

[資料]

1. 調査団員・氏名

(1) 基本設計調査時

団員氏名	担 当	所 属	現地調査期間
小貫 和俊	総括	JICA モンゴル事務所次長	3月19日～3月27日
坂部 英孝	計画管理	JICA 無償資金協力部業務第一グループ 運輸交通・電力チーム 副主任	3月19日～3月27日
丸岡 健二	業務主任／道路交通計画	(株)建設技研インターナショナル	3月19日～5月6日
溝田 祐造	橋梁設計Ⅰ／施工計画	(株)建設技研インターナショナル	3月19日～5月6日
鈴木 泰之	橋梁設計Ⅱ	(株)建設技術研究所	4月19日～5月6日
岡崎 亮男	道路設計／埋設物調査	(株)建設技研インターナショナル	4月9日～5月6日
下河内 仁	自然条件調査（地形地質調査）	(株)建設技研インターナショナル	3月23日～5月6日
小川 武彦	環境社会配慮／経済分析Ⅱ	(株)ランド総合研究所	3月30日～5月6日
小坂 文夫	調達計画／積算	(株)建設技研インターナショナル	3月23日～5月6日
小池 勇	経済分析Ⅰ	(株)アルメック	4月18日～5月6日
半田 敏幸	通訳Ⅰ	(財)日本国際協力センター	3月23日～5月6日
吾孫子 さなえ	通訳Ⅱ	(財)日本国際協力センター	3月19日～5月27日
相澤 円香	業務調整	(株)建設技研インターナショナル	3月23日～5月6日

(2) 基本設計調査概要書説明時

団員氏名	担 当	所 属	現地調査期間
小貫 和俊	総括	JICA モンゴル事務所次長	10月31日～11月6日
坂部 英孝	計画管理	独立行政法人国際協力機構 経済基盤開発部 運輸交通・情報通信第3課	11月2日～11月6日
丸岡 健二	業務主任／道路交通計画	(株)建設技研インターナショナル	10月30日～11月6日
溝田 祐造	橋梁設計Ⅰ／施工計画	(株)建設技研インターナショナル	10月30日～11月6日
岡崎 亮男	道路設計／埋設物調査	(株)建設技研インターナショナル	10月30日～11月6日
小川 武彦	環境社会配慮／経済分析Ⅱ	(株)ランド総合研究所	10月30日～11月6日
半田 敏幸	通訳Ⅰ	(財)日本国際協力センター	10月30日～11月6日

(2) 基本設計調査概要書説明時

工程表			総括	計画管理	業務主任/ 道路交通計画	橋梁設計 I / 施工計画	道路設計/ 既存埋設物調査	環境社会配慮/経 済分析 II	通訳 I
日順	日付	曜日	小貫 和俊	坂部 英孝	丸岡 健二	溝田 祐造	岡崎 亮男	小川 武彦	半田 敏幸
1	10月	30	木			東京→ソウル→ウランバートル			
2		31	金	MRTCUD・UB市と 協議		JICA表敬 MRTCUD・UB市と協議			
3	11月	1	土			団内会議			
4		2	日		東京→北京	団内会議			
5		3	月		北京→UB	JICA打合せ、MRTCUD、UB市との協議			
6		4	火			MRTCUDとM/D協議			
7		5	水			M/D署名、JICA、EOJ報告			
8		6	木			UB→北京→東京			

3. 関係者（面会者）リスト

氏名	職位	所属
1) 道路・運輸・建設・都市開発省（旧道路・運輸・観光省）		
Mr. Jadamba BAT-ERDENE	次官	
Mr. BAASANKHUU Dorjtseveen	局長	道路政策整備局
Mr. Khuushaan GANTUMUR	次長	道路政策整備局
Mr. Dolgorsuren ZAGDRADNAA	事務官	道路政策整備局
2) 財務省		
Mr. Baavgai KHUREBAATAR	局長	経済政策局
3) ウランバートル市		
Mr. Enebishii MUNKH-OCHIR	助役	
Mr. Choimpog BAT	助役	
Mr. D. Janchivdorj	道路橋梁部長	道路局
Mr. Daraasuren	設計部長	道路局
Mr. L. Battsooj	次長	道路局
Ms. Ts. Khorloo	建築士	都市計画局
Mr. A. Enkhpureu	埋設管担当	設備局
Mr. S. Tsedsuren	次長	土地管理局
Mr. M. Zoljargal	局長	環境保護局
4) ウランバートル鉄道		
Mr. L. Baasandorj	会長	Zamyn-Uud 積替施設部
Mr. Erdenebulgan	技師長	技術政策局
Mr. D. Chinzorig	技師	技術政策局
5) モンゴル交通警察局		
Mr. O. Batjargal	交通計画課長	モンゴル交通計画課
Mr. L. Guntevsuren	警部補	モンゴル交通計画課
6) 民間会社		
Mr. D. Jargalsaikhan	代表取締役	Electric Transport Company
Mr. Erdenetouch	技師長	Electric Transport Company
Mr. B. Erkhembayar	部長	GBET Co., Ltd Consulting Engineers
Mr. M. Davaasuren	事業本部長	Gan Khiits 商工会社
Mr. B. Adiyasuren	代表取締役	Eco Asia
Mr. M. Kubota	代表取締役	Sar Shine International
Mr. T. Bayaraa	営業部長	Wagner Asia Equipment LLC
Ms. Ts. Chinbat	部長	Wagner Asia Equipment LLC

氏名	職位	所属
Mr.G.Tselmuun	レンタル担当	Wagner Asia Equipment LLC
Mr.G.Bayaraa	会計担当	Wagner Asia Equipment LLC
Mr.D.Enkhat	会長	Mongolian Express Co.,LTD
Mr.kh.Davaanyam	次長	Mongolian Express Co.,LTD
Mr.K.Notake	次長	Bridge Construction LLC
Mr.O.GAnbold	部長	Ikh Sairiin Khundii
Mr.B.Tushigbat	部長	EREL
Mr.Ch.Jargalsaikhan	部長	Dayarkh LLC
Mr. M.Ulziisaikhan	常務取締役	Just Group
Mr.T.Ariunbold	営業部長	Komit
Mr.O.Chuluunbaatar	常務取締役	Road Construction, leasing of Machine and Equipment.Co.,Ltd
Mr.M.Mandakhbayar	総支配人	MKI Co.,Ltd
Mr.Kh.Chinbold	総支配人	SUURI Co.,Ltd
Mr.L.Sanjaadprj	部長	Yalguusan
Mr.J.Bayarsaikhan	技術士	UB-AZZA Co.,
7) その他		
Mr.D.Boldbaatar	部長	金融政策・研究部
Mr.Ts.Tsendeehhuu	研究教授	生物学部植物学科
Dr. BAATAR Ravjaa	研究主幹	モンゴル科学アカデミー (森林生態研究所)
Dr. JANCHIVDORJ Luntan	水資源主任	モンゴル科学アカデミー
8) 日本大使館及び JICA 事務所		
平原 勝	日本大使	在モンゴル日本大使館
守屋 勉	所 長	JICA モンゴル事務所

4. 討議議事録 (M/D)

(1) M/D (基本設計時)

**Minutes of Discussions
on the Basic Design Study
on the Project for Construction of Railway Fly-over
in Ulaanbaatar City
in Mongolia**

Based on the results of the Preliminary Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Construction of Railway Fly-over in Ulaanbaatar City (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 (hereinafter referred to as "the Team"), which is headed by Mr. Kazutoshi ONUKI, Deputy Resident Representative of JICA Mongolia Office, and is scheduled to stay in the country from March 20, 2008 to May 6, 2008.

The Team held discussions with the officials concerned of the Government of Mongolia and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Ulaanbaatar, March 26, 2008

小貫 和俊

Kazutoshi ONUKI
Leader
Basic Design Study Team
Japan International Cooperation Agency

Baavgai KHURENBAATAR
Director General
Department of Policy and Co-ordination
for Loans and Aid
Ministry of Finance
Mongolia

for Jadamba BAT-ERDENE
State Secretary
Ministry of Road, Transport and Tourism
Mongolia

Enebish MUNKH-OCHIR
General Manager of City
and Chief of the Mayor's Office
Ulaanbaatar City
Mongolia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to construct a Railway Fly-over to ensure the safe and smooth traffic of roads between northern and southern areas of Ulaanbaatar city, which are divided by the railway tracks.

2. Project site

The site of the Project is shown in Annex-1.

3. Responsible Ministry and Implementing Agency

3-1. The responsible Ministry is the Ministry of Road, Transport and Tourism.

3-2. The implementing organization is the Ulaanbaatar City Government. Road Department of Ulaanbaatar City is responsible for the Project.

3-3. The organization chart of the responsible Ministry and the implementing organization is shown on the Minutes of Discussions signed by both sides on March 1, 2007.

4. Items requested by the Government of Mongolia

4-1. After discussions with the Team, the item described below was requested by the Mongolian side.

To construct a Railway Fly-over connecting between northern and southern areas of Ulaanbaatar city.

- Number of traffic lane: 4 lanes (2 lanes each way),
- Total width: 16.5m (dual carriage way $(3.25 \times 2 + 0.75) \times 2 = 14.5$ m, median strip 1.0m, parapet 0.5m $\times 2 = 1.0$ m),
- Sidewalk: 1.5m at each side,
- Construction of Approach Roads to Naryn Zam Road, Ikh-Toiruu Street and Engels Street

JICA will assess the appropriateness of the request and will recommend to the Government of Japan.

4-2. Both sides confirmed that the beginning and ending points of the approach road are the places where the elevation of the approach road is placed to the existing roads. These points will be confirmed through the further study and discussions of alignment design based on the topographic survey.

4-3. Both sides confirmed that the improvement and/or rehabilitation of the existing roads related to the Project (Ikh-Toiruu Street, Engels Street, etc.), including the bridges, is out of the scope of the Project, and the Mongolian side should implement them at its own expenses in a timely manner to ensure the effect of the Project.



K.O.




The Mongolian side shall prepare the implementation plan for the improvement of existing roads and bridges mentioned above, and submit it to JICA Study Team, before the explanation of Draft Report of Basic Design Study for the Project of October, 2008.

4-4. Both sides reconfirmed that the Japanese side will design the fly-over with the assumption that the piers can be constructed in the railway premises as indicated on Annex-2. The Mongolian side shall secure the necessary area of railway premises for the Project by the commencement of the Project.

4-5. Through the further study, both sides shall continue to discuss the possibility to remove or lower the existing roof of the platform for V.I.P. by the Mongolian side, which affects the design of the fly-over (especially for vertical alignment), and conclude it by the end of April, 2008.

5. Japan's Grant Aid Scheme

The Mongolian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Mongolia as explained by the Team and described in Annex-2 and Annex-3 of the Minutes of Discussions signed by both parties on July 5, 2007.

6. Schedule of the Study

6-1. The consultants will proceed to further studies in Mongolia until May 6, 2008.

6-2. JICA will prepare the draft report in Mongolian and dispatch a mission in order to explain its contents around October 2008.

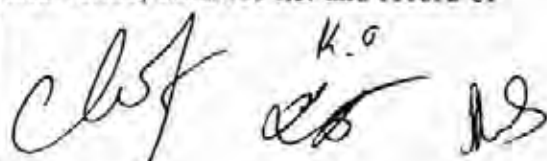
6-3. In case that the contents of the report is accepted in principle by the Government of Mongolia, JICA will complete the final report in English and send it to the Government of Mongolia by the end of January, 2009.

7. Environmental and Social Considerations

7-1. The Mongolian side explained to the Team that as a result of SIA (Screening Impact Assessment) conducted by the Ministry of Nature and Environment, the Ministry presented the view with the letter issued on February 18, 2008 that the execution of DEIA (Detailed Environment Impact Assessment) is required prior to the implementation of the Project.

The Mongolian side is in process to obtain the ECC (Environment Clearance Certificate) based on DEIA, and both sides confirmed that the Mongolian side shall prepare the flowchart of the procedures and submit it to JICA Mongolia Office by the end of March, 2008, and obtain the ECC by the end of September, 2008.

7-2. Both sides confirmed that the Mongolian side will hold stakeholders meetings on an appropriate occasion and report its results such as time and venue, attendee list and record of

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discussion to JICA Mongolia Office by the end of September, 2008.

7-3. Both sides confirmed that the Mongolian side shall prepare the flowchart of the procedures related to the land securing and submit it to JICA Mongolia Office by April 10, 2008, and shall conclude the necessary procedures to obtain basic agreements of affected land owners by the end of September, 2008. And the Mongolian side shall complete the securing of land necessary for the Project by the commencement of the Project.

8. Other relevant issues

8-1. Through the site survey conducted on March 22, 2008, both sides confirmed that there exist the following utilities that will be affected by the Project;

(1) Underground:

Hot water supply pipes for central heating, Water supply pipes, Sewage pipes, Telephone lines, Power lines, Drainage, etc.

(2) On and Above Ground:

Electric pole and its overhead wire, Advertising pillars, Trees, Street lightings and foundations, Fences, Entrance with staircase, Kiosks, etc.

(3) Overhead:

Power-supply catenaries of trolleybus, etc.

In case these utilities are required to be relocated and/or removed from the Project site, the Mongolian side shall undertake them in a timely manner at the Mongolian expenses, including the compensation for cease of trolleybus operations.

8-2. The Mongolian side confirmed that the following undertakings should be taken by the Mongolian side at the Mongolian expenses.

(1) Necessary arrangement for the Team, the Consultant and the Contractor to enter the railway premises for the Project (e.g. obtaining of the entry permit from the Railway Authority, etc.).

(2) Necessary arrangement for the Team, the Consultant and the Contractor to use the necessary area in the railway premises for the Project (e.g. obtaining of the work permit from the Railway Authority, etc.).

(3) Necessary arrangement for controlling railway operation for neighboring construction so-called "window time".

(4) Necessary arrangement for traffic control at necessary sections.

(5) Necessary arrangement for the tax exemption of imported equipment and materials.

(6) Securing and clearance of the temporary yard.

(7) Securing of site for disposal of waste.

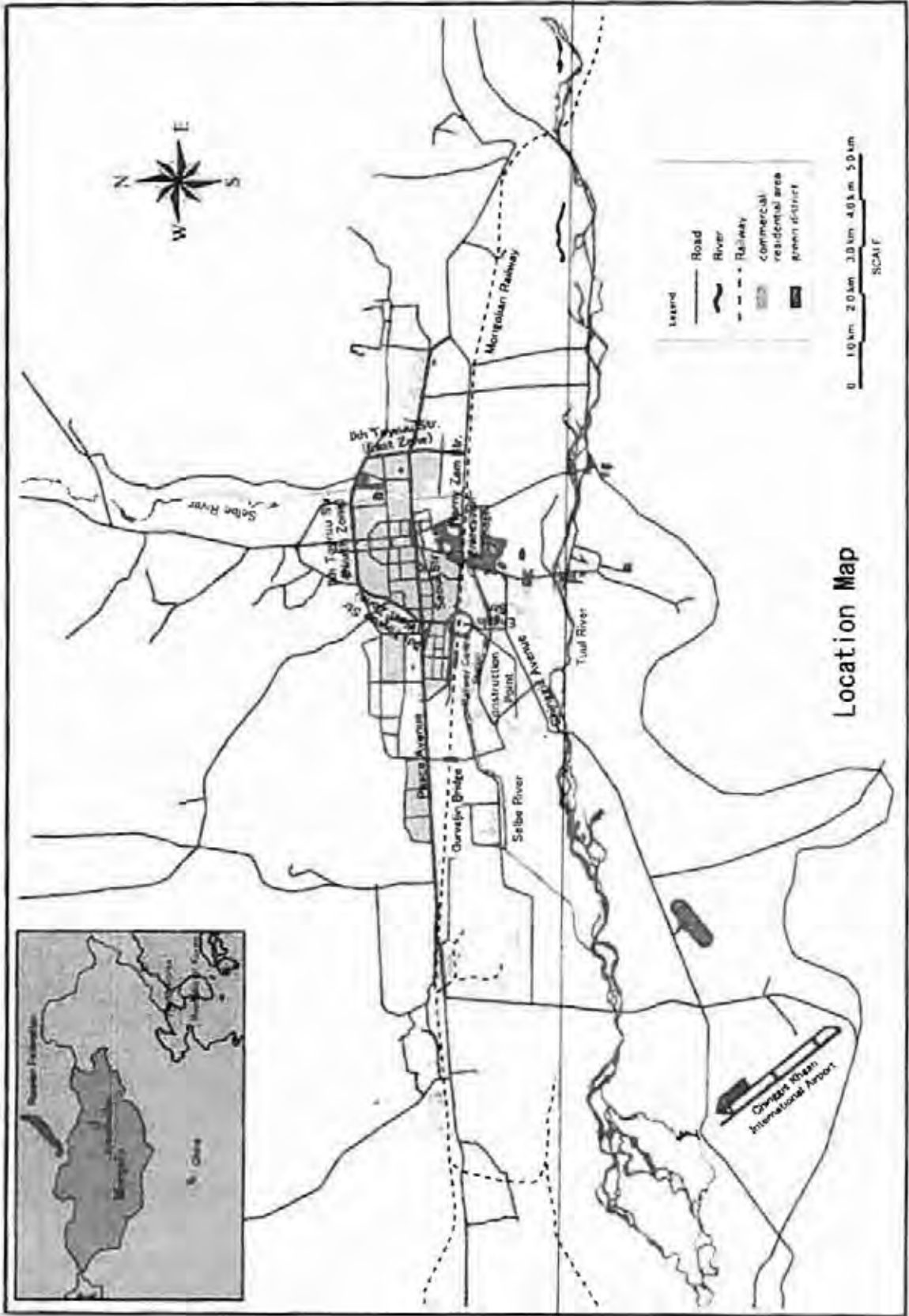
(8) Maintaining order at the sites and yards for the Project.

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- 8-3. The Mongolian side shall secure enough budget and personnel necessary for the operation and maintenance of the fly-over constructed by the Project, including the periodical maintenance work after the completion of the Project.
- 8-4. The Mongolian side requested the Team to carry out the counterpart training in Japan on operation and maintenance for the Fly-over as a technical cooperation by JICA.
Both sides agreed that another official request will need to be submitted by the Mongolian side to the Government of Japan.
- 8-5. The Mongolian side shall provide necessary numbers of counterpart personnel to the Team during the period of their studies in Mongolia.
- 8-6. The Mongolian side shall submit answers to the Questionnaire, which the Team handed to the Mongolian side, by April 21, 2008.

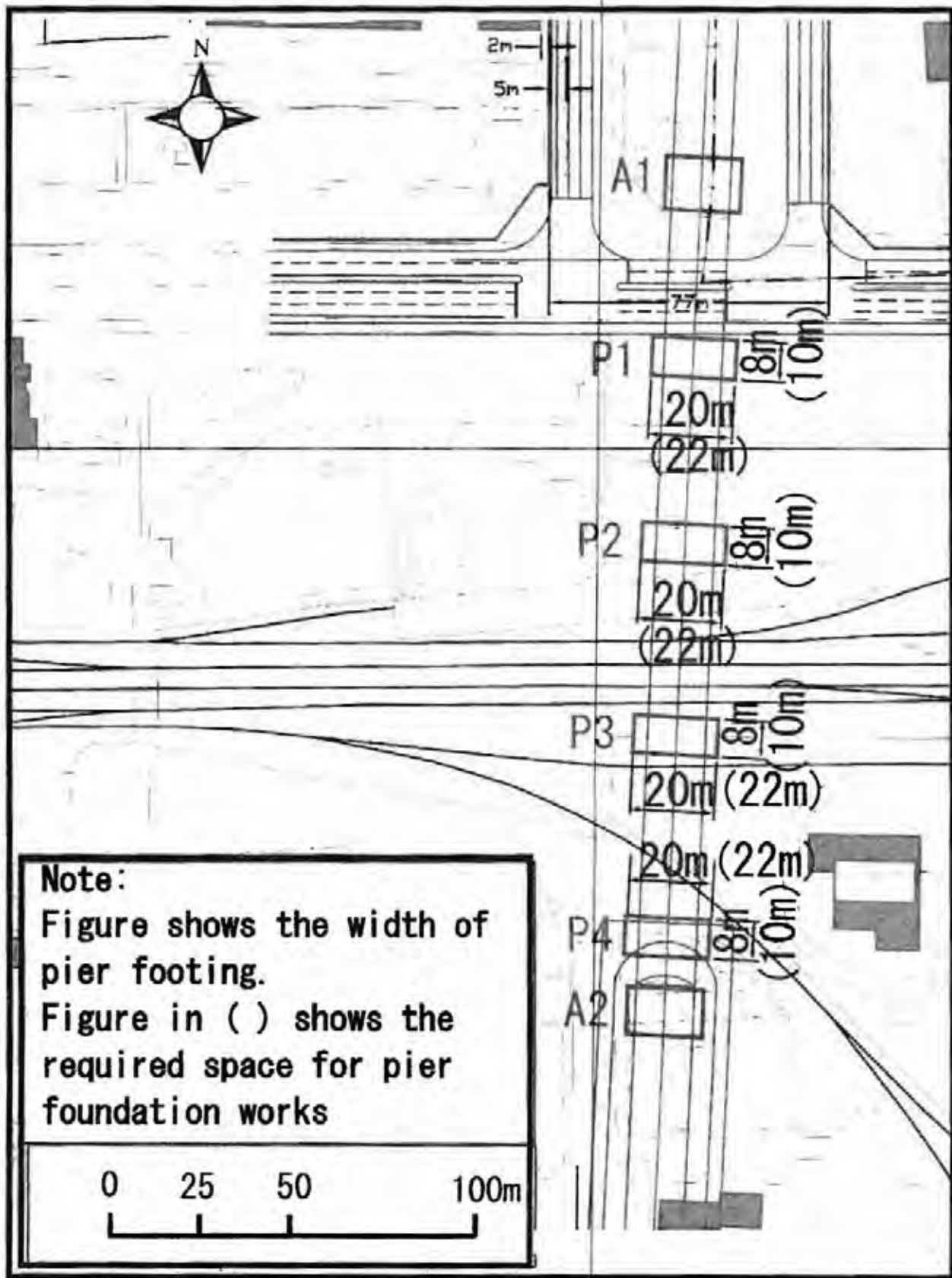
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Annex-1



Location Map

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Note:
Figure shows the width of pier footing.
Figure in () shows the required space for pier foundation works

0 25 50 100m

Location of Piers (P1, P2 and P3)

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**Minutes of Discussions
on Basic Design Study
on the Project for Construction of Railway Fly-over
in Ulaanbaatar City
in Mongolia
(Explanation of Draft Report)**

In March 2008, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Construction of Railway Fly-over in Ulaanbaatar City (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 the concerned officials of the Government of Mongolia on the contents of the draft report, JICA sent to Mongolia the Basic Design Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Kazutoshi ONUKI, Deputy Resident Representative of JICA Mongolia Office, from October 30 to November 6, 2008.

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

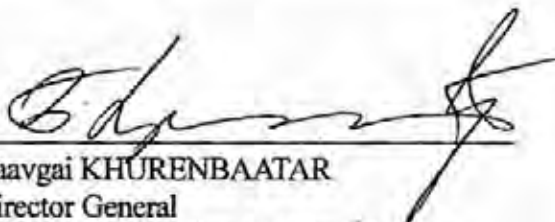
Ulaanbaatar November 4, 2008



Kazutoshi ONUKI
Leader
Basic Design Explanation Team
Japan International Cooperation Agency



Jadamba BAT-ERDENE
State Secretary
Ministry of Road, Transport, Construction
and Urban Development
Mongolia



Baavgai KHURENBAATAR
Director General
Department of Policy and Coordination
for Loans and Aid
Ministry of Finance
Mongolia



Choimpog BAT
General Manager of Ulaanbaatar City
and Chief of the Mayor's Office
Ulaanbaatar City
Mongolia

ATTACHMENT

1. Components of the Draft Report

The Mongolian side agreed and accepted in principle the contents of the draft report of Basic Design Study by the Team.

2. Cost Estimation

Both sides agreed that the Project Cost Estimation as attached in Annex-1 should never be duplicated or released to any third parties before the signing of all the Contract(s) for the Project.

3. Japan's Grant Aid Scheme

3-1. The Mongolian side understood the Japan's Grant Aid scheme explained by the Team.

3-2. The Mongolian side understands necessary measures to be taken by the Government of Mongolia as explained by the Preliminary Study Team and described in Annex-3 of the Minutes of Discussions signed by both sides on July 5, 2007.

4. Schedule of the Study

JICA will complete the Final Report in English, in accordance with the confirmed items and send it to the Mongolian side by the end of January, 2009.

5. Environmental and Social Considerations

5-1. Procedure for ECC (Environmental Clearance Certificate)

Both sides confirmed that the Mongolian side obtained the ECC for the Project attached as Annex-2.

5-2. Stakeholders' Meeting

The Mongolian side explained to the Team that the stakeholders' meeting for the Project was held on September 16, 2008, and reported its result to JICA Mongolia Office on October 2, 2008.

5-3. Basic Agreement from Land Possessors

Both sides confirmed that the Mongolian side completed the securing land of 3 affected land possessors and obtained basic agreements from 7 affected land possessors, while there is a negotiation process on the compensation for a building of one affected land possessor (No.9 in the attached list of the securing land issued by the land administrative department of the Ulaanbaatar City dated October 2, 2008.). Regarding the said land possessor, the Mongolian side shall obtain the basic agreement and report it to JICA Mongolia Office by the end of November, 2008.

6. Improvement of "Engels Street" and "Ikh-Toiruu Street"

Both sides confirmed that Improvement of "Engels Street" (widening from 2-lane to 4-lane, including the reconstruction of Dund Gol Bridge) and "Ikh-Toiruu Street" (Strengthening traffic management including intersection improvement) is very important to ensure the effect of the Project. And the Mongolian side explained to the Team that the Mongolian side should implement it with the schedule described as follows;

- (1) Completion of the Design and Preparation of Tendering : Year 2009,
(Funded by Road Fund of Ulaanbaatar City)
- (2) Commencement of the Works : Year 2010,
- (3) Completion of the Works : Year 2012.
(Appropriated by 2010-2011 budget based on the result of (1))

7. Other Relevant Issues

- 7-1. The Mongolian side explained to the Team that the responsible ministry for the Project had been changed from MRTT (Ministry of Road, Transport and Tourism) to MRTAUD (Ministry of Road, Transport, Construction and Urban Development) as the result of the restructuring of governmental ministries and agencies in September, 2008.
- 7-2. For smooth implementation of the Project, both sides confirmed that the Responsible Ministry, named MRTAUD should take every responsibility and measures, including coordination, in any matters arise between the Mongolian government body and entity.
- 7-3. The Mongolian side confirmed that the following undertakings should be taken by the Mongolian side at the Mongolian expenses.
- (1) Before commencement of construction work
 - (a) To secure the land for the Project,
 - (b) To relocate the existing utilities (electricity power, telecommunication, water, etc.),
 - (c) To Secure and clearance of the temporary yard,
 - (d) To distribute the electricity and telephone line to the base-camp,
 - (e) To secure the site for disposal of waste,
 - (f) To log the trees affecting the construction works,
 - (g) To remove the existing obstacles affecting the construction works,
 - (h) To remove or lower the existing roof of the platform for V.I.P.
 - (2) During construction work
 - (a) To make necessary arrangement of detours for public traffic at necessary sections, e.g. securing of land, public announcement etc,
 - (b) To keep the 4-hour window time during the adjacent work of the existing railway,
 - (c) Necessary coordination among residents and/or road users and the Contractor.
- 7-4. The Mongolian side shall secure enough budget and personnel necessary for the operation and maintenance of the facilities improved by the Project, including the periodical maintenance work after the completion of the Project.

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Annex-1

Project Cost to be Borne by Japan's Grant Aid

Items		Cost (Million Japanese Yen)	
Construction Facilities	Bridge	Substructure: 2 Abutments and 5 Piers Superstructure: Deck Width : 16.5m ~ 19.5m Bridge Length: : 262m Bridge Surface : 4,788 m ² Accessories: Expansion Joint, Staircase Approach Road (633m) Reinforced Earth Gravity Type Retaining Wall Drainage System Improvement of Intersection Others	3,462
		Detailed Design and Construction Supervision	311
Total		3,773	

Notes:

- (1) The cost estimates in the above table are provisional and will be further examined by the government of Japan for the approval of the Grant.
- (2) The Total Cost of the Project JPY 3,773 million is equivalent to USD 34.94 million at the current exchange rate USD 1.0=JPY 107.97.

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**МОНГОЛ УЛСЫН
ЗАМ, ТЭЭВЭР, БАРИЛГА,
ХОТ БАЙГУУЛАЛТЫН
ЯАМ**

15170 Улаанбаатар хот, Чингэлтэй дүүрэг
Барилгандын талбай 3, Утас/Факс (976-11) 32-29-04,
E-mail: webmaster@mtrca.gov.mn

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ЯПОН УЛСЫН ОЛОН УЛСЫН
ХАМТЫН АЖИЛЛАГААНЫ
АГЕНЛАГТ

Annex-2

Тайлан хүргүүлэх тухай

Япон улсын буцалтгүй тусламжийн хөрөнгөөр баригдах Улаанбаатар хотын баруун 4-н зам, тээврийн товчооноос төмөр зам дээгүүр барих гүүрэн гарцын төслийн байгаль орчинд нөлөөлөх байдлын нарийвчилсан үнэлгээний тайланг батлуулан хүргүүлж байна.

Хүлээн авч танилцана уу.

ТӨРИЙН НАРИЙН БИЧГИЙН ДАРГЫН
ҮҮРЭГ ГҮЙЦЭТГЭГЧ

Ж.БАТ-ЭРДЭНЭ

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БАТЛАВ.
ЕРӨНХИЙ ШИНЖЭЭЧ



Ч.ГАНБАТ

ШҮҮМЖ БИЧСЭН:
ШИНЖЭЭЧ



**УЛААНБААТАР ХОТЫН БАРУУН ДӨРВӨН ЗАМ, ТЭЭВРИЙН
ТОВЧООНООС ТӨМӨР ЗАМ ДЭЭГҮҮР ГҮҮРЭН ГАРЦ БАРИХ
БАРИЛГЫН АЖЛЫН БАЙГАЛЬ ОРЧИНД НӨЛӨӨЛӨХ
БАЙДЛЫН НАРИЙВЧИЛСАН ҮНЭЛГЭЭНИЙ ТАЙЛАН**



ҮНЭЛГЭЭХИЙСЭН МЭРГЭЖЛИЙН
БАЙГУУЛЛАГА:
"САНИТРЕЙД" ХХК ЗАХИРАЛ



ЦАДЪЯАСҮРЭН

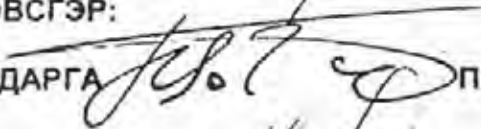
ТӨСӨЛ ХЭРЭГЖҮҮЛЭГЧ:
ЗАМ, ТЭЭВЭР, АЯЛАЛ ЖУУЛЧЛАЛЫН ЯАМ,
ТӨРИЙН НАРИЙН БИЧГИЙН ДАРГА



Ж.БАТ-ЭРДЭНЭ

ТӨСӨЛ ХЭРЭГЖИХ НУТАГ ДЭВСГЭР:

БАЯНГОЛ ДҮҮРГИЙН ЗАСАГ ДАРГА



П.ЦОГТБААТАР

ХАН-УУЛ ДҮҮРГИЙН ЗАСАГ ДАРГА



Д.ЗАГДЖАВ

Handwritten notes in a box:
10.10.2008
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(2) テクニカルメモランダム(基本設計調査時)

May 1, 2008

Technical Memorandum on Major Findings during the Field Survey

Important Notes:

The opinions expressed in this memorandum are solely those of the author and do not represent the official policies, opinions, or statements of JICA.

1. Demand Forecast of Traffic on Railway Flyover

Traffic demand on the Railway Flyover is forecasted as shown in Table 1, using the simulation model built by JICA Study that is "The Study on City Master Plan and Urban Development Program of Ulaanbaatar City (UBMPS)".

Table 1 Demand Forecast of Traffic on Railway Flyover in 2007

	Railway Fly-over		Balance of Traffic Volume	
	Before	After		
Gurvaljin Bridge	21,500	20,400	-1,100	95%
Peace Bridge	48,200	37,900	-10,300	79%
Railway FO	0	25,600	25,600	
Ikh Toyruu	31,100	33,900	2,800	109%
Engels Street	3,000	16,800	13,800	560%
Naryn Zam, East	56,300	55,100	-1,200	98%
Naryn Zam, West	29,100	29,600	500	102%

Peace Ave

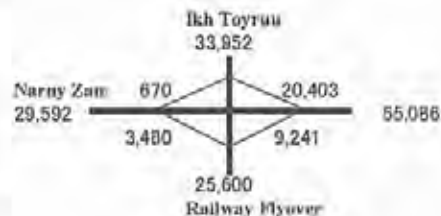
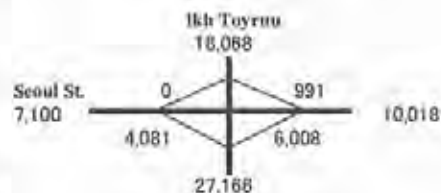
	39	87	37	35	Total
39	0	3264	5963	464	9691
87	0	0	11609	17343	28952
37	7755	10782	0	1207	19744
35	622	16986	1084	0	18692
Total	8377	31032	18656	19014	77079

Seoul St.

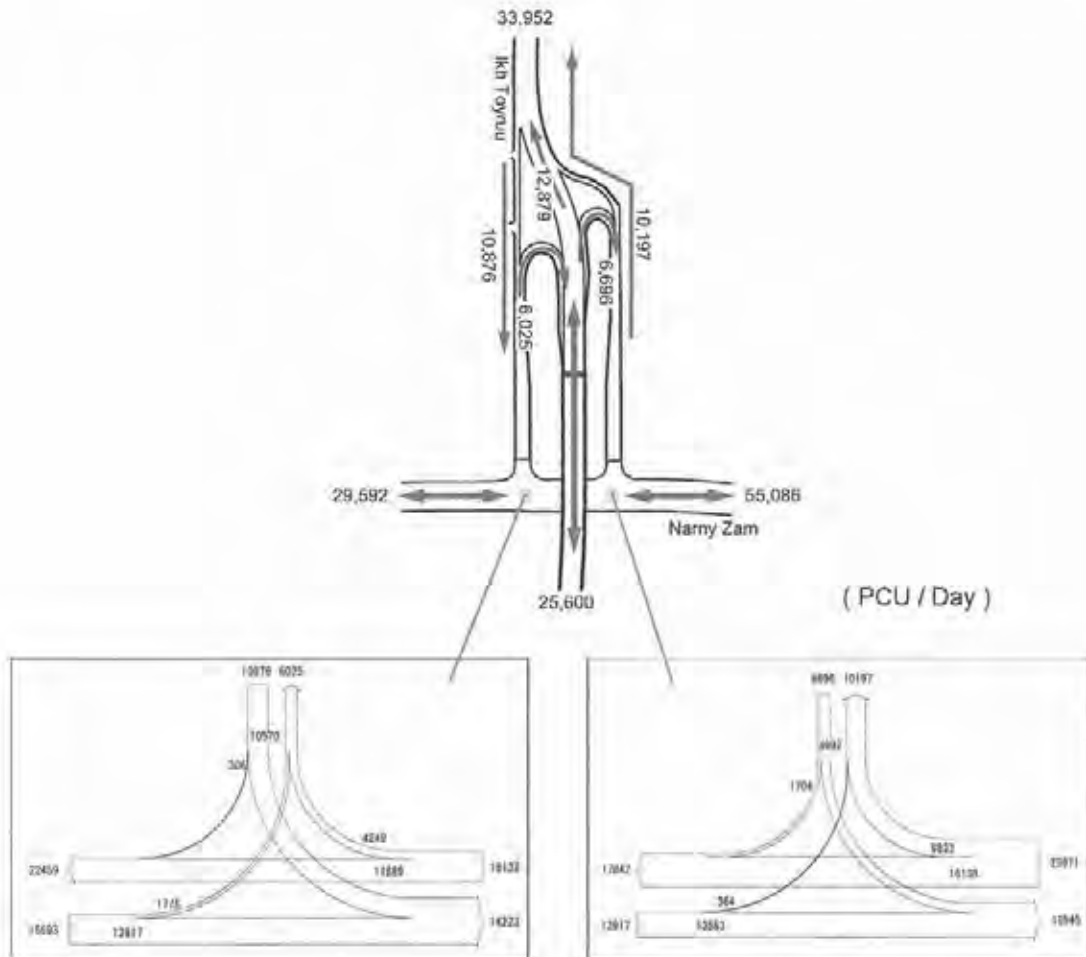
	N42	98	99	38	Total
N42	0	2859	0	838	3707
98	3139	0	0	8853	11992
99	3019	4081	0	0	7100
38	153	8224	0	0	8377
Total	8311	15174	0	9691	31176

Naryn Zam

	N43	178	177	N40	Total
N43	0	1704	6042	4992	12738
178	1776	0	364	13553	15693
177	6837	306	0	10570	17713
N40	4249	11889	9033	0	25971
Total	12862	13899	16239	29115	72115



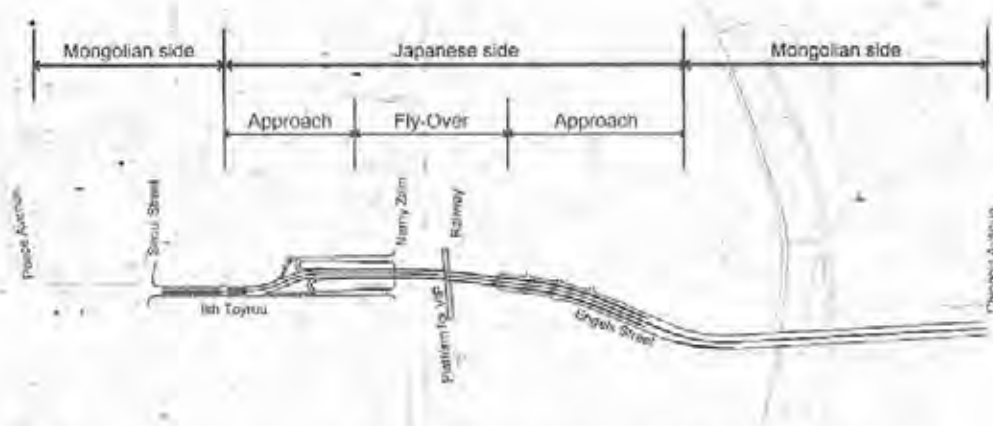
The directional traffic at the intersection between Ikh Toyruu and Naryn Zam is forecasted as follows:



Traffic volume of 25,600 PCU/day on Railway Flyover in 2007 will increase up to 41,900 PCU/day in 2020 according to future OD table prepared by UBMP.

2. Project Components

(1) Demarcation between Japan and Mongolia



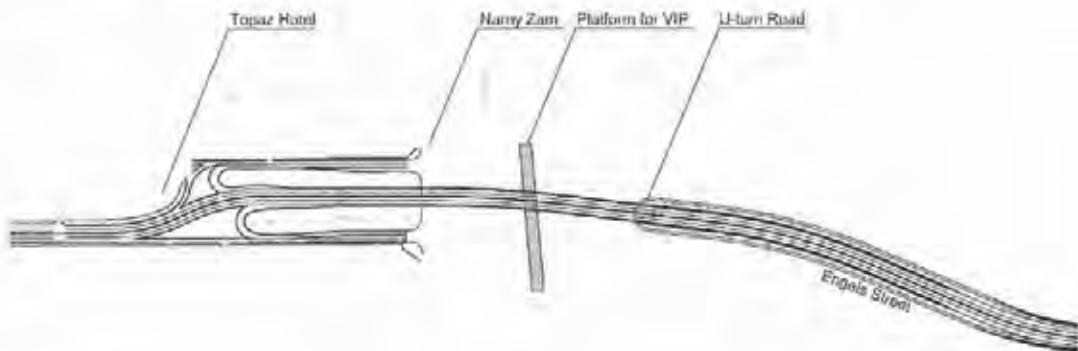
Note-1 : Beginning points (B.P) of Ikh Toyruu Section is West-cross Intersection.

Note-2 : Ending point (E.P) of Engels Street Section is Chinggis Avenue Intersection.

Note-3 : E.P of Japanese Section on Naryn Zam is the eastern and western ends of improved intersection.

Note-4 : B.P and E.P of the approach road are points that the elevation of the approach road is placed to the existing roads.

(2) Railway Fly-over Section as the Japanese Section L=895 m



Note-1 : B.P of Railway Fly-over Section is the construction limit of Ikh Toyruu at Sta. 0+365 (No. 18+05) to coincide with E.P of Ikh Toyruu Section.

Note-2 : E.P of Railway Fly-over Section is the construction limit of Engels Street Section at Sta. 1+260 (No. 63+00) to coincide with B.P of Engels Street Section.

Note-3 : E.P of Japanese Section on Naryn Zam will be determined by the design of

intersection during the analysis in Japan based on topographic map surveyed for the Study.

Location of piers in railway premises is agreed to Railway Authority and confirmed by the MD signed on March 26, 2008 as shown in Fig. 1.

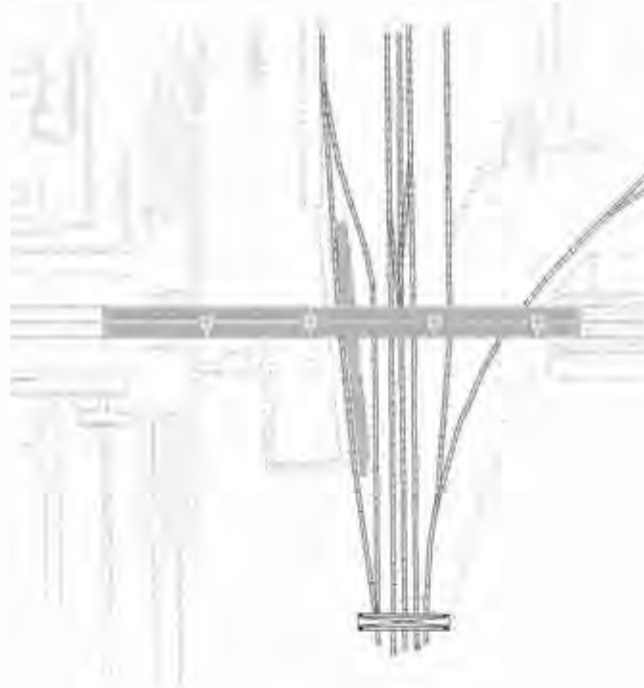


Fig. 1 Agreed Piers within Railway Premises

(3) Improvement of Ikh Toyruu Section L= 365 m

- 1) Establishment of Road Right-of-Way along Ikh Toyruu Section
- 2) Channelization of Seoul Street Intersection
- 3) Modification of Channelization at West-cross Intersection
- 4) Modification of Sidewalk along Ikh Toyruu Section
- 5) Modification of Drainage at the necessary section
- 6) Installation of Street Lighting in the vicinity of intersections
- 7) Installation of Traffic Marking at the necessary section

(4) Improvement of Engels Street Section L= 600 m

- 1) Establishment of Road Right-of-Way along Engels Street Section
- 2) Construction of 4-lane divided Arterial Street
- 3) Re-construction of Dund Gol Dund Bridge

- 4) Channelization of Dund Gol Street Intersection
- 5) Channelization of Chinggis Avenue Intersection
- 6) Modification of Drainage at the necessary section
- 7) Installation of Street Lighting in the vicinity of intersections
- 8) Installation of Traffic Marking at the necessary section

3. Design Standard for Highway

Mongolian Standard shall be used for highway design in principle, and Japanese Standard will supplement it as required, if any.

(1) Classification of Highway

Railway Fly-over Section as a part of "Middle Ring Road" is classified into Arterial Road and the functional classification falls into Category of "Main Street of Urban Road" as shown in the Table 2.

Table 2 Functional and Technical Classifications of Highways

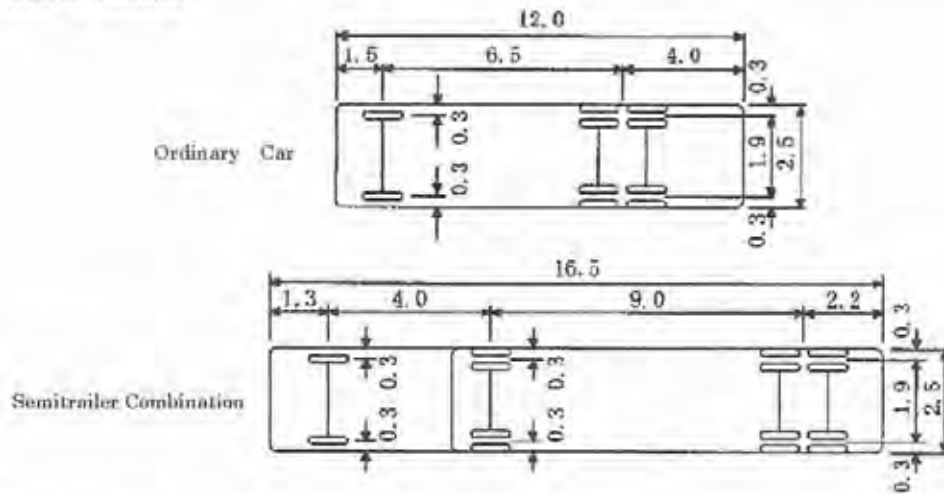
Road Classification		Number of lanes	Traveled Way (m)	Road shoulder width (m)	Remarks
National Road	I	4	15	2.0	Divided
	II	2	7.5		Undivided
	III	2	6.0	1.0 0.5	Undivided
Rural Road	IV	2	4.5	1.0 0.75	Undivided
Urban Road	Expressway	6	22.5	0.75	Divided
	Main Street	4	15		Divided
Village Road		2	7	0.5	Undivided

Source: BRIDGE AND CULVERT DESIGNING, BNBD 32.02-03, Construction Normative Documents, Construction Norms and Regulations of Mongolia, Ministry of Infrastructure of Mongolia, 2005

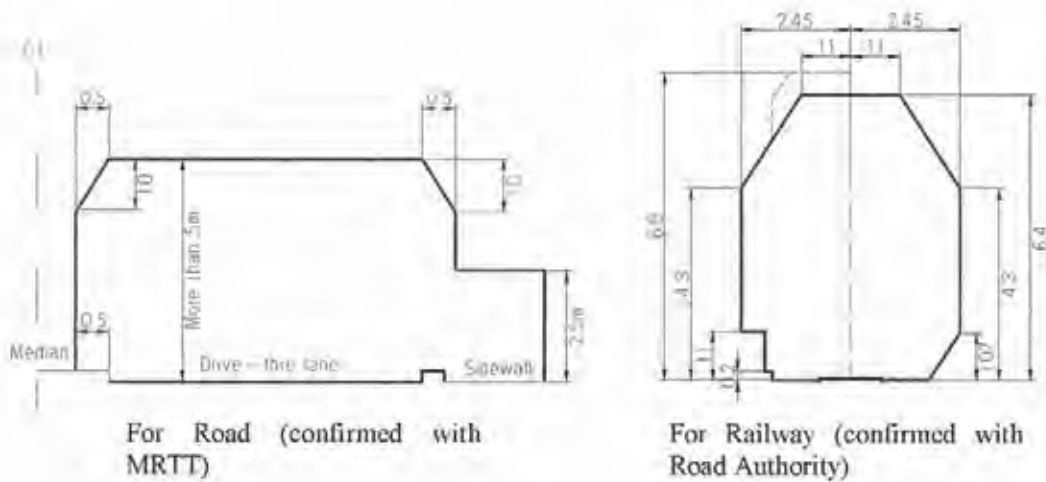
(2) Design Speed

Excessive land acquisition will be required for the Project in case that the Mongolian design criteria are applied where design speed of 80 Km/h is adopted. It is a matter of fact that the design speed of Naryn Zam is 60 Km/h. Accordingly the Japanese design criteria are proposed to be applied to the Project.

(3) Design Vehicles

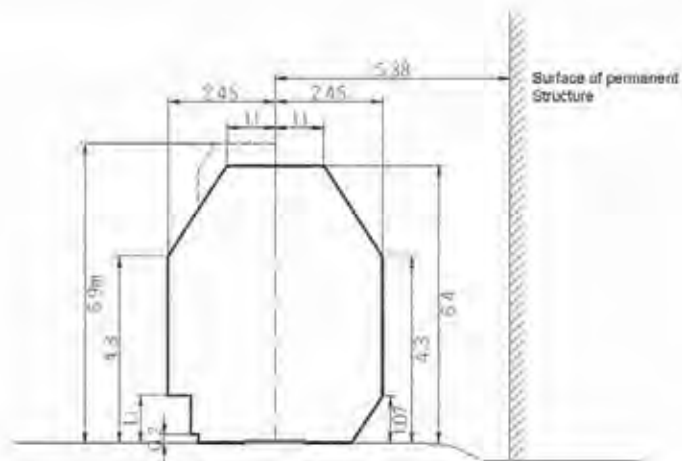


(4) Clearance Limits



(5) Construction of Permanent Structure within Railway Premises

The surface of permanent structure should be located 5.38 m far from the center of Railway's Clearance Limit. The surface of temporary structure may be located beyond Railway's Clearance Limit, provided that railway operation should be controlled at reduced speed.



(6) Geometric Design Standard

Table 3 Summary of Geometric Criteria for Through Traveled Lane of Railway Flyover

Item	Unit	Design Criteria
1. Design Speed	km/h	60
2. Traveled Land Width	m	3.25
3. Outer Shoulder Width	m	0.75
4. Median including Marginal Strip	m	1.0
5. Cross fall of Traveled Way	%	2
6. Cross fall of Shoulder	%	2
7. Type of Pavement	-	Flexible AC Pavement
8. Stopping Sight Distance	m	85
9. Maximum Super elevation	%	6
10. Minimum Horizontal Curve Radius	m	150
11. Minimum Horizontal Curve Length	m	100 or $700/\theta$
12. Minimum Transition Curve Length	m	50
13. Sharpest Curve without Transition Curve	m	500
14. Sharpest Curve without Super elevation	m	2,000
15. Max. Relative Slope for Super elevation Runoff	-	1:125
16. Maximum Grade	%	5
17. Minimum Vertical Curve Length	m	215
18. Horizontal Clearance	-	Roadway Width
19. Vertical Clearance	m	5.0
20. Min. Horizontal Curve Radius for Channelization	m	13.0

The geometric design criteria for at-grade intersection are referred to the Japanese standard.

(7) Drainage Design Standard and Criteria

Mongolian Standard shall be used for drainage design in principle. AASHTO Standard and/or Japanese Standard will supplement it as required, if any.

1) Design Storm

<u>Facility/Drainage Structure</u>	<u>Design Storm Frequency</u>
Road Surface Drainage	3 year
Bridge Surface Drainage	3 year
Pipe Culverts	10 year

2) Rainfall

The Rainfall-Intensity-Duration-Frequency (RIDF) Curves are developed from the rainfall-intensity-duration-frequency data of the each site area in Mongolia.

3) Catchment Area

The catchment area or contributing drainage areas are determined using the 1:50,000 and 1:25,000 scale topographic map.

4) Time of Concentration

The time of concentration (Tc), which is defined as the time required for water to flow from the farthest point of the catchment or the drainage area to the point under consideration, is determined by means of the United States Soil Conservation Service (USSCS) formula. ∴

$$T_c = \frac{0.87 L_s}{H}$$

Where :

Tc = Time of concentration in hours

Ls = Length of stream or watercourse in kms.

H = Difference in elevation between the farthest point of the catchment to the point under consideration in meters.

The minimum time of concentration used is 5 minutes.

5) Design Discharge

Design discharge calculations were made using the Rational Formula.

$$Q = CIA$$

Where : Q = design discharge in cu. m. per sec. (cms)

C = runoff coefficient

I = rainfall intensity in millimeter per hour (mm/hr)

A = catchment area in acres

For drainage areas less than 2.5 km², peak flows will be computed using the rational formula:

$$Q = CIA/360$$

Where : Q = design discharge in cu. ft. per sec. (cfs)

C = runoff coefficient

I = rainfall intensity in millimeter per hour (mm/hr)

A = catchment area in hectares

(8) General Traffic Safety Facilities

1) Guard Rail

Guard Rails are planned to install at the following locations:

- Naryn Zam Intersection
- Sharp Curve of Channelization
- High embankment

2) Road Markings

Road markings will be marked by tack with epoxy resin or be painted on pavement, and it will be consisted of the following type:

- Centerline
- Roadside line on marginal strip
- Separation on auxiliary lane
- Channelization
- Pedestrian crossing

3) Regulatory and Warning Signs

Principal regulatory and warning signs are planned to install at the following locations:

- Horizontally sharp curve
- Vertically steep grade
- Intersection

4) Street Lighting

Street Lighting will be installed to cover the stretches of Railway Flyover and intersections on Naryn Zam.

5) Traffic Signal

Traffic signal will be installed at two channelized intersections on Naryn Zam.

4. Design Standard for Bridge

(1) Applied Standard

- Specification for Highway Bridges, Japan Road Association, 2002
- Designing of Road Bridges and Culverts(BN&D 32.02.03), Ministry of Infrastructure, Mongolia, 2005

(2) Material Strength

PC girder	ock = 40 N/mm ²	Abutment, Pier	ock = 21 N/mm ²
RC girder	ock = 24 N/mm ²	Approach Wall	ock = 21 N/mm ²
RC Slab, Cross	ock = 24 N/mm ²	RC Pile (Precast)	ock = 24 N/mm ²
Concrete Pavement	ock = 24 N/mm ²	RC Box Culvert	ock = 21 N/mm ²
RC Hand Rail	ock = 21 N/mm ²	RC Pipe Culvert	ock = 21 N/mm ²

* Concrete Compressive Strength ock (28 days)

Steel Grade (deformed Bar)	Strength(N/mm ²)		Length (Dia mm)
	Yield	Tensile	
SD295	295 min	440-600	6000-12000mm (10-32mm)
SD345	345-440	490 min	
SD390	390-510	560 min	

(3) Dead Load

Types of Dead Load	Unit Weight (kN/m ³)	Types of Dead Load	Unit Weight (kN/m ³)
Steel or cast steel	77	Cement mortar	21
Cast iron	71	Asphalt pavement	22.5
Aluminum alloys	27.5	Bituminous material	11
Timber(treated/untreated)	8	Compacted sand, earth/gravel	19
Concrete(plain)	23	Loose sand, earth, and gravel	18
Concrete(reinforced/prestressed)	24.5	Under ground water	10

(4) Live Load

Live load will be the B-Live Load of Japanese Specification for Highway Bridges in the designing of the new bridges. B Live Loading of Japan Loading System is shown in Attachment-1.

HS20-44 of AASHTO (Standard Specifications for Highway Bridges) is also considered as applicable live load since Railway Flyover will be a part of Asian Highway Network. Design results will be verified and reviewed by loading HS20-44.

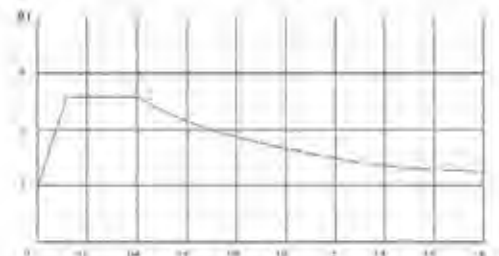
(5) Seismic Design of Bridge

The seismic design load of bridge is as specified in the Mongolian Standard published by the Ministry of Construction and Urban Development in 2006. Seismic design load is calculated by the following formula:

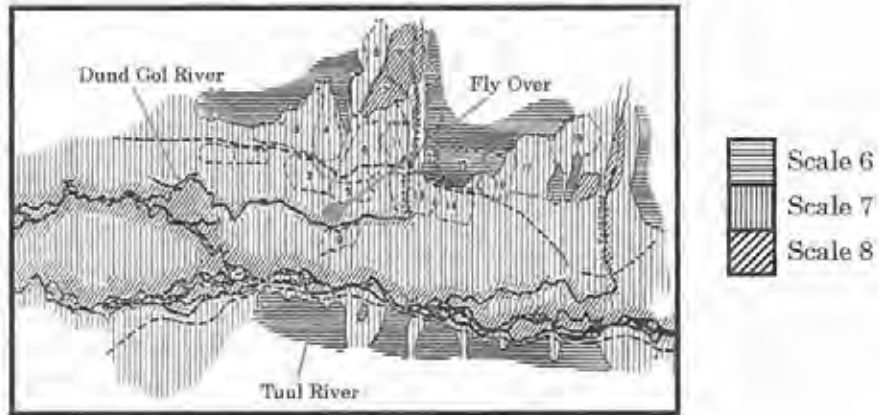
$$S_{0ik} = K_{\Psi} * Q_k * \eta_{ik} * A * \beta_i$$

Where:

- S_{0ik}: Seismic Load
- K_Ψ: 1 (in case of bridge structure)
- Q_k: Vertical Load
- η_{ik}: Hight of Inertia Forth



A : 0.1 Region Factor (Scale 7)
 β_1 : Dynamic Coefficient
 T : Specific Period



Seismic Hazard Map of Ulaanbaatar city

Based on the above seismic load formula, seismic design is conducted to satisfy the following calculation methods:

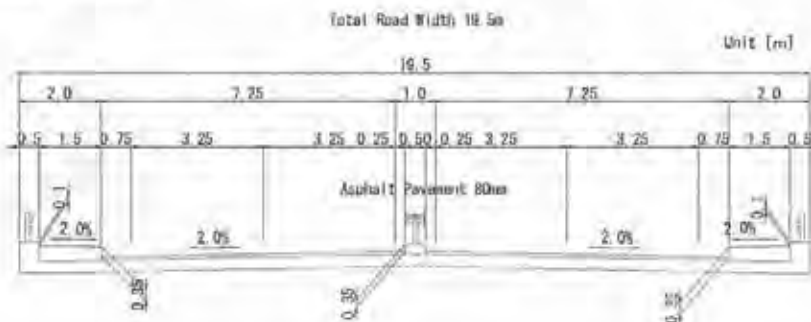
- 1) In case of allowable stress analysis: Seismic horizontal coefficient, K_h is 0.1
- 2) In case of ultimate stress analysis: Seismic load is analyzed by the above formula in consideration of inelastic/plastic deformation of bridge.

(6) Other Loads

Loads	Specification	Remarks
Earth Pressure	Coulomb theory	Japanese Specification
Temperature	-40°C~+40°C	Mongolian Standard

5. Typical Cross Sections

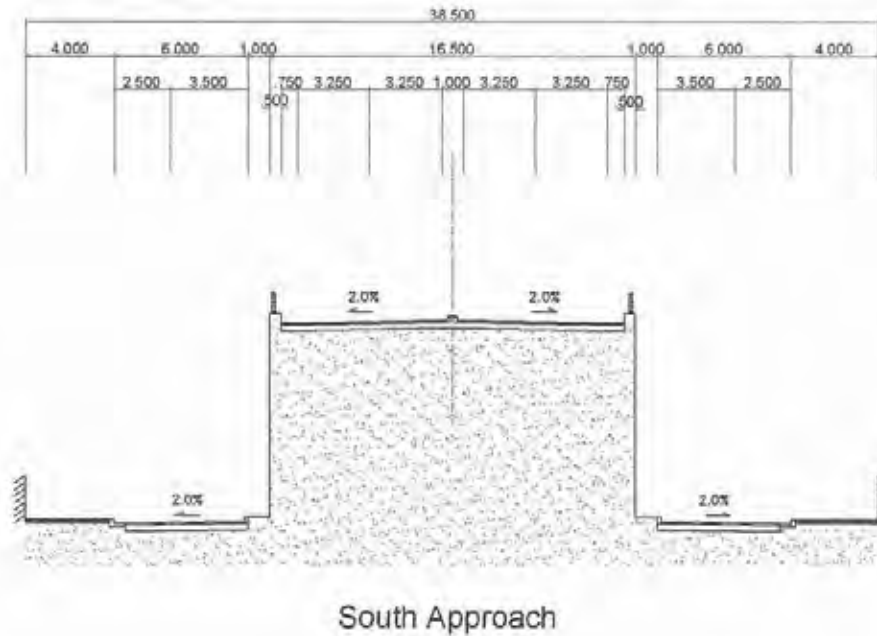
(1) Railway Fly-over



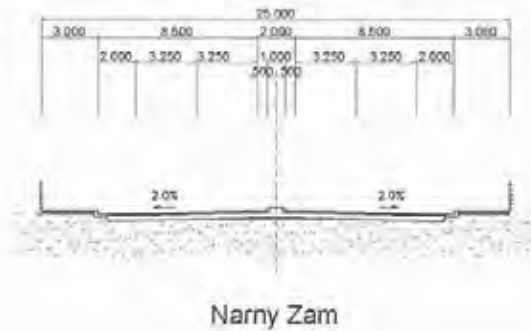
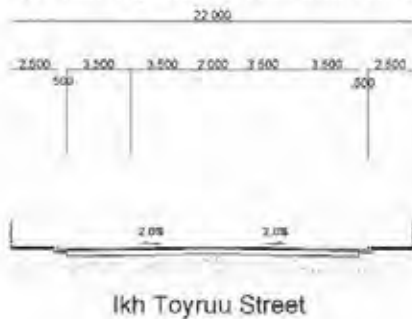
(2) Typical Cross Section in Earthwork Section, Northern Section



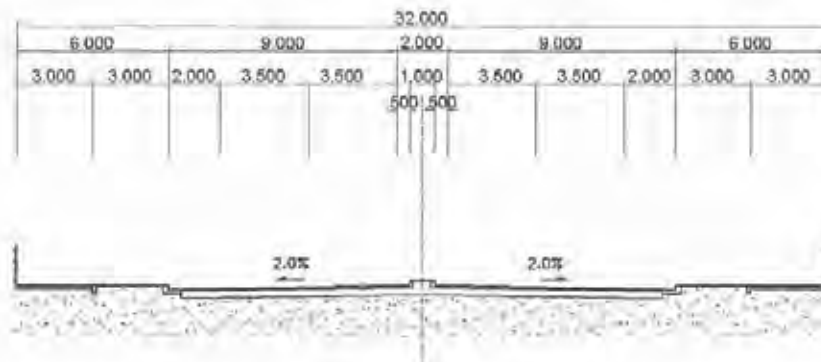
(3) Typical Cross Section in Earthwork Section, Southern Section



(3) Ikh Toyruu Section and Naryn Zam



(4) Engels Street Section



Engels Street

6. Drainage System

Drainage structures such as Pipe culvert, Ditch, Catch-basin, Inlet, etc. are installed to drain storm water on pavement up to the end of drainage system as shown in Attachment-2.

The following points are deemed important to make a drainage system workable:

- To connect the drainage system of Ikh Tovyruu to that of the northern section of Railway Flyover in order to keep consistency of the system.
- To modify the drainage system of Nary Zam to meet technical requirements brought by the improvement of intersections.
- To connect the drainage system of the southern section of Railway Flyover to that of Engels Street in order to keep consistency of the system.

7. Retaining Wall and Stone Masonry

Concrete structures such as retaining wall and/or stone masonry are constructed to improve road within Right-of-Way where embankment slope would violate the boundary of road. A retaining wall will be constructed to protect existing manholes encompassed by structure at Sta. 0+520 (No. 26+00), but some protection works in the vicinity of structure will be done by the Mongolian side to avert excessive earth pressure by traffic loads and embankment slope.

8. Extent of Sidewalk on Railway Flyover

The Railway Flyover is planned to have 1.5 m wide sidewalks at both sides. The extent of sidewalk will be provided from the Pier located at the southern side of Naryn Zam to the Pier located at the southern side of U-turn road. The location of staircases is shown in Fig. 2.



Fig. 2 Extent of Sidewalk on Railway Flyover

9. Major affected facilities and properties

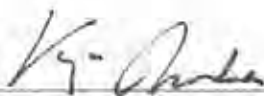
It is necessary to remove and/or replace all the affected facilities and properties within the Road Right-of-Way, especially construction of foundation of piers and abutments.

Major affected facilities and properties are listed in Attachment-4.

10. Major Undertakings to be taken by the Government of Mongolia

The Mongolian side shall be responsible for the following items:

- 1) Necessary land acquisition and establishment of Road Right-of-Way for the Project as shown in Attachment-5.
- 2) Relocation, improvement and/or repair of existing utilities (heating pipes, power lines, telecommunication lines, water supply pipes, sewer, power-supply catenaries of trolleybus etc.) as listed in Attachment-4.
- 3) Necessary arrangement for vehicles to make detour or set up a diversion at necessary sections. The diversion plan on Naryn Zam is shown in Attachment-6.
- 4) Securing and clearance of the temporary yard such as the land for contractor's facilities.
- 5) Installation of water supply, sewerage, electric power and telephone line up to the Base Camps
- 6) Securing of site for disposal of waste at Ulaan-Chuluut Waste Disposal Site as shown in Attachment-7.
- 7) Clearing and grubbing of affected trees as listed in Attachment-4.
- 8) Removal and/or replacement of affected facilities and properties as listed in Attachment-4.
- 9) Removal of the affected roof of the platform for V.I.P.
- 10) Completion of the necessary procedures to obtain the ECC (Environment Clearance Certificate) based on DEIA by the end of September, 2008.
- 11) Holding stakeholders' meetings on an appropriate occasion and report its results such as time and venue, attendee list and record of discussion to JICA Mongolia Office by the end of September, 2008.
- 12) Conclusion of the necessary procedures to obtain basic agreements of affected land owners by the end of September, 2008.
- 13) Necessary arrangement for controlling railway operation for neighboring construction so-called "window time" at least four (4) hours.



Kenji MARUOKA
Chief Consultant
JICA Basic Design Study Team



Dorjtseveen BAASANKHUU
Director, Department of Road
Ministry of Road, Transport and Tourism

Reference Japan Loading System
 B Live Loading [Japan Road Association, 1994]

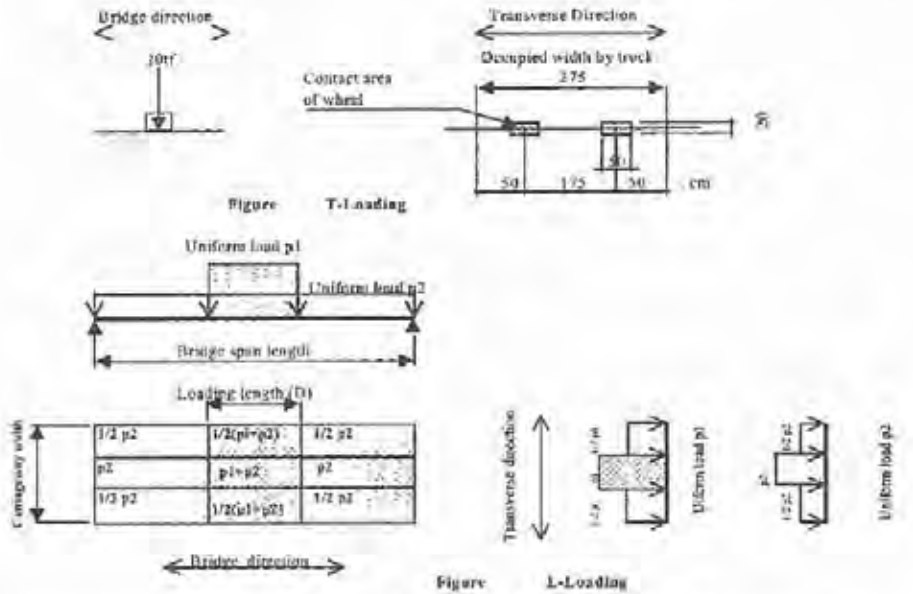


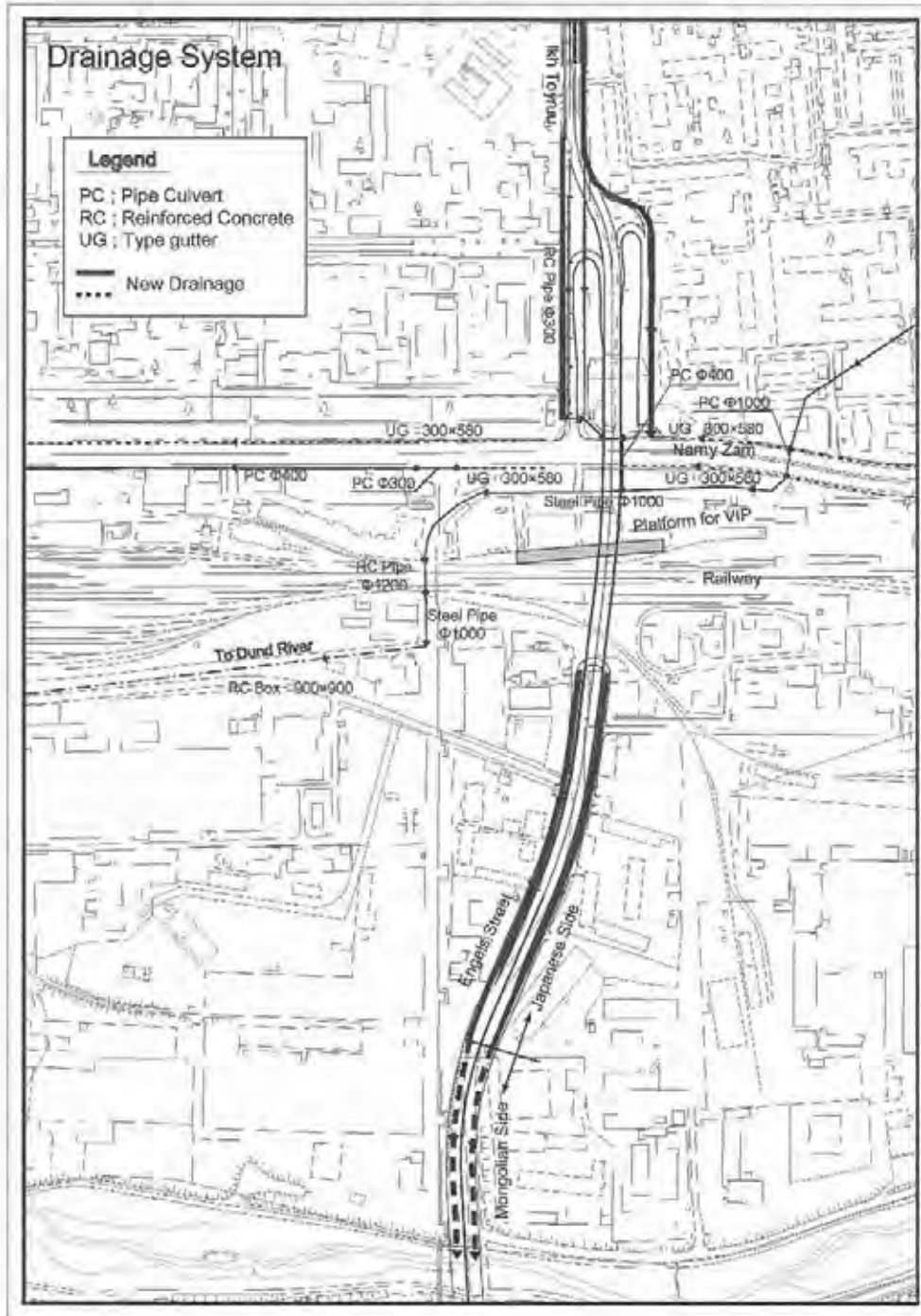
Table L- Loading (B-Live Load, Japan)

Loading length D (m)	Main loads (width 5.5m)					(L- Span)
	Uniform loads p1		Uniform loads p2			Sub loads (width-5.5m.)
	Load (kg/m ²)		Load (kg/m ²)			
	for Bending Moment	for Shearing Force	L < 80	80 < L < 130	L > 130	50% of Main load
10	1,000	1,200	350	430-L	300	

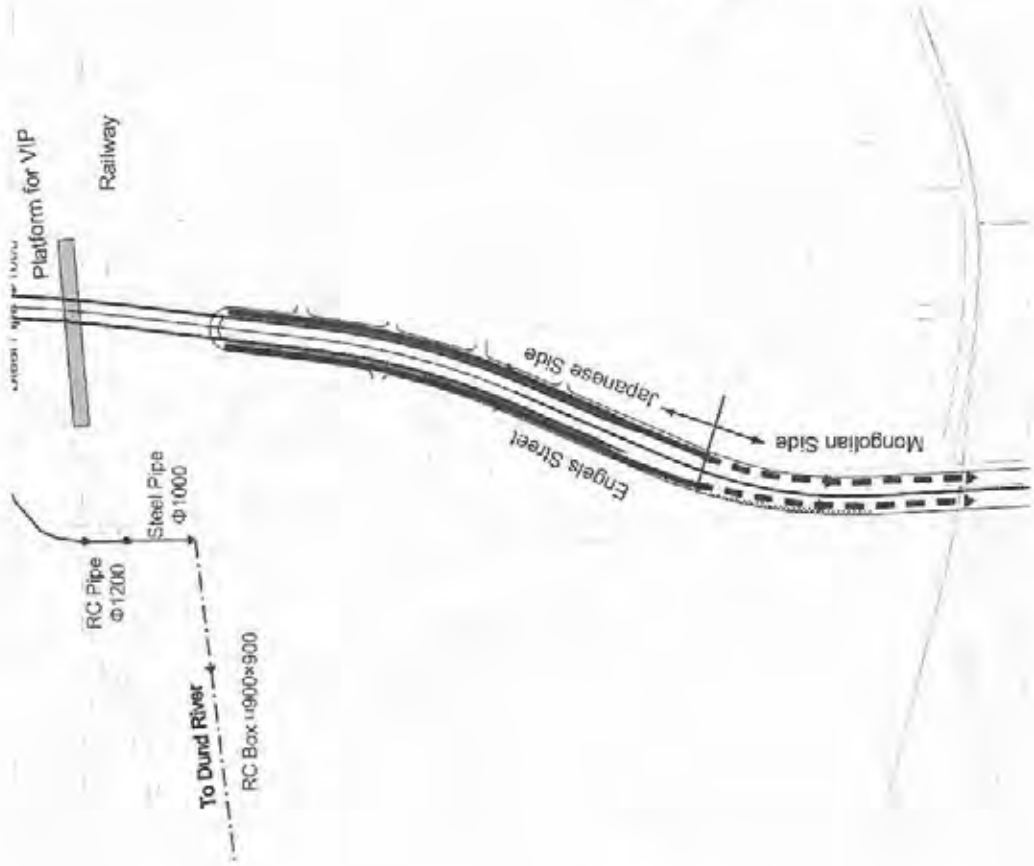
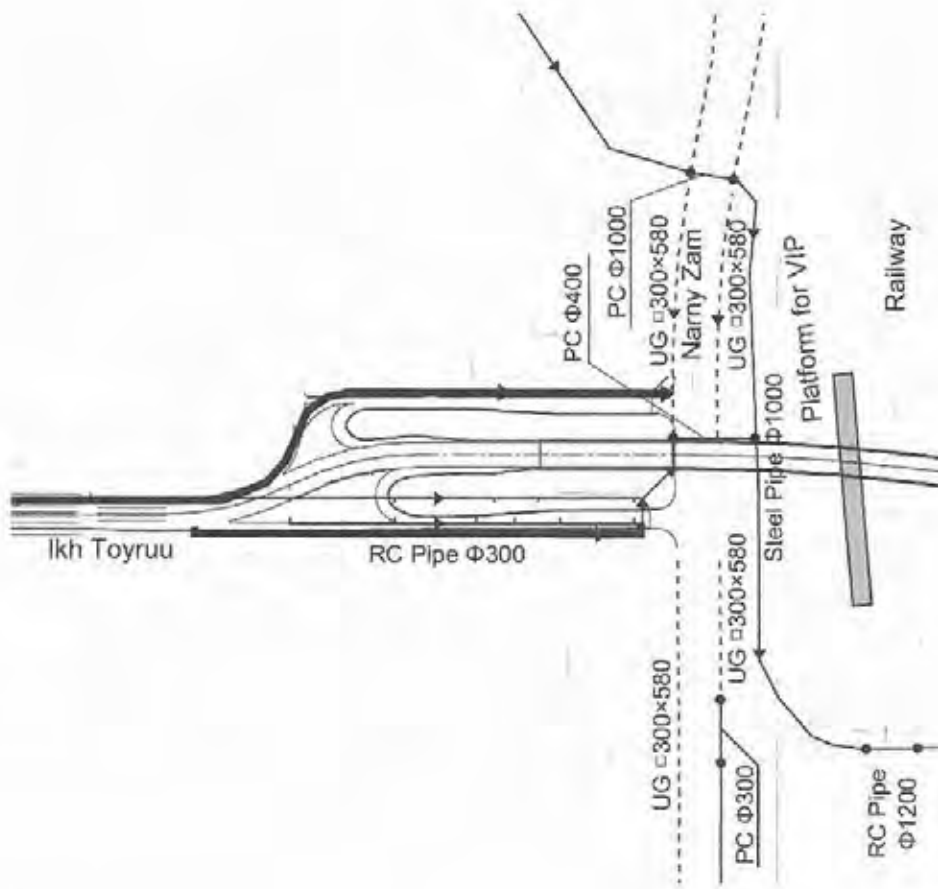
Table Uniform Loading for Sidewalk

Span Length (m)	For Slab	For Main Girder		
		L < 80	80 < L < 130	L > 130
Uniform Load (kg/m ²)	800	350	430-L	300

Attachment-2: Targeted Ends of Drainage System



A 2-1



Attachment-4: List of Utilities Affected by the Construction Works

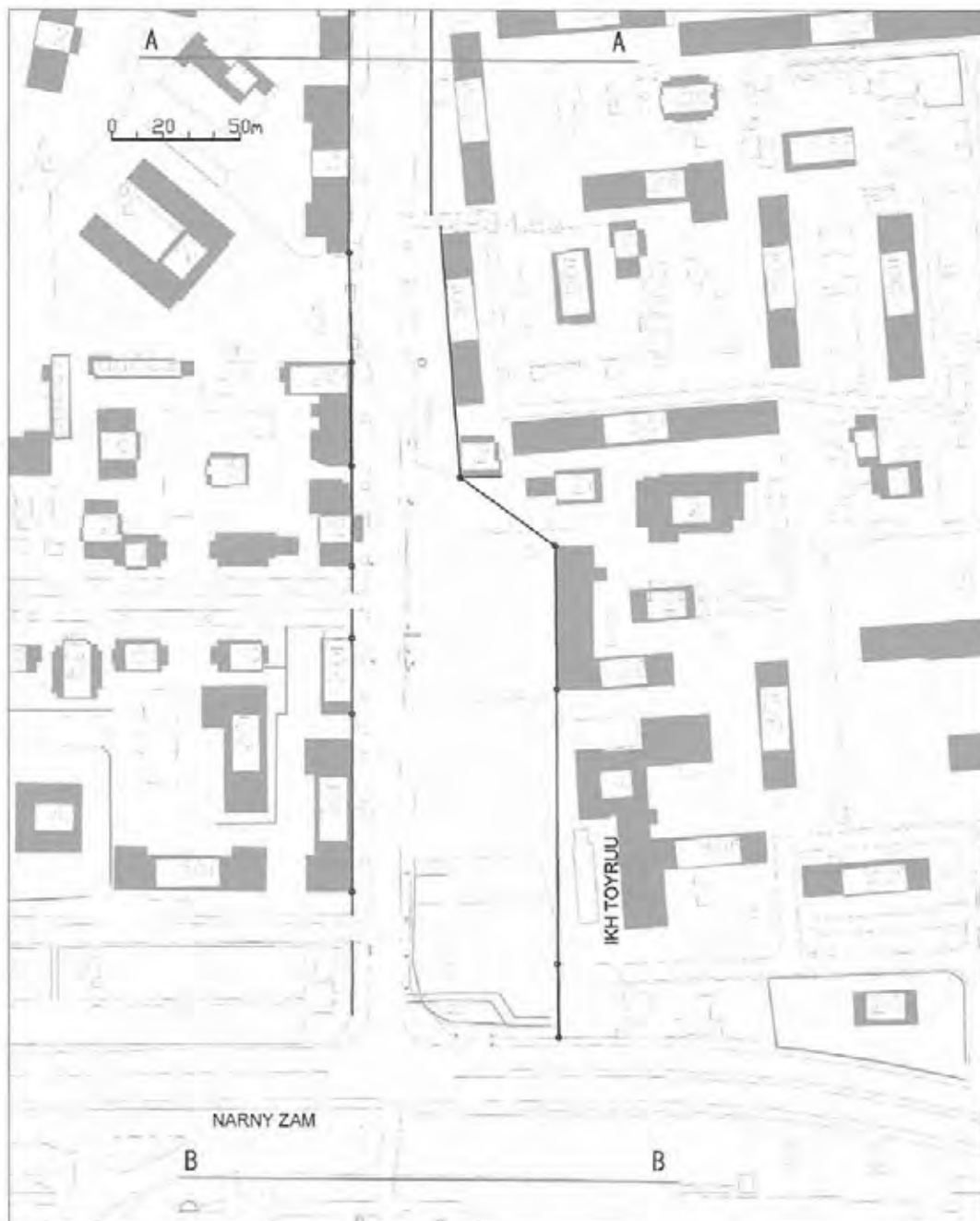
Section	Station	Underground					On and Above Ground							Overhead				
		Sewer Pipe	Drainage Pipe	Water Supply Pipe	Electric Cable	Hot Water Distribution Pipe	Telecommunication Cable	Electric Pole	Advertising Pillar	Tree	Street Lighting and Foundation	Fence	Entrance with staircase	Kiosk	Traffic Signal	Traffic Sign Board	Power Supply Cables/ies of Trolleybus	Electric/Telecommunication Cable
Ikh Toyrum	No.18 - No.19		RD	RD	RD	RD	RD			RD				RD			RD	RD
	No.19 - No.20		RD	RD	RD	RD	RD			RD	RD		RD	RD			RD	RD
	No.20 - No.21		RD	RD	RD	RD	RD			RD			RD	RD			RD	RD
	No.21 - No.22		RD	RD	RD	RD	RD			RD							RD	RD
	No.22 - No.23		RD	RD	RD	RD	RD		RD	RD		RD		RD			RD	RD
	No.23 - No.24		RD	RD	RD	RD	RD			RD	RD		RD			RD	RD	RD
	No.24 - No.25		RD	RD	RD	RD	RD			RD	RD		RD				RD	RD
	No.25 - No.26	RD				RD		RD		RD	RD		RD				RD	RD
	No.26 - No.27	RD	RD	RD	RD	RD	RD	RD		RD	RD						RD	RD
	No.27 - No.28	RD				RD				RD							RD	RD
	No.28 - No.29	RD				RD				RD							RD	RD
	No.29 - No.30	RD				RD		RD		RD	RD						RD	RD
	No.30 - No.31	BP				BP				RD	RD	RD					RD	RD
	No.31 - No.32	BP		BP	BP					RD	RD	RD					RD	RD
	No.32 - No.33	BP		BP	BP	BP				RD							RD	RD
	No.33 - No.34	BP		BP	BP	BP		RD		RD							RD	RD
No.34 - No.35	BP		BP	BP			RD	RD		RD	RD			RD	RD	RD	RD	
No.35 - No.36					BP	BP				BR	BR							
No.36 - No.37					BP	BP					BR							
Railway Station	No.37 - No.38								BR									
	No.38 - No.39			BP					BR									
	No.39 - No.40										BR							
	No.40 - No.41																	
	No.41 - No.42				BP						BR	BR					BR	
	No.42 - No.43											BR						
Engels Street	No.43 - No.44				BP						BR						BR	
	No.44 - No.45							BR									BR	
	No.45 - No.46			BP	BP													
	No.46 - No.47			RD	RD													
	No.47 - No.48			RD	RD													
	No.48 - No.49			RD	RD													
	No.49 - No.50			RD	RD			RD									RD	
	No.50 - No.51			RD	RD							RD						
	No.51 - No.52				RD													RD
	No.52 - No.53				RD							RD						RD
	No.53 - No.54				RD													RD
	No.54 - No.55				RD							RD						RD
	No.55 - No.56				RD													RD
	No.56 - No.57				RD							RD						RD
	No.57 - No.58				RD													RD
	No.58 - No.59				RD							RD						RD
	No.59 - No.60				RD													RD
No.60 - No.61				RD				RD			RD						RD	
No.61 - No.62				RD				RD									RD	
No.62 - No.63				RD				RD									RD	

Notes: RD: Affected by Road Construction
 BP: Affected by Bridge Pier Construction
 BR: Affected by Bridge Construction



A 5-1

A-40
A-33



A 5-2

A-41
A-34



A 5-3

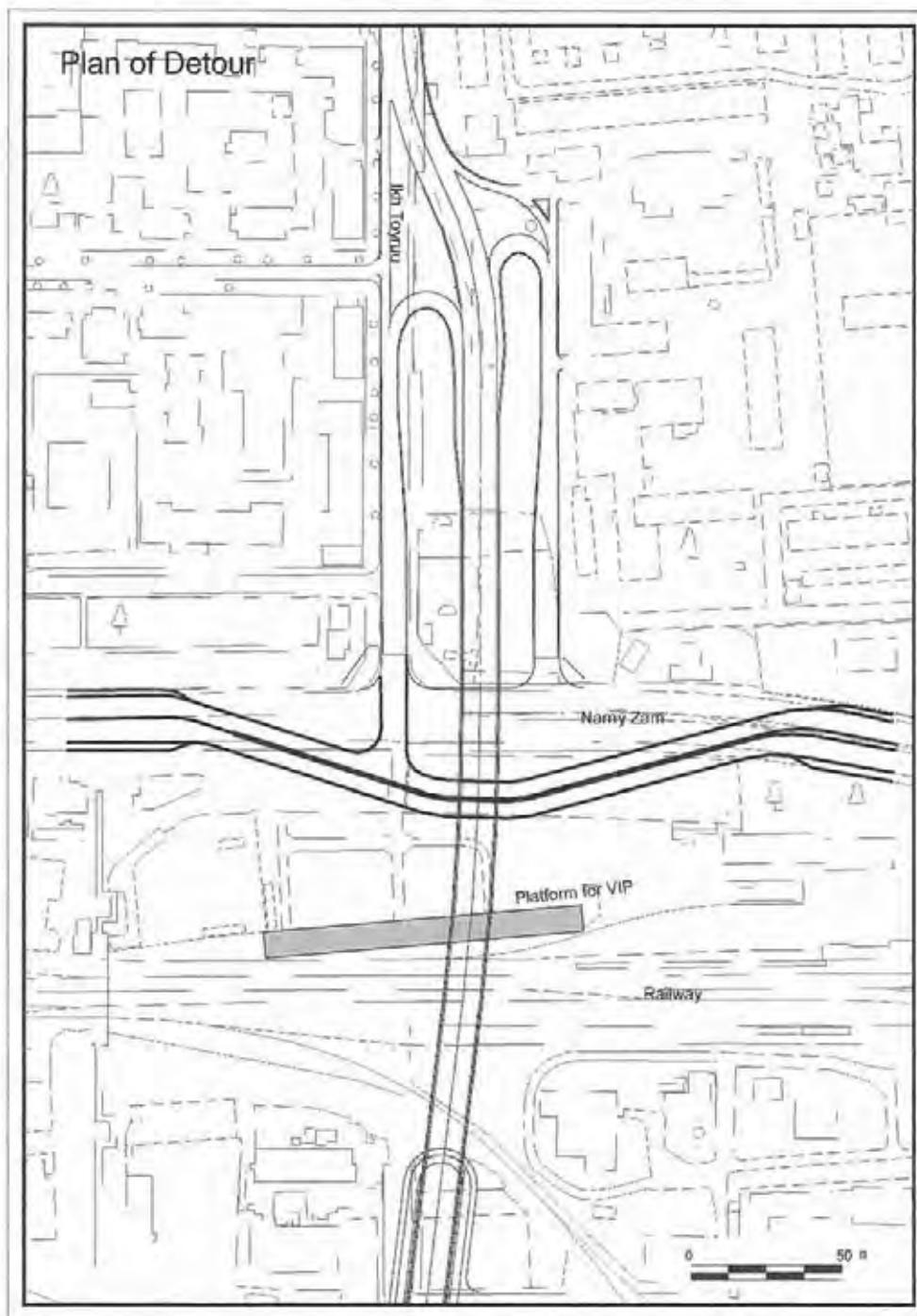
A-42
A-35



A 5-4

A-43
A-36

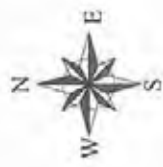
Attachment-6:



A 6

A-44
A-37

Attachment-7: Waste Disposal Site Location Map



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(4) テクニカルメモランダム (基本設計概要説明時)

Basic Design Study on the Project for Construction of Railway Fly-over
in Ulaanbaatar City in Mongolia

November 4, 2008

Technical Memorandum on the Basic Design Report

Important Notes:

The opinions expressed in this memorandum are solely those of the author and do not represent the official policies, opinions, or statements of JICA.

The general layout and details of bridge and road structure are presented in the report of Basic Design Study. Detailed design will be proceeded based on the results of Basic Design Study. Furthermore, some details of structures were confirmed hereinafter.

1. DETAILS OF BRIDGE STRUCTURES

1.1 General Layout and Cross Section

- (1) General Layout of Bridge shall be designed as shown in Basic Design Drawing BD-1.
- (2) Typical cross sections are shown in Figure-1.

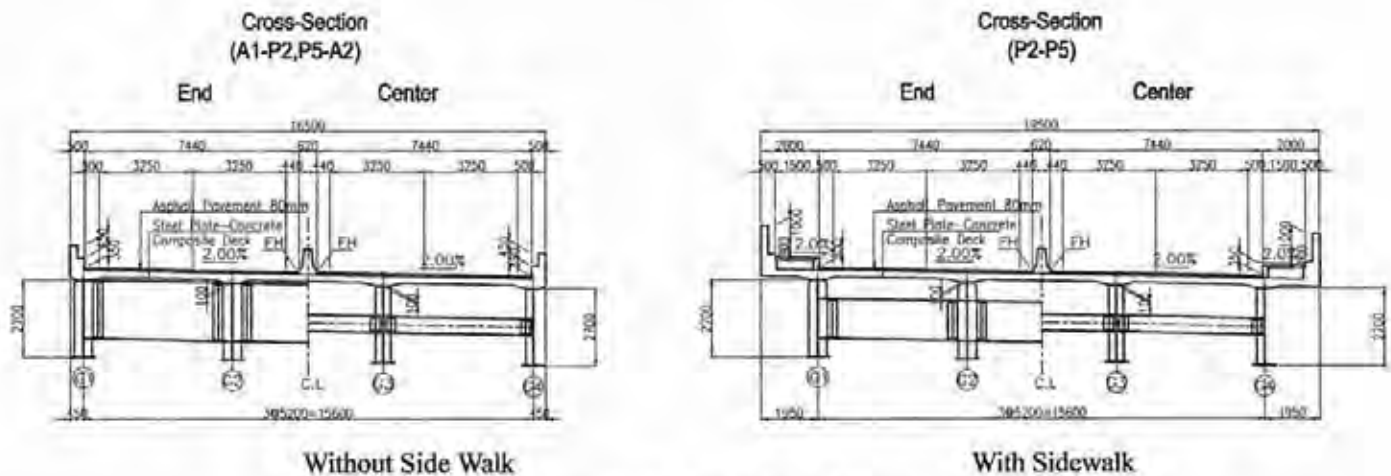


Figure-1 Typical Cross Section

- (3) Details of median strip are shown at Figure-2.

The median strip shall be constructed by cast-in place concrete.

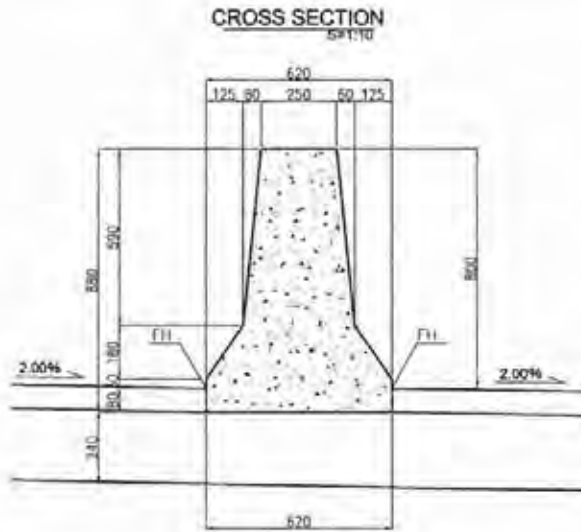


Figure-2

(4) Guard Fence

Guard fence is planned to be constructed by cast-in-place concrete as shown in Figure-3. Details of guard fence will be discussed and decided during detailed design.

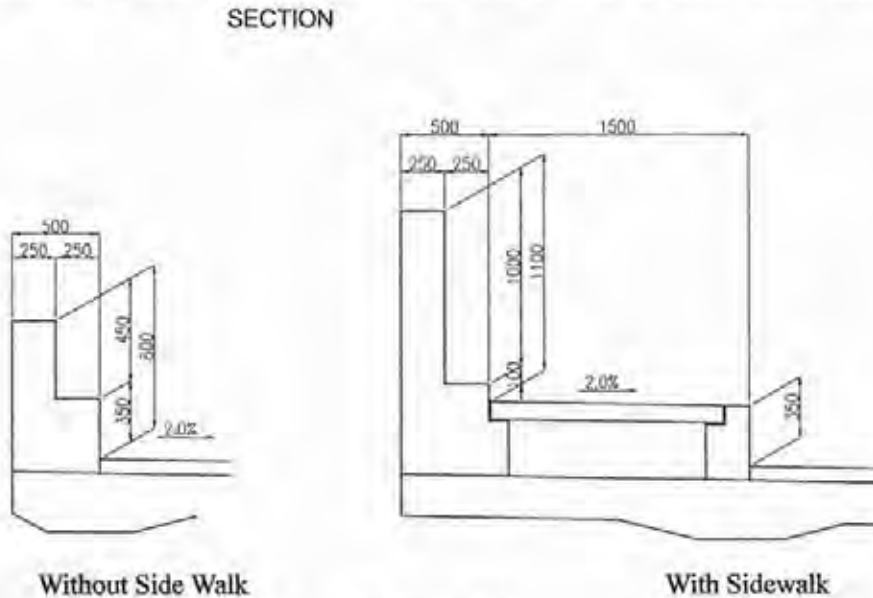
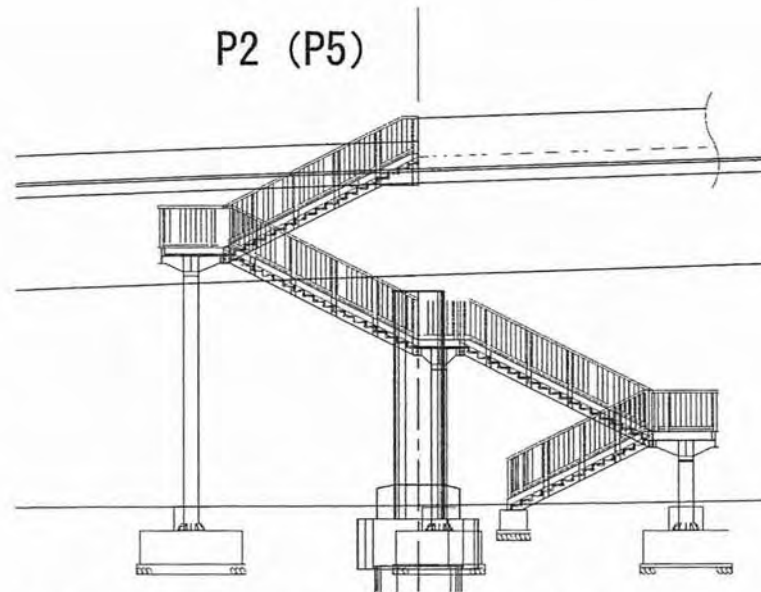


Figure-3 (1)



Note: The height of guard fence shall be change at the end side walk.

Figure-3 (2)

1.2 Details of Side Walk

The side walks are planned to be hollow section and covered by precast concrete panels for weight saving. The precast concrete panel is fixed on the slab by bolts. The panel is removable. Details of side walk and the utilization of space under the panel will be discussed and decided during detailed design.

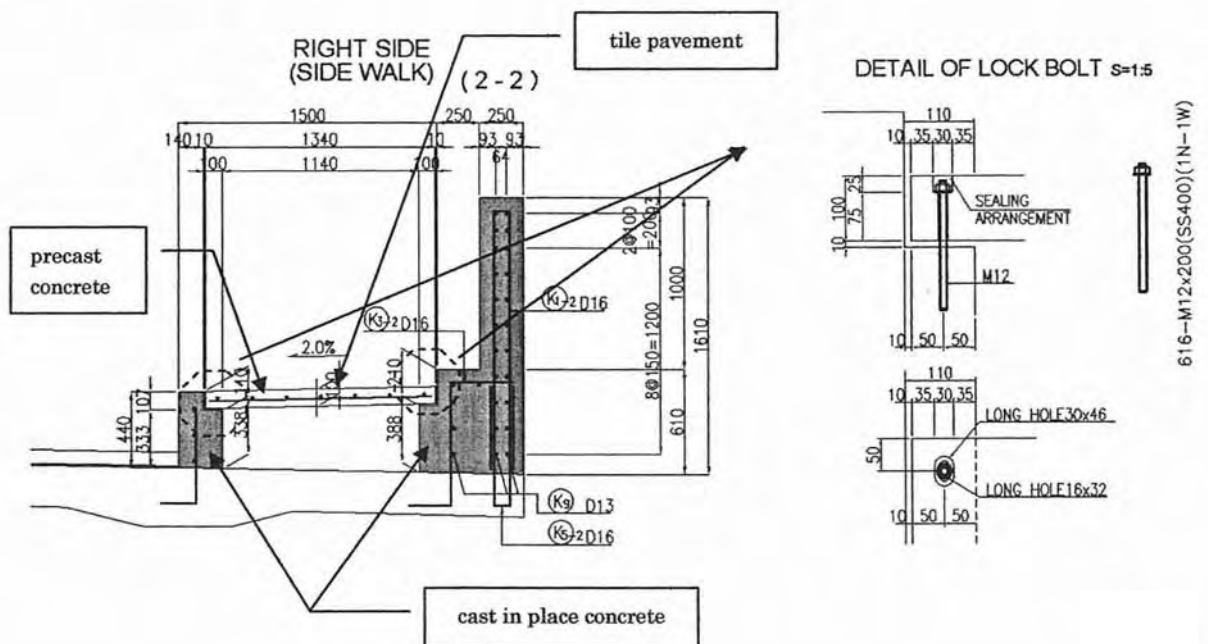


Figure-4

1.3 Stair Case

(1) Location and direction

4-Staircases are installed and details of the staircases are shown at Figure-5

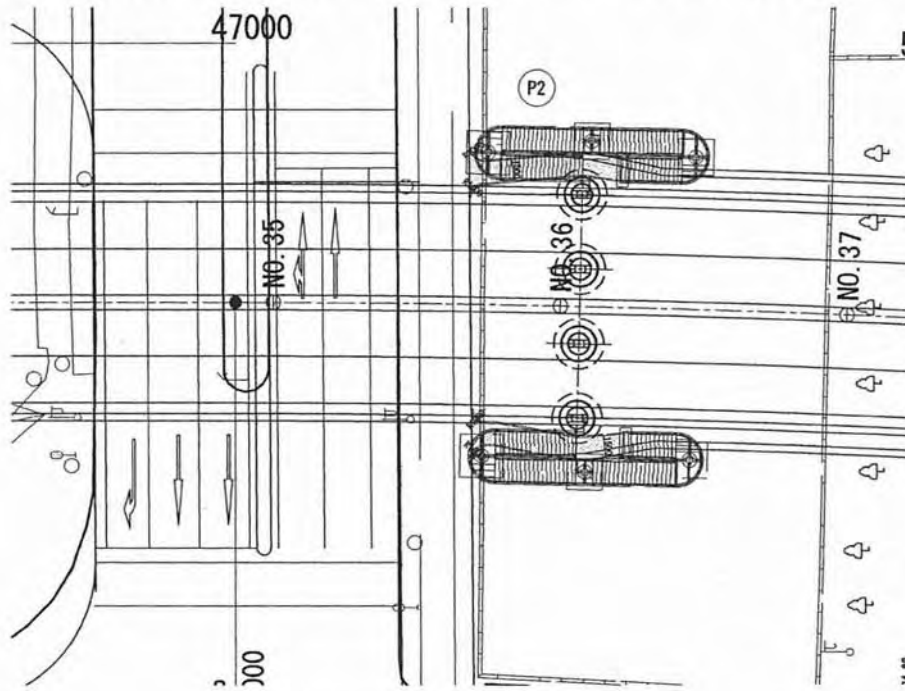


Figure-5(1) Naryn Zam Side

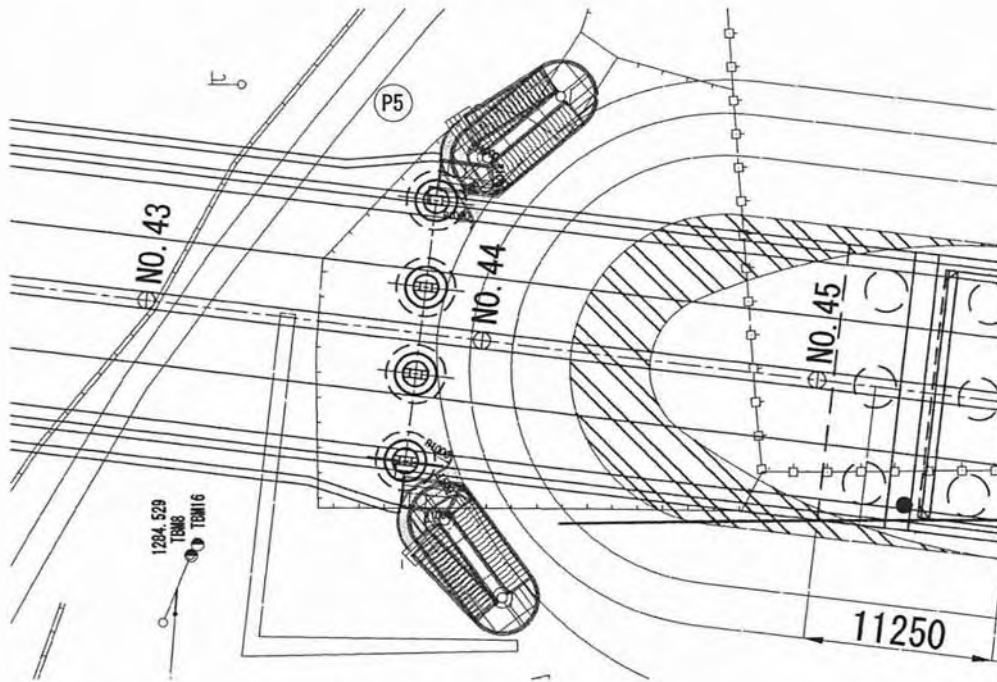
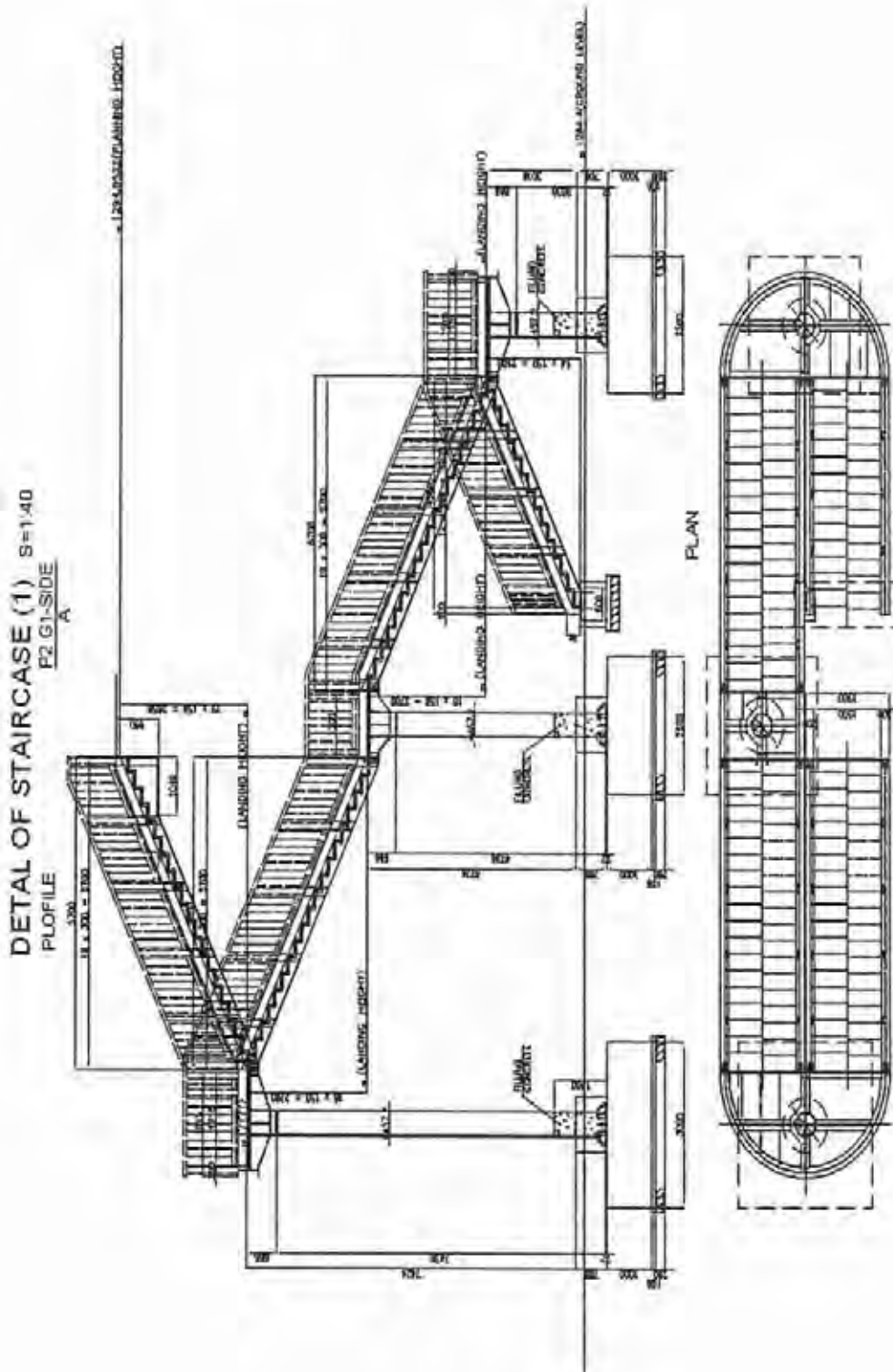


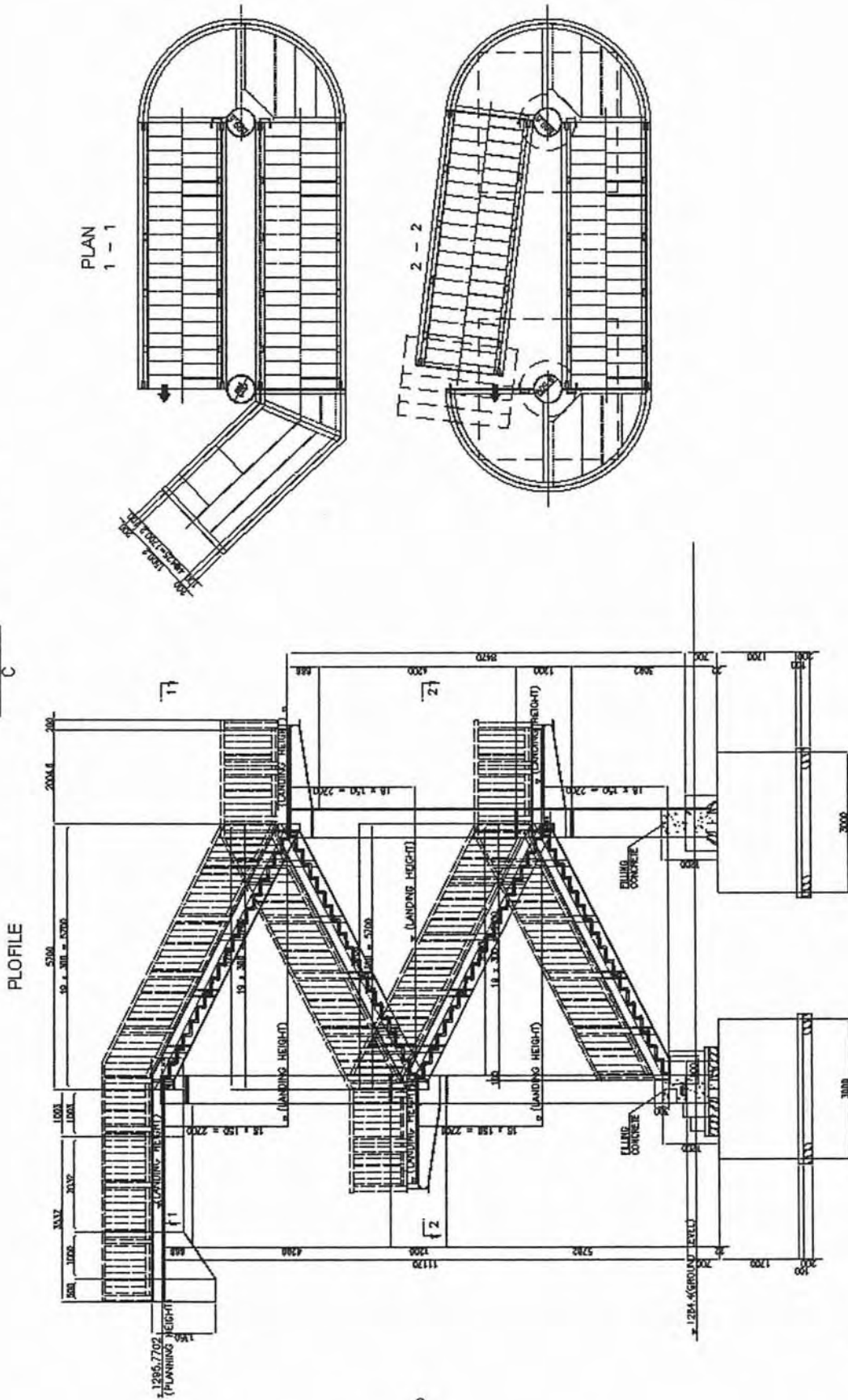
Figure-5(2) Engels Street Side

(2) Detail of Satire Case



DETAIL OF STAIRCASE (3) S=1:40

P5 G1-SIDE
C



1.3 Drainage Plan

(1) Drainage System

Drainage pipe are connected to the street drain at A1,P1,P2,P5,A2. The Drainage System are shown in Figure-6.

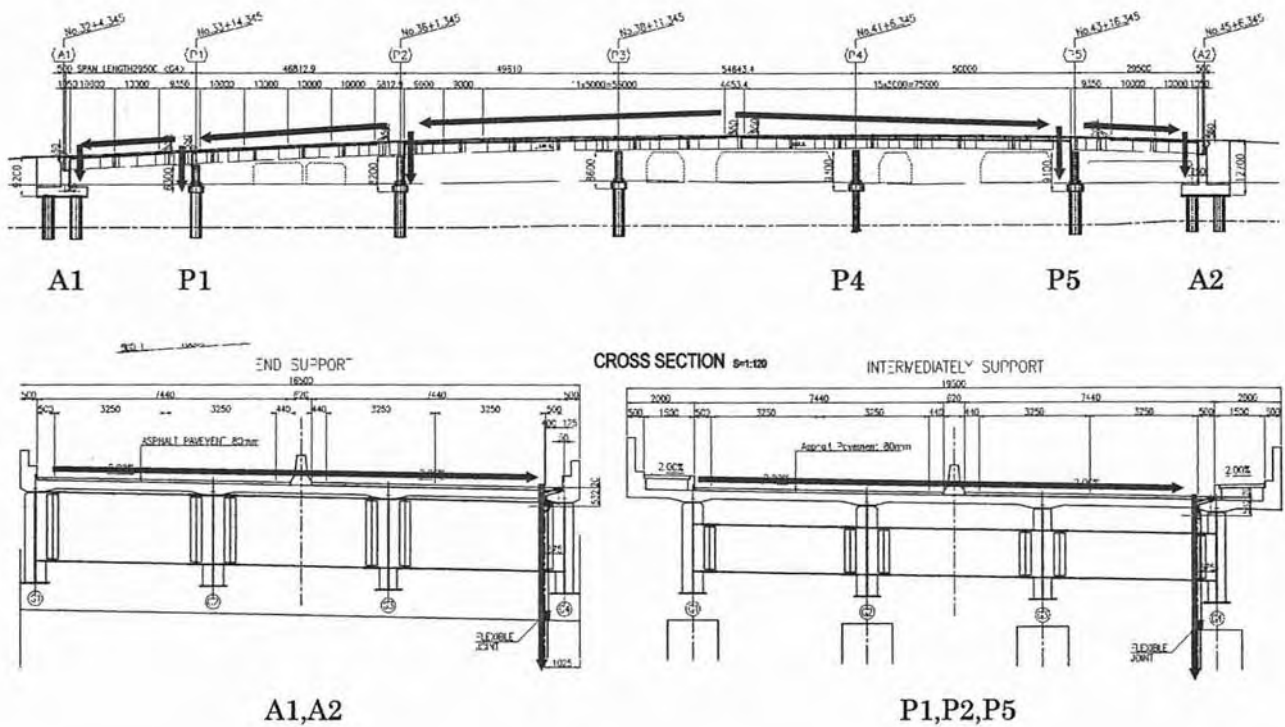


Figure-6

1.4 Heat Insulating plate

The Heating Insulating Plate shall be installed over the ordinary operation area only as shown in Figure-7.

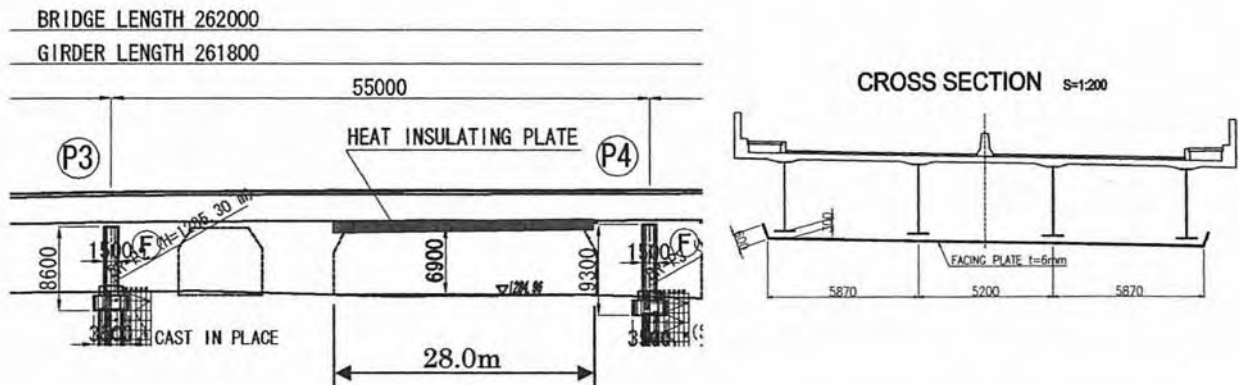
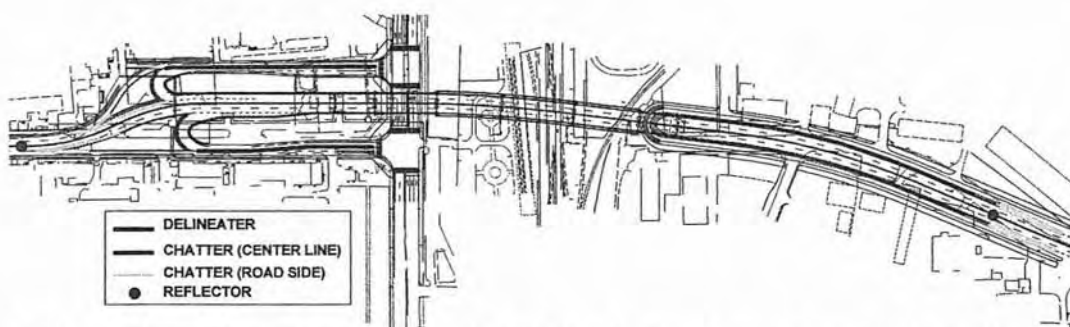


Figure-7

2. DETAILS OF ROAD STRUCTURES

- (1) Road Alignment (Plane and Vertical) including the channel at Ikh Toyruu shall be designed as shown in Basic Design Drawing BD-13 ~BD-19.
- (2) Width of Carriageway and Shoulder shall be designed as shown in Basic Design Drawing BD-20~BD-22.
- (3) Thickness of Pavement shall be designed as shown in Basic Design Drawing BD-20~BD-22.
- (4) End of Drainage (Existing Drainage) shall be designed as shown in Figure 2-2-4 of Draft Final Report.
- (5) Extent of Guard Rail and Guard Pipe shall be designed as shown in Figure 2-2-2 of Draft Final Report.
- (6) Extent of Delineator shall be set as below.



- (7) Dimension of Traffic Sign Board shall be designed as shown in Basic Design Drawing BD-37. (Location of the Sign Board shall be within 30m behind of subject intersections.)
- (8) Condition of Street Lighting shall be designed based on following specification.

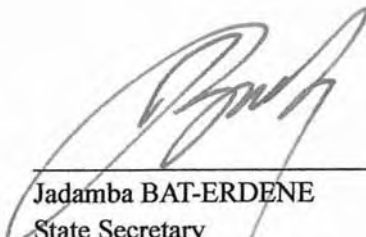
Item	Specification
Average Road Surface Luminance	>1.0 cd/m ²
Height of Lighting Pole	H=10m
Type of the Lump	High-pressure Sodium Lump(Light Flux F>15,000 lx)

✓


- (9) Benchmark of R.O.W shall be set to cover the road width shown in attached Basic Design Drawing before commencement of Detailed Design.

3. INTER-GOVERNMENTAL PROCEDURE


The Ministry shall issue the document to the Ulaanbaatar city to consummate the inter-governmental procedure for the use of the land for the project.



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State Secretary
Ministry of Road, Transport, Construction
and Urban Development
Mongolia



Kenji MARUOKA
Director General
Chief Consultant
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