

## **2-2-4 Implementation Plan**

### **2-2-4-1 Implementation Plan for Construction**

#### **(1) Implementation Policy**

The implementation agency of Mongolian side is Ministry of Road, Transportation and Tourism. On the other hand, the executing agency is Road Policy and Coordination Department under MRTT for the basic design, the detailed design and the tender processing, and Road Inspection and Research Center (RIRC, Former DOR) under MRTT for supervision stage. Bridge Construction & Maintenance Supervision Division under Road Inspection and Research Center takes directly charge of supervision.

AZZA Tuv and HARGUI which are governmental maintenance company under former DOR are in charge of procured equipment.

Basic implementation policies of the project under the Grant Aid of Japan are as follows

-In Mongolia, the repairing of pavement is generally adopted by urgent method, namely, patching. The selection and the practice of an appropriate repair method are required for maintenance, and the project contains the improvement section. Therefore, the Japanese expert for the repair of pavement will be dispatched for smooth execution of the project and the technology transfer to Mongolian side.

-In Mongolia, there is no contractor who has experience of sheet pile cofferdam by themselves. Therefore, the Japanese expert for the guide of sheet pile cofferdam will be dispatched for smooth execution of the project and the technology transfer to Mongolian side.

-In Mongolia, there are few contractors who have experience of bridge construction of RC-T girder. Therefore, the Japanese expert for the guide of bridge construction will be dispatched for smooth execution of the project and the technology transfer to Mongolian side.

-Design of pipe culverts and revetment will be adopted Mongolian construction method, and it will make local sub-contractors to participation in the project from the initial stage. And, it is considered to facilitate to utilize local sub-contractors for earth works and drainage works as much as possible.

#### **(2) Implementation Conditions**

##### **1) Meteorological Condition**

For the asphalt pavement works and concrete works, temperature control of the asphalt mixture and the fresh mixed concrete is indispensable from the viewpoint of quality control

because the daily difference of the temperature is also large even in the period other than winter season. Therefore, the systems of supervision and construction management to reflect such a severe natural condition are incorporated.

2) Access between Sites

Construction sites for the project are divided into two sections, namely Section II and Section VI of which distance is approximately 165km. Therefore, the systems of supervision and construction management that secure high, close quality control are considered.

3) Maintaining of Existing Traffic

The road improvement will be worked on one side of the cross section while the present road traffic passes the other side, and detour road will be installed in replacement of bridge. During these construction works, securing a safe, smooth traffic will be taken into account for planning of the systems of supervision and construction management.

4) Transportation of Construction Materials and Equipment crossing the Kherlen River

Existing Kherlen Bridge has very low soundness and its damage is worsening. Increase of heavy vehicles causes damage to the existing structure and the risk of collapse will increase. Therefore, prior to the commencement of construction works, temporary bridge is planned to be installed at the Kherlen River.

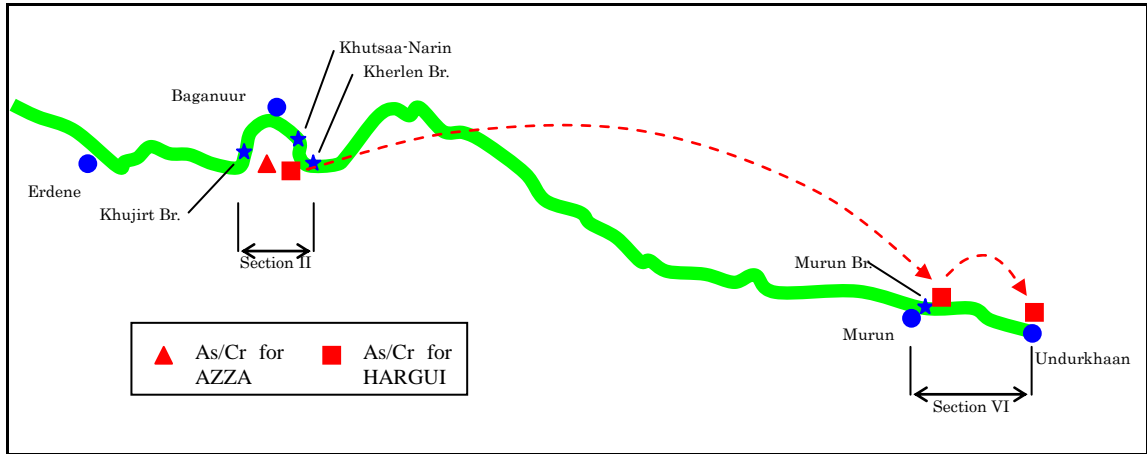
5) Usage of Procured Plant by Contractor

A Japanese contractor for the project will use without charge one set of asphalt plant and crusher plant which will be procured for the Improvement of Equipment that is one of components of the project, and the priority is given to a Japanese contractor for the project to use another set of asphalt plant without charge. Timely delivery of asphalt and crusher plants will become critical because any delay of delivery will shorten construction period in summer and affect overall construction schedule considerably.

6) Timing of Delivery and Place for Procured Plants

Both AZZA Tuv and HARGUI will receive one set each in 1st package. However, a Japanese contractor for the civil works may use without charge one set of asphalt plant and crusher plant together with asphalt testing equipment for HARGUI. It is planned to install in Baganuur area in the first place for Section II. Crusher plant will be used in Baganuur until the production of aggregate will reach targeted volume and will be handed over to HARGUI, while asphalt plant together with asphalt testing equipment will be transferred to Murun area

prior to the commencement of construction works in Section VI, and finally will be handed over to HARGUI after the construction is completed. Figure 2-4-1-1 shows timing of delivery and place for procured plants.



Item	Place	Year 2006												Year 2007												Year 2008												Year 2009																																																										
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12																																																		
Equipment	Asphalt Plant-1	●—————→																																																																																														
	Crusher Plant-1	●—————→																																																																																														
	Asphalt Plant-2	Baganuur	●—————→																																																																																													
		Murun	●—————→																																																																																													
	Crusher Plant-2	Baganuur	●—————→																																																																																													
		Undurkhaan	●—————→																																																																																													
	Other Equip.-1	●—————→																																																																																														
	Other Equip.-2	●—————→																																																																																														
Soft Component	Preparatory Works	●—————→																								●—————→												●—————→																																																										
	Pilot Construction																																																	●—————→																								●—————→												●—————→										

**Figure 2-2-4-1 Timing of Delivery and Place for Procured Plants**

7) Mongolian Environmental Laws

The restorations of work roads, temporary sites such as borrow pits and construction yards and so on should be carried out by the contractors in compliance with the Mongolian Environmental Laws although the MNE has approved the Project officially. Therefore, these conditions are taken into account planning of the implementation.

(3) Scope of Works

For the implementation of the project under the Grant Aid of Japan, the scope of works to be undertaken by the Government of Japan and the Government of Mongolia is shown in Table 2-2-4-1.

**Table 2-2-4-1 Scope of Works for Mongolian Side and Japanese Side  
for Road Construction**

Item	Description	Undertaking		Remarks
		Japan	Mongolia	
1. Land/Yard	Secure lands such as construction sites, construction yards and work roads necessary for the Project		○	
	Clear construction sites including removal and replacement of obstacles within construction sites		○	
	Compensate costs for resettlement, if any		○	
	Exempt loyalty of land use for temporary works, borrow pits, sand pits and quarry sites		○	
	Secure concession on borrow pits, sand pits and quarry sites		○	
	Construction and restoration of detour roads and work roads	○		
	Construction and restoration of construction yards	○		
	Provide distributing line of electricity to base camps and Kherlen casting yards		○	
	Provide drop wiring, circuit breaker and transformer within base camps and Kherlen casting yards	○		
	Provide communication means such as telephone trunk line to main distribution frame/panel (MDF) of base camps and Kherlen casting yards or allocation of wireless frequency		○	
	Provide MDF and extension after MDF	○		
2. Construction	Construct new road of Section II 15 km in length	○		
	Improve existing road of Section II 15 km in length	○		
	Construct new road of Section VI 28 km in length	○		
	Construct new bridges of Kherlen , Khutsaa Narin and Murun Bridge	○		
	Replace Khujirt Bridge and removal of the existing Khujirt Bridge	○		
	Construct "Road-side Stations"		○	
	Erect monuments		○	
	Plant trees		○	
3. Equipment	Let a Japanese contractor use one set of asphalt plant and crusher plant together with asphalt testing equipment procured for the Project without charge		○	
	Construct basement and erect plants used by a Japanese contractor	○		
	Secure lands and required facilities on return of plants used by a Japanese contractor		○	
	Give priority to a Japanese contractor to use procured asphalt plant for AZZA Tuv without charge of depreciation		○	

#### **(4) Consulting Services**

##### **1) Basic Policy for Detailed Design and the Construction Supervision**

###### **a) Detailed Design**

The basic policy regarding detailed design is as follows:

- The detailed design will be carried out for the entire of the project even in two packages proposed.
- The field survey during the detailed design will be conducted for reconfirmation of the site, supplementary surveys related to the construction/estimation and additional survey such as collection of latest data based upon the basic design. The final discussion shall be carefully held with the Government of Mongolia on confirmation items related to the detailed design.
- After the preparation of the tender documents including finalized design based on the field survey, the meeting will be held with the Government of Mongolia to approve of the tender documents.

###### **b) Construction Supervision**

The basic policy regarding construction supervision is as follows:

- The project is divided into two sites, and its distance is approximately 165 km. Therefore, site office will be set up at each site for the proper supervision.
- Meteorological conditions in winter are so severe that no construction work is carried out in principle in order to keep quality of work and efficiency. Timely delivery of plants and materials will become critical to make construction plan realistic and practical because road and bridge can be constructed only in summer. any delay of delivery will shorten construction period in summer and affect overall construction schedule considerably. Therefore, the system of the supervision that keeps the required quality without any delay is considered.

##### **2) Important Notice for Detailed Design and the Construction Supervision**

###### **a) Important Notice for Detailed Design**

The important notice of the detailed design is as follows:

- Minimum number of experts will be dispatched to Mongolia to conduct the field survey during the detailed design.

- Minimum number of experts will be assigned to prepare the tender documents including finalized design. The preparation of the tender documents will be made on condition that contract package for road construction is divided into two.
- For the approval the tender documents, minimum number of experts will be dispatched to Mongolia.

b) Important Notice for Construction Supervision

The important notice regarding construction supervision is as follows:

- Project Manager of consultant will be dispatched to Mongolia only at the commencement/completion of the construction and the warranty inspections.
- The resident engineer will stay at the site for the entire construction period to supervise the construction, and will be arranged in the site office of Section II basically.
- To execute smooth construction supervision, the road engineer will be assigned for the main construction period of Section VI in consideration of the amount of construction works in Section VI and the distance between Section II and Section VI.
- To execute smooth construction supervision, one bridge engineer will be assigned for the main construction period of Kherlen Bridge in consideration with the amount of construction works in Kherlen Bridge.
- To execute smooth construction supervision, another bridge engineer will be assigned for the main construction period of other bridges in consideration with the distance between Section II and Section VI.
- Local engineers will be employed and properly arranged to assist Japanese engineers and to receive transfer technology.

**(5) Quality Control Plan**

The quality control will be carried out in accordance with AASHTO and Japanese specifications such as the Ministry of Land, Infrastructure and Transport, Japan Highway Public Corporation, and so on. And, these specifications are subject to the approval of agency/organization related to the Government of Mongolia to secure smooth handover of project to the Mongolian side. The quality control items for the concrete, embankment, sub-base course, base course and asphalt are shown in Table 2-2-4-2 to Table 2-2-4-5. Statistically analysis will be conducted for the concrete compressive test.

**Table 2-2-4-2 Quality Control for Concrete**

Item	Control Item	Description	Method	Frequency
Concrete	Cement	Type of cement	Visual observation	Delivery time
		Equivalent JIS (Portland Cement)	JIS R 5210, 5211 JIS R 5212, 5213	1/ month or Delivery Time
	Admixture	Equivalent JIS or JSEC Standard	JIS A 6201-6206	1/ month or Delivery Time
	Water	Influence of concrete strength	JIS A 5308	Before design of mix proportion
	Aggregate	Screen, Gradation	JIS A 1102, AASHTO T 27	
		Unit weight and solid contain	JIS A 1104, AASHTO T 19	
		Organic impurity in Fine	JIS A 1105, AASHTO T 21	
		Specific weight, Water absorption in Fine	JIS A 1109, AASHTO T 84	
		Specific weight, Water absorption in Coarse	JIS A 1110, AASHTO T 85	
	Specified Mix	Trial mix	JIS A 1101, AASHTO T 119 (Slump) JIS A 1118 (Air)	Before 35 days prior to commencement of concreting
	Job Mix	Surface moisture in Fine Aggregate	JIS A 1111, 1125	1/ day
		Grading of Aggregate	JIS A 1102	1/ day
		Temperature of water & Aggregate	Measurement of temperature	Each batching
	Weigh of Material	Weighing equipment accuracy	Static load test	1/ 6 month
Error of weighing		Test of Scale	1/ day	
Concrete Mix Test	Sampling fresh concrete		JIS A 1115	1/ day
	Compressive test		JIS A 1108, AASHTO T-22	Follow the standard mentioned left
	Making & curing concrete specimens		JIS A 1132, AASHTO T 23	Follow the standard mentioned left

**Table 2-2-4-3 Quality Control for Embankment**

Item	Description	Method	Frequency
Soil	Classifications (Unit weight, moisture test, Gradation, Liquid limit, Plasticity index)	AASHTO A-1 to A-4 and AASHTO T-11, T-27	1/borrow pit
	CBR test	JIS A 1211/AASHTO T-193	1/borrow pit
	Expansion	AASHTO	1/borrow pit
Roadbed	Thickness of the compacted layers	Measurement	1/day
	Density test	AASHTO T-147	1/place
	Compacting moisture	JIS A 1203	1/day
	Tamping test	JGS 1611	1/day
Sub-grade	Thickness of the compacted layers	Measurement	1/place
	Density test	JIS A-1210/AASHTO T-99-D	1/place
	Compacting moisture	JIS A 1203	1/place
	Tamping test	JGS 1611	1/place

**Table 2-2-4-4 Quality Control for Base and Sub-base Course**

Item	Description	Method	Frequency
Sub-base Course	Classifications (Unit weight, moisture test, Gradation, Liquid limit, Plasticity index)	AASHTO A-1 to A-4 and AASHTO T-11, T-27	1/borrow pit
	CBR test	AASHTO T-193	1/borrow pit
	Expansion	AASHTO	1/borrow pit
	Maximum diameter	Measurement	1/borrow pit
	Thickness of the compacted layers	Measurement	1/day
	Density test	AASHTO T-180-D	1/day
	Compacting moisture	JIS A 1203	1/day
Base Course	Tamping test	JGS 1611	1/day
	Classifications (Unit weight, moisture test, Gradation, Liquid limit, Plasticity index)	AASHTO A-1 to A-4 and AASHTO T-11, T-27	1/borrow pit
	CBR test	AASHTO T-193	1/borrow pit
	Expansion	AASHTO	1/borrow pit
	Abrasion	AASHTO T-96	1/borrow pit
	Thickness of the compacted layers	Measurement	1/day
	Density test	AASHTO T-180-D	1/day
Compacting moisture	JIS A 1203	1/day	
Tamping test	JGS 1611	1/day	

**Table 2-2-4-5 Quality Control for Asphalt**

Item	Description	Method	Frequency
Priming	Bituminous materials	AASHTO M-141/AASHTO M-82	Each material
	Type of materials	SC-70, SC-250 or MC-30, MC-70	Each material
	Water content	AASHTO T-55	1/50 tons
	Penetration	AASHTO T-49	1/50 tons
	Distillation	AASHTO T-78	1/50 tons
	Saybolt-Furol Viscosity	AASHTO T-72	1/50 tons
	Ductility	AASHTO T-51	1/50 tons
Bituminous	Flash point	AASHTO T-79	1/50 tons
	Bituminous materials	AASHTO M-20/AASHTO M-52	Each material
	Type of materials	60-70, 85-100, 100-120/RT-11, RT-12	Each material
	Rate of application		Before 24 hours prior to commencement of trial mix
	Quantities of applied materials	Measurement	Each piece
	Water content	AASHTO T-55	1/50 tons
	Penetration	AASHTO T-49	1/50 tons
	Distillation	AASHTO T-78	1/50 tons
	Saybolt-Furol Viscosity	AASHTO T-72	1/50 tons
	Ductility	AASHTO T-51	1/50 tons
	Flame point	AASHTO T-48	1/50 tons
	Thin film oven	AASHTO T-179	1/50 tons
	Engler viscosity	AASHTO T-52	1/50 tons
Aggregate	Flotation	AASHTO T-50	1/50 tons
	Particle size	Measurement	Each hopper/day
	Abrasion	AASHTO T-96	1/month or 1/variation
	Shape index	Measurement	1/999m <sup>3</sup>
	Sand equivalent of fine aggregate		1/day
	Particle size of filler material	AASHTO T-27	1/day
	Adherence additive		1/batch & 1/incorporation
Asphalt mixture	Binding agent		Before transportation & 1/8hrs paving
	Marshall characteristics	AASHTO T-245	1/day
	Compaction test	AASHTO T-166	1/200m
	Temperature	Measurement	4/day
	Collection of asphalt samples	AASHTO T-230	1/day



## **(6) Procurement Plan**

### 1) Construction Materials

#### a) Basic Policy

The basic policy regarding procurement of construction materials is as follows:

- As a general rule, the essential materials for the construction shall be procured from local sources if available. Even imported materials which are easily available in Mongolian are regarded as local materials and are procured locally as far as volume of materials is sufficient. If it takes long time in the procurement process, such materials will be procured from Japan or the third countries.
- The ready mixed concrete, asphalt mixture, embankment materials, sand and crushed stone will be produced by the contractor.

#### b) Present Conditions for Procurement

The approval from the central laboratory under Road Inspection and Research Center is needed before the material is in use. The present procurement conditions for the major construction materials required for the project are shown as follows:

##### i) Cement

The cement produced in Mongolia is mainly an ordinary portland cement. On the other hand, the imported cement from Russia and China could be purchased in local market. "Portland Cement Specification (MNS 974-99)" in 1999 prohibits the usage of cement with 8% or more of the hydro aluminates of Ca for the road structure. The cement of Mongolia is improved, and there is no problem in the quality and the quantity now, although there was some cement with higher portion of hydro aluminates of Ca than above mentioned specification in the past.

##### ii) Reinforcing Steel bar

The reinforcing steel bar is produced in the Darkhan ironworks that is only supplier in Mongolia. Because the JICA specialist had been dispatched and transferred technology, it has capacity to produce in sufficient quality with capacity to increase production.

##### iii) Bitumen

It is possible to procure it in a local market although the bitumen material is imported from Russia. As for the straight asphalt, it is generally transported by railway from

Russia, and is transshipped to the tank lorry from the wagon in the major city. For the transshipment to the tank lorry, it is necessary to melt the straight asphalt by steam because it has coagulated in the wagon.

iv) Formwork Materials

Imported plywood from China for the formwork is freely purchasable in a local market. However, it can be used only twice due to its low quality.

v) Fuel

Generally, fuel such as petrol and diesel oil is imported from Russia, and available at petrol stations located in the major cities.

vi) Structural Materials for Bridge

The structural materials for bridge such as expansion joints, shoes, catch-basin and form ties is not available in Mongolia, and they are procured from the third countries such as Russia and China. However, it is planned for the project to procure them from Japan because Japanese products have advantage in quality and delivery period.

vii) Steel Materials for Temporary Works

The steel materials for temporary works such as H-beams and sheet-piles for temporary steel bridge and temporary cofferdam are not available in Mongolia. There are problems in the qualities such as rusts, the distortions and so on, although procurement from the third country such as China is possible. Therefore, it is planned for the project to procure them from Japan because Japanese products have advantage in quality.

c) Procurement Plan of Major Construction Materials

Considering the present procurement conditions, the procurement plan of the major construction materials is shown in Table 2-2-4-6.

**Table 2-2-4-6 Procurement Plan of Major Construction Materials**

Materials	Specification	Supply Source			Remarks
		Mongolia	Japan	Third Country	
Portland cement		○			
Fine aggregate (sand)	for concrete	○			Produced by Contractor
Coarse aggregate	for concrete	○			Produced by Contractor
Filler		○			
Straight asphalt		○			
Cut back asphalt		○			
Fine sand	for asphalt mixture	○			Produced by Contractor
Coarse sand	for asphalt mixture	○			Produced by Contractor
Aggregate for asphalt mixture	13-20mm	○			Produced by Contractor
Aggregate for asphalt mixture	5-12mm	○			Produced by Contractor
Aggregate for base course	CBR>80%	○			Produced by Contractor
Aggregate for sub-base course	CBR>30%	○			Produced by Contractor
Embankment material		○			Produced by Contractor
Crusher run		○			Produced by Contractor
Re-bar		○			
Round bar		○			
Formwork material	t=12mm	○			
Wooden		○			
Diesel		○			
Gasoline		○			
Black powder	AN-FO	○			
Dynamite		○			
Rubber bearing	310x260x36, 310x260x44		○		
Expansion joint	N II-35		○		
Catch basin for bridge			○		
Form tie	Type D-300		○		
Washer	Type D		○		
Stopper	Type D-W1/2		○		
Separator	Type D-500 W1/2		○		
Admixture	Air entraining agent		○		
Form release agent			○		
Less-shrinkage mortar			○		
Covering plate	1,000x2,000x200mm		○		
H-beam	H300, H400		○		
Sheet pile	Type IV		○		
Waling strip	H350, H400		○		
Paint	JIS K 5516-2		○		
Glass bead	JIS R 3301		○		

## 2) Construction Equipment

### a) Basic Policy

The basic policy for the procurement of construction equipment is as follows:

- As a general rule, the essential equipment for the construction shall be procured from local sources if available. Otherwise, it is planned to procure from Japan or the third countries taking into account the maintenance condition, the state of possession, the possession amount, the procurement circumstances, and the economical viewpoint, etc.
- The procurement plan of construction equipment is set up on the premise that the contractor will use one set of asphalt plant and crushing plant without any charge, and

the priority is given to a Japanese contractor for the project to use another set of asphalt plant without charge.

b) Present Conditions for Procurement

The present procurement conditions for the major construction equipment required for the project are shown as follows:

i) Leasing Company

There are two kinds of leasing companies in Mongolia; one is a private dealer company who also conduct leasing, another is TTT established by the support of WB under road maintenance management company AZZAN. As for the construction equipment of TTT, the leasing is difficult because governmental construction is given priority, and the number is limited. On the other hand, the leasing equipment of private dealer companies are mostly excavators with limited specifications, although the maintenance condition of them are good. Therefore, the leasing from private dealer companies is also difficult.

ii) Construction Company

As for the equipment of the construction company, new equipment such as made in China and South Korea is increasing recently. On the other hand, there are limits in the model and the number, and the maintenance conditions of them have the difference by the company. Moreover, these equipment could be leased if it is not in use for its own business. The procurement plan for the construction equipment could be leased from the construction company although the construction equipment has the tendency to shortage generally.

iii) Construction Equipment Procured from Japan

- Concrete Plant and Concrete Pump Vehicle

In general, capacity of concrete mixer/plant that could be procured in Mongolia has only 0.5m<sup>3</sup>. Based on the concrete amount required from constructing bridges, a concrete plant and a concrete pumping vehicle are necessary from the viewpoint of the work efficiency, the quality control and stable supply. This equipment is not available in Mongolia. It is procured from the third countries such as Russia and China if necessary. However, it is planned to procure it from Japan because Japanese procurements have advantage of quality and delivery period.

- Vibration Hammer and Water Jet

The vibration hammer and the water jet are necessary to work for the temporary bridge and the temporary cofferdam. This equipment is not available in Mongolia. It is procured from the third countries such as China. However, it is planned to procure it from Japan because Japanese procurements have advantage of quality and delivery period.

- Testing Instruments

Rectangular parallelepiped is a shape of a test piece applied in Mongolian standard, and its strength value is different from the AASHTO and the Japanese standards. Therefore, the testing instruments will be procured from Japan in consideration of the quality control. However, the testing instruments of asphalt are planned to borrow the procured ones by this project with the asphalt plant.

- c) Procurement Plan of Major Construction Equipment

Considering the present procurement conditions, the procurement plan of the major construction equipment is shown in Table 2-2-4-7.

**Table 2-2-4-7 Procurement Plan of Major Construction Equipment**

Equipment	Specification	Supply Source			Remarks
		Mongolia	Japan	Third Country	
Bulldozer	15 ton	○			
Bulldozer	21 ton	○			
Bulldozer with ripper	32 ton	○			
Back hoe	Hydraulic, 0.6m <sup>3</sup>	○			
Back hoe	Hydraulic, 1.0m <sup>3</sup>	○			
Motor grader	3.1 m	○			
Macadam roller	10-12 ton	○			
Tired roller	8-20 t	○			
Asphalt finisher	Wheel type, 2.4-4.5m	○			
Vibration roller	Hand-guide, 0.8-1.1ton	○			
Tamper	60-100kg	○			
Trailer	32ton	○			
Truck with crane	8ton with 2.9ton crane	○			
Truck	4 ton	○			
Dump truck	10 ton	○			
Dump truck	4 ton	○			
Road Sprinkler	5500-6000 Liter	○			
Track crane	Hydraulic, 25 ton	○			
Crawler crane	Hydraulic, 40 ton	○			
Concrete breaker	20kg	○			
Line marker	Hot mix type, W=15cm	○			
Concrete cutter	Handy type, 30cm	○			
Breaker	600-800kg	○			
Crawler drill	150kg	○			
Concrete mixer	0.5m <sup>3</sup>	○			
Asphalt plant	30ton/hr	○			Application of procured equipment
Crusher plant	30ton/hr	○			Application of procured equipment (1set)
Generator	Diesel	○			
Concrete plant	1.0m <sup>3</sup>		○		
Concrete pumping vehicle	90-110m <sup>3</sup> /h		○		
Vibration hammer	60kW		○		
Water jet	17.7MPa, 325 L/min		○		
Water pump	200mm, 10m		○		
Testing instrument			○		Excluding asphalt testing equipment

## **2-2-4-2 Implementation Plan for Improvement of Equipment**

### **(1) Implementation Policy**

Equipment required for the plan are not manufactured in Mongolia, and accordingly it is necessary to procure them from Japan or other third countries. The procurement of equipment is taken into consideration the following points.

- The fairness, transparency, and competitiveness for procurement are firmly maintained as a grants aid project.
- Reliance and request of Japanese products from Mongolia responsibility organization and implementing agency to road maintenance equipment
- Work results of Japanese-made equipment procured in previous Grant Aids “Project for Road construction utilizing rock-asphalt in Mongolia” and “Project for Improvement of Roads in Ulaanbaatar”
- After-sale service capability such as preventive maintenance, repair, and spare part supply of local agency in Mongolia

### **(2) Implementation Condition**

In addition to the above-mentioned procurement plan, the following specification is taken into account.

#### **1) Equipment procurement with Standard Specifications.**

Although Mongolia suffers severe winter with temperature sometimes record  $-40^{\circ}\text{C}$ , specification for procured equipment will not be for frigid district because procured equipment will not be in use in winter and kept in the garage. Some equipment needs specification for cold district due to the possibility of usage in winter. Since the altitude of jobsites such as Ulaanbaatar is around 1,350 m, no special specification such as high- altitude specification is required.

Standard Specification is applied to as much procured equipment as possible considering operation period and ease of maintenance.

#### **2) Apply the existing technology for operation and maintenance of equipment**

Mongolian operators have sufficient operating practices and experiences since sufficient number of equipment made in ex-Soviet Union and ex-East European countries are available. However, they have rather limited practices and experiences of operation against recent

sophisticated equipment, and the high-tech specification using electronic device should be applied to the minimal extent because they can operate and maintain equipment by their own skills.

### (3) Scope of Works

The scope of works of Japanese side and Mongolia side is shown in Table 2-2-4-8.

**Table 2-2-4-8 The Scope of Works of Japanese Side and Mongolia Side**

Item	Description	Undertaking		Remarks
		Japan	Mongolia	
1. Land/Yard	Secure plant yards and lands for facilities related to procured equipment		○	
	Level and compact plant yard and relevant lands		○	
	Construct external fence		○	
2. Garage for equipment	Secure garages with roof for equipment procured for the Project		○	For 2 <sup>nd</sup> package
	Provide electricity, water supply, sewerage, telephone line and heater for garage as required		○	
	Secure tools and facilities for equipment repair and parts warehouse at garage		○	
3. Plant yards	Secure access roads with pavement and stockyards		○	For 1 <sup>st</sup> package Plants for AZZA Tuv in Baganuur Plants for HARGUI in Undurkhaan
	Provide electricity, water supply, sewerage, telephone line and heater for office for workers, warehouse and laboratory		○	
	Provide office for workers, warehouse and laboratory at plant yard		○	
4. Crusher plant	Basement construction	○		For 1 <sup>st</sup> package
	Erection	○		
	Provide operators, materials and labors for trial test necessary for instruction of operation		○	
5. Asphalt plant	Basement construction	○		For 1 <sup>st</sup> package
	Erection	○		
	Provide operators, materials*2) and labors for trial test necessary for instruction of operation		○	
6. Delivery of equipment	Unload equipment by crane and store it at garage		○	For 2 <sup>nd</sup> package
	Store parts at warehouse		○	

Note: Asphalt plant, crusher plant and asphalt testing equipment for HARUGUI are scheduled to be handed over from Japanese contractor to HARUGUI in 2009.

### (4) Consulting Service

Making good use of resident engineer can minimize the dispatch and improve the efficiency of equipment specialist's supervision, as this project has combine components of construction of facilities and procurement of equipment. Three engineers, who are project manager,



equipment planning and cost estimation, will be in charge until the completion of tender and project manager with equipment planning will continue till the handover of the equipment.

## **(5) Procurement Plan**

### 1) Procurement Plan

Equipment required for this project is not manufactured in Mongolia, so it is necessary to procure them from other countries. The most appropriate supplying country is Japan because of the following reasons: i) confidence to Japanese equipment of Mongolian implementation and execution agency, ii) strong request from Mongolian implementation and execution agency, iii) excellent performance of the procured equipment in the former projects “Project for Road construction utilizing rock-asphalt in Mongolia” and the “Project for Improvement of Roads in Ulaanbaatar”, iv) aftercare system (regular inspection, maintenance, repair, supply of spare parts, etc.) of main Japanese manufacturers with an agency in Mongolia.

Some equipment which is not manufactured in Japan such as backhoe loader and vibratory roller (combined type) will be procured from the third country among Britain, Sweden, France, and Italy. Manufactures of these countries have agents in Mongolia to perform aftercare services.

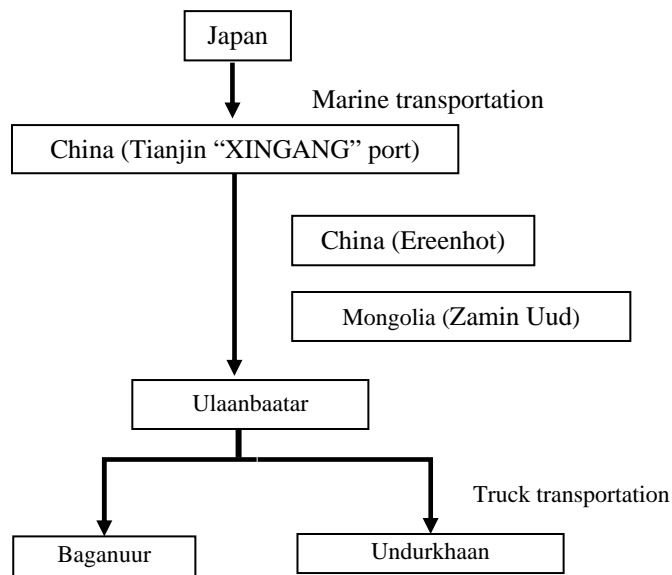
### 2) Transportation Plan

The marine transportation route is either from the ports in Japan, or from port in Britain, Sweden, France, and Italy, respectively.

As for the transportation route from Japan, it is most common to unload in the Tianjin “XINGANG” port in China, and convey to Ulaanbaatar by railroad transportation. Delivery to Baganuur and Undrkhaan will be made by truck. The main origin port in Japan is Yokohama, Kobe, and Osaka. A transportation period is estimated as around 50 days.

Although the equipment from Europe have two routes through Tianjin “XINGANG” port and through Russian Siberia railroad, the route through Tianjin is mainly selected due to the lack of security and delay in route through Siberian railroad. A transportation period is estimated as around 60 days.

a) In the case of shipping from Japan



b) In the case of shipping from Europe

The equipment from Europe are also carried to the Tianjin "XINGANG" port in China by marine transportation, and are carried to a site by the railroad and truck as well as the equipment from Japan.

### 2-2-4-3 Implementation Schedule

#### (1) Basic Policy

A basic policy of the implementation schedule of this project is as follows, and Table 2-4-3-1 shows the summarized implementation schedule.

- The execution process of the construction facilities consists of the detailed design and the construction supervision because only basic design was conducted.
- The execution process of the procurement of equipment only contains the procurement supervision because the draft specification was prepared in the basic design stage.
- The implementation schedule of the construction facilities was divided two stages. One is the detailed design and a part of construction supervision. Another is the remained part of construction supervision in several years.
- This project has combined scheme of the construction facilities and the procurement of equipment, and the software component is also included. For the planning of implementation schedule, severe meteorological conditions in Mongolia were considered.

## **(2) Important Notice**

As for meteorological conditions of Mongolia, it is severe in winter, and construction works is basically impossible in winter excluding the aggregate production and the manufacturing of a pre-cast products. The factor that the influence gives to the implementation schedule of each stage is as follows:

### **1) First Stage**

- In the construction facilities, the implementation schedule would be planned on the assumption that the contractor will construct using asphalt plant and crushing plant procured in this project. Therefore, the delay of borrowing time of these plants will influence the implementation schedule.
- In the procurement of equipment, a part of shipping from Japan will be unavoidably carried out in winter season, and there is transportation from the third country. The delay of marine transport by the weather condition might influence the implementation schedule.

### **2) Second Stage**

In the implementation schedule, superstructure works in Kherlen Bridge is the critical path. However, it is difficult to construct superstructure in winter from the viewpoint of the quality control. Therefore, a steady, strict, close quality and process control are required for the supervision.

**Table 2-2-4-9 Implementation Schedule**

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44								
First Stage	Detailed Design	(Site investigation)																																																		
		(Work in Japan) (Approval of tender document)																																																		
	Procurement Schedule	(Manufacture of equipments in Japan) (Discussion for procurement of equipment) (Inspection and load a ship) (Transportation from Japan) (Construction of plant basement) (Election of plants, adjustment and trial operation)																																																		
		(Preparation work) (Clearing work) (Earth work) (Pavement work) (drainage work) (Pipe culvert work) (Incidental work)																																																		
Construction Schedule	Section II	(Manufacture of equipments in Japan) (Manufacture of equipments in third country) (Discussion for procurement of equipment) (Inspection and load a ship) (Transportation from Japan) (Transportation from third country) (Adjustment and trial operation)																																																		
		(Preparation work)																																																		
	Procurement Schedule	(Earth work) (Pavement work) (drainage work) (Pipe culvert work) (Incidental work)																																																		
		(Preparation, demolition of existing bridge and etc) (Sub structure work) (Casting of girder) (River swichover work) (Sub structure work) (Casting of girder) (River revetment) (Preparation work) (Sub structure work) (Casting of girder) (River revetment) (Preparation work) (Sub structure work) (Casting of girder) (River revetment) (Preparation work) (Earth work) (Pavement work) (Slope and drainage work) (Box and pipe culvert work) (Incidental work) (River swichover work) (Sub structure work) (Casting of girder) (River revetment)																																																		
Section VI	Section II	(Preparation and river swichover work)																																																		
		(River restoration and clearing work) (Sub structure work) (Super structure work) (Approach road and river revetment) (Clearing work) (Super structure work) (Approach road)																																																		
	Construction Schedule	(River restoration work) (Sub structure work) (Casting of girder) (Super structure work) (River revetment) (Clearing work) (Super structure work) (Approach road)																																																		
		(Preparation work) (Earth work) (Pavement work) (Slope and drainage work) (Box and pipe culvert work) (Incidental work) (River swichover work) (Sub structure work) (Casting of girder) (River revetment)																																																		
Murun Br.																																																				

## **2-3 Obligation of the Government of Mongolia**

### **2-3-1 Obligation of the Government of Mongolia**

The following items are the obligation of the Government of Mongolia:

#### (1) General Matters

- 1) To set Banking Arrangement (B/A)
- 2) To advise commission of Authorization to Payment (A/P) and make payment for the commission
- 3) To secure all the expenses and prompt execution of customs clearance for products purchased under the Grant Aid
- 4) To accord Japanese nationals whose services may be required in connection with supply of the products and the services under the verified contracts
- 5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts
- 6) To maintain and use properly and effectively the constructed facilities and procured equipment under the Grant Aid

#### (2) Facilities Matters

- 1) To secure lands such as construction sites, construction yards and work roads necessary for the Project
- 2) To clear construction sites including removal and replacement of obstacles within construction sites
- 3) To compensate costs for resettlement, if any
- 4) To exempt loyalty of land use for temporary works, borrow pits, sand pits and quarry sites
- 5) To secure concession on borrow pits, sand pits and quarry sites
- 6) To provide distributing line of electricity to base camps and Kherlen casting yards
- 7) To provide telephone trunk line to main distribution frame/panel (MDF) of base camps and Kherlen casting yards or allocation of wireless frequency
- 8) To construct Road-side Stations (Michi-no-Eki), erect monuments and plant trees
- 9) To let a Japanese contractor use one set of asphalt plant and crusher plant together with asphalt testing equipment procured for the Project without charge

- 10) To secure lands and required facilities on return of plants used by a Japanese contractor
- 11) To give priority to a Japanese contractor to use procured asphalt plant for AZZA Tuv without charge of depreciation

(3) Equipment Matters

- 1) To secure plant yards and lands for facilities related to procured equipment
- 2) To level plant yard and relevant lands
- 3) To construct external fence
- 4) To secure garages with roof for equipment procured for the Project
- 5) To provide electricity, water supply, sewerage, telephone line and heater for garage as required
- 6) To secure tools and facilities for equipment repair and parts warehouse at garage
- 7) To secure access roads with pavement<sup>\*1)</sup> and stockyards
- 8) To provide office for workers, warehouse and laboratory at plant yard with necessary utilities such as electricity, water supply, sewerage, telephone line and heater
- 9) To provide operators, materials<sup>\*2)</sup> and labors for trial test necessary for instruction of operation for asphalt plant and crusher plant
- 10) To unload equipment by crane and store it at garage
- 11) To store parts at warehouse

(4) Soft Component

- 1) To appoint trainees and to make them available for group induction and technical training
- 2) To secure required budget and facilities for executing soft component
- 3) To procure labors, materials and equipment necessary for technical training in coordination with supplier, contractor and consultant

(5) Others

- 1) To contract with a Japanese consulting firm for detail design (D/D) and construction supervision
- 2) To contract with a Japanese contractor

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\*1) denotes that specification of pavement is not determined and it aims at achieving the purpose of environmental conservation such as prevention of dust.

\*2) denotes that the cost of material shall be borne by a Japanese contractor for the Project in case that a Japanese contractor will become beneficiary.

## 2-3-2 Estimated Project Cost in Basic Design Stage

For the implementation of the project under the Grant Aid of Japan, the estimated cost in Basic Design Stage including the cost borne by the Mongolian side will be about 2,990 million yen. Based on the share of the scope of works described in Section 2-2-4-1(3), the cost covered by the Japanese side and the cost borne by the Mongolian side are as follows:

### (1) Cost Covered by the Japanese Side

This cost estimate is provisional and will be further examined by the Government of Japan for the approval of the Grant Aid.

Cost Covered by the Japanese Side 2,932 Million Yen

Road Construction and Improvement totaling approximately 60km

Item			Cost Covered by the Japanese Side (Unit: Million Yen)	
Road Construction and Improvement	Road Construction Works	Embankment, Cutting, Pavement, Drainage Box Culverts, Pipe Culverts	1,433	1,906
	Bridge Construction (4 Bridges)	RC Bridges, Approach Road	449	
	Incidental Works	Traffic Signs, Markings, Guard Posts, Kilo-Posts	24	
Procurement of Equipment		Asphalt Plant, Crushing Plants, Motor Grader, Vibration Roller and etc	736	
Detailed Design and Supervision			290	

### (2) Cost Borne by the Mongolian Side

#### 1) Road Construction

- i) Right of way and land for contractor's facilities = 20,000,000 Tg
- ii) Land rental fee for contractor's facilities including borrow pits, sand pits and quarry sites = 30,000,000 Tg
- iii) Land for asphalt plant and crushing plants procured under Japan's Grant Aid and construction of gates and fences in and around the plant sites = 15,000,000 Tg
- iv) Construction of road side station = 100,000,000 Tg
- v) Construction of monuments = 8,000,000 Tg
- vi) Planting tree = 7,000,000 Tg

- vii) Relocation of telephone line posts = 25,000,000 Tg
- viii) Electricity: the distributing line to the two base camps  
and one concrete plant yard = 100,000,000 Tg
- ix) Providing facilities for the distribution of electricity,  
telephone, and other incidental facilities = 6,000,000 Tg
- x) To ensure unloading and customs clearance at port  
of disembarkation in recipient country = 1,500,000 Tg

2) Procurement of Equipment

- xi) Garage and warehouse of equipments procured under  
the Japan's Grant Aid = 300,000,000 Tg
- 
- Total of 1) and 2) 612,500,000 Tg

(Approximately 58.1 Million Yen)

(3) Condition of Cost Estimation

- 1) Basis of Cost Estimation : As of September, 2004
- 2) Exchange Rate : 1US\$ = 110.56 Japanese Yen  
1Tg = 0.0948 Japanese Yen
- 3) Construction : This project will be divided two stages shown as  
and Procurement Schedule Table 2-4-4-1  
which is described each detailed design, construction  
schedule and procurement schedule of equipment.
- 4) Others : This project will be implemented in accordance with the  
Japanese Grant Aid system.

**2-4 Project Operation Plan**

**2-4-1 Project Operation Plan regarding Construction**

(1) Periodical Inspection and Maintenance

A standard schedule of periodical inspection and maintenance for the road and bridges is shown in Table 2-4-1-1.



**Table 2-4-1-1 Schedule of Periodical Inspection and Maintenance**

Facility		Maintenance and Repairing Works	Inspection Period
Bridges	Drainage pipe	Cleaning of sediments	3 months
	Expansion joint	Repair of damaged members	1 year
	Handrail	Repairing damages by traffic accidents	1 year
	Bearings	Removal of earth deposit	1 year
	RC slab and Curb	Repair of crack and stripping	1 year
	Asphalt pavement	Repair of crack and potholes	1 year
	Main structure, Floor system, Lateral bracing	Repair of damaged members	1 year
	Substructure	Repair of crack and stripping	1 year
	Revetment	Repair of scours	1 year
Roads	Road surface	Patching and smoothing	1 month
	Shoulder and Slope	Surface treatment, vegetation, additional embankment	1 month
	Sid drainage	Removal of earth deposit	1 month
	Marking	Repainting	1 month
	Culvert	Repair of crack, stripping and joint	1 month

It is important to keep records (date of inspection, location of inspection, result of inspection, and name of inspector) of periodical checking at the road maintenance office and to grasp the condition of damage if any for the purpose of making a repair plan and its schedule. Therefore, the periodical checking system must be established at the initial stage.

(2) Maintenance of Asphalt Pavement

An emergency repair should be made timely as required to avoid expanding damage, and routine maintenance including minor maintenance works (patching, leveling) is also carried out. The periodic maintenance such as overly on deteriorated section will be required at seven years interval as a general rule.

(3) Maintenance Cost

The maintenance of constructed roads shall be carried out by AZZA Tuv and HARGUI using procured equipment.

The routine maintenance cost is estimated to be approximately 74.8 million Tg (7.1 million yen) that sum up operation and maintenance costs for road and bridge. However, the operation and the maintenance cost of procured equipment are included in Section 2-4-2 (2). Therefore, the following cost doesn't contain these expenditures so that the operation and the maintenance of constructed facilities should be used the procured equipment.

1) Operation and Maintenance Cost for Bridges

Daily inspection and routine maintenance for bridges will be required, but a large-scale repair will not be taken into consideration unless damage and deform by vehicular collision occur.

The major works of daily inspection and routine maintenance are the cleaning of the catch-basin and the removal of the piling up earth and sand. Therefore, the routine maintenance cost for bridges is estimated as follows:

a) Personnel expenses		
(271,000Tg/Month x 12Months x 2 Sections)	=	6,504,000 Tg
b) Miscellaneous		
(Ramp Sum [a]x50% )	=	9,756,000 Tg
<u>c) Vehicle operation charge (Ramp Sum)</u>	=	<u>3,861,000 Tg</u>
Total		20,121,000 Tg

(Approximately 191 Million Yen)

## 2) Operation and Maintenance Cost for Roads

The operation and maintenance cost for roads includes only the daily inspection and the routine maintenance in this section so that the periodic maintenance such as overlay will be conducted once every seven years.

The major works of daily inspection and routine maintenance are the patching of potholes and the sealing of cracks, and especially the sealing of cracks at the early spring is important. Therefore, the routine maintenance cost for roads is estimated as follows:

a) Cost for patching and sealing		
100Tg/m <sup>2</sup> x 7.6m x 60km x 2 Sections	=	45,600,000 Tg
<u>b) Miscellaneous (Lump Sum (a)x20%)</u>	=	<u>9,120,000 Tg</u>
Total		54,720,000 Tg

(Approximately 519Million Yen)

## 3) Reliability of Budget Allocation

Road maintenance companies of AZZA Tuv and HARGUI will conduct operation and maintenance for constructed roads as described in “1) Operation and Maintenance Cost for Bridges”. The budget for two road maintenance companies is allocated from the Ministry of Road, Transport and Tourism (MRTT) through the former DOR. The operation and maintenance cost is estimated approximately 74.8 million Tugrik for constructed roads. On the other hand, the annual budget for road maintenance of the former DOR is approximately 14,000 million Tugrik. It accounts for less than 1% against the budget. Accordingly, it is possible to allocate budget for an appropriate operation and maintenance of constructed roads.

## **2-4-2 Project Operation Plan regarding Improvement of Equipment**

### **(1) Project Operation Plan**

The national road maintenance company AZZA Tuv having a branch in Baganuur is responsible for 135km stretch from Ulaanbaatar to Baganuur, while the national road maintenance company HARGUI is responsible for 199km stretch from Baganuur to Undurkhaan. However, road maintenance ability of both maintenance companies decreases year by year because equipment that is available in both maintenance companies are old and obsolete enough to decline operation. 15 years or more have already elapsed since they were purchased early in the 90s of the 80s, and, the number of equipment at a operative level are decreasing year by year. Although some kind of equipment is available in the market on a rental basis but the costly charges cause to delay road maintenance work because of budgetary constraint. Moreover, although mechanics have knowledge of equipment structure and daily preventive maintenance, they are used to equipment made in ex-Soviet Union and ex-East European countries. Their technical level is getting lower as such obsolete equipment go for scrap.

AZZA Tuv has enough staff who have experience in operation of an asphalt plant and a crusher plant in the past because AZZA Tuv has maintained paved national roads. AZZA Tuv has enough staff who have experience in operation of an asphalt plant and a crusher plant in the past because AZZA Tuv has maintained paved national roads. Accordingly, AZZA Tuv will be competent to operate and manage equipment procured for the project if an introductory training and training of equipment management will be carried out by a Japanese supplier at the time of delivery of equipment.

On the contrary, HARGUI would face serious difficulty to operate and manage equipment procured because there is few paved road under the jurisdiction of HARGUI and it will increase drastically after the completion of the project. HARGUI should increase number of staff who will be employed newly and will train both present and new staff by group induction and an introductory training by a Japanese supplier at the time of delivery of equipment.

A currently owned staff and the required number of staff for equipment to be procured in the project are shown in Table 2-4-1-1.

**Table 2-4-2-1 Present staff and required staff for equipment to be procured**

Category	AZZA Tuv				HARGUI					
	Existing	Necessary number for the equipment to be procured			enough(+) or lack(-)	Existing	Necessary number for the equipment to be procured			enough(+) or lack(-)
		Construction equipment	Vehicles	Plants			Construction equipment	Vehicles	Plants	
Operator	41	13		4	+24	9	15		4	-10
Driver	14			7	+7	6			9	+3

Note:

- 1) Number of existing staff is of the survey result of the Study.
- 2) Present equipment are so old and obsolete that they are replaced by equipment that will be procured by the project.

On the other hand, the present method of road maintenance is to cover cracks or potholes with asphalt mixture that are identified by visual inspection. Neither investigation of cause of defects nor sound design to keep good condition is conducted. Moreover, equipment cannot be appropriately used because of lack of repair work planning and improper selection and combination of equipment due to shortage of equipment. According, equipment to be procured for the project should be used appropriately after an introductory training and training of equipment management are executed.

A mechanical engineer will be dispatched in order to instruct the initial operation and maintenance of equipment, and a road rehabilitation specialist will be dispatched in order to transfer the pavement repair technology using the guidance for investigation method, analysis of defects and its evaluation, appropriate measures, practical usage of equipment and so forth.

(2) Operation and Maintenance Cost

Operation and maintenance of equipment will require the costs shown in Table 2-4-2-2 after the delivery of equipment to AZZA Tuv and HARGUI.

**Table 2-4-2-2 Estimated Cost for Operation and Maintenance of Equipment**

Unit : 1,000 Tg

No.	Company	Yearly maintenance and repair costs	Fuel and oil	Total
1	AZZA Tuv	102,281	77,526	179,807
2	HARGUI	113,520	91,007	204,527
	Total	215,801	168,533	384,334

**2-5 Other Relevant Issues**

**2-5-1 Necessity of Soft Component**

The road maintenance ability of both maintenance companies of AZZA Tuv and HARGUI decreases year by year because their equipment are old and obsolete enough to decline operation. Although some kind of equipment is available in the market on a rental basis but

the costly charges cause to delay road maintenance work because of budgetary constraint. Neither systematic maintenance nor appropriate management of equipment is carried out.

The present method of road maintenance is to cover cracks or potholes with asphalt mixture that are identified by visual inspection. Neither investigation of cause of defects nor sound design to keep good condition is conducted.

Accordingly, the training to implement maintenance work systematically and efficiently with procured equipment is required.

## **2-5-2 Contents of Soft Component**

The purpose of soft component is to enhance the ability of equipment maintenance and to increase the rate of operation of procured equipment. It is required to implement maintenance efficiently and effectively with limited funds.

Soft component comprises group induction and technical training. Group induction comprises introductory training by supplier and induction to enhance the equipment maintenance ability. The objective of group induction is the realization of efficient equipment operation by the acquisition of equipment operation method and the enhancement of maintenance ability.

Technical training provides the technique to repair the road with procured equipment. The objective of technical training is to enhance the ability of maintenance work which comprises plan, design, procurement and construction. It is required that the comprehensive road maintenance system is instructed by supplier, contractor and consultant.

The implementation schedule of the Project is divided into two packages, namely 1<sup>st</sup> package and 2<sup>nd</sup> package. 2 sets of asphalt plant and crusher plant together with asphalt testing equipment will be procured in 1<sup>st</sup> package and the remaining part of equipment will be delivered in 2<sup>nd</sup> package. Accordingly, group induction for plants will be carried out in 1<sup>st</sup> package and the remaining part of soft component will be conducted in 2<sup>nd</sup> package.

## **2-5-3 Group Induction**

### **2-5-3-1 Objectives of Group Induction**

Group induction comprises introductory training and induction to enhance the equipment maintenance ability. Introductory training is implemented as a part of equipment procurement by supplier and provides the operation method and how to use the manual.

The objective of induction is to establish an efficient maintenance and management system. It will be able to reduce the maintenance cost by the prevention of breakdown as well as the increase of the rate of operation.

The goal of this soft component is following 2 items.

- To understand the condition of equipment correctly
- To implement regular inspection and maintenance systematically

### 2-5-3-2 Contents of Group Induction

The contents and output of group induction is as follows.

Objectives	Schedule	Executive Agency	Contents	Output
1. To understand the condition of equipment correctly				
- Explanation and meeting about material/equipment list and parts list	Beginning of site work	E / C	Explanation and meeting about list	
- Making of material/equipment list	Beginning of site work	E / C	Order of existing document Improvement of existing document format Instruction of list making procedure	Material/equipment list
- Making of parts list	Beginning of site work	E / C		Parts list
- Making of running list	Middle of site work	E / C		running list
2. To implement regular inspection and maintenance systematically				
- Explanation and meeting about manual	Beginning of site work	E / C	Explanation and meeting about manual	
- Making of regular inspection check sheet	Middle of site work	E / C	Instruction of check sheet making procedure	Regular inspection check sheet
- Making of running record form	Beginning of site work	E / C	Instruction of record form making procedure	Running record form
- Making of regular inspection form and breakdown/repair form	All term of site work	E / C	Instruction of form making procedure	Regular inspection form Breakdown/repair form
- Making of inventory form for parts	End of site work	E / C	Instruction of form making procedure	Parts inventory form

\* Executive Agency ; E : Equipment maintenance expert C : Mongolia counterpart

### 2-5-4 Technical Training

#### 2-5-4-1 Objectives of Technical Training

The improvement of road maintenance system as well as the increase of the rate of operation is required in order to implement maintenance work efficiently with limited material, equipment and budget. Road maintenance comprises inspection, investigation, repair method selection, design, preparatory work and construction. It is significant to record and feed back this series of maintenance work.

In technical training, a series of maintenance system will be instructed by lecture and exercise of design/construction. The objective of this training is to establish the system to implement maintenance efficiently by making manual and road inventory.

Technical training will be implemented by supplier, contractor and consultant. The contents of training implemented by respective agencies are as follows.

(1) Technical training by supplier

Technical training implemented by supplier is introductory training for procured equipment and road maintenance training. Supplier will implement pilot construction (surface treatment road) with procured equipment in 2007 (tentative).

(2) Technical training by contractor

Contractor for stage 2 construction will implement pilot construction (asphalt pavement road, concrete pavement road) in summer, 2008 and 2009 (tentative).

(3) Technical training by consultant

Consultant will take charge of coordination, arrangement, supervising and evaluation of construction as well as investigation, evaluation, plan and design for maintenance work in a series of pilot construction.

## 2-5-4-2 Contents of Technical Training

The contents and output of technical training is as follows.

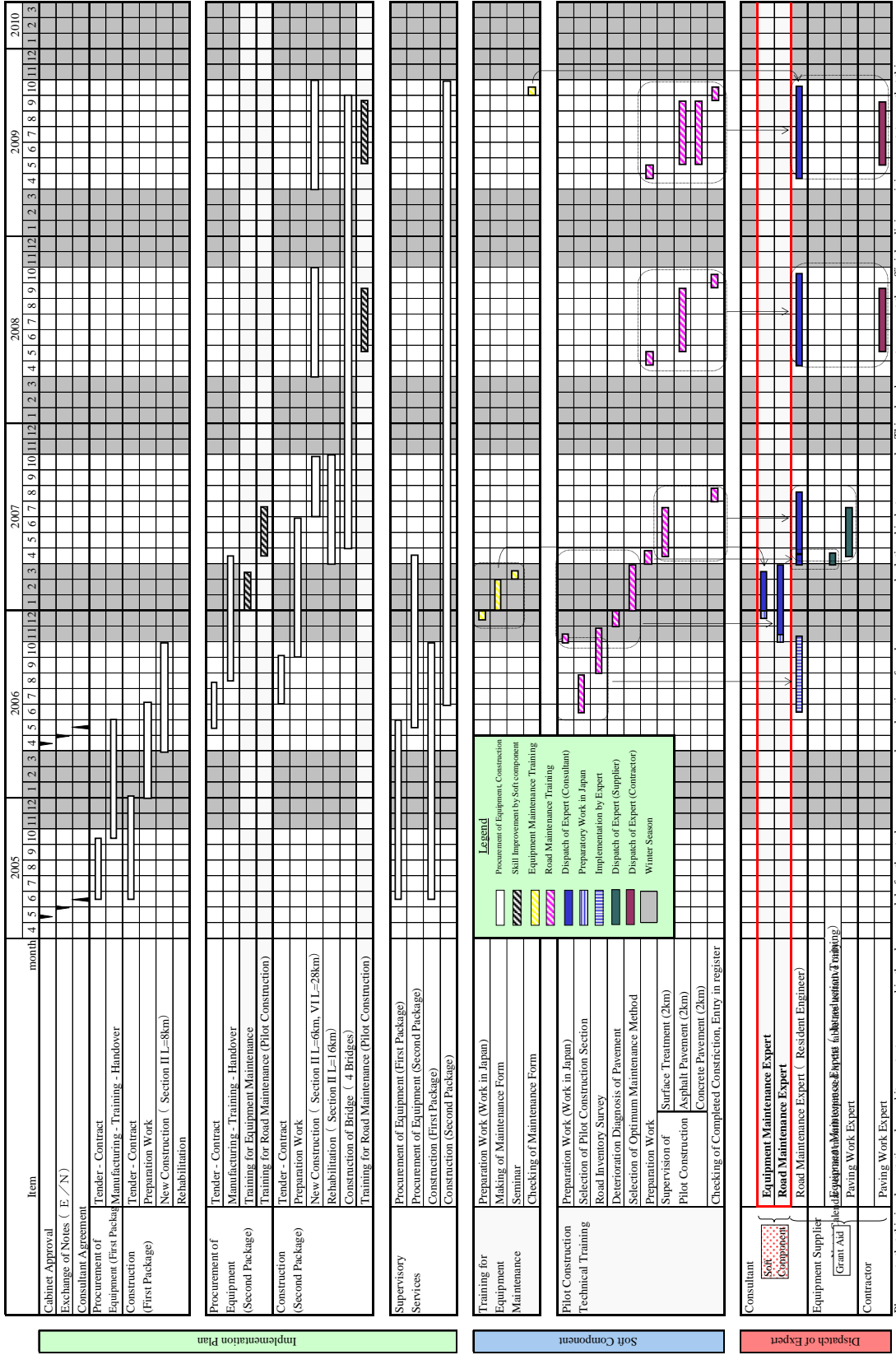
Contents	Lecture	Training	Output
Preparatory work <ul style="list-style-type: none"> <li>- Making of training materials</li> </ul> Preparatory work in site <ul style="list-style-type: none"> <li>- Road inventory survey</li> </ul>			<ul style="list-style-type: none"> <li>- Materials use in training</li> <li>- Road inventory sheet for pilot construction section</li> </ul>
1. Inspection and investigation <ul style="list-style-type: none"> <li>- Coordination, Organization of working team</li> <li>- General of maintenance</li> <li>- Road inventory survey</li> <li>- Structure site survey</li> <li>- Pavement structure survey</li> <li>- Other survey</li> </ul>	<ul style="list-style-type: none"> <li>- Importance of maintenance</li> <li>- Procedure of maintenance</li> <li>- Meaning of respective investigation</li> <li>- Procedure of investigation</li> <li>- Arrangement of result</li> </ul>	<ul style="list-style-type: none"> <li>- Arrangement of survey result for pilot construction section</li> </ul>	<ul style="list-style-type: none"> <li>- To Understand rough maintenance work flow</li> <li>- To make planning report</li> <li>- To make road inventory</li> <li>- To enhance skill and efficiency by understanding of inspection/investigation procedure</li> <li>- To make database for future maintenance planning</li> </ul>
2. Determine whether maintenance is required or not <ul style="list-style-type: none"> <li>- Service level of pavement</li> <li>- Life cycle</li> <li>- Evaluation method for survey result</li> <li>- Criteria for evaluation</li> <li>- Capability required for pavement</li> <li>- Determine whether maintenance is required or not</li> <li>- Selection of maintenance section</li> </ul>	<ul style="list-style-type: none"> <li>- Function of pavement, viewpoint for evaluation, life cycle</li> <li>- Cracking ratio, rutting volume, surface roughness, CBR</li> <li>- Criteria for comprehensive evaluation</li> <li>- Determination of service level from traffic volume and significance</li> <li>- Selection of maintenance section from distribution of damage points</li> </ul>	<ul style="list-style-type: none"> <li>- Evaluation of damage level for existing road</li> <li>- Determination of service level from traffic volume and significance for existing road</li> <li>- Determine whether maintenance is required or not</li> <li>- Selection of maintenance section</li> </ul>	<ul style="list-style-type: none"> <li>- To Evaluate damage level from survey result</li> <li>- To identify section requiring maintenance</li> <li>- To determine section executed pilot construction</li> </ul>
3. Determination of maintenance method and materials <ul style="list-style-type: none"> <li>- Crack</li> <li>- Rutting</li> <li>- Pot hole</li> <li>- Various maintenance methods</li> <li>- Characteristic of materials</li> <li>- Selection of maintenance method for</li> </ul>	<ul style="list-style-type: none"> <li>- Damage type, cause of damage, measure for damage</li> <li>- Maintenance method, introduction of materials</li> <li>- Selection of maintenance method regarding surface damage and base</li> </ul>	<ul style="list-style-type: none"> <li>- Selection of optimum maintenance method from damage level and cause for existing road</li> </ul>	<ul style="list-style-type: none"> <li>- To select optimum maintenance method from cause of damage</li> <li>- To select optimum maintenance method and materials from damage level, cause, traffic volume and so forth</li> <li>- To select maintenance method for pilot</li> </ul>



Contents	Lecture	Training	Output
<p>respective damages</p> <p>4. Plan and design of maintenance</p> <ul style="list-style-type: none"> <li>- Necessity of planning</li> <li>- Planning for middle and long term</li> <li>- Planning for short term</li> <li>- Design criteria</li> <li>- Maintenance design</li> <li>- Construction planning</li> <li>- Selection of material and equipment</li> </ul>	<p>course damage</p> <ul style="list-style-type: none"> <li>- Efficient and effective maintenance</li> <li>- Maximization of maintenance effect by coordination and feedback between middle/long term plan and short term plan</li> <li>- Determination of criteria from traffic volume, environment and so forth</li> <li>- Calculation method</li> <li>- Construction planning on account of environment and equipment procurement</li> </ul>	<ul style="list-style-type: none"> <li>- Middle and long term maintenance plan</li> <li>- Short term maintenance plan</li> <li>- Maintenance design for existing road</li> <li>- Construction planning for pilot construction</li> </ul>	<p>construction section</p> <ul style="list-style-type: none"> <li>- To make construction efficient from the viewpoint of comprehensive and middle/long term planning</li> <li>- To reduce construction cost by optimum selection of pavement width and so forth</li> <li>- Maintenance plan and design for pilot construction</li> <li>- Construction planning for pilot construction</li> </ul>
<p>5. Implementation of maintenance</p> <ul style="list-style-type: none"> <li>- Procurement of material and equipment</li> <li>- Quality control</li> <li>- Making of road inventory</li> <li>- Feedback</li> </ul>	<ul style="list-style-type: none"> <li>- Significance of quality control</li> <li>- Road inventory making procedure</li> <li>- Road inventory management manner</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Construction management</li> <li>- Quality control</li> </ul>	<ul style="list-style-type: none"> <li>- To enhance skill and efficiency by construction on account of management and quality control</li> <li>- To make a manual based on a series of lecture</li> <li>- To implement continuous maintenance work with understanding of a series of maintenance system</li> </ul>

## 2-5-5 Implementation Schedule of Soft Component

Implementation schedule of soft component is as follows.



## CHAPTER 3

### Project Evaluation and Recommendations

## **CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS**

### **3-1 Project Effect**

#### **(1) Direct Effects**

##### 1) Saving of Vehicle Operating Costs

Average traveling speed on multiple shifting tracks is 40 km/h at most on the most desirable condition. It is forced to reduce speed up to 20 km/h to keep safety and avert losing way at night, deep groove and rutting. Although the surface conditions become better because disintegration and depressions are covered by snow and rather flat, average traveling speed also decreases considerably due to slippery surfaces. Once multiple shifting tracks are changed to one paved road to an all-weather standard, average traveling speed between Baganuur and Undurkhaan will increase 60 km/h – 80 km/h although it is 20 km/h – 40 km/h at present, and accordingly vehicle operating costs may decrease considerably due to saving of traveling time and improvement of roughness.

##### 2) Increase of Heavy Vehicles

Heavy vehicles with the loading capacity of 14 t allow passing on Kherlen Bridge and only small trucks can pass on wooden bridges. However, as these bridges are improved to an international standard as a part of Asian Highway, many heavy vehicles will be able to pass on the road and especially it will enable to transport 40 ft containers. It may mitigate the weight restriction to 20 t for truck or 43 t for trailer.

##### 3) Mitigation of Adverse Impacts on Loss of Grassland

Once multiple shifting tracks are changed to one paved road, grassland will be conserved from vehicular tracks and dust. Approximately the losing area of 12% will be reduced considering the loss by embankment of road.

#### **(2) Indirect Effects**

##### 1) Increase of Traffic Volume and Passengers

Number of vehicle will increase as the road is improved. And bus services between major cities are improved in terms of frequency, which will lead increase of passengers.

##### 2) Stimulation to Economic Activities in the Region

Heavy vehicles will be able to pass on the road as the loading capacity is increased, and freight of products is ensured throughout the year. This, with development of the commercial

activities of the regions along the road resulted from erection of Road-side Station (Michi-no-Eki), will stimulate economic activities in Eastern Mongolia.

3) **Enhancement of Traffic Safety and Improvement of Life level**

It will be possible to secure traffic safety throughout the year. And construction of new bridges will remove the traffic bottleneck. They will enable people to have better access to social facilities including schools, hospitals and communication centers. Therefore the standard of life will be improved.

**3-2 Recommendations**

**(1) Undertakings by the Mongolian Side**

It is recommended that the Mongolian Side should construct Road-side Stations, erect Monuments and plant trees along the road since the implementation of Road-side Stations and planting trees is required to enhance functions according to increment of road users and the erection of monuments aims to disseminate the background of the Project and its signification to the public.

**(2) Provision of Sure Transport Means through a Year**

The Project is located on the arterial road to connect the capital city of Ulaanbaatar to the eastern region comprising 3 provinces of Khentii, Dornod and Sukhbaatar, and it will connect paved sections each other between Ulaanbaatar and Baganuur / Undurkhaan. The Project is planned to stimulate the development of the “Millennium Road Plan” to the border so as to induce incremental demand of domestic freight as well as international cargo to China. Accordingly, it is recommended to monitor the progress of the development of the “Millennium Road Plan”.

**(3) Strengthening of Road Maintenance Capability**

Road construction and maintenance in Mongolia is heavily mechanized because of the low density of population and long distances to be covered. It is therefore necessary to strengthen the capability of road repair and maintenance by the procurement of modern equipment and improvement of repairing skill by group induction and technical training. It is recommended that the undertakings by the Mongolian side on the plan for the Soft Components should be carried out timely according to the implementation plan.

## APPENDICES

## APPENDIX 1

### Member List of the Study Team

## Appendix 1. Member List of the Study Team

### (1) First Field Study Team

Assignment	Name and Authority/Firm
<b>Leader</b>	<b>Mr. HAYASHI Hiroyuki</b> Traffic Infrastructure Team, Project Management Group II, Grant Aid Management Dept., Japan International Cooperation Agency
<b>Chief Consultant / Road Planning / Environmental and Social Considerations</b>	<b>Mr. MARUOKA Kenji</b> Pacific Consultants International
<b>Bridge Design I</b>	<b>Mr. NOMIYAMA Koreaki</b> Japan Overseas Consultants Co., Ltd.
<b>Natural Condition Survey (Topography, Geology and Hydrology)</b>	<b>Mr. KOBAYASHI Yoshitoshi</b> Japan Overseas Consultants Co., Ltd.

### (2) Second Field Study Team

Assignment	Name and Authority/Firm
<b>Leader</b>	<b>Mr. HAYASHI Hiroyuki</b> Traffic Infrastructure Team, Project Management Group II, Grant Aid Management Dept., Japan International Cooperation Agency
<b>Chief Consultant / Road Planning / Environmental and Social Considerations</b>	<b>Mr. MARUOKA Kenji</b> Pacific Consultants International
<b>Road Design I</b>	<b>Mr. HARADA Atsushi</b> Pacific Consultants International
<b>Bridge Design I</b>	<b>Mr. NOMIYAMA Koreaki</b> Japan Overseas Consultants Co., Ltd.
<b>Bridge Design II</b>	<b>Mr. NAKANO Hidetoshi</b> Pacific Consultants International
<b>Road Equipment and Machinery Planning</b>	<b>Mr. KOHSAKA Yukio</b> Pacific Consultants International
<b>Natural Condition Survey (Topography, Geology and Hydrology)</b>	<b>Mr. KOBAYASHI Yoshitoshi</b> Japan Overseas Consultants Co., Ltd.
<b>Construction Planning / Cost Estimate</b>	<b>Mr. TAKEUCHI Tomoaki</b> Pacific Consultants International
<b>Procurement Planning / Cost Estimate</b>	<b>Mr. KOSAKA Fumio</b> Pacific Consultants International
<b>Consultant Coordinator / Road Design II</b>	<b>Mr. OGUNI Takuma</b> Pacific Consultants International



(3) Draft Report Explanation Team

<b>Assignment</b>	<b>Name and Authority/Firm</b>
<b>Chief Consultant / Road Planning / Environmental and Social Considerations</b>	<b>Mr. MARUOKA Kenji</b> Pacific Consultants International
<b>Bridge Design I</b>	<b>Mr. NOMIYAMA Koreaki</b> Japan Overseas Consultants Co., Ltd.
<b>Road Equipment and Machinery Planning</b>	<b>Mr. KOHSAKA Yukio</b> Pacific Consultants International

APPENDIX 2  
Study Schedule

## Appendix 2. Study Schedule

### (1) First Field Study

Itinerary				Team Leader	Chief Consultant / Road Planning / Environmental and Social Consideration	Bridge Design I	Natural Condition Survey and Analysis	
No.	Date	Day		Mr. HAYASHI Hiroyuki	Mr. MARUOKA Kenji	Mr. NOMIYAMA Koreaki	Mr. KOBAYASHI Yoshitoshi	
1	Jun 26	Sat			Tokyo - Ulaanbaatar			
2	27	Sun			Site Survey (other projects*)			
3	28	Mon			Meeting with JICA, Presentation and Discussion of IC/R to MOI and DOR			
4	29	Tue			Sector and Subcontractor Investigations			
5	30	Wed			Review of Fesibility Study			
6	Jul 1	Thu			Review of EIA	Data Collection		
7	2	Fri		Data Collection and Reporting				
8	3	Sat		Tokyo - Ulaanbaatar	Preparation of Site Survey		Tokyo - UB	
9	4	Sun		Site Survey (Ulaanbaatar - Undurkhaan)				
10	5	Mon		Site Survey (Undurkhaan - Ulaanbaatar)				
11	6	Tue		Courtesy Call to Embassy of Japan, MOI and Metting with MOI and JICA				
12	7	Wed		Courtesy Call to MoFA, MEF and MNE, Discussion on M/D with MOI				
13	8	Thu		Discussion and Signing on M/D with MOI				
14	9	Fri		Report to Embassy of Japan and JICA				
15	10	Sat		Ulaanbaatar - Tokyo			Site Survey (other projects*)	
16	11	Sun			Discussion with JICA headquarters	Discussion with JICA headquarters	Data Collection on Natural Conditions	
17	12	Mon						
18	13	Tue						Discussion with DOR
19	14	Wed						
20	15	Thu						
21	16	Fri						
22	17	Sat						
23	18	Sun						
24	19	Mon						
25	20	Tue						
26	21	Wed						
27	22	Thu					Site Inspection on Topographic and Geotechnical Survey	
28	23	Fri						
29	24	Sat						
30	25	Sun						
31	26	Mon						
32	27	Tue						
33	28	Wed		UB - Tokyo				

(2) Second Field Study

Itinerary		Team Leader	Chief Consultant / Road Planning / Environmental and Social Consideration	Road Design I	Bridge Design I	Bridge Design II	Equipment and Machinery Planning	Natural Condition Survey and Analysis	Construction Program / Cost Estimate	Procurement Program / Cost Estimate	Coordinator / Road Planning I
No.	Date	Mr. HAYASHI Hiroyuki	Mr. MARIOKA Kenji	Mr. HARADA Atsushi	Mr. NOMIYAMA Kensei	Mr. NAKANO Hidetoshi	Mr. KOSAKA Yukio	Mr. KOBAYASHI Yoshitoshi	Mr. TAKEUCHI Tomoaki	Mr. KOSAKA Fumio	Mr. OGUNI Takuma
1	Aug. 11 Wed	Tokyo - Ulaanbaatar									
2	12 Thu	Courtesy Call to Embassy of Japan and JICA									
3	13 Fri	Discussion with MOI and DOR									
4	14 Sat	Site Survey 1 (Ulaanbaatar - Undurkhaan)									
5	15 Sun	Site Survey 2 (Undurkhaan - Ulaanbaatar)									
6	16 Mon	Courtesy Call to MoFA, MEF and MNE									
7	17 Tue	Discussion and Signing on M/D. Meeting with JICA									
8	18 Wed	Ulaanbaatar - Tokyo									
9	19 Thu		Data Collection of Other Donors and Projects	Tokyo - UB	Other Donors and Projects	Discussion with DOR	Tokyo - Ulaanbaatar	Meteorology Hydrology Survey			
10	20 Fri		Environmental Regulations	Site Survey 1	Setting up Design Criteria	Site Survey 1 (UB - UK)	Site Survey 1 (UB - UK)				
11	21 Sat			Site Survey 2	Design Criteria	Site Survey 2 (UK - UB)	Site Survey 2 (UK - UB)				
12	22 Sun										
13	23 Mon										
14	24 Tue										
15	25 Wed										
16	26 Thu		Basic Concept of the Project	Preparation	Data Collection						
17	27 Fri		Study on Other Consideration	Traffic Survey	Engineering Studies						
18	28 Sat			Site Investigation 1 (Section II)	Site Investigation 1 (Section II)						
19	29 Sun			Site Investigation 2 (Section VI)	Site Investigation 2 (Section VI)						
20	30 Mon										
21	31 Tue										
22	1 Sep.										
23	2 Thu		Operation/Maintenance Planning	Analysis of Traffic Survey	Basic Concept of the Project	Technical Analysis	Procurement and Subcontractor Investigations	Geotechnical Topography Meteorology Hydrology Analysis	Subcontractor Market Cost Estimate Investigation	Procurement Market Cost Estimate Investigation	Analysis of Traffic Survey
24	3 Fri		Obligation of Recipient Country	Discussion with DOR and Related Organization	Discussion with DOR and Related Organization	Basic Design	Basic Concept of the Project		Construction and O/M Program	Procurement and O/M Program	Basic Design
25	4 Sat		Determination of Evaluation Index								
26	5 Sun										
27	6 Mon		Study on Subjects and Problems Recommendation	Basic Design	Reporting	Basic Design	Discussion with DOR Related Organization	Geotechnical Topography Meteorology Hydrology Analysis	Site Investigation 1 (II)	Implementation Planning	Basic Design
28	7 Tue		Discussion with DOR and Related Organization	Basic Design	Sorting out Data UB - Tokyo				Site Investigation 2 (VI)	Cost Estimation of Project Implementation and O/M	Basic Design
29	8 Wed								Implementation Planning	Cost Estimation of Project Implementation and O/M	Basic Design
30	9 Thu		Discussion with DOR and Related Organization						Cost Estimation of Project Implementation and O/M	Sorting out Data	Basic Design
31	10 Fri								Project Implementation and O/M	UB - Tokyo	Discussion
32	11 Sat		Discussion in Study Team								Discussion
33	12 Sun		Sorting out Data								Basic Design
34	13 Mon		Report to JICA								Basic Design
35	14 Tue		Discussion with DOR								Discussion with DOR
36	15 Wed		Sorting out Data								Sorting out Data
37	16 Thu		Report to JICA								Report to JICA
38	17 Fri										UB - Tokyo
39	18 Sat										UB - Tokyo

\* UB: Ulaanbaatar, JICA: Japan International Cooperation Agency, EOJ: Embassy of Japan, MOI: Ministry of Infrastructure, DOR: Department of Roads, MoFA: Ministry of Foreign Affairs, MEF: Ministry of Economy and Finance MNE: Ministry of Nature and Environment, M/D: Minutes of Discussion, UK: Undurkhaan, O/M: Operation and Maintenance

(3) Draft Report Explanation

Days	Date	Mr. Maruoka, Mr. Nomiya, Mr. Kohsaka		Accommodation
		AM	PM	
1	23-Feb Wed.	9:30 Call on JICA Office	18:20 Arrival at Ulaanbaatar	Ulaanbaatar
2	24-Feb Thurs.	11:00 Call on Embassy of Japan	14:30 Mr. O. Erdembileg, Director General, Economic Cooperation Policy Coordination Dept., MOF	Ulaanbaatar
			15:30 Explanation and Discussion of Draft Basic Design Report to Ministry of Road, Transport and Tourism (MORTT)	
3	25-Feb Fri.	10:00 Explanation and discussion on DBD	Explanation and discussion on DBD	Ulaanbaatar
4	26-Feb Sat.	Site Inspection(UB-Baganuur)	Site Inspection(UB-Baganuur)	Ulaanbaatar
5	27-Feb Sun.			Ulaanbaatar
6	28-Feb Mon.	10:00 Explanation and discussion on DBD	Explanation and discussion on DBD	Ulaanbaatar
7	1-Mar Tue.	10:00 Explanation and discussion on DBD	Explanation and discussion on DBD	Ulaanbaatar
8	2-Mar Wed.	10:00 Discussion of Minutes of Discussion	Discussion of Minutes of Discussion	Ulaanbaatar
9	3-Mar Thurs.	10:00 Discussion of Minutes of Discussion	15:00 Joint meeting with ADB, WB and UNDP at JICA Mongolian Office	Ulaanbaatar
10	4-Mar Fri.	Signing of Minutes of Discussion	14:30 Report to Embassy of Japan	Ulaanbaatar
11	5-Mar Sat.	Departure to Tokyo from UB	15:30 Report to JICA Office	Ulaanbaatar

Regend:

- UB Ulaanbaatar
- DBD Draft Basic Design Report
- MORTT Ministry of Road, Transport and Tourism
- MOF Ministry of Finance
- MD Minutes of Discussion

## APPENDIX 3

### List of Parties Concerned in the Recipient Country

### Appendix 3. List of Parties Concerned in Recipient Country

#### List of Parties Concerned in Recipient Country

##### (1) Japanese

Name	Position	Affiliation
1) Japanese Embassy in Mongolia		
Kazuhiro Someya	Secretary	
Hiroshi Sato	Secretary	
2) JICA Mongolia Office		
Toshio Hirai	General Manager	
Akira Shimizu		

##### (2) Mongolian

Name	Position	Affiliation
1) Ministry of Road, Transport and Tourism (Former Ministry of Infrastructure)		
Mr. P. Batsaikhan	State Secretary	
Mr. J. Sereeter	Director General	Policy and Coordination Department of Roads Transport, Information, Communications and Tourism
Mr. O. Sod	Director General	Road Department
Mr. B. Enkhtur	Vice Director	Department of Roads
Mr. H. Gantumur	Deputy Director	Department of Road Policy Coordination
Mr. B. Manduul		Department of Road Policy Coordination
Ms. G. Narantuya		Department of Road Policy Coordination
Ms. B. Tserennyama		Department of Road Policy Coordination
Mr. T. Dovdondorj	Director General	Department of Roads Government Implementing Agency
Mr. D. Baasankhuu		Road Inspection and Road Research Center
Mr. Ch. Bayasgalan		Road Inspection and Road Research Center
Mr. Ts. Nyamjav		Road Inspection and Road Research Center
Mr. T. Byamba		Road Inspection and Road Research Center
Mr. B. Enkhtur		Road Inspection and Road Research Center
Mr. Bayasgalan		Construction Management Division
Mr. Enkhtuya		Construction Management Division
Mr. G. Battogtokh		Construction Division
Mr. K. Gantumur		Construction Division
Mr. Lkhagvasuren	Chief Engineer	Central Laboratory
2) Ministry of Finance		
Mr. D Zorigt	Director-General	Department of Foreign Loan and Aid Policy and Coordination
Mr. L. Nasanbuyan	Assistance of Director	Department of Foreign Loan and Aid Policy and Coordination
Mr. T. Dorjkhand	Deputy Director	Department of Foreign Loan and Aid Policy and Coordination

Name	Position	Affiliation
3) Khentii Province		
Mr. Ch ErdeneBaatar	Governor	
4) AZZAN (Governmental Road Maintenance Company)		
Mr. D. Chuluun	Director General	
Mr. Batsuur	Department Director	
Mr. D. Bold		
Mr. Dorjjugder		
5) HARUGUI (Road Maintenance Company Khentii Province)		
Mr. D. Magasarjav	Director	
6) UBZZ (Ulaanbaatar City Road Maintenance Company)		
Mr. Kh. Enkhtaivan	Director General	
7) Erdene Zam (Road and Bridge Construction State Enterprise)		
Mr. L. Adilbish	General Director	
Mr. J. Saikhan	Chief Engineer	
8) Baganuur District		
E. Chimeg		Infrastructure Urban Planning Department of Public Economy
9) Mongolian Railway Baganuur Station		
Luvsan	Station Manager	
10) GBET Co. Ltd.		
Mr. B. Erkhembayar		

(3) Other Donors

Name	Position	Affiliation
1) World Bank		
Mr. Ts Bat-ochir	Sr. Operation Officer	
2) Asian Development Bank		
Mr. Ts Amar	Economics Officer	



**APPENDIX 4**  
**Minutes of Discussions**

Minutes of Discussions  
on the Basic Design Study on the Project  
for Construction of the Eastern Arterial Road  
and Improvement of Equipment  
for Road Construction and Maintenance  
in Mongolia  
(first field survey)

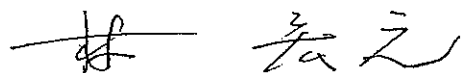
In response to the request from the Government of Mongolia, the Government of Japan decided to conduct the Basic Design Study (hereinafter referred to as "the Study") on the project for Construction of the Eastern Arterial Road and Improvement of Equipment for Road Construction and Maintenance (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Mongolia the Basic Design Study Team (first field survey) (hereinafter referred to as "the Team"), headed by Mr. Hiroyuki Hayashi, an officer, Traffic Infrastructure Team of the Project Management Group II, Grant Aid Management Department, JICA, and is scheduled to stay in the country from June 26 to July 28, 2004.

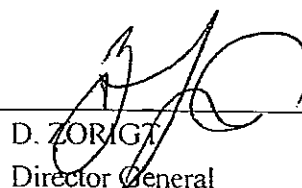
The Team held discussions with the concerned officials of the Government of Mongolia.

In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the second field survey.

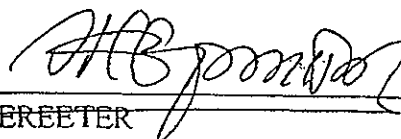
Ulaanbaatar, July 8, 2004



Hiroyuki Hayashi  
Leader  
Basic Design Study Team  
Japan International Cooperation Agency



D. ZORIGT  
Director General  
Department of Economic Cooperation Policy  
and Coordination  
Ministry of Finance and Economy



J. SERREETER  
Director General  
Policy and Coordination Department of Roads  
Transport, Information, Communications & Tourism  
Ministry of Infrastructure



B. ENKHTUR  
Vice Director  
Department of Roads

## ATTACHMENT

### 1. Objective

The objective of the Project is to construct the Eastern Arterial Road and to procure equipment for road construction and maintenance.

### 2. Project Site

The sites of the Project are shown in Annex-1.

### 3. Organizations concerned in Mongolia

- (1) The Coordinating Ministry is the Ministry of Finance and Economy (MOFE).
- (2) The Responsible Ministry is the Ministry of Infrastructure (MOI).
- (3) The Implementing Agency is the Department of Roads of MOI (DOR).
- (4) The organization charts of MOI and DOR are shown in Annex-2.

### 4. Components Requested by the Government of Mongolia

After discussions with the Team, the following components were finally requested by the Mongolian side;

- Improvement of the section II (Baganuur - Kherlen River East) 31 km, and the section VI (Murun River West - Undurkhaan) 29 km, including bridges and culverts
- Procurement of the equipment for road construction and maintenance (30 items), equipment lists are shown in Annex-3

The Team will put the priority and assess the appropriateness of each component and will show the results to the Mongolian side at the time of the second field survey.

### 5. Japan's Grant Aid Scheme

- (1) The Mongolian side understands the Japan's Grant Aid scheme and the necessary measures to be taken by the Government of Mongolia explained by the Team as described in Annex-4.
- (2) The Mongolian side promised to take necessary measures, as described in Annex-5, for smooth implementation of the Project as a condition for the Japan's Grant Aid to be implemented.

### 6. Schedule of the Study

- (1) The Team will proceed to further studies in Mongolia until July 28, 2004.
- (2) JICA will prepare the interim report and dispatch a team for the second field survey to Mongolia in order to discuss its contents and to study in detail at the sites in the middle of August 2004.
- (3) JICA will prepare the draft report in English and dispatch a team to Mongolia in order to explain its contents in the middle of January 2005.
- (4) When the contents of the draft report are accepted in principle by the Government of Mongolia, JICA will complete the final report and send it to the Government of Mongolia around March 2005.

fs (PB)

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## 7. The JICA Guidelines for Environmental and Social Considerations

The Team explained outline of the JICA Guidelines for Environmental and Social Considerations (hereinafter referred to as "the new JICA Guidelines"). The Mongolian side took the new JICA Guidelines into consideration.

## 8. Information Disclosure

Both sides agreed that information disclosure shall be implemented regarding all the studies and surveys.

## 9. Explanation of the Policy of the Government of Japan

The Team explained the present policy of the Government of Japan as follows:

(1) The Ministry of Foreign Affairs of Japan (hereinafter referred to as "MOFA") will make its own Environmental and Social Considerations Guideline for Grant Aid Project, referring to the new JICA Guidelines as well. MOFA will set down critical path(s) for each stage of projects from the viewpoints of the Environmental and Social Considerations (hereinafter referred to as "the ESC") especially for the resettlement issues.

(2) MOFA may suspend the implementation of projects unless otherwise the process of the ESC including the above-mentioned resettlement issues is followed.

(3) Specifically the benchmark for the start of the Detailed Design Study and the implementation stage of projects should be determined for each project. The both sides agreed that the benchmarks for the start of the Detailed Design Study and implementation stage of the Project should be as below;

- To conduct public information campaigns to local residents/stakeholders regarding involuntary resettlement, which may occur when the Project to be implemented, and obtain their agreement in writing by the end of December, 2004 and submit its report(s) to the Japanese side through JICA Mongolia Office.

- To obtain agreements from all of the Project Affected Persons (PAPs) about the conditions and contents of the resettlement and setback, in principle, and submit its report(s) to the Japanese side through JICA Mongolia Office, if any.

## 10. Other Relevant Issues

(1) The Mongolian side should submit answers in English to the Questionnaire, which the Team handed to the Mongolian side, by July 23, 2004.

(2) The Mongolian side should provide necessary number(s) of counterpart personnel to the Team during the field survey.

(3) The Mongolian side should arrange the budget allocation for securing land(s), undertakings in Annex-5, and others described in this Minutes of Discussion.

(4) The Mongolian side confirmed that the Study will be conducted on the basis of the Feasibility Study on Construction of Eastern Arterial Road in Mongolia in June 2002 by JICA and the basic design and followed detailed design based on the Study should be approved by the authorities concerned in due course. The Mongolian side should be responsible for consummating the approval process in three weeks without any charge to the Japanese side.

(5) Both sides confirmed that the location and contents of Road-side Station will be studied in the course

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of the Study and the Mongolian side will be responsible for the implementation of Road-side Station.

(6) Both sides confirmed that the locations of Planting Trees and Monuments for the Project will be studied in the course of the Study and the Mongolian side will be responsible for the realization of Planting Trees and Monuments.

(7) Both sides confirmed that the Mongolian side will be responsible for obtaining concessions and royalties on borrow pits and quarry sites along the National Road 0501.

(8) Both sides confirmed that the Mongolian side will hold a public meeting with booklet for the implementation of the Project at Baganuur and Undurkhaan to collect public comments from local people and submit the minutes of discussion together with attendance lists to the Japanese side through JICA Mongolia Office by September 15, 2004.

(9) The Mongolian side explained that the equipment for road construction and maintenance should be allocated to the state-own road maintenance companies as below;

- Tuv AZZA (responsible for maintenance of the section between Ulaanbaatar and the Kherlen Bridge on the National Road 0501)

- HARGUI (responsible for maintenance of the section between the Kherlen River east and Undurkhaan on the National Road 0501)

The Mongolian side also explained that the above-mentioned companies should not be privatized for a certain period and all properties of the equipment should belong to the State Property Committee.

(10) Both sides confirmed that neither construction of the training center nor procurement of the training equipment for the Project should be included in the Project.

The Mongolian side requested the Team that the On-the-Job Training, seminar, and complete sets of operation manuals in Mongolian for the requested equipment should be included in the Project to strengthen operator's skill.

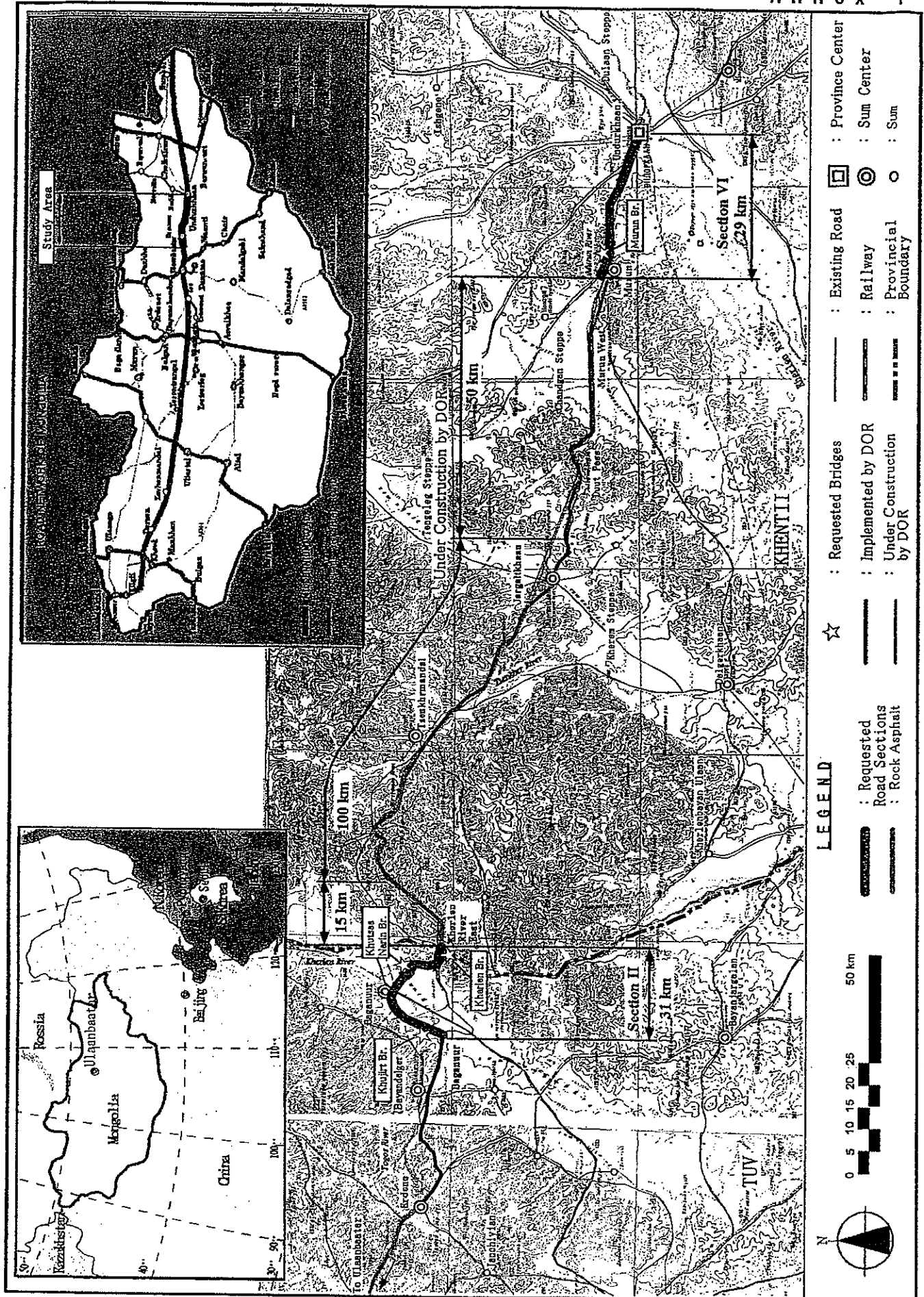
(11) The Mongolian side should submit the allocation plan for the requested equipment and annual road maintenance plan for the road section between Ulaanbaatar and Undurkhaan by July 23, 2004.

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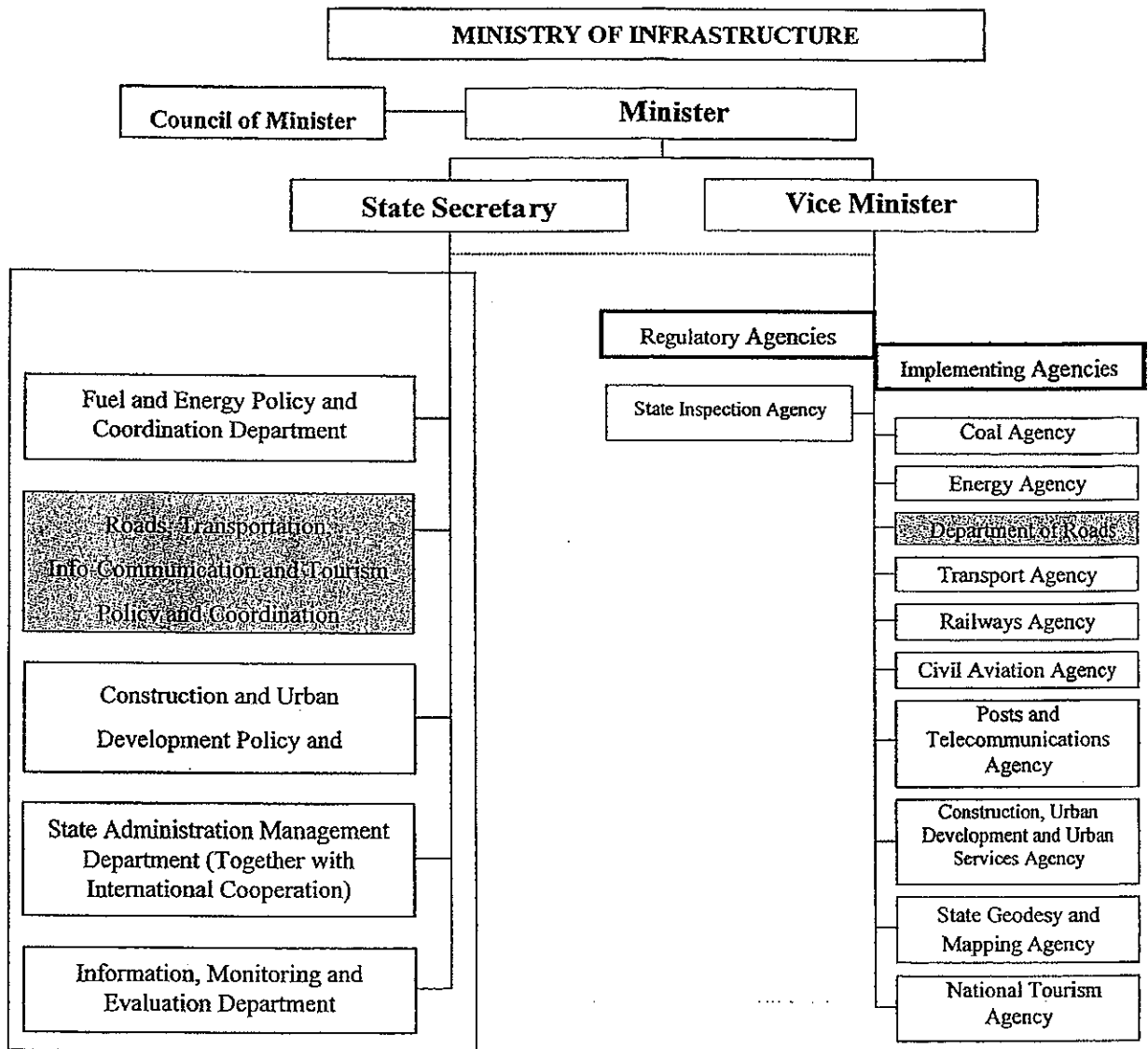
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### Organization Chart



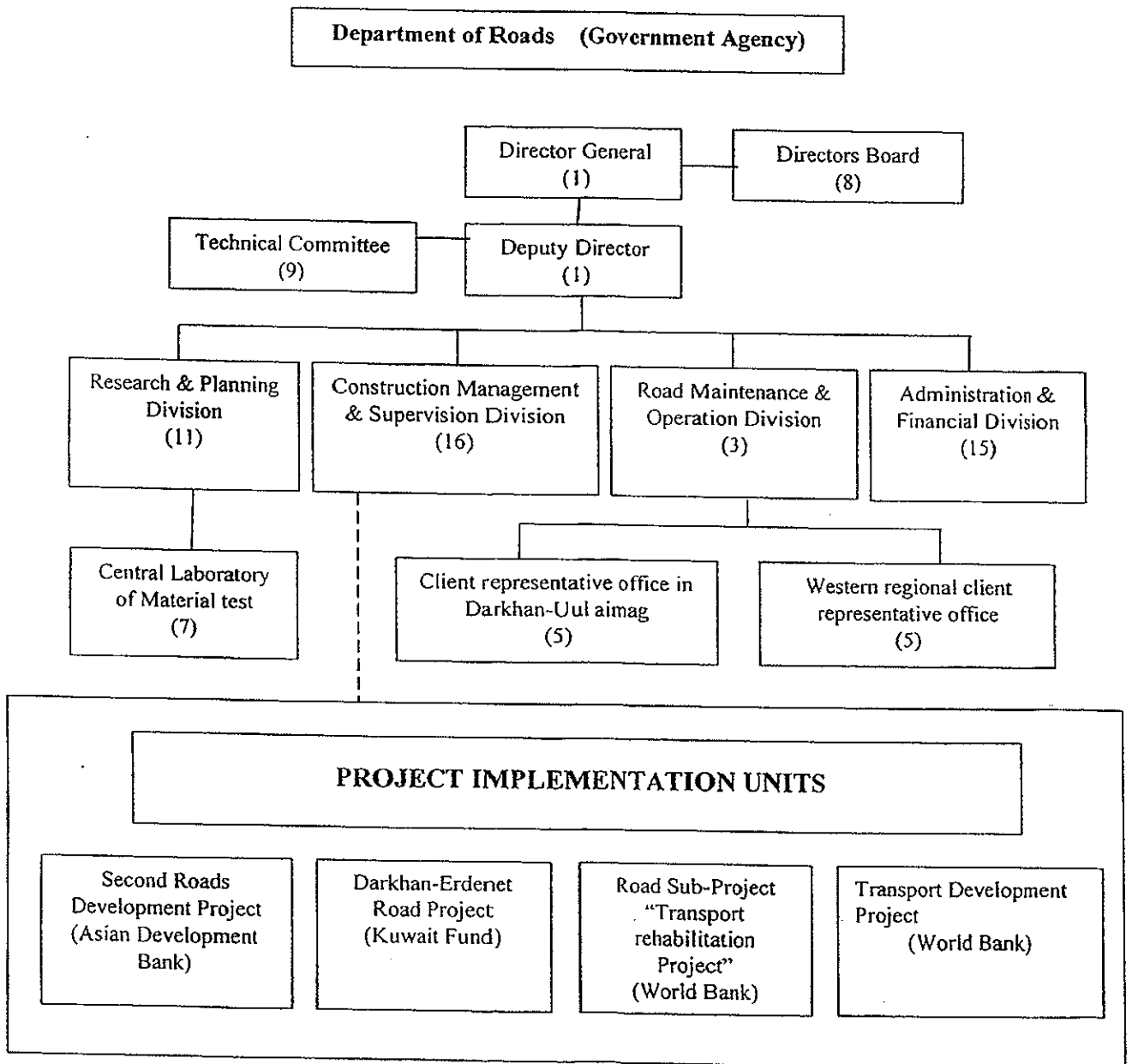
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— *[Signature]* —

BOUK

### Organization Chart



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← PHS - Souk



Annex-3 Equipment List

Item	Description	Specification	Quantity	Remarks
1	Bulldozer	28 ton	4 units	Construction
2	Bulldozer	7 ton	2 units	ditto
3	Hydraulic Excavator	0.7 m3	5 units	ditto
4	Wheel Loader	2.1 m3	7 units	ditto
5	Wheel Loader	1.3 m3	2 units	Construction/Maintenance
6	Dump Truck	11 ton	41 units	Construction
7	Motor Grader	3.7 m	11 units	Construction/Maintenance
8	Vibration Roller	10 ton	7 units	ditto
9	Tire Roller	10 ton	1 unit	ditto
10	Asphalt Finisher	4 m	1 unit	ditto
11	Asphalt Plant	60 ton	1 unit	ditto
12	Water Tanker	8000 liter	1 unit	Construction
13	Asphalt Sprayer	1500 liter	1 unit	Construction/Maintenance
14	Chip Spreader	Vessel mount type	2 units	Construction/Maintenance
15	Tractor Head with Trailer	35 ton	1 unit	Construction
16	Crusher Plant	Jaw 60t & Cone 49t	2 units	Construction
17	Asphalt Cutter	-	2 units	Maintenance
18	Air Compressor	180 PSI	2 units	Construction/Maintenance
19	Plate Compactor	60 kg	8 units	ditto
20	Pneumatic Breaker	30 kg	8 units	ditto
21	Dump Truck	4 ton, 4 x 4	4 units	ditto
22	Truck with 3 ton Crane	5 ton	1 unit	ditto
23	Road Patrol Car	4 x 4	1 unit	Maintenance
24	Double Cab Pick-up	4 x 4	2 units	Construction/Maintenance
25	Line Marker Truck	-	1 unit	Construction/Maintenance
26	Mobile Workshop	GVW 13 ton, 4 x 4	2 units	Maintenance
27	Rotary Snow Remover	Unimog type	2 units	Maintenance
28	Asphalt Testing Equipment	-	1 lot	Construction/Maintenance
29	Radio Communication	Base / Mobile	1 lot	Construction/Maintenance
30	Road Measure (wheel type)	5 digits	1 set	Maintenance

## Japan's Grant Aid Scheme

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

### 1. Grant Aid Procedures

Japan's Grant Aid scheme is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

### 2. Basic Design Study

#### 1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the requested project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid scheme from a technical, social and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project
- Estimation of costs of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

## 2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

## 3. Japan's Grant Aid Scheme

### 1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

- 2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

- 3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely, consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

### 4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

### 5) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.

- b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
  - c) To secure buildings prior to the procurement in case the installation of the equipment.
  - d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
  - e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
  - f) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- 6) "Proper Use"
- The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.
- 7) "Re-export"
- The products purchased under the Grant Aid should not be re-exported from the recipient country.
- 8) Banking Arrangements (B/A)
- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
  - b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay (A/P) issued by the Government of the recipient country or its designated authority.
- 9) Authorization to Pay (A/P)
- The Government of the recipient country should bear an advising commission of an Authorization to Pay and Payment commissions to the Bank.

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## Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	(•)	(•)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		•

(B/A: Banking Arrangement, A/P: Authorization to Pay)

< September 14, 2004 >

**Minutes of Discussions  
on the Basic Design Study on the Project  
for Construction of the Eastern Arterial Road  
and Improvement of Equipment  
for Road Construction and Maintenance  
in Mongolia  
(second field survey)**

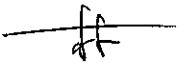
In response to the request from the Government of Mongolia, the Government of Japan decided to conduct the Basic Design Study (hereinafter referred to as "the Study") on the project for Construction of the Eastern Arterial Road and Improvement of Equipment for Road Construction and Maintenance (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Mongolia the Basic Design Study Team (second field survey) (hereinafter referred to as "the Team"), headed by Mr. Hiroyuki Hayashi, an officer, Traffic Infrastructure Team of the Project Management Group II, Grant Aid Management Department, JICA, and is scheduled to stay in the country from August 11 to September 18, 2004.

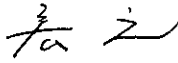
The Team held discussions with the concerned officials of the Government of Mongolia.

In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare a draft report.

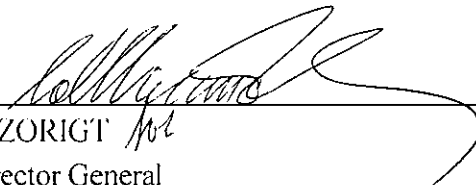
Ulaanbaatar, September 14, 2004



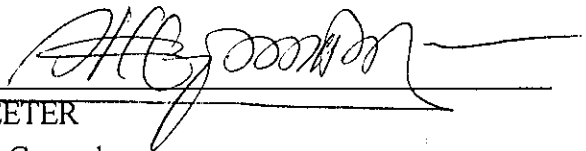
Hiroyuki Hayashi  
Leader  
Basic Design Study Team  
Japan International Cooperation Agency



D. ZORIGT  
Director General  
Department of Economic Cooperation Policy  
and Coordination  
Ministry of Finance and Economy



J. SEREETER  
Director General  
Policy and Coordination Department of Roads  
Transport, Information, Communications & Tourism  
Ministry of Infrastructure



T. DOVDONDORJ  
Director General  
Department of Roads (DOR)

## ATTACHMENT

### 1. Contents of the Components Requested by the Government of Mongolia

- (1) Both sides confirmed that the contents of each component of the roads including bridges and culverts of the section II (Baganuur - Kherlen River East) 30.4 km, and the section VI (Murun River West - Undurkhaan) 28.1 km.
- (2) Both sides also confirmed that the contents of each component of the equipment for road maintenance (19 items) as per Annex-1.

### 2. Schedule of the Study

- (1) The Team will proceed to further studies in Mongolia until September 18, 2004.
- (2) JICA will prepare the draft report in English and dispatch a team to Mongolia in order to explain its contents in the middle of January 2005.
- (3) When the contents of the draft report are accepted in principle by the Government of Mongolia, JICA will complete the final report and send it to the Government of Mongolia around March 2005.

### 3. Other Relevant Issues

- (1) The Mongolian side held public meetings with booklet for the implementation of the Project at Baganuur and Undurkhaan to collect public comments from local people and submit the minutes of discussion together with attendance lists to the Team. The summary of the public meetings and public comments are shown in Annex-2.
- (2) The Mongolian side explained that the state-owned road maintenance companies will be reorganized in near future and the Baganuur Office of AZZA Tuv and HARGUI under the concept of the reorganized maintenance companies will be responsible for maintenance of roads in the Eastern Region including the Millennium Road section between Ulaanbaatar and Undurkhaan.
- (3) The Mongolian side explained that it is necessary to implement the improvement measures of operation level of road maintenance equipment procured under Japan's Grant Aid and requested an appropriate technical assistance as shown in Annex-3.
- (4) The Mongolian side should make necessary arrangement and appropriate the fund for undertakings in Annex-4 and others described in this Minutes of Discussion.
- (5) The Mongolian side understood that one set of asphalt and crushing plants procured under Japan's Grant Aid may be utilized by the Japanese contractor for the Project. The details will be explained to the Mongolian side at the time of the explanation of draft report.
- (6) The Japanese side pointed out that the 50 km section contracted to the Mongolian contractor "Monroad" is likely suspended due to financial problems. The Mongolian side explained that the DOR tries to push the contractor "Monroad" through the work for the time being and the contractor "Monroad" would be replaced by other contractor to achieve the goal of completion in October 2005 if necessary. The Mongolian side confirmed that the DOR would report the name of new contractor and the revised construction schedule to the Japanese side through JICA Mongolia Office just in case that the contractor "Monroad" should be replaced.

### Requested Equipment List for Road Maintenance

No.	Description	Specification	Q'ty
1	Motor Grader	3.7 m	2
2	Vibration Roller	7 ton	4
3	Asphalt finisher	2.5 m - 4 m	2
4	Asphalt Plant	30 ton/hr	2
5	Water Tanker	8,000 ℓ	2
6	Crusher Plant	30 ton/hr	2
7	Asphalt Cutter	30 cm	7
8	Plate Compactor	80 kg	5
9	Pick-Up Truck	Double Cab with Mechanic Tool	7
10	Cargo Truck with Crane and/or Mobil Workshop Truck	2 - 4 ton with 3 ton Crane, Welder with generator, Air compressor, and Mechanic Tool	2
11	Line Marker Truck	15 cm	2
12	Asphalt Testing Equipment		2
13	Backhoe Loader	100 HP	7
14	Road Maintenance Truck	4 ton	5
15	Vibratory Rammer	70 kg	7
16	Dump Truck	15 ton	6
17	Wheel Loader	2.3 m <sup>3</sup>	4
18	Trailer	15 - 20 ton	1
19	Asphalt Sprayer	400 ℓ	2



DEPARTMENT OF ROADS, MONGOLIAN GOVERNMENT IMPLEMENTING AGENCY  
STAKEHOLDER PARTICIPATORY MEETING

BAGANUUR DISTRICT

August 28, 2004

List of participants	Position/Address
1. M.Tuulsaikhan	1 <sup>st</sup> Bag Governor
2. N.Lkhagvasuren	1 <sup>st</sup> Bag supervisor
3. Batnasan	4 <sup>th</sup> Bag Governor
4. G.Altangerel	1 <sup>st</sup> khoroo, Surgaltiin zadgai
5. Ulziisaikhan	1 <sup>st</sup> khoroo, Surgaltiin zadgai
6. Sharchuluun	1 <sup>st</sup> khoroo, Surgaltiin zadgai
7. Dulmaa	1 <sup>st</sup> khoroo, Surgaltiin zadgai
8. Naidan	Flat 12, #29
9. R.Tsendsuren	1 <sup>st</sup> khoroo, Surgaltiin zadgai
10. G.Shagdar	1 <sup>st</sup> khoroo, Surgaltiin zadgai
11. Sh.Tumurpurev	1 <sup>st</sup> khoroo, Surgaltiin zadgai
12. Chogjiimaa	1 <sup>st</sup> khoroo, Surgaltiin zadgai
13. Suren	1 <sup>st</sup> khoroo, Surgaltiin zadgai
14. S.Boldsaikhan	3 <sup>rd</sup> khoroo, T3 5-3
15. D.Osornyam	3 <sup>rd</sup> khoroo, T3 6-2
16. G.Altangerel	3 <sup>rd</sup> khoroo, T3 2-1-2
17. Ts.Otgonbayar	1 <sup>st</sup> khoroo, 15-58
18. D.Myagmarsuren	1 <sup>st</sup> khoroo, Surgaltiin zadgai 141
19. A.Tserenkhand	1 <sup>st</sup> khoroo, Surgaltiin zadgai 139
20. S.Dulamragchaa	1 <sup>st</sup> khoroo, Surgaltiin zadgai
21. Bitogtokh	1 <sup>st</sup> khoroo, Surgaltiin zadgai
22. Ch.Ganbaatar	3 <sup>rd</sup> khoroo
23. Z.Jamsran	3 <sup>rd</sup> khoroo, khilchnii 7-4
24. S.Byambasamdan	4 <sup>th</sup> khoroo 2-12
25. B.Amartuvshin	3 <sup>rd</sup> khoroo
26. Kh.Battulga	3 <sup>rd</sup> khoroo, 44-16
27. B.Ganbaatar	3 <sup>rd</sup> khoroo, 311
28. B.Batbayar	3 <sup>rd</sup> khoroo, khilchin 2-1
29. B.Erkhembayar	3 <sup>rd</sup> khoroo, khilchin 6-6
30. B.Amartuvshin	3 <sup>rd</sup> khoroo 39-24
31. B.Bold	3 <sup>rd</sup> khoroo 6-3
32. G.Bataa	3 <sup>rd</sup> khoroo 7-1
33. Sh.Chimgee	4 <sup>th</sup> khoroo, nariinii 13-2
34. J.Chuluuntsetseg	1 <sup>st</sup> khoroo, 15-57
35. S.Ulzilnyam	4 <sup>th</sup> khoroo, nariinii 5-9
36. D.Purevsuren	4 <sup>th</sup> khoroo, nariinii 10-12
37. S.Oyun	4 <sup>th</sup> khoroo, nariinii 16-28

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PCI

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38. Ts.Tuya	4 <sup>th</sup> khoroo, nariinii 5-15
39. D.Ganbat	4 <sup>th</sup> khoroo, nariinii 5-15
40. N.Munkhtuya	4 <sup>th</sup> khoroo, nariinii 15-9
41. N.Tsolmon	4 <sup>th</sup> khoroo, nariinii 24-7
42. B.Badamtsetseg	4 <sup>th</sup> khoroo, nariinii 24-8
43. O.Ayuushmaa	4 <sup>th</sup> khoroo, rashaantiin 20-5
44. D.Mendbayar	1 <sup>st</sup> khoroo, 7-49
45. G.Dagvaasuren	1 <sup>st</sup> khoroo 3-71, BBS's correspondent
46. Janchiv	2 <sup>nd</sup> khoroo governor
47. Ts.Sukhbaatar	head of the district office
48. B.Erdenechimeg	
49. B.Lkhagva	Governor of Baganuur district
50. O.Radnaabazar	4 <sup>th</sup> khoroo, Baidlag 15-5
51. U.Sukhee	4 <sup>th</sup> khoroo, Baidlag 1-15
52. M.Buddorj	Director of Baganuur us
53. Sh.Yura	1 <sup>st</sup> khoroo 2-2
54. D.Ganbat	3 <sup>rd</sup> khoroo 37-13
55. D.Byambaa	4 <sup>th</sup> khoroo

### MEETING NOTES

A participatory meeting was held at Baganuur district on 28, 2004, from 10:00 to 12:00 in the district's cultural center. Stakeholders for the project from local government and community were invited to attend. A list of attendees is above. Mr. B.Lhagva, Governor of Baganuur district, opened the meeting. Mr. B.Lkhagva, introduced the team and spoke about road improvement, projects implemented under the assistance of the JICA. Then Mr.Dorjsuren, director of Eco trade LLC., Environmental Consultants, explained their goals in assessing the environmental issues of the area and importance of working with local stakeholders to insure the greatest possible benefit to the community from the project.

During the recent years, the Government of Mongolia has been paying special attention to road improvement. The clear example of that can be seen from the recent road construction works. The purpose of our team is meeting with members of the local community who live in the project impact area to discuss with them the road development and environmental issues in order to get your opinions and suggestions for the project.

We are pleased to listen to your opinions and suggestions about the current road development and the proposed project and submit them to the authorities. So you can tell your opinions and suggestions. We would like to listen now.

#### Question:

Mr Janchiv. Exploitation period of road is usually short because care and maintenance of road is missed. How should it be organized and implemented?

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**Answer:**

Mrs. Narantuya. Local road companies are responsible for repairing and protecting road.

**Suggestion and opinion:**

O.Radnaabazar. The road from Bayandavaa to Erdene sum is pretty good. Local authority need technical document of road which should include how was it built, what kind of material were used. Damaged and influenced areas should be fully restored by project planners. And also small roads should be built that would link central road between settlements.

**Suggestion and opinion:**

Mr. Shagdar. Road construction demands a lot of money to build. Mongolian people are good at destroying created things. We have to care about road all the time. Local communities or families should be responsible for protecting particular sections of road.

**Suggestion and opinion:**

Mr. Dulamragchaa. Please send our word to project team. We are very happy for that. Road maintenance is more important than to build road. Local herder families and organizations should attend to protect road. Heavy trucks and equipments break the road with metal part of the wheel while their wheels are broken. Construction of the road of Erdenet was good experience for Mongolian road constructors. We need to enhance the nearby environment of the road by planting trees. I want to say one important idea to repair road. Japanese experts use bitumen to solder broken parts of the road.

**Question:**

Mr. Blitogtokh. Could that road be built through yurt block? Because that road finishes before reaches yurt block. Could it be continued? And also is there possibility to build bridge?

**Answer:**

Mrs. Narantuya. Local government is responsible for building or repairing local road and also they have budget for that.

**Suggestion and opinion:**

Mrs. Dulmaa. We are happy that millennium road will continue.

**Suggestion and opinion:**

Mr. Naidan. I think, that project team needs to care about soil surface. Exit for livestock is good idea.

**Suggestion and opinion:**

Mr. Radnaabazar. The road needs to have road signs installed. Project team should concentrate on this issue.

**Question:**

Mrs. Chimgee. Is there opportunity that local communities attend to road construction work?

**Answer:**

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Mrs. Narantuya. Of course, local community can attend to road construction work. We do that.

Mr. B.Lkhagva (Baganuur district governor). We very much appreciate your coming and wish success in everything.

**Announcement:**

Mrs. Narantuya introduced announcement.

Dear local residents, if you have any problem and conflicts relating environmental issues of your resident area and any act of against of your legal rights and grievances during the road construction.

Please, inform urgently to the following address:

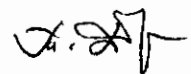
- ROAD DEPARTMENT OF MONGOLIA, Specialist, Mrs. Narantuya (phone 326068),
- ECO-TRADE Environmental Consultants, Director D.Dorjsuren (Phone 323569)

Mr. B.Lkhagva (Baganuur district governor) closed the meeting.

Prepared by:  
ECO-TRADE Environmental Consultants

4

Clients: DEPARTMENT OF ROADS, MONGOLIAN  
GOVERNMENT IMPLEMENTING AGENCY  
PCI



DEPARTMENT OF ROADS, MONGOLIAN GOVERNMENT IMPLEMENTING AGENCY  
STAKEHOLDER PARTICIPATORY MEETING

KHENTII PROVINCE, UNDURKHAAN

August 27, 2004

List of participants	Position/Address
1.Boldbaatar	Khargui company, engineer
2.Chinbat	Khargui company, mechanic
3.Myagmarjav	Khargui company, accountant
4.Tungalag	Khargui company, PC operator
5.Bilegmaa	Khargui company, cleaner
6.Khishigjargal	Kherlen sum, Governor's office, cashier
7.G.Enkhzaya	2 <sup>nd</sup> bag governor of Kherlen sum
8.B.Sainchimeg	1 <sup>st</sup> bag governor of Kherlen sum
9.G.Munkhjargal	Kherlen sum, architect of Governor's office
10.Baigalitsogt	Kherlen sum, 5 <sup>th</sup> bag, staff
11.B.Tsendjav	Kherlen sum, head of Governor's office
12.Byabaakhuu	Kherlen sum, driver
13.J.Badamtsetseg	Kherlen sum, 3 <sup>rd</sup> bag governor
14.N.Ganbold	Kherlen sum zasag darga
15.Bayarkhuu	Kherlen sum, land manager
16.Ch.Rabdanzan	Correspondent of Mongolian radio
17.I.Tsegmid	5 <sup>th</sup> bag, pensioner
18.Ch.Altanzaya	Khargui company, engineer
19.J.Uurtsaikh	5 <sup>th</sup> bag, Khargui company, road-engineer
20.D.Sukhtogoo	1 <sup>st</sup> school, teacher
21.Kh.Tsetsegmaa	Chinii plaza, manager
22.Ts.Purevjav	5 <sup>th</sup> bag, pensioner
23.Ts.Altantsetseg	5 <sup>th</sup> bag, builder
24.I.Nyamkhajal	a cook
25.D.Jamsuren	pensioner
26.N.Bor	4 <sup>th</sup> bag, flat 36A
27.L.Sain-Uchral	4 <sup>th</sup> bag
28.Ch.Tarav	1 <sup>st</sup> bag, pensioner
29.J.Uranchimeg	2 <sup>nd</sup> bag, Sanburd TV, staff
30.Ganchimeg	2 <sup>nd</sup> bag, Sanburd TV, journalist
31.J.Gantsetseg	3 <sup>rd</sup> kindergarten
32.Ts/r Gantsetseg	3 <sup>rd</sup> kindergarten
33.Gantuul	3 <sup>rd</sup> kindergarten
34.Zagdsuren	3 <sup>rd</sup> kindergarten
35.Tserennadmid	Kherlen sum, 4 <sup>th</sup> kindergarten, teacher
36.Saikhantsetseg	Bayan-ovoo, school teacher
37.Tsetsegsaikhhan	Kherlen sum, Ulziit village, school teacher

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38.Altankhaich	Kherlen sum, Ulziit village, school teacher
39.Bayarsaikhan	Kherlen sum, 5 <sup>th</sup> kindergarten
40.Gantsetseg	Kherlen sum, 2 <sup>nd</sup> kindergarten
41.Ganbat	FM radio -106.2
42.Kh.Sainzaya	Darkhan sum, 10 <sup>th</sup> kindergarten, teacher
43.Ts.Erdenetogtokh	Bayanmunkh sum, school teacher
44.T.Bold	5 <sup>th</sup> bag, unemployed
45.B.Munguntsetseg	2 <sup>nd</sup> bag, Governor office of the province, Civil registration and information office
46.D.Buyanjargal	3 <sup>rd</sup> bag, Governor office of the province, Civil registration and information office
47.Tserenchimed	2 <sup>nd</sup> bag, Governor office of the province, Civil registration and information office pensioner
48.Tarab	kindergarten teacher, Berkh town
49.Osgonnavch	teacher, Berkh town
50.Sainkhuu	teacher, Bor-undur town
51.Valiya	teacher, Bor-undur town
52.Bolormaa	teacher, Bor-Undur town
53.Molorchimeg	teacher, Bor-Undur town
54.Ankhubayar	teacher, Bor-Undur complex
55.Nina	teacher, Bor-Undur complex
56.Oyunchimeg	teacher, Bor-Undur
57.Munkh-Uchral	teacher, Darkhan
58.Tegshdelger	teacher, Darkhan
59.Oyun-Erdene	teacher, Murun sum
60.Gantumur	teacher, Murun sum
61.Oyuntsetseg	kindergarten teacher, Murun sum
62.N.Oyungerel	herdsman
63.Lkhagvasuren	Bayan-Adarga, teacher
64.Myagmarsuren	Bayan-Adarga, teacher
65.Azjargal	Bayan-Adarga, teacher
66. Narantsetseg	Governor's office of the province
67.Gan-Ochir	Governor's office of the province
68. Gandulam	Governor's office of the province
69.B.Tsetsegmaa	Governor's office of the province
70.D.Jargalsikhan	Governor's office of the province
71.Ts.Valyasuren	Governor's office of the province
72.B.Tsendjav	Governor's office of the province
73.L.Tsengel	Jargalkhaan sum, teacher
74.D.Shirnen	Khargui company driver
75.Ts.Davaakhuu	unemployed
76.D.Bayarkhuu	Kherlen sum, Governor's office, land manager
77.N.Batbileg	Kherlen sum, Governor's office
78.B.Baigaltsogt	Kherlen sum, Governor's office
79.Ch.Erdenechimeg	Gurvanbayan sum

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ECO-TRADE Environmental Consultants

Clients: DEPARTMENT OF ROADS, MONGOLIAN  
GOVERNMENT IMPLEMENTING AGENCY  
PCI

2

80. B.Lkhamaa	teacher, Gurvanbayan sum
81. B.Gangantugs	teacher
82. J.Gantsetseg	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
83. Ts.Gantsetseg	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
84. Oyunjargal	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
85. Zakhchimeg	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
86. Gantungalag	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
87. Zolzaya	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
88. Bolor	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
89. Gantuul	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
90. Zagdsuren	Kherlen sum, 3 <sup>rd</sup> kindergarten, teacher
91. Tsetsegmaa	1 <sup>st</sup> bag
92. Enkhbat	1 <sup>st</sup> bag
93. Z.Tsedennyam	Kherlen sum, 3 <sup>rd</sup> bag
94. B.Munkhbat	Batshireet sum
95. Z.Enkhjargal	Batshireet sum, school teacher
96. Ts.Ariungerel	Batshireet sum, school teacher
97. S.Mungun	Batshireet sum, school teacher
98. A.Khandtsoo	Batshireet sum, school teacher
99. Davaadorj	Deputy governor of Khentii province
100. Erdenetugs	head of department
101. Ganbold	Kherlen sum governor
102. Tsendjav	Head of Kherlen sum governor's office
103. Boloroo	3 <sup>rd</sup> kindergarten
104. Jargal-Oyun	3 <sup>rd</sup> kindergarten
105. Zolzaya	3 <sup>rd</sup> kindergarten
106. Mungun	Batshireet sum
107. Enkhjargal	Batshireet sum
108. O.Batjargal	Batshireet sum
109. Tsedennyam	1 <sup>st</sup> school
110. Boldbaatar	5 <sup>th</sup> bag
111. Erdenechimeg	teacher, khurkh sum
112. Amarsaikhan	2 <sup>nd</sup> bag
113. Oyuntsetseg	2 <sup>nd</sup> bag
114. Jagdag	2 <sup>nd</sup> bag
115. Byambaa	2 <sup>nd</sup> bag
116. Tsedennyam	3 <sup>rd</sup> bag, pensioner
117. Gantsetseg	3 <sup>rd</sup> bag
118. Nyamkhata	3 <sup>rd</sup> bag
119. Undarmaa	3 <sup>rd</sup> bag
120. Bolormaa	4 <sup>th</sup> bag, Binder sum, teacher
121. Bolortuya	Binder, 5 bag, teacher
122. Tserenlkham	Umnudelger sum, teacher
123. L.Enkhtsetseg	Umnudelger sum
124. G.Altantuya	Umnudelger sum, school teacher
125. B.Enkhtsetseg	Umnudelger sum, school teacher

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GOVERNMENT IMPLEMENTING AGENCY  
PCI

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126.Kh.Munkhtsetseg	Umnudelger sum, school teacher
127.Kh.Ariuntuya	Umnudelger sum, 14 <sup>th</sup> kindergarten
128.G.Uurtsaikh	Norovlin sum, teacher
129.S.Ankhtuya	Bor undur, Ikh ireedui university, teacher
130.G.Usukhbayar	Bor undur, teacher
131.S.Narantsetseg	Bor undur, teacher
132.Luvsansharav	pensioner
132.Jargalsaikhan	Bor undur, teacher
133.Gantsetseg	Bor undur, teacher
134.Erdenechimeg	Bor undur, teacher
135.Alimaa	Kherlen sum, 4 <sup>th</sup> kindergarten, teacher
136.Ariungerel	Kherlen sum, 4 <sup>th</sup> kindergarten, teacher

### MEETING NOTES

A participatory meeting was held at Undurkhaan on 27, 2004, from 17:30 to 19:20 in the secondary school's cultural center. Stakeholders for the project from local government and community were invited to attend. A list of attendees is above.

Mr. Davaadorj, deputy governor of Khentii province, opened the meeting. Mr. Davaadorj, introduced the team and spoke about road improvement, projects implemented under the assistance of the JICA. Then Mr.Dorjsuren, director of Eco trade LLC., Environmental Consultants, explained their goals in assessing the environmental issues of the area and importance of working with local stakeholders to insure the greatest possible benefit to the community from the project.

During the recent years, the Government of Mongolia has been paying special attention to road improvement. The clear example of that can be seen from the recent road construction works. The purpose of our team is meeting with members of the local community who live in the project impact area to discuss with them the road development and environmental issues in order to get your opinions and suggestions for the project.

We are pleased to listen to your opinions and suggestions about the current road development and the proposed project and submit them to the authorities. So you can tell your opinions and suggestions. We would like to listen now.

#### Question:

Mr. Tsedennyam. I think that road will bring with development for Khentii aimag. I can't understand, will that the road be built after 2 years. Which borrow pits will you exploit for the road construction? Are they exploited before or new? Trees should be planted 2 sides of the road. It would be one of the road protecting method and helps to improve nearby environment of the road. How to restore borrow pits after exploitation?

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**Answer:**

Mrs. Narantuya. Currently, we are working on road design of the 60 km road. It's expected that work will be finished by December. Then, executive organizations will be selected to implement the project. And also road construction equipment needs to be imported. All that activities require about one year. I think, work on the road is due to begin in spring, 2006.

Mr. D.Dorjsuren. There are all 16-21 borrow pits. Restoration work of borrow pits include planting, ground surface levelling and covering soil surface with humus layer. Cost of trees is included on the budget of the project.

**Question:**

Mr. Tsedenyam. I'm very pleased with your explanation and I've received wider information about road and environmental issues. The road gives us more possibility and will support development. As difficulties, in winter time that road is covered with snow in 2 edges and becomes narrower. What kind of protection will be built for this problem?

**Answer:**

Mrs. Narantuya. "Khargui" company in Khentii province is responsible for repairing and protecting particular section of the road.

**Question:**

Mr. Tsendjav. Firstly, I would say thank for the people who are participating in this meeting. I think it will bring us a lot of opportunity. There are a lot of positive impacts than negative impacts. There will be many good effects if the road passes through sum centre. Is it possible to use hummock and muddy place for road construction material instead of borrow pits?

**Answer:**

Mr. Dorjsuren. There are standards for road construction material. Some of them meet the standard and some of them don't meet.

**Question:**

Mr. Bayarsaikhan. Where will exactly the final destination reach to Undurkhaan?

**Answer:**

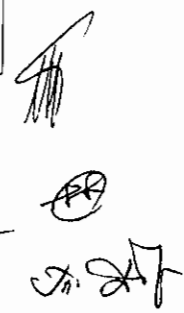
Mrs. Narantuya. The road finishes at the junction near western of Undurkhaan town, where 3 roads meet.

**Opinion and suggestion:**

Mr. Luvsansharav. Japan is one of well-developed countries of the world. We are very pleased that Japan is helping and supporting our country to develop. We should use that road with great care.

**Question:**

Mr. Luvsansharav. Which company will implement the project?



**Answer:**

Mrs. Narantuya. Currently, PCI is working on road design. Then, tender will be announced among companies.

**Announcement:**

Mrs. Narantuya introduced announcement.

Dear local residents, If you have any problem and conflicts relating environmental issues of your resident area and any act of against of your legal rights and grievances during the road construction.

Please, inform urgently to the following address:

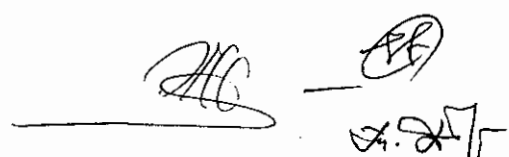
- ROAD DEPARTMENT OF MONGOLIA, Specialist, Mrs. Narantuya (phone 326068),
- ECO-TRADE Environmental Consultants, Director D.Dorjsuren (Phone 323569)

Mr. Davaadorj (deputy governor of Khentii province) closed the meeting.

Prepared by:  
ECO-TRADE Environmental Consultants

Clients: DEPARTMENT OF ROADS, MONGOLIAN  
GOVERNMENT IMPLEMENTING AGENCY  
PCI

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Handwritten signatures and initials are present at the bottom right of the page. There are two distinct signatures, one appearing to be 'JHC' and another 'X.X.J', along with some scribbles.



**DEPARTMENT OF ROADS  
IMPLEMENTARY AGENCY  
OF THE GOVERNMENT OF MONGOLIA**

210628 Chingisiin orgon choloo 11  
Sukhbaatar duureg, Ulaanbaatar, MONGOLIA  
Tel/Fax: (976-11) 31-05-03, E-mail: roads@mongol.net

Date 7 September 2004  
Ref. 2/988

To: **Study team of Japanese Grant aid**

Subject: Implementation of improvement measures of the operation level of road maintenance equipment procured under Grant aid.

Dear Sirs,

With the purpose to advance equipment operation level, to implement appropriate road maintenance system and to improve its quality and efficacy, we are requesting you to accept our proposal to implement following issues within the project.

1. Elementary training

Training will be a part of equipment procurement contract, and the procuring company will teach the methods to operate the equipment, and the knowledge how to use instruction manual and how to carry out technical inspection for the equipment will be endowed. The trainings will be organized group by group.

2. Technology transfer training




Road maintenance technology will be learnt within the training. As learnt this technology, trainers will have an eventuality to make appropriate road maintenance work.

Short and long-term appointment of Japanese experts to Mongolia is needed.

3. Within the project, at least three road engineers and three mechanic engineers will be involved in the training under JICA.

With best regards,

  
B. ENKHTUR  
DEPUTY DIRECTOR

**Major Undertakings for Road Construction to be taken by the Government of Mongolia  
in accordance with Japan's Grant Aid Scheme**

The Mongolian side shall be responsible for the following points:

- (1) Concessions and Royalties on Borrow Pits, Sand Pits and Quarry Sites
- (2) Road Right-of-Way and Land for Contractor's facilities
- (3) Land Rental Fee for Contractor's facilities including Borrow Pits, Sand Pits and Quarry Sites.

Items	Section II	Section IV
Base Camp	250mx360m	300mx400m
Concrete Plant Yard for Khelren Bridge	200mx300m	-
Casting Yard for Khujirt and Khutsaa-Nariin Bridge	50mx 200m	-
Quarry Sites	1 place	1 place
Sand Pits	1 place	1 place

- (4) Land for asphalt plant and crushing plants procured under Japan's Grant Aid and construction of gates and fences in and around the plant sites.
- (5) Garage and warehouse of equipment procured under Japan's Grant Aid
- (6) Construction of Road-side Stations
  - East side of Khelren River (6,000m<sup>2</sup>)
  - East side of Murun River (6,000m<sup>2</sup>)
- (7) Construction of Monuments
  - East side of Khelren River
  - West Undurkhaan Intersection
- (8) Planting Tree
  - Planting of approx. 100 trees for 5 intersections
  - Planting of approx. 30 trees and providing the garden of 500m<sup>2</sup> with shrub and lawn by each Road-side Station (2 Road-side Stations)
- (9) Relocation of Telephone Line Posts
  - Section II: 2 posts
  - Section VI: 2 posts

(10) To provide facilities for the distribution of electricity, telephone and other incidental facilities in the case that a Japanese contractor will utilize asphalt plant and crushing plants procured under Japan's Grant Aid and will hand it over to the Mongolian side after completion of the Project.

1) Electricity: The distributing line to the two base camps and one concrete plant yard.

2) Telecommunication means:

- In the area "far from town": The Government of Mongolia is responsible for obtaining only licenses for wireless communication system (radio station).

- In the area "nearby town": The Government of Mongolia is responsible for installing telephone trunk line to the main distribution frame/panel (MDF) and obtaining only licenses for wireless communication system (radio station) between camps.

(11) To provide facilities for the distribution of electricity, telephone and other incidental facilities in the case that asphalt plant and crushing plants will be procured under Japan's Grant Aid and handed over to the Mongolian side directly.

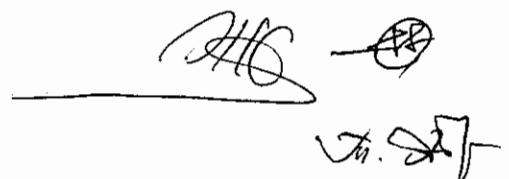
(12) To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A (Advising commission of A/P and Payment commission).

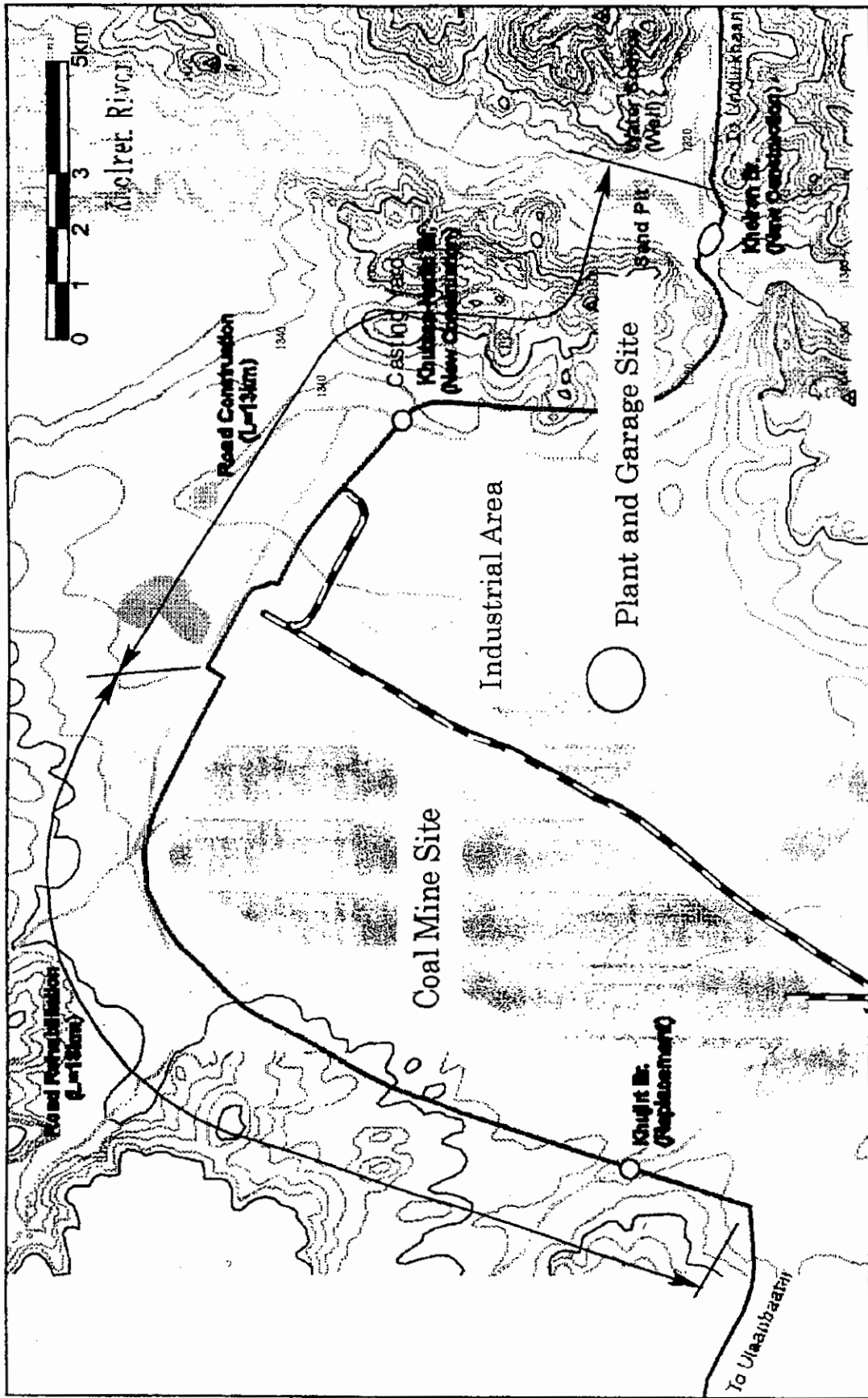
(13) To ensure unloading and customs clearance at port of disembarkation in recipient country (Tax exemption and custom clearance of the products at the port of disembarkation).

(14) To accord Japanese nationals whose services may be required in connection with supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(15) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.

(16) To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid.

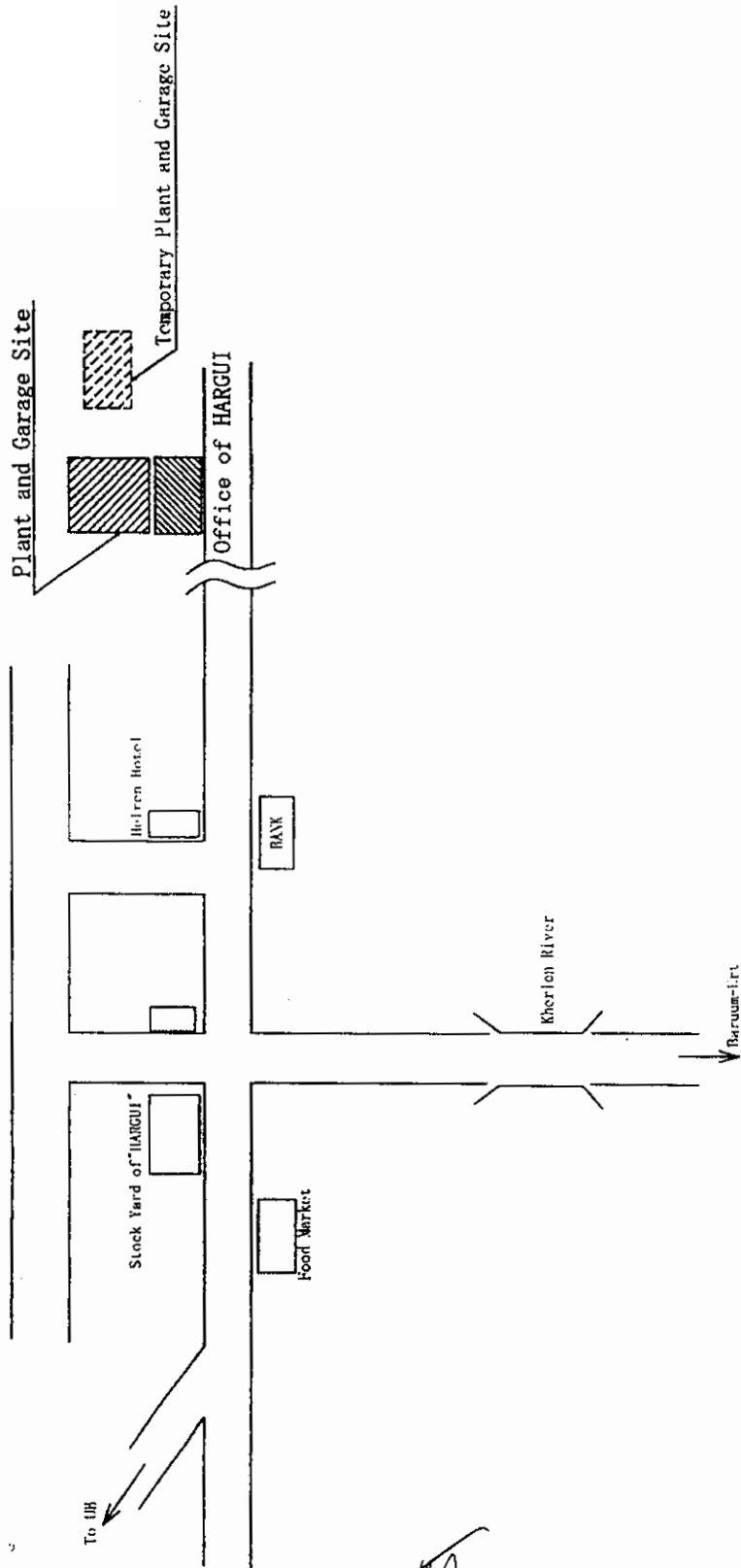




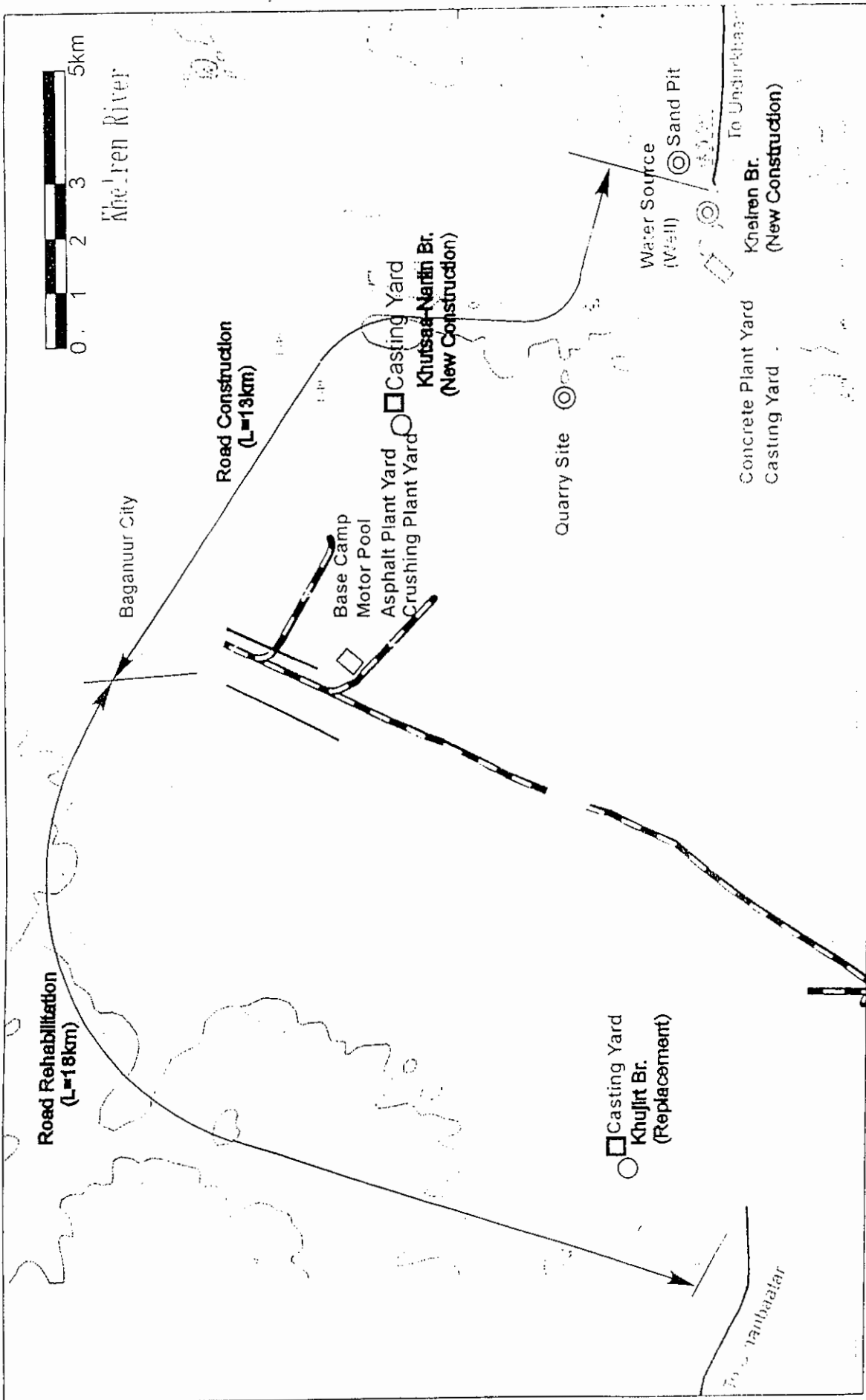
Location of asphalt and crushing plant (Begannur)

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2) Undurkhaan



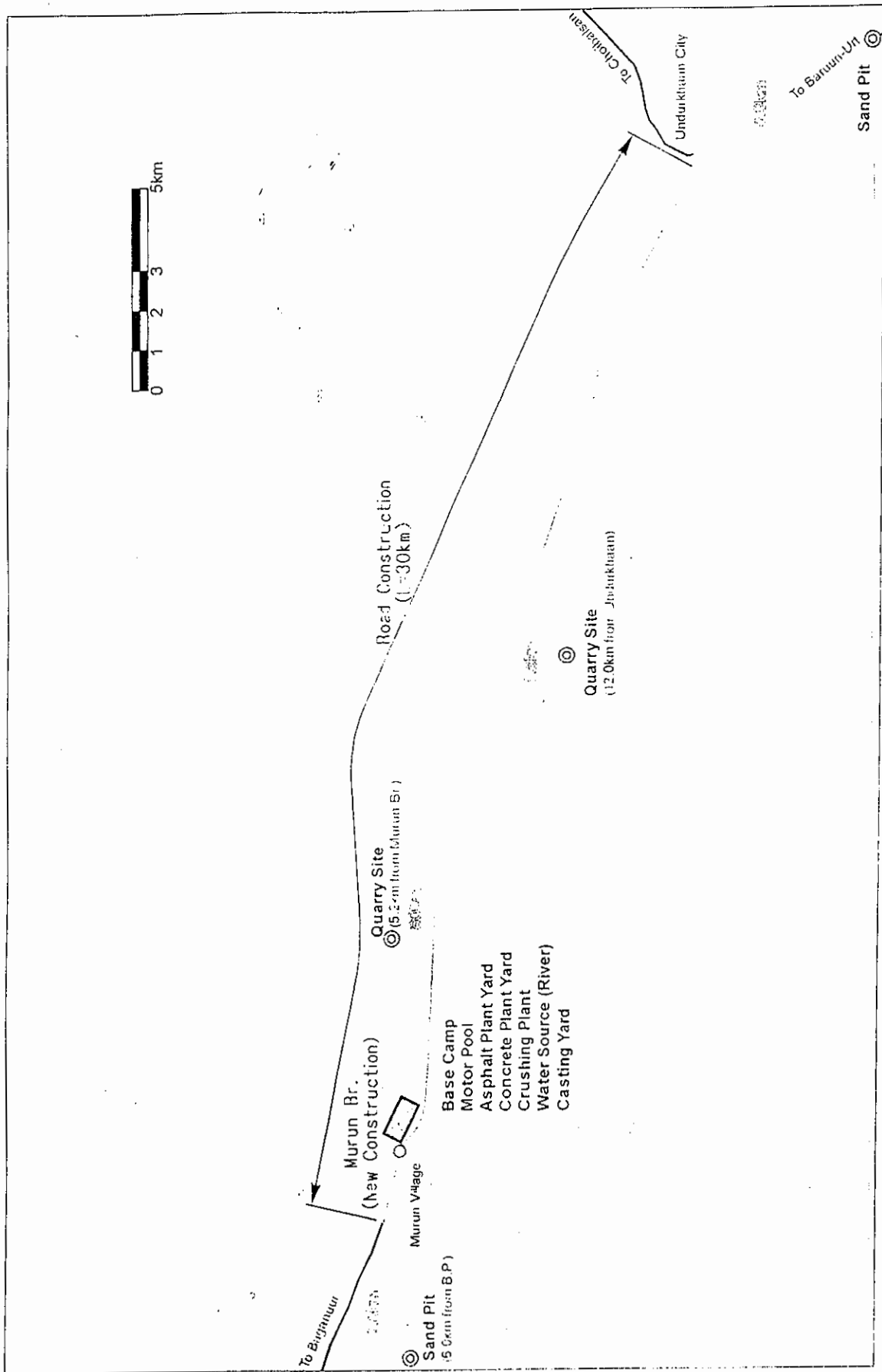
Location of asphalt and crushing plant. (Undurkhaan)



Construction Arrangement (Section-II)

*[Handwritten signatures and marks]*





Construction Arrangement (Section VI)

< March 4, 2005 >

**Minutes of Discussions  
on the Basic Design Study on the Project  
for Construction of the Eastern Arterial Road  
and Improvement of Equipment  
for Road Construction and Maintenance  
in Mongolia  
(Explanation on Draft Report)**

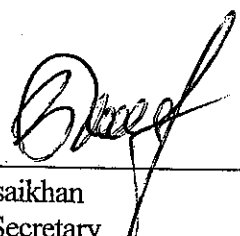
In September 2004, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Study Team for the Basic Design Study (hereinafter referred to as "the Study") on the Project for Construction of the Eastern Arterial Road and Improvement of Equipment for Road Construction and Maintenance (hereinafter referred to as "the Project") to Mongolia, and through discussions, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

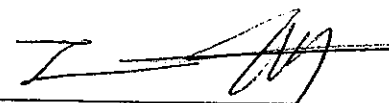
In order to explain and to consult with officials concerned of the Government of Mongolia on the components of the draft report, JICA sent to Mongolia the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Akira Shimizu, Senior Assistant Resident Representative of the JICA Mongolia Office, from February 23 to March 5, 2005.

As a result of discussions, both sides confirmed the main items described on the attached sheets.

Ulaanbaatar, March 4, 2005

  
Akira Shimizu  
Leader  
Draft Report Explanation Team  
Japan International Cooperation Agency

  
P. Batsaikhan  
State Secretary  
Ministry of Roads, Transport and Tourism

  
for O. Erdembileg  
Director General  
Department of Policy and Coordination  
for Loans and Aid  
Ministry of Finance

## ATTACHMENT

### 1. Components of the Draft Report

The Government of Mongolia agreed and accepted in principle the components of the draft final report explained by the Team.

### 2. Schedule of the Study

JICA will complete the Final Report by March 2005 and send it to the Government of Mongolia after finalization.

### 3. Organizations concerned in Mongolia

The Mongolian side explained that implementation structure for the Project was changed due to the ministry reforms.

- (1) The Coordinating Ministry is the Ministry of Finance (MOF).
- (2) The Responsible Ministry is the Ministry of Roads, Transport and Tourism (MORT&T).
- (3) The Implementing Agency is the Road Inspection & Research Center (RI&RC).
- (4) The organization charts are shown in Annex-1.

### 4. Undertakings to be done by the Mongolian side

- (1) The Mongolian side should secure the storage spaces for the road maintenance equipment of Asphalt plants and Crusher plants in Baganuur by April 2006.
- (2) The Mongolian side should secure the storage spaces for the road maintenance equipment except Asphalt plants and Crusher plants in Baganuur and Undurkhaan by March 2007.
- (3) The Mongolian side should be responsible for the undertakings shown in Annex-2 related to the implementation of the Project.

### 5. Handling of the Final Report

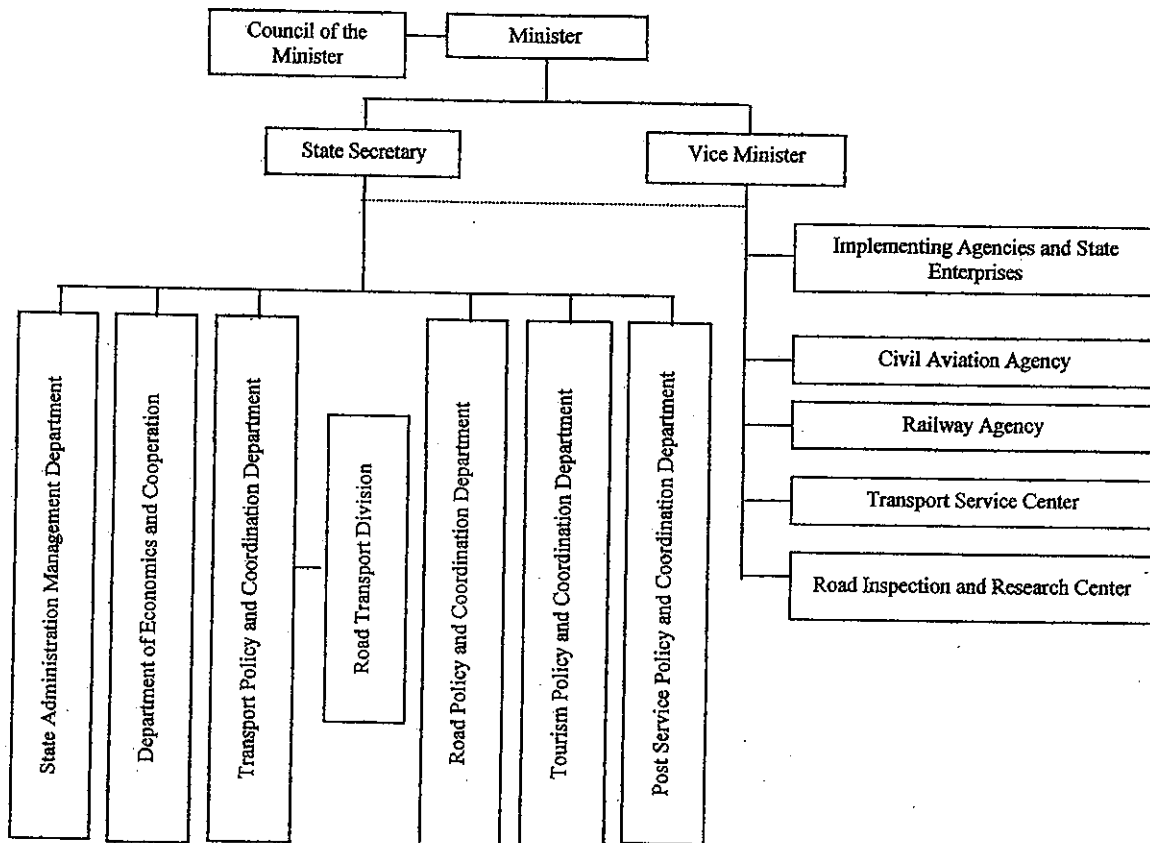
Both sides confirmed that the Final Report should be treated as "Non-confidential document". However, both sides agreed that the specifications and other technical information for tender of the road construction equipment handed to Mongolian side from the Team is confidential and should not be duplicated or released to any outside parties.

### 6. Other Relevant Issues

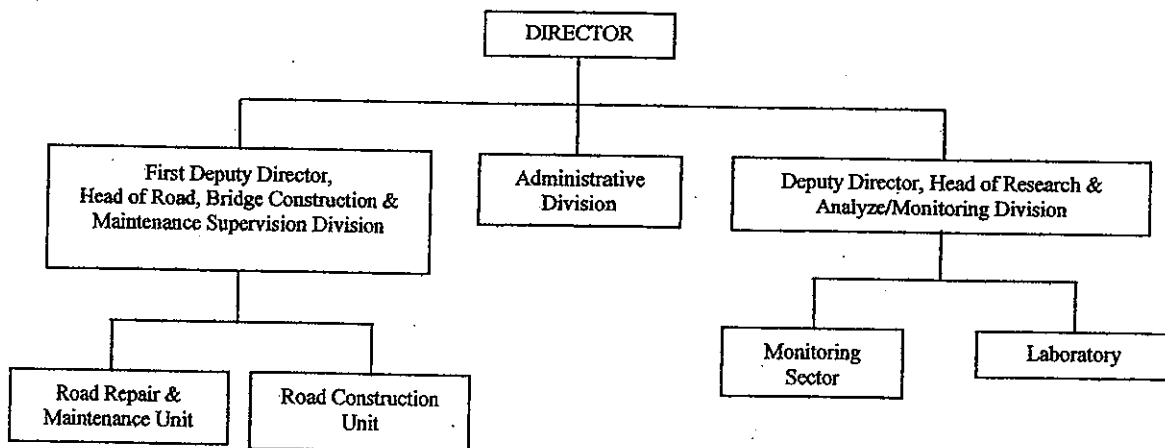
- (1) The Mongolian side requested the Team to change the road alignment at Baganuur Mining Intersection (Sta. 18+185). However the Team mentioned that the request cannot be accepted because it is inferior to other alternatives in the benefit and technical aspects of the Project implementation. The Mongolian side consented to the Team's reference and accepted the road

alignment selected by the Team.

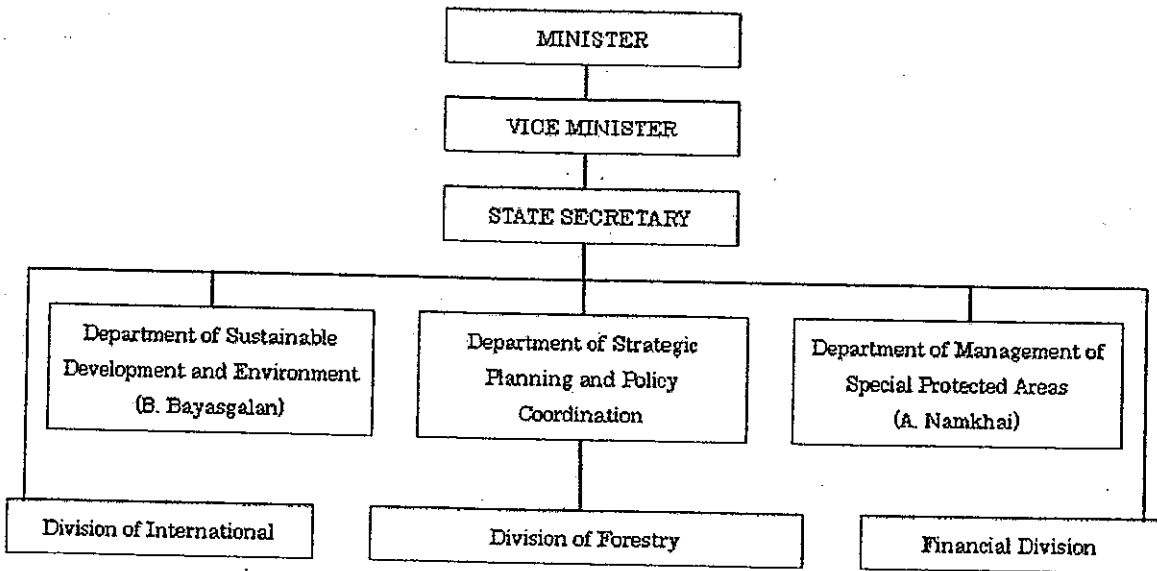
- (2) The Mongolian side submitted the routine and periodical maintenance plan for the Project as per Annex-3.
- (3) The both sides confirmed that the Environmental Management Plan (EMP) should be prepared by the contractor of the Project and submitted to Department of Sustainable Development and Environment, Ministry of Nature and Environment by March, 2006.
- (4) The both sides confirmed the contents of the plan for the Soft Components, the Mongolian side should submit the member list with the following background by January 2006.
  - Current position
  - Year of birth
  - Education background
  - Professional field
  - Key experiences
- (5) The Mongolian side requested the Team to carry out the counterpart training in Japan on the following fields as a technical cooperation by JICA. The Team took note of the request:
  - Equipment management planning
  - Road maintenance planning
  - Bridge construction planningThe Mongolian side understood that the submission of an official request of the said training through diplomatic channel will be need.
- (6) The Mongolian side understood that the Project will be planned as consisting of two packages of civil work and procurement of equipment. The Mongolian side also understood that the undertakings by the Mongolian side should be carried out timely according to the implementation plan.
- (7) For smooth implementation of the Project, both sides confirmed that the Responsible Ministry, named MORT&T should take every responsibility and measures, including coordination, in any matters arise between the Mongolian government body and entity.
- (8) The both sides agreed that, once the section/portion of the Project site will be open to public use, the said section/portion will be considered as completion, and the Mongolian side shall take every responsibility and necessary measures against damages, other than which is covered by warranty of defect.



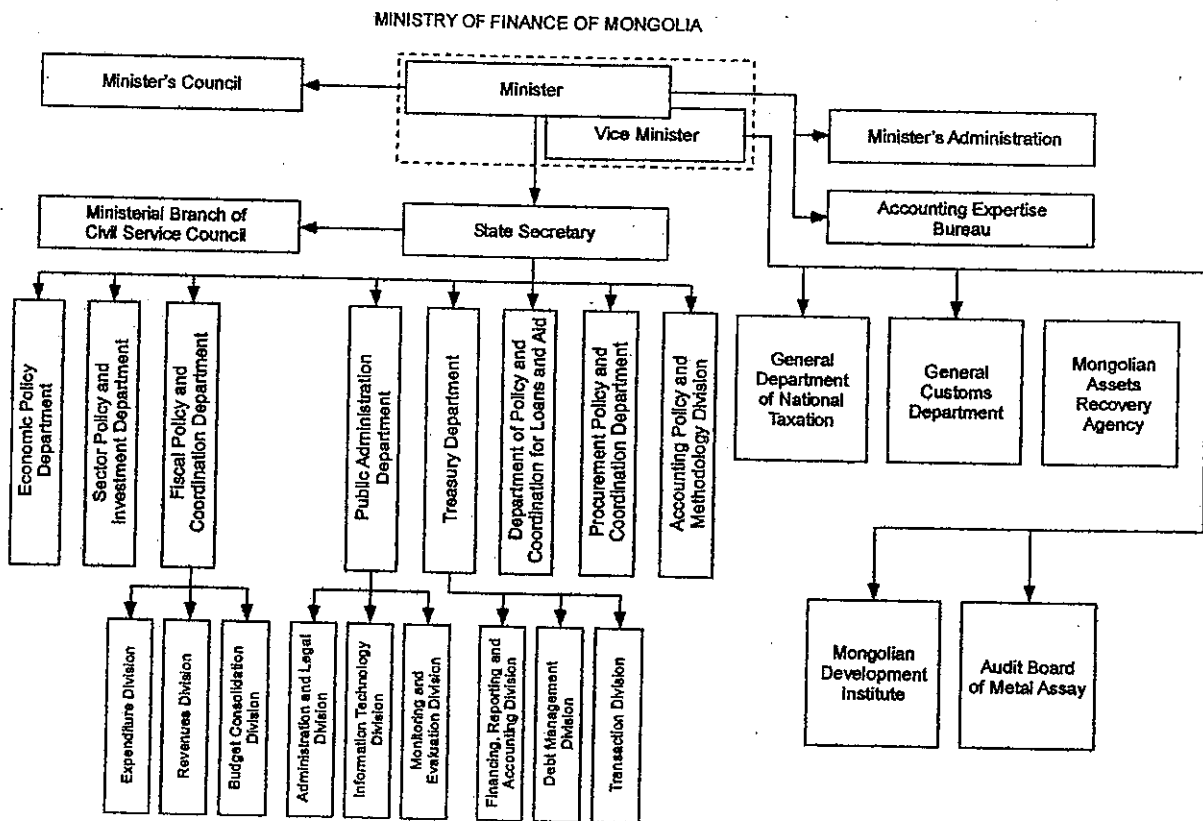
**Figure 1 Organization Chart of Ministry of Road, Transport and Tourism**



**Figure 2 Organization Chart of Road Inspection and Research Center**



**Figure 3 ORGANIZATION OF THE MINISTRY OF NATURE AND ENVIRONMENT**



**Figure 4 ORGANIZATION OF THE MINISTRY OF FINANCE**

**Undertakings to be done by the Mongolian side**

(1) General Matters

- 1) To set Banking Arrangement (B/A)
- 2) To advise commission of Authorization to Payment (A/P) and make payment for the commission
- 3) To secure all the expenses and prompt execution of customs clearance for products purchased under the Grant Aid
- 4) To accord Japanese nationals whose services may be required in connection with supply of the products and the services under the verified contracts
- 5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts
- 6) To maintain and use properly and effectively the constructed facilities and procured equipment under the Grant Aid

(2) Facilities Matters

- 1) To secure lands such as construction sites, construction yards as shown in Appendix-1 and work roads necessary for the Project
- 2) To clear construction sites including removal and replacement of obstacles within construction sites
- 3) To compensate costs for resettlement, if any
- 4) To exempt loyalty of land use for temporary works, borrow pits, sand pits and quarry sites as shown in Appendix-1
- 5) To secure concession on borrow pits, sand pits and quarry sites
- 6) To provide distributing line of electricity to base camps and Kherlen casting yards
- 7) To provide telephone trunk line to main distribution frame/panel (MDF) of base camps and Kherlen casting yards or allocation of wireless frequency
- 8) To construct "Road-side Stations", erect monuments and plant trees

- 9) To let a Japanese contractor use one set of asphalt plant and crusher plant together with asphalt testing equipment procured for the Project without charge
  - 10) To secure lands and required facilities on return of plants used by a Japanese contractor
  - 11) To give priority to a Japanese contractor to use procured asphalt plant for AZZA Tuv without charge of depreciation
- (3) Equipment Matters
- 1) To secure plant yards as shown in Appendix-2 and lands for facilities related to procured equipment
  - 2) To level plant yard and relevant lands
  - 3) To construct external fence
  - 4) To secure garages with roof as shown in Appendix-2 for equipment procured for the Project
  - 5) To provide electricity, water supply, sewerage, telephone line and heater for garage as required
  - 6) To secure tools and facilities for equipment repair and parts warehouse at garage
  - 7) To secure access roads with pavement<sup>\*1)</sup> and stockyards
  - 8) To provide necessary utilities such as electricity, water supply, sewerage, telephone line and heater for office for workers, warehouse and laboratory at plant yard
  - 9) To provide office for workers, warehouse and laboratory at plant yard
  - 10) To provide operators, materials<sup>\*2)</sup> and labors for trial test necessary for instruction of operation for asphalt plant and crusher plant
  - 11) To unload equipment by crane and store it at garage
  - 12) To store parts at warehouse

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<sup>\*1)</sup> denotes that specification of pavement is not determined and it aims at achieving the purpose of environmental conservation such as prevention of dust.

<sup>\*2)</sup> denotes that the cost of material shall be born by a Japanese contractor for the Project in case that a Japanese contractor will become beneficiary.



(4) Soft Component

- 1) To appoint trainees and to make them available for group induction and technical training
- 2) To secure required budget and facilities for executing soft component
- 3) To procure labors, materials and equipment necessary for technical training in coordination with supplier, contractor and consultant

(5) Others

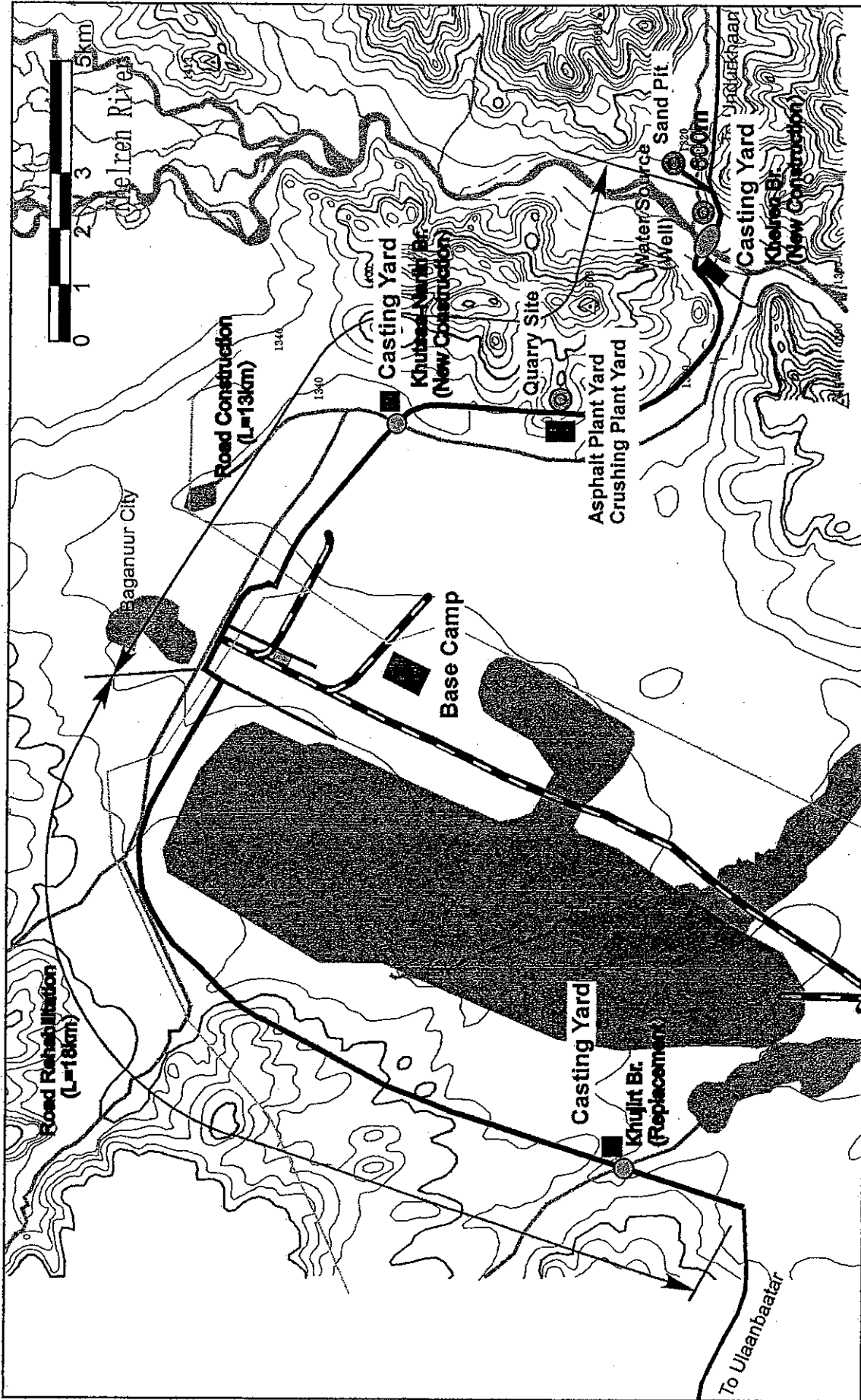
- 1) To contract with a Japanese consulting firm for detail design (D/D) and construction supervision
- 2) To contract with a Japanese contractor

Appendix:

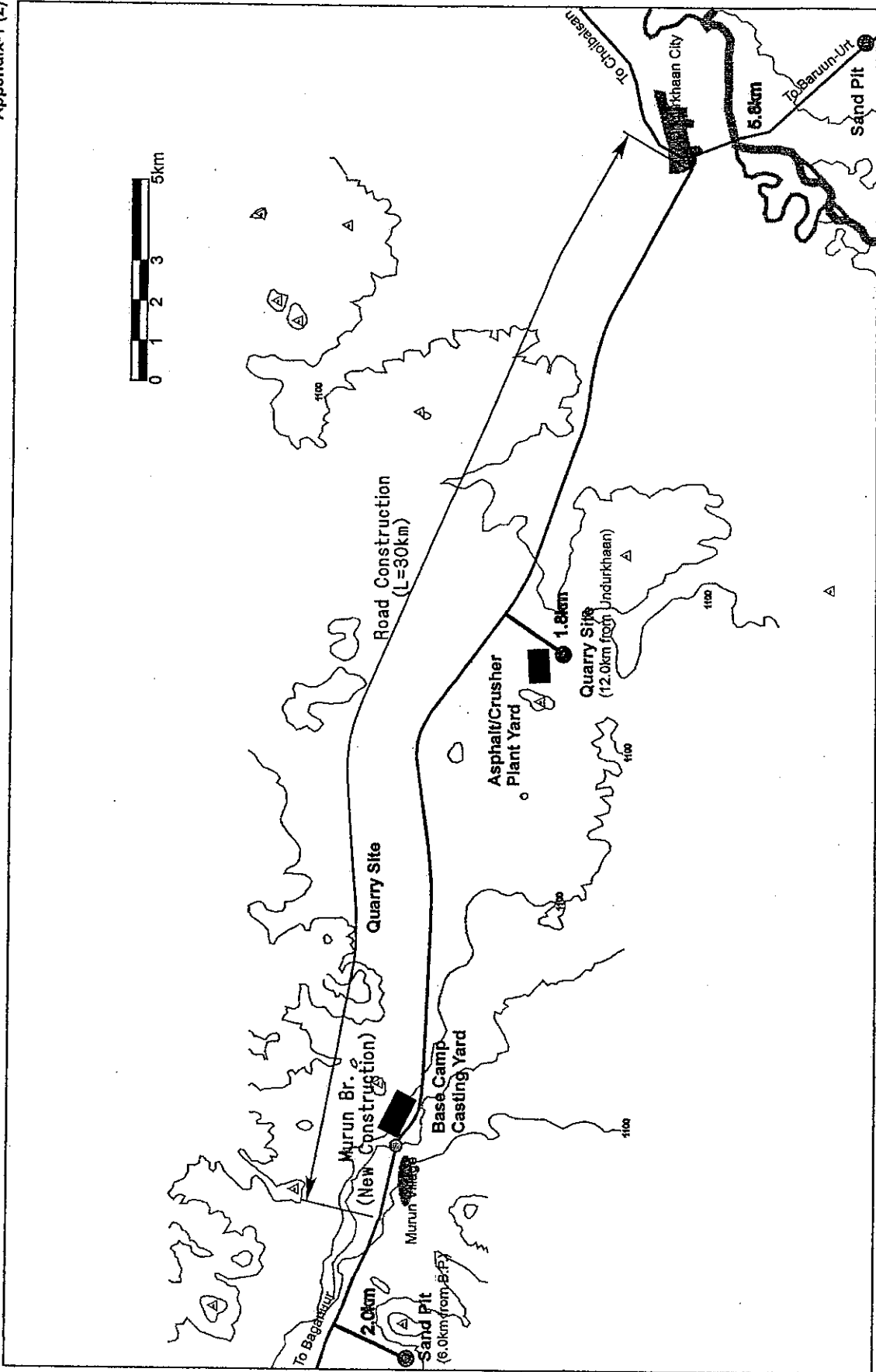
Appendix 1: Construction Yards

Section	Relevant Facilities	Area: W X H
Section II	Base Camp	90 m X 100 m
	Crusher Plant, Asphalt Plant, Concrete Mixing Plant	190 m X 90 m
	Casting yard at Khujirt Br. and Khutsaa-Narin Br.	80 m X 50 m
	Casting yard and Concrete Mixing Plant at Kherlen Br.	215 m X 80 m
Section VI	Base Camp, casting yard and Concrete Mixing Plant at Murun Br.	200 m X 100 m
	Crusher Plant and Asphalt Plant	160 m X 90 m

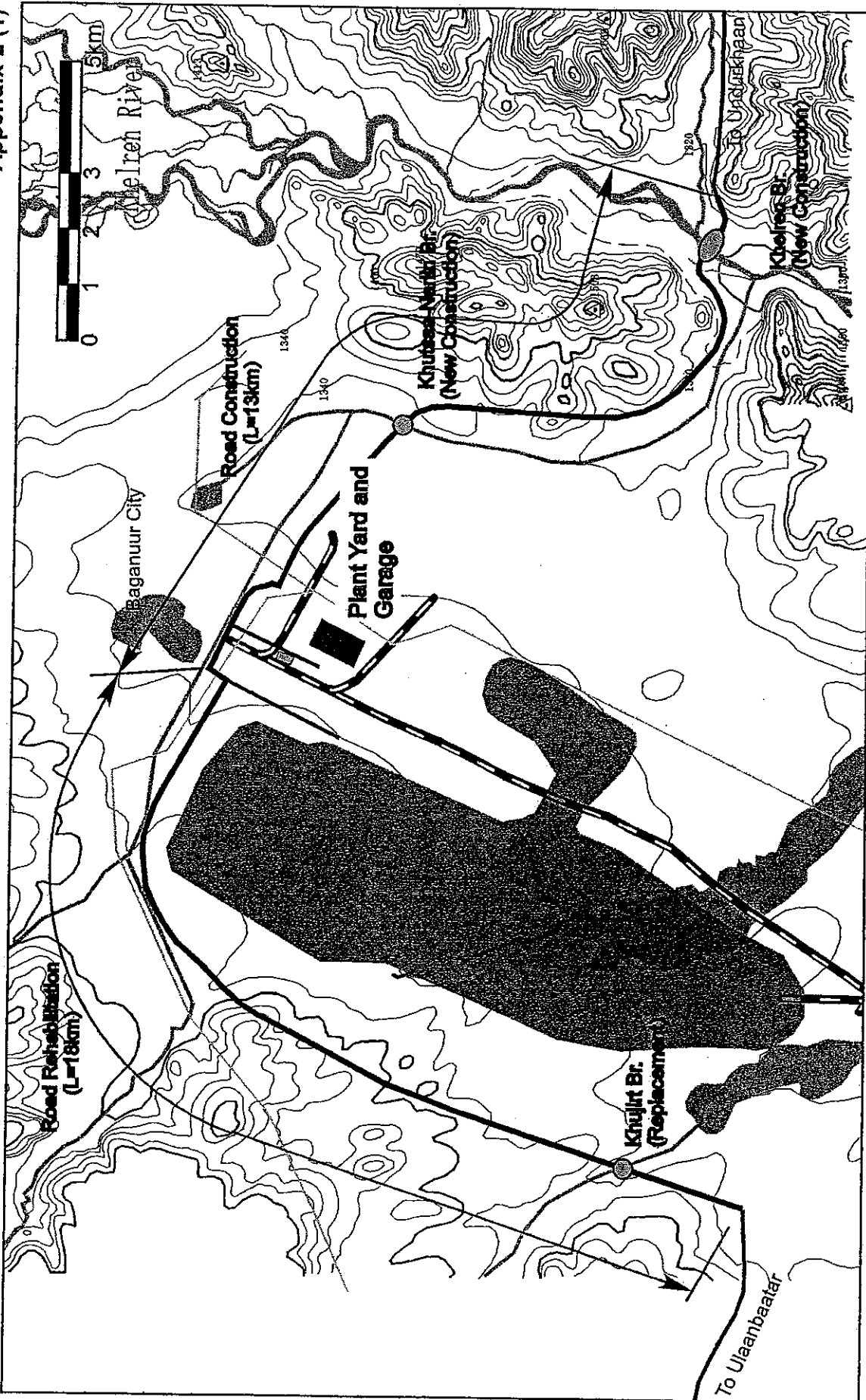
The locations of relevant facilities are shown in the following figures.



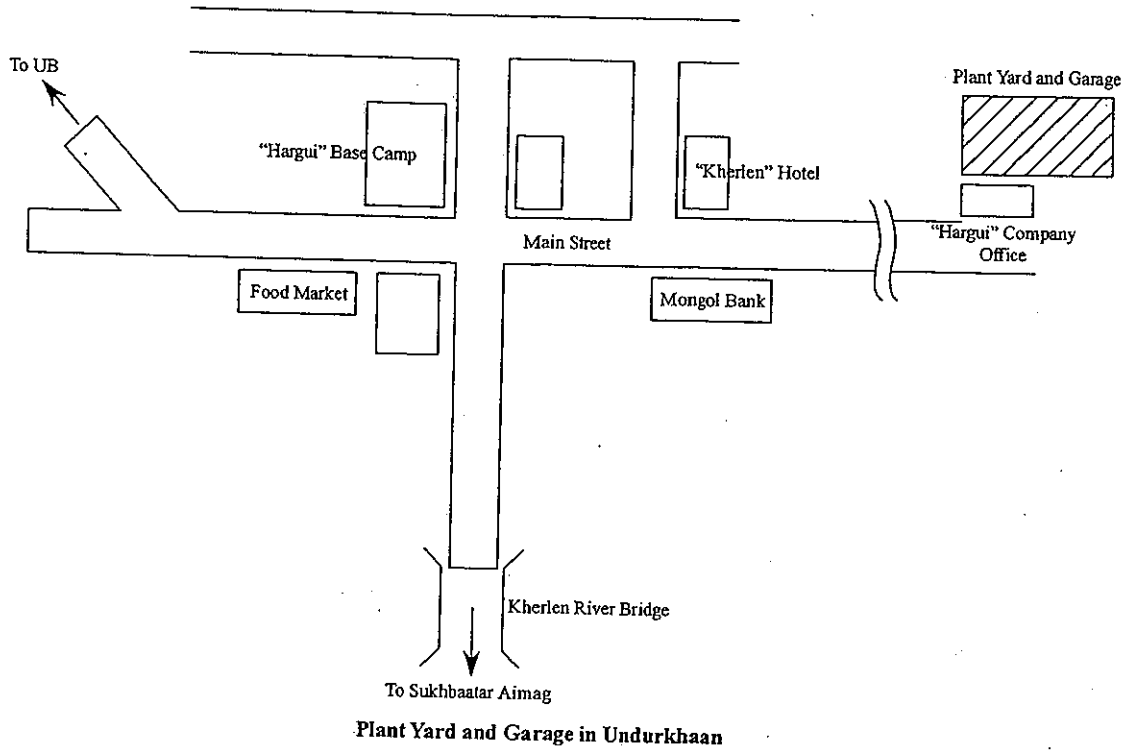
Construction Yards (Section-II)



Construction Yards (Section VI)



Plant Yard and Garage in Baganuur



Appendix 2: Plant Yards

Name of Company	Relevant Facilities	Area: W X H
AAZA Tuv	Asphalt Plant	36 m X 25 m
	Crusher Plant	36 m X 33 m
	Garage	80 m X 14 m
HARGUI	Asphalt Plant	36 m X 25 m
	Crusher Plant	36 m X 33 m
	Garage	97 m X 14 m

Notes:

- 1) The areas for asphalt plant and crusher plant are at the minimum to construct basement and erect plant.
- 2) The area for garage shown above is only for reference, and it fully depends upon the arrangement of equipment.

Approved by: Director General, Road Policy and Coordination Department

S. Ochirbat

THE ROUTINE MAINTENANCE PLAN OF THE STATE ROAD BY 2005-2010

№	Companies which are responsible of the road maintenance	Total length of roads, km				Financial plan by 2005-2010, mln tugrug						Total amount, mln tugrug
		Paved	Gravel	Improved	Earth	2005	2006	2007	2008	2009	2010	
1	AZZA Arkhangai Co. ltd	15,6	134,9	20,0	86,5	246,0	302,8	359,5	416,3	473,1	529,8	2327,5
2	AZZA Gobi-Altai Co. ltd	6,0	66,3	94,9	566,8	200,0	246,2	292,3	338,5	384,6	430,8	1892,4
3	AZZA Darkhan Co. ltd	219,0				309,4	380,8	452,3	523,7	595,1	666,5	2927,8
4	AZZA Dornogovi Co ltd	13,0	5,4		429,6	105,8	130,2	154,6	179,0	203,5	227,9	1001,0
5	AZZA Zavkhan Co. ltd	4,5	112,8	108,5	685,2	467,3	575,2	683,0	790,8	898,7	1006,5	4421,5
6	AZZA Selenge Co. ltd	119,1			0,9	397,1	488,7	580,2	671,8	763,5	855,1	3756,4
7	AZZA Tov Co. ltd	142,7	7,7	126,0	922,6	566,8	697,6	828,3	959,1	1089,7	1220,7	5362,2
8	AZZA Orkhon Co. ltd	142,0				248,5	305,9	363,2	420,6	477,9	535,3	2351,4
9	AZZA Ovorkhangai Co. ltd	161,7	33,0		209,3	261,0	321,2	381,5	441,7	501,9	562,2	2469,5
10	AZZA Uvs Co. ltd	56,0	90,4	39,0	588,6	444,1	546,6	649,4	751,6	854,1	956,6	4202,4
11	AZZA Kharkhorin Co. ltd	138,8	11,8	27,0	35,4	237,9	292,7	347,6	402,5	457,4	512,3	2250,4
12	AZZA Khovd Co. ltd	45,9	12,5	292,5	388,1	452,8	557,2	661,7	766,2	870,7	975,2	4283,8
13	AZZA Khovsgol Co ltd	14,5	74,0	111,0	592,5	245,5	302,2	358,8	415,5	472,2	528,8	2323,0
14	AZZA Erdenesant Co.ltd	144,0	11,5		88,2	255,7	314,5	373,7	432,8	491,8	550,8	2419,3
15	AZZAN Co. ltd	274,0	47,0		274,0	469,1	577,3	685,6	793,8	902,1	1010,2	4438,1
16	Bayan-Olgii Jol.Co ltd	5,7	116,0	80,8	323,8	259,3	319,2	379,0	438,8	498,7	558,5	2453,5
17	Bayankhongor Orgon jim Co ltd	17,5		24,4	240,1	345,6	425,4	505,1	584,9	664,6	744,4	3270,0
18	Dornod Auto Zam Co.ltd	10,0	405,6	14,0	341,4	240,6	296,1	351,6	407,2	462,7	518,2	2276,4
19	Bulgan Erdenet Suvraga Co. ltd	8,8	81,0	72,5	314,7	189,6	233,4	277,1	320,9	364,6	408,4	1794,0
20	Sukhbaatar Tallin zam Co. ltd				535,0	304,1	374,3	444,4	514,6	584,8	654,9	2877,1
21	Khentii Hargui Co.ltd	2,0	254,0	295,5	187,5	253,8	312,5	371,1	429,7	488,3	546,9	2402,3
<b>Total</b>		<b>1540,8</b>	<b>1463,9</b>	<b>1306,1</b>	<b>6810,2</b>	<b>6500,0</b>	<b>8000,0</b>	<b>9500,0</b>	<b>10000,0</b>	<b>12500,0</b>	<b>14000,0</b>	<b>61500,0</b>

Prepared by: Officer, Road Policy and Coordination Department

D. Zagradnaa

## APPENDIX 5

### Cost Estimation Borne by the Recipient Country

Appendix 5. Cost Estimation Borne by the Recipient Country



САНГИЙН ЯАМАНД

МОНГОЛ УЛСЫН  
ТӨРИЙН НАРИЙН БИЙГИЙН  
ДАРГА

Төрийн Мэдээлэлээр хэл, Чангынгой суурал,  
Тэдгээн үндэстний гудамж 5/1, Засгийн газрын II байр,  
Утас: 32-64-06, Факс: 31-06-12  
E-mail: info@psn.gov.mn, http://www.mn/psn.gov.mn

2005.01.20 № 6/1000  
санай \_\_\_\_\_-ны № \_\_\_\_\_-т

Төслийн Монгол талаас гарах  
хөрөнгийн тухай

Япон Улсын Засгийн газрын буцалтгүй тусламжаар “Зүүн чиглэлийн гол авто зам барих төсөл” –ийг (Багануурын хатуу хучилттай замын шинэчлэлтийг оруулаад Хэрлэн-голын төмөр бетон гүүр хүртэл 30.4 км, Мөрөн сумаас Өндөрхаан хүртэл 28.1 км, бүгд 58.5 км хатуу хучилттай зам барих, замын засвар арчлалтын машин, механизм нийлүүлэх) хэрэгжүүлэхээр Хэлэлцээрийн тэмдэглэлд Япон улсын ЖАЙКА байгууллагаас үндсэн зураг төслийн судалгааны ахлагч, Монгол Улсын Санхүү, эдийн засгийн яамны Эдийн Засгийн хамтын ажиллагааны бодлого, зохицуулалтын газрын дарга, Дэд бүтцийн яамны Зам,Тээвэр, Холбоо, Аялал жуулчлалын бодлого, зохицуулалтын газрын дарга, Авто замын газрын дарга нар 2004 оны 9 дүгээр сарын 14-ний өдөр гарын үсэг зурсан юм.

Дээрх төслийг хэрэгжүүлэхэд зам барилгын ажил болон замын засвар, арчлалтын машин, механизм нийлүүлэх зардлыг Япон Улсын Засгийн газар гаргаж зарим нэг тодорхой хэсгийн зардлыг Монгол Улсын Засгийн газар гаргахаар байгаа юм.

Иймд Монгол Улсын Засгийн газраас гаргах зардлын тухай албан тоотыг PCI.Co.ltd компанид уламжилж бидний ажилд туслалцаа үзүүлэхийг хүсье.

Жич: Албан тоотын төслийг хавсаргав.

ТӨРИЙН НАРИЙН БИЙГИЙН  
ДАРГА

П.БАТСАЙХАН



TO: Pacific Consultants International  
7-5, Sekido 1-Chome, Tama -Shi, Tokyo -206-8550  
Japan

FAX: 042-372-06360

Sub: Cost estimate to be borne by the Government of Mongolia

Sir,

As desired vide the Minutes of Discussions on the Basic Design Study on Project for Construction of the Eastern Arterial Road and Improvement dated on September 14, 2004, we are pleasure to submit herewith the tentative cost estimates to be borne by GoM for the following works;

1. Concessions and royalties on borrow pits, sand and Quarry sites -	0. tug
2. Road Right -of way and Land for Contractor's facilities -	20 mln.tug
3. Land rental fee for Contractor's facilities including Borrow Pits, sand pits and Quarry sites-	30 mln.tug
4. Land for asphalt plant and crushing plants procured under Japan's Grant Aid and construction of gates and fences in and around the plant sites-	15 mln.tug
5. Garage and warehouse of equipments procured under the Japan's Grand Aid-	300 mln. tug
6. Construction of road-side Stations-	100 mln.tug
7. Construction of monuments-	8 mln.tug
8. Planting tree -	7 mln.tug
9. Relocation of telephone line posts-	25 mln.tug
10. Electricity: The distributing line to the two base camps and one concrete plant yard-	100 mln.tug
11. Providing facilities for the distribution of electricity, telephone, and other incidental facilities-	6 mln. tug
12. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A-	0. tug
13. to ensure unloading and customs clearance at port of disembarkation in recipient country -	1.5 mln.tug
<b>TOTAL</b>	<b>612.5 mln.tug</b>

The above cost estimation has been prepared based on the drawings and bill of quantities supplied by your good self.

We hope that this information will be useful during your presentation to made at JICA Head Office in Tokyo.

Yours sincerely,

## APPENDIX 6

Answer from Railway Authority



УЛААНБААТАР ТӨМӨР ЗАМЫН  
ХЭРЭГ ЭРХЛЭХ ГАЗРЫН  
ЗАМЫН АЛБА

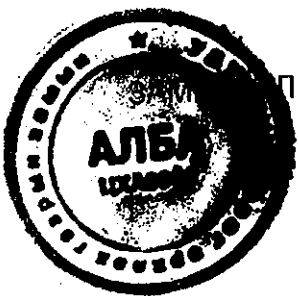
2004.09.15 № 77  
танай 2004.09.09 -ны № 2/994 -т

АВТО ЗАМЫН ГАЗАРТ

Албан тоот бичгийн хариу

Танай 2004 -09-09 -ны өдрийн 2/994 тоот албан бичгийг хүлээн авч дараах хариуг өгч байна.

Багануураас Хэрлэнгийн гүүр чиглэлд тавих танай замтай огтлолцож буй төмөр зам нь Бага нуур өртөөний 9-р зам буюу татах мухар зам юм. Уг зам нь 160м урттай өртөөний сэлгээний ажилд байнга ашиглагддаг. Тус өртөөн дээр ТЗ-ын 1, Бага нуур ХХК-ийн 2 сэлгээний илчит тэрэг өвлийн улиралд хоногт 180-250 вагон, зуны улиралд 110-150 вагонд сэлгээний ажил гүйцэтгэж тус зам дээр ажилладаг тул авто замтай огтлолцуулах боломжгүй байна.



АЛБАНЫ ДАРГА *[Signature]* Н.СҮРЭНЖАВ

29838

ULAANBAATAR RAILWAY  
RAILROAD DIVISION OF HEAD OFFICE  
September 15, 2004 Ref. No. 77

Subject: Reply to your letter of September 9, 2004 with Ref. No. 2/994

To: DOR

This is reply to your letter of September 9, 2004 with Ref. No. 2/994.

Railway that crosses with your road alignment from Baganuur to Kherlen Bridge, is railroad No. 9 of Baganuur Station. This railroad has length of 160 m and used for sorting of wagons. In winter season approximately 180 – 250 wagons and in summer season approximately 110 – 150 wagons are sorted by 2 shunting engine of TZ-1 and Baganuur Coal Company. Therefore, it is impossible to cross this railroad by your road.

Head of Division      N. SURENJAV