the outside of external lanes for buses/trucks.
- The existing reinforced concrete bridge carriageway has sufficient width for 8 vehicular lanes – 4 each way with the pedestrian passages alongside bridge side shoulders/edge

## 5. PRELIMINARY COST ESTIMATE AK-JOL BCP IMPROVEMENTS

PROPOSED AK-JOL BCP IMPROVEMENTS - PRELIMINARY COST ESTIMATE TO BE VERIFIED AT THE DESIGN STAGE						
Item	Description	Unit	Quantity	Rate per Unit (KGS)	Total Cost (KGS)	Total Cost (US\$)
1	Existing Pedestrian Processing barracks -disassembling	m2	150	1,500.00	225,000.00	USD 3,262.50
2	Proposed Pedestrian Processing barracks -assembling	m2	62	3,500.00	217,000.00	USD 3,146.50
3	Proposed approach area - 8cm asphalt concrete on 15cm base and 30cm compacted subbase	m2	8,883	2,900.00	25,760,700.00	USD 373,530.15
4	Repairs to existing asphalt concrete departure area - up to the boundary line	m2	4,537	1,450.00	6,578,650.00	USD 95,390.43
5	Secondary Inspection warehouse for buses including heating, plumbing, electrical, fire protection	m2	160	4,000.00	640,000.00	USD 9,280.00
6	Proposed check booths 4 x 4 m	m2	128	11,000.00	1,408,000.00	USD 20,416.00
7	Proposed space framed canopy over the new processing area (Kislovodsk or equivalent) - incl.footing and supports	m2	2,500	10,000.00	25,000,000.00	USD 362,500.00
8	Proposed Pedestrian passage 3.0m wide - up to the boundary line (fenced and roofed)	m	2,100	2,000.00	4,200,000.00	USD 60,900.00
9	Pedestrian walkway 10cm thick r.c. slab on compacted base	m2	1,720	1,200.00	2,064,000.00	USD 29,928.00
<b>Total</b>					<b>KGS 66,093,350.00</b>	<b>USD 958,354.00</b>
		1KGS	0.0145	US\$		

This is a preliminary cost estimate based on the conceptual layouts for the BCP improvements. The construction costs rates are based on the current construction costs in Bishkek. The costs have to be revised at the design stage.

Road cost per sqm was adopted from the ADB source:

Kyrgyz Republic: CAREC Transport Corridor 1

(Bishkek -Torugart Road) Project August 2008



KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS

Bishkek-Naryn-Torugart Road Rehabilitation Project

Package 2: km 288 - km 400

Cost of 67 km

Item	Description	Amount US\$
1	General Items	2 425 660.00
2	Control of Works and Materials	119 123.44
3	Earth Works	5 533 095.10
4	Drainage Works	1 183 327.86
5	Pavement Works	19 219 950.98
6	Bridge Works	18 291.28
8	Road Furniture	2 835 074.99
9	Miscellaneous Works	71 704.00
10	Schedule of Dayworks	140 089.60
	Labour	5 785.00
	Materials	109 705.00
	Equipment	24 599.60
	SUBTOTAL	31 757 616.38
	Contingency 10 = %	3 175 761.64
	TOTAL	34 933 377.99

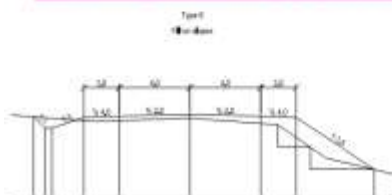
Cost Estimate for Package 2 (120 km)

Item	average cost per 1 km	Cost of 120 Road
General Items		2 425 660.00
Control of Works	1 832.67	210 920.20
Earth Works	85 132.23	10 215 867.88
Drainage Works	18 358.88	2 203 066.82
Pavement Works	285 691.54	35 482 984.76
Bridge Works	281.46	33 768.53
Road Furniture	43 628.85	5 235 461.51
Miscellaneous Works	1 193.14	132 276.62
Schedule of Dayworks		140 089.60
Labour		
Materials		
Equipment		
SUBTOTAL		56 289 195.91
Contingency 10 = %		5 628 919.59
TOTAL		61 918 115.50

Average cost per 1 km

515 964.30

Road with including shoulders is 12m. 1km= 1000m  
= 1000m x 12m = 12,000m<sup>2</sup>  
1m<sup>2</sup> cost = \$ 515,985/12,000 = \$ 43/m<sup>2</sup>



KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS

Bishkek-Naryn-Torugart Road Rehabilitation Project

Package 1: km 400 - km 439

N Item	Description	Amount US\$
1	General Items	833 260.00
2	Control of Works and Materials	65 974.00
3	Earth Works	1 817 283.30
4	Drainage Works	426 761.82
5	Pavement Works	11 184 224.20
6	Bridge Works	-
8	Road Furniture	479 897.38
9	Miscellaneous Works	-
10	Schedule of Dayworks	15 987.40
	Labour	200.50
	Materials	19 789.50
	Equipment	5 997.40
	SUBTOTAL	14 843 348.02
	Contingency 10 = %	1 484 330.80
	TOTAL	16 327 678.82

Average 1 km cost

418 657.41



1 km=1,000m x 12m total road width = 12,000m<sup>2</sup>  
1m<sup>2</sup> = \$ 418,658/12,000 = \$ 34.9 /m<sup>2</sup>

The road construction cost rate of US\$ 42/m<sup>2</sup> is used in the Cost Estimate

## 6. EXISTING AK-TILEK BCP






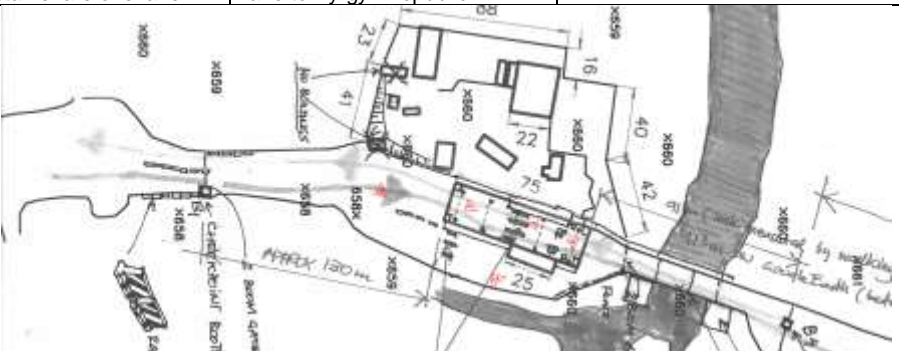
### 6.1. Operational services at Ak-Tilek BCP

The access road is asphalted dual carriageway, in reasonably good repair, with two wide lanes in each direction. The road is slightly curved to the right, in the northbound (exit from Kyrgyz Republic) direction. Approximately 130 meters before the actual Kyrgyz Republic control building, the road is divided into two by hard concrete blocks and towards the control facility, two manually operated boom gates are installed. Two Kyrgyz Border Officers stop and release traffic towards and from the control facility. This is the only Checkpoint with boom gates at Ak-Tilek.

### 6.2. BCP facilities current layout

The main Control Area is located under the large 'Kislovodsk' metal space frame canopy – See plan in Appendix 5. It consists of one inbound lanes and two outbound lanes with the pedestrian processing facilities located at both sides. Part of the administration offices are located inside the pedestrian processing facilities. Remaining offices are outside the Main Control area in other buildings on site. Outbound & inbound pedestrians have a fenced and roofed passage running alongside the canopy side perimeter. These passages terminate at both ends of the canopy. Outbound pedestrians have to cross the lanes to get to the passage across the bridge, which is only on the inbound side (people coming from Kazakhstan). The western outer part of the BCP control zone is fenced and behind the fence there are Border Guards auxiliary administrative buildings and staff parking. The eastern BCP perimeter with the cement factory trucks lanes is also fenced.

Table below shows photos Ak-Tilek BCP taken during the Field Work 23-30 Sept.2018

			
1. One lane shared by cars, buses and trucks (excluding cement factory trucks) from Kazakhstan	2. Trucks (excluding cement factory trucks) and buses to Kazakhstan share one lane	3. Two outbound lanes to Kazakhstan and one inbound lane to Kyrgyz Republic	10. One inbound and one outbound lane
			
14. Cement factory trucks lanes bypassing the BCP Main Processing facilities			

### 6.3. BCP facilities current vehicular movements arrangement

Buses and trucks are currently the predominant type of the vehicular traffic in this BCP.

In the Questionnaire completed by the Kyrgyz Border Guards and Kazakh Border Guards for 2017 out of over 200,000 vehicles 62% were buses and trucks.





Radiation Portal Monitors on outbound and inbound direction are placed before vehicles enter the BCP control facilities. This is a correct arrangement for the security reason.





The current operational arrangements for traffic control and traffic management on each BCP are clearly visible on this site plan. In theory the vehicles should have been using their dedicated lanes – as it is shown on the site plan. However, it has been noted during the Field Work that they are directed to the first available lane. Trucks delivering limestone rock for the Kyrgyz cement factory bypass the main BCP processing facilities but have to cross three lanes to get to and from the narrow boundary bridge which is only 9.7 m wide.

There is enough space under the canopies on this BCP to create dedicated lanes for each type of vehicles. Cement factory trucks bypassing the major BCP processing facilities will remain, but only at outbound (to Kazakhstan) direction. The inbound direction (to Kyrgyz Republic) will be relocated in order to eliminate the lanes crossing.

#### 6.4. Weight Control Station

Right at the intersection of roads to Bishkek and Kant, on both sides of the road leading to Ak-Tilek, Ministry of Transport operates two weighbridges for all trucks. See Report by Radomir Djuric for this facilities details.

It is proposed that this Truck Weighing Station continues its operation for the improved BCP.

	
<p>Weight Control Station on the road to Ak-Tilek BCP</p>	<p>Trucks Weight Control Station at the intersection of roads to Bishkek and Kant</p>
	
<p>Weight Control Station with a Single-Axle Weighbridge for Dynamic Weighing and Versatile Load Management</p>	<p>Weight Control Stations on both directions</p>

## 7. PROPOSED AK-TILEK BCP IMPROVEMENTS

### 7.1. Operational services at Ak-Tilek

Both countries are members of the CIS and EAEU and contribute to the development of the big regional market that unites more than 180 million people.

In addition, both Kyrgyz Republic and Kazakhstan are contracting parties to the UNECE International Convention on the Harmonization of Frontier Controls of Goods (1982).

Logistics Report by Radomir Djuric addressed the proposed operational changes to the BCP procedures in order to eliminate the traffic congestion and slowing of the movement through the BCP processing. These changes will facilitate the introduction of the OSS Joint Integrated Road BCP. This would require a cooperation between MEDT and MTC of both countries.

BCP facilities proposed vehicular movements arrangement.

The major part of the proposed changes is to create dedicated lanes for each type of the vehicular traffic and separated pedestrian movements through the BCP.

Number of the lanes is based on the current traffic data and the anticipated growth of trade between these two countries and the transit cargo movement – see Report by Radomir Djuric for details.

‘Fit for purpose’ approach has been adopted in this proposal, therefore efforts are made to keep as many of the existing BCP facilities and building structures as possible.

### 7.2. BCP proposed facilities and traffic arrangement

Large canopy matching the existing one is proposed to allow for the control facilities for the dedicated vehicular lanes. Traffic management description is addressed in a separate Report. See Appendix 8 for traffic management in two Options. To illustrate it better they are also superimposed on the Google dearth image.

#### 7.2.1. Pedestrians/passengers processing facilities.

There is a very small number of outbound and inbound pedestrians, therefore it is proposed to use the existing pedestrian processing unit for inbound direction as a combined facility for both directions.

		
Existing inbound pedestrians processing unit -proposed to serve both directions	Existing entry to pedestrian passage. This passage to be diverted to allow for the proposed cement factory trucks inbound lane	Existing passage to the border bridge to remain.

Necessary refurbishment of this unit is required because it also holds some BCP offices. Some of them have to be moved outside the main BCP area.

All existing check booths to be removed to clear the space for the dedicated vehicular lanes.

Drivers processing will be done at the new check booths located on the islands between the lanes.

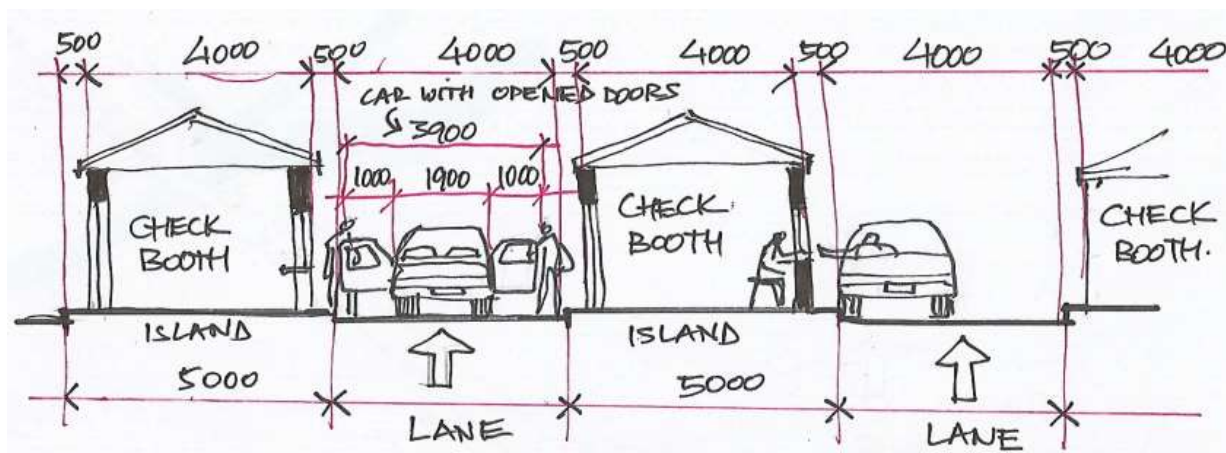
### 7.2.2. New joint check booths

The check booths are proposed to be large enough for two Border Officers – one Kyrgyz and one Kazakh.

Check booths for buses/trucks to have the Border Officer seat at the level of the truck/bus driver seat. These two vehicles have drivers' seats at different levels; truck driver seat height @1.80 from the ground and bus/coach driver seat & 1.5m from the ground so an average Border Guard seat height of 1.65m from the ground is adopted. The check booth floor is 1.2m from the ground (deducting the chair height of 0.45m from the seat height).

See clause 3.1.1 for details

- Check booth isles to be 5.0 m wide to allow for the angled car parking behind the check booth for cars requiring a secondary inspection. This way such cars will not be blocking the lane and guarantee a steady flow of vehicles.
- Proposed documents control on the car lanes does not require the driver to step out of his vehicle. See Report by Radomir Djuric for detail description of these procedures.



Using ALPR/ANPR and MSR (Mobile Passport Readers) will guarantee Border security and significantly increase the processing speed.





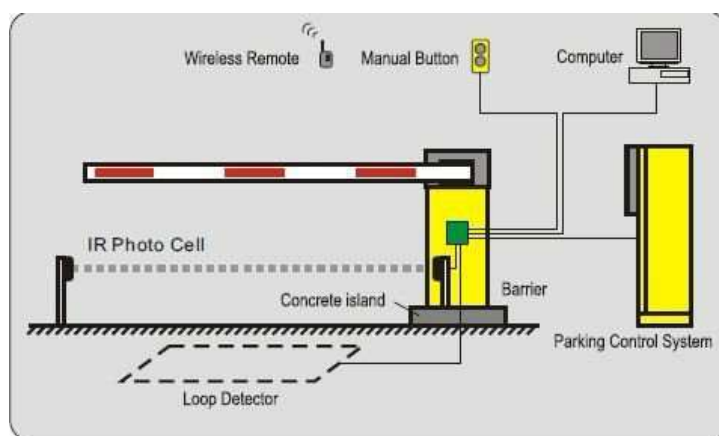
*Mobile Passport Reader for bus passengers*



*Automatic Licence Plate Recognition*

### 7.2.3. Boom gates.

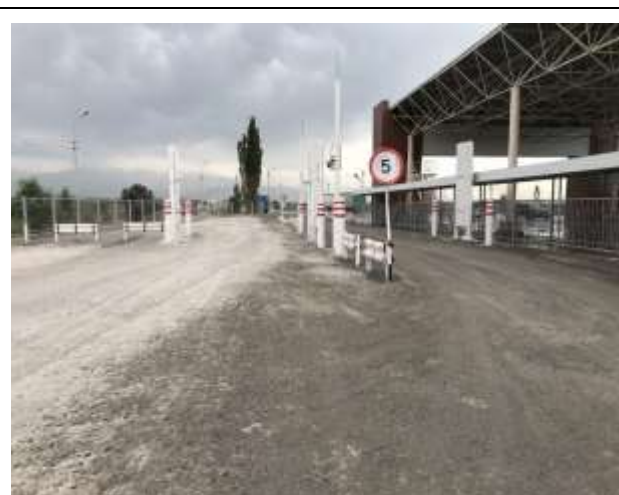
All existing boom gates are to be removed. New ones to be located at the end of each car's secondary inspection angled parking bays – see page above. Upon completion of the entry check the Border Officer of the entry country will open the automated boom gate.



*Automatic boom gate simple*

### 7.2.4. Radiation Portal Monitors.

These are installed on the existing BCP on inbound and outbound direction. It is proposed to keep them where they would not obstruct the new dedicated traffic lanes arrangement, or remove and re-install them where required.



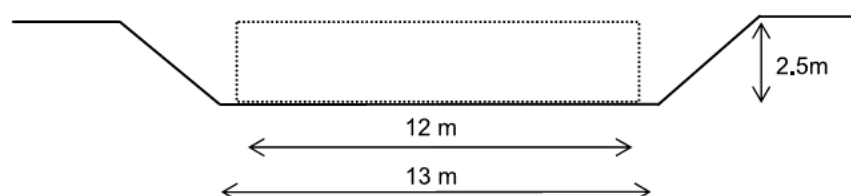
Existing RPM's under the canopy to remain

Existing RPM's for cement trucks to remain

### 7.2.5. Bus bays

To be located close to the Secondary Inspection warehouse to allow the passengers to disembark and take their luggage to the X-ray scanners.

Pick-up/  
Drop-off Point



### 7.2.6. Secondary Inspection facilities for buses

They are proposed to be located adjacent to the bus parking bays to facilitate the inspections. The large baggage X-Ray scanners and Cargo X-Ray conveyor for trucks (10T max) are to be installed in them. Staff and customers sanitary facilities are to be included as well. Metal framed and clad warehouse should be used for these facilities.

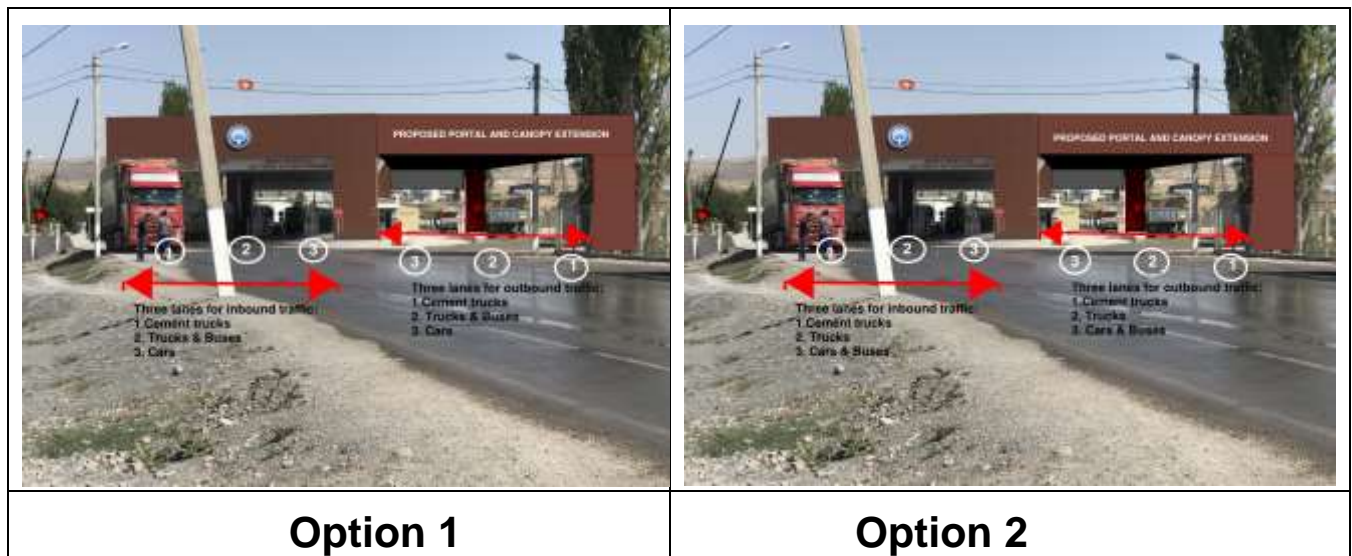
For details see Ak-Jol BCP Clause 3.1.1

### 7.2.7. Canopy over the extended main processing facilities.

It is proposed to use the standard galvanized metal space frame roofing – Kislovodsk, or equivalent and match the existing image.

Existing large metal framed and powder coated metal sheets clad portals at Kyrgyz and Kazakh ends of the canopy should be repeated for the canopy extension





The front of the canopy should contain the basic information for the drivers and indicate the lanes to select. Two options of separating traffic lanes are proposed.

### Option 1

Three lanes in each direction:

- Lane 1 - Cement trucks
- Lane 2 - Trucks & Buses
- Lane 3 – Cars

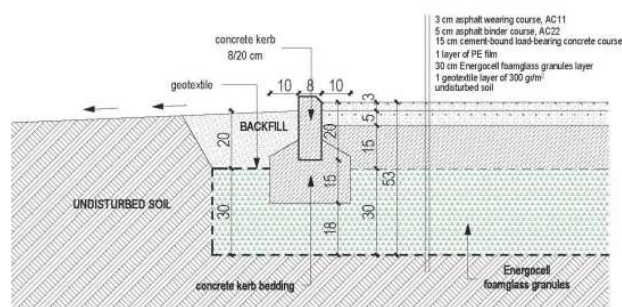
### Option 2

Three lanes in each direction:

- Lane 1 – Cement trucks
- Lane 2 – Trucks
- Lane 3 – Cars and Buses

Detail of the traffic lanes under the canopy -See Appendix 7

Proposed traffic lanes for the extended main processing facility and additional lane on the western side of the existing facilities to be constructed with asphalt concrete wearing course to the Kyrgyz Republic road design standards.





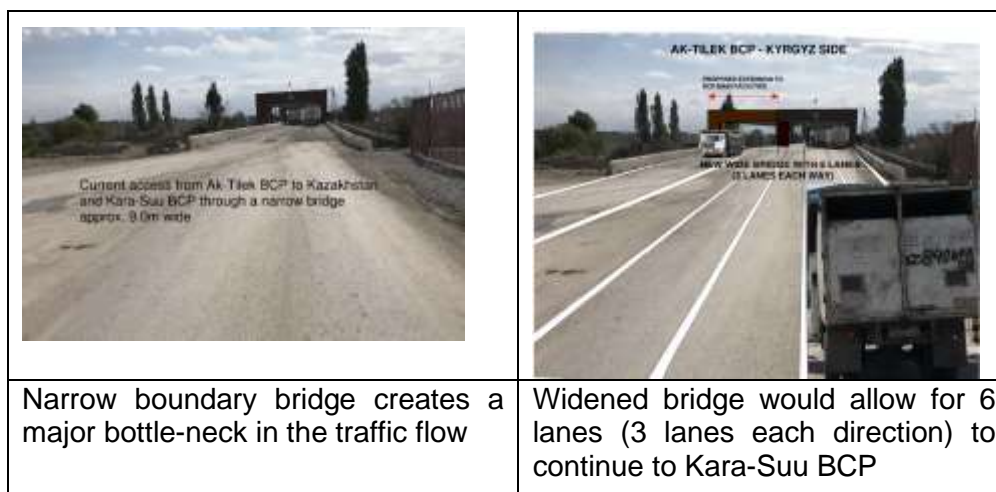
The canal on the eastern side of the BCP Main Processing facilities located under the canopy has to be constructed as the reinforced concrete box culvert in order to allow for the canopy extension.



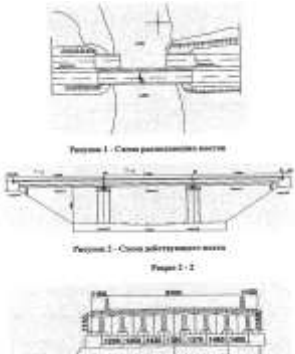



- Trucks movement through BCP is controlled by the Passport check that is completed as with the cars. The control cabin should be at the same level as the truck cabin and on the left hand-side. No other documents are to be checked as the BCP is inside the Eurasian Customs Union, not at the external border and carnet system similar to TIR is to be applied.

Complete layout for the new Ak-Tilek traffic arrangement -See Appendix 8

### 7.2.8. Proposed traffic to the border line Kyrgyz Republic-Kazakhstan across the bridge



 <p>BRIDGE WIDENING ABUTMENT ON KYRGYZ SIDE</p>	 <p>BRIDGE WIDENING ABUTMENT ON KAZAKH SIDE</p>
<p>Bridge widening abutment on the Kyrgyz side</p>	<p>Bridge widening abutment on the Kazakh side</p>
 <p>Рисунок 1 - Схема планировки моста Рисунок 2 - Схема разреза моста Рисунок 2 - 2</p>	 <p>RADIATION PORTAL MONITORS ON THREE LANES TO REMAIN</p>
<p>Existing bridge plans showing the abutments and the first span for a second bridge. This second bridge construction has been abandoned</p>	<p>Three lanes remain under the canopy with RPM's that do not obstruct the traffic.</p>

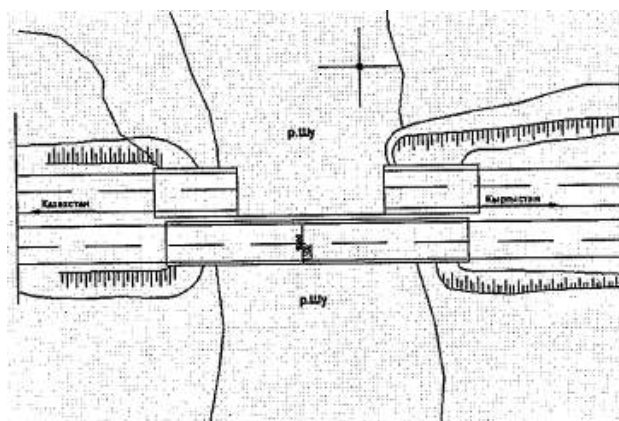
## 7.2.9. Proposed bridge to have six vehicular lanes.

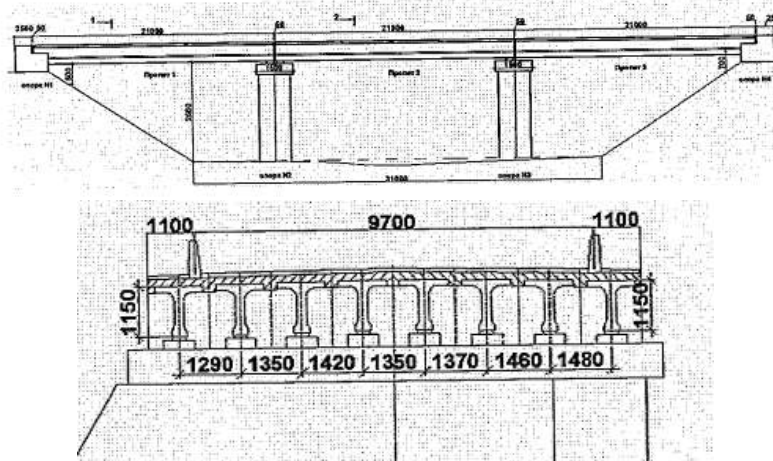
See Appendix 9.

Two preferences are proposed for the new bridge:

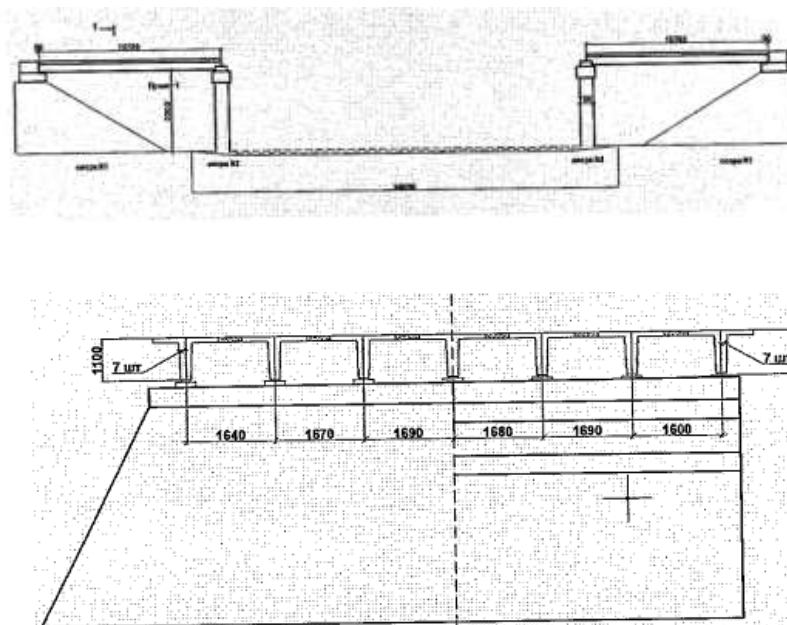
### 7.2.9.1. Bridge Preference 1

- Existing bridge 9.7m wide to remain subject to its technical appraisal. The bridge was designed by 'Kyrgyzdorostransproject' and constructed in 1962-1963





- Existing abutments and the first spans 16.76m long and 9.97m wide at each side of the unfinished bridge to be demolished. These bridge sections were constructed in 1983.



Completion of this bridge with 9.97m clear width would only allow for 3 lanes @ 3.3m wide. Such lane width is not suitable for the commercial semi-trailers.

- New bridge 68.2m long, with 16.0m clear width for 4 lanes @ 4.0m wide. Proposed cost-effective type is a bridge with steel truss girders and cast in situ deck slab. See Appendix 8.

Other bridge types should be considered for local conditions and technical capabilities:

- Concrete Deck and Pre-stressed Girders
- Concrete Deck and Steel Box Girders
- Segmented Concrete Box Girders

New bridge would have to be constructed where the abutments for the abandoned bridge are - for the two joint bridges to have 6 lanes:



2 lanes @ 4.85m wide on the old bridge and 6 lanes @ 4.0m wide on the new bridge.



Examples of similar bridge design concept.

#### 7.2.9.2. Bridge Preference 2

- Existing bridge to remain during the construction of the new bridge and to be demolished when the new bridge passed the technical tests and become operational.
- Existing unfinished bridge to be demolished
- New bridge 68.2m long, with 24.0m clear width for 6 lanes @ 4.0m wide to be constructed. Proposed cost-effective type is a bridge with steel truss girders and cast in situ deck slab. See Appendix 8.

Both options are included in the Preliminary Cost Estimates.

- The area between the BCP facilities and the border line on the Chuy River is wide enough to accommodate the proposed 6 vehicular traffic and the combined pedestrian passage for both direction at the outside of external inbound (to Kyrgyz Republic) lane for cement trucks.

This number of lanes will continue through the new widened bridge to the Kazakh Kara-Suu BCP. See Appendix 8.

## 8. PRELIMINARY COST ESTIMATE AK-TILEK BCP IMPROVEMENTS

This is a preliminary cost estimate based on the conceptual layouts for the BCP improvements.

The construction costs rates are based on the current construction costs in Bishkek. The costs have to be revised at the design stage.

Total cost of the new bridge construction is shown in these estimates. This cost is also included in the Kazakh Report. Relevant Authorities in both countries may decide about the cost sharing.

Road cost per sqm was adopted from the ADB source:

Kyrqyz Republic: CAREC Transport Corridor 1

(Bishkek -Torugart Road) Project

August 2008

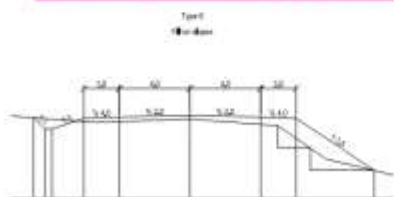
KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS		
Bishkek-Naryn-Tengri Road Rehabilitation Project		
Package 2: km 288 - km 400		Cost of 67 km
Items	Description	Amount US\$
1	General Items	2 625 660,00
2	Control of Works and Materials	119 123,44
3	Earth Works	5 533 595,10
4	Drainage Works	1 183 327,86
5	Pavement Works	19 219 950,08
6	Bridge Works	18 291,28
8	Road Furniture	2 835 674,99
9	Miscellaneous Works	71 704,00
10	Schedule of Dayworks	140 089,60
	Labor	5 785,00
	Materials	169 705,00
	Equipment	26 599,60
	<b>SUBTOTAL</b>	<b>31 757 616,35</b>
	<b>Contingency 10 %</b>	<b>3 175 761,64</b>
	<b>TOTAL</b>	<b>34 933 377,99</b>

**Cost Estimate for Package 2 (120 km)**

Item	average cost per 1 km	Cost of 1 km Road
General Items		3 625 660,36
Control of Works	1 832,67	210 929,26
Earth Works	85 132,23	10 215 867,88
Drainage Works	18 358,89	2 203 066,82
Pavement Works	295 691,54	35 482 984,76
Bridge Works	281,46	33 768,53
Road Furniture	40	5 235 461,51
Miscellaneous Works	1 103,14	132 376,62
Schedule of Dayworks		140 089,60
Labor		
Materials		
Equipment		
<b>SUBTOTAL</b>		<b>56 289 195,81</b>
Contingency 10 = %		5 628 919,59
<b>TOTAL</b>		<b>61 918 115,40</b>

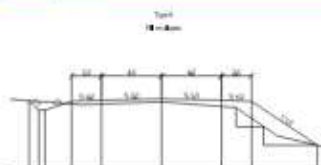
Average cost per 1 km	515 964,30
-----------------------	------------

Road with including shoulders is 12m. 1km= 1000m  
 $= 1000\text{m} \times 12\text{m} = 12,000\text{m}^2$   
 1m<sup>2</sup> cost = \$ 515,985/12,000 = \$ 43/m<sup>2</sup>



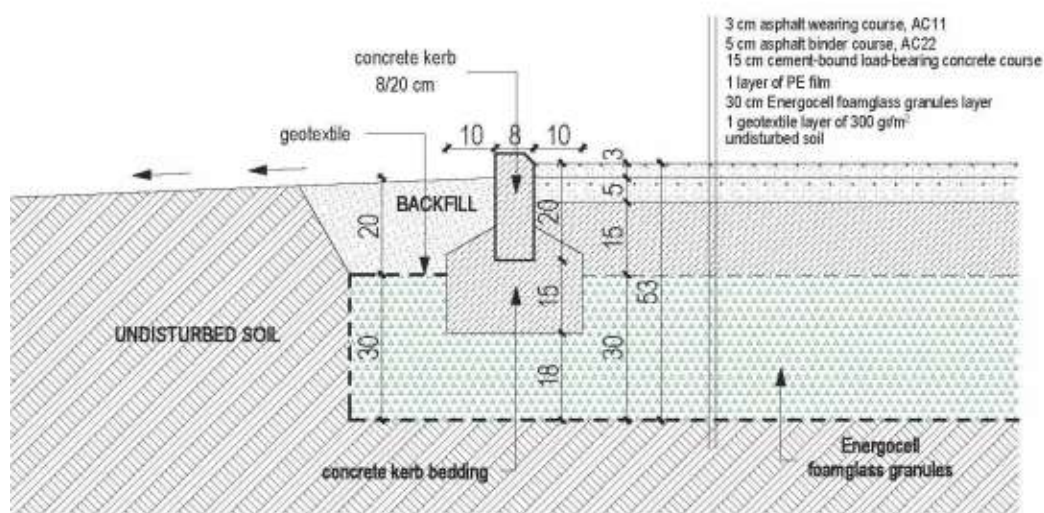
KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS		
Bishkek-Naryn-Torogart Road Rehabilitation Project		
Package 1: km 480 + km 439		
N Item	Description	Amount US\$
1	General Items	833 240,00
2	Control of Works and Materials	65 974,00
3	Earth Works	1 827 283,36
4	Drainage Works	426 761,82
5	Pavement Works	11 184 224,20
6	Bridge Works	-
8	Road Furniture	479 897,30
9	Miscellaneous Works	-
10	Schedule of Dayworks	25 907,40
	Labour	200,54
	Materials	19 709,50
	Equipment	5 997,40
	SUBTOTAL	14 843 308,02
	Contingency 10 - %	1 484 330,89
	TOTAL	16 327 638,91

Average 1 km cost	418 657.41
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1 km=1,000m x 12m total road width = 12,000m<sup>2</sup>  
1m<sup>2</sup> = \$ 418.658/12,000 = \$ 34.9 /m<sup>2</sup>

The road construction cost rate of US\$ 42/m<sup>2</sup> is used in the Cost Estimate



Sample of the road cross section

Bridge construction costs per sqm was based on the US Bridge Development Report of July 2007.

New Construction (2005 Cost Per Square Foot)		
Bridge Type	Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab Simple Span*	\$110	\$130
Precast Concrete Slab Simple Span*	\$125	\$175
Reinforced Concrete Flat Slab Continuous Span*	NA	
Medium Span Bridges:		
Concrete Deck/ Steel Girder • Simple Span*	\$95	\$125
Concrete Deck/ Steel Girder • Continuous Span*	\$105	\$170
Concrete Deck/ Prestressed Girder • Simple Span	\$85	\$125
Concrete Deck/ Prestressed Girder • Continuous Span	\$95	\$135
Concrete Deck/ Steel Box Girder – Span Range from 150' to 280' (for curvature, add a 15% premium)	\$125	\$175
Segmental Concrete Box Girders • Cantilever Construction, Span Range from 150' to 280'	\$130	\$160
Movable Bridge • Bascule Spans and Piers	\$1000	\$1,400
Demolition Cost:		
Typical	\$25	\$50
Bascule	\$50	\$65
Project Type	Low	High
Widening (Construction Only)	\$110.00	\$140.00
* Increase the cost by twenty percent for phased construction.		

\* Increase the cost by twenty percent for phased construction.

Note:

US\$ 1200/m<sup>2</sup> for the bridge construction rate has been used in the Cost Estimate

US\$ 278/m<sup>2</sup> for the bridge demolition rate has been used in the Cost Estimate

## Option 1

PROPOSED AK-TILEK BCP IMPROVEMENTS - OPTION 1 -PRELIMINARY COST ESTIMATE						
Preference 1 for the bridge						
Item	Description	Unit	Quantity	Rate per Unit (KGS)	Total Cost (KGS)	Total Cost (US\$)
1	Existing Pedestrian Processing barracks -disassembling	m2	150	1,500.00	225,000.00	3,262.50
2	Proposed approach area and area under the proposed addition to existing canopy- 8cm asphalt concrete on 15cm base and 30cm compacted subbase	m2	6,250	2,900.00	18,125,000.00	262,812.50
3	Secondary Inspection warehouse for buses including heating, plumbing, electrical, fire protection	m2	160	4,000.00	640,000.00	9,280.00
4	Proposed check booths 4 x 4 m	m2	96	11,000.00	1,056,000.00	15,312.00
5	Proposed space framed canopy over the new processing area (Kislovodsk or equivalent) - incl.footing, supports and portals	m2	1,560	10,000.00	15,600,000.00	226,200.00
6	Demolition of existing uncompleted reinforced concrete bridge (abutments and first spans)	m2	167	19,172.41	3,203,656.66	46,453.02
7	Proposed bridge - <b>Preference 1</b> - with steel truss girders and reinforced concrete cast in situ slab: 16.0m wide x 68.2m long	m2	1,091	82,758.62	90,306,206.90	1,309,440.00
8	Proposed Pedestrian passage 3.0m wide - up to the boundary line. Fence divided for inbound and outbound direction 1.5m wide each (fenced and roofed)	m	555	2,000.00	1,110,000.00	16,095.00
9	Pedestrian walkway 10cm thick r.c. slab on compacted base	m2	450	1,200.00	540,000.00	7,830.00
<b>Total</b>					<b>KGS 130,805,864.00</b>	<b>USD 1,896,686.00</b>
		1 KGS	0.0145	US\$		

## Option 2

PROPOSED AK-TILEK BCP IMPROVEMENTS - OPTION 1 -PRELIMINARY COST ESTIMATE						
Preference 2 for the bridge						
Item	Description	Unit	Quantity	Rate per Unit (KGS)	Total Cost (KGS)	Total Cost (US\$)
1	Existing Pedestrian Processing barracks -disassembling	m2	150	1,500.00	225,000.00	3,262.50
2	Proposed approach area and area under the proposed addition to existing canopy- 8cm asphalt concrete on 15cm base and 30cm compacted subbase	m2	6,250	2,900.00	18,125,000.00	262,812.50
3	Secondary Inspection warehouse for buses including heating, plumbing, electrical, fire protection	m2	160	4,000.00	640,000.00	9,280.00
4	Proposed check booths 4 x 4 m	m2	96	11,000.00	1,056,000.00	15,312.00
5	Proposed space framed canopy over the new processing area (Kislovodsk or equivalent) - incl.footing, supports and portals	m2	1,560	10,000.00	15,600,000.00	226,200.00
6	Demolition of existing uncompleted reinforced concrete bridge (abutments and first spans)	m2	167	19,172.41	3,203,656.66	46,453.02
7	Demolition of existing operational reinforced concrete bridge 9.7m wide x 68.2m long	m2	662	19,172.41	12,683,318.62	183,908.12
8	Proposed bridge - <b>Preference 2</b> - with steel truss girders and reinforced concrete cast in situ slab: 24.0m wide x 68.2m long	m2	1,637	82,758.62	135,459,310.34	1,964,160.00
9	Proposed Pedestrian passage 3.0m wide - up to the boundary line. Fence divided for inbound and outbound direction 1.5m wide each (fenced and roofed)	m	555	2,000.00	1,110,000.00	16,095.00
10	Pedestrian walkway 10cm thick r.c. slab on compacted base	m2	450	1,200.00	540,000.00	7,830.00
<b>Total</b>					<b>KGS 188,642,286.00</b>	<b>USD 2,735,314.00</b>
		1 KGS	0.0145	US\$		



## 9. AK-JOL & AK-TILEK BCP'S PROPOSED AUXILLIARY SUPPORT FACILITIES

These facilities may need to be upgraded with the increased traffic and are to be determined at the design stage.

### 9.1. Water tanks and Pumping Station

Underground reinforce concrete tank divided into two parts: for firefighting and potable water. Hydraulic engineer to determine the tank capacity at the next stage of the design development.

### 9.2. Back-up generator

Housed in a separate building for the sound attenuation and security.

### 9.3. Water Tanks and Pumping Station

Underground reinforced concrete tank divided into two parts:

- Water for fire fighting
- Potable water

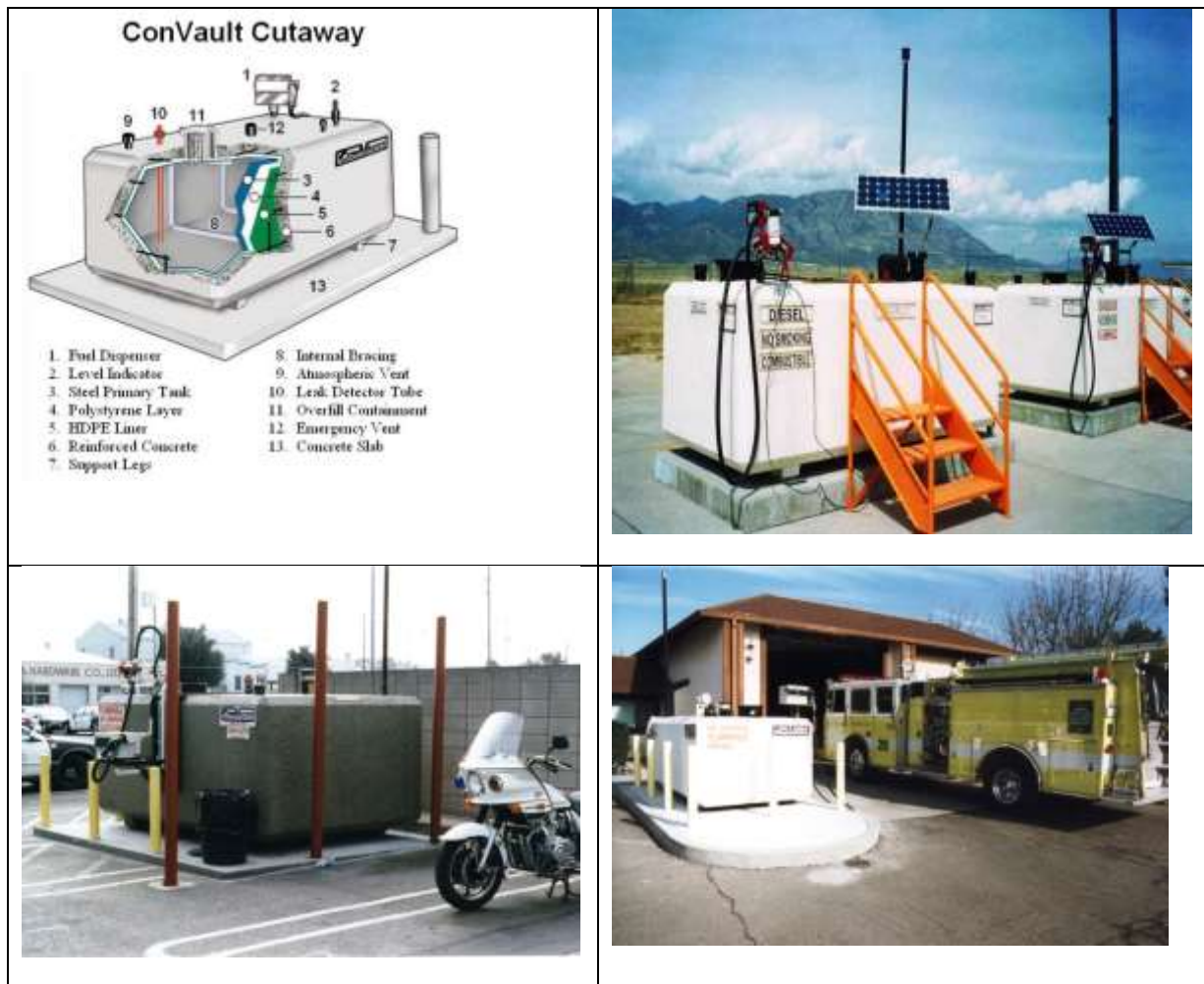
Pumping Station located on top of the tank with submersible pumps

### 9.4. Back-up generator

Diesel powered generator is located in a separate enclosure with masonry loadbearing walls and metal roof frame and sheeting. The provisional power demand estimate that I prepared (Appendix 1) has to be verified by the Electrical Engineer at the next stage of the design development.



Diesel tank is an on-ground reinforced concrete type - ConVault' or similar.  
Tank capacity should provide fuel for the back-up generator.



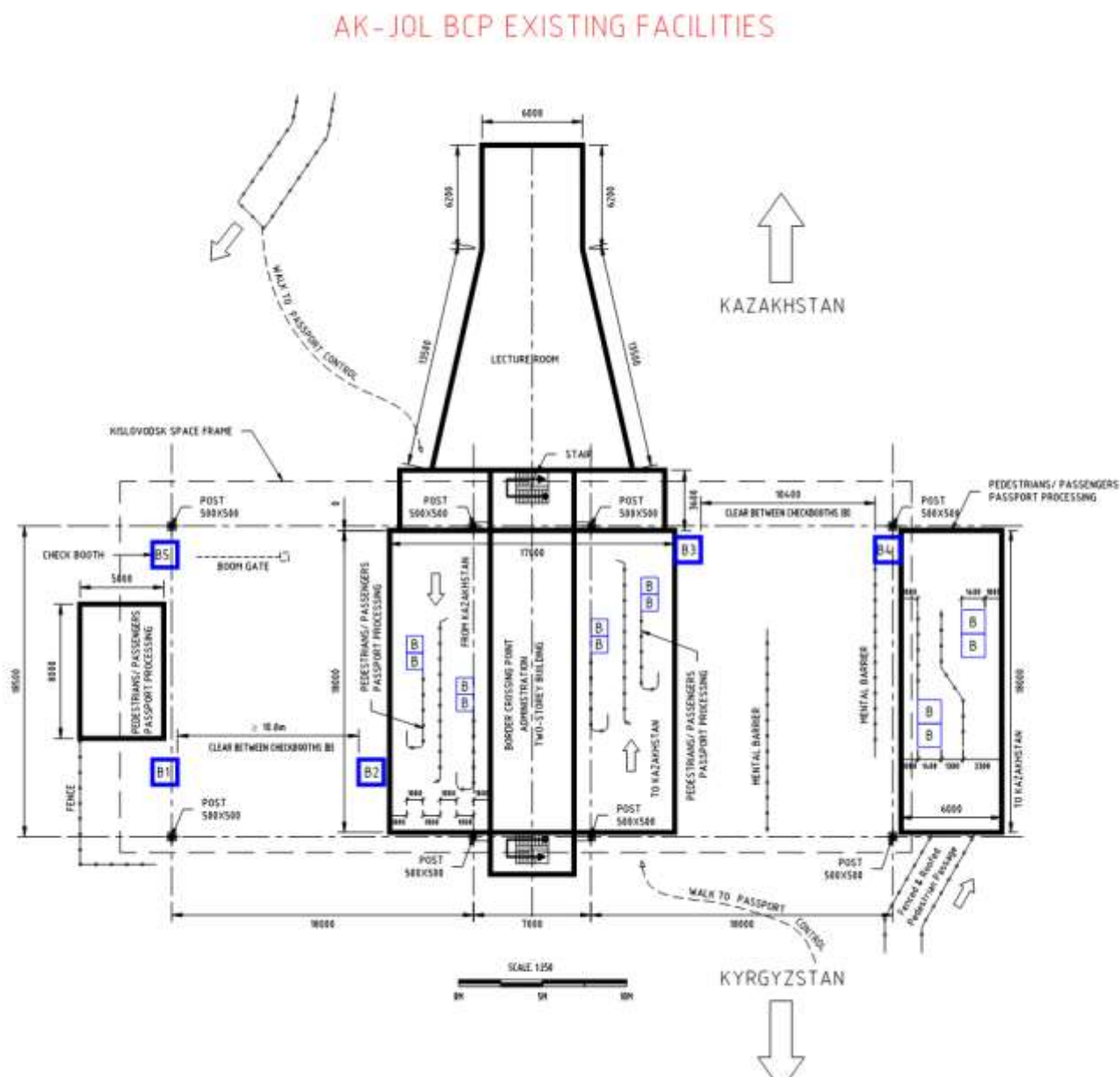
#### 9.4.1. Optional impact attenuators for the check booths islands

Several options are available



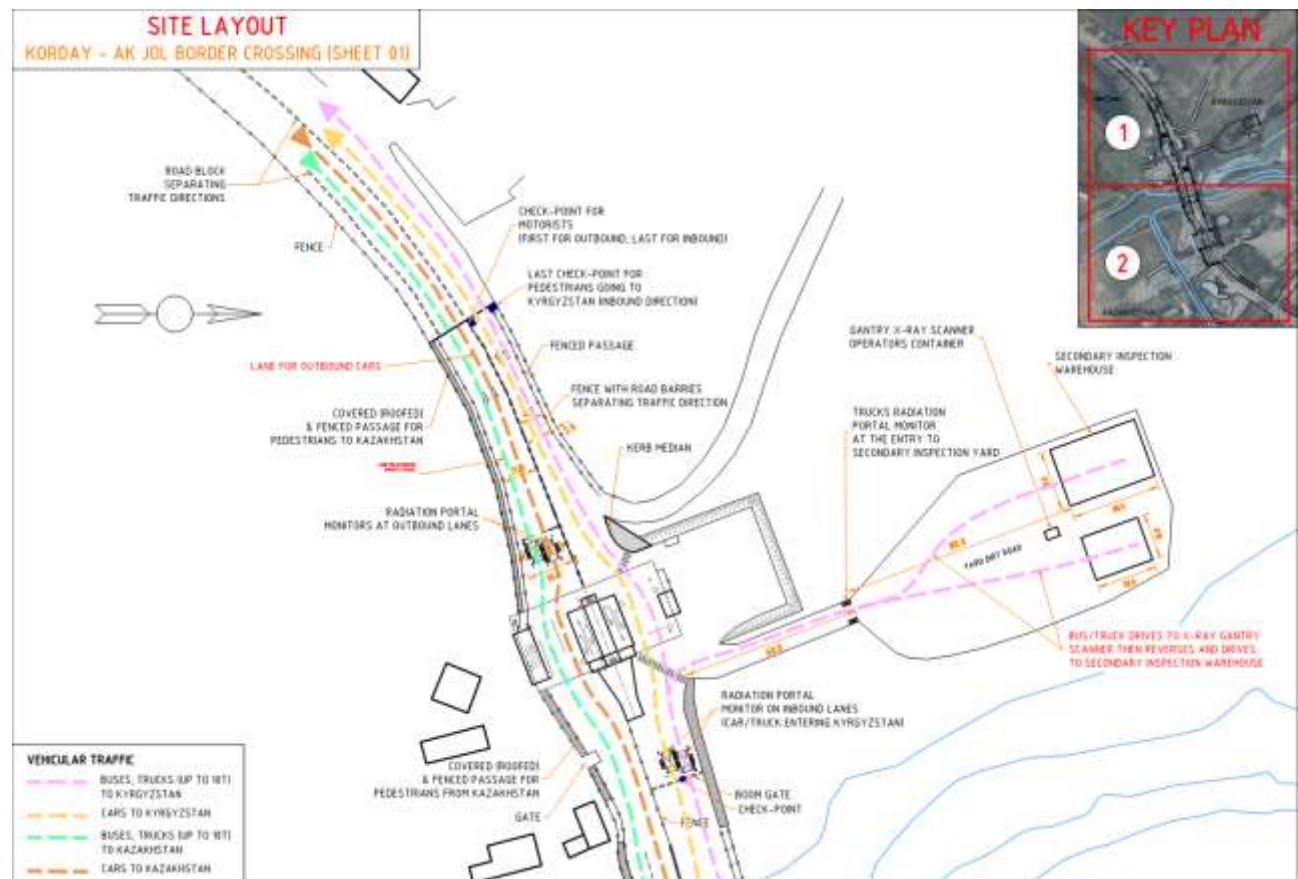
## 10. APPENDIX 1

### Ak-Jol Border Crossing Point – Existing Administration and Processing Facilities (Ground Floor Level)



## 11. APPENDIX 2

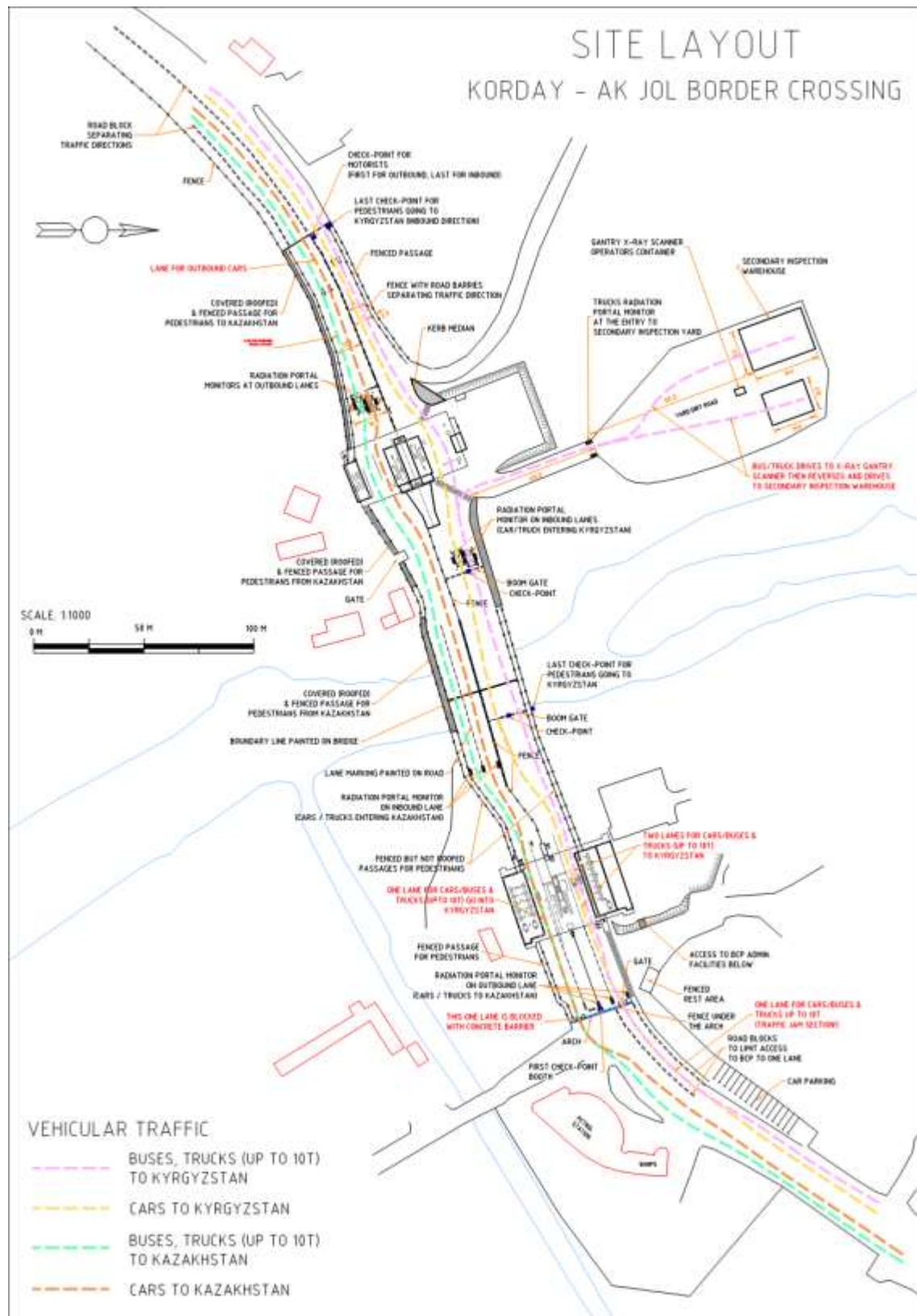
### Ak-Jol Border Crossing Point -current traffic diagram

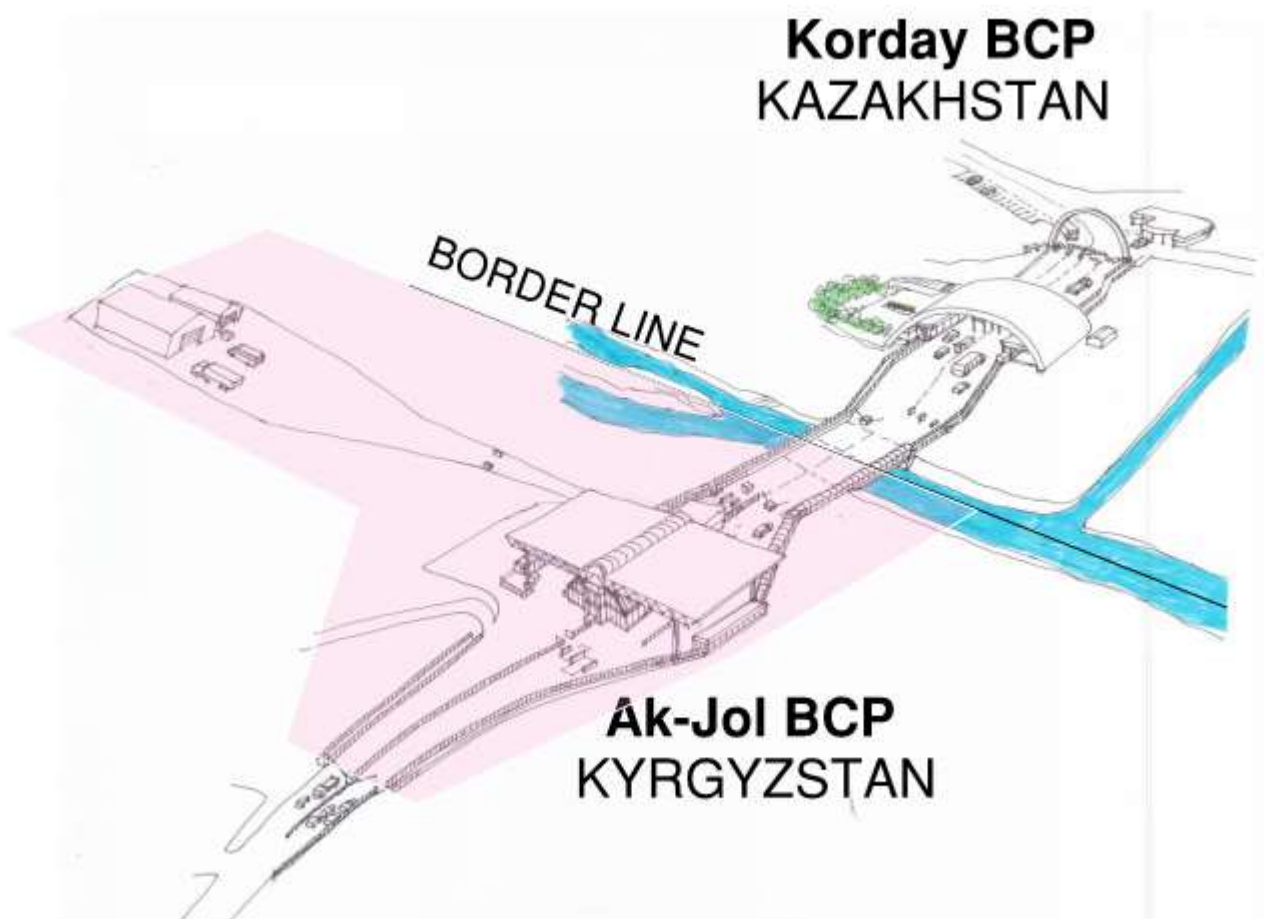




## Complete site plan of border crossing area: Ak-Jol BCP on the Kyrgyz side and Korday BCP on the Kazakh side

### Current traffic diagram



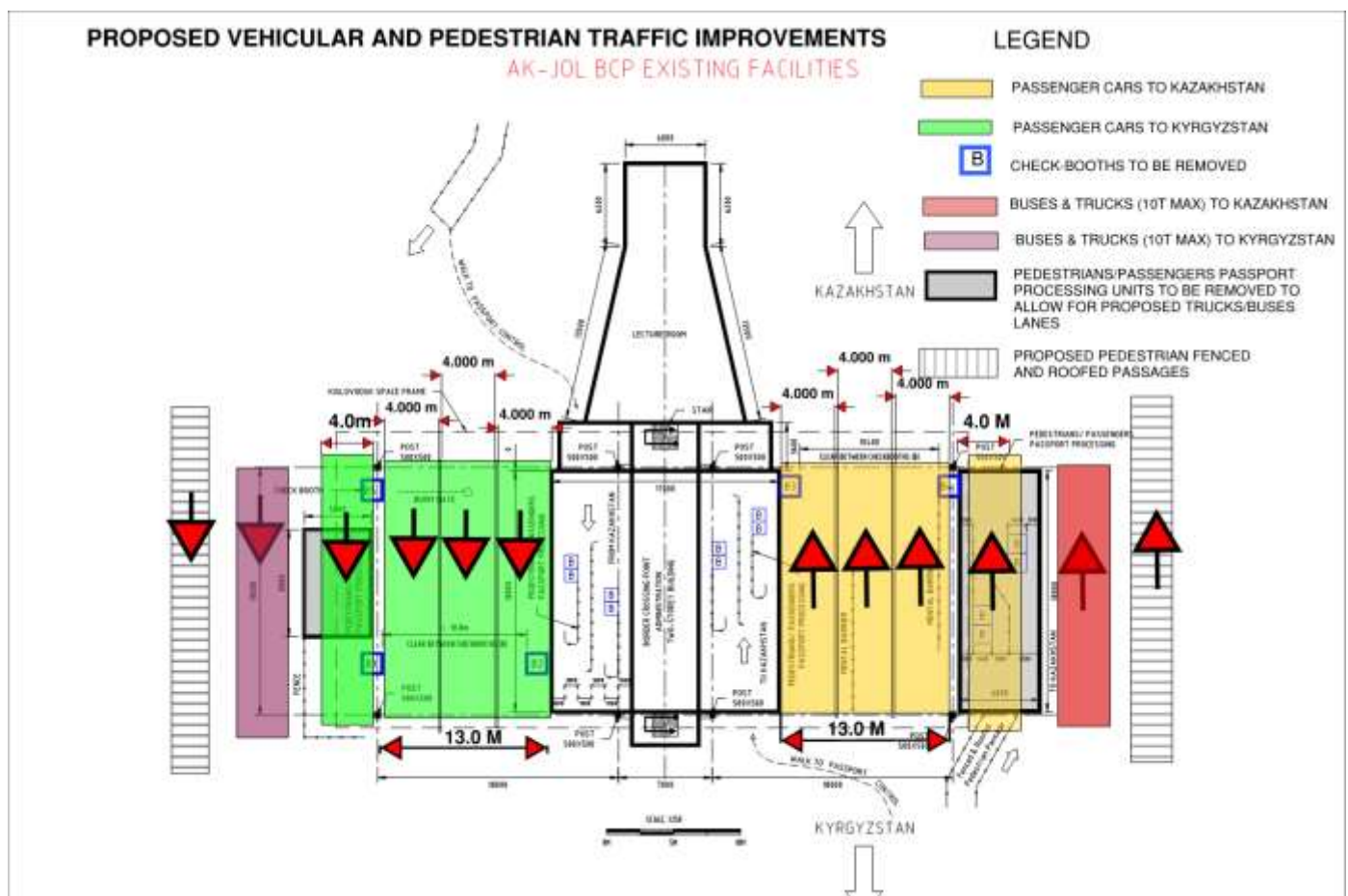


**Aerial view of the existing Ak-Jol & Korday BCP's**

## 12. APPENDIX 3

### Ak-Jol BCP

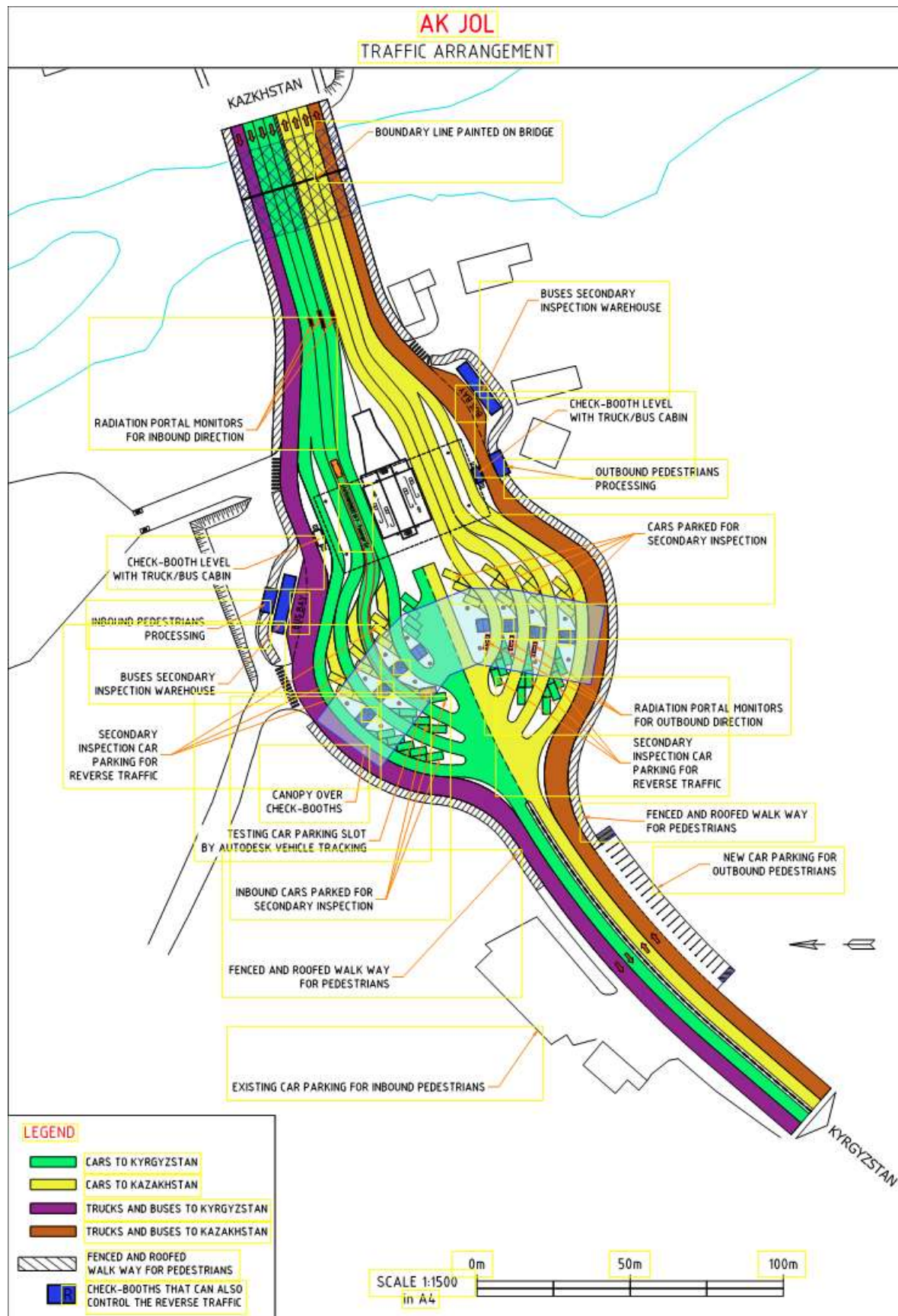
#### Proposed traffic under the existing Kislovodsk canopy





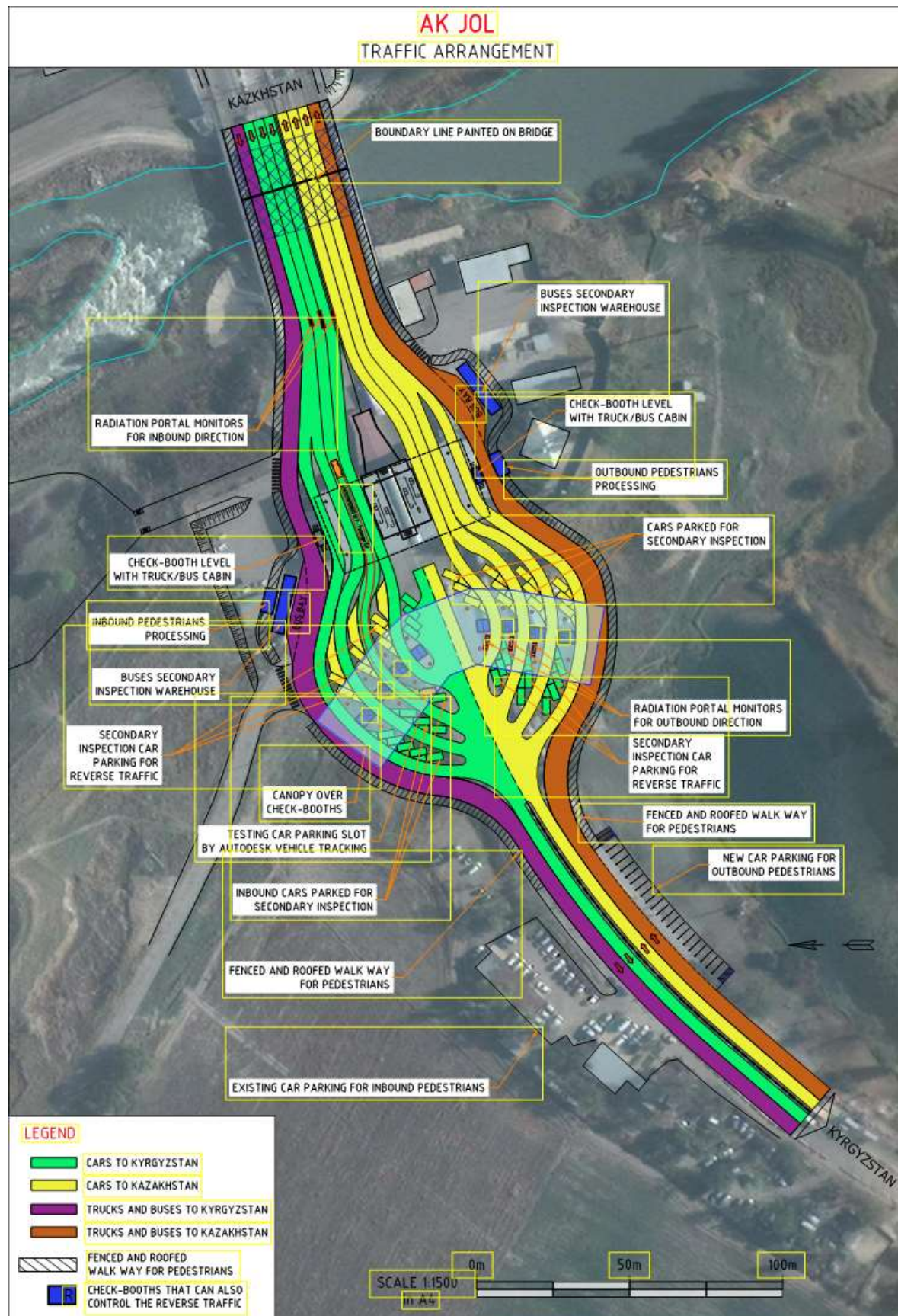
## 13. APPENDIX 4

### Ak-Jol BCP - Proposed vehicular & pedestrian traffic



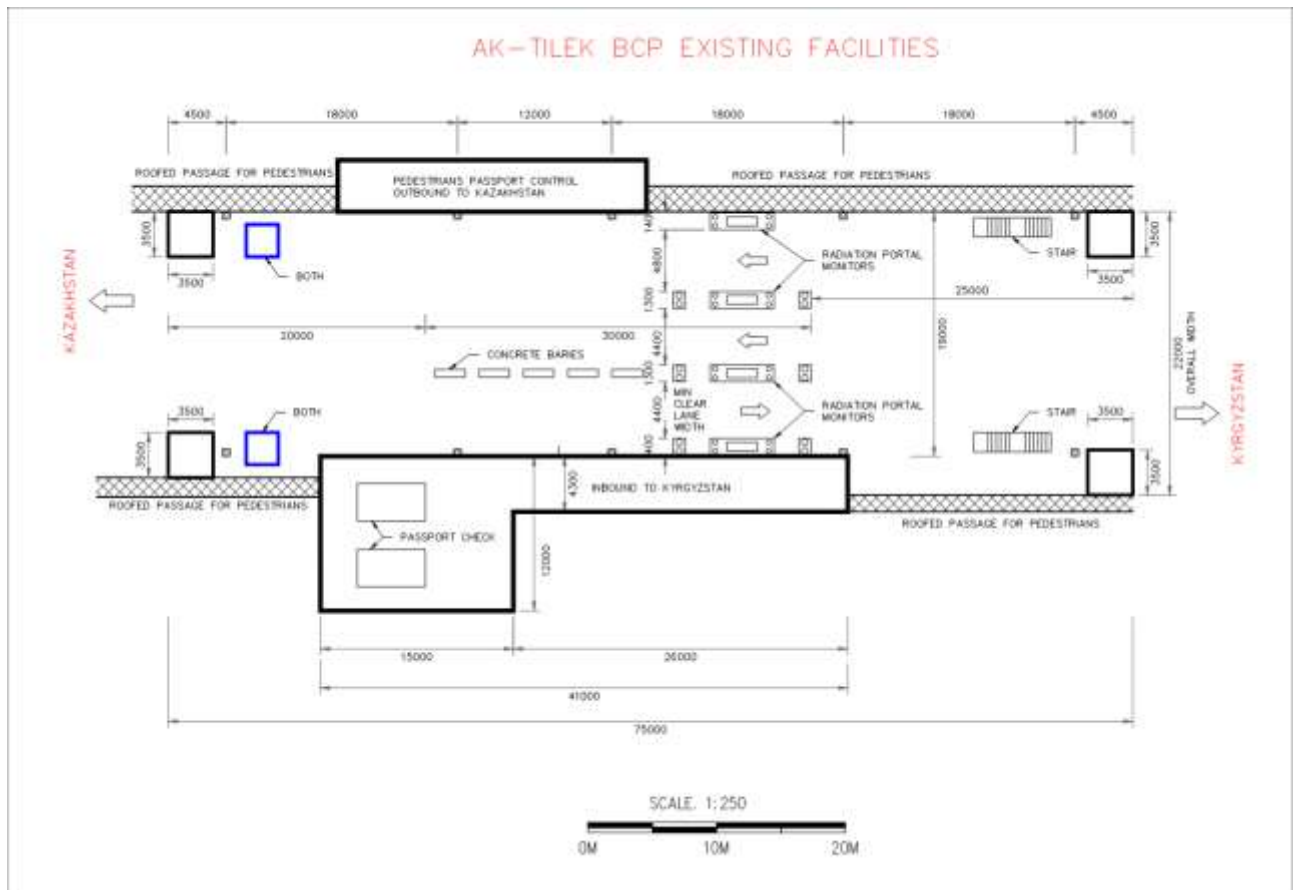


## Ak-Jol BCP – Proposed vehicular & pedestrian traffic on Google Earth Map



## 14. APPENDIX 5

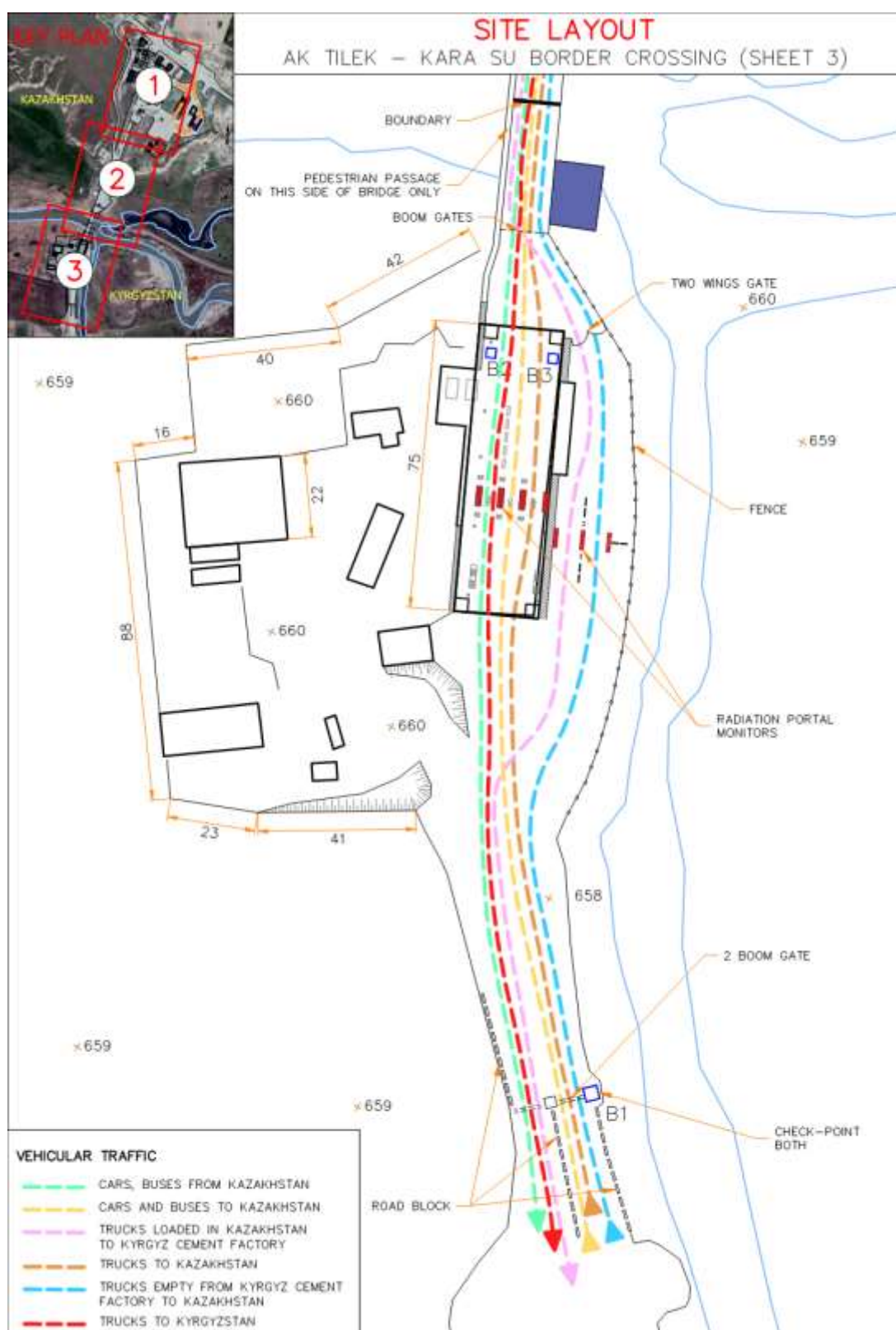
### Ak-Tilek BCP – existing main processing facilities under the space frame canopy



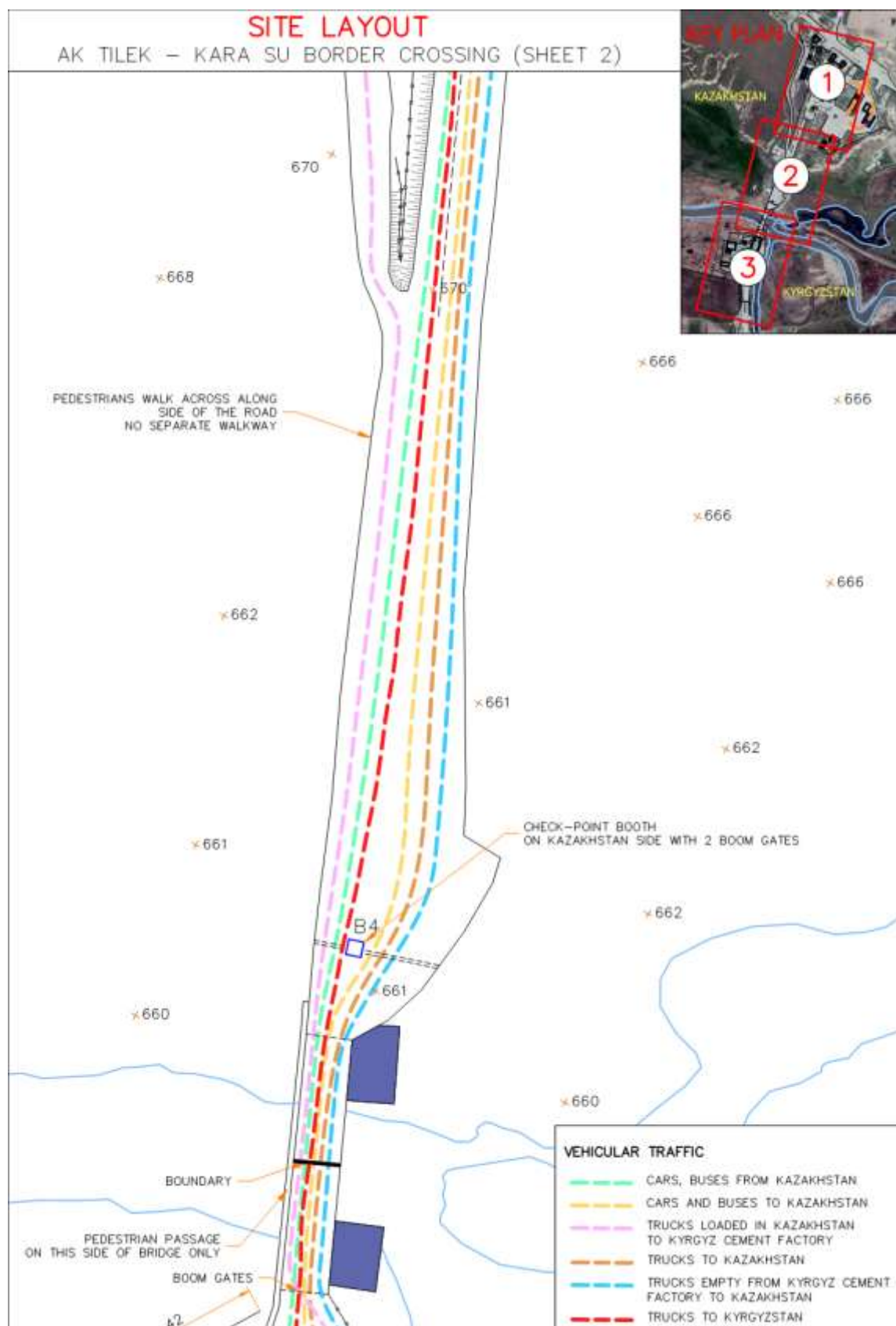


## 15. APPENDIX 6

### Ak-Tilek BCP existing traffic diagram



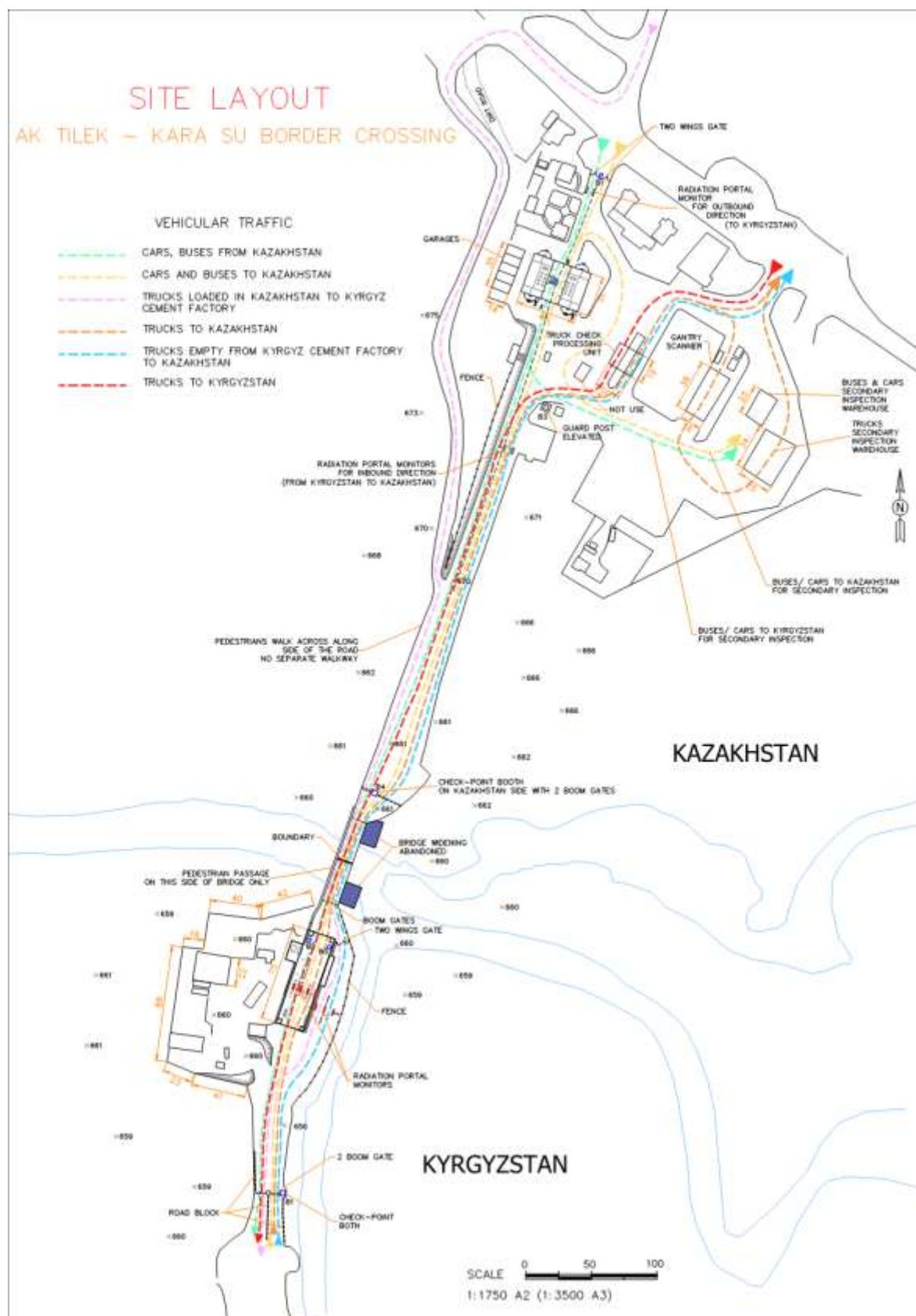
## Ak-Tilek BCP –existing traffic diagram on road to Kara-Suu BCP

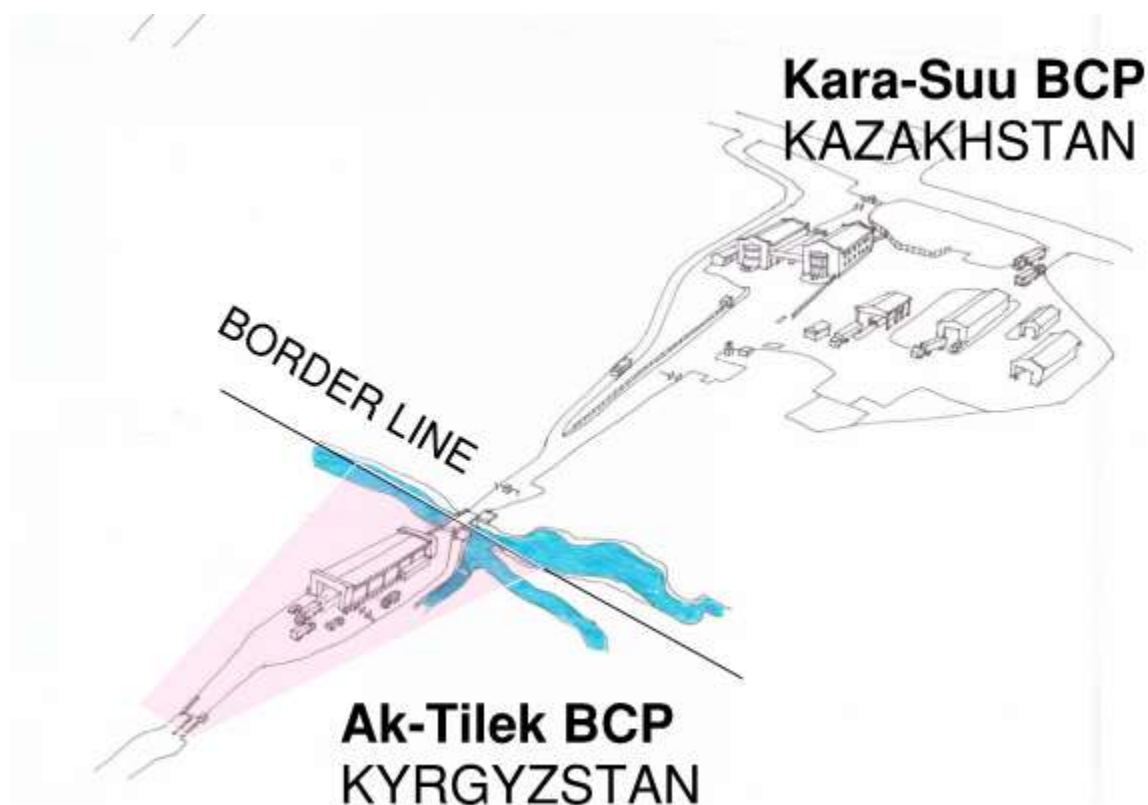




# Complete site plan of border crossing area: Ak-Tilek BCP on the Kyrgyz side and Kara-Suu BCP on the Kazakh side

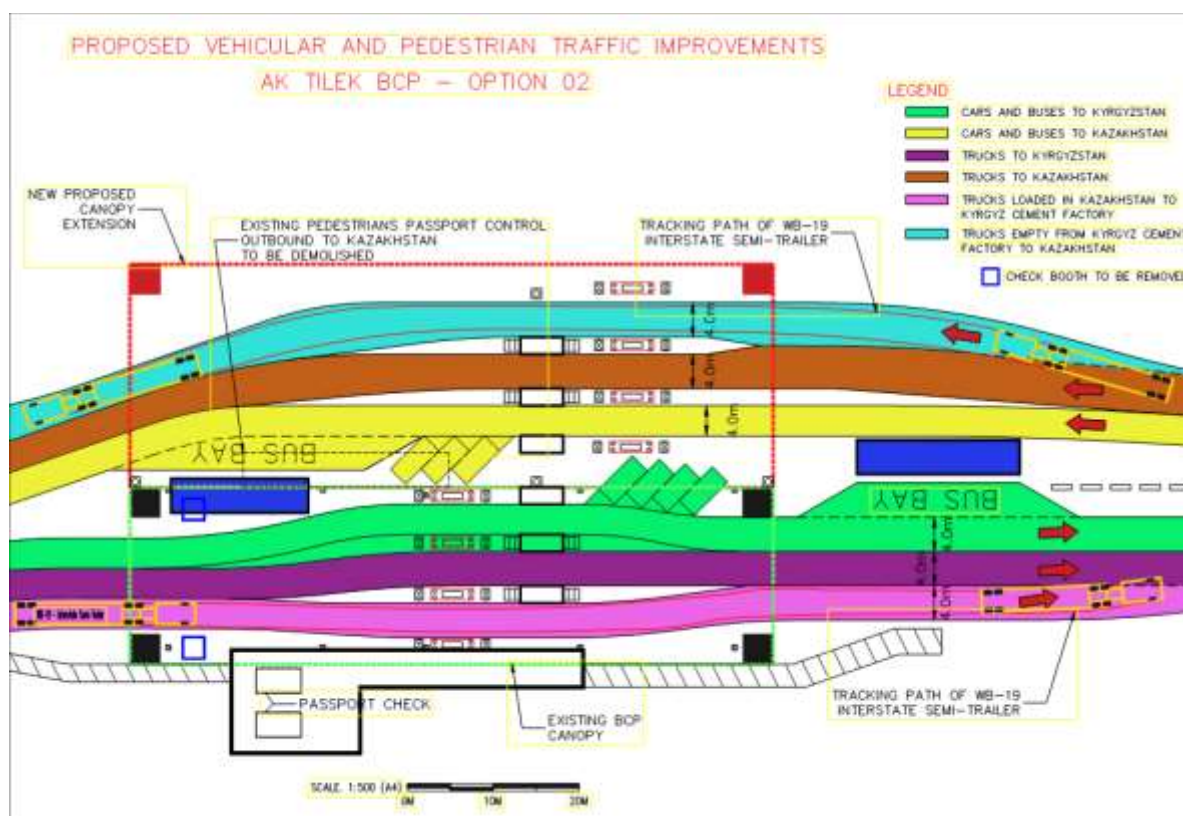
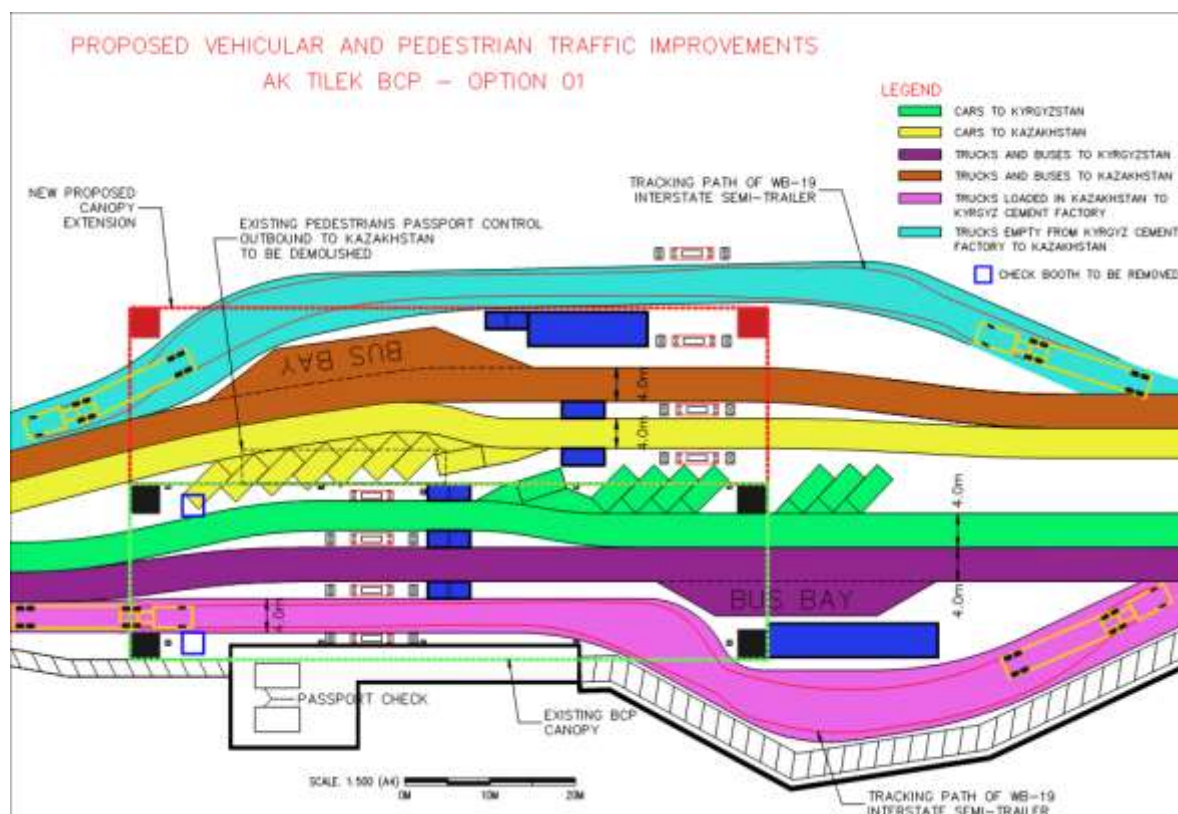
## Current traffic diagram





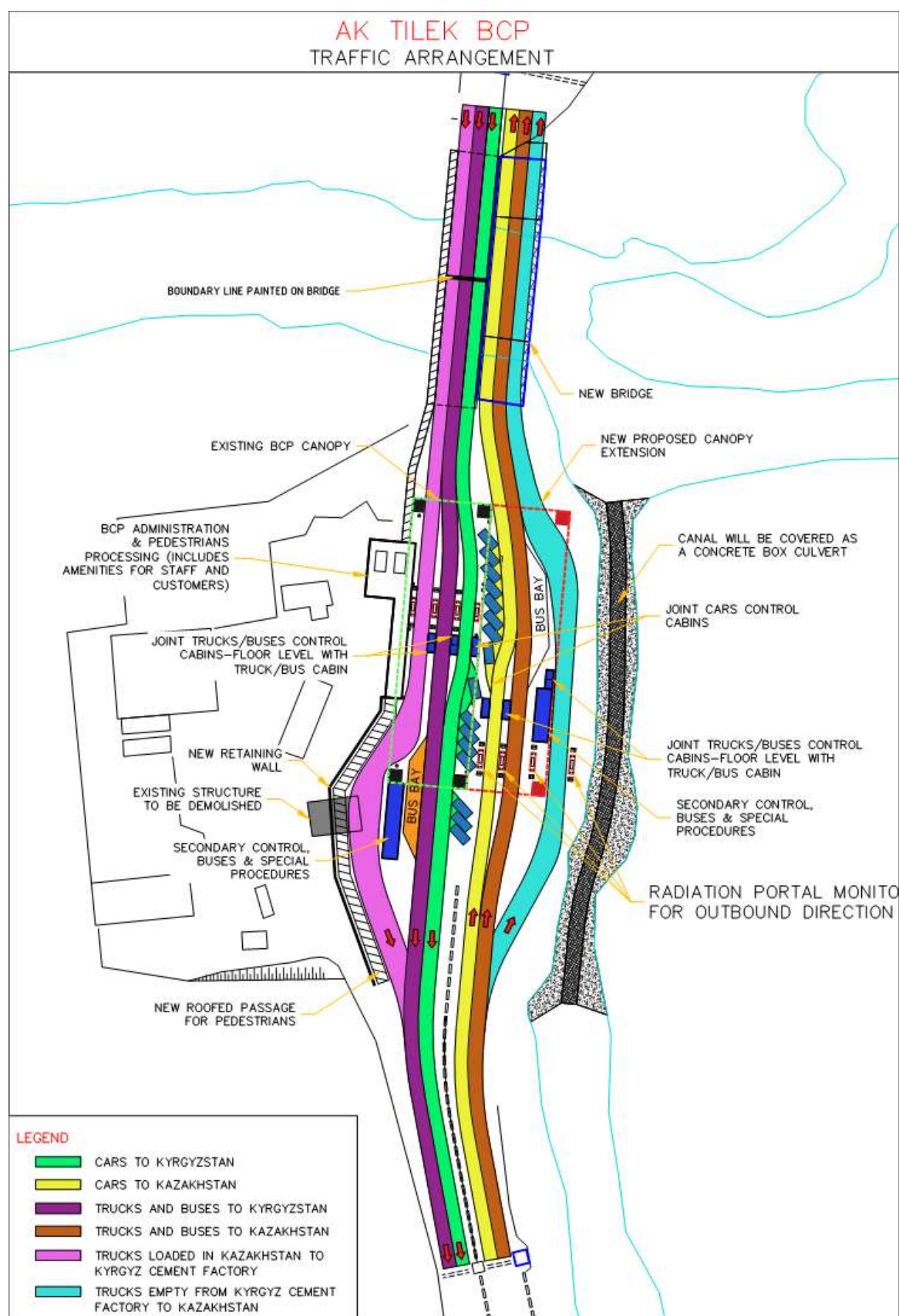
**Aerial view of the existing Ak-Tilek and Kara-Suu BCP's**

## 16. APPENDIX 7

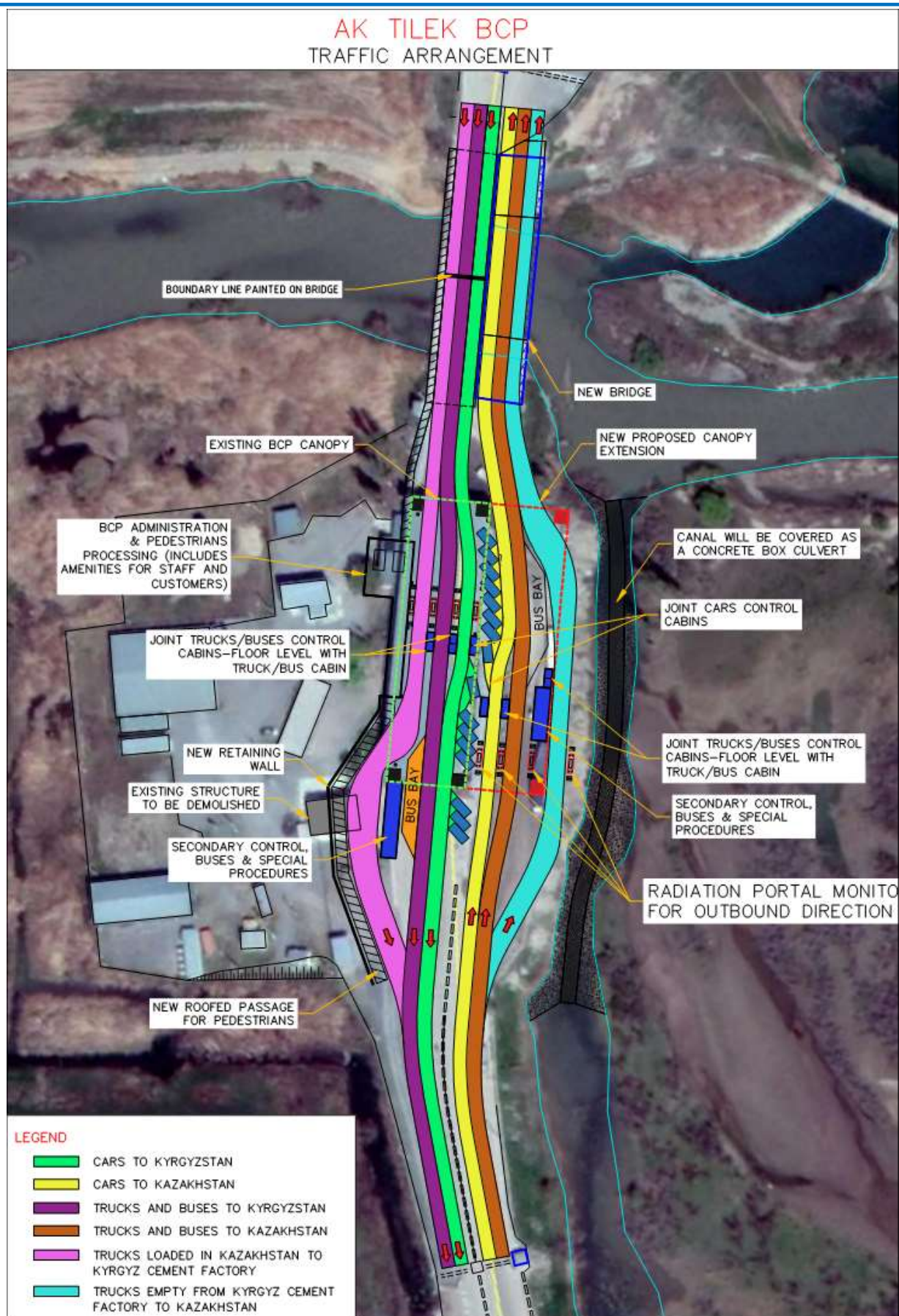


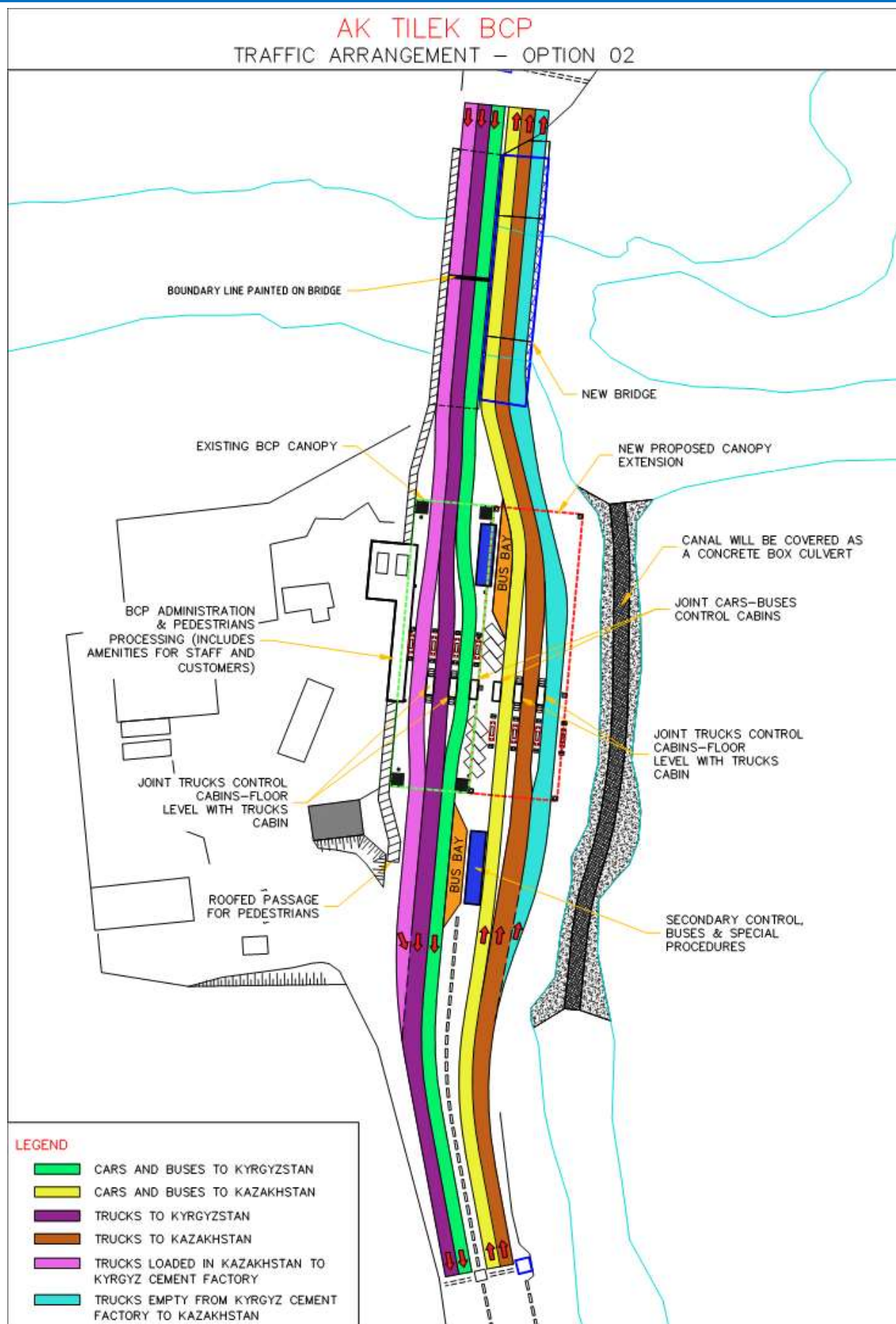


## 17. APPENDIX 8

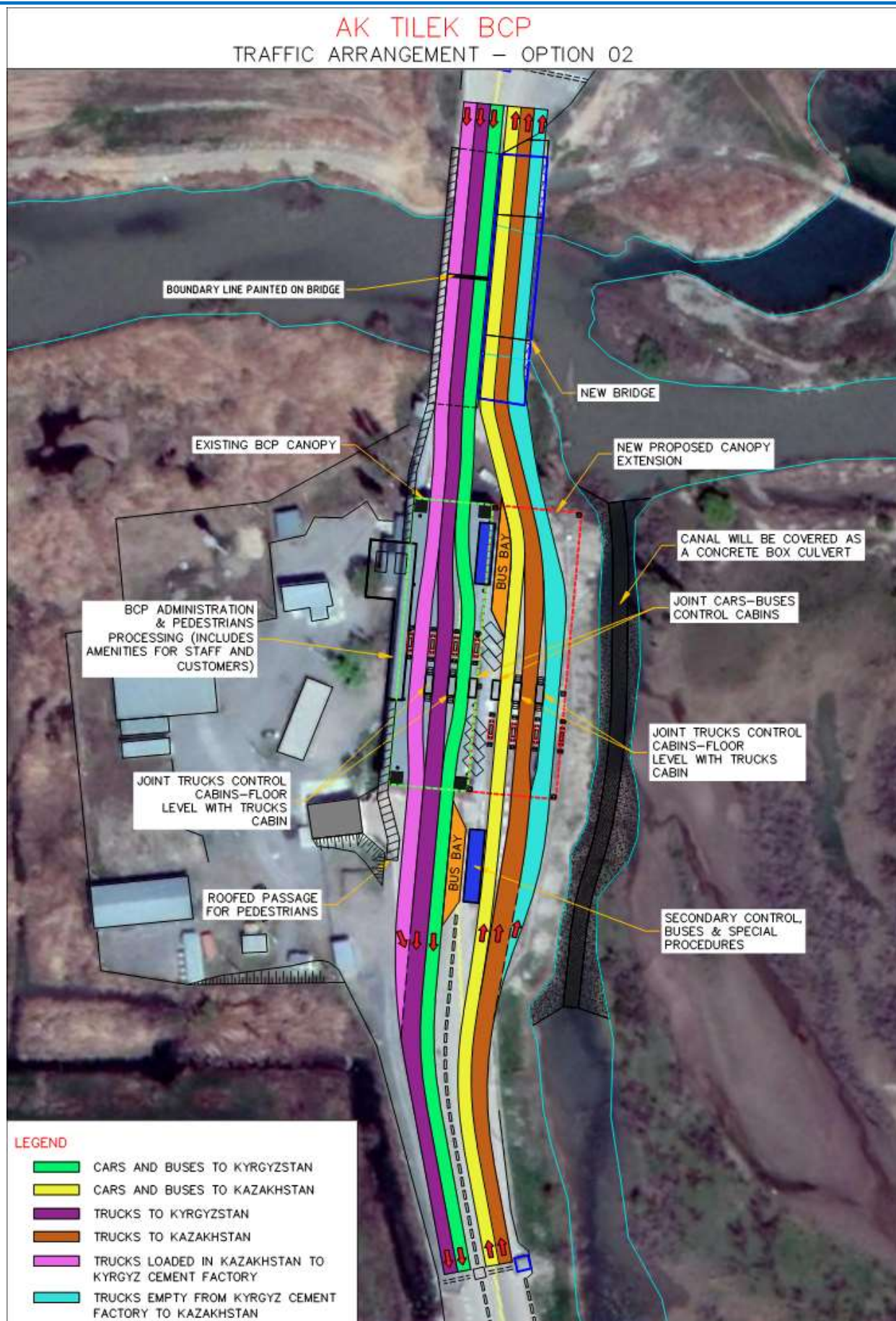












## 18. APPENDIX 8

### Proposed bridge with steel truss girders and cast in situ slab

