MINISTRY OF SCIENCE, TECHNOLOGY,
EDUCATION AND CULTURE
MONGOLIA

No. 1

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR ESTABLISHMENT OF
THE JAPAN-MONGOLIA CENTER FOR HUMAN RESOURCES
DEVELOPMENT COOPERATION
IN
MONGOLIA

MAY, 2000

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
KUME SEKKEI CO., LTD.

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PREFACE

In response to a request from the Government of Mongolia, the Government of Japan decided to conduct a basic design study on the Project for Establishment of the Japan – Mongolia Center for Human Resources Development Cooperation and entrusted the study to the Japan International Cooperation Agency (JICA).

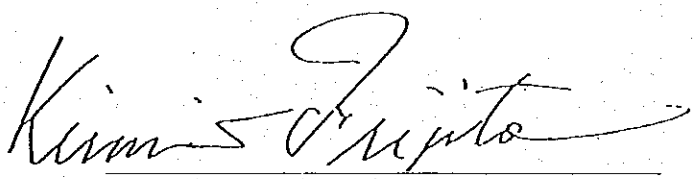
JICA sent to Mongolia a study team from November 28 to December 18, 1999.

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

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

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

May, 2000



Kimio Fujita
President
Japan International Cooperation Agency

May, 2000

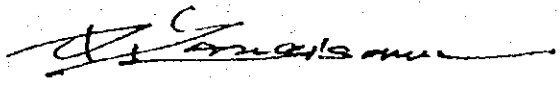
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Establishment of the Japan – Mongolia Center for Human resources Development Cooperation in Mongolia.

This study was conducted by Kume Sekkei Co., Ltd., under a contract to JICA, during the period from November 24, 1999 to June 8, 2000. In conducting the study, we have examined the feasibility and rational 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.

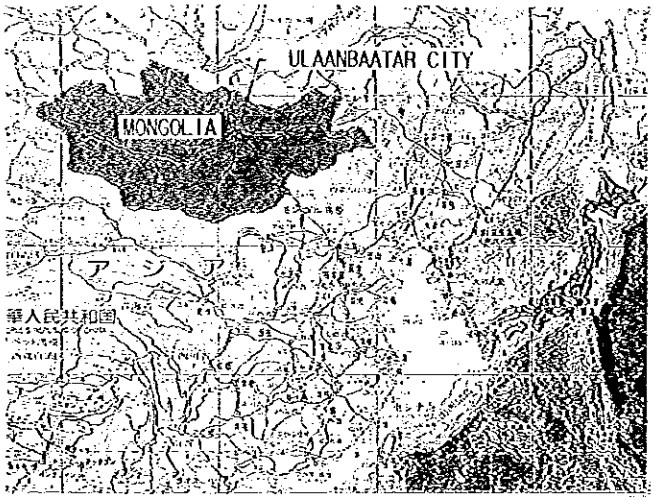
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

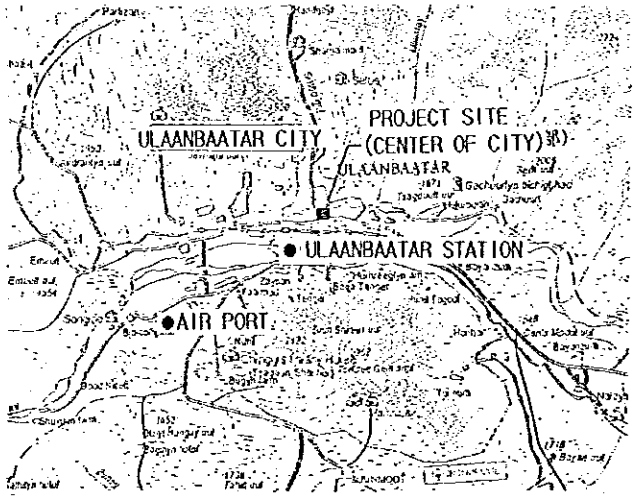


Akitada Yanagisawa
Chief Consultant,
Basic Design Study Team on
The Project for Establishment of the
Japan – Mongolia Center for Human
Resources Development Cooperation
Kume Sekkei Co., Ltd.

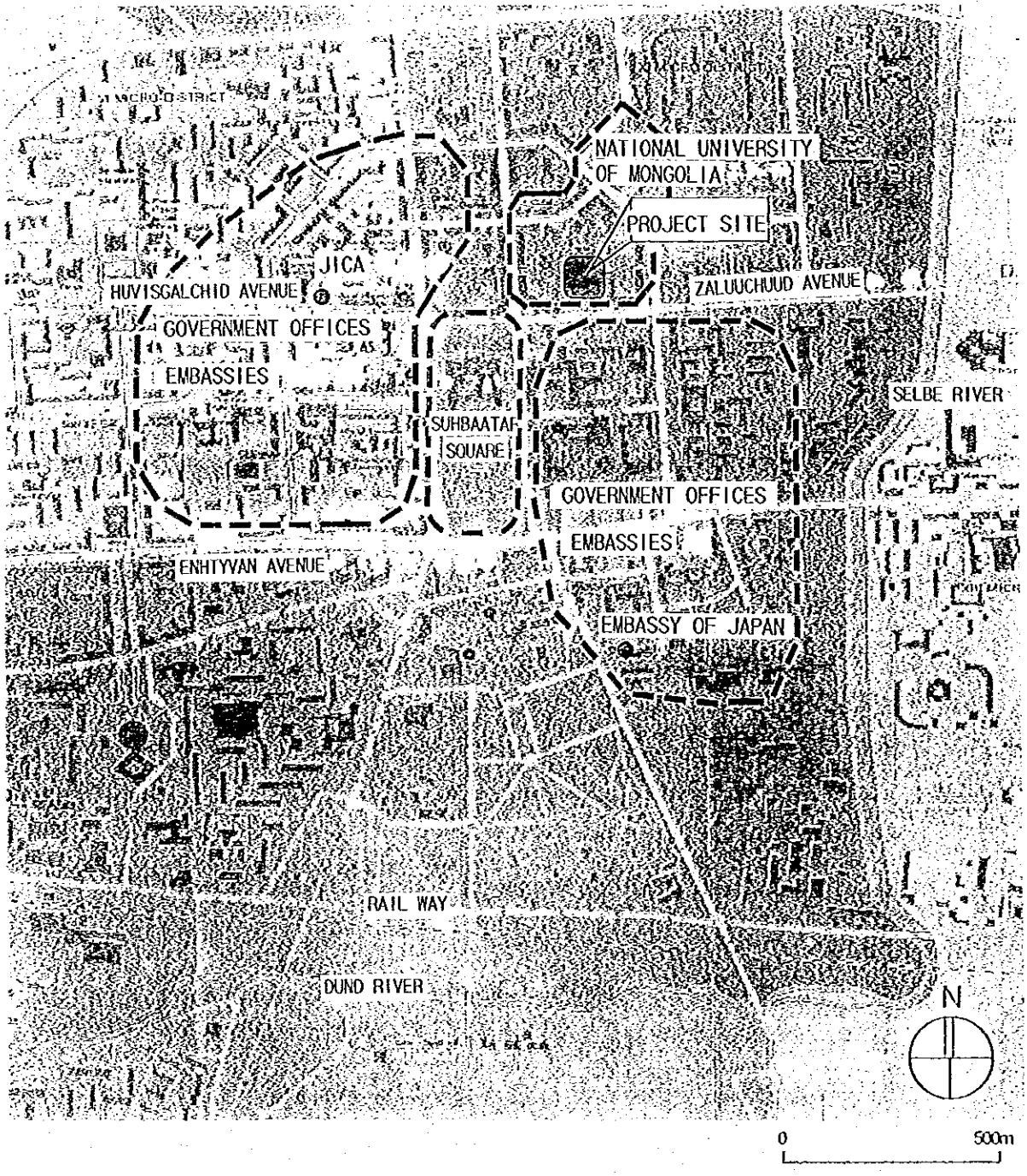
■ MONGOLIA



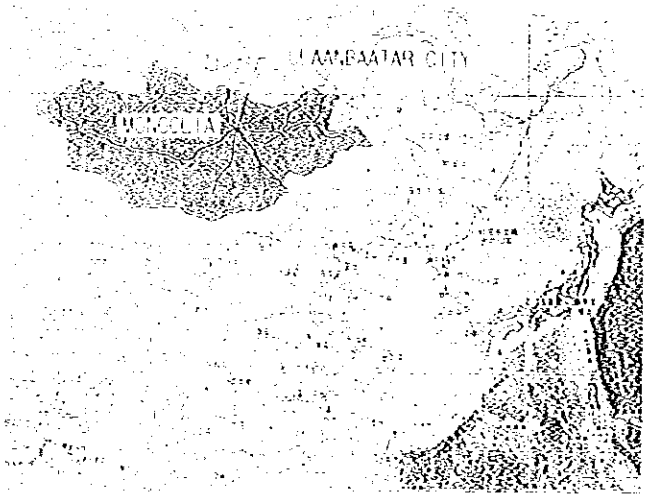
■ ULAANBAATAR CITY



■ PROJECT SITE



MONGOLIA



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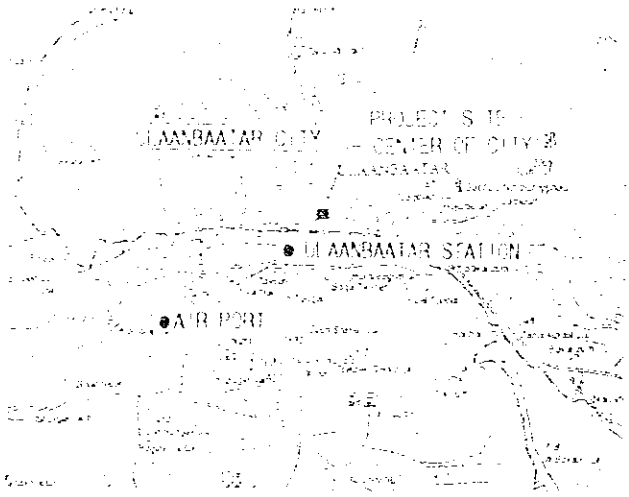

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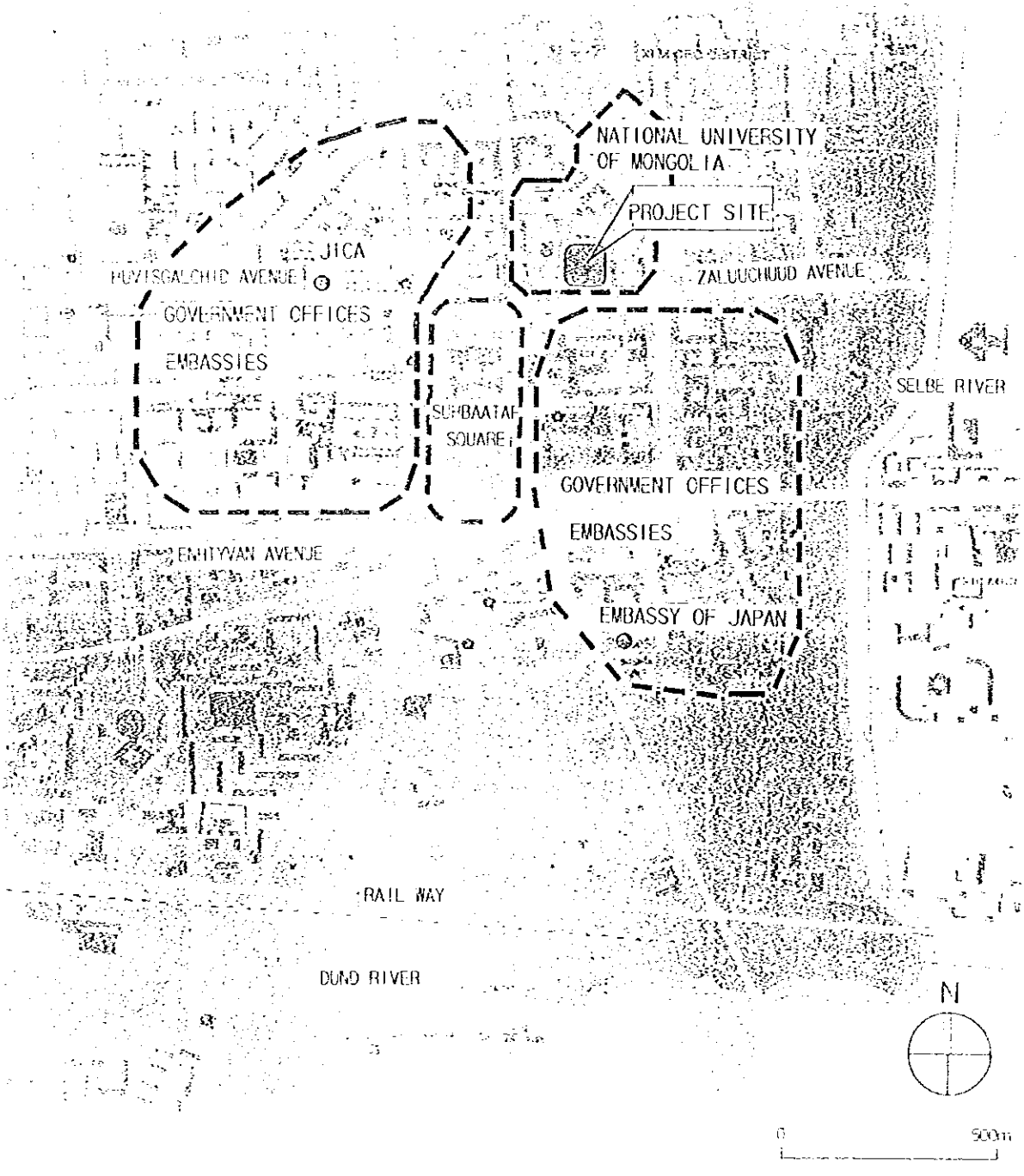

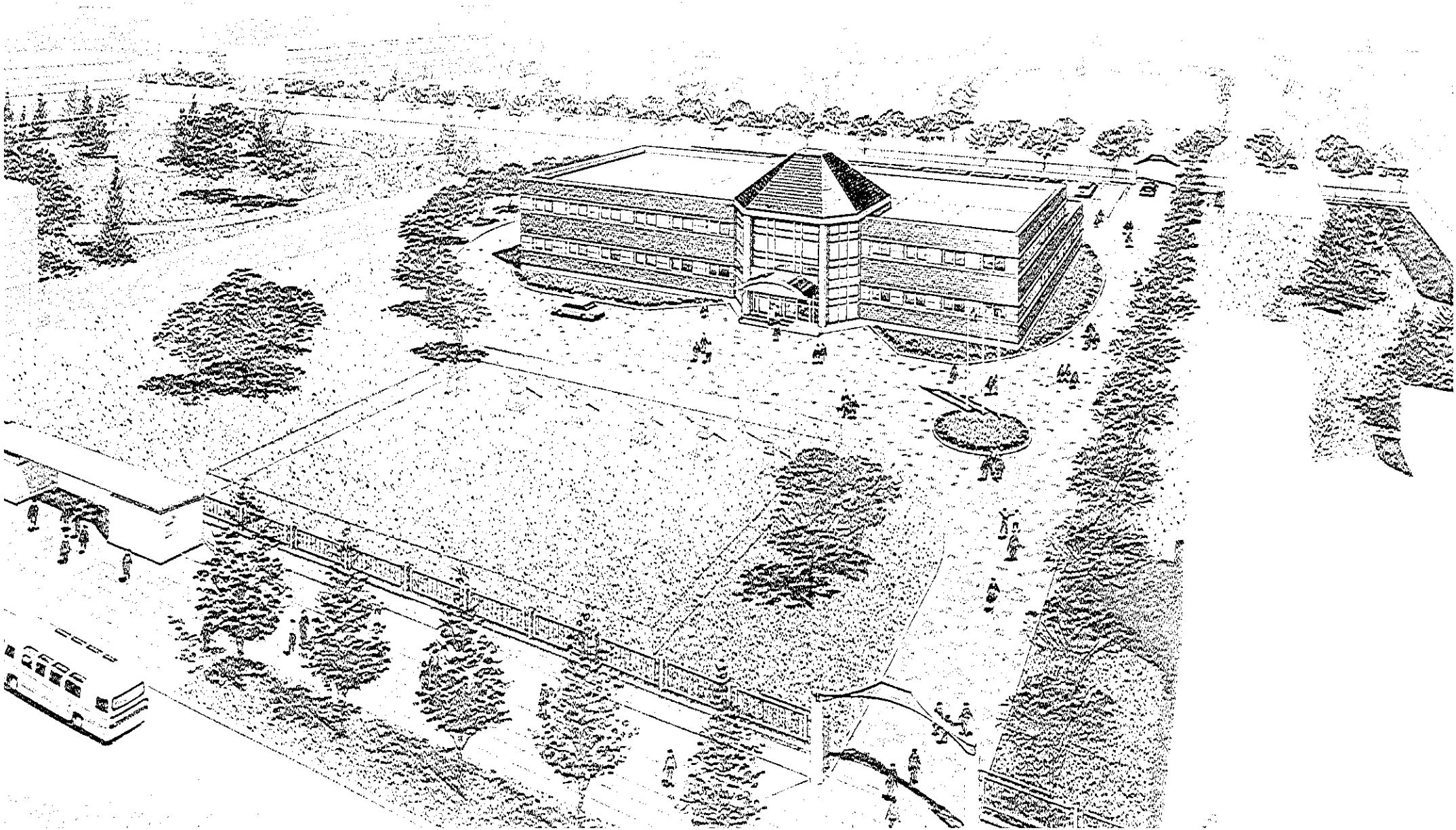

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
COMECON	Council for Mutual Economic Assistance ; Communist Economic Conference
ESPI	English for Special Purpose Institute
EU	European Union
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers
MDBA	Mongolian Business Development Agency
MMA	Mongolian Management Association
MOSTEC	Ministry of Science, Technology, Education and Culture
NUM	National University of Mongolia
ODA	Official Development Assistance
Tacis	Technical Assistance for Commonwealth Independents States
UBC	Ulaanbaatar City
Tg	Tugrik
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAID	U. S. Agency for International Development

CONTENTS

APPENDICES

CHAPTER 1 BACKGROUND OF THE PROJECT

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The Republic of Mongolia (hereinafter referred to as "Mongolia") is situated in the eastern part of Central Asia between Russia and China and has a national land area of 1.57 million km^2 and a population of 2.54 million. Since its independence in 1921 as a socialist country, Mongolia has had a close relationship with the former Soviet Union for approximately 70 years in terms of both politics and economy.

The Government of Mongolia commenced the reform of its economic system in June, 1987. The new constitution adopted in January, 1992 calls for the withdrawal of the expression "socialism" and a shift from the planned economy to a market economy. While the Government of Mongolia introduced a three year programme for the economic transition to a market economy in 1991, the actual economic situation of the country worsened due to several factors, including (i) a lack of the knowledge, financial strength and human resources required to materialize such a transition, (ii) the suspension of financial and technical assistance by the former Soviet Union and (iii) the collapse of the external trade structure, in turn caused by the dissolution of the COMECON regime.

However, the recent economic turmoil caused by the collapse of the communist block has now stabilised, largely due to loans by the IMF as well as the World Bank and the re-adjustment of Mongolia's economic structure under the guidance of these international organizations since 1994.

In the education sector, such educational indices as the school enrollment rate and the employment rate recorded a high level due to priority investment in human resources development under the series of National Development Plans up to the end of the 1980's. The administrative confusion and tight finance in subsequent years, however, has worsened the conditions of education while the expansion and improvement of urban infrastructure and educational facilities have not been sufficiently conducted.

The National Development Plan under the new political regime further emphasises education as the basis for national development and the newly enacted "New Education Law" and "The Basic Principles for Educational Reform" show the direction for reform, including the rebuilding of the educational system, improvement of the quality and efficiency of education, decentralisation and improvement of the educational management capability. Institutions for higher education have been given the clear role of developing manpower to conduct the task of transforming the domestic economy to a market economy under the Higher Education Law of 1995, necessitating the reforms of introducing a practical educational curriculum to suit the new economic system, review of theory-oriented teaching, the development of a teacher re-training system and the urgent improvement of educational facilities and equipment. Despite such emphasis on education, sufficient achievements have not yet been made because of the shortage of

funding and capable teachers, etc.

Under these circumstances the Government of Japan recognized that the stability and economic development of Mongolia were important for the political and economic stability of the region and determined that "intellectual assistance and human resources development to enable the transition to a market economy" was a high priority area for Japanese ODA for Mongolia. Japan has continued to assist the development efforts of Mongolia, which is seeking democratization and a shift to a market economy, with various projects and studies to serve human resources development and institutional reform in Mongolia, including "Economic Reform and Development", a research cooperation project introduced in 1994, and "The Study to Assist Transition to a Market Economy", a development study implemented in 1998. The Government of Japan also dispatched a project formulation study team to Mongolia in October, 1998 for the purpose of proposing the establishment of "a Center for Human Resources Development Cooperation" to act as the central institution for human resources development as part of "The New Human Resources Development Strategy for Asia Towards the 21st Century" in order to facilitate human resources development, particularly aimed at younger generations, and understanding of Japan among the people of Mongolia through cultural exchanges between the two countries. During the visit to Mongolia, the study team members explained that Japanese initiative that the Center would host business courses and Japanese language courses as well as sponsoring activities to facilitate understanding of Japan and this initiative was understood and supported by the Mongolian side. The Government of Mongolia subsequently decided to make the National University of Mongolia (NUM) the project implementation body and made a request for grant aid for facilities and equipment for the proposed Center.

CHAPTER 2 CONTENTS OF THE PROJECT

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2.1 Objectives of the Project

The Higher Education Law enacted in 1995 requires that universities play a role of meeting social needs to achieve a market economy. To be more precise, what are required are (i) a review of the curriculum to materialize the education of the people required to facilitate the transition to and to manage a market economy and (ii) improvement of the educational facilities as well as equipment. The National University of Mongolia (NUM), which is the implementation body for the Project, is reforming the education provided by its Faculty of Economics with the assistance of other aid organizations (Tacis, etc.) and is also providing business courses for adults as part of its efforts to develop human resources to assist the transition to a market economy. However, the facilities, equipment and teaching staff are insufficient in terms of both quality and quantity.

The objectives of the present grant aid project are to facilitate the development of the human resources required by Mongolia to proceed with its transition to a market economy and to promote mutual understanding between Mongolia and Japan by means of the provision of the facilities and equipment required to (i) establish business courses with emphasis on practical skills to compensate for the weakness of human resources development efforts in progress by the NUM and (ii) Japanese language courses together with (iii) facilities for Japan-Mongolia cultural exchange activities.

2-2 Basic Concept of the Project

2-2-1 Basic Concept

The establishment of Japan Center by the Government of Japan is planned not only in Mongolia but also in Viet Nam or in the others several countries which are achieving a market economy.
The common guideline of component of Center's facilities and equipment are as follows.

(1) The building of the Center will be compact, functional and economical and care will be taken to prevent it from becoming excessively decorative or extravagant.

(2) As ordinary members of the public will be welcome to visit the Center, the highest priority will be given to easy access while ensuring the security of the Center in an inconspicuous manner and taking the requests made by the Mongolian side into careful consideration.

(3) The Center will be made accessible to all regardless of age and nationality. However, this does not mean that the entire Center will be open to all visitors. The people allowed access will be defined for each zone. The building design will feature the concept of being barrier-free as a major consideration so that the Center is friendly to handicapped people.

(4) It is assumed that small and medium-size seminars and lecture meetings will also take place at the Center and a floor area of approximately 1,000 m^2 is used as the yardstick. Large seminars and performances requiring special equipment will be held at facilities other than the Center (as it is not assumed that all activities will take place at the Center itself). It is hoped that an increase of lively activities outside the Center will lead to the cooperation of and cultural exchanges with local communities and increased recognition of the Center.

(5) The Center is a facility which is expected to become "the face of Japan". Efforts will be made in regard to its external appearance and interior to create "a feeling of Japan" within the scope of not affecting the budget. The fixtures will be selected to create a warm atmosphere. Special care will be taken to create an environment-friendly building as much as possible.

2-2-2 Basic Concept of Building

The aim of the Center is to provide a facility for business courses, Japanese language courses and cultural exchange activities between Japan and Mongolia to achieve the stated objectives of the Project and will consist of the following three zones.

(1) Cultural Exchange/Lobby Zone:
open zone where various types of information for visitors to the Center are provided.
- Cultural Exchange/Lobby: space for exhibition, transmittal image projection and resting and chatting.
- Library: space for reading, Audio-visual booths, Internet access booths and book shelves.

(2) Lecture /Training Zone
a zone in which business courses and Japanese language courses are held
- Multi-Purpose Space:
  Lectures and Film shows for 150 persons
  Room can be divided into 3 smaller rooms
- Seminar room:
  Two rooms each for 30 persons separated by movable partition
  One large seminar can be held using the space for 2 rooms
- Computer Training Room:
  Space for 15 person's computer training
- Cultural Exchange room :
  Introduction of Japanese culture
  Room can be used separated into two rooms
- Japan Club Room :
  Office space for 8 persons of related organizations

(3) Administration Zone:
a zone incorporating the various rooms required for the management of the Center
- Director's office:
  Two director's room and a secretary's room.
- Reception Room:
  Inviting guest and small meeting
- Office :
  Space for 7 administrative staffs.
- Meeting room:
  Space for 16 persons used for general meeting

- Lecturer's Room :
  Space for 8 lecturers of Japanese language and each business seminar.

2-2-3 Basic Concept of Equipment

For the smooth activity of the Center and fulfillment of the function of each room, necessary equipment are planned as follows:

- Computer:
  Personnel computer set for training and administrative use.
- Audio- Visual equipment:
  Supply Audio-Visual information installed at Cultural Exchange/Lobby and Multi-purpose room etc.
- Office equipment:
  Preparation of training material and communication apparatus.
- Furniture:
  Furniture for staff activities at each room.

2.3 Basic Design

2.3.1 Design Concept

(1) Basic Concept Regarding Natural Conditions

1) Climate
   - In view of the long and severe winter, the facility plan will offer excellent heat insulation and an efficient heating system (heat transmission coefficient K of the walls = 0.255 W/m^2/deg/hr: some four times better performance than ordinary walls). North-facing main rooms will be avoided as much as is practically possible to allow the use of sunshine for comfort and better heating efficiency. A windbreak room (ante-room) will be introduced at the entrance of the Center to suppress the invasion of cold air from outside.
   - Although an air-conditioning system is not planned for the Center as in the case of similar facilities given the short summer, windows with an insect control net can be left open to ease the internal heat.

2) Earthquakes
   - The aseismatic performance required of a building pursuant to Mongolia's Aseismatic Standards will be adhered to (Ulaan Baatar: seismic intensity Grade 7 area; ground surface acceleration: approximately 100 gal).

3) Supporting Ground

- The supporting ground will be determined taking the deep level of ground freezing (approx.3m) into consideration. The foundations should be both practical and economical.
- Giving the rising tendency of the groundwater table in Ulaan Baatar in recent years, the structural plan will examine the possible buoyancy acting on the building while the construction plan will pay attention to possible spring water during the drilling work.

4) Lightning

- Because of the relatively frequent occurrence of lightning, a lightning protector system will be installed in accordance with the relevant local standards.

5) Site Location

- The proposed site is sufficiently large and is a prime site on a university campus. In respect of future expansion and development, the facility plan for the Center will be prepared to contribute to the improved environment of the campus.
- The No. 1 and No. 2 Buildings located on either side of the proposed site for the Center are three stories and four/five stories buildings respectively. Based on the general assessment regarding harmony with these and other buildings in the vicinity, the effective use of the site, the overall scale and easy management of the Center and a reasonable construction schedule, the new Center building will have two stories.

(2) Basic Concept Regarding Social Conditions

1) Facility with Easy Access

- The proposed Center is a facility which will be widely open to the general public. Because of the recessed position of the building from the road in front, the exterior plan will emphasize easy recognition of the building from outside of the Center site and easy access to the building.

2) Facility with Clear Internal Layout and Easy Security Control

- The Center can expect many visitors. The internal layout should, therefore, be clear for visitors and trainees while the facility plan should allow easy management and security control by administrative staff.

- A gate will be introduced to control access to the site and the windows on the ground floor will have a security grid.

3) Barrier-Free Facility
   - A seminar room (multi-purpose room) will be introduced on the ground floor together with toilet facilities for the disabled (multi-purpose toilet facilities).
   - Sloping access will be provided at the entrance of the building.

4) Japanese Styling
   - The external appearance of the building should be compatible with the local climate and should be familiar to local people while simultaneously giving the impression of traditional Japanese style.
   - Part of the roof will be a distinctive sloping roof and the external walls will emphasize the horizontal line.
   - The cultural exchange room will create the atmosphere of a traditional Japanese room based on wood finishing in view of the main purposes of its use.

5) Car Park
   - There has been a rapid increase of the number of cars in Ulaan Baatar in recent years. However, there is no exclusive car park on the university campus except for that located in front of the No. 1 Building. While empty space around each building is currently used for ad-hoc car parking, the gradual introduction of proper parking spaces is planned in the coming years.
   - Given the current car park situation described above, an exclusive car park for the Center will be introduced under the Project. This car park will have a capacity of 20 - 25 cars based on the recommended car park size by the Municipal Authority at "the rate of one parking space per some 10 people expected to use the facility".
   - The car park will be an outdoor car park as the idea of an underground car park beneath the building or a sheltered ground level car park has been rejected on the grounds of the maintenance cost and/or difficulty of dealing with seepage water.

(3) Basic Concept Regarding Local Conditions for Construction Work and Use of Local Materials and Equipment

1) Realistic Implementation Schedule In View of Local Building Permit System

- The building permit system currently in operation in Ulaan Baatar does not necessarily function clearly and smoothly, partly because it was only recently introduced. The preparation of the implementation schedule should take the required period for the official examination of the building application at various stages following the stage of obtaining the land use permit (already obtained) (permit for technical conditions → examination and inspection of the detailed design → permit for the commencement of construction work) into consideration.

2) Use of Local Construction Methods

- High quality items imported from China and other countries are readily available in the local construction material and equipment market. Priority will be given to the selection of those items which can be procured in Mongolia and which are reliable with few maintenance problems.
- Reinforced brick masonry which is the common construction method in Mongolia and other methods with which local construction companies and workers are familiar will be employed for building and repair work.

(4) Basic Concept Regarding Maintenance Work by Project Implementation Body

1) Easy to Operate Facilities and Equipment

- Facilities (windows, doors and movable partition walls, etc.), equipment and electrical systems which are commonly used, easy to operate and maintain and which can be repaired by local companies will be selected.
- The provision of training on their operation, inspection and repair is planned prior to their handing over to the Mongolian side.

2) Reduction of Running Cost and Maintenance Cost

- The ceiling height of each room will be determined based on the characteristics and heating efficiency of the room.
- The use of as much natural light as possible is planned, even for corridors and places of common use, such as toilet facilities, to reduce the need for lighting equipment.
- The selection of internal and external finishing materials will stress durability and weatherability to reduce the maintenance cost.

(5) Grades of Facilities

The grade of the finishing materials, equipment and systems, etc. for the Center will be determined on the basis of simplicity so that they little differ from those of existing facilities.

- At the same time, architectural consideration will be given within a reasonable scope to suit the character of the Center and that of each zone as well as each room while the overall facility plan will aim at achieving a general balance of functionality, comfort and economy.

(6) Selection and Grades of Equipment

- The equipment to be provided should be appropriate for the envisaged functions of the Center in general and the planned activities in each room in particular.
- Textbooks and other teaching materials for the Center and books and video software for the library are excluded from the scope of the Project, these equipment should be provided based on the contents of training course of technical cooperation instead of supplied by the financial assistance. by the Government of Japan
- The common use of equipment will be encouraged as much as possible to utilize efficiently the number of items and quantities. General-purpose items will have selection priority to avoid unnecessary duplication while ensuring the provision of sufficient items and quantities.
- The equipment grades should be those which allow easy operation by staff and easy maintenance, including repair and the replacement of parts in Mongolia.

2.3.2 Basic Design

(1) Site Layout Plan

- The Center building will be a two stories building and will be located at the back of the meteorological observation area situated in the front part of the designated site.

  In deciding the exact location of the building, the following distance should be secured from the planned extension of the No. 1 Building of the University and from the meteorological observation pole.

No. 1 Building extension	:	at least 15 m (to prevent the spread of fire based on municipal standards)
Meteorological observation pole	:	at least 2.7 times the planed building height (recommended by the Japan Meteorological Association)

An approach road linking the public road in front and the campus road will be constructed on the east side of the building. As it is judged that access to the Center will mainly be from the pavement in front by people arriving at the Center by public bus services or on foot, the main gate of the Center will be located at this pavement side. The main gate should clearly indicate the presence of the Center.

- In view of the difficult vehicle access to the Center from the front because of an existing bus stop and pavement, the current approach route to the planned site will be made to a vehicle access road and a sub-gate will be introduced at the entry point.
- An outdoor car park with 24 parking spaces will be constructed on the north side of the building.
- The main entrance of the building will be located on the south side of the building while a rear entrance will be introduced on the car park side. An approach way for vehicles to the main entrance will also be introduced.

(2) Architectural Planning

1) Planning

The planning of room scale indicated on basic concept is determined based on the number of staff, the estimated number of attendance for seminars, unforeseen number of visitors and layout of required equipment and furniture.

The planning component and scale of each required room are described as follows.

Cultural Exchange/Lobby Zone

① Lobby (Planned Floor Area: 190 m^2)

- This is the Center's entrance hall and will have space for resting and chatting while looking at picture and photograph displays, etc. as well as video displays.
- Equipment for various types of visual display and an information board on planned activities will be installed.
- As it is common practice for local facilities such as the Center to have a cloak room near the entrance where visitors may leave their coats in winter, a cloak room of an appropriate size will be introduced in this zone in view of the accommodation capacity of the Center.

② Library (Planned Floor Area: 170 m^2)

- Various types of information on Japan will be provided and managed.
- The library will have space for a book and reference material lending counter and reading space in addition to booths designed for the viewing of videos, Internet access and individual consultations.
- The number of books to be stored will be approximately 6,000, consisting of some 3,000 to be supplied under technical cooperation and additional books and magazines, etc. based on the assumed partial transfer of books, etc. on Japan from universities and other libraries.
- It is assumed that the library will be run by one full-time librarian and several part-time workers. The shelves will be open type shelves which are common in libraries in Mongolia.

Lecture/Training Zone

① Multi-Purpose Space (Planned Floor Area: 222 m^2)

- This space will be used for medium size lectures, conferences, receptions and film shows.
- This space will house AV equipment to enable various types of presentations, including video shows.
- Maximum accommodation of some 150 people in a classroom style will be designed, assuming the use of this space for lectures and meetings of the University of Mongolia as long as these activities do not hinder the functions of the Center.
- Movable partition walls will be used to divide the space into three seminar rooms under normal circumstances.

② Seminar Rooms (Planned Floor Area: 54 m^2 x 2)

- These rooms will mainly be used for business courses and Japanese language courses.
- They will have a classroom style and will each accommodate up to 30 people.
- The two rooms will be divided by a movable partition wall so that large seminars can be held using the space of the two rooms.

③ Computer Training Room (Planned Floor Area: 54 m^2)

- This room will be used for courses using personal computers.
- A class size of approximately half, i.e. 15 people, of the courses using the Seminar Rooms is assumed.
- The floor is specified as an OA floor to allow the wiring of OA equipment.

④ Cultural Exchange Room (Planned Floor Area: 65 m^2)

- This room will be used for small-scale activities to introduce Japanese culture (flower arrangement, tea ceremony and calligraphy, etc.) and cultural exchanges (singing and dancing, etc.)
- Where necessary, movable tatami mats (eight mats) will be used to create the impression of a traditional Japanese room.
- A movable partition wall will be installed to divide the room so that different activities, including the above-mentioned Japanese cultural activities, can simultaneously take place.

⑤ Japan Club Room (Planned Floor Area: 45 m^2)

- This room will house the secretariat for the alumni of those undergoing training in Japan and the society of Japanese language teachers. It will also be used to support the activities of the JOCV and NGOs, cultural exchange projects of local public bodies and academic exchange schemes, etc.
- It should be large enough to accommodate eight desks.

Administration Zone

① Director's Office (Planned Floor Area: 58 m^2 for Three Rooms)

- A Japanese director's office and Mongolian co-director's office will be introduced side by side.
- Working space for a secretary will be introduced in front of the above two offices.

② Reception Room (Planned Floor Area: 19 m^2)

- This room will be located adjacent to the director's and co- director's offices.

③ Office (Planned Floor Area: 56 m^2)

- The office will accommodate seven persons, including up to three experts and four office clerks.
- The office will be located near the ground floor entrance and will be adjacent to the reception/cloak room to improve the efficiency of reception work.

④ Meeting Room (Planned Floor Area: 32 m^2)

- This room will be used for meetings of the steering committee and general meetings of the Center.
- It will accommodate some 16 persons given the number of staff members and lecturers at the Center.

⑤ Lecturers' Room (Planned Floor Area: 52 m^2)

- This room will provide space for a total of eight lecturers for the business courses and Japanese language courses.
- The room will have a teaching material preparation corner where training materials and AV teaching materials are prepared/edited.

The room will be used for the storage of the tape-recorders, etc. used for self-learning of the Japanese language by trainees.

Above mentioned zoning and required room planning are described as follows:

- Clear configuration of the zones is planned and the administration zone and the training zone will be distributed to the east and west of the cultural exchange/lobby zone respectively.
- The library, which is the central place for the provision of information, and the multi-purpose space with the largest seating capacity will be located on the ground floor in view of convenience of use.

All rooms will be distributed along the east-west corridor to minimise energy consumption while ensuring high operation and maintenance efficiency.

- Windows will be introduced for the corridors and toilet facilities in an appropriate manner to allow the entry of natural light.
- The administration zone will have lockable doors to prevent accidental entry.

- Two building entrances will be introduced, one of which will be the front entrance while the other will be the sub-entrance from the car park.

Table 2-3-1 Floor Area of Planned Rooms

Room Name	Persons	Reason of Area planning	Planned Area (㎡)
1. Cultural Exchange/Lobby zone			
Lobby		Entrance hall, Movie screen, Visual display/Resting and chatting space, Cloak room(20m2),Furniture/Equipment Layout.	190
Library		AV×4booths、PC×5booths, Consultationx2booths,Reading 12booths, Librarian, Copy machine, Book stack for 6000volumes, Furniture/Booth layout	170
Sub-total-1			360
2. Lecture/Training zone			
Multi-Purpose Space	150	Divided into three seminar rooms Furniture layout	222
Seminar room	30 2rooms	Divided by movable partition, Furniture layout	108
Computer Training room	15	Furniture layout	54
Cultural Exchange room		Japanese style room (eight mats)	65
Japan Club room	8	Furniture layout	45
Storage		1F 30㎡、2F 20㎡ Furniture stock volume	50
Sub-total-2			544
3. Administration zone			
Director's OFFICE/Secretary's room	3	Director's 2rooms,Secretary's 1 room, Furniture stock volume	58
Reception room		Furniture layout	19
Office	7	Furniture layout	56
Meeting room	16	Furniture layout	32
Lecturer's room	8	Inc teaching material preparation space Furniture layout	52
Sub-total-3			217
4. Common space		Corridor, Entrance ante room, Lavatories, Pantry, Machine service room., etc.	389
Grand total 1-4.			1,510

Cross -Section Plan

- The floor height is determined based on the size of individual rooms, configuration of the structural beams and economy.

  - Ground floor : 4.3 m
  - First floor : 3.5 m

- The main rooms will have a suspended ceiling and the height of the suspended ceiling is determined as follows based on the room size and heating efficiency.

  - Multi-purpose space, lobby and library : 3.5 m
  - Seminar rooms and office, etc. : 3.0 m

- The basic roof shape will be a common flat roof. However, a sloping roof will be introduced above the entrance area to create a distinctive external appearance.

- The external walls will have a cavity sandwiched by insulation material while the windows will be double-glazed to ensure a good heat insulation performance.

- Hot water heating pipes will be placed in the space under the ground floor slabs to reduce underfloor chill.

(3) Structural Plan

1) Design Standards

The structural design for the Center will be based on the relevant laws, regulations and standards, etc. in Mongolia. If necessary, Japanese standards will be applied.

According to the aseismatic standards in Mongolia, the municipal area of Ulaan Baatar belongs to the seismic intensity Grade 7 area with ground surface acceleration of approximately 100 gal. This figure is similar to the aseismatic standard of 80 - 100 gal in Japan.

The snow load in Ulaan Baatar is 0.5 Kpa (50 kg/m^2).

The following design floor loads will be employed, following examples in Japan.

Seminar rooms : 2.3Kpa (230kg/㎡)
Office : 3.0 Kpa (300kg/㎡)

2) Ground Conditions and Foundation Plan

A soil formation capable of supporting the planned building is believed to appear some 3.2 m below the ground surface. Given this condition, spread concrete foundations will be placed on the supporting formation at an approximate depth of 3.2 m below the ground surface. Meanwhile, the freezing depth of the ground and the groundwater table in the area are believed to be up to 3 m and 2.5 - 3.0 m below the ground surface respectively. As the groundwater table is believed to rise to 2.5 m below the ground surface in summer, this must be taken into consideration in the design of the foundations. A detailed survey will be conducted in the future to reconfirm the ground conditions.

3) Structural Framework Plan

The structural framework of the building will principally use RC pillars and beams which are commonly used in Mongolia for buildings of a similar size and the building will have brick masonry walls. The floor slabs will be concrete throughout. However, a precast concrete floor may be used in view of the necessity to complete the structural work within the short summer period.

4) Structural Materials

In principle, the structural materials to be used will be those which can be procured locally.

(4) Mechanical Service Plan

The Center will require heating for some eight months of the year. While natural ventilation by opening the windows, etc. cannot be relied on during the heating period, a building plan with good natural ventilation is required to suppress a temperature increase inside the building in summer. In view of such requirements, the equipment plan will be prepared based on the following principles.

- The plan contents must be coordinated with the planned building functions.
- The heat insulation performance should be sufficient to contain the total heating capacity of the local trunk hot water pipeline to 130,000 Kcal/hr or less.
- Radiation heating will be employed as it offers comfort even if the room temperature is relatively low.

- In principle, equipment and materials which can be locally procured and which have a high level of general-purpose application will be selected.
- Every system used should be easy to check and maintain.
- The plan should take reduction of the running cost and energy saving into proper consideration.

1) Heating and Ventilation Systems

① Heating System

A hot water pipeline will extended from the local trunk hot water pipeline to the machine room on the first floor. After heat exchange, hot water will be circulated to the radiators installed in each room (in principle, under the windows) via the plenum above the suspended ceiling on the ground floor. The design outdoor and indoor temperatures are as follows.

- Outdoor temperature : -40°C (lowest)
- Indoor temperature : 20°C (the municipal standard is 18°C)

② Ventilation System

Seminar rooms, office, toilets and so on will have a ceiling fan for Class 3 ventilation (mechanical extraction and natural air supply). Natural air supply will come from the corridor and the extraction ducts will have sufficient heat insulation. In view of the anticipated temperature rise in the south-facing rooms in summer, windows and transoms, etc. to allow air passage between the north and south will be introduced to facilitate natural ventilation.

2) Plumbing Service Plan

① Water Supply System

A water supply pipe (50 mm in diameter) will extend from the water main (80mm in diameter) buried under the campus road to the north of the site to the machine room on the first floor for direct supply to the toilet facilities and pantry.

② Hot Water Supply System

An electric water heater with storage will be installed in the pantry to make tea.

③ Sewerage System

A combined sewer pipe serving sewage and waste water, etc. will be connected to the existing sewer main (150 mm in diameter) located to the southwest of the site.

④ Sanitary-Ware System

As water will be directly supplied from the machine room, the sanitary-ware will be those with a water tank to reduce the volume of instantaneous water supply. The water closets and urinals will have a low tank and high tank respectively.

⑤ Fire-Fighting System

According to local regulations, two indoor fire plugs will be installed on each floor and will be connected to the direct water supply system.

3) Electrical Installations

① Power Receiving and Distribution System

The supply of low voltage power (3 Ø 4 W, 380/220 V, 50 Hz) will be made from the existing substation on the campus to the Center via underground cable. A hand-hole will be provided on the site near the site boundary. The Electricity Corporation will be responsible for the extension of the power line from the substation to this hand-hole as well as for laying the incoming cable to the distribution panel in the building while the laying of the underground conduit on the site will be conducted as part of the Project.

The power supply situation in Ulaan Baatar is fairly reliable as power cuts, i.e. planned power cuts, only occur approximately once a year. Taking the functions of the Center and the necessity for a continual power supply for the equipment to be used into consideration, it is judged that the installation of an emergency power generator will be unnecessary. However, because of voltage fluctuation in the range of 5 - 10%, an automatic voltage regulator (AVR) will be installed to ensure power supply with a stable voltage performance. In the case of an uninterrupted power supply source for OA equipment, etc., portable uninterrupted power supply equipment will be installed.

- Stable power source: automatic voltage regulator (AVR)70kVA

② Trunk Power System

Power will be supplied from the distribution panel via a conduit to each lighting panel board, power control panel and power equipment. Warning of irregularity will be conveyed to and displayed on the warning panel in the office.

Electric system for trunk line and branch circuits

- Trunk power line : 3 Ø 4 W 380/220 V
- Lighting/receptacles : 1 Ø 2 W 220 V
- Ventilation/water supply/sewerage : 3 Ø 4 W 380/220 V

③ Wiring for Receptacles

The number of receptacles is planned based on the equipment plan and receptacles will be introduced to allow flexibility of their use, taking cleaning and maintenance work into consideration.

④ Lighting Equipment

Fluorescent lamps which are locally available will mainly be used for the lighting equipment to keep the running cost low.

Planned luminous intensity for key rooms

- Office	: 400 lux	- Director's room	: 300 lux
- Library	: 350 lux	- Lecturer's room	: 300 lux
- Lobby	: 150 lux	- Toilets & Storage	: 100 lux
- Multi-purpose space	: 400 lux		
- Seminar rooms	: 400 lux		

⑤ Telephone System

The telephone line (5 lines)will be extended to the Center from the existing station of north – east side of the site via an underground conduit. As in the case of the power line extension, piping work from a hand-hole on the site to the building will be conducted under the Project.

An incoming terminal board will be installed inside the building and further extension to each telephone will be made via a telephone switchboard which will be installed in the office. A telephone will be provided in appropriate rooms to make both internal and external communication possible.

⑥ Common TV Signal Receiving System

Satellite broadcasting antenna(Equipment) will be installed and a TV outlet will be provided in appropriate places

⑦ Fire Alarm System

According to local regulations, a fire warning system will be installed in accordance with the local standards. Fire detectors for the early detection of fire and fire buttons to inform of the occurrence of a fire will be installed in two places at each floor and this information will be displayed on the panel in the office as well as sounding an emergency bell for prompt and safe evacuation.

⑧ Cable Radio

Existing cable radio line of the No. 2 Building of the University will be extended to the office on the first floor.

⑨ Lightning Protection System

A lightning protection system will be installed to protect the building from lightning damage,

Lightning rod will be installed on the top of the building to protect the area covered by 60 degree from top of the rod.

(5) Construction Materials Plan

The basic principle for the selection of construction materials is the use of materials and finishing methods which are suitable for the local climate and which are firmly established locally in view of achieving facilities which are easy to maintain. The procurement of construction materials locally where possible will facilitate repair and on-site maintenance.

Table 2-3-2

Comparison Between Local Construction Methods and Selected Construction Methods

	Local Method	Selected Method	Reason for Selection
<Exterior> Roof	- Flat concrete slabs - Corrugated metal sheets (sloping roof)	- Flat concrete slabs - Corrugated metal sheets (sloping roof)	- Good weatherability and commonly used in Mongolia
External Walls	- Brick masonry with mortar and paint finish - Ornamental brick masonry - Tiles and stone facing	- Ornamental brick masonry	- Common method in Mongolia
Windows and Doors	- Aluminium (exterior) - Steel (exterior/interior) - Wood (exterior/interior)	- Aluminium (exterior of double-glazed windows) - Plastic (interior of double glazed windows) - Wood (interior), steel	- Good durability and heat insulation and commonly used in Mongolia
<Interior> Floor	- Tiles; terrazzo tiles; marble; long vinyl chloride sheeting; PVC tiles; wooden parquet; carpet; carpet tiles	- Tiles; long vinyl chloride sheeting; carpet; carpet tiles	- Tiles and long vinyl chloride sheeting are highly durable and are commonly used in Mongolia - Carpet tiles have heat retention and acoustic functions and are commonly used in Mongolia
Internal Walls	- Brick masonry with tile and paint finish - Plaster board with paint finish - Wooden decorative panels and cloth finish	- Plaster board with paint finish - Wooden decorative panels	- Commonly used in Mongolia
Ceiling	- Concrete slabs with paint finish - Plaster board - Acoustic rockwool board - Water-resistant board	- Plaster board - Acoustic rockwool board - Water-resistant board	- Acoustic rockwool board absorbs sound and is popularly used in Mongolia. Water-resistant board is used in places where water is used

Further details of the main materials to be used are given below.

1) Roofing Materials

Concrete slabs (flat roof) and coloured steel roof tiles, both of which are commonly used in Mongolia, will be used to provide good weatherability. Waterproofing will be provided by commonly used waterproof sheets placed in position by cement tiles.

2) Windows and Doors

Double-glazed, horizontal sliding windows which are common in Mongolia will be installed with an aluminum exterior in view of weatherability and a plastic interior, the use of which has been increasing locally, in view of heat insulation. A security grid will be mounted to the ground floor windows for security purposes. Internal doors in the building will be wooden doors in view of their common use in Mongolia.

3) Interior Finishing Materials

Carpet tiles will be used for the floor of the main rooms as priority is given to the acoustic and heat insulation performance. In the case of the personal computer training room, the resin OA floor will be covered by carpet tiles to allow wiring for equipment underneath and flexible modification of the equipment layout. The walls will have a light steel framework with plaster board and a paint finish for good workability and easy maintenance. The ceiling will be system ceiling (suspended ceiling).

4) Exterior Finishing Materials

Pavements will be made of interlocking bricks while the car park will be paved by concrete.

Table 2-3-3 Planning of Main Finishing Items

Room	Floor	Walls	Ceiling	Reasons for Selection
Cultural Exchange/Lobby	Tiles	Paint finish; partially decorative plywood	Acoustic rockwool board (with ribs)	Durability (floor); sound absorption (ceiling)
Library	Carpet tiles	Paint finish; partially decorative plywood	Plaster board	Sound absorption; heat retention; durability
Multi-Purpose Space	Carpet tiles	Paint finish; partially decorative panels	Acoustic rockwool board	Durability; sound absorption
Seminar Room	Carpet tiles	Paint finish	Acoustic rockwool board	Sound absorption; heat retention
Personal Computer Training Room	Carpet tiles (OA floor)	Paint finish	Acoustic rockwool board	Wiring for equipment; sound absorption
Cultural Exchange Room	Long vinyl chloride sheeting	Decorative plywood	Acoustic rockwool board	Comfort
Japan Club Room/Office/Lecturers' Room	Carpet tiles	Paint finish	Plaster board	Sound absorption; heat retention
Director's Office/Meeting Room/Reception Room	Carpet	Paint finish; partially decorative plywood	Decorative plywood	Sound absorption; heat retention; comfort
Toilet Facilities	Ceramic tiles	Semi-ceramic tiles	Silicone calcium board with paint finish	Clean impression; easy cleaning; water resistance
Corridor	Tiles (GF); long vinyl chloride sheeting	Mortar with paint finish	Plaster board	Durability; economy
Storage/Machine Room	Mortar with steel trowel finish	Paint finish	Exposed concrete slabs	Economy

(6) Equipment Plan

The supply of the following equipment is planned in accordance with the function(s) of and types of activities in each room.

1) Personal Computers

- Personal computers are planned for computer training, access to the Internet in the library and operation and management of the Center.
- The main server will be installed in the office and will be linked to other personal computers in director rooms and lecturers' room so that access to the Internet can be made by every computer in those rooms. However, as that installed in the library for Internet access will be used by many, unspecified persons, it will be separated from the Center's computer network for independent access to the Internet via a server in the library.
- The computer network system for training room will be set up independently, only for the data references are available among each computer at training room.
- An exclusive telephone line for this computer will be installed in view of the general form of its use and the communication cost.
- As there is no OS capable of supporting the Japanese, English and Mongolian languages at present, OS software run on English will be used. The specifications include that at start-up, one of the above three languages can be selected for actual operation.
- The servers will be accompanied by an uninterrupted power supply to protect data and software from power cuts. Each personal computer will be supplied by an electrostatic mat in view of the very dry local climate.

2) AV Equipment

- Various AV systems will be provided in the following places to provide wide-ranging AV information for visitors.
- Entrance lobby: system using a large size television set, centering on visual display
- Multi-purpose space: system combining pictures and sound using a multi-projector
- Lecturers' room: editing system for teaching videos
- The provision of a projector and video camera display unit is planned as common equipment for use in various rooms according to need.
- All of the systems and equipment will be of the basic grade so that they can be used by the Center's staff with little difficulty.

3) Office Equipment

- A copier to prepare reference materials, etc. and a facsimile machine for communication will be installed in the office.

4) Furniture

- Desks, chairs, cabinets and bookshelves, etc. will be provided to suit the anticipated number of users and the type of use of each room.
- Two-seat, collapsible tables (desks) will be used in the seminar rooms so that they can be folded and stored in the storage if necessary.
- In principle, ready-made products will be procured in view of low cost and easy maintenance.

The concrete items, their locations and quantities are shown in the planned equipment list below.