No.

MONGOLIA
MINISTRY OF EDUCATION,
CULTURE AND SCIENCE

IMPLEMENTATION REVIEW STUDY REPORT ON THE PROJECT FOR THE CONSTRUCTION OF THE KHARAKHORUM MUSEUM IN MONGOLIA

SEPTEMBER, 2008

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

YAMASHITA SEKKEI INC.

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PREFACE

In response to a request from the Government of Mongolia, the Government of Japan decided to conduct an Implementation Review Study on the Project for the Construction of the Kharakhorum Museum in Mongolia and entrusted it to the Japan International Cooperation Agency (JICA).

JICA sent to Mongolia a study team from June 12 to June 28, 2008.

The team held discussions with the officials concerned of the Government of Mongolia, and conducted field studies at the study area. After the team returned to Japan, further studies were made, and as a result of this, 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 team.

September, 2008

Eiji Hashimoto
Vice President
Japan International Cooperation Agency

September, 2008

Letter of Transmittal

We are pleased to submit to you the Implementation Review Study report on the Project for the Construction of the Kharakhorum Museum in Mongolia.

This Study was conducted by Yamashita Sekkei Inc., under a contract to JICA, during the period from June 12 to June 28, 2008. 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,

Takaaki Kimura
Project Manager,
Implementation review study team on
The Project for the construction
of the Kharakhorum Museum
In Mongolia
Yamashita Sekkei Inc.

Summary

The remains of Kharakhorum, which used to be the capital of the Mongolian Empire, is located 350km southwest of Ulaanbaatar on the western bank of the Orkhon Valley in Kharakhorin sum, Uvurkhangai. It is said that the city of Kharakhorum originated as a military depot set up by Genghis Khan in 1220 and was constructed as the capital of the empire by Ogotai Khan in 1235. Although the buildings of Kharakhorum were destroyed by Ming around 1380, the city has never been abandoned completely and the Tibetan Buddhist Temple of Erdene Zuu was constructed in the city in 1586. Most of the ruins of the city have perished over time and only a few traces remain on the surface. As the remaining ruins are buried underground, archaeological surveys planned with meticulous care are required for future restoration of the ruins. The Soviet Union and Mongolia conducted a joint archaeological survey in 1948-49. Mongolia and Japan conducted a joint archaeological survey funded by the Japanese trust fund of UNESCO in 1995-98. A large-scale archaeological survey was proposed at the evaluation conference held in the summer of 1997, and it was decided to urgently carry out preliminary measures for protection of the ruins. As a part of the measures, wooden fences were set up for the conservation of the ruins. In addition, the farmland, roads, and factories within the area of the ruins were moved out from the area. A joint archaeological survey by the Mongolian Academy of Science and the University of Bonn of Germany has been carried out since 1999.

As the ruins were registered as a UNESCO World Cultural Heritage site in 2004, establishment of a base for the protection, research, and exhibition of the ruins has become an urgent task. However, to date, there is no facility to conserve and store the relics from the ruins. Some parts of the relics excavated with the cooperation of the University of Bonn (UOB) are currently on itinerary exhibition in Germany and other European countries whilst others are inevitably kept under very poor conditions, such as being kept in a garage of a nearby hotel under the management of UOB. It is anticipated that such conditions may lead the relics to futher deteriorate and be damaged especially by the coldness of mid-winter. As the year 2006 was the 800th anniversary of the enthronement of Genghis Khan in 1206, many commemorative ceremonies and events were held all over Mongolia. As a part of these commemoration projects, the project for the construction of a museum in Kharakhorum, the capital of the Mongolian Empire, in order to display, conserve, study, and restore the relics from in and around the city, was planned and a request for its implementation was submitted to Japan as a cultural grant project of Japan's Grant Aid.

Based on the request from the Government of Mongolia, the Government of Japan decided to implement a Basic Design Study and JICA dispatched a Study Team to Mongolia from September 30th to October 26th 2005. The Study Team held discussions with the relevant Mongolian government officials and conducted a field survey at the proposed project site. The team continued their work on analyzing the field survey results in Japan and the Basic Design Study Report was finalized after the explanation of the Draft Report in Mongolia from February 11th to 25th, 2006.

Through the discussions with the Mongolia side, it has been agreed that the main functions and activities of the building should be limited to the functions of a museum and that the total floor area of the building would not exceed 1,500m^2.

The Objectives of this project are; to systematically exhibit the conditions of excavation and the relics from the ruins, to educate visitors on history through domestic cultural heritage, to offer the latest information regarding the Orkhon Valley and Kharakhorum ruins, and to utilize the remains and relics as tourist attractions by constructing the museum near Erdene Zuu and the ruins of Kharahorum City.

Exchange of Notes (E/N) of the project was signed on 18th July, 2006 between the Government of Japan and the Government of Mongolia. Consequently, the detail design and tender procedure were implemented. However, the tender was unsuccessful. Because of the constraint of the above E/N period, the Project was suspended.

In response to this situation, JICA decided to conduct an Implementation Review Study (the study) and sent the study team to Mongolia. As a result of discussions, both parties confirmed the components of the Project described in the Basic Design Study report shall not be changed. However, in case the necessary situation arises, the component eliminated at the Detailed Design stage in 2006 will be considered as targets of exclusion from the Project.

The basic design of this project was devised so as not to impair the scenery of the ruins of Kharakhorum City and Temple Erdene Zuu. The facility and equipment are of appropriate scale in accordance with a cultural grant project from Japan's Grant Aid, will be easily maintained, and is suitable for the extremely cold climate of the locality. Most of the construction materials and equipment, which are imported mainly from China and Russia, are locally available in Mongolia. The design of the facility will allow it to be constructed economically and be easily maintained by adopting local standard construction methods.

The museum building: Reinforced Concrete Structure, one story, floor area: 1,473m^2

The main components of the facilities are shown in the following table.

Division	Room	Main functions and remarks
Display/artifact division	Orientation plaza	1. Give guidance to the entire permanent exhibition. 2. Exhibit the progress of excavation and restoration of Kharakhorum ruins.
	Permanent exhibition room	1. Exhibit the relics and other historical materials and models of the Mongolian Empire in chronological order. 2. Provide a lounge for rest with outside view in the Permanent exhibition room. 3. Install exhibition furniture fitted with various exhibition technologies.
	Temporary exhibition room	1. Install picture display rails for providing easy update of the exhibits. 2. Provide the ceiling with grid rails to ensure flexibility of exhibition layout and easy future renewal of facilities equipment.
	General Storage	1. Store the relics, finds, exhibits and cultural properties. 2. Include space for sorting the stored items and install shelves spacially made for the purpose.
	Secure Storage	1. Entrance to this storage is made only through the general storage. 2. Provide constant temperature and humidity in order to store the delicate relics, finds or fragile properties in the storage
	Anteroom	Prevent fresh air from entering into exhibition rooms and storages.

	Treatment room	1. Used for treatment works (washing, arranging, etc.) of the relics and other items that are carried in and photographed for record. 2. Used for temperature adjustment of properties, which are carried in from outside in the cold winter season, before taking them into warmer rooms.
Entrance division	Entry	Prevent the wind blowing into the hall by constructing sidewalls.
	Foyer	1. Install reception counter, ticket counter and cloakroom and counter. 2. Provide a space for a museum shop that sells museum guidebooks and replicas. 3. Provide a space for rest and a canteen connected with an outdoor space.
	Observation room and Gallery	1. Provide views of Erdene Zuu Monastery Temple and the Kharakhorum ruins. 2. Gallery is designed to provide guidance to the cultural environment of the Kharakhorum ruins and Orkhon Valley.
Training division	Multipurpose hall	1. Designed to give; guidance to the museum by audio-visuals, training, conference, planned exhibitions. 2. The capacity of the hall is 75 seats.
Administration division	Administration offices	1. Provide rooms for the director, the chief officer and administration space, meeting space and stores according to the staff number of each division. 2. The floor areas are determined by the number of assistants as well as officers according to the staff distribution plan.
	Security office	The room for persons in charge of security and the coal-fired boiler operator is planned.
	Staff room	1. Used for preparing tea/coffee as well as resting and a locker room. 2. An outdoor resting space is also planned.
	Library	It is designed to be used for a library of common technical books and document.
Research/Restoration division	Research/Restoration laboratory	Provide space and facilities equipment for conducting research, registration, restoration and clerical work.
	Unpacking room	A platform and unpacking space designed to easily carry in excavated items is planned.
Service	Coal-fired boiler room	1. A boiler and a chimney for heating purposes is planned. 2. A bin for coal and stockyard of ashes are planned close to a coal-fired boiler room and for easy access of automobiles.
	Mach/Elec. rooms	Machine room for Airconditioning, substation, reservoir room, pump room are planned.
Exterior structure	Rooftop terrace	Provide views of cultural heritage sites in the surrounding area.
	Outdoor exhibition area	Outdoor exhibition area is planned along the axis towards the Kharakhorum ruins from the permanent exhibition room.
	Others	Staff parking, visitors parking, a porte-cochere and pedestrian paths are planned according to needs.

The items of equipment supplied to this project will be the equipment of exhibition/training, restoration/ storage and environmental measurement as shown in the following table.

Group	Equipment	Quantity
Exhibition/training	Personal computer	3
	DVD player	3
	LCD projector	1
Restoration/ Storage	Hot air drier	1
	Sand blaster	1
	Balance	1
	Lighting fixture with a magnifier	1
	Shelf Open Type	16
	Shelf Casement Type	4
Environmental measurement	Illuminometer	1
	Thermometer/hygrometer (Portable)	1
	Thermometer/hygrometer (Mounted)	1

The implementing agency for this project is the Ministry of Education, Culture and Science and the Bureau of Culture & Art is directly in charge of management and maintenance of the Kharakhorum museum. Management and maintenance of the museum will be carried out by 21 staff including the director. The organization of the museum consists of 3 departments; the Marketing Department in charge of administration

and planning, the Research Department in charge of exhibition and research, and the Finance Department in charge of maintenance.

Among them, only the director will be dispatched from the Ministry of Education, Culture and Science and all others will be recruited as local staff of Uvurkhangai or Kharakhorin sum. Since the project does not include specialized facilities equipment but only locally common ones, the technical level of the local staff for maintenance of the equipment will be sufficient.

The projected annual operating budget is 79,780,000 Tg (approximately 7,180,000 Yen), out of which 69,780,000 Tg will come from the national coffers and 10,000,000 Tg from the revenue of admission fees. The annual operating budget of the Erdene Zuu Museum, which is situated very close to the new museum being managed by the local government, is 67,200,000 Tg that is covered by the revenue from the admission fees (20,000 to 28,000 visitors / year) and the remaining amount from sales at the museum shop. As a comparable number of visitors are expected for the new museum as well, it is considered possible for it to have the revenue sufficient to cover the entire operation and maintenance expenses. Therefore, even though the budget allocated from the national coffers dips from the budget expected at present, the operating budget of the museum will be fully compensated with the revenue of the admission fees.

After conclusion of the Exchange of Notes, the project will take 4.5 months for the review of detail design work and tender procedure and 12.5 months for construction of the facilities and installation of the equipment after conclusion of the Exchange of Notes. Thus, the total period to complete the project will be 17 months.

Some parts of the relics excavated with the cooperation of the University of Bonn (UOB) were on itinerary exhibition in Germany and other European countries but were returned in 2008 and have been placed on temporary display in buildings of the Mongolian Academy of science, institute of Archaeology, whilst others are kept under very poor conditions, such as in the garage of a nearby hotel in Kharakhorum under the management of UOB

As mentioned above, by constructing exhibition rooms, a multipurpose hall, storage rooms and rooms for research/restoration, this museum will be the center of activities of restoration and conservation of the relics from the Kharakhorum ruins by the Mongolians. It is expected that exhibitions of the relics and lectures to be held in the multipurpose hall will induce awareness and interest of local residents, students and children in archaeological restoration and their traditional cultural heritage. Also, an increase of tourists including that of Japanese is expected by the establishment of the museum thereby strengthening the friendship between Mongolia and Japan.

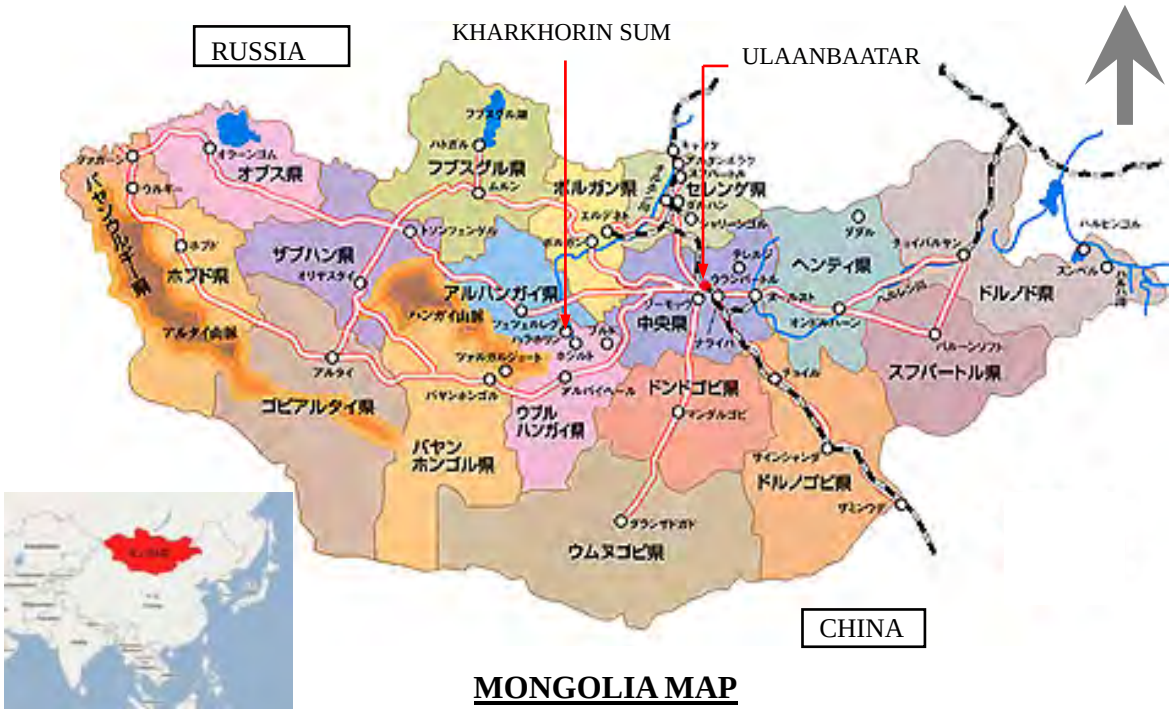
It is considered that the implementation of this project is valid as a Cultural Grant of Japan’s Grant Aid because this project will contribute to the development of conservation of the cultural heritage of Mongolia as well as to the conservation, restoration, and safekeeping of the relics from the Kharakhorum ruins and to development of education and tourist attractions by exhibition of the relics.

Furthermore, attractive display of the relics, which is the main feature of the museum, will contribute to an increase of visitors. The effects of the project, as the national historical museum of Mongolia where the precious relics will be permanently displayed, will be more effective if the display of the relics can be

regularly changed / renewed at appropriate times in co-operation with the National Heritage Center, UNESCO and the World Heritage Committee of Mongolia.

CONTENTS

[Appendices]



MONGOLIA MAP

COMPLETE MAP OF ASIA

SITE MAP

PERSPECTIVE -1

PERSPECTIVE –2

PERSPECTIVE -3

List of Figures & Tables

Abbreviation

(Alphabetical Order)

AV	Audio Visual
AVR	Auto Voltage Regulator
CPU	Central Processing Unit
DVD	Digital Versatile Desk
E/N	Exchange of Notes
EU	European Union
GB	Giga Byte
GDP	Gross Domestic Product
GHz	Giga Hertz
Hz	Hertz
JICA	Japan International Cooperation Agency
kPa	Kilo pascal
lux	Lux
M	Magnitude
MDF	Main Distribution Frame
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OJT	On-the-job training
OS	Operation System
PBX	Private Branch Exchange
PC	Personal Computer
Tg	Tugrug
TICA	Turkish International Cooperation and Development Agency
UNESCO	United Nations Education, Scientific and Cultural Organization
VCD	Video Compact Desk

Chapter 1. Background of the Project

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The remains of Kharakhorum, which used to be the capital of the Mongolian Empire, is located 350km southwest of Ulaanbaatar on the western bank of the Orkhon Valley in Kharakhorin sum, Uvurkhangai. It is said that the city of Kharakhorum originated as a military depot set up by Genghis Khan in 1220 and was constructed as the capital of the empire by Ogotai Khan in 1235. Although the buildings of Kharakhorum were destroyed by Ming around 1380, the city has never been abandoned completely and the Tibetan Buddhist Temple of Erdene Zuu was constructed in the city in 1586. Most of the ruins of the city have perished over time and only a few traces remain on the surface. As the remaining ruins are buried underground, archaeological surveys planned with meticulous care are required for future restoration of the ruins. The Soviet Union and Mongolia conducted a joint archaeological survey in 1948-49. Mongolia and Japan conducted a joint archaeological survey funded by the Japanese trust fund of UNESCO in 1995-98. A large-scale archaeological survey was proposed at the evaluation conference held in the summer of 1997, and it was decided to urgently carry out preliminary measures for protection of the ruins. As a part of the measures, wooden fences were set up for the conservation of the ruins. In addition, the farmland, roads, and factories within the area of the ruins were moved out from the area. A joint archaeological survey by the Mongolian Academy of Science and the University of Bonn of Germany has been carried out since 1999.

As the ruins were registered as a UNESCO World Cultural Heritage site in 2004, establishment of a base for the protection, research, and exhibition of the ruins has become an urgent task. However, to date, there is no facility to conserve and store the relics from the ruins. Some parts of the relics excavated with the cooperation of the University of Bonn (UOB) were on itinerary exhibition in Germany and other European countries but were returned in 2008 and have been placed on temporary display in buildings of the Mongolian Academy of science, institute of Archaeology, whilst others are kept under very poor conditions, such as in the garage of a nearby hotel in Kharakhorum under the management of UOB . It is anticipated that such conditions may lead the relics to futher deteriorate and be damaged especially by the coldness of mid-winter. As the year 2006 was the 800th anniversary of the enthronement of Genghis Khan in 1206, many commemorative ceremonies and events were held all over Mongolia. As a part of these commemoration projects, the project for the construction of a museum in Kharakhorum, the capital of the Mongolian Empire, in order to display, conserve, study, and restore the relics from in and around the city, was planned and a request for its implementation was submitted to Japan as a cultural grant project of Japan's Grant Aid.

Based on the request from the Government of Mongolia, the Government of Japan decided to implement a Basic Design Study and JICA dispatched a Study Team to Mongolia from September 30th to October 26th 2005. The Study Team held discussions with the relevant Mongolian government officials and conducted a field survey at the proposed project site. The team continued their work on analyzing the field survey results in Japan and the Basic Design Study Report was finalized after the explanation of the Draft Report in Mongolia from February 11th to 25th, 2006.

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In response to this situation, JICA decided to conduct an Implementation Review Study (the study) and sent the study team to Mongolia.

Chapter 2. Contents of the Project

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2-1 Basic Concept of the Project

Most of the Kharakhorum ruins, the capital of the Mongolian Empire, have perished, only a few traces of the ruins can be found on the earth's surface. An archeological survey designed to help recover the ruins buried in the earth has been carried out with the cooperation of Japan and many other foreign countries. At present, part of the ruins unearthed with the cooperation of the University of Bonn are on itinerary exhibition in Germany and many other European countries. As the ruins were registered as a UNESCO World Cultural Heritage site in 2004, establishment of a base for the protection, research, and exhibition of the ruins has become an urgent task. However, to date, there has been no facility to conserve and store the relics from the ruins. Under such circumstances, some of the relics are inevitably kept under very poor conditions under the management of University of Bonn, such as being kept in a garage of a nearby hotel. It is anticipated that such conditions may lead the relics to futher deteriorate and be damaged especially by the coldness of mid-winter.

This project aims to improve the aforesaid conditions by establishing a museum in order to preserve and restore the relics uncovered in and around the ruins as Mongolia's cultural heritage. The preserved/restored relics will also be utilized as historical educational material as well as resources for tourist attraction by putting them on public display. To be constructed in concrete, the building consists of the construction of facilities including rooms for exhibition, preservation/restoration, research, training and the procurement of relevant equipment.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policies

2-2-1-1 Basic Policies

(1) Planned Building

Through the discussions with the relevant authorities, both sides had reached an agreement that the main functions of the building was limited to the functions of a museum and that the total floor area of the building was not to exceed 1,500m^2. It had also been confirmed that the museum would have the following main functions.

1) Display division (permanent/temporary exhibition rooms)
2) Artifact division
3) Foyer (including information for visitors about the surrounding cultural heritage)
4) Restoration/Research division
5) Training division
6) Library
7) Offices

(2) Site Selection

The project site is situated close to Erdene Zuu Monastery Temple in Kharkhorin sum in the Middle East of Mongolia, approximately 350 km west of Ulaanbaatar, the capital of the country. The project site that the Mongolian side has designated for this project was flat and had no obstacles such as existing buildings or ruins within it. There are two elevated high voltage power cables, which are running across the site. Although there is 20 meter setback requirement from the cables for construction of buildings under the current building regulations, it had been confirmed that the building area was large enough and adequate space is available for the construction of the planned building and the existing power cables are scheduled to be relocated according to the master plan of Kharkhorin City.

It had also been confirmed, through the regional urban planning maps, that the project site was situated outside of the district for preservation of ruins (established by the use of UNESCO's Japan Trust Fund). Furthermore, resulting from a trial excavation survey conducted by the science academy of Mongolia, a certificate was issued on October 6, 2005 certifying that the site was free of archaelogical relics to be protected.

At the time of the implementation review study, there was no access road to the building site though a plan to construct an access road was indicated in the master plan for Kharkhorin City. A request was made by the study team to the Ministry of Education, Culture and Science that the Ministry construct an access road located in front of the south side of the project site by the opening of the museum. The request had been confirmed in the minutes, it will be completed by May 2010.

As stated above, the project site is confirmed to be suitable for construction of the museum.

(3) Display Plan

Mongolia, where there are many historical ruins, is a treasure house of historical resources that shows humankind's footprint from the Old Stone Age to modern times. The Kharakhorum ruins and its surroundings, in particular the Orkhon River Valley, is a place rich in important historical heritage. The Kharakhorum Museum, as the representing museum of Mongolia, will play a major role in introducing the history, culture and spiritual climate of Mongolia to the Mongolian people and overseas visitors.

The objective of the exhibitions at the Kharakhorum Museum is to present a broad overview of Mongolian history and culture with a central focus on the era of Mongolian Empire, which has been the largest empire in human history, of which, Kharakhorum was the capital. It will thereby serve to deepen people's interest in, and understanding of the country. Furthermore, the museum is to act as an orientation facility, to propogate the importance of the restoration of Mongolian cultural heritage by locally restoring the relics and motivating the Mongolians and foreigners to visit other historical ruins and regional museums in the country.

2-2-1-2 Facility Design

As the detailed design is mostly complete with a general review necessary, the museum design can be summarized as follows:

(1) Basic policy

1) Special attention has been paid to those aspects of exterior design so as not to spoil the historical and cultural properties of the site or as a Cultural Heritage Site.

2) Special attention has been paid to thermal insulation and to obtain constant temperature to prevent the relics from weathering and deteriorating in the severe cold climate.

3) It has been designed to satisfy the functional needs of a museum by using the building area to the maximum as well as the exterior and roof top area.

(2) The Museum's Functions and Required Facilities

The planned museum consists of facilities for restoration, research and training activities in addition to the preservation and exhibition of buried cultural properties excavated mainly from the Kharakhorum ruins. It is also expected to act as the base for cultural activities in the Orkhon River Valley designated as a UNESCO World Cultural Heritage. The main facility component corresponded to the activities of the planned museum are as follows.

Table 2-1 Main Facility Component

Division	Room	Main functions and remarks
Display/artifact division	Orientation plaza	1. Give guidance to the entire permanent exhibition. 2. Exhibit the progress of excavation and restoration of Kharakhorum ruins.
	Permanent exhibition room	1. Exhibit the relics and other historical materials and models of the Mongolian Empire in chronological order. 2. Provide a lounge for rest with outside view in the Permanent exhibition room. 3. Install exhibition furniture fitted with various exhibition technologies.
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	General Storage	1. Store the relics, finds, exhibits and cultural properties. 2. Include space for sorting the stored items and install shelves spacially made for the purpose.
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	Treatment room	1. Used for treatment works (washing, arranging, etc.) of the relics and other items that are carried in and photographed for record. 2. Used for temperature adjustment of properties, which are carried in from outside in the cold winter season, before taking them into warmer rooms.
Entrance division	Entry	Prevent the wind blowing into the hall by constructing sidewalls.
	Foyer	1. Install reception counter, ticket counter and cloakroom and counter. 2. Provide a space for a museum shop that sells museum guidebooks and replicas. 3. Provide a space for rest and a canteen connected with an outdoor space.
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Training division	Multipurpose hall	1. Designed to give; guidance to the museum by audio-visuals, training, conference, planned exhibitions. 2. The capacity of the hall is 75 seats.

Division	Room	Main functions and remarks
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	Security office	The room for persons in charge of security and the coal-fired boiler operator is planned.
	Staff room	1. Used for preparing tea/coffee as well as resting and a locker room. 2. An outdoor resting space is also planned.
	Library	It is designed to be used for a library of common technical books and document.
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	Unpacking room	A platform and unpacking space designed to easily carry in excavated items is planned.
Service	Coal-fired boiler room	1. A boiler and a chimney for heating purposes is planned. 2. A bin for coal and stockyard of ashes are planned close to a coal-fired boiler room and for easy access of automobiles.
	Mach/Elec. rooms	Machine room for Airconditioning, substation, reservoir room, pump room are planned.
Exterior structure	Rooftop terrace	Provide views of cultural heritage sites in the surrounding area.
	Outdoor exhibition area	Outdoor exhibition area is planned along the axis towards the Kharakhorum ruins from the permanent exhibition room.
	Others	Staff parking, visitors parking, a porte-cochere and pedestrian paths are planned according to needs.

(3) Determination of Sizes of Facilities

Appropriateness of scale of each facility has been determined by taking into consideration the activities of the planned museum, visitor circulation paths in the exhibition rooms and equipment/furniture arrangement. The real size of each room and area has also been determined by taking into consideration consistency with the exhibition plan, circulation paths of large numbers of visitors, areas of each room, and widths of passages and entrances needed.

(4) Natural Conditions

In Kharkhorin sum, where the project site is situated, the average annual temperature is approximately 0 ℃ and falls to –30℃ in the winter season; heating of the museum is needed for 8 months a year. For this reason, top priority has been given to thermal insulation and air tightness in designing the building since natural ventilation is likely to have negative effects on indoor environment, e.g. heat loss by letting in the cold fresh-air. In practice, the walls and roofs will be externally insulated, the windows will be double glazed and their area reduced to minimum requirements for efficient thermal insulation.

Furthermore, working rooms have been placed on the sunlit side of the building for better heating effect. Each entrance of the building will have an entry room for reduction of fresh-air intake. Exterior finishing materials that are highly resistant to freezing, drying, sunlight and dust storms have been selected to cope with the harsh environment of the region.

(5) Construction and Building Permit Application Procedures

In Mongolia there are well-organized laws, regulations and procedures pertaining to construction and building permit application. The building construction plan will therefore be drawn up in strict compliance

with the relevant local laws and regulations so that the building permit application procedures may be completed smoothly. These procedures are divided into three stages.

① The prefecture government's land use permit and approval for technical conditions to be obtained by the Building Permit Authorities of the prefecture government.

② After ①, detail design must be examined by the Construction Agency in Ulaanbaatar.

③ Relevant permits according to local laws and regulations to be obtained before starting the construction work.

The prefecture government's land use permit and approval for technical conditions was obtained by the Construction Bureau of Uvurkhangai and the city government of Kharakhorin sum on 16th February 2006.

(6) Local Construction Situation

The construction methods in Mongolia are greatly influenced by those of the former Soviet Union where parts of the corresponding Russian industrial standards are applied mutatis mutandis although Mongolia has its own industrial standards applicable to building materials. Main building materials are imported from China, Russia and other East European countries. In implementing this project, according to the above construction situation, the common methods of construction in Mongolia will be adopted and the materials, which are easily obtained in the local market and in accordance with the Mongolian standards, will be used.

(7) Use of Local Contractors' Services

In Mongolia, many buildings of official bodies and private businesses have been constructed by using local construction consultants and contractors. Furthermore, they been used for many projects funded by Japan and other foreign countries. It is therefore and has been, a precondition to use the local consultants and contractors where needed as it is considered easy and effective for implemention of the project.

(8) Facility Grades

No building has originally been designed as a museum in Mongolia to date. Therefore the priority of grading the planned facilities will be given to durability, ease of maintenance and management for the museum by referring the grades of common public cultural buildings of Mongolia. For example, building materials, which are highly durable and easily obtainable in the country, will be used. High priority is given to easy maintenance and management, e.g. no windows and lighting fixtures to be placed at high places for ease of their cleaning and replacement.

(9) Facility Operation, Maintenance and Management Capability

The facility maintenance of the museum will be managed by its own staff with the support of the Bureau of Culture and Art. However there is no plan to employ full-time engineers to take charge of facility maintenance/management except a coal-fired boiler caretaker. For this reason, those items of equipment that require advanced maintenance/management techniques and which are not common in Mongolia have not been selected for this project. In selecting equipment that requires daily operation and maintenance, priority

has been given to 1) low operation and maintenance cost so that it would not put much burden on operation of the museum and 2) to availability of necessary consumables and spare parts.

(10) Determination of the Construction Period

There are two seasons in Kharkhorin sum, a long winter, which is from October to the middle of May, and a short summer, which lasts about three months. As the average temperature falls below 0^{o} C during the winter, special consideration needs to be given against frost in carrying out exterior work and structural work such as painting and brick lying, which necessitate the use of water. Furthermore, it should be noted that it is impossible to carry out earthwork until April, when the frozen ground begins to thaw.

Most orders for building materials are customarily placed in early spring and therefore supply cannot usually meet with demand. Therefore, it is essential to complete the bidding and contracting procedures as early as possible during the wintertime so that sufficient time for ordering building materials can be secured.

A sufficient drying/aging period after concreting needs to be secured for protection of the relics and artifacts against moisture and ammonia gas that are emitted from concrete before starting exhibition and storage of them in the facilities.

The simple alkali examination method*, which makes it possible to determine the condition of concrete on construction sites, will be used to determine the drying/aging period.

* In this method, a piece of test paper similar to litmas paper is used to read the pH values ranging from 4 to 10. Also the discoloration index for linseed oil-immersed paper is calculated. (If the index stands at levels lower than 30, it means a safe atmosphere.) This is a simple alkali examination method used for determination of the condition of concrete.

2-2-1-3 Equipment Design Plan

(1) Selection of Equipment

This museum has been designed as a historical museum of which functions and activities range from collection, restoration and preservative treatment, research and study, storage of the relics, and information management to exhibitions. However, it was decided that the main activity of the museum is to be the exhibition of the relics with specialized level restoration and preservative treatment of the relics of Kharakhorum to be carried out at the Science Academy of Mongolia. Therefore, only primary level restoration will be carried out in the museum.

The equipment to be procured for this project will be selected in line with the activities of the project and in accordance with the criteria set especially for the project.

(2) Providing Equipment Specifications

The equipment to be procured for this project includes equipment of audio-visual, preservation, storage, restoration and environmental measurement. Remarks on providing equipment specifications are shown in the following table

Table 2-2 Remarks on Providing Equipment Specifications

Equipment	Remarks
Audio-visual equipment for exhibition and seminar	As Audio-visual equipment is basically fast-evolving equipment, the items to be procured for this project will be the latest and prevalent in Mongolia.
Equipment for storage of the relics	The equipment will be procured from China because of unavailability of locally made items. The specifications shall be made with due care in order to ensure quality of the items especially in terms of material and finish.
Equipment for restoration and preservation of the relics and equipment for environmental measurement.	Easy-use, easy-care and commonly used models has been specified for selecting the equipment so that operation and maintenance will be easy.

(3) Quantity of Equipment

The necessary quantity of equipment has been determined by examining the activity of the museum and the purpose of their use.

(4) Maintenance Service by Local Distributors

In the case of equipment that requires regular supply of consumables and spare parts, ones that are supplied by local distributers delegated by the manufacturers has been selected.

(5) Equipment Operation and Maintenance

In the case of equipment that requires instructions and/or training, the suppliers will practice instruction and training of the equipment at the time of installation. Relevant manuals and a list of local distributors will be supplied.

1) Operating instruction (Explanation of features and function of equipment, procedure of operation, points that require special attention)

2) Maintenance instruction（Explanation of daily maintenance and service.）

(6) Procurement Policy

A market survey was conducted during the basic design study in Mongolia on the assumption that in principle, equipment for this project will be locally procured.

The following table shows the current local market conditions and the procurement policy.

Table 2-3 Local Market Conditions and Procurement Policy

Equipment	Local market conditions	Procurement policy
Audio-visual (A/V) equipment	Japanese-made A/V equipment such as personal computers, DVD players, projectors are available in the local market and market prices of those items are about 20% to 30% higher than those of other origins. There is no problem for maintenance of A/V equipment sold in the local market. Most of the items are imported from China and Singapore.	Japanese-made products or those manufactured in OECD member countries will be procured.
Equipment for storage and exhibition of the relics	Wood for wooden craft is currently supplied from Russia, since deforestation was banned in Mongolia in 2004. Due to this, wood prices rose approximately 50% from 2004 to 2005. This uptrend in wood prices is expected to continue and to hinder procurement of Mongolian product for this project. Further, the locally available wood is pine only and is not suitable for storing the relics because it contains much resin. The Ministry of Education, Culture and Science stated that steel shelves are more suitable for storing the relics.	To be procured from a third county (China) since steel made cannot be procured in Mongolia.
Equipment for restoration/preservation of the relics and equipment for environmental measurement.	These items of equipment are specialty equipment for restoration of buried cultural properties and are not available in the market of the Mongolia.	To be procured from Japan on the condition that the manufacturers of equipment have distributors in Mongolia.

(7) Procurement Schedule

Because all items of the equipment for this project are to be simply placed in the building after the completion of construction work, procurement of the equipment has been scheduled so as to have the delivery of the equipment coincide with the completion of the construction work.

2-2-2 Basic Plans

2-2-2-1 Construction Plan

(1) Facility plan

1) Layout Plan

The project site stretches out long and narrow from east to west. As a whole, the site is an irregular shape and is adjacent to an irrigation canal on its northern side. It is basically flat with a gradual slope in a northeasterly direction. The road running in front of Erdene Zuu Monastery Temple would be the road that the access to the project site is to be connected to since it is expected that most of the visitors to the museum will use this road. Therefore, the planned building has been sited as close as possible to this road so that visitors to Erdene Zuu Monastery Temple can see the museum easily from this road. As the building is to be built on a field where there is no obstruction to the visitors' view, it has been designed with utmost emphasis on its external appearance from all directions. Special attention has been given to the relationship between the exterior view of the building and the landscapes of the Kharakhorum ruins and Erdene Zuu Monastery Temple. The coal shed and the like will be placed where it is hard to see from the direction of the ruins.

2) Access Plan

An access road to the planned building is to face the road to be built on the southern side. A lead-in road for vehicles, a carriage porch and parking lots for the museum's staff have been included in the project site. As most of the visitors are expected to use motor vehicles instead of public transportation, visitor parking has also been planned, however, as the open space within the project site can be used as parking in case of a parking space shortage, only minimal number of visitors parking will be provided.

(2) Architectural Plan

1) Basic Concept Regarding Floor Plan

Particular attention has been paid to the following points in preparing the floor plan.

① The administration rooms and the main entrance are placed on the southern side of the building in order to utilize the natural sun light/heat during the daytime. The exhibition rooms, where it is desirable to maintain a constant temperature in the rooms, have been placed on the northern side.

② The storage areas, where a constant temperature in the rooms is most desirable, are surrounded by other rooms and do not face the external walls of the building, so that air conditioning costs of the storage areas will be minimized

③ The multipurpose hall for training, guidance to visitors and multimedia exhibitions have been placed at the center of the building.

④ A café and a museum shop, which will generate extra income to cover part of the operation cost of the museum, has been planned for visitors’ convenience.

⑤ The building is to be partially buried by soil in order to gain greater thermal insulation effect, reduction of depth of frozen soil and the cost of external wall finishes.

⑥ The total area of the external walls has been minimized for reduction of heat loss and construction cost.

⑦ Rooms that share the same functions have been integrated into one room and a part of a room will be used as a passage way to mimimize area that is used only as passage ways in order to improve effective area rates and utilization rates of the facilities.

⑧ The buildings have been designed as barrier-free, e.g. no floor gaps in the visitors' area.

2) Floor area of each department

Floor area of each department of the museum has been determined based on the layout of furniture and equipment in each room after taking personnel allocation and contents of services into consideration. Also, rooms that share same functions are integrated to enhance utilization rate of the facilities.

The following table shows rooms needed and the floor area of each room based on the results of the examination of facility planning.

Table 2-4 Planned Floor Area (by division)

Division	Room	Planned floor area (㎡)	Scale, Grounds for layout planning, Remarks
Display/Artifact division	Orientation plaza	59.65	Overall guidance and exhibition of the scenes of excavating of the Kharakhorum ruins
	Permanent exhibition room	282.17	Exhibition of the relics in chronological order, from the ancient to the Mongol Empire era. The layout and area has been determined according to the exhibition plan.
	Temporary exhibition room	104.75	This exhibition room is to provide a space for temporary exhibitions that are updated annually. Showcases are to be arranged in the same way as in multipurpose galleries.
	Storage	11.53	To store display equipment, display panels, etc.
	General Storage	76.57	To store finds, exhibits and cultural properties.
	Secure Storage	40.60	To store valuable finds as a warehouse where security and constant temperature are maintained.
	Treatment room	16.74	To separate the warehouses and the exhibition rooms from the unpacking facility located nearby.
	Storage	9.57	To store equipment for use in the repositories and carriers.
	Preparation room	14.57	Space for controlling the temperatures of finds and cleaning finds
Entrance division	Entry	9.31	Umbrella stands are provided.
	Foyer	74.48	Including reception counter, ticket counter and cloakroom
	Museum shop	16.60	Space for selling guidebooks and replicas
	Café Lounge	43.11	It includes an indoor rest area for visitors and a tearoom (its operation is to be outsourced). The space is to be located adjacent to the outdoor rest area (approximately 15 m2).
	Anteroom	17.11	It connects the multipurpose hall and the exhibition rooms
	Gallery	13.92	To give guidance on Orkhon River Valley Gorge, a Cultural Heritage Site.
	Observation room	9.07	Room that allows a view of Erdene Zuu Monastery Temple and the Kharakhorum ruins
	Toilet	41.69	For men: WC's;2, urinals;3 and washbowl;2 for women: WC's;2 and washbowls; 2 For disabled persons:WC's;1

Division	Room	Planned floor area (m^2)	Scale, Grounds for layout planning, Remarks
Training division	Multipurpose hall	84.94	75 movable chairs (2 classes plus lecturer). It has been provided with a stage. Its layout is to be consistent with its functions as a multipurpose facility to be used for training, multimedia exhibitions and many other events.
Administration division	Administration office	49.04	4 persons x $9m^2$ for staff members and approximately 14 m^2 for passages and storage spaces
	Director's office	14.80	Desk plus space for preliminary discussions
	Chief clerk's office	14.80	Desk plus space for preliminary discussions
	Staff room	18.13	To serve also as a serving room, locker room, workers' anteroom or lounge
	Meeting room	12.76	To be used for joint meetings with the staff of the research/clerical divisions (12 seats at maximum)
	Library	6.06	Space to store specialty books for common use
	Warehouse	3.28	To store office equipment and multipurpose hall equipment
	Security office	12.3	To serve also as the guards' office and the coal-fired boiler manager's room (during the wintertime)
	Toilet	7.56	1 WC and 1 washbowl each for men and women
	Passage	32.0	Spaces for entrances for the use of the staff
Research/ restoration division	Research/restoration room	50.73	Space for conducting research and restoration Worktable and shelves to store finds are to be installed.
	Research/restoration staff room	17.27	2 staff members x 9 m^2. Shelves to store finds are to be installed.
	Unpacking room	34.62	To be for usage of transportation of finds and cultural properties
Service	Water tank pump room	104.39	Heating equipment for preventing water tank from being frozen is to be installed.
	Electric room		Incoming panel and AVR are to be installed.
	Mechanical room		Intake fan is to be installed.
	Coal-fired boiler room		Boiler for heating purposes is to be installed.
Exterior	Rooftop terrace	-	Provide views of cultural heritage sites in the surrounding area
	Pedestrian pathway	-	Slope to the roof with an angle of less than 1/20 for wheelchair users
	Outdoor exhibition area	-	Due consideration has been given to its relationship with temporary exhibitions and landscapes of the ruins.
	Unloading area	-	Areas for carrying in the relics and coals have been separated.
	Parking lot	-	Parking lot for the staff and visitors have been provided separately.
Total area (main rooms)		1,219.18	
Total floor area		1,472.13	

3) Sectional Planning

Prime importance has been placed on obtaining sufficient thermal insulation in sectional design. The roofs, the external walls and the perimeters of the foundations, in particular, will be insulated externally so that heat bridging may not take place. The height of the building has been designed to obtain sufficient ceiling height to create a comfortable indoor environment, and aspects of heating efficiency, being economy and easy maintenance/management has been taken into account. Except for the entrance area, the outside of the buildings will be filled with soil up to 3 meters of height in order to obtain greater thermal insulation effect.

The roofs will be flat concrete roofs that are common in the country so that the facility volume may be

minimized.

The approach to the rooftop terrace will be a gentle slope for easy use by wheelchair users.

(3) Structural Plan

1) Foundation Plan

The result of a soil investigation showed that the project site has sandy soil and is almost free from the adverse effects of ground freezing. Therefore, it was judged to be appropriate to lay a foundation 2.0 to 2.5 meters deep for the planned museum. With the exception of spaces for the entrances, all around the building soil will be placed to provide sufficient thermal insulation to the external walls. This will also make the actual distance between the designed soil surface level and the base of the foundation level more than 5 meters except around the entrances.

2) Superstructure Plan

In Mongolia, most of the public buildings are of RC rigid-frame structures. Both outer and inner walls are generally made of concrete block. Common construction methods in Mongolia have been adopted for this project to obtain greater workability and economical efficiency. Although PC (pre-cast) panels are commonly used as floor slabs for the purpose of shortening the construction period, in situ concrete slabs will be used for the project because PC slabs will be inadvisable in terms of economic efficiency, workability and shortening the construction period in the case of this project, which is single story with an irregular shape plan that makes it difficult and not worthwhile to use PC slabs.

3) Guideline of Structure Plan

The standards for earthquake resistant design in Mongolia are based on Russian standards, which were established in the former Soviet Union. Under the earthquake standards, the project site falls into the category of magnitude 9 on the MSK scale (200 to 400 gals, 5 to 6 on the scale specified by the Meteorological Agency of Japan). Structural design for the project has been in accordance with the earthquake standards. As it is possible to procure reinforcing bars that meet the Japanese Industrial standards (JIS) in the local market, those which meet JIS will be procured for the construction of the project.

The design values of the wind force and the snow load are as follows, which are in accordance with the relevant local standards.

Wind load： 0.35kg/㎡ (35.0kpa)

Snow load： 0.30kg/㎡ (31.0kpa)

(4) Electrical Facility Plan

The project site has a stable supply of electric power since it is situated in a region where electric power is supplied through the Central Electric Power Supply Network of Mongolia although the voltage fluctuation rate in and around the project site is expected to be approximately 10%. Thus, installation of an automatic

voltage regulator in the building is planned for prevention of damage to lighting fixtures and other similar appliances by the fluctuation. There will be no emergency electric supply unit for the project, as there is hardly any power cut in the area according to the electric power company.

1) Power Receiving Facility

An underground service cable and hand holes are to be installed between the connection point outside of the project site and the electric room as low voltage (380 V/220 V) electric power is to be supplied to the project site. Cable installing work up to the power switchboard in the electric room is to be carried out by the Mongolian side.

2) Telephone Line

Underground conduits, hand holes are to be installed between the connection point and the Electric room. Installation of cables up to the Main Distribution Frame (MDF) is to be carried out by the Mongolian side.

3) Power Supply Facility

An incoming panel, an AVR and a low voltage power switchboard are to be installed in the electric room.

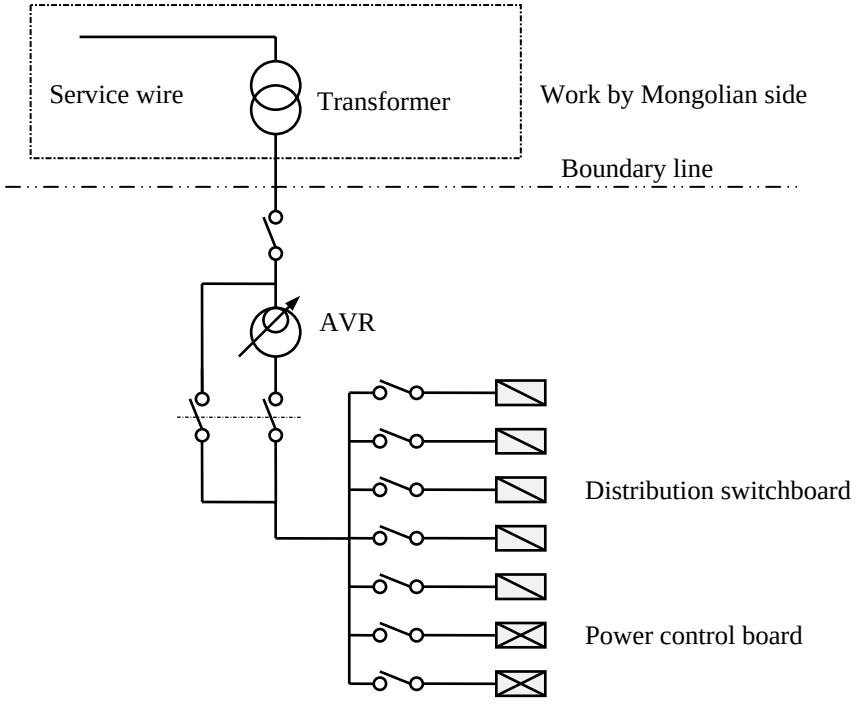


Fig. 2-1 Main Power Supply System

4) Main Power Supply Facility

Distribution switchboards, power control boards and main cables are to be installed in all the required places. In principle, cable trays and cables are to be installed in ceilings.

5) Lighting and Receptacle Facilities

The lights will be mainly fluorescent lamps. Spotlights will be installed in the exhibition rooms on an as required basis. The target illuminance for each of the main rooms is as shown in Table 2-5.

Table 2-5 Target Illuminance for Each of the Main Rooms

Main room	Target illuminance (lux)
Administration office/chief clerk's office/curator's office/meeting room	400
Exhibition room/multipurpose room	300
Lounge/gallery/observation room	150
Electric room/air conditioning machine room	300
Passage/toilet/warehouse	150

Wall-mount type receptacles, in principle, will be installed in places as needed.

6) Telephone Facilities

An extension network system is to be established with a MDF and PBX being installed in the administration office of the facilities. Multifunctional telephones are to be installed in all the offices and standard telephones are to be installed in most of the other rooms. Only telephone outlets are to be installed in the machine room and other incidental rooms.

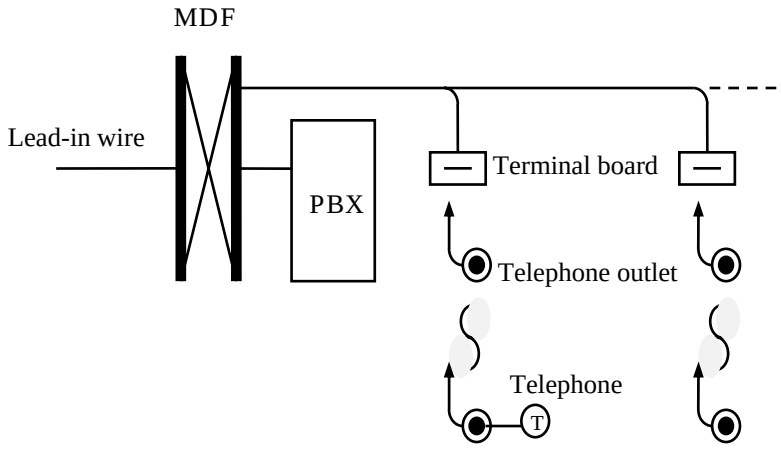


Fig. 2-2 Telephone System

7) Public Address Facilities

The planned public address system consists of an amplifier to be installed in the administration room and a remote microphone to be installed at the reception counter for providing public address to the whole museum.

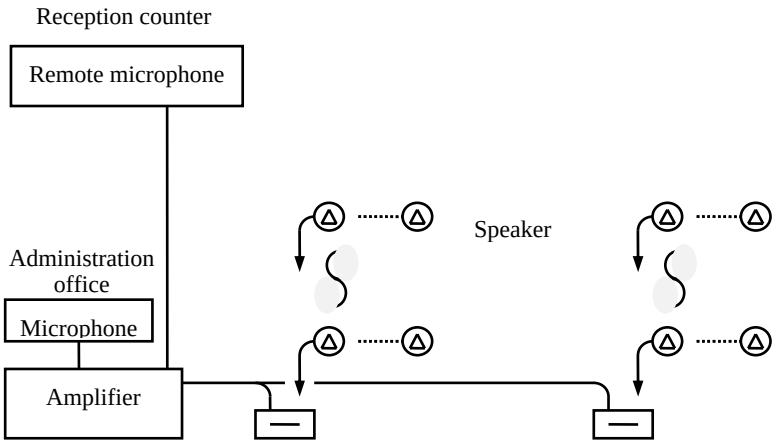


Fig. 2-3 Public Address System

8) Automatic Fire Alarm System

A receiver is to be installed in the guardroom, and sensors in all the required places, for early detection of fires and for early evacuation.

(5) Air Conditioning Facilities

1) Heating Facilities

A regional heating system, in which heated water produced in the coal-burning power plants is supplied to each building, is common in the urban area of the country's major cities. However, coal-fired boilers are commonly used as the main heat source for buildings larger than middle size outside the area covered by the regional heating system. A coal-fired boiler and hot water radiator system will be used for the project because the project site is out of the regional heating system area, it is a commonly used and reliable system because of ease of operation and management and a stable supply of fuel.

In this heating system however, it is difficult to control heat distribution in each of the rooms. As it is likely that temperature near the ceiling becomes higher than that of near the floor, controllable ventilation for exhausting warm air to outside will be planned. As the project site is situated in the coldest region in the country, a boiler caretaker room will be provided for continuously operating the boiler all day in order to prevent freezing of pipes in winter. In addition, the boiler must be a low-pollution boiler that meets the Environmental Standards for Smoke from the Boiler" established by the Ministry of Nature and Environment.

In the case of a heat source to be provided by a regional heating system in the future, it is possible to incorporate the change by simply connecting a hotwater inlet pipe from the regional heating system to the hot water circulation pump of the existing heating system. The boiler room can be converted to a store in that case.

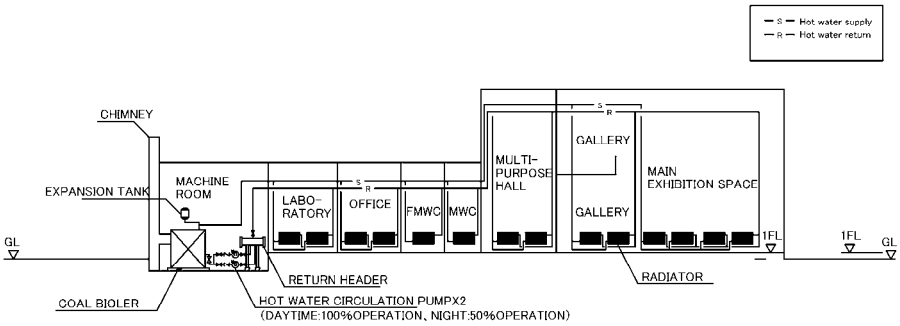


Fig. 2-4 Heating System

2) Cooling Facilities

Cooling systems are not installed in museums in Mongolia. There is no necessity for installation of cooling systems in public buildings in general, except for few exceptional cases.

However, the design will incorporate ease of natural ventilation by taking the balance with the effects of thermal insulation into consideration because the temperature occasionally rises close to 30^{o} C for a short while during the summer due to the continental climate.

2) Ventilating Facilities

A mechanical ventilation system is to be installed in order to control/maintain the indoor environment as the building is designed to be airtight and all the windows are not openable during the winter. In addition, it is a requirement of the national building standards that all public buildings be provided with mechanical ventilation. A heat exchange air intake system, in which the cold fresh air will be warmed up by hot water and distributed to each room through ventilation ducts, will be installed in the building. The return air is to be mechanically exhausted from the toilets and passages.

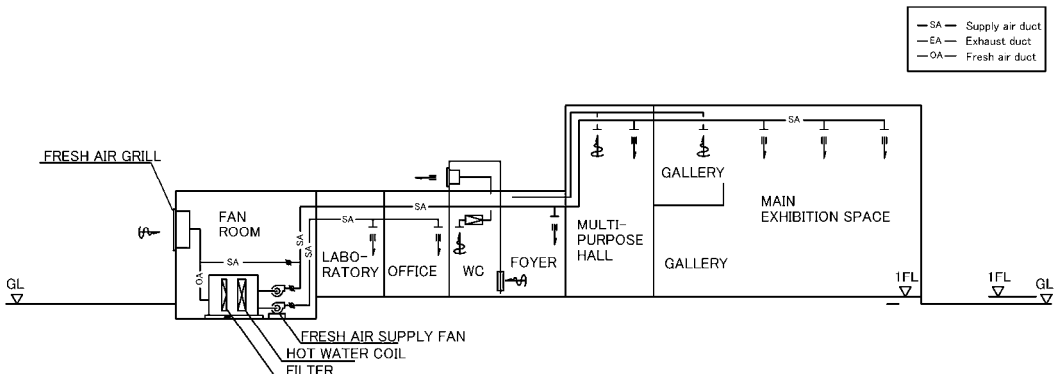


Fig. 2-5 Ventilation System

(6) Plumbing Facilities

1) Drainage Facilities

It is required to have more than 120 meters between the well and the permeation tank of the sewage system where there is no sewer main and the waste is disposed to the soil according to the Mongolian sanitation standards. It is not possible to plan permeation tanks for the disposal of this project because there is an exisiting well in the nearby tourist camp and some wells are expected to be made for houses around the site in the future. Therefore, as an alternative, a sesspool system that the waste is stored in the tank first and taken away by a vacuum suction truck is to be constructed.

Particular care must be given to the depth of the tank which needs to be insulated and kept under the freezing level in winter, specifications for pipes, manholes and covers, etc. The capacity of septic tanks has been designed taking into account assumptions that approximately 25,000 tourists will visit the museum in 4 months during the summer and there are no other public lavatories near the project site.

2) Water Supply Facilities

Water will be supplied to the water reservoir tank by water supply trucks and to each part of the museum with a pressure pump, as there is no water main near the project site. The water supply system by elevated water tank has not been planned due to the difficulty of insulation, obtaining sufficient water pressure and the costliness of construction work.

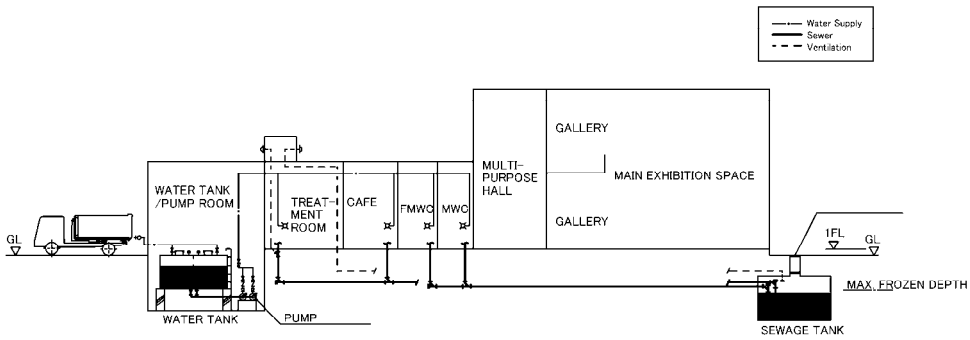


Fig. 2-6 Water Supply and Drainage System

3) Hot Water Supply Facilities

A commonly used hot water heater (tank type) will be installed.

4) Firefighting Facilities

The following fire control equipment will be installed in accordance with the relevant local standards.

- Indoor fire hydrant
- Movable fire extinguisher

(7) Materials/Construction Method Plan

Building materials and a construction method has been selected in consideration of the local climate, required performance, construction period, construction cost, quantity, maintenance and management, etc.

1) Exterior Finishing Materials

The following table shows the main exterior finishing materials selected and the rationale for their selection.

Table 2-6 Main Exterior Finishing List

Component	Finishing materials	Remarks
Roof	Protective block on asphalt waterproofing	The best performance of waterproofing is obtained among the locally available waterproofing materials.
Outer wall	Fair faced brick	It is used widely in the domestic market and highly durable. It is maintenance-free. It does not require periodic recoating or repair of cracks unlike mortar coating. It will contribute to reduction in maintenance/ management cost.
Furniture	PVC coated sash, double-glazed glass	PVC coated sash is better in terms of insulation performance than aluminum sash and copper sash. Double-glazed glass excels in insulation performance. Both products are used widely in the domestic market.

2) Interior Finishing Materials

The following table shows the main interior finishing materials selected and the rationale for their selection.

Table 2-7 Main Interior Finishing List

Room	Floor	Wall	Ceiling	Remarks
Exhibition room	Carpet tile (wooden flooring for some rooms)	Coated wall	Coated plaster board	Emphasis is put on humidity control function and ease of cleaning.
Multipurpose hall	Carpet tile	Coated porous plaster board	Metal open grid ceiling	Emphasis is put on acoustic effects and flexibility.
Foyer	Ceramic tile	Coating	Coated plaster board	Emphasis is put on ease of cleaning.
Office	Vinyl floor tile	Coating	Rock wool sound board	Emphasis is put on ease of maintenance and cleaning.
Toilet	Ceramic tile	Ceramic tile	Moisture resistant	Emphasis is put on water resistance and ease of cleaning

(8) Display Plan

1) Types of Exhibitions

- Permanent Exhibition

The permanent exhibition has been designed to provide an overview of the history of Kharakhorum, the capital of the Mongol Empire, where various cultures were in harmony with one another. The exhibits will be reviewed, updated and remodeled as appropriate in keeping with future developments in data collection and research activities so that the latest information may be provided to visitors.

- Temporary Exhibition

The temporary exhibition has been designed to introduce important relics at home and abroad to visitors for a given period of time with the aim of motivating them to revisit the museum. It is also designed to present the details of the historical and cultural characteristics of each of the regions in the country to visitors.

2) Components of the Permanent Exhibition

The permanent exhibition at the Kharakhorum Museum presents an overview of the history and culture of Kharakhorum in a manner that enables children and foreign visitors to understand the Kharakhorum ruins well. With this in mind the permanent exhibition consists of the following components.

A. Orientation Plaza

This is the introductory part of the permanent exhibition. It also serves as a place where visitors can take a rest and review the details of the ruins of Orkhon river valley they have seen before proceeding to the next stage of their tour of the ruins.

B. Display Exhibits in Chronological Order

The exhibits are displayed in chronological order, the exhibits being classified by period. The exhibits in each period classification are displayed in various forms. For example, the finds and events symbolic of the period and the natural environment in Kharakhorum are presented in life-size form or in the form of true-to-life audio-visual presentations. Through such arrangement visitors will be able to really understand the cultural characteristics of each period, how people lived in each period and even the spiritual world of ancient Mongolians, without reading recondite commentaries. Visitors who have limited time will be able to see the whole picture of the history and culture of Kharakhorum in a short time.

C. Outdoor Exhibition

The outdoor exhibition has been designed to prompt visitors to enter the museum by heightening their interest in the museum, lead them outdoors again, and then prompt them to visit other excavation sites. It is also designed to link the exterior and the interior of the museum by enhancing the sense of its spaciousness.

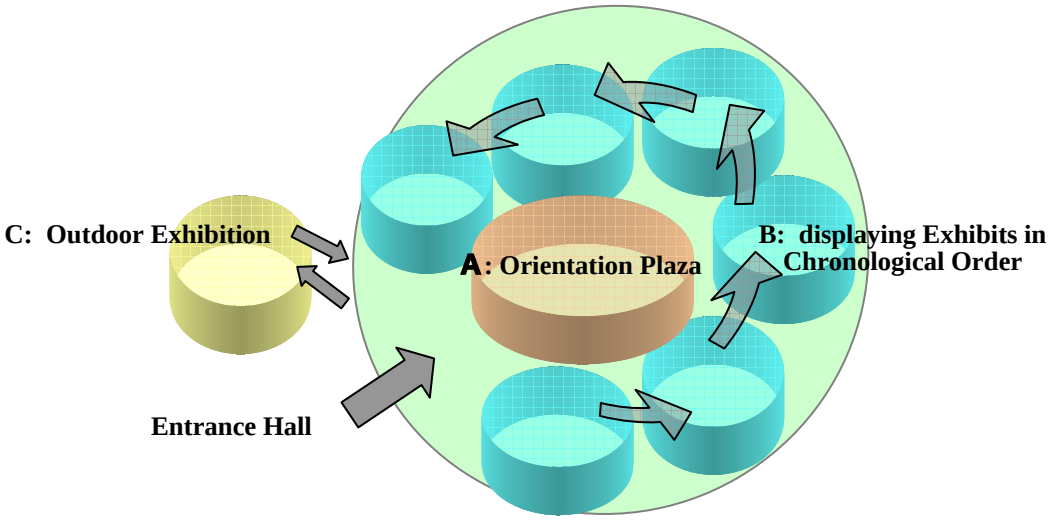


Fig. 2-7 Diagram of Zoning for Display

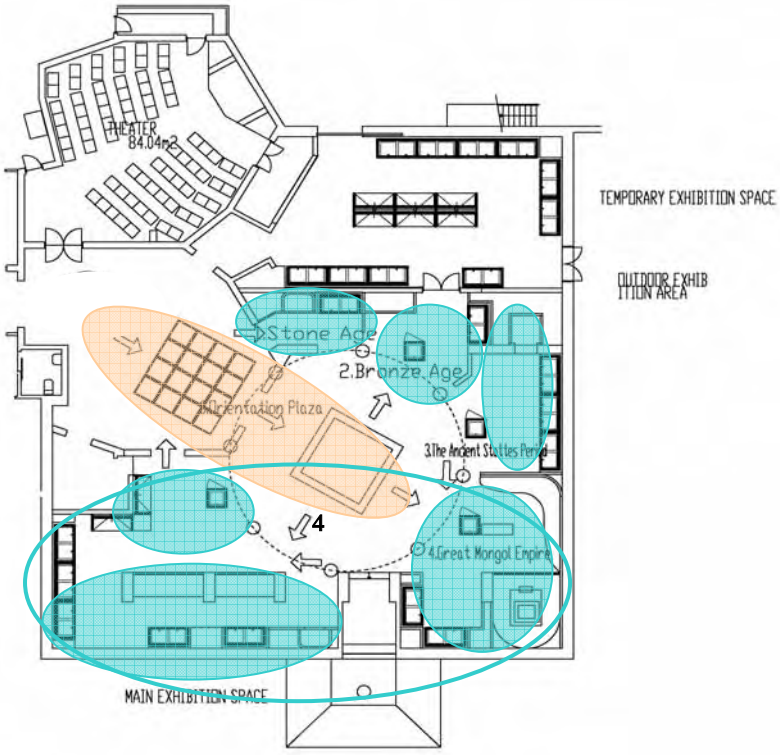


Fig. 2-8 Diagram of Display

2-2-2-2 Equipment Plan

(1) Criteria of equipment selection

1) To be consistent with main function of the planned museum
2) To be necessary for the operation of the planned museum
3) To be free from problems of operational/maintenance/management
4) To be suited to current technical levels

(2) Examination of the Requested Items of Equipment

Discussions on validity of the requested items of equipment were held with the representatives of the Mongolian side through the basic design study and outcome of the discussions was recorded as the requested items of equipment in the minutes of discussions. After the signing of the minutes, further discussions with the representatives of the Mongolian side were continued to confirm the details and the number of the requested items of equipment and to provide a draft of equipment list.

Items of equipment for excavation, analysis, preservative treatment and research were excluded from this project because these items of equipment are not for usage of activity and function of the planned museum. It was decided to include only the following items of equipment that were in conformity with the functions of this project.

1) Audio-visual equipment for explaining the ruins of Kharakhorum and articles of exhibition (DVD player, personal computer)
2) Audio-visual equipment for use in the multipurpose hall (LCD projector, DVD player, Personal computer, and etc.)
3) Equipment for primary repair (Hot air drier, Sand plaster, Magnifier fitted with luminaries, Balance and Restoration tool kit)
4) Equipment for storage/management (Storage shelf, Carrier and etc.)
5) Equipment for environmental measurement in the exhibition and storage areas (Illuminometer and Thermometer/hygrometer)

Equipment list is shown in Table 2-8

(3) Examination of the Main Items of Equipment

The rationale for selecting the main items of equipment was as follows.

1) Display System

The display system will give an introduction of the details of Kharakhorum ruins and the buried cultural properties in the possession of the museum to visitors on the display screen and contribute to reduction in the number of the staff members in charge of guide. Furthermore, it will be possible to access data and information on the buried cultural properties in the possession of the museum,

which in turn will make it possible to provide researchers on Kharakhorum ruins with relevant data and information.

The number of Display System is 2 sets and each set includes a Personal computer, a DVD/VCD player, a table and a couple of chairs. 4 persons can access the computer at the same time by 2 sets of Display System.

2) Equipment for Multipurpose Hall

The multipurpose hall has been designed for various purposes. It will be for orientation and explanation of Kharakhorum ruins and the buried cultural properties in the possession of the museum to schoolchildren who visit the museum as part of historical education on the Kharakhorum ruins before tours for information. It will also be used as a place for symposiums and seminars on the Kharakhorum ruins. Supposing that 70 schoolchildren (35 schoolchildren/a class and 2 classes visit together) and 5 teachers visit the museum, the hall's capacity is therefore 75 persons.

75 chairs with a writing board will be placed in the multipurpose hall.

Audio-visual equipment is a LCD projector, a Personal computer, a DVD/VCD player, an Amplifier for microphone, a Speaker set and 2 microphones.

3) Equipment for usage of primary repair

① Hot Air Drier

The hot air drier is for drying buried cultural properties after washing and removing extraneous matter from them. This equipment is necessary for pretreatment (drying) of restoration.

② Sand Blaster

A sand blaster is for removing extraneous matter to very small parts of buried cultural properties by means of ultrasonic vibration. This equipment is necessary for restoration.

③ Electronic Balance

This instrument is for weighing buried cultural properties. This equipment is necessary for restoration.

④ Lighting Fixture with Magnifier

This instrument is for observing buried cultural properties and fine works of restoration. This equipment is necessary for restoration.

⑤ Restoration tool kit

The Restoration tool kit is for restoring and measuring sizes of buried cultural properties.

⑥ Worktable

Worktables are for washing, restoring, measuring and keeping records of buried cultural properties. This equipment is necessary for works of restoration.

⑦ Shelf

Shelf Open Type is specified shelf with a depth of 90 cm for storing buried cultural properties and this size of shelf is used widely for storing cultural properties in Japan.

Shelf Casement Type is usually in the form of what is called “chest of drawers” in Japan. It is for storing precious cultural properties of small size.

⑧ Cabinet

Cabinet Type with a lock is for temporarily storing buried cultural properties in the process of restoration.

4) Equipment for Storage/Management

① Carrier

The carrier is for transferring buried cultural properties in the planned museum. This equipment is necessary for safe transportation of buried cultural properties.

② Storage Box

Most of the buried cultural properties from the Kharakhorum ruins are pieces of fraction of earthenware. It is necessary to affix a label with records of excavation, etc. to each of pieces and put them into storage boxes classified by place of excavation before storing them in the warehouse. This storage box is necessary for efficient storage of the buried cultural properties.

5) Equipment for Environmental Measurement

① Illuminometer

The illuminometer is for measuring the amount of light and UV in rooms and showcases .The illuminometer will be a portable one because there will be a need to use it for measuring the amount of light and UV in each showcases when needed.

② Thermometer/hygrometer

This instrument is necessary for measuring temperature and humidity to check environment in the exhibition rooms. Thermometer/hygrometer (Mounted type) is to be installed in the storage as well as in the Secure storage. Thermometer/hygrometers (Portable type) will be for measuring temperature and humidity inside of exhibition cases when needed.

The following table shows the specifications and usage of the main items of equipment to be planned for this project as a result of examination.

Table 2-8 Main Equipment List

Classification	Equipment	Specifications	Level	No. of units	Usage
Explaining exhibits/training	Personal computer	* Type of OS: Microsoft Windows XP Home Edition or more * Processor: Pentium Celeron versions or more *Memory: 512MB * Hard disk: 40GB or more	Intermediate	3	The component of display system will show visitors details of Kharakhorum ruins and the buried cultural properties in the possession of the museum on the display screen and contribute to reduction in the number of the staff members in charge of guide.
	DVD player	*DVD reproduction: DVD/Video,CD Player *Video characteristic: Compatible with NTSC	Intermediate	3	The component of display system will show visitors details of Kharakhorum ruins and the buried cultural properties in the possession of the museum on the display screen and contribute to reduction in the number of the staff members in charge of guide.
Restoration/storage	LCD Projector	* Brightness (ANSI Lumens) 2,000 Lumens *Zoom 1.6x *Screen size：40～200” * Light source: 130 W or more	Intermediate	1	Display system for orientations, seminars, workshop, etc in the multipurpose hall.
	Hot air drier	*Air pressure: Included with the range of 20-90hpa*Consumption of air: Included with the range of 50-80L/min. * Temperature range of air supplied: Included with the temperature range 20-600 ℃	Intermediate	1	The hot air drier is for drying of items after washing and removing extraneous matter from buried cultural properties
	Sand blaster	*Operating pressure: Included with the range of 0.3-8 hPa*Diameter of Polishing agent: Included with the range of 5 - 500 μm*Polishing agent: Glass beads and Alumina	Intermediate	1	The sand blaster is for removing extraneous matter to the very small parts of buried cultural properties by means of ultrasonic vibration.
	Balance	Weighing capacity：620 g* Minimum display:0.001g (1mg)	Intermediate	1	Instrument for weighing buried cultural properties
	Lighting fixture with a magnifier	Power consumption of fluorescent lamp：14 W *Arm length：40 x 40 cm * Dimensions：40 x 60 cm	Intermediate	2	Equipment for removing mud from buried cultural properties and restoring them
	Shelf Open Type	* Number of shelf boards: 4* Material of frame: coated steel pipe * Maximum load-carrying capacity: more than 30 kg *Dimensions：1800(W) ×900(D)× 1800(H)mm	Intermediate	16	Instrument for storing buried cultural properties
	Shelf Casement Type	Type: upper 4 decks: each fitted with hinged doors; lower 7 decks: each fitted with drawers *Material: wood	Intermediate	4	Instrument for storing buried cultural properties
Environmental measurement	Illuminometer	*Display: 3.5 digits range of illuminance displayed on LCD* Sampling: 2.5 times/sec	Intermediate	1	Equipment for measuring amount of light and UV of exhibition hall and each place of storage .
	Thermometer/ hygrometer (Portable)	Type: Portable：-50～70 ℃、Range of temperature 25～95 %、*Precision of humidity measured：±5%*Precision of temperature measured：±1℃	Intermediate	1	Equipment for measuring temperature and humidity in exhibition halls and storages.
	Thermometer/hygrometer (Mounted)	Type: Portable：-50～70 ℃、Range of temperature 25～95 %、*Precision of humidity measured：±5%*Precision of temperature measured：±1℃	Intermediate	2	Equipment for measuring temperature and humidity in exhibition halls and storages.

(4) Equipment List

The following table shows the equipment list with quantities, countries of origin, countries of procurement, and conditions of procurement (including the necessity of local distributors to provide replacement parts and maintenance services) according to evaluation and examination

Table 2-9 Equipment List with Origins and Quantities

Category	No.	Equipment	Number of units	Country of Procurement	Country of origin	Service of local distributor	
						Supply of Consumables and replacement parts	Maintenance service
Exhibi-tion/ Training	1	Personal computer	3	Mongolia	Japan		○
	2	DVD player	3	Mongolia	Japan		○
	3	LCD projector	1	Mongolia	Japan	○	○
	4	Amplifier for microphone	1	Mongolia	Japan		○
	5	Speaker	1	Mongolia	Japan		○
	6	Microphone	2	Mongolia	Japan		○
	7	Chair with a writing board	75	China	China		
Restora-tion/ Storage	8	Shelf (D=600)	6	Mongolia/China	Mongolia/China		
	9	Worktable	1	Mongolia/China	Mongolia/China		
	10	Chair	8	Mongolia/China	Mongolia/China		
	11	Hot air drier	1	Japan	Japan		○
	12	Sand plaster	1	Japan	Japan, USA, EU	○	○
	13	Balance	1	Japan	Japan		○
	14	Lighting fixture with a magnifier	2	Japan	Japan	○	○
	15	Restoration tool kit	1	Japan	Japan		○
	16	Steel Carrier	1	Mongolia/China	Mongolia/China		
	17	Plastic Carrier	2	Mongolia/China	Mongolia/China		
	18	Storage box	200	Mongolia/China	Mongolia/China		
	19	Worktable	3	Mongolia/China	Mongolia/China		
	20	Restoration Worktable	2	Mongolia/China	Mongolia/China		
	21	Working Chair	10	Mongolia/China	Mongolia/China		
	22	Shelf Open Type	16	Mongolia/China	Mongolia/China		
	23	Shelf Casement Type	4	Mongolia/China	Mongolia/China		
	24	Shelf (D=900)	3	Mongolia/China	Mongolia/China		
	25	Cabinet	6	Mongolia/China	Mongolia/China		
Environ-mental Measure-ment	26	Illuminometer	1	Japan	Japan	○	○
	27	Thermometer/hygrometer (Portable)	1	Japan	Japan	○	○
	28	Thermometer/hygrometer (Mounted)	2	Japan	Japan	○	○

The following table shows the evaluation result of all of the requested items.

Table 2-10 The evaluation result of all of the requested items

Criteria of selection	Overall rating
① Consistent with the main function of the museum ② Necessary for operation of the museum ③ No operational/maintenance/management problems ④ Suited to present technical level in Mongolia	Rank A： Judged to be eligible for the project Rank B：To be excluded from the project by judging that the priority of equipment is lower, although its necessity is recognized. Rank C：To be excluded from the project Deleted ：Not consistent with the main function of the museum or included in the construction work instead of the equipment work

Use	No.	Equipment	No. of units	①	②	③	④	Overall rating
Exhibition/ storage	1	Spotlight	15	Included in construction work				Deleted
	2	Lamp	24	Included in construction work				Deleted
	3	Light cover	15	Included in construction work				Deleted
	4	Light mounting rail	120	Included in construction work				Deleted
	5	Showcase	29	Included in construction work				Deleted
	6	Portable translator for guides	1	Use Display System in place of Portable transfer for guides.				Deleted
	7	Personal computer	6	Exclude with Personal computers for staff.				Deleted
	8	Personal computer for exhibition	3	○	○	○	○	A
	9	Copier	3	Born by Mongolian side.				Deleted
	10	Virtual display set	1	Included in construction work				Deleted
	11	Set of shelf decks	1	○	○	○	○	A
Training	12	Furniture for meeting room	1	Included in construction work				Deleted
	13	Furniture for library	1	○	○	○	○	A
	14	Furniture for lounge	1	Included in construction work				Deleted
	15	Safety system	1	Included in construction work				Deleted
Restoration	16	Hot air drier	—	○	○	○	○	A
	17	Vacuum immersion equipment	—	×	×	×	×	C
	18	Sand plaster	—	○	○	○	○	A
	19	Hume hood	—	×	×	×	×	C
	20	Pure water maker	—	×	×	×	×	B
	21	Ultrasonic washing equipment	—	×	×	×	×	C
	22	PEG immersion system	—	×	×	×	×	C
	23	Organic solvent immersion equipment	—	×	×	×	×	C
	24	Vacuum freeze drier	—	×	×	×	×	C
	25	Freezer	—	×	×	×	×	C
	26	Vacuum drier	—	×	×	×	×	C
	27	Water bath	—	×	×	×	×	C
	28	Hot plate	—	×	×	×	×	C
	29	Balance	—	○	○	○	○	A
	30	Cl^- ion measuring equipment	—	×	×	×	×	C
	31	Autoclave	—	×	×	×	×	C
	32	Ultrasonic scaler	—	×	×	×	×	C
	33	Binocular microscope	—	Changed to Lighting fixture with a magnifier				B
	34	Lighting fixture with a magnifier	—	○	○	○	○	A
	35	Pencil for use in restoration	—	×	×	×	×	C
	36	Refrigerator	—	×	×	×	×	C
	37	Temperature/humidity chamber	—	×	×	×	×	C
	38	Soft X-ray examination system	—	×	×	×	×	C
	39	Hard X-ray examination system	—	×	×	×	×	C
	40	Metallographic microscope	—	×	×	×	×	C
	41	Binocular microscope	—	×	×	×	×	C
	42	Biological microscope	—	×	×	×	×	C
	43	Grinder	—	×	×	×	×	C

Use	No.	Equipment	No. of units	①	②	③	④	Overall rating
Environ-mental measure-ment	44	Temperature control	—	×	×	×	×	C
	45	Microtome	—	×	×	×	×	C
	46	Thermometer/hygrometer	—	×	×	×	×	C
	47	Illuminometer	—	○	○	○	○	A
	48	Uviometer	—	○	○	○	○	A
	49	Chromatometer	—	×	×	×	×	C
	50	Ultraviolet lamp	—	×	×	×	×	C
	51	Camera	—	×	×	×	×	C
Training/ restoration	52	Scanning electron microscope	—	×	×	×	×	C
	53	Gas chromatograph	—	×	×	×	×	C
	54	X-ray diffractometeer	—	×	×	×	×	C
	55	Infrared fluorescence spectrometer	—	×	×	×	×	C
	56	Atomic fluorescence spectrometer	—	×	×	×	×	C
Training	57	Rotary vacuum evaporator	—	×	×	×	×	C
	58	Centrifuge	—	×	×	×	×	C
	59	Balance	—	×	×	×	×	C
Restoration /storage	60	Personal computer	5	Born by Mongolian side.				Deleted
	61	Color printer	2	Born by Mongolian side.				Deleted
	62	Monochrome printer	1	Born by Mongolian side.				Deleted
	63	Scanner	1	Born by Mongolian side.				Deleted
	64	Digital camera	2	Born by Mongolian side.				Deleted
	65	Computer desk/chair	10	Born by Mongolian side.				Deleted
	66	Camera	10	Born by Mongolian side.				Deleted
	67	Video camera	2	Born by Mongolian side.				Deleted
	68	TV set	1	×	×	○	○	C
	69	Video player	1	×	×	○	○	C
	70	Developing machine	1	×	×	○	○	C
	71	Worktable	3	×	×	○	○	C
	72	Shelf	5	×	×	○	○	C
	73	Slide scope	1	×	×	○	○	C
	74	GPS	8	×	×	×	×	C
	75	Reflactometer	1	×	×	○	○	C
	76	Generator	2	×	×	×	×	C
	77	Cabinet for storing finds	1	○	○	○	○	A

2-2-3 Basic Design Drawings

The draft drawings that have been prepared based on the results of the examination of the requested items of equipment are as follow.

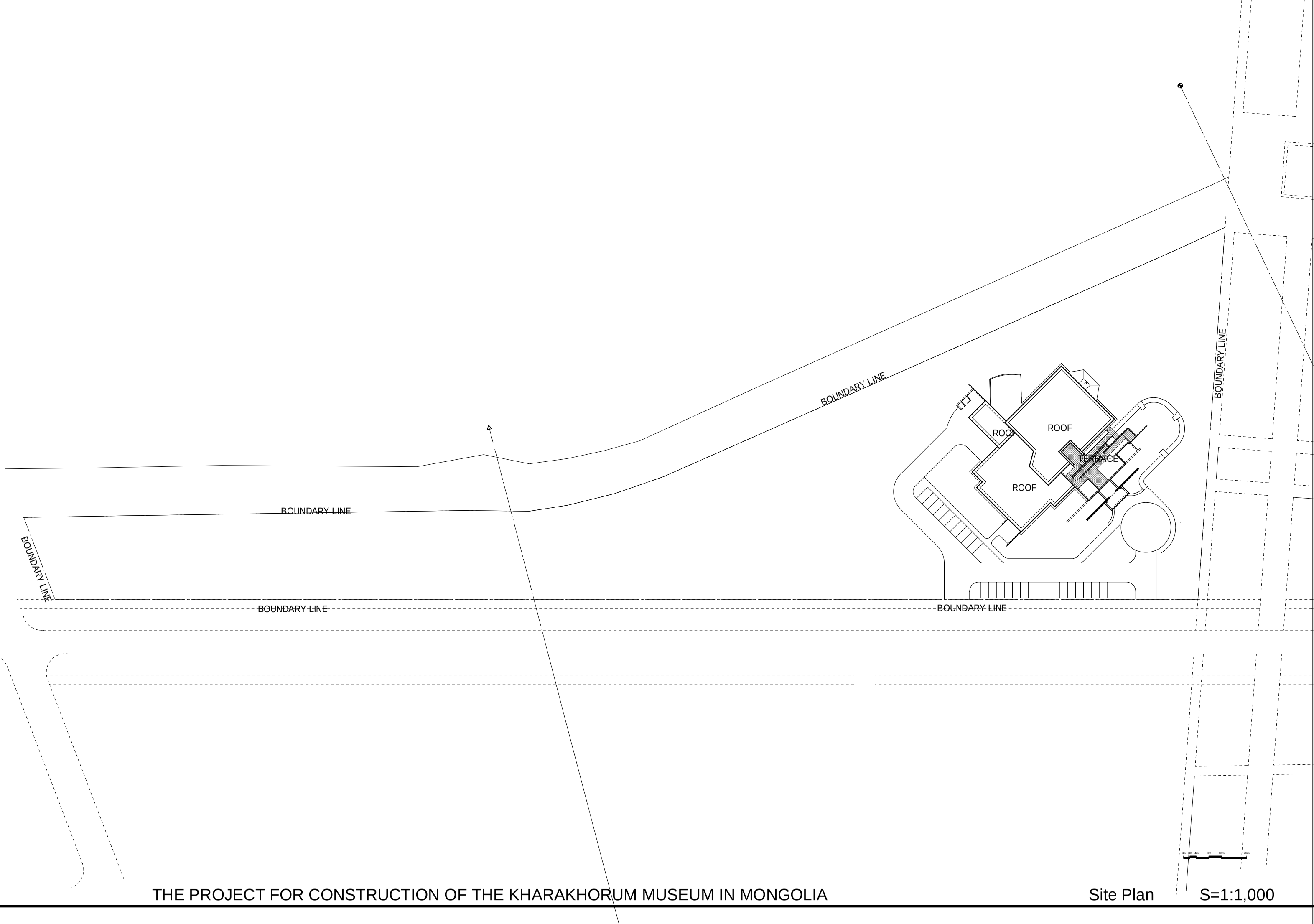
① Site plan

② Ground Floor plans

③ Roof plan

④ Elevations

⑤ Sections



THE PROJECT FOR CONSTRUCTION OF THE KHARAKHORUM MUSEUM IN MONGOLIA

Site Plan S=1:1,000

BOUNDARY LINE

ERDENE ZUU MONASTERY

SCULPTURE TERRACE

UP

MAIN EXHIBITION SPACE

ORIENTATION PLAZA

STORAGE

PS
DS

WC

WC

WC

115

ROOF GARDEN

UP

OUTDOOR CAFE

CAFE

OBSERVATORY

BOUNDARY LINE

PHONE

FOYER

ENTRY

VISITOR

ROOF OVER

GL+150

OUT EXHIBITION AREA

GL+300

TEMPORARY EXHIBITION SPACE

STORAGE

MULTI PURPOSE HALL

TICKETS/INFORMATION

MUSEUM SHOP

CLOAK ROOM

GL+150

COAL STORAGE

COAL BOILER

WATER TANK
IPUMPRIY

FAN ROOM

ELECTRICAL
ROOM

WATER TANK
IPUMPRIY

STORAGE

TRETMENT ROOM

DS

STORAGE

OFFICE
(ADMINISTRATION)

STORAGE

UNLOADING

DELIVER

PREP AREA

OFFICE
(CURATOR)

LIBRARY

UP

OFFICE/SECURITY

SECURE STORAGE

OFFICE
(GENERAL MANAGER)

WC

WC

RESERCH STAFF
OFFICE

LABORATORY

STAFF ROOM

MEETING ROOM

ENTRY

STAFF

OUT DOOR
AREA

VISITOR PARKING

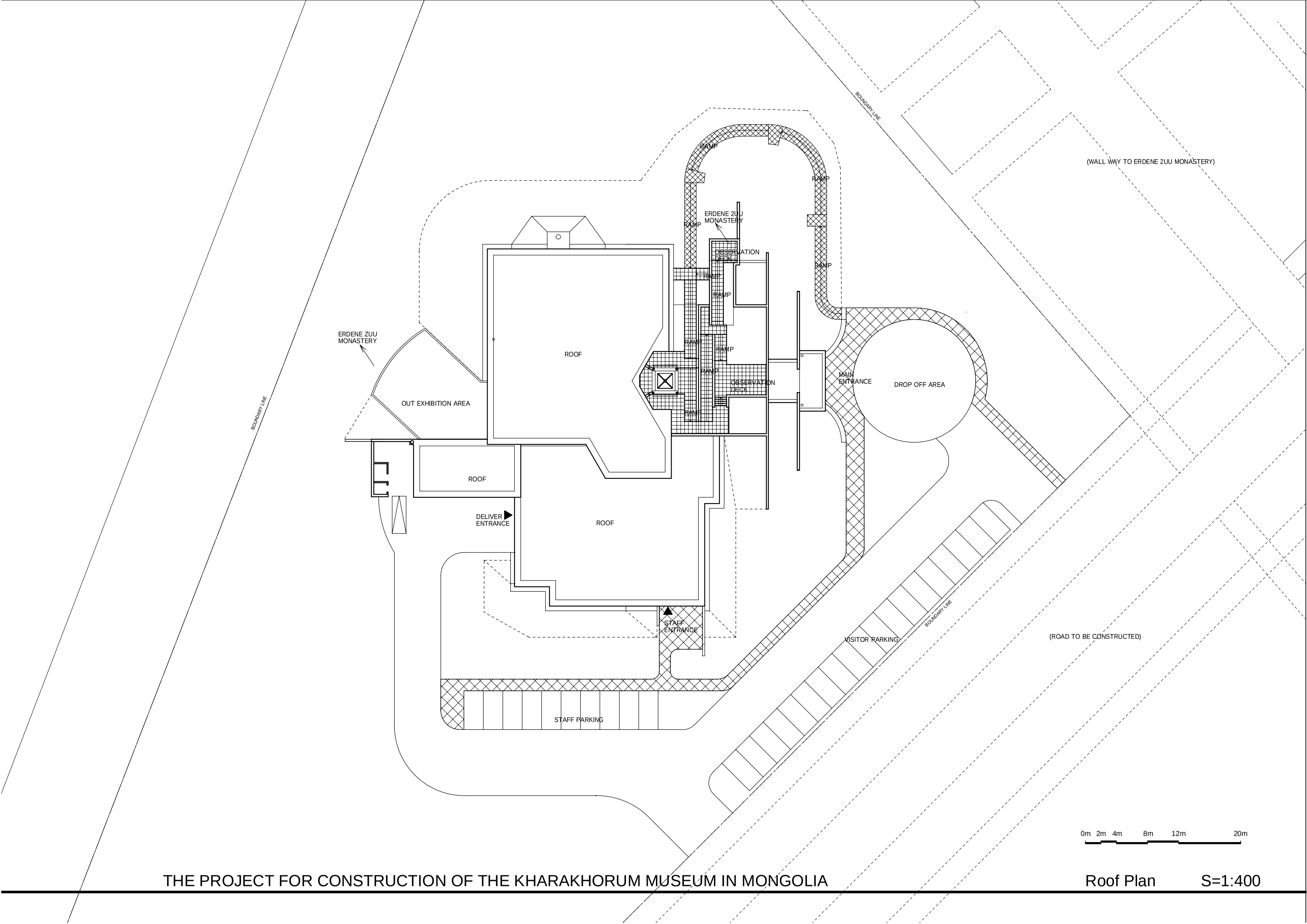
BOUNDARY LINE

ROAD

0m 2m 4m 8m 12m 20m

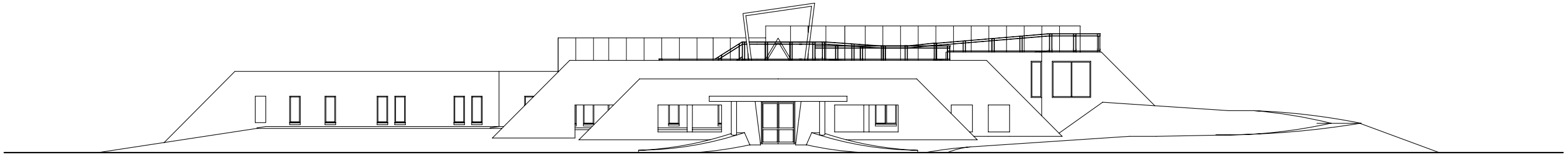
THE PROJECT FOR CONSTRUCTION OF THE KHARAKHORUM MUSEUM IN MONGOLIA

GF Plan S=1:250

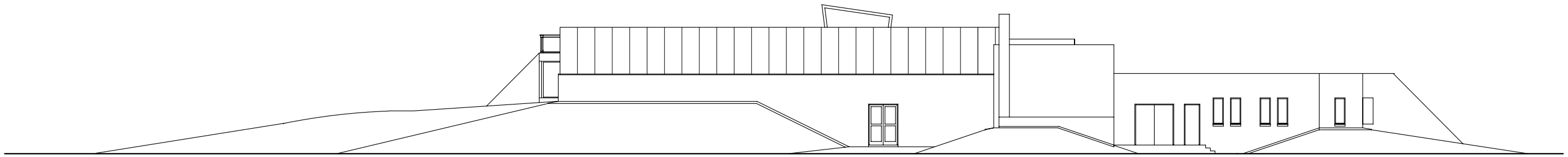


THE PROJECT FOR CONSTRUCTION OF THE KHARAKHORUM MUSEUM IN MONGOLIA

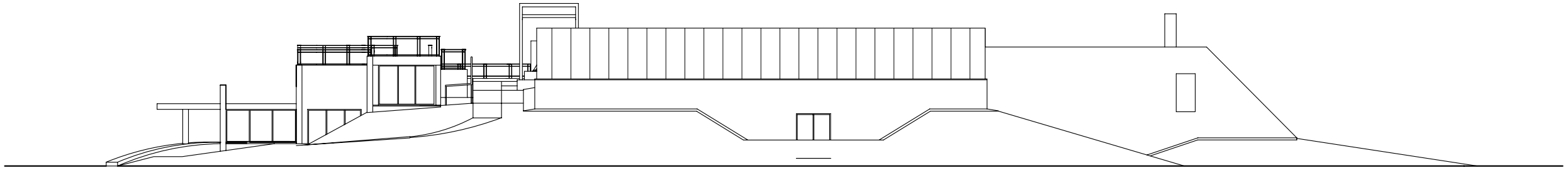
Roof Plan S=1:400



SOUTH ELEVATION



NORTH ELEVATION



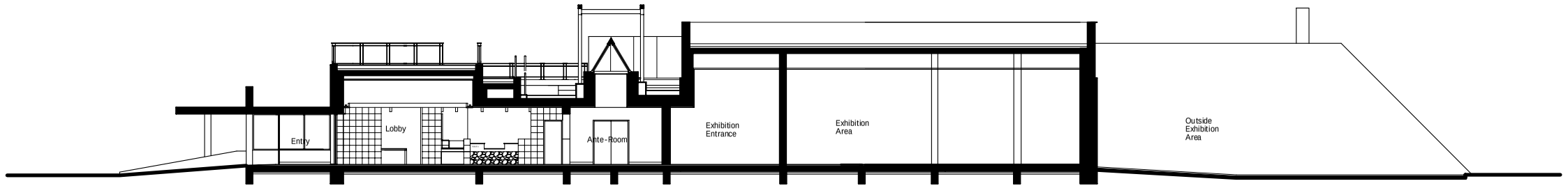
EAST ELEVATION

WEST ELEVATION

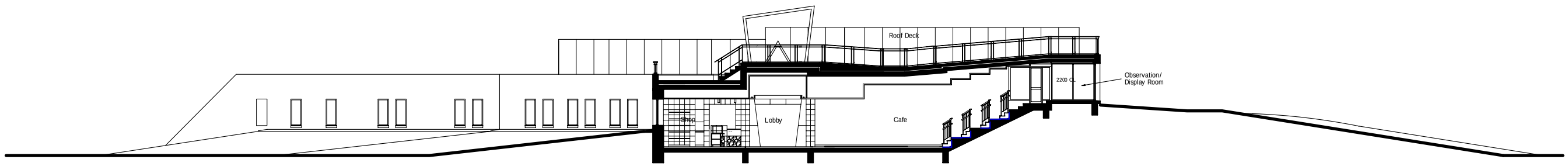
0m 2m 4m 8m 12m 20m

THE PROJECT FOR CONSTRUCTION OF THE KHARAKHORUM MUSEUM IN MONGOLIA

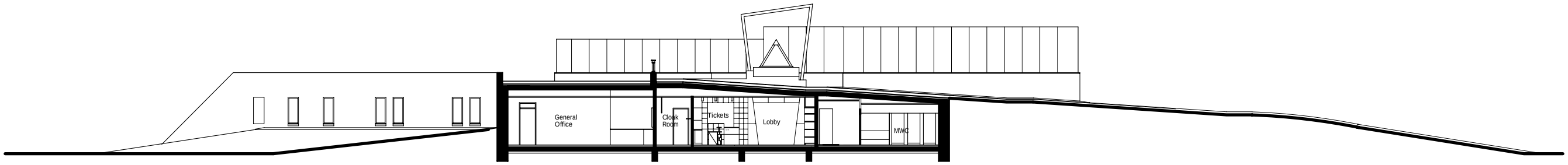
Elevation S=1:250



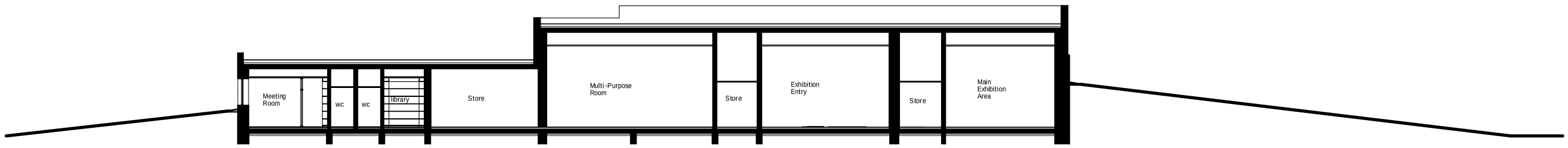
SECTION-1



SECTION-2



SECTION-3



SECTION-4

0m 2m 4m 8m 12m 20m

THE PROJECT FOR CONSTRUCTION OF THE KHARAKHORUM MUSEUM IN MONGOLIA

Section S=1:250

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

This project consists of construction work and equipment procurement and installation work. The scope of Japan's cooperation is to be carried out within the framework of the grant aid scheme of the Government of Japan.

This project is to be officially implemented after the two governments approve the contents of the project and exchange notes regarding implementation of this project. After conclusion of the Exchange of Notes (E/N), the implementing agency of the project and a consultant in charge of this project are to conclude the consultant agreement and the consultant will start the review of detail design, and preparation of tender documents of this project. Upon completing preparation of the tender documents, tender procedure will take place for selection of successful tenderers for the works. The respective successful tenderers, who are Japanese companies, will carry out the construction work and the equipment procurement/installation work.

(1) Organizations in Recipient Country

The following Mongolian authorities are the implementing agencies responsible for each task.

1) Responsible for the project: Ministry of Education and Culture

This Ministry is to represent the Government of Mongolia in implementing the project.

2) Responsible for decision-making: Bureau of Culture and Art, Ministry of Education and Culture.

This Bureau in the Ministry is to carry out all activities related to this project. The director and the deputy director of the bureau will be the authorized signers for all official documents relating to this project.

3) Other relevant organizations:

World Heritage Committee of Mongolia, Mongol Academy of Science, National Cultural Property Center, selected universities, etc. are to carry out excavations, restoration work, registration work and research/analysis of the relics and other cultural properties in cooperation with the museum.

(2) Consultant

Immediately after the Notes regarding the Project are exchanged between the two governments, the implementing agency of Mongolia will conclude a consultant agreement with a selected Japanese consultant in accordance with the Grant Aid scheme of the Government of Japan. The consultant is to carry out the following services in accordance with the provisions of the consultant agreement.

1) Detail Design Review: Review of detail design documents (including specifications and other technical documents)

The consultant is to review the design of the facilities in detail based on the Basic Design and prepare tender documents including drawings, specifications, instructions to tenderers and draft contracts in order to select a Japanese contractor and supplier.

2) Assistance of Tendering: Assistance of tendering to select the contractor and the supplier and concluding the contracts with the contractor and the supplier.

In implementing tenders, the consultant is to prepare advertisements for tenders, receive applications, screen applicants, distribute tender documents, receive tenders, and evaluate the result of the tender. The consultant is also to assist on conclusion of the construction contract and the equipment procurement contract between the implementing agency and the contractor and the supplier, respectively, and report all these matters to the Government of Japan.

3) Supervision: Supervision of the construction work and the equipment work and of supplier's giving guidance on equipment installation/operation.

Supervision is a task to check to see whether or not the construction contractor and the equipment supplyer are carrying out their respective works in accordance with the provisions of the relevant contracts, respectively, to ensure that the contracted obligations are properly fulfilled. In other words, it is to give the contractor and the equipment supplier guidances, advices and to coordinate their works for smooth implementation of the project. Details of supervision services are described below.

① Guidance, advice and coordination to the contractor and the supplier

The consultant is to examine the execution schedule, the execution plan, and the construction equipment and materials procurement/installation plan and to coordinate, give relevant guidance and advice to the contractor and the supplier.

② Examining and approving the working drawings and the manufacturing drawings

The consultant is to examine, instruct and approve the shop drawings and the manufacturing drawings and other relevant documents submitted by the contractor and the supplier.

③ Verifying and approving the construction equipment/materials

The consultant is to verify and approve the building materials and equipment proposed by the contractor and the supplier in compliance with the contract documents.

④ Factory inspection

The consultant is to inspect, when necessary, the building materials and equipment at the manufacturers' factories to ensure their qualily and performance.

⑤ Reporting the progress of the construction work

The consultant is to get a good grasp of the progress of the construction work and to report the progress of the construction work to the governments of the two countries.

⑥ Completion inspection and commissioning test

Upon completion of the construction work, the consultant is to conduct a final inspection and commissioning tests of the completed facilities and installed equipment to ensure that all the works

are completed in compliance with the contract documents and then submit a certificate of completion of inspection to the Mongolian side.

⑦ Training for operation of equipment

Some equipment procured for this project requires expertise in operation, maintenance and management. It is, therefore, necessary that the contractor and the supplier give on site training to the local staff in charge of operation and repair of the equipment during the period of installation, adjustment and test-run period. The consultant is to give guidance and to advice regarding the training programme.

(3) The Contractor and the Equipment Supplier

The contractor is to construct the facilities and the equipment supplier is to procure, supply and install the equipment in accordance with the contract documents and give instructions for operation, maintenance and management of the facilities and the equipment to the Mongolian side. The supplier is to ensure after-sale services for obtaining technical assistance, procuring spare parts and consumables of major equipment without cost or at cost during the warranty period and to support the client with the assistance of manufacturers and their distributors in the country so that the client may receive pertinent instructions.

(4) Japan International Cooperation Agency (JICA)

JICA executes the Grant by making payments of the amount in accordance with E/N and pays serious attention to ensure the accountability on proper and effective use of the Grant for the project.

2-2-4-2 Implementation Conditions

(1) Construction Work

1) Building Code and Procedures for Obtaining Building Permits

Mongolia has well-organized standards for architectural planning and execution. Following the completion of the detail design, the project implementing agency must notify the relevant authorities of implementing the project and submit detail design drawings, specifications, etc. that are prepared in accordance with the relevant local standards. Since Mongolia has its own standards, it is necessary that building materials, equipment and other products to which the local fire fighting regulations apply will be in compliance with the regulations.

2) Likely adverse effects on the neighborhood

There are few houses and other structures in the area surrounding the project site. In addition, there is not much traffic on the roads running near the project site. For these reasons, there will be only a few adverse effects, such as noise, vibrations, waste and traffic congestions, of the implementation of this project on the neighborhood. However, in view of the fact that there runs an irrigation canal on the northern side of the project site and well water is supplied to houses in the neighbor hood, it is necessary to carry out the construction work giving due consideration to avoid possible water pollution and soil

contamination.

(2) Equipment Procurement

1) Schedule Control

All the equipment to be procured will be installed in the newly built facilities of the project. It is therefore important that the timing of supply, installation, inspection and training of equipment be carefully scheduled between the contractor and the equipment supplier under the supervision of the consultant.

2) Dispatch of Engineer

It is very important for the staff of the museum to acquire skills to operate, maintain and manage the procured equipment in order for the equipment to be properly and effectively used. Since the audio-visual equipment for this project is to be locally procured, engineers from local distributors are to install, adjust, make trial runs and give an initial guidance on operation of equipment. In the case of equipment for use in restoration and preservation of relics, it is necessary that manufacturers' or local distributors' engineers are dispatched to install, adjust, operate, and give guidance on maintenance and management of such equipment. The following table shows a list of the main items of equipment and the operations required (installation, adjustment, trial run and/or guidance on initial operation) for each of them.

Table 2-11 List of Equipment and Required Work

NO.	Equipment	No. of units	Installation	Adjustment/trial run	Guidance on initial operation
1	Personal computer	3	○	○	○
2	DVD player	3	○	○	○
3	LCD projector	1	○	○	○
4	Amplifier for microphone	1	○	○	○
5	Speaker	1	○	○	×
6	Microphone	2	○	○	×
7	Chair with a writing board	75	×	×	×
8	Shelf (D=600)	6	○	×	×
9	Worktable	1	×	×	×
10	Chair	8	×	×	×
11	Hot air drier	1	×	○	○
12	Sand plaster	1	×	○	○
13	Balance	1	×	○	×
14	Lighting fixture with a magnifier	2	×	×	×
15	Restoration tool kit	1	×	×	×
16	Steel Carrier	1	×	×	×
17	Plastic Carrier	2	×	×	×
18	Storage box	200	×	×	×
19	Worktable	3	×	×	×
20	Restoration Worktable	2	×	×	×
21	Working Chair	10	×	×	×
22	Shelf Open Type	14	○	×	×
23	Shelf Casement Type	4	○	×	×
24	Shelf (D=900)	3	○	×	×

NO.	Equipment	No. of units	Installation	Adjustment/trial run	Guidance on initial operation
25	Cabinet	6	○	×	×
26	Illuminometer	1	×	○	○
27	Thermometer/hygrometer (Portable)	1	×	○	○
28	Thermometer/hygrometer (Mounted)	2	○	○	○

2-2-4-3 Scope of Works

(1) Scope of Construction Work

1) Work under Japan's Grant Aid

① Construction of the building set forth in the basic design study report

② Implementation of incidental works, eg. electrical, air-conditioning (heater, ventilation), and plumbing works, in the facilities

③ Preparation of infrastructure (power supply, water supply and drainage systems, etc.) within the project site

④ Installation and removal of temporary work facilities such as fence, building material store, etc.

⑤ Payment of power, water and telephone charges used for construction

⑥ Transportation to Mongolia

⑦ Inland transportation in Mongolia

2) Work under the Government of Mongolia

① Securement and installation of exhibits

② Securement of the project site for the construction of the planned facilities

③ Removal of existing buildings, other structures, waste and trees in the project site which are likely to hinder the construction work

④ Landscaping

⑤ Construction of boundary fences (if necessary)

⑥ Installation of high-tension cable up to the boundary and service cable up to the new building

⑦ Extension of telephone line to the boundary and installation of lead-in wire up to the new building

⑧ Provision of land for temporary site office, work area and materials storage shed, etc. during the construction work

⑨ Provision of power and water supply and connection of telephone line to the project site during the construction work

(2) Scope of Equipment Work (Procurement and Installation)

1) Work under Japan's Grant Aid

① Procurement, transportation, loading and unloading of the equipment to the project site

② Installation, adjustment and trial runs of the equipment

③ Explanation, operation and maintenance training for the equipment

2) Work under the Government of Mongolia

① Provision of temporary storage area for the equipment

② Construction of a temporary access road for motor vehicles bringing in equipment

2-2-4-4 Consultant Supervision

(1) Supervision Policy

In accordance with Japan's Grant Aid scheme, the consultant is to form a project implementing team to ensure smooth implementation of the project based on the basic design policy. The policies for construction supervision and equipment procurement supervision are stated below.

① To keep close contacts with the officials in charge of the project of both the governments to ensure completion of construction of the facilities and procurement of the equipment without delay

② To give prompt and proper guidance and advice with justice to the contractor, the equipment supplier and other concerned parties.

③ To give proper guidance and advice on equipment operation and management after installation and handover of equipment

④ To confirm completion of construction work and equipment work in compliance with conditions of the contract, to witness handover of the equipment and the buildings, and to conclude the consulting services by obtaining the consent of the Government of Mongolia.

(2) Supervision Plan

In view of the size of this project, the consultant is to dispatch a qualified engineer to the project site throughout the project implementation period. The consultant is to send other engineers to the project site on an as needed basis as the project progresses to conduct inspections, give guidance and act as coordinators. The consultant is to appoint an engineer in charge in its home office to establish acommunication and support system for the site engineer. The consultant is also to report the progress of the project and matters to be arranged concerning the payment procedures, the completion and delivery of the construction and equipment works, etc. to all the parties concerned within the Government of Japan.

2-2-4-5 Quality Control Plan

As a rule, the consultant is to conduct construction supervision in accordance with the relevant

Mongolian or Japanese standards as specified in the following table in order to ensure the prescribed quality level of the construction work.

Table 2-12 Quality Control Standards

	Main quality control standards			Remarks
	Item	Target value	Method of inspection	
Earthwork	Slope angle Accuracy of floor Height of groundwork Height of concrete sub-slab	Within range of target value Within range of +0 to 5 cm Within range of +0 to 3 cm Within range of ±1 cm	Slant gauge: visual inspection Level: visual inspection Same as above Same as above	The consultant is to have the contractor prepare an execution manual which describes examination items, target values, details of inspections, testing methods, curing methods, construction methods, etc. in advance.
Reinforcing bar work	Thickness of cover concrete	Portion that does not come in contact with ground 30m/m Portion that comes in contact with ground Foundation 60m/m Other 40m/m	Visual inspection, measurement	Same as above
	Accuracy of finishing	Stirrup, hoop (permissible level ±5m/m Others ±10m/m		
	Tensile strength test	Test specimens: 2 reinforcing bars, each weighing 20 tons (on-site sampling)	Witnessing test conducted in the factory	
Concrete work (liquid concrete)	Compressive strength	Design strength210kg/cm^2 and over	3 test specimens x 3 types per 150m^3 per concreting (witnessing of test conducted)	Same as above
	Slump	15cm±2.5cm	Measured per concreting and per 150m^3 (witnessing of test conducted)	
	Chloride content	Less than 0.3 kg/m^3	Same as above	
Masonry	Compressive strength Other materials (cement, reinforcing bar)	40～70kg/cm^2	Witnessing test conducted by manufacturer Visual inspection	Same as above
Plaster work Painter's work Roof waterproofing work Finish carpentry	Material, method of storage, method of work, thickness of paint, curing, accuracy of work			Same as above
Water supply and drainage work	Water pipe Drain pipe	Pressure test High water level test	Witnessing/verifying of test	Same as above
Electrical work	Power cable	Insulation test Electricity conduction test	Same as above	Same as above

2-2-4-6 Procurement Plan

(1) Construction Work

1) Procurement of Equipment and Materials

Only a few kinds of construction materials, such as cement, aggregate and reinforcing bars, are manufactured in sufficient quantities in Mongolia. Most of the finishing materials and construction machines are imported from Russia, China and East European countries. Some furniture, insulated windows and other items are manufactured by using imported machine tools in Mongolia. Most of the construction materials and equipment that are used widely in the country are in short supply and many products are imported for each project after the import procedures are followed. It is, therefore, necessary to select lighting fixtures and the like giving due consideration the availability of expendable and replacement parts. The following table shows the procurement sources of the construction materials and equipment for building, electrical, plumbing, and mechanical works for this project.

Table 2-13 Procurement Sources of Materials and Equipment

Material/equipment		Procurement source	Remarks
Construction material	Cement	Mongolia	Domestic product
	Sand, gravel	Mongolia	Domestic product
	Reinforcing bar	Mongolia	Domestic product
	Mold, lumber	Mongolia	Domestic product
	Metal furniture	Mongolia,Third country	Imported products are widely used but domestic products may be procured.
	Steel furniture	Third country	Imported products are widely used.
	Furniture fittings	Third country	Imported products are widely used.
	Brick for wall	Mongolia	Most dressing tiles are imports.
	Floor tile	Mongolia,Third country	Imported products are widely used but domestic products can be procured.
	Paint	Mongolia,Third country	Imported products are widely used but domestic products can be procured.
Electrical equipment	Incoming panel, distribution switchboard	Third country	Imported products are widely used.
	Lighting fixture	Third country	Imported products are widely used.
	Power cable pipe (rigid PVC pipe)	Third country	Imported products are widely used.
	Electric wire/cable	Mongolia,Third country	Imported products are widely used.
Air-conditioning equipment	Heating equipment	Third country	Imported products are widely used.
	Ventilating fan	Third country	Imported products are widely used.
Plumbing equipment	Pump	Third country	Imported products are widely used.
	Sanitary fixture	Third country	Imported products are widely used.
	Water supply pipe/drainage pipe (rigid PVC pipe)	Third country	Imported products are widely used.
	Water tank	Third country	Imported products are widely used.

2) Method of transportation

As Mongolia is a landlocked country, the main transportation is by land. As shown in the diagram below, domestic products will be transported by land from Ulaanbaatar to Kharkhorin sum. Products imported from China will be procured in Beijing or Shanghai and transported by rail to Ulaanbaatar. However, due to the difference of width of railway, it is necessary to not only receive custom checks, but also to transfer goods to freight trains of different rail gauge. Still more, Dsamin Uuel station at the border

is the starting point of the Mongolian railway system. The numbers of containers mobilizing are not sufficient. Due to an extreme shortage of cargo trains and difficulties of maintenance for trains and railroads, a great number of containers are sitting in the yard. Consequently, time delays are occurring and costs of transportation are increasing. Products procured from third countries and Japan will be transported by sea to Tianjin, from where products will be transported by rail to Ulaanbaatar. Under present circumstances, it is possible to procure the products shown in Table 2-13 in China. In principle, all third country products will be procured from China.

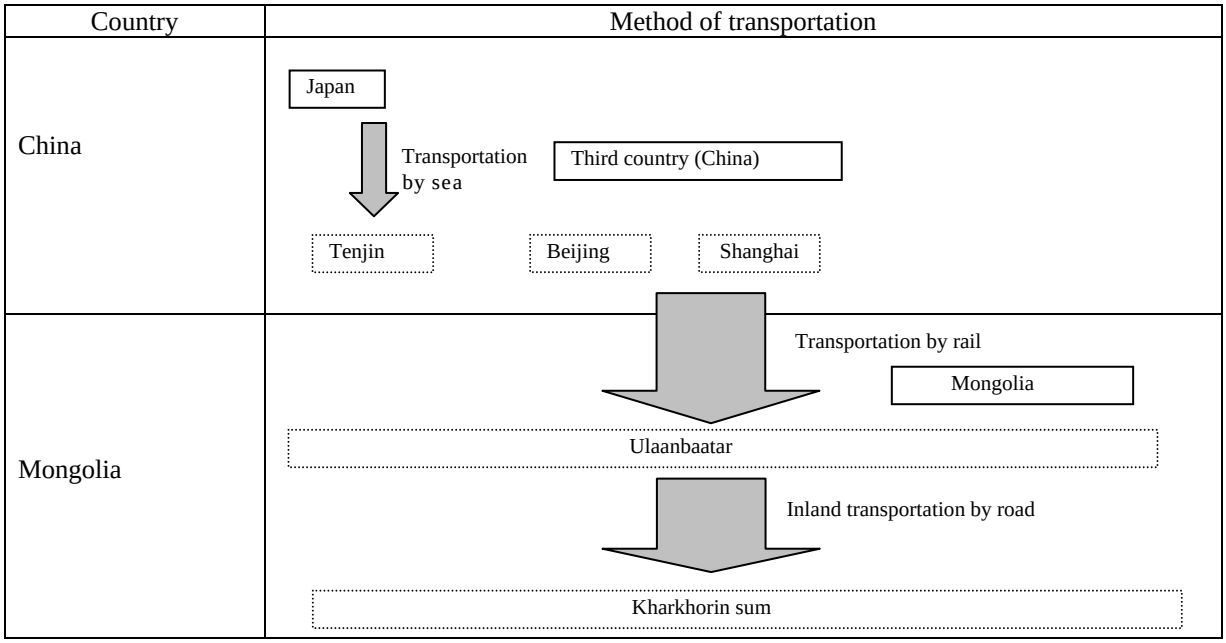


Fig. 2-9 Transportation Route

(2) Procurement of Equipment

1) Procurement of Equipment

In principal equipment, which does not require consumables or spare parts, will be procured in Japan or Mongolia. Regarding equipment, which requires supplies of spare parts, consumables, and maintenance services, will be procured from manufacturers who have local distributors that can supply necessary parts, consumables and services, in Mongolia. The possibility of procuring third country products will be considered so long as there are local distributors, which meet the above conditions.

The equipment, which will be from third country products and require services by local distributors or branches are shown in Appendix-4 titled “List of Selected Items of Equipment.”

Method of Transportation

① Container transportation will be the basic method of transportation in light of the need to prevent theft and loss in transit.

② Equipment that is to be procured from Japan will be transported by sea from Japan to Tianjin, and will be transported by rail to Ulaanbaatar. They will then be transported by land to the project site in Kharkhorin sum.

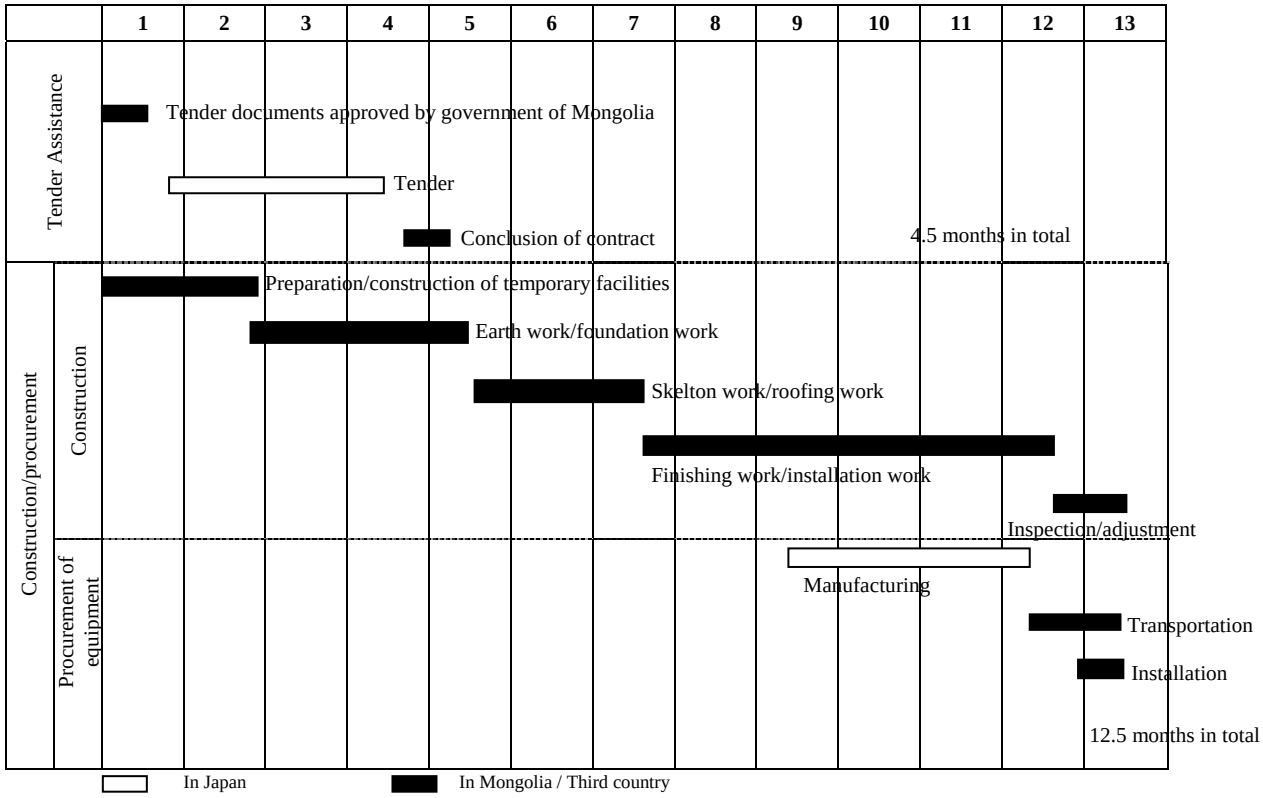
③ Those which to be procured from the third country (China) will be transported by rail from China to Ulaanbaatar, and then by land to the project site.

④ Those, which to be procured in Mongolia will be transported by truck to the project site.

2-2-4-7 Implementation Schedule

When the two governments sign the Exchange of Notes for the implementation of the project, the construction work and the equipment work are to be carried out according to the following schedule.

Table 2-14 Implementation Schedule



(1) Tender Assistance

The equipment supplier and the construction contractor are to be decided on by tender procedure. The order of the procedure is as follows, advertisement of tender, screening of applicants (prequalification), handing out of tender documents and explanation of the documents, question-and-answer session, tenders opening, evaluation of tenders, and conclusion of contracts. Meanwhile, the project implementing agency in Mongolia is to proceed with the procedures for obtaining permits, such as land use permission, permission to build, issuance of business visas, etc. prior to the start of the project and the consultant is to support this process.

(2) Construction Work and Equipment Work

Judging from the details and sizes of the planned facilities and the local construction situation, it is expected that the period of implementation of this project, including installation of equipment, will be 12.5 months if the procurement of construction materials and equipment progresses smoothly.

2-3 Obligations of Recipient Country

In implementing this project, the project implementing agency is required to undertake the following within the specified period of time:

(1) To obtain building permit prior to the start of the construction work,

(The project implementing agency must notify the relevant authorities of implementing the project and obtain building permit prior to commencement of the construction work.)

(2) To remove existing structures, waste, trees and other obstacles to the construction work,

(3) To implement exterior work such as landscaping and construction of gates, fences and guard house,

(The project implementing agency is to construct gates, boundary fences and (if needed) a guard house and to carry out landscaping.)

(4) To provide the infrastructure (power supply, water supply and drainage) up to the boundary of the project site,

(5) To secure land for temporary office, work area, materials storage shed, etc. and to provide temporary power, water supply and telephone service to the project site for the purpose of construction work during the construction period,

(6) To operate, maintain and manage the facilities and equipment,

(The project implementing agency is to secure budgetary appropriations and staff members that are necessary for ensuring the proper and efficient use of the facilities constructed and equipment procured under this project.)

(7) To bear commissions, namely advising commissions of an Authorisation to Pay (A/P) and payment commissions, to a Japanese bank for the banking services based upon the Banking Arrangement (B/A),

(8) 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,

(9) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in Mongolia with respect to the supply of the products and services under the verified contracts,

(10) 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 Mongolia and stay therein for the performance of their work,

(11) To provide necessary permissions, licenses, and other authorisation for implementing the Project, if necessary

(12) To bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.

2-4 Project Operation Plan

2-4-1 Operation Plan

(1) Staffing Plan

Number of museum saff is 21 including the director as shown in Fig. 2-10. The organization consists of 3 departments; Maketing Department for planning/ manegment, Financial Department for administration/ maintenance, and Research Department for exhibition/research. The director will be dispatched from the Bureau of Education and Culture and all others are to be newly employed as local government employees. Since the project does not include specialized facilities equipment but only locally common ones, the technical level of the local staff for maintenance of the equipment will be sufficient.

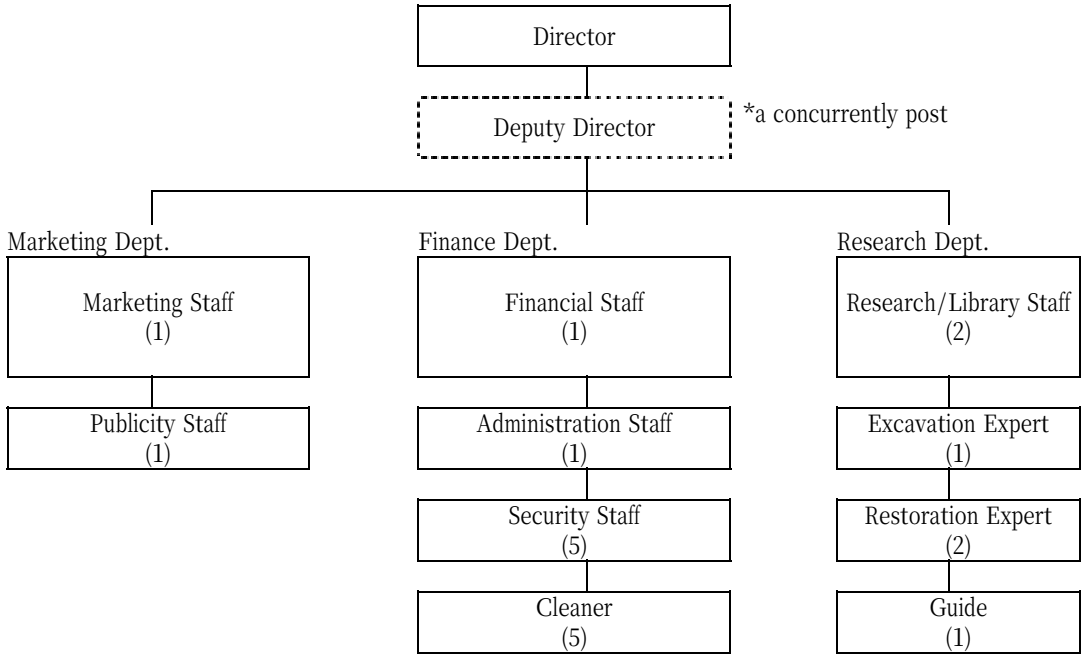


Fig. 2-10 Project Implementing Agency

(2) Budget Plan

The projected annual operating budget is 79,779,000 Tg (approximately 6,956,000 Yen), out of which 69,779,000 Tg will come from the national coffers and 10,000,000 Tg from the revenue of admission fees. The annual operating budget of the Erdene Zuu Museum, which is situated very close to the new museum being managed by the local government, is 67,200,000 Tg that is covered by the revenue from the admission fees (20,000 to 28,000 / year) and the remaining amount from sales at the museum shop. As a comparable number of visitors are expected for the new museum as well, it is considered possible for it to have the revenue sufficient to cover the entire operation and maintenance expenses. Therefore, even though the budget allocated from the national coffers dips from the budget expected at present, the operating budget of the museum will be fully compensated with the revenue of the admission fees.

2-4-2 Maintenance Plan

Except for the coal boiler caretaker, personnel for daily maintenance such as cleaning, replacing broken glass, etc., will be sufficient for this project because there is no sophisticated equipment that requires skilled personnel and it is possible to outsource maintenance services when necessary.

2-4-3 Operation and Maintenance Cost

The following table shows the estimated operation cost of the Kharakhorum museum.

Table 2-15 Estimated Operation Cost of the Kharakhorum Museum

Item	Estimated initial operating budget of Kharakhorum Museum (in thousands of Tg
Disbursements	
Salary	36,743.6
Annuity	7,899.9
Health insurance	1,800.5
Total goods/service expenses	20,756.0
Stationery expenses	800.0
Electricity charges	1,320.0
Heating expenses	1,200.0
Water supply and drainage expenses	86.0
Fuel/transportation expenses	3,000.0
Communication expenses	600.0
Domestic travel expenses	500.0
Overseas travel expenses	1,000.0
Book expenses	200.0
Equipment expenses	4,100.0
Repair expenses	3,100.0
Charges	750.0
Scientific research expenses	200.0
Clothing expenses	300.0
Food expenses	600.0
Cultural property preservation expenses	200.0
Bonus/lump sum	600.0
Capital depreciation expenses	700.0
Exhibit purchase expenses	1,500.0
Total	67,200.0
Incomes	
Incomes from museum activities	67,200.0
Subsidies from national treasury	
Total	67,200.0

It is estimated that there will be no significant difference in terms of the number of visitors and incomes from museum activities between the Erdene Zuu Monastery Museum and the new museum since the two museums are located close to each other. Income of the Erdene Zuu Monastery Museum of 2005 was 40,264,000Tg, which is about the same as the estimated expense of the new museum. It is possible to defray expenses of museums from incomes of the museums' activities in Mongolia. Therefore, it is concluded that even if the state contribution were reduced, there will be no problem with operation and maintenance of the

museum, as it is possible for the Kharakhorum museum to defray the necessary expenses with ease.

2-5 Estimated Project Cost

(1) Project Cost Borne by Mongolian Side

①	Electricity, city water, sewerage, telephone cost	45 million Tg
②	Access road construction cost	40 million Tg
③	Exhibition Installation cost	75 million Tg
④	Furniture/fittings purchase cost	8 million Tg
⑤	Banking Charge	3 million Tg
	Total	171 million Tg (16million yen)

(2) Condition of Estimation

① Estimated Date : June 2008

② Exchange Rate : 1US$=106.73Yen

: 1Tg = 0.094

③ Construction Period : As shown in Table 2-13

④ Others : The Project will be implemented in accordance with the rules and regulations of Japan's grant aid.

2-6 Other Relevant Issures

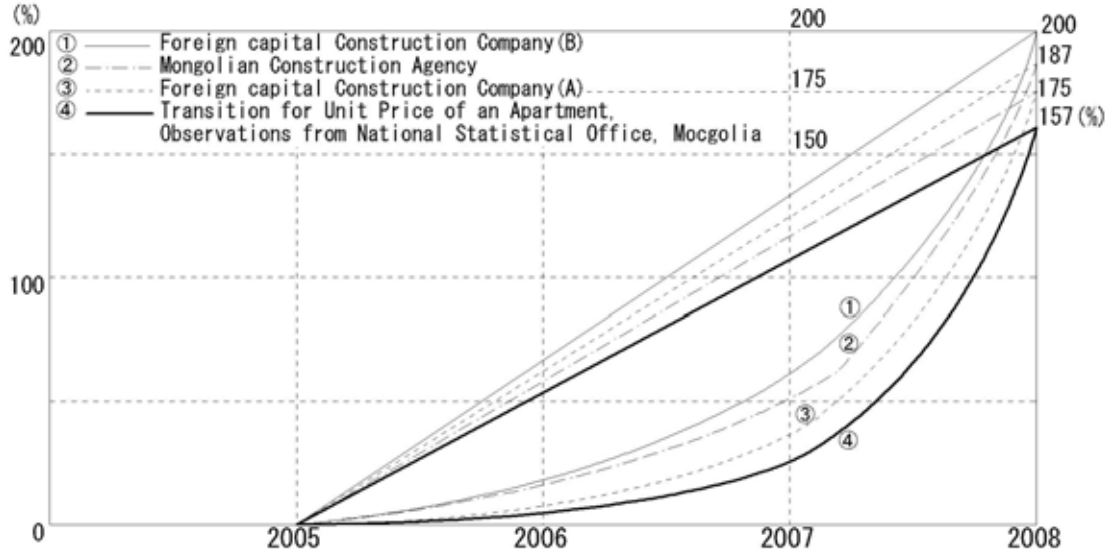
2-6-1 Trend of Construction Price Market in Mongolia

1. Trend of Construction Price Market in Mongolia

Since no official construction price statistics in Mongolia existed at the study in June 2008 in Mongolia, the inflation rate from year 2005 to 2008 was taken from the Ministry of Construction and Urban Development, the National Statistical Office, large scale construction companies and the Assocoation of Constructors by means of indivisual interview.

The following Fig2-11 shows the trend of Construction Price Market in Mongolia

Fig. 2-11 Trend of Construction Price Market in Mongolia



(Source: National Statistical Office Monthly Report, etc. May 2008, Independent made)

Most answers are based on the beginning of year 2008. However, the price of construction is still rising due to the global price increase of steel and transportation attributed to crude oil prices and appreciation of the Chinese yuan. The rate is still rising sharply especially from spring in year 2008. There are some cases of suspended construction work after contracts had commenced from the end of last year. Difficulties are being faced by some companies due to the sharp increase of construction materials and other costs.

Some remarkable differences of price have occurred only in the last half year as some construction materials have doubled in price since the last half year to May 2008.

Table 2-17: Trend of Construction Material Price

	Unit	May 2007 Tog	July 2007 Tog	April 2008 Tog	May 2008 Tog	May 2008 May 2007 (%)	May 2008 Dec. 2007 (%)	May 2008 April 2008 (%)
Mongolian Made								
Mortar		52,000	56,000	56,000	56,000	107.7	100.0	100.0
Reinforced Concrete		56,000	63,000	65,000	65,000	116.1	103.2	100.0
Brick		80,000	120,000	240,000	240,000	300.0	200.0	100.0
Cement	50kg				7,000			
Lime	Kg	300	300	300	300	100.0	100.0	100.0
Slab		65,000	70,000	140,000	180,000	276.9	257.1	128.6
Polystyrene	M2	3,000	3,200	3,200	3,200	106.7	100.0	100.0
Water Paint	kg	450	1,200	1,300	1,430		119.2	110.0
Russian Made								
Asphalt Roofing	Pack	11,000	11,500	12,500	13,500	122.7	117.4	108.0
Nail	Kg	1,500	1,800	2,000	2,000	133.3	111.1	100.0
Lime	kg	350	500	5,00	500	142.9	100.0	100.0
Chinese Made								
Brick		75,000	100,000	200,000	200,000	266.7	200.0	100.0
Cement	50kg				6,500			
Regular Glass	M2	6,500	8,500	9,500	10,500	161.5	123.5	110.5
Refrective Glass	M2	5,000	6,500	8,000	9,000	180.0	138.5	112.5
Asphalt Roofing	Pack	4,000	4,500	5,000	7,000	175.0	155.6	140.0
Nail	Kg	1,300	1,500	1,800	1,800	138.5	120.0	100.0
Oil Paint	Kg	1,000	1,200	1,500	15,00	150.0	125.0	100.0
Wall Paper	Pack	4,500	5,000	7,500	7,500	166.7	150.0	100.0
Linoleum	M	2,500	3,500	3,500	3,500	140.0	100.0	100.0
Exterior Water Paint	5kg	1,800	2,250	2,250	2,250		100.0	100.0
Interior Water Paint	5kg	3,500	1,800	1,800	1,800		100.0	100.0
Lime	Kg	300	300	300	300	100.0	100.0	100.0
Ceramic Sink	Piece	3,5000	3,5000	40,000	40,000	114.3	114.3	100.0
Ceramic washbasin	Piece	50,000	50,000	60,000	60,000	120.0	120.0	100.0
Fluorescent Lamp	Piece	1,000	1,000	1,200	1,200	120.0	120.0	100.0
Steel Door	Piece	120,000	120,000	130,000	130,000	108.3	108.3	100.0
Fauset	Piece	12,000	12,000	12,000	12,000	100.0	100.0	100.0
Shower Kit	Piece	5,000	15,000	15,000	15,000		100.0	100.0
Flooring Material	M2	7,500	7,500	8,500	8,500	113.3	113.3	100.0
Ceiling Material	M2	2,500	2,500	2,800	2,800	112.0	112.0	100.0

(Source: National Statistical Office Monthly Report, May 2008)

2. Price increase and infrastructure cost

The consumer price index (CPI) in Mongolia rose 21.4% from December 2007 to May 2008. Water service cost rose 74 % from 2006 to 2007 but along with electricity costs has stabilized and decreased some what in the half year to May 2008.

On the other hand, gasoline cost has risen significantly. For this reason, the estimate of the present cost of infrastructure relevant to construction expenses was reviewed for this report.

Chapter 3. Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect

(1) Direct impact

Collected relics will be systematically classified and stored safely and more than 1000 items of the relics will be exhibited to the public.

(2) Indirect Impact

- The pupils and children around the region will be educated about restoration of the ruins of the Mongolian Empire and their understanding of and interest in their own traditional culture will be enhanced through orientations, which will be held at the multi-purpose hall.
- It will be possible for the Mongolian side to start their own planned restoration activities at the excavation sites, which have not been touched.
- An increase in the number of tourists to Kharakholum is expected by the construction of the museum.
- It is expected that the museum will become the center of friendship between Mongolia and Japan through activities in the Temporary exhibition room such as special exhibitions.
- By exhibiting the relics, revenue is expected from the admission fees to the museum.

3-2 Recommendations

This project is expected to have sufficient beneficial impact and will widely contribute to the education of the Mongolian people about their own traditional culture and civilization. However, in order to contribute further, the following improvement and preparation are also desirable.

(1) Continuous training of the specialists

It is expected that operation and administration of the museum will be managed well under the leadership of the museum director from the Bureau of Culture and other staff. However it is necessary to establish a continuous education/training system of the staff, e.g. museum specialist, restoration specialist and guides, through OJT and seminars during the winter season because it takes a long time and much experience to cultivate sufficiently experienced special staff in each field.

(2) Promotion of the implementation of Kharakhorum Master Plan

Timely opening of the museum is guaranteed since the access road construction on the south side of the museum premises is scheduled to be completed before the commencement of this project. However, it is essential to have infrastructure ready such as water supply, sewerage, and regional hot water supply for economical operation of the facility in accordance with the Kharakhorum masterplan.

(3) Programmed change of exhibits

An attractive display of exhibits, the main attraction of the museum, leads to an increase in the number of visitors to the museum. As a historical museum, which permanently exhibits and stores relics and valuable cultural heritage as a tourist attraction, the museum is required to periodically change/renew exhibits at appropriate times in coorporation with the Academy of Science, the Cultural Property Center, and UNESCO-Mongolia World Heritage Committee.

(Appendices)

1. **Member List of Study Team**
2. **Study Schedule**
3. **List of Parties Concerned**
4. **Minutes of Discussions**
   - **Implementation Review Study**
   - **Explanation of Draft Basic Design Study (Reference)**
   - **Basic Design Study (Reference)**
5. **Other Relevant data**
   - **Site Survey Drawing (Reference)**
   - **Site Soil Investigation Data (Reference)**
6. **References**
   - **Letters from the Concerned Authorities (Reference)**
   - **Equipment Distribution List**
   - **Running Cost of Equipment**

1. Member List of Study Team

1. Members of Study Team

Implementation Review Study

1.	Mr. Kazutoshi ONUKI	Team Leader	Deputy Resident Representative JICA Mongolia Office
2.	Ms. Rieko KUBOTA	Programme coordinator	Project Study Division I, Grant Aid and Loan Support Development, JICA
3.	Mr. Takaaki KIMURA	Project Manager/ Architectural Planner	Yamashita Sekkei Inc.
4.	Mr. Tadayoshi TSUMOTO	Construction and Cost Planner	Yamashita Sekkei Inc.

2. Study Schedule

2. Study Schedule

(1) Implementation Review Study (June 12th 2008 – June 28th 2008)

	Date	Place	Schedule
1	12-Jun	Beijing	・ Tokyo→Beijing ・ Research for prices of building materials and equipments
2	13-Jun	Beijing	・ Tokyo→Beijing ・ Beijing→Ulaanbaatar
3	14-Jun	Kharakhorin	・ Ulaanbaatar→Kharakhorin ・ Visit to building site ・ Price index survey ・ A courtesy visit for mayor of Kharakhorin（confirmation for condition of progress for Kharakhorin development program）
4	15-Jun	Kharakhorin	・ Kharakhorin→Ulaanbaatar
5	16-Jun	Ulaanbaatar	・ Meeting and courtesy visit for JICA office, Embassy of Japan and Department of Education, Culture & Science
6	17-Jun	Ulaanbaatar	・ Meeting with Department of Education, Culture & Science
7	18-Jun	Ulaanbaatar	・ Meeting with Department of Education, Culture & Science
8	19-Jun	Ulaanbaatar	・ Signing of Minutes with Department of Education, Culture & Science and Ministry of Finance. ・ Report to JICA office and Embassy of Japan
9	20-Jun	Ulaanbaatar	・ Meeting with Department of Education, Culture & Science ・ Examination for prices of building materials（temporary scaffolding, expense of site management, labor cost and etc.）
10	21-Jun	Ulaanbaatar	・ Building Market Survey
11	22-Jun	Beijing	・ Ulaanbaatar→Beijing
12	23-Jun	Beijing	・ Collection for quotations
13	24-Jun	Beijing	・ Collection for quotations
14	25-Jun	Shanghai	・ Beijing→Shanghai ・ Collection for quotations
15	26-Jun	Shanghai	・ Collection for quotations
16	27-Jun	Shanghai	・ Collection for quotations
17	28-Jun	Shanghai	・ Shanghai→Tokyo

3. List of Parties Concerned

List of Party Concerned

Embassy of Japan in Mongolia	
Third Secretary	Mr. Isao KOYAMA
JICA Mongolia Office	
Resident Representative	Mr. Yukio ISHIDA
Deputy Resident Representative	Mr. Kazutoshi ONUKI
Assistant Resident Representative	Mr. Kiyotaka MIYAZAKI
Program Officer of Education	Ms. P. ENKHZAYA
Ministry of Education, Culture and Science	
State secretary	Mr MISHIGJAV Buurunkhii
Department of Culture and Art	
Director	Mr ERDENEBAT Gendendaram
Deputy Director	Mr GANBAATAR Jadambaa
Officer	Dr OYUNBILEG. Zundui
Officer	Ms Zolzaya. ERDENEBAYAR
Ministry of Finance, Department of Policy and Coordination for Loans and Aid	
Director-General	Mr Baavgai KHURENBAATAR
Economist-General	Ms B. Gaadulam
Mongolian National Commitee for UNESCO	
Secretary-General	Mr. Norov URTNASAN
Culture officer	Ms G. SELENGE
Mongolian Academy of Sciences, Institute of Archaeology	
Director	Dr.Sc,prof. D. TSEVEENDORJ
Archeologist	Dr Erdenebat ULAMBAYAR
National Center of Mongolian Ger Development	
President	Mr Ganbaatar LUVSANGOMBO

4. Minutes of Discussions

- **Implementation Review Study**
- **Explanation of Draft Basic Design Study (Reference)**
- **Basic Design Study (Reference)**

- **Implementation Review Study**

Minutes of Discussions
on the Implementation Review Study
on the Project for Construction of the Kharakhorum Museum
in Mongolia

In June 2008, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Implementation Review Study Team on the Project for Construction of the Kharakhorum Museum (hereinafter referred to as "the Project") to Mongolia.

JICA sent to Mongolia the Implementation Review Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Kazutoshi Onuki, Deputy Resident Representative, JICA Mongolia Office, from June 13th to 20th of June, 2008.

As a result of discussions, both sides confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Implementation Review Study Report.

Ulaanbaatar, 19 June, 2008

Kazutoshi Onuki
Leader
Implementation Review Study Team
Japan International Cooperation Agency

Gendendaram ERDENEBAT
Director, Department of Culture and Art
Ministry of Education, Culture and Science of Mongolia

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

ATTACHMENT

1. Components of the Project

The Mongolian side has agreed that the components of the Project described in the Basic Design Study Report shall not be changed. However, in case the necessary situation arises, the component eliminated at the Detailed Design stage in 2006 will be considered as target of exclusion from the Project.

2. Japan's Grant Aid Scheme

2-1. The Mongolian side reconfirmed the Japan's Grant Aid scheme explained by the Team, as described in Annex-1.

2-2. Both sideswill take the necessary measures, as described in Annex-2, in timely manner.

3. Schedule of the Study

JICA will complete the Implementation Review Study Report in accordance with the confirmed items and send it to the Mongolian side by the middle of October 2008.

4. Other Relevant Issues

4-1. Confidentiality of the Project Cost Estimate

The Japanese side explained the Project Cost Estimate shall be reported to the Mongolian side by the beginning of September, 2008 based on the re-estimation of the Project cost. Both sides agreed that the Project Cost Estimate should never be duplicated or released to any outside parties before signing of all the Contract(s) for the Project.

4-2.Undertakings by the Mongolian side

The Mongolian side agrees to carry out the following undertakings in accordance with the schedule of the Project at the expense of Mongolian side. The expected implementation schedule is as attached in Annex-3.

1) To ensure the necessary arrangements of construction permissions and other authorizations required to construct the Kharakhorum Museum in Mongolia (hereinafter referred to as the "Museum").
2) To level and clear the land within the Project site until the construction starts.
3) To construct the access road to the Project site by the completion of the Project.
4) To distribute electricity and telephone trunk line to the Project site in accordance with the schedule of the Project.
5) To ensure prompt tax exemption and customs clearance of the products at the port of disembarkation
6) To ensure prompt issue of the Banking Agreement(B/A) and Authorization to Pay (A/P).

4-3.Operation and Maintenance

The Mongolian side agreed to allocate necessary budget especially for budget in FY2009 and FY 2010. The Mongolian side also agreed to allocate the staff members of Museum to properly and effectively operate and maintain the Museum.

4-4.Exhibition plan of the Museum

The Mongolian side stressed the exhibition in the United States shall be one year from February, 2009 to February, 2010. Therefore, the artifacts will be returned to Mongolia before the opening of the museum.

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Japanese side requested the Mongolian side to make sure there will be sufficient contents at the Museum in case of the future leasing.

4-5.Conditions for the Japanese cabinet approval of this Project

Japanese side asserted that the following issues will be crucial conditions to approve this Project;

1) Assurance of no influence due to the General election in Mongolia

Mongolian side agreed to ensure that there will be no influence by the General election to be held in the end of June, 2008. If, in case, the Project-related government officials may be replaced due to the new cabinet order, the Mongolian side will issue a confirmation letter to Japanese side through the Embassy of Japan in Mongolia to assure no change in implementation of this Project by the middle of August, 2008.

2) Assurance of no conflict with UNESCO World Heritage guideline about the location of Project site

Mongolian side made sure the location of the Project site does not conflict with the core zone of the UNESCO World Heritage as attached in Annex-4. Mongolian side added the UNESCO Mongolian committee is fully aware of the importance of this Museum.

END

Annex-1. Japan's Grant Aid Scheme
Annex-2. Major undertakings by Mongolian side
Annex-3. Implementation Schedule of the undertakings by the Mongolian side
Annex-4. Confirmation letter of non-UNESCO World Heritage zone by UNESCO Mongolian committee

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Japan's Grant Aid Scheme

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure 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

1) 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 the Cabinet)

Determination of Implementation
(The Notes exchanged between the Governments of Japan and the recipient country)

2) 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 the 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.

Secondary, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

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 (hereafter referred to as the "Study"), conducted by JICA on a requested project (hereafter 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:

a) Confirmation of the background, objectives, and benefits of the requested Project and also institutional

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capacity of agencies concerned of the recipient country necessary for the Project's implementation.

b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of views.

c) Confirmation of items agreed upon by both parties concerning the basic concept of the Project.

d) Preparation of a Basic Design of the Project.

e) 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 a Consultant

For smooth implementation of the Study, JICA uses registered consulting firms. JICA selects firms based on proposals submitted by interested firms. The selected firm carries out a Basic Design Study and writes a report, based upon the terms of reference set by JICA.

The consulting firms used for the Study 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 consulting firms and contractors 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 a 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

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services of a third country.

However, the prime contractors, namely, consulting, constructing 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 the 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 to the Government of the Recipient Country

In the implementation of the Project, the recipient country is required to undertake necessary measures as follows:

① to secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction (Refer to Annex 1),

② to provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

③ to secure buildings prior to the procurement in case of the installation of the equipment,

④ to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation of the products purchased under the Grant Aid,

⑤ 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, and

⑥ 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 shall not be re-exported from the recipient country.

8) Banking Arrangement (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.

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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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Annex-2.

Major undertakings by each government

No.	Items	To be covered by Grant Aid	To be covered by Mongolian side
1.	To secured land		•
2.	To clear, level and reclaim the site when needed		•
3.	To construct gates and fences in and around the site		•
4.	To construct the parking lot	•	
5.	To construct roads		
	1) Within the site	•	
	2) Outside the site		•
6.	To construct the buildings	•	
7.	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		•
	b. The drop wiring and internal wiring within the site	•	
	c. The main circuit breaker and transformer	•	
	2) Water Supply		
	a. The city water distribution main to the site		•
	b. The supply system within the site (receiving and elevated tanks)	•	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		•
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	•	
	4) Gas Supply		
	a. The city gas main to the site		•
	b. The gas supply system within the site	•	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		•
	b. The MDF and the extension after the frame/panel	•	
	6) Furniture and Equipment		
	a. General furniture		•
	b. Project equipment	•	
8.	To bear the following commissions to the Japanese bank for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
9.	To ensure unloading and customs clearance at 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 for the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	•	
10.	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contact, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		•
11.	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.		•
12.	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		•
13.	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		•

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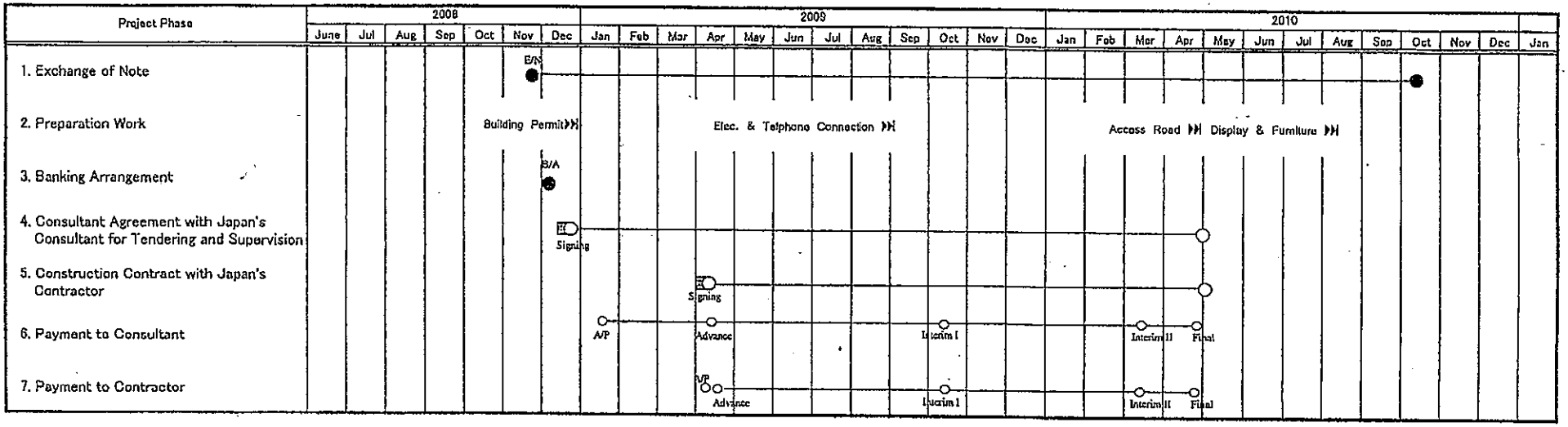
PROJECT SCHEDULE

Annex – 3

(1) Implementation schedule of undertakings by Mongolian side



НЭГДСЭН ҮНДЭСТНИЙ БОЛОВСРОЛ, ШИНЖЛЭХ УХААН, СОЁЛЫН БАЙГУУЛЛАГЫН МОНГОЛЫН ҮНДЭСНИЙ КОМИСС
COMMISSION NATIONALE DE MONGOLIE POUR L' UNESCO
MONGOLIAN NATIONAL COMMISSION FOR UNESCO

Date: 16.6.2008 № MNC/08/106 Ulaanbaatar

To Whom It May Concern:

I extend my greetings on the behalf of Mongolian National Commission for UNESCO, along with our flourishing cooperation.

I take the pleasure to be informed that the Ministry of Education, Culture and Science of Mongolia, in close cooperation with Japan International Cooperation Agency (JICA), is planning to construct a new museum at the Orkhon Valley Cultural Landscape (OVCL), inscribed on the World Heritage List in 2004.

We consider that establishment of a museum at the Site would be beneficial for preservation, conservation, appreciation and dissemination of the World Heritage Site and significant to raise understanding and awareness on protection of the Site. As the Ministry of Education, Culture and Science of Mongolia, the Mongolian National Commission for UNESCO initiated the proposal on the construction and establishment of the "Kharkhorum museum" within the WH Site to the Government of Japan in framework of World Heritage issues of Japan Funds-in-Trust and included this objective in the "Orkhon Valley Cultural Landscape Management Plan", which was submitted to WH Centre together with nomination dossier and considered and advocated by international experts and World Heritage Committee. We fully understand the concern of Japanese Team about the construction of the "Kharakorum museum" in core zone. However, taking the purpose and benefits of Museum into consideration, we recognize the selection of the Museum site location will not conflict with the significance of core zone.

Therefore, I am sure that the construction and establishment of the "Kharkhorum museum" in according to requirements of the World Heritage Site will be highly appreciated and supported by UNESCO and World Heritage Committee.

Thank you very much in advance for your kind and close cooperation.

Yours Sincerely.

Norov Urtnasan
Secretary – General

To: JICA
Tokyo, Japan

Address: Mongolian National Commission for UNESCO,
Government Building XI, Post office 38, Revolution Avenue
Ulaanbaatar, Mongolia

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· **Explanation of Draft Basic Design Study (Reference)**

Minutes of Discussions
on the Basic Design Study on the Project for
Construction of the Kharakhorum Museum in Mongolia
(Explanation of Draft Final Report)

In October 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Construction of the Kharakhorum Museum in Mongolia (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 final report of the study.

In order to explain and to consult with concerned officials of the Government of Mongolia (hereinafter referred to as "Mongolia") on the components of the draft final report, JICA sent to Mongolia the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Yasuhiro Morimoto, Deputy Resident Representative, Mongolia Office, JICA from January 11 to 25, 2006.

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

Ulaanbaatar, 20 February, 2006

Yasuhiro Morimoto
Leader
Basic Design Explanation Team
Japan International Cooperation Agency

for Norov Batmunkh
Director, Department of Culture and Art
Ministry of Education, Culture and Science
Mongolia

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

ATTACHMENT

1. Components of the Draft Final Report

The Mongolian side has agreed and accepted in principle the components of the draft final report explained by the Team.

2. Japan's Grant Aid Scheme

The Mongolian side understands the Japan's Grant Aid scheme and the necessary undertakings to be taken by the Government of Mongolia as explained by the Team and described in Annex-6 and Annex-7 of the Minutes of Discussions signed by both sides on October 7, 2005.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Mongolia by the end of March, 2006.

4. Other Relevant Issues

4-1 The Mongolian side understands the schedule of the Project after the Exchange of Notes (E/N).

4-2 The Mongolia side agrees to carry out the following arrangements in accordance with the schedule of the Project;

1) To ensure necessary arrangement of construction permissions and other authorizations required to construct the Kharakhorum Museum in Mongolia (hereinafter referred to as the "Museum").
2) To construct the access road to the project site by the end of 2007.
3) To level and clear the land within the project site until the construction starts.
4) To distribute electricity and telephone trunk line to the project site in accordance with the schedule of the Project.
5) To ensure prompt tax exemption and customs clearance of the products at the port of disembarkation.

4-3 Regarding the exhibition of the Museum, both sides agreed on the following issues:

1) The Japanese side proposed a draft of the exhibition scenario in the Draft Final Report. Based on this draft, the Mongolian side shall complete its own exhibition scenario, policy and plan and submit them to JICA Mongolia Office by the end of June.
2) The Mongolian side shall prepare and secure the content of the exhibition (exhibits, models, multimedia materials, explanation plates, etc.), and install them at the proper timing in accordance with the opening schedule of the Museum.

timing in accordance with the opening schedule of the Museum.

3) Both sides expect that the Museum be a foothold of friendship between Mongolia and Japan, and therefore the Japanese side requested the Mongolian side to make use of the opportunity, such as to hold an exhibition introducing Japan at the temporary exhibition room.

4-4 Regarding the tendering of the contractor of the Project, the Mongolian side agrees not to separate the construction and equipment part, and tender the whole Project as one, in consideration of efficiency and actuality.

4-5 The Mongolian side agrees to secure and allocate enough budgets to operate / maintain the building and equipment built and supplied by the Grant Aid properly and effectively. Also, the Mongolian side shall post necessary number of staffs to operate the Museum.

· **Basic Design Study (Reference)**

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR CONSTRUCTION OF THE KHARAKHORUM MUSEUM
IN MONGOLIA

In response to a request from the Government of the Mongolia (hereinafter referred to as "Mongolia"), the Government of Japan decided to conduct a basic design study on the Project for Construction of the Kharakhorum Museum (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 Ms. Yuko Ishizawa, Chief, Project Monitoring and Coordination Team, Grant Aid Management Department, JICA, and is scheduled to stay in the country from 2 October to 23 October, 2005.

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, 7 October, 2005

Ms. Yuko ISHIZAWA
Leader
Basic Design Study Team
Japan International Cooperation Agency

Mr. Norov BATMUNKH
Director, Department of Culture and Art
Ministry of Education, Culture and Science
of Mongolia

Mr. O.ERDEMBILEG
Director General
Department of Policy and
Coordination for Loans and Aid
Ministry of Finance of Mongolia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to conserve and to research the artifacts, and to enlighten the visitors of the Kharakhorum Museum (hereinafter referred to as "the Museum" on history and culture of Kharakhorum, through construction of the Museum and procurement of the equipment.

2. Project Site

2-1. The site of the Project is located in front of the Erdene Zuu Monastery, Kharkhorin Somon, Uburkhangai Province, as shown in Annex-1.

2-2. The certification of land property is attached as Annex-2.

3. Responsible and Implementing Organization

The followings are the responsible and implementing organizations. The chart of the organizations/agencies relevant to the Project is shown in Annex-3.

Responsible Organization:	Ministry of Education, Culture and Science
Implementing Organization:	Department of Culture and Art, Ministry of Education, Culture and Science

4. Items requested by the Mongolian Government

After discussions with the Team, the building of the Museum described in Annex-4 and the equipment for the Museum described in Annex-5 were finally requested by the Mongolian side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

5-1 The Mongolian side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex -6.

5-2 The Mongolian side will take the necessary measures, as described in Annex-7, for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

6. Schedule of the Study

6-1 The consultants will proceed to further studies in Mongolia until 23 October,

2005.

6-2 JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around February 2006.

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 and send it to the Government of Mongolia around April 2006.

7. Other relevant issues

7-1. Both sides confirmed that the main functions of the Museum are exhibitions and conservations of the artifacts. Both sides, therefore, agreed to change the Project title from "The project for construction of the Kharakhorum museum, research and information centre" to "The project for construction of the Kharakhorum museum."

7-2. Both sides have agreed that the Museum would have the following functions:

- To collect and protect artifacts for the Museum
- To research the collected artifacts
- To provide preliminary treatment/process for the artifacts for conservation and restoration
- To hold permanent as well as temporary exhibitions
- To enlighten visitors from Mongolia and from overseas through the exhibitions of the Museum

7-3. Mongolian side explained that the Museum, in place of open theater, is a part of "the Master Plan of Kharkhorin City" which was authorized by the order of the Prime Minister in June 2004. The relevant certification is attached as Annex-8.

7-4. The Mongolian side has agreed to secure and allocate the enough budgets to operate and maintain the building and the equipment built and supplied by the Grant Aid properly and effectively.

7-5. The Mongolian side has agreed to post staffs necessary for the Museum before the opening.

7-6. The Mongolian side guarantees that no archaeological relics exists under the

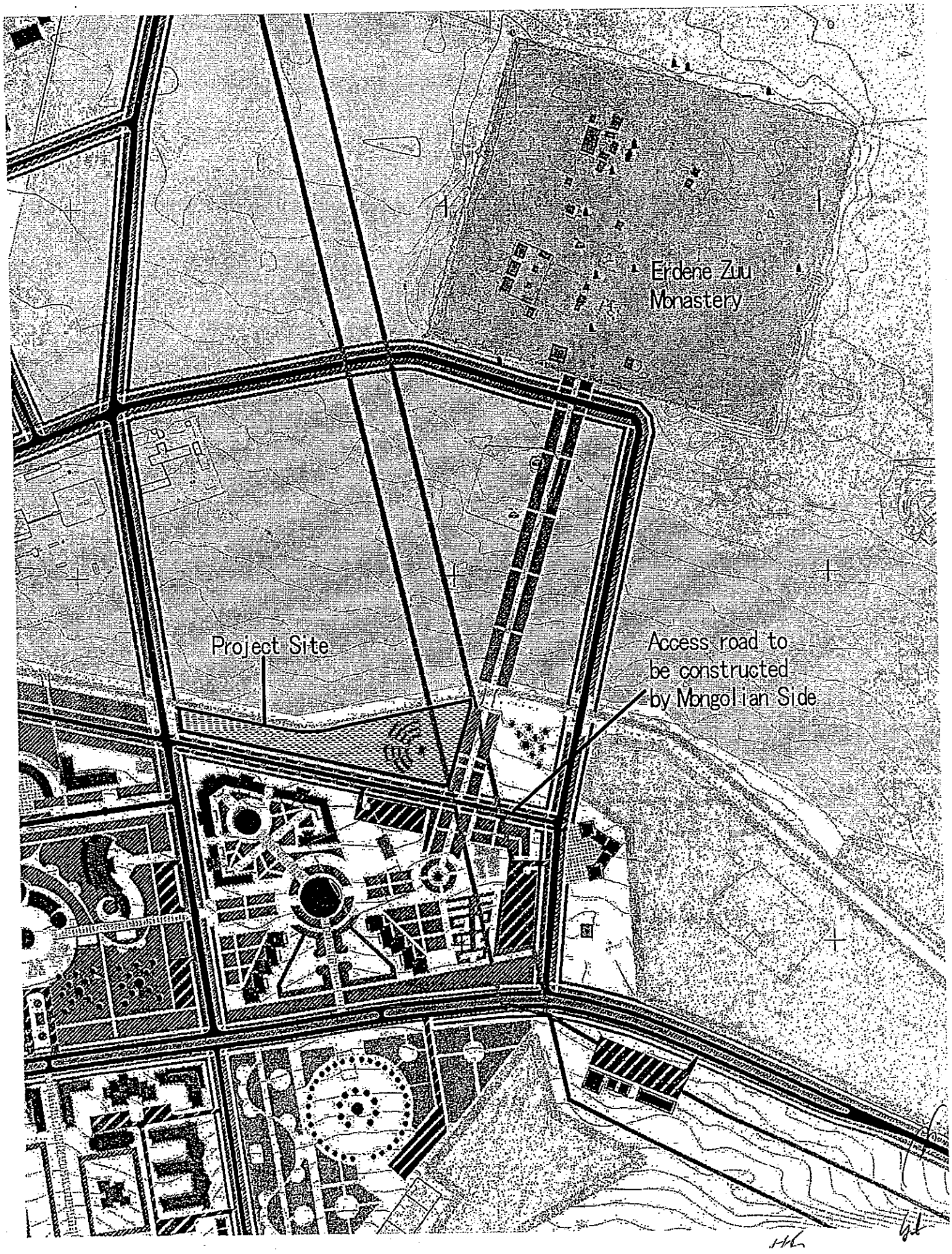
planned construction site. The relevant certifications are attached as Annex-9.

7-7. Mongolian side shall take the following measures in accordance with the implementation schedule of the Project;

- To obtain building permissions and other necessary authorizations from the relevant authorities to construct the Museum,
- To provide proper access road to the site and facilities for distribution of electricity, telephone trunk line to the site in accordance with the schedule of the Project,
- To provide landscaping work within construction site, if necessary,
- To construct boundary fence and gate(s), if necessary,
- To bear all the expenses other than construction work and supply of equipment, such as charges for building permits, distribution of infrastructure to the construction site,
- To prepare and secure exhibition materials until the completion of the Museum building, and
- To display exhibition materials after the completion of the Museum.

7-8. The Mongolian side understands that an access road should be constructed by the end of 2007, and has agreed to take necessary measures for construction of the road.

Annex 1


Erdene Zuu
Monastery
Project Site
Access road to
be constructed
by Mongolian Side

Annex - 2

БОЛОВСРОЛ СОЁЛ ШИНЖЛЭХ
УХААНЫ ЯАМАНД

ӨВӨРХАНГАЙ АЙМАГ
ХАРХОРИН СУМЫН
ЗАСАГ ДАРГА

212920 Хархорин, Хархорин сум;

2005 · 07 · 19 № 218

танай _____-ны № _____ т

Тодорхойлолт

Монгол Улсын Ерөнхий сайдын 2004 оны 06 дугаар сарын 15-ны өдрийн 66 тоот захирамжаар батлагдсан Хангайн бүсийн тулгуур төв хотын ерөнхий төлөв лөгөөнд тусгагдсан "Хархорум музей"-г барих газар нь улсын өмч болно.

ЗАСАГ ДАРГА Г.НЯМДУЛАМ.

21 0224

Annex-2

（仮訳）

教育文化科学省　　殿

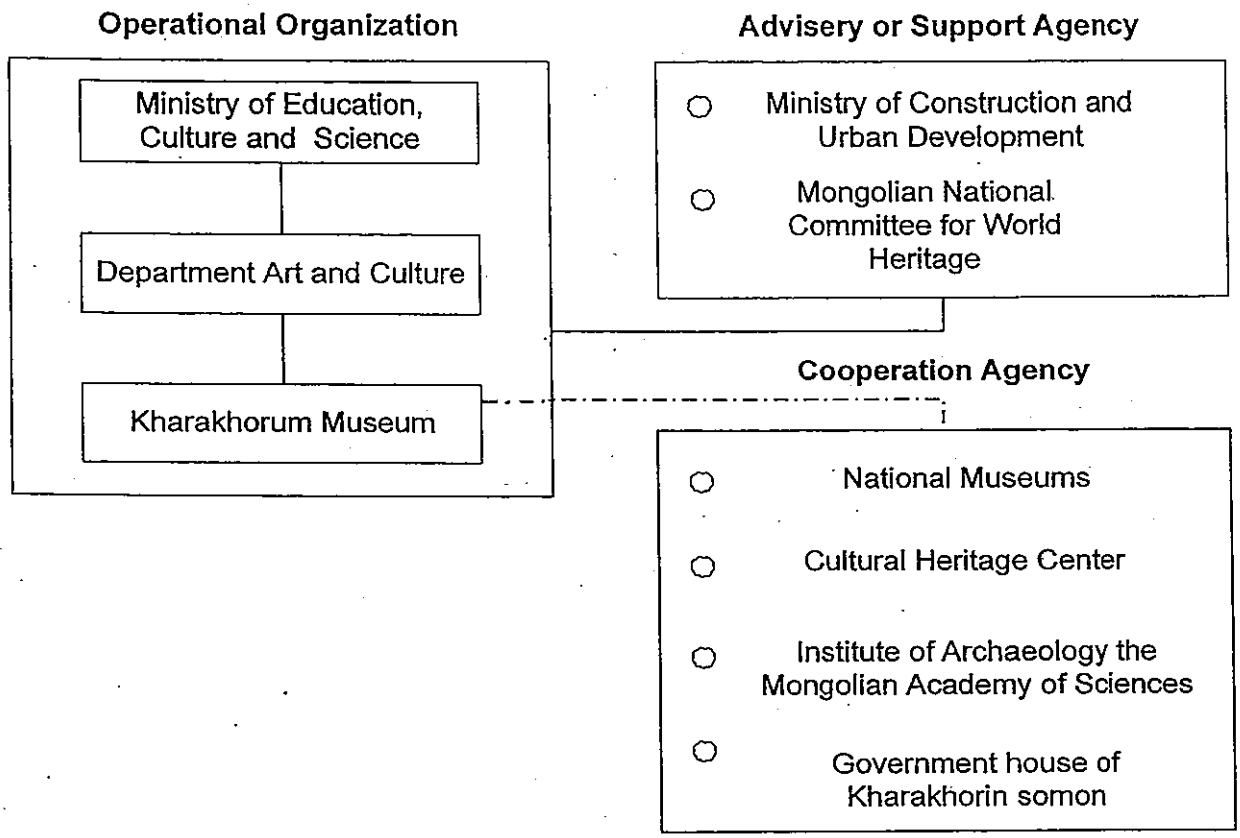
Uburhangai県
カラコルムソム（郡）
郡役所　　郡長
212920　カラコルム、　カラコルムソム
2005年07月19日　№_____

決定通知書

モンゴル国首相2004年06月15日の第66認定によって是認されたハンガイ地帯の中心であるカラコルム市の都市利用計画に提示された“カラコルム博物館”建設用地は国有地であることを公示する。

郡長　　G. Nyamdulam

Annex - 3


Operational Organization
Ministry of Education, Culture and Science
Department Art and Culture
Kharakhorum Museum
Advisery or Support Agency
Ministry of Construction and Urban Development
Mongolian National Committee for World Heritage
Cooperation Agency
National Museums
Cultural Heritage Center
Institute of Archaeology the Mongolian Academy of Sciences
Government house of Kharakhorin somon

Items Requested by Mongolian Government: Building Plan

Both sides confirmed that the Project includes the following facility components.

- Permanent exhibition hall
- Temporary exhibition hall
- Entrance hall includes guidance for visitors about the surrounding heritages.
- Storage(s) for the archaeological relics
- Room(s) for information training activities
- Laboratory(s) for preserving and research activities
- Library
- Administration office
- Other supportive facilities to operate building and provide services for the Project

The scope and size of the above items of building components shall be subject to further survey and justification in Japan. However, both size agreed that total floor area of the building will not exceed 1,500 square meter.

Items Requested by Mongolian Government: Equipment

Both sides confirmed the necessity of the following equipment based on the original request.

A Equipment for Exhibition

- Show cases
- Display system for DVD, CD and Video
- Conference Room Equipment set
- Bookshelves
- Exhibition room furniture set

B Equipment for Conservation/Restoration

- Hot air drier
- Sand blaster
- Water purification system
- Balance
- Stereomicroscope
- Tools for restoration
- Labolatory furniture set
- Shelves for storage room

C Others

- Illumination meter
- UV meter
- Humidity & temp. meter
- Equipment for facility maintenance

The scopes and quantity of the above items shall be subject to further survey and justification in Japan.

Japan's Grant Aid Program

1. Japan's Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed by 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 the Cabinet of Japan)

Determination of Implementation (Exchange of Notes between both Governments)

Implementation (implementation of the Project)

(2) Firstly, an application or a request for a Grant Aid project submitted by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Japan's Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA 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 Program, based on the Basic Design Study Report prepared by JICA and the results are then submitted to the cabinet for approval.

Fourth, the project approved by the cabinet becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Basic Design Study conducted by JICA on a requested project is to provide a basic document necessary for appraisal of the project by the

Japanese Government. The contents of the Study are as follows:

a) confirmation of the background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation,

b) evaluation of the appropriateness of the project for the Grant Aid Scheme from a technical, social and economical point of view,

c) confirmation of items agreed on by the both parties concerning a basic concept of the project,

d) preparation of a basic design of the project,

e) estimation of cost 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.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request. Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selection of Consultants

For smooth implementation of the study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on the proposals submitted by the 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 a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

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

(2) Exchange of Notes (E/N)

Both Governments concerned extend Japan's Grant Aid in accordance with the Exchange of Notes in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid etc., are confirmed.

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

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

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

However the prime contractors, namely, consulting, contractor 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.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. The Government of Japan shall verify those contracts. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings Required to 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 prior to the installation work in case the project is providing equipment,

b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) to secure buildings prior to the installation work in case the project is providing 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.

(7) Proper Use

The recipient country is required to maintain and use the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for the operation and maintenance as well as to bear all expenses other than those covered by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in a bank in Japan. The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by 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 issued by the Government of the recipient country or its designated authority.

Major Undertaking to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1.	To secured land		●
2.	To clear, level and reclaim the site when needed		●
3.	To construct gates and fences in and around the site		●
4.	To construct the parking lot	●	
5.	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6.	To construct the buildings	●	
7.	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8.	To bear the following commissions to the Japanese bank for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9.	To ensure unloading and customs clearance at 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 for the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10.	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contact, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
11.	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.		●
12.	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13.	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		●

Annex - 8

"ХОТ БАЙГУУЛАЛТ"
ТӨРИЙН ӨМЧИТ ҮЙЛДВЭРИЙН ГАЗАР

2005 оны 09 сарын 22 өдөр Дугаар 25 Улаанбаатар хот

Боловсрол, Соёл шинжлэх ухааны яаманд

Барилгын байршлын тухай.

Монгол Улсын Ерөнхий сайдын 2004 оны 66 дугаар захирамжаар Хангайн бүсийн тулгуур төв Хархорин хотын ерөнхий төлөвлөгөөг баталсаны дагуу Япон улсын тусламжаар барих музейн барилгын байршлыг ерөнхий төлөвлөгөөний авторын хувьд орон нутгийн удирдлагатай урьдчилан тохиролцсоны үндсэн дээр тогтоосон болно.

ХОТ БАЙГУУЛАЛТ ТӨРИЙН ӨМЧИТ ҮЙЛДВЭРИЙН ГАЗАР • УЛААНБААТАР ХОТ • УХЛ 0158

ЗАХИРАЛ Д.САЙН-ЭР

Annex-8

“都市計画決定書”

モンゴル国都市開発所有機構

2005年09月02日　　番号25　　Ulannbaatar市

教育文化科学省　　殿

建設予定地について

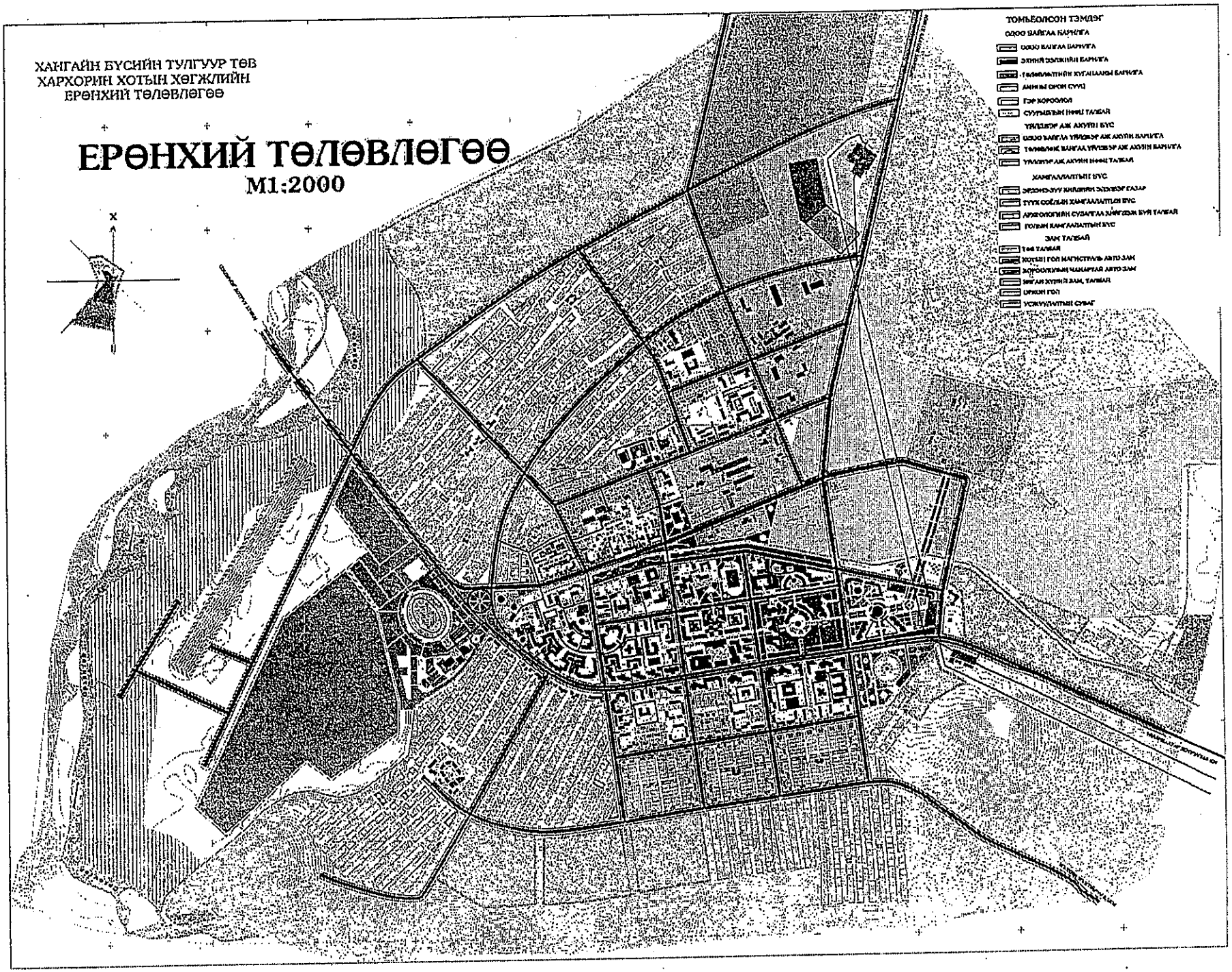
モンゴル国首相2004年06月15日の第66認定によって是認されたハンガイ地帯の中心であるカラコルム市の都市開発計画に設定された、日本国無償資金協力によるカラコルム博物館の建設予定地は、本機構が、カラコルム行政官との合意の下に設定し、使用を許可されたものである。

局長　　D. Sain-er

ХАНГАЙН БҮСИЙН ТУЛГУУР ТӨВ
ХАРХОРИН ХОТЫН ХӨГЖЛИЙН
ЕРӨНХИЙ ТӨЛӨВЛӨГӨӨ

ЕРӨНХИЙ ТӨЛӨВЛӨГӨӨ

М1:2000



Annex - 9

МОНГОЛ УЛСЫН
ШИНЖЛЭХ УХААНЫ АКАДЕМИЙН
АРХЕОЛОГИЙН ХҮРЭЭЛЭН
Улаанбаатар-51, Жуковын гудамж-77
Тел/факс(976-11)452894, 452899

2005-08-08 № 4/37

танай 2005-07-22-ны № 4/3049 т

БСШУЯ-НЫ СОЁЛ, УРЛАГИЙН
ГАЗРЫН ДАРГА Н.БАТМӨНХ
ТАНАА

Япон улсын Засгийн газрын Соёлын өвийн буцалтгүй тусламжийн хүрээнд хэрэгжүүлэх "Хархорум музей" төслийг боловсруулахад тус хүрээлэн эхнээс нь оролцон ажилласан билээ. Иймд Хархорум музей барих барилгын газрыг урьдчилсан байдлаар сонгохдоо эртний Хархорум хотын туурийн хамгаалалтын бүсийн гадна, хөрсөн дээр археологийн ямар нэгэн дурсгал үгүй талбайг товлосон юм.

Харин музейн барилгын ажил гүйцэтгэх явцад мэргэжлийн археологичдыг оролцуулан хяналт тавиулж ажиллах нь зүйтэй гэж үзэж байна.

ЭРДЭМТЭН НАРИЙН БИЧГИЙН ДАРГА,
ДОКТОР Б.ЦОГТБААТАР

Annex-9

教育文化科学省　殿

モンゴル国
科学アカデミー
考古学研究所
ウランバートル市—51、Jukov 通り-77

2005 年 08 月 08 日　№　2/37

依頼 2005 年 07 月 22 日　№　4/3049

日本国無償資金協力による “カラコルム博物館” 建築計画を実施するためにモンゴル科学アカデミーは当初から参画してきた。カラコルム博物館の建築計画を作成するにあたり文化芸術局が選定した当館の建設予定地が、カラコルム市遺跡保護地域外の無埋設遺跡地区であることを認定する。

ただし、当敷地がカラコルム市遺跡保護地域に隣接しているため、博物館の建築着手前に、専門家による埋蔵文化財の試掘調査することが必要と考えている。

科学アカデミー秘書、
Dr.　B.Tsogtbaatar

Annex - 9

Өвөрхангай аймгийн Хархорин сумын төвд баригдах "Хархорумын музей"-н барилгын талбайд хийсэн археологийн судалгааны дүгнэлт

Өвөрхангай аймгийн Хархорин сумын төвд Япон улсын засгийн газрын хөрөнгө оруулалтаар баригдах "Хархорумын музей"-н барилгын талбайд БСШУЯ-ны захиалгаар ШУА-ийн Археологийн хүрээлэнгийн Дундад зууны секторын эрдэм шинжилгээний тэргүүлэх ажилтан, доктор, профессор Д.Баяр, эрдэм шинжилгээний ажилтан С.Хүрэлсүх, Л.Мөнхбаяр нар газар дээр нь очиж археологийн нарийвчилсан хайгуул судалгаа хийв.

Уг талбай нь Хархорин сумын зүүн захад Хархорины тариалангийн талбайг услах зориулалт бүхий сувгийн урд хэсэгт /Эрдэнэзуу хийдийн баруун урд талд/ буюу Эрдэнэзуу руу чиглэсэн засмал замын баруун талд байрлах "Цэнгүүн хүрээ" жуулчины баазын чанх баруун талд 100 м зайтай байрлана.

Уг талбайн ерөнхий байдлыг ажиглахад сувгийн урд хэсэгт маш ойр байрласан байх бөгөөд уг сувгийг барих явцад тухайн газрын шороог авч ашигласан нь овон товон болж археологийн дурсгал байх ямар ч боломжгүй нь илт байна. Одоо тухайн газарт автомашины зам, холбооны шугам, цахилгааны хувьсгуур /трансформатор/, газар шорооны ажлын үед үүссэн хөрсний эвдрэл илт мэдэгдэх ажээ.

Энэхүү талбайд 200х200 м хэмжээтэй газарт археологийн тандалт хийж үзэхэд газрын хөрсөнд ил мэдэгдэх археологийн дурсгал илэрсэнгүй, ухаж хонхойлгосон нүхний хананд ямарваа соёлт давхрагын ул мөр үгүй, барилгын материал тоосго зэргийн үлдэгдэл огт байхгүй, ургамлаар бүрхэгдсэн элсэрхэг хөрсөнөөс бүрдэж байлаа.

Уг талбайн газрын байршлийг GPS-р тогтоосон.

Д.Баяр

116 ш

GPS-ийн хэмжилт

Muz-1
Далайн түвшнээс дээш 1466 м
N 47° 11' 42.2"
E 102° 50' 19.8"
Алдаа 5

Muz-2
Далайн түвшнээс дээш 1460 м
N 47° 11' 43.4"
E 102° 50' 19.8"
Алдаа 5

Muz-3
Далайн түвшнээс дээш 1468 м
N 47° 11' 43.6"
E 102° 50' 22.5"
Алдаа 5

Muz-4
Далайн түвшнээс дээш 1473 м
N 47° 11' 42.4"
E 102° 50' 23.0"
Алдаа 5

ШУА-ийн Археологийн хүрээлэнгийн
Дундад зууны секторын эрхлэгч Д.Баяр
/доктор (Sc), профессор/

Эрдэм шинжилгээний ажилтан С.Хүрэлсүх
Л.Мөнхбаяр
/магистр/

2005-10-06.

165

Annex-9

(仮訳)

ウルフハンガイ県ハラホリンスム中心に建設が予定されている カラコルム博物館の建設予定地における埋蔵物試掘調査報告書

ウルフハンガイ県ハラホリンスムの中心部に日本国無償資金協力案件で建設が予定されているカラコルム博物館の建設予定地において、モンゴル国教育科学文化省の依頼により当研究所所長 Dr.(Sc).教授　D.Bayar, S.Khurelsuh, L.Munkhbayar 研究員は、現地での試掘調査を実施した。

この建設予定地はハルホルンスム東の農業用水路に面したエルテンゾー寺院の道路の西側テェングフレーツーリストキャンプの西側 100mに位置している。

この予定地は農業用水路に隣接しており、用水路構築時の掘削土より、異物が含まれていないことが明白である。

現在、付近での道路、電柱、トランスの敷設の資材置場等に使われている。

建設予定地の 200mX200m の範囲で試掘調査を行った結果、埋設遺跡は、発見されなかった。また、調査地内の掘削された場所には、遺物も、遺構も発見されなかった。また、表土は草で覆われた、砂地である。

そのため位置の測定には、GPS を用いた。

（２枚目）

・ GPS の調査結果

Muz-1
海抜 1466m
N 47°　11' 42.2"
E 102°　50' 19.8"

Muz-2
海抜 1460 m
N 47°　11' 43.4"
E 102°　50' 19.8"

Muz-3
海抜 1468m
N 47°　11' 43.6"
E 102°　50' 22.5"

Muz-4
海抜 1473m
N 47°　11' 42.4"
E 102°　50' 23.0"

モンゴル科学アカデミー考古学研究所 所長　D. Bayar
（Prof. Dr. Sc.）

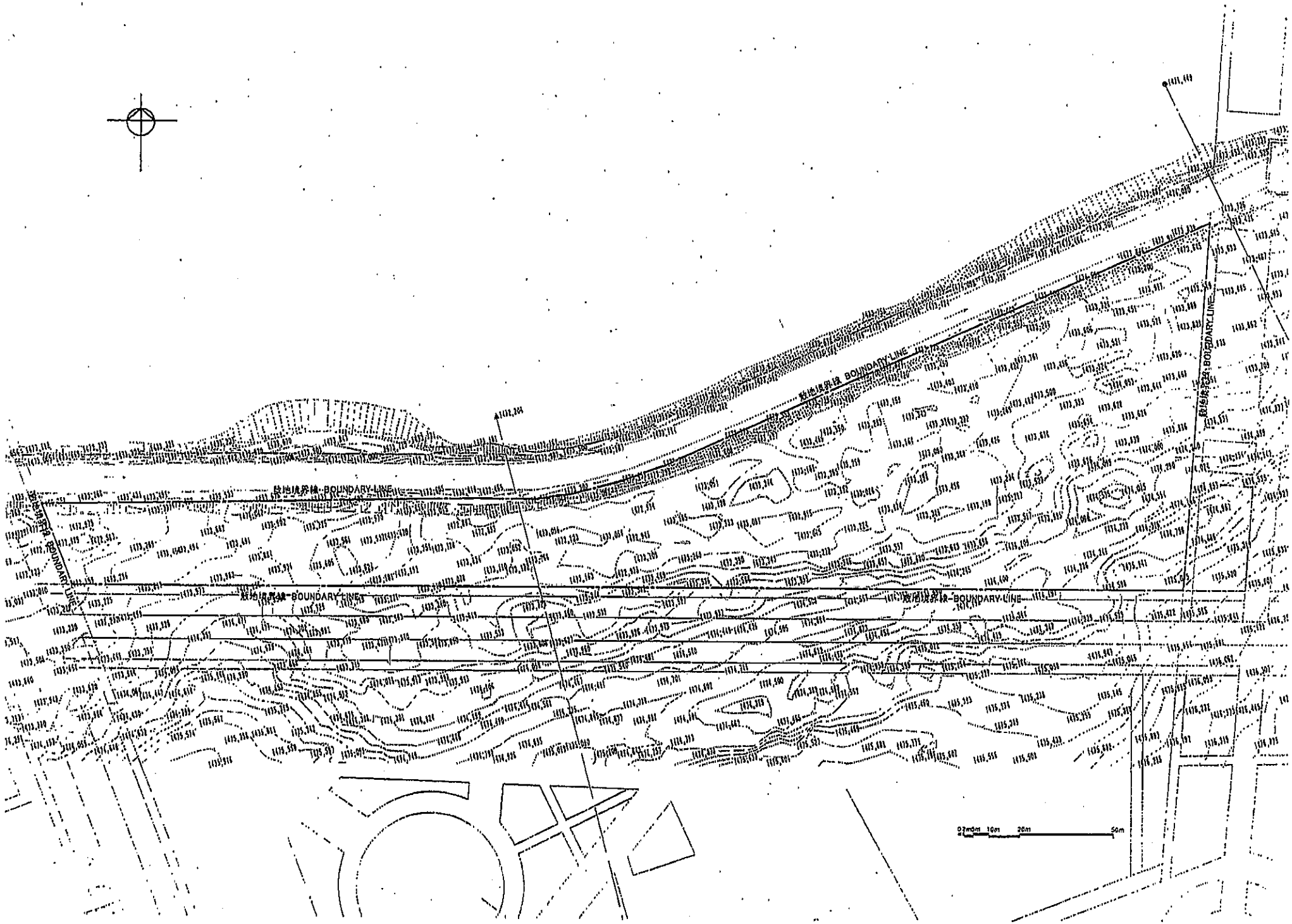
同研究所　研究員　C. Hurelsuh
L. Munhbayar
(Master)

2005.10.6

5. Other Relevant data

- **Site Survey Drawing**
- **Site Soil Investigation Data**

- **Site Survey Drawing**


BOUNDARY-LINE
0 2.5m 10m 20m 50m

· **Site Soil Investigation Data**

Drilling Log and Standard Penetration Test (SPT)

Project: *The basic desigh study of Kharkhorin Museum Project*

Ground elevation: *1473.3 m*

Date: *15.10.05*

Borehole No: *BH-1*

Ground water level : —

Surveyed: *Soil Trade LLC A.Bat*

Scale	Elevation m	Depth, m	Thickness of stratum	Soil: Symbol	Soil: Visual classification	Soil: Color	Soil: Description	Depth	No. of blows / Penetration cm	No. of blows for 15cm penetration: 15cm	15cm	15cm	N value	Sampling: Sample No.	Sampling depth, m	Symbol of sample
						Brown	Topsoil									
1	1473.3	0.3	0.3	SP-SM		Grey brown	Poorly graded sand with silt and gravel Medium dense	1.0	13/30	5	6	7			1.0	
		0.8	1.1						14/30	6	7	7			2.0	
2				SM		Grey brown	Silty sand with gravel Stiff	2.0	11/30	3	4	7			3.0	
3	1470.3	3.0	2.2	SC-SM		Brown	Silty, clayey sand	3.0	23/30	7	10	13			4.0	
		3.3	0.3						25/30	7	11	14			5.0	
4				SM		Grey brown	Silty sand with gravel Very stiff	4.0	23/30	6	10	13			6.0	
5								5.0	25/30	8	11	14			7.0	
6		5.8	2.5					6.0	22/30	7	12	15			8.0	
7				SP-SM		Grey brown	Poorly graded sand with silt and gravel Medium dense	7.0	29/30	8	13	16			9.0	
8								8.0	26/30	7	12	14			10.0	
9								9.0	28/30	8	13	15			11.0	
10		9.8	4.0					10.0	30/30	9	14	16			12.0	
11	1462.3			SM		Grey brown	Silty sand with gravel Very stiff to hard	11.0	37/30	10	18	19			13.0	
12								12.0	44/30	11	20	24			14.0	
13								13.0	70/30	20	30	40			15.0	
14		13.5	3.7					14.0	64/30	21	25	39			16.0	
15								15.0	60/30	24	28	32			17.0	
16				GM		Grey brown	Silty gravel with sand Very dense	16.0	65/30	19	27	38			18.0	
17								17.0	68/30	21	29	39			19.0	
18								18.0	64/30	23	30	34			20.0	
19								19.0								
20	1453.3	20.0	6.5													

Drilling Log and Standard Penetration Test (SPT)

Project: *The basic design study of Khurkhorin Museum Project*

Ground elevation: *1472.9 m*

Date: *14.10.05*

Borehole No: *SEBH-2*

Ground water level : —

Surveyed: *Soil Trade LLC A.Bat*

Scale	Elevation, m	Depth	Thickness of stratum, m	Soil: Symbol	Soil: Visual classification	Soil: Color	Soil: Description	Depth	Standard Penetration Test: No of blows / Penetration, cm	No of blows at the 15cm: 15cm	15cm	15cm	N value	Sampling: Sample No.	Sampling depth, m	Symbol of sample
	1472.9					Brown	Topsoil		16/30	4	7	9				
1		0.6	0.6	SM		Grey brown	Silty sand Very stiff	1.0	18/30	5	7	11			1.0	
2								2.0	20/30	6	8	12			2.0	
3								3.0	18/30	6	7	11			3.0	
4								4.0	19/30	7	6	13			4.0	
5		4.8	4.2	SC-SM		Brown	Silty clayey sand with gravel Very stiff	5.0	22/30	6	8	14			5.0	
6								6.0	23/30	7	9	14			6.0	
7								7.0	27/30	8	12	15			7.0	
8		7.8	3.0	SW		Grey brown	Well graded sand dense	8.0	40/30	7	19	21			8.0	
9		9.0	1.2	SC		Brown	Clayey sand	9.0	34/30	11	16	18			9.0	
10		9.4	0.4	GW-GM		Grey brown	Well graded gravel with silty and sand dense	10.0	39/30	9	18	21			10.0	
11								11.0	30/30	8	12	18			11.0	
12		11.6	2.2	SM		Brown	Silty sand hard	12.0	42/30	10	18	24			12.0	
13		13.0	1.4	GM		Grey brown	Silty gravel with sand dense to very dense	13.0	49/30	13	21	28			13.0	
14								14.0	64/30	16	28	36			14.0	
15								15.0	62/30	20	29	33			15.0	
16								16.0	64/30	22	27	37			16.0	
17								17.0	65/30	19	31	34			17.0	
18								18.0	69/30	15	32	37			18.0	
19								19.0	72/30	21	31	41			19.0	
20	1452.9	20.0	7.0					20.0							20.0	

Drilling Log and Standard Penetration Test (SPT)

Project: *The basic design study of Kharkhorin Museum Project*

Ground elevation: *1473.9 m*

Date: *15.10.05*

Borehole No: *SEBH-3*

Ground water level : —

Surveyed: *Soil Trade LLC A.Bat*

Strata	Elevation, m	Depth	Thickness of stratum, m	Soil: Symbol	Soil: Visual classification	Soil: Color	Soil: Description	Standard Penetration Test: Depth	No of blows at the 15cm: 15cm	15cm	15cm	N value
	1473.9					Brown	Topsoil					
		0.6	0.6	SC-SM		Grey brown	Silty, clayey sand Stiff	1.0	12/30	5	5	7
		2.0	1.4					2.0	14/30	5	6	8
				SM		Grey brown	Silty sand Stiff to very stiff	3.0	13/30	6	6	7
								4.0	17/30	7	8	9
		4.6	2.6					5.0	21/30	7	9	12
	1468.9			SC-SM		Grey brown to brown	Silty clayey sand Very stiff	6.0	20/30	6	9	11
								7.0	25/30	8	9	11
		7.6	3.0	SC-SM		Grey brown to brown	Silty clayey sand with gravel Very stiff to hard	8.0	22/30	5	10	11
		8.6	1.0					9.0	36/30	9	14	22
	1463.9			SP-SM		Grey brown	Poorly graded sand with silt and gravel Dense	10.0	42/30	11	19	23
		10.8	2.2					11.0	48/30	12	20	28
								12.0	50/30	12	22	28
								13.0	59/30	14	25	34
								14.0	62/30	15	26	36
				GM		Grey brown	Silty gravel with sand Dense to very dense	15.0	69/30	21	30	39
								16.0	63/30	20	28	37
								17.0	72/30	22	31	41
								18.0	69/30	25	31	38
								19.0	71/30	27	33	38
	1453.9	20.0	9.2						74/30	30	32	42

N value scale: 0 10 20 30 40 50 60

Sampling: Sample No. | Sampling depth, m | Symbol of sample

6. References

- **Letters from the Concerned Authorities**
- **Equipment Distribution List**
- **Running Cost of Equipment**

· Letters from the Concerned Authorities

Өвөрхангай аймгийн Засаг даргын тамгын газрын Үйлдвэрлэл, дэд бүтэц, байгаль орчны бодлого зохицуулалтын хэлтэс

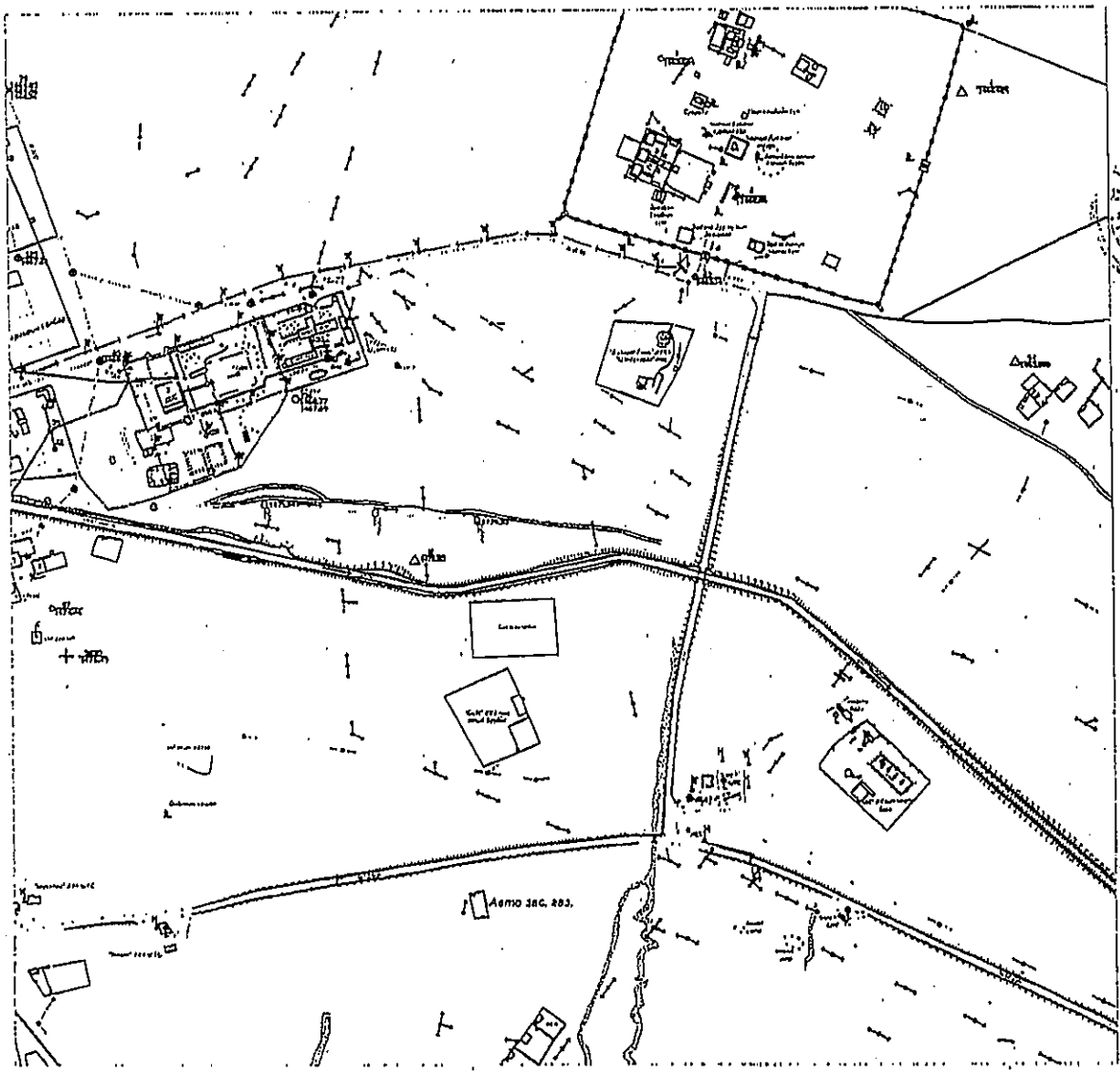
2006 оны 2 сарын16

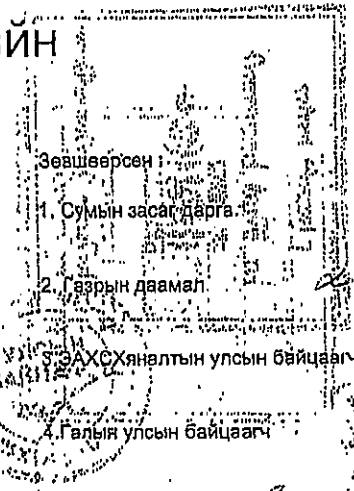
Хархорин музейн барилгад холбогдох үндсэн зөвшилцөлийн бичиг

Энэ удаагийн хурлаар холбогдох засаг захиргаанаас тохиролцсон техникийн үндэслэлийг (техникийн нөхцөлийн зөвшөөрлийг хавсаргав) мөрдөхөөр, Өвөрхангай аймаг Хархорин сум нь төлөвлөсөн газарт тэмдэглэсний дагуу музейн барилга барихыг санал нэгтэйгээр зөвшөөрч байна.

Хэлтэсийн дарга **Г.Ганболд**

Япон улсын хөрөнгө оруулалтаар баригдах музейн эзэмших газрын тойм зураг





Зөвшөөрсөн:

1. Сумын засаг дарга		Г.Нямдулам
2. Газрын даамал		Х. Лхагвадулам
3. ЗАХСХяналтын улсын байцаагч		С.Дагиймаа
4.Галын улсын байцаагч		Ц.Мөнхбат
5.Автын улсын байцаагч		Д.Батсүх
6.Бох-ын улсын байцаагч		С.Ганчимэг
7.ЭХХяналтын улсын байцаагч		Г.Мандахбаяр
8.Холбооны эрхлэгч		Д.Болормаа

Зургийн тайлбар:

1. Сонгосон газар
2. Сба Н ХХК
3. Эрдэнэ зуу музей

N05

ӨВӨРХАНГАЙ АЙМГИЙН
МЭРГЭЖЛИЙН ХЯНАЛТЫН ГАЗАР
УЛСЫН БАЙЦААГЧИЙН ДҮГНЭЛТ

212900 Арвайхээр, Өвөрхангай аймаг.
Утас (01322) 23156 22546 22700

2006.02.16 № 01

БОЛОВСРОЛ, СОЁЛ
ШИНЖЛЭХ УХААНЫ ЯАМАНД

Барилга барих газрын тухай

Хар хорум музейн барилга барих газартай 2006 оны 02 дугаар сарын 16-ны өдөр танилцлаа.

Хархорин суманд Япон улсын Засгийн газрын буцалтгүй тусламжаар баригдах "Хархорум" музейн барилга барих газар нь Хархорин хотын ерөнхий төлөвлөгөө, 2006 оны газар зохион байгуулалтын төлөвлөгөөнд тусгагдсан боловч Монгол Улсын "Газрын тухай" хуулийн 34.2, "Байгаль орчинд нөлөөлөх байдлын үнэлгээний тухай" хуулийн 4.2 дахь заалтуудын дагуу байгаль орчинд нөлөөлөх байдлын үнэлгээг хийлгэж баталгаажуулсны дараа төслийг хэрэгжүүлэх нь зүйтэй гэж үзэж байна.

БОХ-ЫН УЛСЫН БАЙЦААГЧ С.ГАНЧИМЭГ.

境喚局. 通信記.

42 0548

1009

....

/Байгууллагын нэр/

НЭЭМM №38
ЭМНХ сайдын 1997 оны
А/343 тоот тушаалаар батлав.

БАРИЛГА БАЙГУУЛАМЖ БАРИХ ГАЗРЫН ТУХАЙ ЭРҮҮЛ АХУЙН ДҮГНЭЛТ

2006 оны 2 р сарын 16 өдөр № 01 Утас....

1.Барих барилга байгууламжийн нэр ....
Япони Ямашита Секкей компаний Хархоринд баригдах музей

2.Газрыг хаана сонгож авсан ....
Хархорины Гандан орон баг
С.Ба.Н. ХХК-ийн хойд талд

3.Барилга байгууламжийн эрүүл ахуйн хамгаалалтын бүсийн хэмжээ / метрээр / норм зөрчсөн эсэх ....
Үгүй

4.Уг барилга байгууламж нь хүрээлэн байгаа орчин,ус,агаар,газрын хөрс,хүнсний зүйл болон оршин суугчдын эрүүл мэнд,ахуйн нөхцөлд нөлөө үзүүлж болох эсэх
Хүрээлэн байгаа орчин, ус, агаар, газрын хөрс, хүнсний зүйл, оршин суугчдын эрүүл мэндэд сөрөг нөлөө үзүүлэхгүй

5.Сонгосон газар нутгийн шинж чанар / талбайн хэмжээ,хөрс гадаргуугийн байдал хөрсөн доорх усны түвшин, намаг цэвдэгтэй эсэх,ногоон ургамлын тархацын байдал/........
Нийт ... м² талбайтай, газрын гадаргуу тэгшивтэр, элсэрхэг зөөлөн хөрстэй

6.Урьд / сүүлийн 5-10 жилд / нь энэ газрыг юунд ашиглаж байсан ....
Урьд нь ашиглаж байгаагүй

衛生局 樂偉

7.Уг газрын орчин тойронд байгаа барилгуудын байршил хоорондын зай /метрээр /. . . . .
. . . . Сба н ХХК-иас хашаа . . . . метр . . .
. . . . . төвийн шүүдүүнээс урагш 20 м зайд

8.Зонхилох салхины чиглэл . . . .
. . . . баруун хойноос . . . .

9.Баригдах барилга байгууламжийн орчинд үйлдвэрийн ямар газрууд байгаа,тэдгээрийн эрүүл ахуйн ангилал,бүс байгуулах,өргөтгөх боломжтой эсэх
. . . . Тухайн орчинд үйлдвэрийн газар байхгүй. . . . . .

10.Унд ахуй,үйлдвэрийн усан хангамжийн эх булгийг сонгосон байдал, хамгаалалтын бүс байгуулах боломжтой эсэх. . . . .
. . . . . Усан хангамжийг зөөврийн аргаар зохион байгуулсан. . . . . . .

11.Бохир ус,хатуу хог хаягдал,агаар бохирдуулах хаягдлыг зайлуулах боломжтой эсэх. . . . Бохир ус, хатуу хог хаягдлын цэгийг захын объектоос 15 метрээс доошгүй зайд байрлуулах зураг зааны дагуу цэвэрлэг барьж зөөвөрлөх боломжтой.

12.Барилга байгууламжийг дулааны хангамжийн төвлөрсөн шугамд холбох боломжтой эсэх . . . .
. . . . . Энгийн дулаан хангамжаар хангана.

13.Газар сонгоход илэрсэн зөрчлүүд . . . .
. . . . Зөрчилгүй . . . .

14.Зөрчлийг арилгуулахаар авсан арга хэмжээ. . . . .
. . . .

Дүгнэлт

Уг сонгосон газарт Японы Ямашита-Секкей компанийн музейн барилгыг барьж байгуулахад орчны агаар, ус, хөрс, хүнсний зүйл болон хүний эрүүл мэндэд сөрөг нөлөөлөх хүчин зүйлгүй болно.

ЭАХСХяналтын улсын байцаагч. . . . . . [signature] . . . . .

- **Equipment Distribution List**

Equipment Distribution List

Item	Qty.	Permanent Exhibilion Hall	Multi-Purpose Hall	Storage-1	Library	Main Sstorage	Secure Storage	Preparation Area	Treatment Area	Laboratory
C for Exhibition										
Personal computer	3	2	1							
DVD player	3	2	1							
LCD Projector	1		1							
Amplifier	1		1							
Speaker	1		1							
Microphone	2		2							
Equipment for Conservation/Restoration										
Hot air drier	1								1	
Sand blaster	1									1
Balance	1								1	
Lighting fixture with a magnifier	2									2
Restoration tool kit	1									1
Shelf Open Type	16					14	2			
Shelf Casement Type	4						4			
Others										
Illuminometer	1									1
hygrometer (Portable)	1									1
Thermometer/hygrometer (Mounted)	2					1	1			

- **Running Cost of Equipment**

Total running cost of Equipment (US$)

No	Item	Unit	Consumables/Replacement parts	Qty/Year	Unit Price (US$)	Sub-total
B-2	San Blaster	1	Glass Beads set	1	475	475
B-4	Lighting fixture	2	Lamp	2	95	190
C-2-2	Thermometer/ hygrometer(stand-alone)	2	Recording Paper/Ink set	2	815	1630
	Total running cost/ year					**2295**