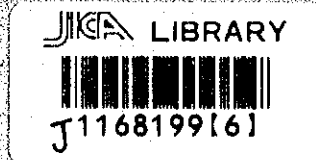


**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT FOR  
IMPROVEMENT OF PRIMARY  
EDUCATION FACILITIES  
(PHASE II)  
IN  
MONGOLIA**

**FEBRUARY 2002**



**JAPAN INTERNATIONAL COOPERATION AGENCY  
MOHRI, ARCHITECT & ASSOCIATES, INC.  
YOKOGAWA ARCHITECTS AND ENGINEERS, INC.**

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BASIC DESIGN STUDY REPORT ON THE PROJECT FOR IMPROVEMENT OF PRIMARY EDUCATION FACILITIES (PHASE II) IN MONGOLIA

FEBRUARY

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## PREFACE

In response to a request from the Government of Mongolia, the Government of Japan decided to conduct a basic design study on the Project for Improvement of Primary Education Facilities in Mongolia (Phase-II) and entrusted the study to the Japan International Cooperation Agency (JICA).

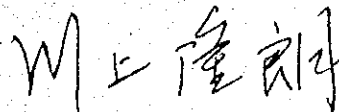
JICA sent to Mongolia a study team from June 12 to July 11, 2001.

The team held discussions with the officials concerned of the Government of Mongolia, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Mongolia in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Mongolia for their close cooperation extended to the teams.

February, 2002



Takao Kawakami

President

Japan International Cooperation Agency

February 2002

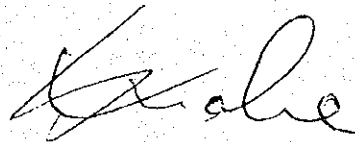
## Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of Primary Education Facilities in Mongolia (Phase-II).

This study was conducted by Mohri, Architect & Associates Inc. and Yokokawa Architects and Engineers, Inc. under a contract to JICA, during the period from June 2001 to February, 2002. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Mongolia and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

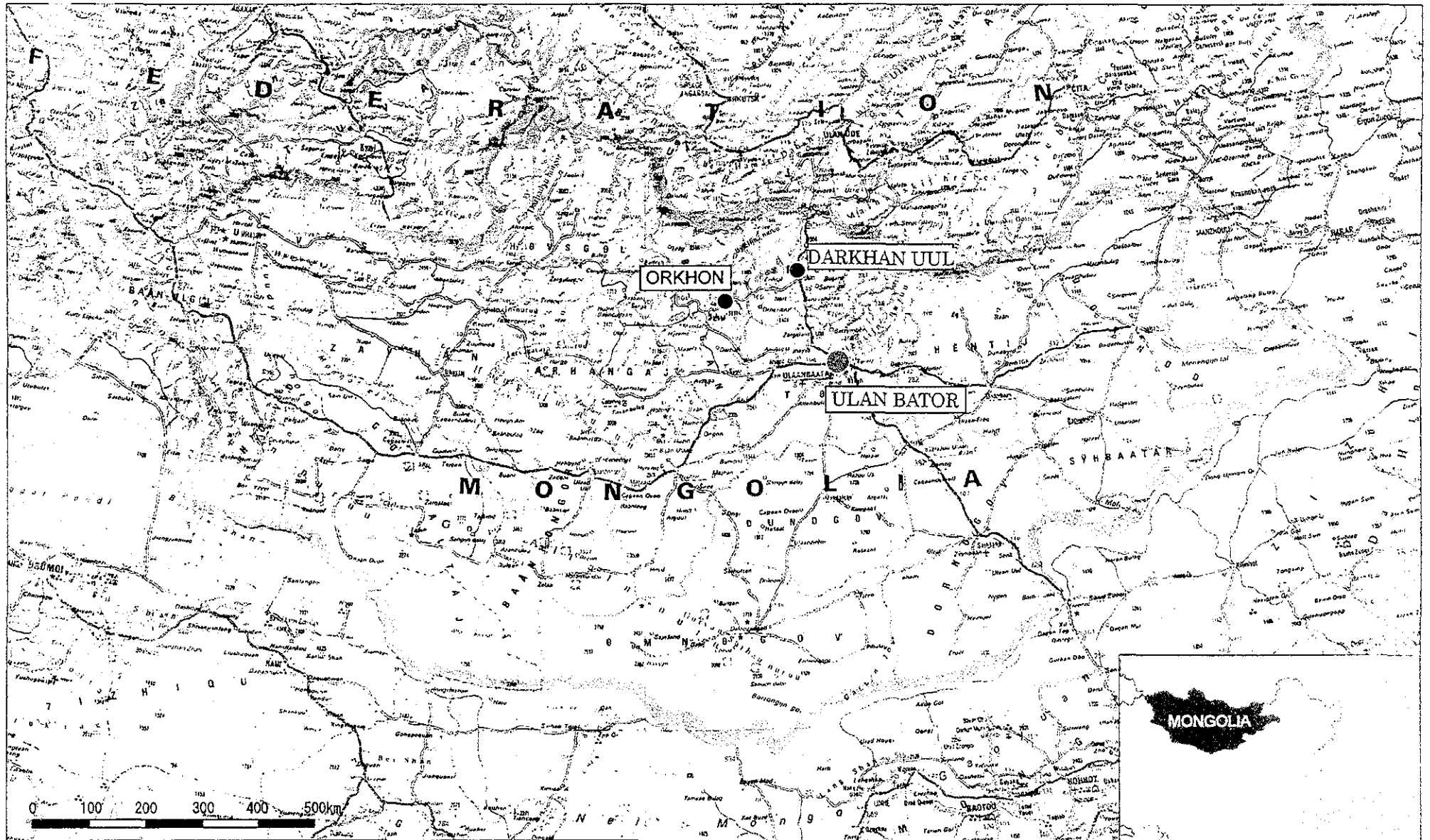
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



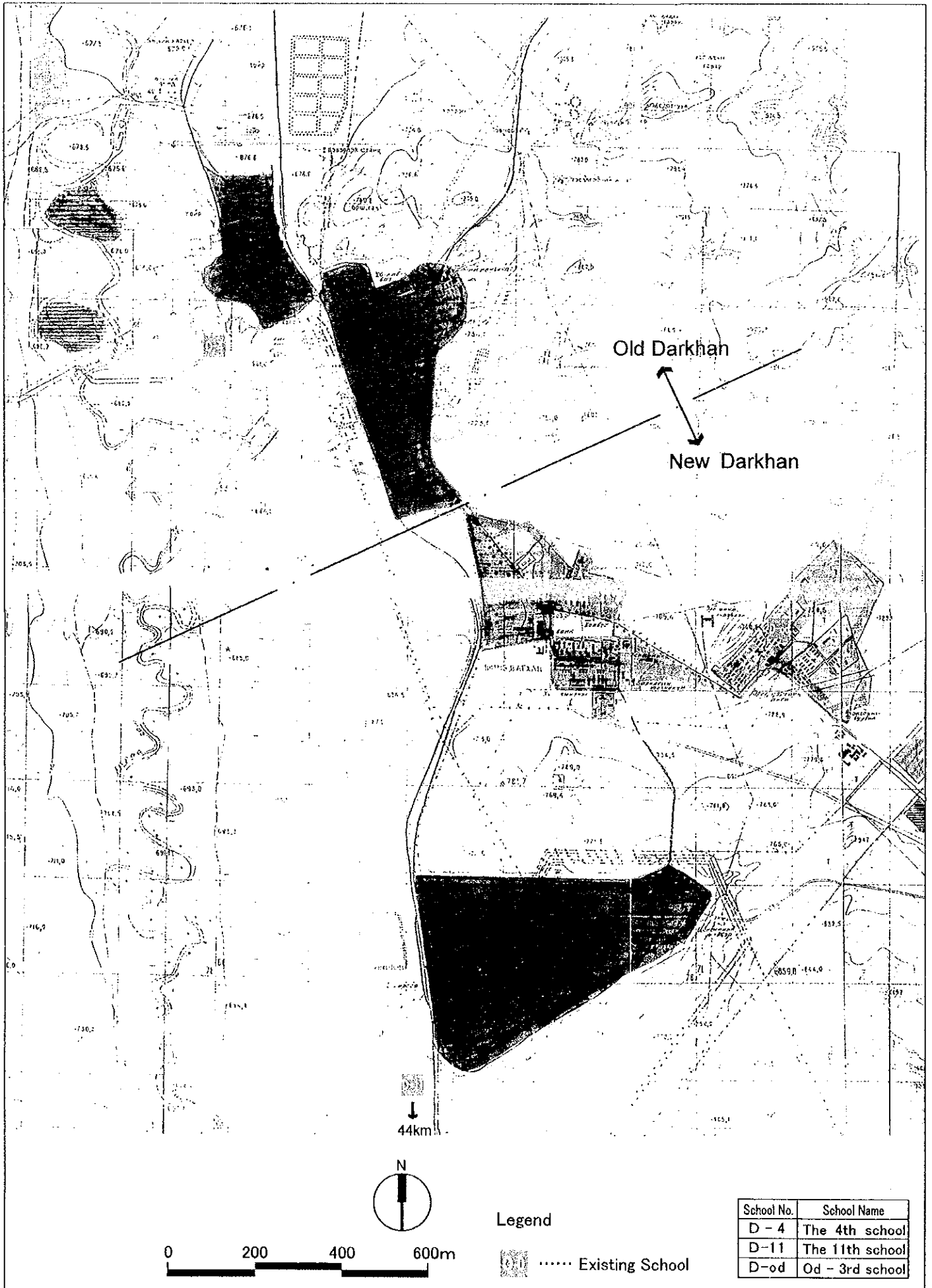
Shinichi Urabe  
Project Manager  
Basic Design Study Team on the Project for  
Improvement of Primary Education  
Facilities in Mongolia Phase-II  
The Consortium of  
Mohri, Architect & Associates Inc. and  
Yokokawa Architect and Engineers Inc.

# MONGOLIA




SITE LOCATION MAP

# PROJECT LOCATION MAP - 1 (DARKHAN OOL)

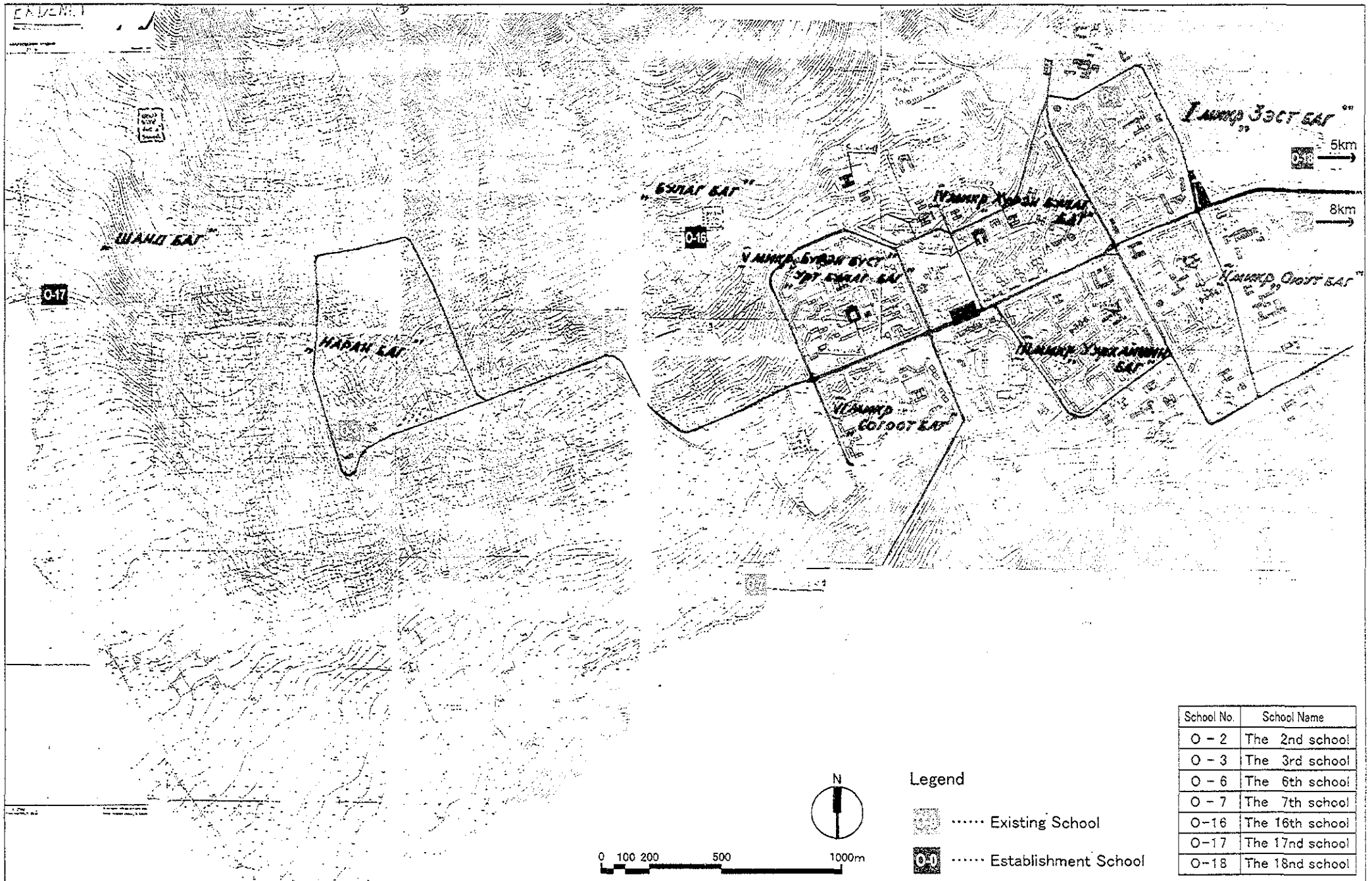


## Legend

 Existing School

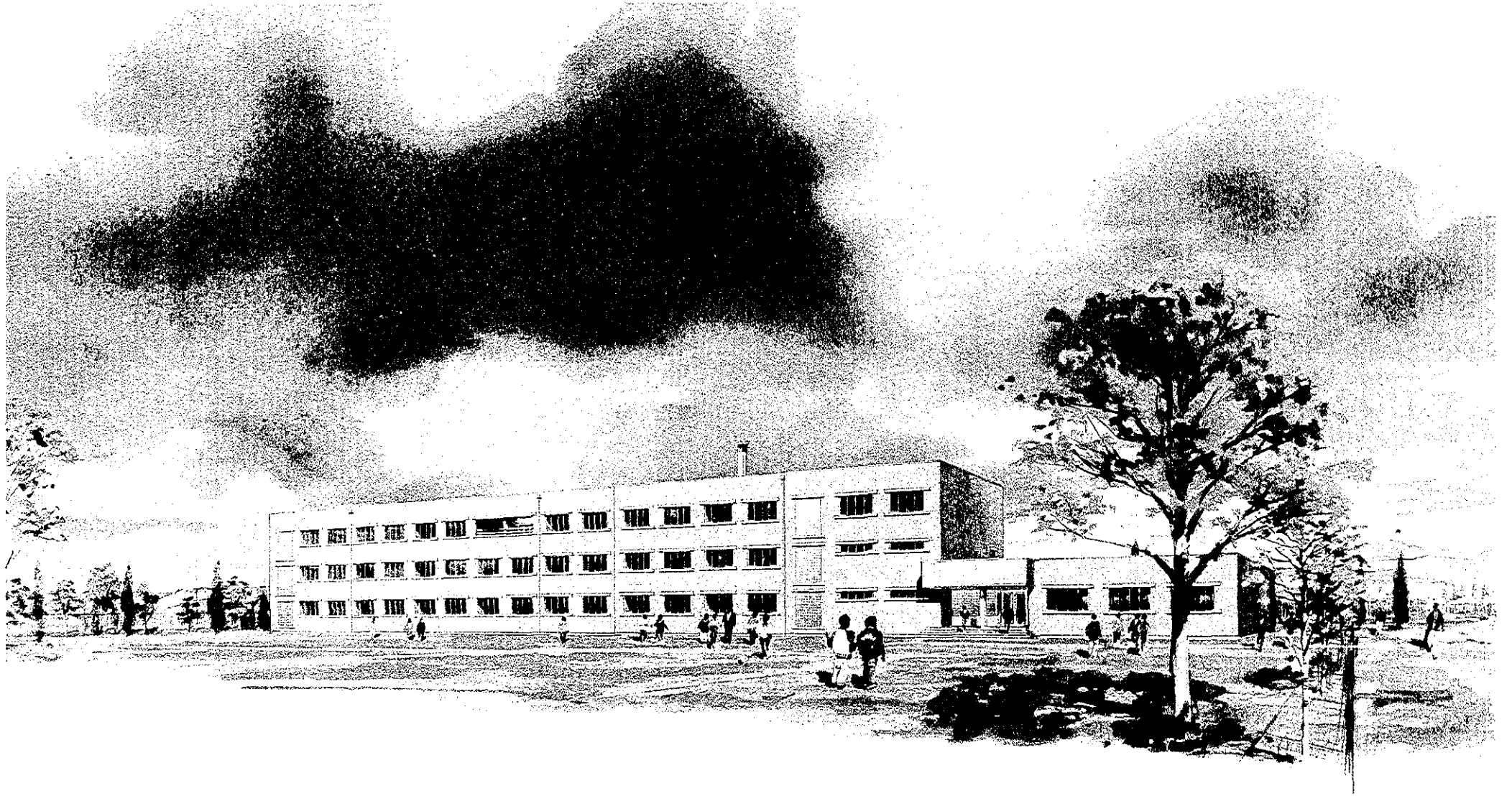
School No.	School Name
D - 4	The 4th school
D-11	The 11th school
D-od	Od - 3rd school

# PROJECT LOCATION MAP - 2 (ORKHON)



School No.	School Name
O - 2	The 2nd school
O - 3	The 3rd school
O - 6	The 6th school
O - 7	The 7th school
O-16	The 16th school
O-17	The 17nd school
O-18	The 18nd school





PERSPECTIVE

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## Abbreviations

<i>JICA:</i>	<i>Japan International Cooperation Agency</i>
<i>JIS:</i>	<i>Japan Industrial Standards</i>
<i>MOSTEC:</i>	<i>Ministry of Science, Technology, Education and Culture</i>
<i>OHP:</i>	<i>Over Head Projector</i>
<i>PTA:</i>	<i>Parents Teachers Association</i>
<i>SCSBC</i>	<i>Steering Committee for School Building Construction</i>
<i>Standards:</i>	<i>Architectural Standards for Educational Buildings and Facilities</i>

## Summary

Mongolia is a landlocked country located in the middle of the Asian continent and is bordered by Russia and China. The country covers an area of 1,566,500 m<sup>2</sup>, which is four times as large as Japan, with a population of 2.4 million people. The Gobi Desert is located in South, and Darkhan-Uul and Orkhon Provinces, Project areas, are situated in the northeastern part of the country. The climate in the areas is typical continental climate with very little annual rainfall and large temperature differences between winter and summer.

Under socialism for a half-century, the Government of Mongolia made the development of human resources, namely education, one of the country's most important targets, and achieved a primary enrolment rate of 98%, an adult literacy rate of 96%, and an education budget of 14% of GDP (Gross Domestic Product) by the 1980's. However, the national economy suffered a sharp downfall due to the social and economic confusion that was caused by the country's shifting to a market economy. As a result, the education budget was reduced (3.8% of GDP), the number of teachers decreased, educational facilities and equipment are deteriorated due to the lack of maintenance, and dormitory fees were introduced. In 1994, the educational indicators showed decreased in the primary school enrollment rate (81%) as well as the adult literacy rate (82.2%). In addition, due to the recent massive inflow of people from the rural into the urban areas, the capacity of existing education facilities in Mongolia, especially in urban areas, haven't been able to keep up with the large growing number of students. In order to deal with the severe problem of classroom shortages, many schools have had to adopt a three-shift teaching system.

Because of this situation, the Government of Mongolia came out with "The Basic Laws for Educational Reform" in 1997, and amended the country's "Education Laws" in 1998. The main target was to develop a high quality, efficient education system through reforms which include decentralization and improvement of the school management. In "Mongolia's 21<sup>st</sup> Action Plan", the Government also clearly mentioned the following as important issues for education sector:

- The provision of equal educational opportunity and access;
- The provision of primary and secondary education to meet individual interests and the needs of the society and the market economy;
- The establishment of a modern education system.

In order to make up for the lack of educational facilities in the urban areas, the Government of Mongolia requested a Grant Aid to build education facilities at 40 schools. In response to the request, the "Project for Improvement of Primary Education Facilities in Mongolia (Phase I)" was implemented to construct a total of 182 classrooms for 16 schools in three stages from 2000 through 2003.

Then, the Government of Mongolia made another request for aid from Japan's Grant Aid Program to construct additional educational facilities at 15 primary schools located in Darkhan City (Darkhan-Uul Province) and Eldenet City (Orkhon Province) which are the second and third largest cities in the country. The Government of Japan dispatched the study team for the Basic Design Study from June 12<sup>th</sup> to July 11<sup>th</sup> in 2001, and for the explanation of the outlines of the "Basic Design Study Report on the Project for Improvement of Primary Education Facilities (Phase 2) in Mongolia" from November 4<sup>th</sup> to 15<sup>th</sup> in 2001.

During the Basic Design Study, the following specific problems of the 15 requested

schools were studied and clarified:

- ① Overcrowding in the classrooms and use of classrooms in multiple shifts;
- ② No schools exist in the Gel areas where the population is growing rapidly;
- ③ Old school buildings and other buildings originally constructed for purposes other than education have been converted into use as classrooms.

The principles for figuring and counting the number of classrooms for Project implementation are as follows:

- ① The number of students is set according to the projected number of students in 2005 (target year of Project completion);
- ② The number of students per classroom is 36;
- ③ It is assumed that the present starting school age of 8 years old will be lowered to 7 years old by 2004;
- ④ A school with a shortage of less than 4 classrooms will be excluded from the Project.

Based on these principles, 117 classrooms for 10 schools out of 15 schools that the Government of Mongolian has listed in its original request for Japan's Grant Aid were selected.

In general principle, the Project's school facilities will be designed according to the guidelines found in the "Architectural Standards for Educational Facilities of Mongolia" (hereinafter referred to as the "Standards"). However, most of these specifications are still based on the former Soviet Union's standards and have not been updated to reflect the current situation in Mongolia. Thus, it is necessary to discuss and clarify these "Standards" with the government's Bureau of Architectural Standards of the Ministry of Infrastructure before Detailed Design and the application for the building permits.

The components of the Project consist of only the minimum necessary facilities of a school, including ordinary classrooms, teachers' rooms, and toilets. In addition, cloakroom, entrance hall, and anteroom are included, as specified in the "Standards". Teachers' rooms will be built only for those teachers who are going to actually use the classrooms constructed in the Project. In principle, three-story buildings shall be built. However, if the number of classrooms to be built is six or less, a two-story building shall be built. In accordance with the "Standards", a pit shall be constructed beneath every school building to have space between the building and the frozen soil in order to prevent any structural damage from the frozen soil.

The following components are included as a component of the Project: 1) furniture – a) students' desks and chairs, teacher's desks and chairs, blackboards, and bulletin boards in a classroom, b) meeting tables and chairs, and lockers for teaching materials in a teachers' office; 2) educational equipment – a) wall charts for language, science and social studies, b) basic science and mathematics teaching materials, and c) overhead projectors (OHP)); and 3) a basic set of tools such as pliers, hammer and screwdriver, etc. (as in Phase I of the Project). The size of the facilities and the amounts of furniture and equipment to be provided to each Project school are listed in the table on next page.



Table 1 Facility Size of Each Project School and Furniture & Equipment to be Provided

No.	Province	Name of School	Story	No of Planned Classroom	Capacity of Teachers' Office	Type of Pupils' Toilet	No. of Place for Teachers' Toilet	Total Floor Area	List of furniture (Number)										
									Classroom								Teachers' Office		
									Teacher's Desk	Teacher's Chair	Student's 2 seater desk (large)	Student's 1 seater chair (Large)	Student's 2 seater desk (small)	Student's 1 seater chair (small)	Blackboard	Bulletinboard	Meeting Table	Chair	Cabinet
D-4	Darkhan-Uul	No.4 School	3	21	24	L	2	2,522.03	21	21	180	360	198	396	21	21	4	24	9
D- 11	Darkhan-Uul	No.11 School	3	9	14	S	1	1,454.64	9	9	72	144	90	180	9	9	3	14	4
D-od3	Darkhan-Uul	Od.3 School	3	8	14	S	1	1,270.89	8	8	72	144	72	144	8	8	3	14	4
O-2	Orkhon	No.2 School	2	4	8	XS	1	660.91	4	4	36	72	36	72	4	4	2	8	2
O-3	Orkhon	No.3 School	3	16	24	L	2	2,007.75	16	16	144	288	144	288	16	16	4	24	9
O-6	Orkhon	No.6 School	2	6	8	XS	1	881.41	6	6	54	108	54	108	6	6	2	8	2
O-7	Orkhon	No.7 School	3	9	14	S	1	1,304.64	9	9	72	144	90	180	9	9	3	14	4
O- 16	Orkhon	No.16 School	3	20	24	L	2	2,511.62	20	20	180	360	180	360	20	20	4	24	9
O- 17	Orkhon	No.17 School	3	12	18	M	1	1,698.39	12	12	108	216	108	216	12	12	3	18	6
O- 18	Orkhon	No.18 School	3	12	18	M	1	1,698.39	12	12	108	216	108	216	12	12	3	18	6
		<b>Total</b>		<b>117</b>	<b>166</b>			<b>16,010.67</b>	<b>117</b>	<b>117</b>	<b>1,026</b>	<b>2,052</b>	<b>1,080</b>	<b>2,160</b>	<b>117</b>	<b>117</b>	<b>31</b>	<b>166</b>	<b>55</b>

Pupils' Toilet Large(L) : Boys' Urinals (10) , Boys' Toilet Bowls (6) , Girls' Toilet Bowls (12) , Cleaning Sink (2) , Hand Washing Faucet (24)  
Pupils' Toilet Medium(M) : Boys' Urinals (6) , Boys' Toilet Bowls (4) , Girls' Toilet Bowls (8) , Cleaning Sink (2) , Hand Washing Faucet (16)  
Pupils' Toilet Small(S) : Boys' Urinals (4) , Boys' Toilet Bowls (2) , Girls' Toilet Bowls (6) , Cleaning Sink (2) , Hand Washing Faucet (12)  
Pupils' Toilet Extra Small(XS): Boys' Urinals (3) , Boys' Toilet Bowls (2) , Girls' Toilet Bowls (4) , Cleaning Sink (1) , Hand Washing Faucet (8)

Considering the capabilities of local subcontractors in both of the provinces, the large amount of construction work involved, and the fact that Project schools are scattered over a wide area, it is considered too difficult to complete all construction in one fiscal year. Therefore, construction work is divided into two stages in this Project

By implementing the Project, the less congested classrooms will be realized at the Project schools, which means the decrease in the number of students per classroom. The number of the students per classrooms will decrease from 93.07 in 2000 to 59.10 in 2005 at the completion of the Project. In those schools, without the Project, the number of the students per classroom would increase to 117.62 in 2005. In 3 newly constructed schools in Gel areas, 44 classrooms will be constructed by the Project, which will accommodate 2,816 students in 2005. This means that the Project can provide better access to education for those who go to schools in the great distance (Table 2). Furthermore, by the increase in the number of the school facilities in Gel areas, the number of students in the urban schools will decrease, which will lead to the less congested classrooms among the other urban schools which are not part of the Project.

In addition, because Gel areas are the areas which grow rapidly to accommodate inflow to urban areas, infrastructure development, including public facilities, has been quite insufficient. Thus, without available facilities for community activities for residents, community meetings have to be held outside. Especially, it is expected that the 3 new Project schools in Orkhon Province will be one of the few public facilities, used not only for school-related activities by the parents and PTA members, but also utilized as the core place of the community. It is also expected that the Project facilities will be also utilized for other non-formal education programs in the area.

Table 2 Comparison of Number of Students per Classroom

Name of School	Yr 2000			Yr 2005				
	Enrollments	# of existing clrms	# of students per clrm	Projected Enrollment	# of clrms after Project	# of students per clrm (w/o Project)	# of students per clrm (after Project)	
Darkhan-Uul	4	850	0 <14>	— <<60.71>>	1,330	21	—	63.33
	11	339	4 <10>	84.75 <<33.90>>	652	13	163.00	50.15
	D-od	107	0 <2>	— <<53.5>>	387	8	—	48.38
Orkhon	2	709	9 <14>	7.78 <<50.64>>	694	13	77.11	53.38
	3	2,893	29	99.76	3,023	45	104.24	67.18
	6	622	6	103.67	711	12	118.50	59.25
	7	787	8 <14>	98.38 <<56.21>>	1,002	17	125.25	58.94
	16	—	—	—	1,329	20	—	66.45
	17	—	—	—	793	12	—	66.08
	18	—	—	—	694	12	—	57.83
Total/Average	6,307	56 <89>	93.07 <<65.48>>	10,615	173	117.62	59.10	

\* 1 The bottom row of the 2000 includes the number of classrooms which are judged not usable

\*2 No.11 in OrhonPovince has small classrooms with capacity of 20 students, but included in the calcula

As mentioned above, the Project will contribute greatly to the benefit of the area residents as well as of the students at the Project schools. It is considered appropriate to implement the Project by financing it in part with the Japan's Grant Aid. As for the operation and maintenance of Project facilities, the Mongolian side has sufficient staff and adequate funds for the program. Thus, it is considered that there will be no major problems for implementation of the Project.

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## Chapter 1 Background of the Project

## Chapter 1: BACKGROUND OF THE PROJECT

Since 1990, shifting to a market economy, the Government of Mongolia has been promoting political and economic reform. After the transition, the country faced crisis due to the political confusion within the country, the stop of assistance from the former Soviet Union, and the recent damage from the cold weather, but the situation is getting better owing to the aid from donors and implementation of austerity budget. However, the shift to the market economy promote a rapid increase in the number of students in the urban area. In Darkhan City (Darkhan-Uul Province) and Eeldenet City (Orkhon Province), which are the second and the third largest cities in Mongolia, the educational situation is almost the same as that of UlanBator in that construction of classrooms cannot keep up with the increase of school-age children caused by the dramatic population growth. Those schools, where classroom congestion is serious, have to conduct a 2 or 3 shift system

However, more than 80% of the education budget is allocated for personnel expenditures and heating costs, which means that it is difficult to secure funds for new classroom and other school building construction. In Darkhan-Uul Province as the Project area, no new school has been constructed since 1990, and only 1 school was constructed in 1991 by the donation from the private sector.

In view of the situation, in the ongoing Phase I of "the Project for Improvement of Primary Education Facilities in Mongolia" (hereinafter referred to as "Phase I"), the Government of Japan is assisting the Government of Mongolia to provide an effective learning environment by extending a Grant for increasing the number of classrooms and providing educational equipment and furniture for public primary schools in Ulan Bator

Then, the Government of Mongolia made another request for aid from Japan's Grant Aid to construct additional educational facilities at 15 primary schools located in Darkhan City (Darkhan-Uul Province) and Eeldenet City (Orkhon Province) which are the second and third largest cities in the country. The Government of Japan dispatched the study team for the Basic Design Study from June 12<sup>th</sup> to July 11<sup>th</sup> in 2001, and for the explanation of the outlines of the "Basic Design Study Report on the Project for Improvement of Primary Education Facilities (Phase 2) in Mongolia" from November 4<sup>th</sup> to 15<sup>th</sup> in 2001.