

OUTLINE DESIGN STUDY REPORT
ON
THE PROJECT FOR THE ESTABLISHMENT OF
NEW SCHOOLS IN THE WEST BANK
IN
THE PALESTINIAN AUTHORITY

MARCH 2009

JAPAN INTERNATIONAL COOPERATION AGENCY

MOHRI, ARCHITECT&ASSOCIATES, INC

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PREFACE

In response to a request from the Government of the Palestinian Authority, the Government of Japan decided to conduct an outline design study on the Project for Establishment of New Schools in the West Bank and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Palestine a study team from May 18 to June 19, 2008.

The team held discussions with the officials concerned of the Government of Palestine, 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 Palestine in order to discuss a draft outline 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 Japan and Palestine.

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

March, 2009

Eiji Hashimoto
Vice-President
Japan International Cooperation Agency

March, 2009

Letter of Transmittal

We are pleased to submit to you the outline design study report on the Project for Establishment of New Schools in the West Bank.

This study was conducted by Mohri, Architect & Associates, Inc., under a contract to JICA, during the period from May, 2008 to March, 2009. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Palestine and formulated the most appropriate outline 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,

Hisafumi Michikawa
Project Manager,
Outline design study team on
the Project for Establishment of New
Schools in the West Bank
Mohri, Architect & Associates, Inc.

SUMMARY

1. Brief Overview of Palestine

The Palestinian Authority (hereinafter referred to as “PA”) consists of the Gaza Strip facing the Mediterranean Sea and the West Bank adjoining the Jordan River, and has a total area of 6,020 sq.km (Gaza Strip:365 sq.km; West Bank: 5,655 sq.km). The West Bank, the target area of the Project, features undulating landscapes. While the altitude reaches nearly 1,000m above the sea level in Nablus and Tubas Governorates, some parts of the land are 400 m below sea level in Jericho Governorate. Moreover, the Gaza Strip and the West Bank are geographically split by Israel, and owing to the political complexity, Palestinians in the West Bank are not allowed to visit the Gaza Strip, and visa versa.

The population of the PA is about 3.76 million in 2007 (Gaza Strip: 1.42 million, West Bank: 2.34m million: Palestinian Central Bureau of Statistics 2007), however, Palestinian population living outside of PA territory are estimated about 6.6 million.

The PA economy has been in decline for several years. GDP per capita of the PA was US\$ 1,130 in 2006 (WB 2007) and contracted by 8.0 % from the previous year. The figure is about a third less than the level of US\$ 1,612 in 1999. There are many factors behind this economic decline such as: the surged unemployment among Palestinians working in Israel due to the tighter transportation restrictions after the 2nd Intifada; lingering fiscal deficits; and, suspension of clearance revenue transfer from Israel due to the inauguration of the Hamas-led cabinet in 2006. Regarding the clearance revenue transfer, Israel resumed the clearance revenue transfer in July 2007, when the Fayyad Administration took office. In addition, the peace talks between the PA and Israel have been resumed, with the aim of signing a peace agreement.

2. Background of the Request

The PA regards the education sector as a priority area in which to develop the human resource for its future independence. Three major goals in the educational sector have been stated in both the “Palestinian Reform & Development Plan (2008-2010)” and the “Five Year Education Plan (2007-2011)” promulgated in 2007. These goals are as follows: 1) improved access to education; 2) improved quality of education; and, 3) improved educational management. Improvement in access to education has been named an especially high priority. Indeed, the PA aims to raise the enrollment rate up to 99% and 98 % for Basic and Secondary education respectively.

In the West Bank, the target area of the Project, the annual average rate of increase in Basic and Secondary education enrollment between 2002/3-2006/7 is as high as 2.6%. Moreover, the annual average rate of increase in enrollment at Secondary level is as high as 8.7%. However, since school construction has not caught up with the increase in enrollment, many schools in the West Bank end up renting buildings or adopting a double-shift system to

accommodate the increasing number of students. Since those rented buildings were not designed for educational purposes, many schools do not have classrooms of adequate size or special classrooms such as computer labs or science laboratories. Consequently, lectures in such rented schools are not always in accord with the curriculum. Hence, the lack of adequate building space for education is an obstacle to quality education.

Also, lecture time at schools using the double-shift system is shorter than that of single-shift schools, on top of that many students studying at the double-shift school tend to commute long distances. Thus, the double-shift system is another obstacle to quality education.

Against this backdrop, the Ministry of Education and Higher Education (hereinafter referred to as “MEHE”), requested financial assistance from the Government of Japan to construct classrooms as well as special classrooms and to procure furniture and educational equipment, in order to resolve the double-shift and rented classroom issues, and thereby improve the overall quality of education.

3. Brief Outline of the Field Survey and the Contents of the Project

Upon receiving that request, the Government of Japan decided to dispatch a team to conduct an Outline Design Study to study the necessity and relevance of the Project. Given the decision, the Japan International Cooperation Agency (hereinafter referred to as “JICA”), dispatched an Outline Design Study team from May 18 to June 19, 2008. The team confirmed the following contents of the request and discussed these with MEHE, the implementing agency of the Project.

<Confirmed Requests from MEHE>

Priority Order	School Name	Governorate	No. of Requested Classrooms	Remarks
1	Beita Boys School	Nablus	16	
2	Wadi Fara’a Girls School	Tubas	16	
3	Beit Dajan Boys School	Nablus	12	
4	Jericho Boys School	Jericho	16	
5	Al Fara’a Boys School	Tubas	9	
6	Al-Zubeidat Girls School	Jericho	12	Alternative school
7	-	-	-	Alternative school: In case that E/N balance remains, the balance will be used to build additional classrooms.
Total			81	

In addition, the team studied the construction industry, surveyed sites, heard from school stakeholders, and examined the necessity of the Project as well as the appropriateness of the components, to put together the Outline Design Study Draft Report. The team revisited the PA to discuss the Draft Report with the concerned parties on the PA side from October 10 to October 21, 2008. Furthermore, the team was dispatched to the PA from January 31 to February 5, 2009 in order to explain the detailed design and a technical reference for the tender documents.

The Project is implemented under the Grant Aid for Community Empowerment, adopts the Palestinian standard specifications and designs, uses local contractors and materials, facilitates competition and thereby aims to realize cost reduction and effectiveness compared to projects under the General Grant Aid. The study results are summarized in: 1) the Selection of the Project Schools; 2) the Outline Design of the Project Components, and; 3) the Project Implementation Plan.

3-1 Selection of the Project Schools

It has been confirmed that all requested schools: 1) have the landownership certificate, and; 2) are located either in Area “A” or “B” where Israel allows the PA to construct buildings. Nevertheless, as it turned out that only 5 schools or less can be constructed with the limited Project budget, the team and MEHE agreed that Al-Zubeidat Girls School, the 6th priority school, would be removed from the Project.

3-2 Outline Design of the Project Components

From the viewpoint of using the local standard, local specifications, local contractors, and local materials, the architectural designs and specifications of the Project are based upon the standard design of MEHE.

<Project Schools and Planned Components>

Components	School Name & Grade	Beita Boys School	Wadi Fara'a Girls School	Beit Dajan Boys School	Jericho Boys School	Al-Fara'a Boys School
		1-8	6-12	1-12	5-12	10-12
No. of Classrooms		16	16	12	16	9
Library		1	1	0	1	1
Administration Unit		1	1	0	1	1
Teachers' Room		2 (S)	2 (S)	1 (M)	2(S)	1 (M)
First Aid		1	1	1	1	1
Social Worker's Room		1	1	1	1	1
Science Lab (General)		0	0	0	0	1
Biology & Chemistry Lab		1	1	0	1	0

Physics & Technology Lab	1	1	0	1	0
Arts & Crafts Room	1	1	0	1	1
Computer Lab	1	1	0	1	1
Home Economics Room	0	1	0	0	0
General Stores	1	1	0	1	1
Toilet Stalls	2(S)	2(S)	1 (M)	2(S)	1 (M)
Canteen & Shade	1	1	1	1	1

<Planned Furniture and Equipment >

Furniture/Equipment	Details
Furniture	Student Desk, Student Chair, Teacher Desk, Teacher Chair, Headmaster Desk, Headmaster Chair, Metal File Cabinet, Metal Cabinet, Multipurpose Chair, Lab Locker, Book Shelf, Reading Table, Stool Chair, Low Cabinet, Working table for Home Economics Room, Computer Table, Computer Chair, Library Chair
Computer Equipment	Computer Hardware, Printer, Network
Educational Media Equipment	Copy Printer, Photocopier, Overhead Projector, Screen, LCD Projector, DVD & VCR Recorder, Radio Cassette Recorder, TV, Digital Camera
Science Equipment	Lab Equipment for Physics, Chemistry, and Biology
Home Economics Equipment	Refrigerator, Furnace, Washing Machine, Microwave Furnace, Blender Mixer

3-3. Project Implementation Plan

MEHE signs the Procurement Management Contract with a Japanese Procurement Management Agent (Japan International Cooperation System: JICS) in accordance with the Exchange of Notes (E/N), the Agreed Minutes on Procedural Details (A/M), and the Grant Agreement (G/A) signed with JICA to contract out the Project implementation. JICS, as an agent of MEHE, will procure a lawyer, contractors, a furniture supplier and equipment suppliers. Furthermore, a Japanese Consultant recommended by JICA shall contract with JICS to assist in the tenders and supervise construction works.

Also, after the signing of the E/N, a Committee shall be organized. The Committee consists of the government representatives of the Japanese and PA sides and JICA, and the chairman shall be the representative from MEHE. In the Project, the members of the Committee will be from the Embassy of Japan, JICA Palestine office, and MEHE. If necessary, the Ministry of Planning, the Governorates of Nablus, Tubas and Jericho will also join the Committee. In addition, the representatives from JICS will join the Committee as advisors. Various problems that may occur during the implementation of the Project will be discussed within the Committee.

4. Project Period

The entire project period is estimated to take 22.5 months. Within a month after the Procurement Management Contract comes into an effect, a lawyer will be selected (1.0 month) to establish the construction supervision system. The contractors for the first group of which construction period is longer than that of the second group, will be selected (4.5 months) to construct schools (17 months). The first group construction sites are Beita Boys School, Wadi Fara'a Girls School, and Beit Dajan Boys School. 2 months later, the same procedure will take place for the second group that consists of Al-Fara'a Boys School and Jericho Boys School. The two groups are expected to complete the construction simultaneously.

<Work Schedule>

Year	2009												2010												2011	
	Month	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
EN	▲																									
Procurement Management Agent Contract	▲																									
Tender	Tenders for Construction		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Tenders for Construction						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Tenders for Furniture & Equipment												■	■	■	■	■	■	■	■	■	■	■	■	■	
Construction	Beita Boys School									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Jericho Boys School									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Beit Dajan Boys School									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Al-Fara'a Boys School												■	■	■	■	■	■	■	■	■	■	■	■	■	
	Wadi-Fara'a Girls School												■	■	■	■	■	■	■	■	■	■	■	■	■	
Procurement, Production and Delivery of Furniture & Equipment																			■	■	■	■	■	■	■	

5. Relevance of the Project

The Project is expected to bring about the following direct effects.

1. In the West Bank, due to the classroom shortage, some schools are forced or will be forced to operate under the double-shift system. The Project constructs 69 classrooms at 5 schools. In doing so, 2 schools (Beita Boys School and Wadi Fara'a Girls School) will be able to operate under the single-shift, and another 2 schools (Beit Dajan Boys School and Jericho Boys School) will be able to maintain the single-shift. Hence, the Project assures that a total of 2,600 students studying at Beita Boys School, Wadi Fara'a Girls School, Beit Dajan Boys School, and Jericho School, can study in the single-shift schools.
2. Of the Project schools, Jericho Boys School and Al Fara'a Boys School are unable to teach in accordance with the curriculum, as the schools use rented facilities due to the classroom shortage. Due to the Project implementation, these two schools will terminate the double-shift and transfer one of the shifts to the school facilities that are furnished with science labs, computer labs and libraries so that the schools can teach in accordance with the curriculum. Further, an issue of inadequate size classrooms

will be resolved.

In order that the facilities constructed by the Project will be used continuously and appropriately, MEHE is requested to address the following issues.

1. Enroll the appropriate number of students in the Project schools and divide them into classes appropriately.
2. Allocate the Project schools the necessary amount of operation and maintenance costs. Especially, every 5 and 10 years, relatively a large amount of repainting cost must be budgeted.
3. Direct and supervise local authorities of the Project schools to dispose wastewater continuously.

MEHE has assured of its intention to address the 3 issues above. In doing so, the Project schools will be able to properly operate and maintain the facilities constructed by the Project and thereby the Project contributes to the improvement of quality education on which “the Five Year Education Plan (2007-2011)” focuses.

As stated, since the Project is expected to produce many important effects, and at the same time widely contributes to BHN of community residents, it is confirmed appropriate to assist in a part of the Project using Japan’s Grant Aid. In addition, it is confirmed that the PA side has sufficient manpower and finance to operate and maintain the Project facilities, and therefore, no problems are anticipated. Hence, the Project is expected to be implemented smoothly and efficiently.

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1	Nablus	Beita Boys School
2	Tubas	Wadi Fara'a Girls School
3	Nablus	Beit Dajan Boys School
4	Jericho	Jericho Boys School
5	Tubas	Al Fara'a Boys School



Location of Palestine and Project Area



Kilometres 10 5 0 10 Kilometres
Miles 10 5 0 10 Miles



PERSPECTIVE

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Abbreviations

A/M	Agreed Minutes
BOQ	Bill of Quantity
CTD	Central Tender Committee
E/N	Exchange of Notes
G/A	Grant Agreement
GDP	Gross Domestic Products
MEHE	Ministry of Education and Higher Education
JICA	Japan International Cooperation Agency
JICS	Japan International Cooperation System
TOR	Terms of Reference
UNRWA	United Nations Relief and Works Agency
VAT	Value Added Tax

Chapter 1: Background of the Project

Chapter 1 - Background of the Project

1-1 Background of the Project

The Palestinian Authority (hereinafter referred to as “PA”) regards the education sector as a priority area in which to develop human resource for its future independence. Three major goals in the educational sector have been stated in both the “Palestinian Reform & Development Plan (2008-2010)” and the “Five Year Education Plan (2007-2011)” promulgated in 2007. These goals are as follows: 1) improved access to education; 2) improved quality of education; and, 3) improved educational management. Improvement in access to education has been named an especially high priority. Indeed, the PA aims to raise the enrollment rate up to 99% and 98 % for Basic and Secondary education respectively.

In the West Bank, the target area of the Project, the annual average rate of increase in Basic and Secondary education enrollment between 2002/3-2006/7 is as high as 2.6%. Moreover, the annual average rate of increase in enrollment at Secondary level is as high as 8.7%. However, since school construction has not caught up with the increase in enrollment, many schools in the West Bank end up renting buildings or adopting a double-shift system to accommodate the increasing number of students. Since those rented buildings were not designed for educational purposes, many schools do not have classrooms of adequate size or special classrooms such as computer labs or science laboratories. Consequently, lectures in such rented schools are not always in accord with the curriculum. Hence, the lack of adequate building space for education is an obstacle to quality education.

Also, lecture time at schools using the double-shift system is shorter than that of single-shift schools. Likewise, the double-shift system is another obstacle to quality education.

Against this backdrop, the Ministry of Education and Higher Education (hereinafter referred to as “MEHE”), requested financial assistance from the Government of Japan to construct classrooms as well as special classrooms and to procure furniture and educational equipment, in order to resolve the double-shift and rented classroom issues, and thereby improve the overall quality of education and access to education.

1-2 Natural Conditions

(1) Weather Conditions

The West Bank is an area that stretches along the Jordan River, and features a Mediterranean climate that is overall warm but has temperature fluctuations depending on the specific area. The area by the Jordan River is dry and below sea level, and its climate gets drier, as one moves from the north to the south. The altitude of the central mountain area is between 500-1,000m above sea level, and during the summer time, the weather is hot and dry. However, in the wintertime, it has a substantial amount of precipitation with some snow. Lowlands of the

northern and western areas feature mild weather with a relatively large amount of precipitation. In the West Bank, the annual precipitation varies among areas and cities: Jericho, located in the Jordan Valley, records about 200mm; the central mountain area records approximately 550mm, and; the northwestern area of the West Bank records about 900mm. There is prevailing wind throughout a year in the West Bank, however, there is no record of typhoons or storms.

Table 1-1 Weather Data

Ramallah (Altitude: 870m)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
High Temp (°C)	12.0	13.0	16.0	21.0	25.0	28.0	29.0	29.0	28.0	25.0	19.0	14.0
Low Temp (°C)	4.0	4.0	6.0	9.0	12.0	15.0	17.0	17.0	16.0	14.0	9.0	6.0
Precipitation (mm)	142.2	114.3	99.1	30.5	2.5	0.0	0.0	0.0	0.0	22.9	68.6	109.2

Nablus (Altitude:550m)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
High Temp (°C)	15.0	13.0	16.0	21.0	26.0	28.0	30.0	28.0	27.0	26.0	21.0	15.0
Low Temp (°C)	9.0	4.0	7.0	10.0	16.0	19.0	21.0	20.0	18.0	17.0	13.0	9.0
Precipitation (mm)	126.0	199.0	206.0	22.7	40.4	0.0	0.0	0.0	17.5	16.3	60.0	176.4

Jericho (Altitude: -350m)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
High Temp (°C)	20.0	19.0	21.0	28.0	36.0	37.0	38.0	37.0	35.0	32.0	27.0	21.0
Low Temp (°C)	9.0	6.0	9.0	13.0	18.0	22.0	24.0	23.0	23.0	19.0	15.0	11.0
Precipitation (mm)	52.7	43.1	35.4	2.0	4.4	0.0	0.0	0.0	0.0	31.0	10.7	45.2

(2) Topographic Conditions

Because many of the requested sites feature complicated topography (See Chapter 2, 2-2-1-2 (2) for details), and the building area of each site is relatively large, topographic surveys were contracted out to a local engineering company. The local engineer surveyed all the requested sites except for Beita Boys School and Al-Fara'a Boys School sites, the survey drawing of which were provided by the PA side. The specification of the topographic survey was as follows.

Survey drawings scale of 1/500, contour line every 20 cm, boundary lines, adjacent roads, existing buildings, major trees and infrastructures.

(3) Soil Conditions

Soil investigation were conducted for all the requested sites, since it was preliminarily known that the soil conditions of some sites were not very good and the Project schools would be 3-story or 4-story high buildings. The building structure was calculated based upon the soil

investigation results (See Chapter 2, 2-2-2-5 (8) for the soil bearing capacity). The specification of the soil investigation was as follows.

Soil investigation 4 boreholes per site (9 m in depth x 2 and 6 m in depth x 2), standard penetration test, water content, Atterberg limit, sieve analysis, field unit weight in case of cohesive soil, unconfined compression test, consolidation and swelling tests, and direct shear test.

(4) Earthquake Conditions

See Chapter 2, 2-2-2-5 (8) for details.

1-3 Environmental and Social Considerations

The Project constructs school facilities at existing school sites or new sites. Although land development, retaining wall construction, and pilling are needed at some sites, these works do not negatively affect the ecosystem or ground water system, because some sites are existing schools sites and other sites are new but rocky and quite dry.

Additionally, in conformity with the Ministry of Environment's direction, all wastewater shall be vacuumed and will not penetrate into the ground. Therefore, there will be no negative impact on the environment.

Moreover, as the Project includes no forced transfer of residents, there are no negative social impacts.

Chapter 2: Contents of the Project

Chapter 2 -Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Background of the Project

The Palestinian Authority (hereinafter referred to as “PA”) regards the education sector as a priority area in which to develop human resource for its future independence. Three major goals in the educational sector have been stated in both the “Palestinian Reform & Development Plan (2008-2010)” and the “Five Year Education Plan (2007-2011)” promulgated in 2007. These goals are as follows: 1) improved access to education; 2) improved quality of education; and, 3) improved educational management. Improvement in access to education has been named an especially high priority. Indeed, the PA aims to raise the enrollment rate up to 99% and 98 % for Basic and Secondary education respectively.

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Also, lecture time at schools using the double-shift system is shorter than that of single-shift schools. Likewise, the double-shift system is another obstacle to quality education.

2-1-2 Overall Goal and Project Objective

Against this backdrop, the Project sets its objectives a reduction in the number of rented schools and double-shift schools, having as its overall goal an improvement in the quality of education in the West Bank.

2-1-3 Outline of the Project

To achieve the above mentioned objectives, the Project constructs classrooms, special classrooms such as science labs, administrative unit including headmaster room, toilets, etc. It also procures educational furniture and equipment for 5 sites in the West Bank.

2-2 Outline Design of the Requested Japanese Assistance

2-2-1 Design Policy

The Project is implemented utilizing Japan's financial resource scheme of Grant Aid for Community Empowerment, in order to reduce the cost and to increase the efficiency of the Project compared with ones that utilize the Japanese General Project Grant Aid scheme, through creating a competitive environment by employing local specifications and design and utilizing local contractors as well as locally procured materials and equipment.

To add, the Project sites may be altered at the implementation stage.

2-2-1-1 Basic Policy

In Palestine, the standard design for rooms of school facilities does exist and has been used in school construction projects regardless of whether they are self-funded or donor-assisted projects. The components of facilities are also standardized according to the number of students and the curriculum and used universally in Palestine. However, regarding common spaces such as corridor and stairs, layout of buildings, exterior plans and so on, there is no concrete standard design, and therefore, architects design schools at their own discretion. This is because most of the school sites in Palestine have their own unique topographic conditions such as slopes and limited space and no concrete standard design can be introduced. The Project will follow the standard design as much as possible and will design parts to which the standard design cannot be applied after thorough discussion with the PA side.

2-2-1-2 Policy for Natural Conditions

(1) Weather Conditions:

Considering the weather conditions in the West Bank and reflecting discussions with the PA side, the following have been set as the Project design policies.

- ① Shades shall be installed to protect students from strong ultraviolet light in the summer and precipitation in the winter, while students are outside for activities.
- ② Classrooms must not face the East in order to avoid the strong sunlight during the morning time. Classrooms facing the North are ideal, but in the case that classrooms need to face the West or the South, window sun screens shall be installed.
- ③ The Jericho Governorate features the desert climate and gets extremely hot during the summertime, hence, ceiling fans shall be installed in every classroom and air conditioners shall be installed in an administrative unit and a computer lab at schools belonging to Jericho Governorate. In order to secure natural ventilation, a double-band corridor type shall be avoided.

(2) Topographic Conditions

Half of the requested school sites are on slopes and need land development and leveling prior to construction. Using the following measures, these site plans shall be designed while minimizing the amount of land development and leveling for the sake of cost reduction.

- ① Buildings shall be contoured.
- ② The number of stories shall be planned, taking an advantage of level differences at each site. For example, when a basement floor is partially planned, its exterior wall will be used as retaining wall.
- ③ Flower beds, seats, stairs, and so on will be planned using level differences at the sites.
- ④ The height and length of retaining walls shall be reduced to the minimum.

(3) Soil Conditions

At Beita Boys School, Beit Dajan Boys School and Jericho Boys School, sites shall be pilled, as the boring tests indicate that these sites do not have sufficient soil bearing capacity.

(4) Earthquake Conditions

The rift valley that stretches from the Jordan River via the Dead Sea to the Red Sea is an earthquake epicenter and earthquakes have been recorded long into the past. The earthquake zones are indicated in “the seismic hazard map for building code in the Levant” published by the Earth Sciences and Seismic Engineering Center of An-Najah National University in Nablus. The Project follows this map for the building code. According to the map, the Jordan River side is the most vulnerable area and the further from the River, the less the danger.

2-2-1-3 Policy for Socio-Economic Conditions

(1) Security

The relationship between the PA and Israel is relatively stable at this moment and construction is feasible at the requested school sites. In addition, no landmines or unexploded bombs have been found nearby the sites. Moreover, most of the checkpoint roadblocks are lifted after just a few hours or one day at the longest. Therefore, no negative impacts on construction, such as serious delays of transferring construction materials, are anticipated. Nevertheless, there is no telling whether or not this stability will last. Thus, sufficient time must be budgeted in to the construction schedule. Moreover, it is crucial to include a Force Majeure clause in the construction contracts.

(2) Religion and Gender

Almost all the students at the Project schools are Muslims. Reflecting that, an educational policy to separate boys and girls from an early school year is upheld. Though some schools adopt co-education at the low grades due to lack of facilities, students and parents prefer separating the genders at schools. Moreover, in principle, male teachers are assigned only to boys' schools and female teachers are assigned only to girls' schools. At the site survey, it turned out that some female teachers had been assigned to boys' schools, but not vice versa. Considering the above, appropriate gender-sensitive plans will be made especially for toilets.

To add, home economics is taught to girls. Hence, a home economics room shall be built in the girls' school.

(3) Social Worker Room

As there are many students with psychological problems due to the prolonged conflict, social workers are assigned to most of the schools. Therefore, a social worker room will be built at each Project school. Since many of the students do not want schoolteachers and staff to find out that they have psychological problems, the social worker room must be located at a certain distance from the administrative unit.

(4) Barrier-Free

School buildings are obliged to be barrier free so that the handicapped students can access education without any obstacles. Therefore, the Project schools must be designed to allow any wheel-chair students to move from the gate to the ground floor level by themselves. Alongside stairs, a ramp shall be built. In compliance with the barrier-free policy, at the least, a classroom, a universal toilet, a computer lab and a headmaster room shall be built on the ground floor. However, from the cost reduction point of view, the barrier-free policy can be exempted for floors other than the ground floor level. Given this, the Project shall apply the barrier-free policy only to the ground floor level.

2-2-1-4 Policy for Procurement of Construction Material

While most of the construction materials are produced in the West Bank, some materials are imported either from Asia or Europe. These imported materials are easily available in the local market and all the necessary materials for the Project are procurable in the West Bank. Therefore, the Project adopts a principle of procuring all the materials within the West Bank. But, as the construction costs have shot up very high recently and the construction material cost fluctuates, special attention must be paid when setting prices at the stage of the detailed quantity survey.

2-2-1-5 Policy for Use of Local Contractors and Local Consultants

The floor area to be constructed at each site is about 2,000 m² in the Project. In Palestine, the amount a contractor can sign for is limited depending on its company class designed by Natural Classification Committee. Considering these conditions, contractors of the Project must be bigger than the class 2.

Moreover, MEHE regulates that a contract can be made only for 1 construction site.

Levels of contractors vary in the West Bank. Most of the big contractors have their offices in Hebron, Ramallah, and Nablus and undertake construction projects all over the West Bank. The Project schools are located in Nablus, Tubas and Jericho, and the conditions of main roads are good overall. Thus, it is not difficult to procure construction materials and labor from all the governorates in Palestine. Also, it is possible to invite contractors from throughout the West Bank. Judging from the above situations, a construction plan of one site – one lot is proposed.

Regarding the procurement plan, considering the work efficiency of the Procurement Management Agent, the Project implementation will be divided into two groups. The two tenders will be carried out separately under a staggered schedule in order to avoid a logjam of tenders and contracts.

In regards to consulting works relating to tender assistance and construction supervision, a system wherein a Japanese consultant signs with the Procurement Management Agent as a prime consultant to dispatch a Japanese consultant will be adopted. The said Japanese consultant would then establish the construction supervision system by hiring local consultants as sub-consultants.

2-2-1-6 Policy for Furniture and Equipment Procurement

In general, tenders for furniture and equipment are called separately from ones for facility construction in Palestine. Since furniture and equipment suppliers are quite specialized, it is difficult to procure different groups of equipment in the same lot. Furniture, computer lab equipment, educational media equipment, science equipment, and home economics equipment are requested in the Project and their suppliers differ one from another. Therefore, furniture and each group of equipment are procured separately. As furniture and equipment can be delivered much sooner than the construction, the tenders of furniture and each category of equipment are called later than the facility construction tender.

2-2-1-7 Policy for Setting Grades of Facilities and Equipment

Since the standard design by MEHE is quite good in terms of functionality, construction, cost, and durability, all the school constructions projects regardless of whether they are self-funded or donor assisted, are at a certain adequate level. Thus, the Project follows the standard design, in principle. Also, regarding furniture and equipment, the Project accords the

item list and specification provided by MEHE.

2-2-1-8 Policy for Quality Control

Private consultants are usually employed for governmental project construction supervision in Palestine. Though construction engineers of MEHE make visits to sites for supervision, the visit frequency per site is low because of the high number of on-going projects. Since the Project will construct multiple numbers of school facilities at the same time, it is not practical to leave the construction supervision work to small numbers of MEHE engineers. Thus, there is a great necessity to contract out the construction supervision work to private consultants.

While the level of private consultants is generally much higher than that of their Asian and African counterparts, their consciousness over safety control and quality control has some room for improvement. Hence, in the system where the Japanese consultant as the prime consultant hires a local consultant as a sub-consultant, it is desirable that the Japanese engineers advise and guide the local engineers to enhance the local consultants' construction supervision capacity. The following are specific examples to better quality control.

- Assign one construction supervisor to each site.
- Include quality control check items in the TOR or in the contract of the local consultants.
- The Japanese engineer, in tandem with the local engineers, puts together a checklist for the construction supervision.
- All the construction supervisors are summoned before the construction (during the construction if necessary) for a seminar so that the quality control methods are shared among the concerned parties. In doing so, the level of the quality control is shared among them and raised overall.

2-2-1-9 Policy for Construction Schedule

Access to construction sites by construction vehicles is not likely to be a problem even during the rainy season, though some of the Project sites recess from a main road. However, it is desirable to avoid commencing construction in December except for the site in Jericho, since rain interrupts the construction in that season and the efficiency of earth work thus decreases.

The construction period of each site is different, as each site has its unique shape and soil conditions. In fact, three sites require pile-driving work, and the amount of construction work varies among the sites. The average construction period for a 3-story school building in Palestine is about 12-13 months. From this figure, the construction period of the sites needing pilling work, or land development is estimated to be about 17 months. To add, in terms of the

PA – Israel relationship, there is little that could negatively affect the Project construction period. Still in all, the entire construction period should include some extra time.

2-2-2 Outline Design

2-2-2-1 Requested Components

(1) Requested Schools

The following 7 schools are those requested by the PA side for the Project. The 6th and 7th priority schools are alternative ones and the 7th priority school will be decided at the stage of implementation depending on the remainder of the budget.

Table 2-1 Requested Schools in Order of Priority

Priority	Governor -ate	School Name	Number of Shifts	Reasons of the Request	Remarks
1	Nablus	Beita Boys School	2	To resolve double-shift	By replacing the unusable earthquake-damaged building with a new one, the double-shift operation at a neighboring school will be resolved.
2	Tubas	Wadi Fara'a Girls School	2	To resolve double-shift	In order to resolve the double-shift operation at an existing school, a school will be newly established.
3	Nablus	Beit Dajan Boys School	1*	To replace a dilapidated building and to maintain the single-shift	The school consists of an old dilapidated building and a new building. The school is forced to adopt double-shift when the old building is demolished.
4	Jericho	Jericho Boys School	1*	To resolve renting a building, to maintain the single-shift, and to shorten the students' commuting distance.	The Projects assists the city policy in establishing two educational zones (East zone and West zone) in the city in order to shorten the students' commuting distance.
5	Tubas	Al-Fara'a Boys School	1	To resolve renting a kindergarten building	The Project assists the school in resolving renting a kindergarten building. No secondary boys' school other than this school in the village.
6	Jericho	Al-Zubeidat Girls School	1	(An alternative school) To resolve renting a village council building	As there is no school building for girls, the school rents the village council building. The construction site is on a steep slope and there is no access road for construction vehicles.
7	To be decided at the implementation stage			(An alternative school) In the case that any E/N balance remains, the	

			balance will be used to build additional classrooms	
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1* indicates that the school soon will be double-shift in the near future without Japanese assistance.

(2) Requested Facility Components

The following are the requested facility components.

Classrooms, Library, Administrative Unit (headmaster room, secretary room, teachers' toilet, and kitchen), First Aid Room, Social Worker Room, General Science Laboratory, Biology & Chemistry Lab, Physics & Technology Lab, Arts & Crafts Room, Computer Lab, General Stores, Toilets, Canteen, Shade, and Home Economics Room.

(3) Requested Components of Furniture and Equipment

Table 2-2 below is the list of requested components of furniture and equipment.

Table 2-2 Furniture and Equipment in Order of Priority

Priority	Group
1	School Furniture
2	Computer Equipment
3	Educational Media Equipment
4	Science Equipment
5	Home Economics Equipment

2-2-2-2 Selecting the Project Schools

(1) Exclusion by Land Ownership Certificate

As copies of the land ownership certificate of all the requested sites were submitted in July 2008, no school was excluded from the Project due to the non-submittal of the land ownership certificate.

(2) Exclusion by Israeli-Controlled Areas

No construction by Palestine is allowed in Area "C" which is exclusively controlled by Israel. As all the requested schools are located either in Area "A" or "B" according to the information brought by the Israeli side, no school was excluded from the Project due to this area issue.

(3) Exclusion by the Budget Ceiling

An analysis in Japan concluded that only 5 schools can be constructed within the limited

budget of Japan's Grant Aid at the moment. Hence, Al-Zubeidat Girls School, the 6th priority school, is removed as a Project school from the Outline Design Study. Consequently, the remaining 5 schools are identified as the Project schools. However, it is necessary to understand that construction of all the 5 schools are not guaranteed, if construction costs shoot up at the stage of the Project implementation.

2-2-2-3 Relevance of the Requested Components

(1) Relevance of the Facility Components

1) Classrooms

MEHE sets the standard of 40 students per classroom. In deciding the adequate number of classrooms at a school, however, the number of classrooms needed is not decided by simply dividing the entire enrollment by 40. Rather, the adequate number of classrooms is determined school by school, considering the unique situation at each school. Given this, the Project adopts the following methods to calculate the number of classrooms needed at each school. However, the number of classrooms to be constructed should not exceed the number of classrooms requested by the MEHE at the time of site survey.

- The Project schools will be operated under the single-shift.
- The number of students for the classroom calculation is based upon the enrollment projection of the year 2012/13 (5-year projection).
- The projection is based upon the annual average enrollment increase of 2.6 % (the annual average enrollment increase in the West Bank).
- Assuming that no students drop out or repeat grades, all the students will advance by 5 grades in 5 years. That is, the number of Gr. 1 students in 2007/8 will be that of Gr. 6 students in 2012/13.
- However, regarding Gr. 10-12 at Wadi Fara'a Girls School, since students who finish UNRWA school join Wadi Fara'a Girls School from Gr. 10, the number of students at Gr. 10 is projected using the annual average enrollment increase of 2.6%.
- In principle, if the number of students at a grade exceeds 41, the number of classrooms needed is calculated as 2. Likewise, if the number of students at a grade exceeds 81, the number of classrooms needed is 3. However, depending on the unique situation at each school, this principle is not strictly applied.
- As multi-grade classes are few in Palestine, one classroom is provided at a minimum for each grade. In case the number of students in a class is extremely small, the issue will be addressed on a case-by-case basis. Table 2-3 examines the relevance of the number of classrooms to be constructed.

Table 2-3 Relevance of the Number of Classrooms to be Constructed

Priority	School Name	# of requested CRs	Grades	Boys/Girls	Purpose of the request	# of students in 2007/8 by grade	1	2	3	4	5	6	7	8	9	10	11	12	Total	# of CRs needed (# of classes)	Single/ Double shift	Site transfer/ Facility Expansion	# of CRs in the Project site	# of dilapidated, rented, or converted CRs	(a): # of usable CRs	# of CRs in shortage	(b): # of CRs requested <= # of shortage # of request	# of CRs after the Project (a)+(b)	Remarks									
1	Beita Boys School	16	1-8	BOYS	To resolve the double-shift	# of students in 2007/8 by grade	86	67	76	51	73	80	86	77						576	22	2	Site transfer	0	0	0	22	16	The projection of Gr. 1-5 in 2012/13 is based upon the Gr.1 annual average enrollment increase of 2.6 %. As for Gr. 6-8, the number of Gr. 1 -3 students in 2007/8 will be that of Gr. 6 -8 students in 2012/13.									
						# of classes in 2007/8 by grade	2	2	2	2	2	2	2	2																								
						Projected # of target-grade students in 2012/13	96	94	92	90	88	86	87	76																								
2	Wadi Farata Girls School	16	6-12	GIRLS	To resolve the double-shift	# of students in 2007/8 by grade	72	71	75	64	56	28	26	23	34	114	97	76	736	20	2	Site transfer	0	0	0	20	16	As for Gr. 7-9, the number of Gr. 2 -4 students in 2007/8 will be that of Gr. 7 -9 students in 2012/13. As for Gr. 10-12, the projection of 2012/13 is based upon the Gr. 10 annual average enrollment increase of 2.6% as UNRWA graduates join at Gr. 10.										
						# of classes in 2007/8 by grade	2	2	2	2	2	1	1	1	3	3	23																					
						Projected # of target-grade students in 2012/13						72	71	75	64	56	28	26	34										128	123	600							
3	Beit Dajan Boys School	12	1-12	BOYS	To replace a dilapidated building To maintain the single-shift	# of students in 2007/8 by grade	38	35	39	37	40	51	45	56	37	49	44	59	529	17	1	Facility expansion	17	13	4	13	12	As for Gr. 1-5 in 2012/13, the projection is based upon the annual average enrollment increase of 2.6 %. As for Gr. 6-12, the number of Gr. 1 -5 students in 2007/8 will be that of Gr. 6-12 students in 2012/13. As for Gr. 11 and 12, at least two classrooms are necessary at each grade, as students choose either Science stream or Art stream.										
						# of classes in 2007/8 by grade	1	1	1	1	1	1	2	1	2	2	2	2	2										17									
						Projected # of target-grade students in 2012/13	43	42	41	40	39	38	35	38	37	40	51	45	49										51	45	490							
4	Jericho Boys School	16	5-12	BOYS	To resolve renting a building To maintain the single-shift To shorten students's commuting distance	# of students in 2007/8 by grade	85	111	108	115	130	167	144	145	170	216	281	101	1773	17	1	Site transfer	0	0	0	17	16	For Gr.1-5 in 2012/13, the projection is based upon the annual average enrollment increase of 2.6 %. As for Gr. 6-12, the number of Gr. 1 -5 students in 2007/8 will be that of Gr. 6-12 students in 2012/13.										
						# of classes in 2007/8 by grade	95	93	91	89	87	85	111	108	115	130	167	144	1315																			
						Projected # of target-grade students in the school (n=2)					44	43	56	54	58	65	84	72	476																			
5	Al Farata Boys School	9	10-12	BOYS	To resolve renting a kindergarten building	# of students in 2007/8 by grade															9	1	Site transfer	0	0	0	9	.3 classes each at Gr. 11 and 12 were opened in 2007/8 as there are Science, Art and Commercial streams. The projection of 2012/13 is based upon the Gr. 10 annual average enrollment increase of 2.6% as UNRWA graduates join at Gr. 10.										
						# of classes in 2007/8 by grade																																
						Projected # of target-grade students in 2012/13																																

2) Library

Every surveyed school has a library, though the size differs from one to another. Library books are supplied by MEHE and Education Directorate Offices. Besides, the books are purchased from the school budget, and are donated by universities, private companies and so on. However, overall, the library volume is small. Some of the Arabic and English language lessons are supposed to be conducted at the library, though, in fact, some schools cannot do library activities in the lessons due to limited space. Hence, a library is a necessary room for a newly constructed school facility. To add, as Beit Dajan Boys School has a library, the Project will not provide a library to that school.

3) Administrative Unit

An administrative unit consists of a headmaster room, a secretary room, a first aid room, and teachers' toilet, and kitchen. The unit is indispensable for school administration. To add, as Beit Dajan Boys School has an administrative unit, the Project will not provide the unit to the school.

4) Teachers Room

A teachers room is necessary in every school, as teachers need to do miscellaneous work such as paperwork during breaks and after school. In order that each teacher can have a desk and a chair for his/her exclusive use, a teachers room should be large enough to accommodate 1.5 times as many teachers as the number of classrooms. A middle size (3 bays) and a large size (4 bays) teachers rooms are the standard for a school with 12 classrooms or less and a school with 16 classrooms, respectively. In addition, it is recommended to split a large size (4 bays) teachers room into two small (2bays) rooms, because the bigger the room the noisier it gets, so we follow the recommendation.

5) First Aid Room

A first aid room is a necessary facility for students' health care. The room shall be located nearby the administrative unit.

6) Social Worker Room

As there are many students with psychological problems due to the prolonged conflict, social workers are assigned to most of the schools. For this reason, it is necessary to build a social worker room at each Project school. Since many of the students do not want schoolteachers and staff to find out that they have a psychological problem, a social worker room must be located at a certain distance from the administrative unit.

7) Science Lab

According to the standard design, a school is furnished with two laboratories. One is a Chemistry & Biology Lab, and the other is a Physics & Technology Lab. In case there is not enough space on the site and the classrooms are fewer than 12, only a General Science Lab is to be built, assuming that the lab is used full time. The specifications of a General Science Laboratory are identical to those of a Chemistry & Biology Lab. Among the requested schools, the number of requested classrooms at Al-Fara'a Boys School's is 9. Hence, a General Science Lab will be built in Al-Fara'a Boys School.

As to Beit Dajan Boys School, the school has a Science Lab available for use, thus no science lab will be provided to the school. Since the remaining 3 schools will be provided with 16 classrooms, a Chemistry & Biology Lab and a Physics & Technology Lab will be provided to each school.

8) Arts & Crafts Room

An Arts & Crafts room shall be provided for a school accommodating Gr. 1-11 students. An Arts & Crafts Room is used not only as an Arts & Crafts room but also as a multipurpose room where music, drama and other school activities take place. As to Beit Dajan Boys School, it has an Arts & Crafts room available for use, thus, no such room will be provided.

9) Computer Lab

MEHE considers computer education a very important subject for employment, as approximately 90 % of the labor force is engaged in the second and third industries. Computer education is a required subject and specialized teachers are assigned in schools. A computer lab was provided with every surveyed school and used heavily, though other special rooms had been converted into regular classrooms when classrooms are in shortage. Regarding Beit Dajan Boys School, it has a computer lab available for use. Therefore, no such lab will be provided to the school.

10) General Stores

The necessity of storage is quite high in order to store teaching materials, equipment, textbooks and sports materials. Hence, general stores shall be provided accordingly.

11) Toilets

Middle size (3 bays) toilets are provided for schools with 12 classrooms or less, while large size (4 bays) toilets are built in schools with 16 classrooms. As to large size toilets, it is desirable to divide them into two small (2bays) toilets and build them on the ground and first

floors. Also, a universal toilet (a wheel chair accessible toilet) shall be provided on the ground floor. To add, toilets are either for boys' exclusive use or for girls' exclusive use, as no co-educational school is included in the Project.

12) Canteen

School starts early in the morning and closes at about 1 pm in Palestine. Therefore, schools do not have a lunch break. However, there is a relatively long break (about 25 min) after the 3rd lecture. During this break students buy refreshments at a canteen. Many of the students use the canteen rather than bring a lunchbox from home. Hence, a canteen is an indispensable part of a school. Local vendors rent the canteen for business. The vendors do not have to make a contribution according to the sales, but do pay monthly rent. The rent contributes to the school budget.

13) Shade

During the long break, as students are not allowed to eat inside of classrooms, they eat outside. In addition, they wait outside of classrooms before class begins. To protect students from strong sunshine and rain, MEHE sets the installation of shades as part of the standard design. Considering the weather conditions and customs, shades are frequently used and provide students with comfort. Hence, shades are necessary in school.

14) Home Economics Room

Home economics is taught to girl students above Gr. 5. As home economics requires hands-on activities, a home economics room will be provided to Wadi Fara'a Girls School, the only girls' school among the Project schools.

(2) Relevance of Furniture and Equipment

1) Furniture

All the pieces of furniture requested by MEHE are indispensable in running the schools. Hence, it is reasonable to include them as a part of the components.

2) Computer Equipment

As described, MEHE regards computer education as very important. From the curriculum point of view, computer equipment is indispensable.

3) Educational Media Equipment

Educational media equipment is used for making teaching aids and for various classes. Therefore, it is indispensable equipment for a school. Usually, it is stored in the secretary room

at each school.

4) Home Economics Equipment

As equipment is used in home economics classes, the request of home economics equipment is reasonable.

5) Science Equipment

Science teachers majored in science at university and are trained in science experiments. Hence, whenever possible, science subjects are taught in the labs according to the curriculum. However, in reality, due to the classroom shortage, schools using a science lab as a regular classroom cannot conduct any experiments, though they have the equipment. Thus, science equipment can be used properly, if provided together with science labs.

Science experiments are conducted in groups. The number of groups depends on experiments as below. The quantity of each item needed equals to the number of groups.

- An experiment by 6 groups: 6 sets per lab
- An experiment by 3 groups + a teacher's demonstration: 4 sets per lab
- An experiment by 3 groups: 3 sets per lab
- An experiment by 2 groups: 2 sets per lab
- Only a demonstration by a teacher: 1 set per lab
- An experiment conducted in a classroom: 10 sets per school

2-2-2-4 Planned Components

(1) Components of Facilities

The following table indicates the planned components for the Project schools.

Table 2-4 Planned Components at the Project Schools

Components	School Name & Grade	Beita Boys School	Wadi Fara'a Girls School	Beit Dajan Boys School	Jericho Boys School	Al-Fara'a Boys School
		1-8	6-12	1-12	5-12	10-12
No. of Classrooms		16	16	12	16	9
Library		1	1	0	1	1
Administration Unit		1	1	0	1	1
Teachers Room		2 (S)	2 (S)	1 (M)	2(S)	1 (M)
First Aid		1	1	1	1	1
Social Worker Room		1	1	1	1	1
Science Lab (General)		0	0	0	0	1
Biology & Chemistry Lab		1	1	0	1	0

Physics & Technology Lab	1	1	0	1	0
Arts & Crafts Room	1	1	0	1	1
Computer Lab	1	1	0	1	1
Home Economics Room	0	1	0	0	0
General Stores	1	1	0	1	1
Toilet Stalls	2(S)	2(S)	1 (M)	2(S)	1 (M)
Canteen & Shade	1	1	1	1	1

Legend: (L) Large, (M) Middle, (S) Small

(2) Components of Furniture and Equipment

Computer equipment, educational media equipment, and science equipment shall not be provided for Beit Dajan Boys School, as the school owns the said equipment at the existing facilities. In addition, home economics equipment is only provided for Wadi Fara'a Girls School, as the school is the only girls' school among the Project schools. Table 2-5, 6, 7, 8 and 9 indicate lists of furniture and equipment of the Project schools.

Table 2-5 List of the Requested Furniture

NO	Q'ty and Justification						Beita	Wadi Fara'a	Beit Dajan	Jericho	Al-Fara'a
							16	16	12	16	9
1	Student Desk1 (S) for two	For Gr. 1-4	20/classroom			160	0	80	0	0	
2	Student Desk2 (M) for two	For Gr. 5-10	20/classroom			160	200	120	240	60	
3	Student Desk3 (L) for two	For Gr. 11-12	20/classroom			0	120	40	80	120	
4	Student Chair1 (S)	For Gr. 1-4	40/classroom			320	0	160	0	0	
5	Student Chair2 (M)	For Gr. 5-10	40/classroom			320	400	240	480	120	
6	Student Chair3 (L)	For Gr. 11-12	40/classroom			0	240	80	160	240	
7	Teacher Desk (Classroom)	40/arts & crafts room				40	40	0	40	40	
8	Teacher Desk (Classroom)	1/classroom				16	16	12	16	9	
9	Teacher Chair (Classroom + teachers room)	20/teachers room (s)	24/teachers room(L)			24	24	20	24	20	
10	Headmaster Desk	32/teachers room(s)	40 teachers room (L)			40	40	32	40	32	
11	Headmaster Chair	4 (1 for Headmasters, secretary, first aid, and SW room each)				4	4	2	4	4	
12	Metal File Cabinet (4 Drawers)	Ditto				4	4	2	4	4	
13	Metal Cabinet (2 Doors)	Ditto				4	4	2	4	4	
14	Metal Cabinet (12 Doors)	8/small school	10/large school			10	10	4	10	8	
15	Multipurpose Chair	2/small school	3/large school			3	3	0	3	2	
16	Lab Locker	24 (6 for Headmasters, secretary, first aid, and SW room each)				24	24	12	24	24	
17	Book Shelves	8/lab				16	16	0	16	8	
18	Reading Table	10/library				10	10	0	10	10	
19	Stool Chair	8/library				8	8	0	8	8	
20	Low cabinet	40/lab, 40/home economics room				80	120	0	80	40	
21	Working Table for Home economics Room	2/school				2	2	0	2	2	
22	Computer Table	8/homeeconomics room				0	8	0	0	0	
23	Computer Chair	21/computer lab				21	21	0	21	21	
24	Library Chair	41/computer lab				41	41	0	41	41	
		48/library				48	48	0	48	48	

Table 2-6 List of the Requested Computer Equipment

No	Item	Specification	Q'ty/ computer lab	Beita	Wadi Fara'a	Jericho	Al-Fara'a
1	Computer Hardware	Desktop type, CPU, Monitor, Keyboard, Accessories	15 sets	15	15	15	15
2	Printer	Laser Printer	1 set	1	1	1	1
3	Networks	Distribution board, Switchboard, Cables	1 set	1	1	1	1

Table 2-7 List of the Requested Educational Media Equipment

No	Item	Specification	Q'ty/ administrative unit	Beita	Wadi Fara'a	Jericho	Al-Fara'a
1	Copy printer	B4 size, 120sheets/min at maximum	1	1	1	1	1
2	Photocopier	A3 size, 50%-200%	1	1	1	1	1
3	Overhead projector	A4 Film, Portable	1	1	1	1	1
4	Screen	156 cm x 156 cm Wall screen	1	1	1	1	1
5	LCD projector	LCD type	1	1	1	1	1
6	DVD and VCR recorder	Recordable 6 hours or more	1	1	1	1	1
7	Radio cassette recorder with Vcd player	With AM/FM radio tuner	1	1	1	1	1
8	Television	29 inch. Slim type	1	1	1	1	1
9	Digital Camera	1GB flash memory	1	1	1	1	1

Table 2-8 List of the Requested Home Economics Equipment

No	Equipment	Specifications	Q'ty/homeeconomics room	Wadi Fara'a
1	Refrigerator	300 litre capacity (approx.)	1	1
2	Furnace	Five burners , electric / gas power furnace	1	1
3	Washing Machine	Full automatic, Capacity of (5) kg	1	1
4	Microwave furnace	20 liters capacity (approx.)	1	1
5	Blender Mixer	1 litre (approx.)	1	1

Table 2-9 List of the Requested Science Equipment

No.	Item	Q'ty per lab			Beita Boys School		Wadi Fara'a Girls School		Jericho Boys School		Al Fara'a Boys School
		Physics	Chem	Science	Physics	Chem	Physics	Chem	Physics	Chem	Science
1	Ammeter	6	0	6	6	0	6	0	6	0	6
2	Ball and Ring	6	0	6	6	0	6	0	6	0	6
3	Bar Magnet	6	0	6	6	0	6	0	6	0	6
4	Bell Jar with pump-plastic	2	0	2	2	0	2	0	2	0	2
5	Bifocal Hand Magnifier	6	0	6	6	0	6	0	6	0	6
6	Calorimeter Set	2	1	2	2	1	2	1	2	1	2
7	Capillary Tubes Apparatus	2	2	2	2	2	2	2	2	2	2
8	Cathode Rays Tubes (Set of 2 tubes)	1	1	1	1	1	1	1	1	1	1
9	Compass(pocket)	6	0	6	6	0	6	0	6	0	6
10	Compass set :(pack of 12)	2	0	2	2	0	2	0	2	0	2
11	Compound Bar	3	0	3	3	0	3	0	3	0	3
12	Demo Aneroid Barometer	1	1	1	1	1	1	1	1	1	1
13	Demountable Transformer	1	0	1	1	0	1	0	1	0	1
14	Digital wind speed and temperature meter, hand held	1	1	1	1	1	1	1	1	1	1

No.	Item	Q'ty per lab			Beita Boys School		Wadi Fara'a Girls School		Jericho Boys School		Al Fara'a Boys School	
		Physics	Chem	Science	Physics	Chem	Physics	Chem	Physics	Chem	Physics	Chem
15	Dynamo ; Hand Operated	3	0	3	3	0	3	0	3	0	3	
16	Ebonite Rod	6	0	6	6	0	6	0	6	0	6	
17	Electronic Balance	3	3	3	3	3	3	3	3	3	3	
18	Electroscope	6	0	6	6	0	6	0	6	0	6	
19	Fire Extinguisher	1	1	1	1	1	1	1	1	1	1	
20	Force Table	3	0	3	3	0	3	0	3	0	3	
21	Geoptic set :(Hartel Disk)	1	0	1	1	0	1	0	1	0	1	
22	Hand Centrifuge	1	1	1	1	1	1	1	1	1	1	
23	Heat Conduction Appar	3	3	3	3	3	3	3	3	3	3	
24	High voltage power supply	1	1	1	1	1	1	1	1	1	1	
25	Hoffman Apparatus	2	2	2	2	2	2	2	2	2	2	
26	Hook's Law	3	0	3	3	0	3	0	3	0	3	
27	Hope's Apparatus	1	3	3	1	3	1	3	1	3	3	
28	Horseshoe Magnet	6	0	6	6	0	6	0	6	0	6	
29	Hydraulic Press	2	2	2	2	2	2	2	2	2	2	
30	Hydrometer	2	2	2	2	2	2	2	2	2	2	
31	Hygrometer (wet and dry)	2	2	2	2	2	2	2	2	2	2	
32	Lab Burner-Gas Cartridge	4	4	4	4	4	4	4	4	4	4	
33	Lens Set(set of 6)	2	0	2	2	0	2	0	2	0	2	
34	Linear Air Track Kit	1	0	1	1	0	1	0	1	0	1	
35	Liquid Level Apparatus	2	2	2	2	2	2	2	2	2	2	
36	Low Voltage Power Supply	3	3	3	3	3	3	3	3	3	3	
37	Magnetic Field Chamber	3	0	3	3	0	3	0	3	0	3	
38	Magnetic Needle	6	0	6	6	0	6	0	6	0	6	
39	Microammeter	3	0	3	3	0	3	0	3	0	3	
40	Micrometer	3	0	3	3	0	3	0	3	0	3	
41	Mirrors	3	0	3	3	0	3	0	3	0	3	
42	Multimeter Digital	6	1	6	6	1	6	1	6	1	6	
43	Optical Bench Set	1	0	1	1	0	1	0	1	0	1	
44	Prisms (set of 2)	2	0	2	2	0	2	0	2	0	2	
45	Ripple Tank	1	0	1	1	0	1	0	1	0	1	
46	Ruhmkorff Commutator	2	1	2	2	1	2	1	2	1	2	
47	Simple Balance	1	2	2	1	2	1	2	1	2	2	

No.	Item	Qty per lab			Beita Boys School		Wadi Fara'a Girls School		Jericho Boys School		Al Fara'a Boys School	
		Physics	Chem	Science	Physics	Chem	Physics	Chem	Physics	Chem	Physics	Chem
48	Slotted masses with hanger	2	0	2	2	0	2	0	2	0	2	
49	Solar Energy Unit	3	0	3	3	0	3	0	3	0	3	
50	Spectral Gas Tubes	2	2	2	2	2	2	2	2	2	2	
51	Spring Balance Set	2	0	2	2	0	2	0	2	0	2	
52	Stop Watch (Electronic) :	3	0	3	3	0	3	0	3	0	3	
53	System To study Free Fall	1	0	1	1	0	1	0	1	0	1	
54	Tellurium	1	0	1	1	0	1	0	1	0	1	
55	Triple Beam Balance	3	0	3	3	0	3	0	3	0	3	
56	Tuning Fork on Resonance Box	3	0	3	3	0	3	0	3	0	3	
57	Tuning Forks	1	0	1	1	0	1	0	1	0	1	
58	Van de Graff Generator	1	0	1	1	0	1	0	1	0	1	
59	Vernier Caliper	3	0	3	3	0	3	0	3	0	3	
60	Voltaic cell	2	2	2	2	2	2	2	2	2	2	
61	Voltmeter	3	1	3	3	1	3	1	3	1	3	
62	Atomic structure Model	0	3	3	0	3	0	3	0	3	0	
63	Beakers	3	3	3	3	3	3	3	3	3	3	
64	Burette	0	3	3	0	3	0	3	0	3	0	
65	Burette Clamp	0	3	3	0	3	0	3	0	3	0	
66	Clamp , Universal	3	3	3	3	3	3	3	3	3	3	
67	Cork Borers	2	2	2	2	2	2	2	2	2	2	
68	Crucible porcelain	3	3	3	3	3	3	3	3	3	3	
69	Distillation Apparatus	2	2	2	2	2	2	2	2	2	2	
70	Double 45 Clamp	3	3	3	3	3	3	3	3	3	3	
71	Erlenmeyer Flask	3	3	3	3	3	3	3	3	3	3	
72	Graduated Cylinder	2	2	2	2	2	2	2	2	2	2	
73	Periodic Table of element	0	1	1	0	1	0	1	0	1	0	
74	Pipette	0	3	3	0	3	0	3	0	3	0	
75	Pipette Filler	0	3	3	0	3	0	3	0	3	0	
76	Portable pH Meter	0	3	3	0	3	0	3	0	3	0	
77	Retort stand: Base and Rod	3	3	3	3	3	3	3	3	3	3	
78	Rocks and Minerals Set	1	1	1	1	1	1	1	1	1	1	
79	Stand ring	3	3	3	3	3	3	3	3	3	3	
80	Test Tube	1	2	2	1	2	1	2	1	2	1	

No.	Item	Q'ty per lab			Beita Boys School		Wadi Fara'a Girls School		Jericho Boys School		Al Fara'a Boys School Science
		Physics	Chem	Science	Physics	Chem	Physics	Chem	Physics	Chem	
81	Test Tube Rack	0	6	6	0	6	0	6	0	6	6
82	Thermometers: (set of two)	3	3	3	3	3	3	3	3	3	3
83	Tripod stand , Triangular	2	3	3	2	3	2	3	2	3	3
84	Wire Gauze, Ceramic cente:	6	6	6	6	6	6	6	6	6	6
85	Dissecting Set	0	1	1	0	1	0	1	0	1	1
86	Human Brain Model	0	1	1	0	1	0	1	0	1	1
87	Human Circulatory System Charts	0	1	1	0	1	0	1	0	1	1
88	Human Digestive System Chart	0	1	1	0	1	0	1	0	1	1
89	Human Ear Model	0	1	1	0	1	0	1	0	1	1
90	Human Eye Model	0	1	1	0	1	0	1	0	1	1
91	Human Heart Model	0	1	1	0	1	0	1	0	1	1
92	Human kidney Model	0	1	1	0	1	0	1	0	1	1
93	Human Muscular System Chart	0	1	1	0	1	0	1	0	1	1
94	Human Nervous System Chart	0	1	1	0	1	0	1	0	1	1
95	Human Nose and olfactory system Chart	0	1	1	0	1	0	1	0	1	1
96	Human Respiratory System Chart	0	1	1	0	1	0	1	0	1	1
97	Human Skeleton Model	0	1	1	0	1	0	1	0	1	1
98	Human Torso (sex less)	0	1	1	0	1	0	1	0	1	1
99	Human Urinary System Chart	0	1	1	0	1	0	1	0	1	1
100	Microscope	0	6	6	0	6	0	6	0	6	6
101	Sphygmomanometer	0	3	3	0	3	0	3	0	3	3
102	Stereomicroscope	0	6	6	0	6	0	6	0	6	6
103	Basic Electronics Kit (Only for Gr.10, 11)	10	0	10	0	0	0	0	10	0	10
104	Tools box	1	0	1	1	0	1	0	1	0	1

2-2-2-5 Architectural Plan

(1) Design Code

In the West Bank, ACI (American Concrete Institute, 2002 Michigan, USA) code is used as a structural design code. There is no other code such as 'fire code' or 'architectural code'. However as 'architectural standards' are included in the MEHE standard design drawings, the Project follows them. As for earthquakes, the seismic zone map issued by the 'Earth Sciences and Seismic Engineering Center' in An-Najah National University in Nablus shall be referred to.

(2) Building Permit

A Japanese consultant will prepare drawings, specifications, structural calculations, etc., and a local consultant hired by the Japanese consultant will acquire an approval seal by the Palestinian Engineering Association and then submit them to MEHE. Then, MEHE will apply for a building permit to related municipal governments.

(3) Standard Design Drawings

In principle, the Project shall follow the MEHE standard design drawings. But if necessary, minor modifications shall be made.

(4) Barrier-Free Plan

For the barrier-free design, a classroom, a universal toilet, a computer lab, and a headmaster room have priority to be located on the ground floor in every school. And a ramp from the outside gathering area to the ground floor is also required.

(5) Master Plan

Most of the school sites in the West Bank are rocky slopes. Therefore, leveling, retaining walls, exterior works and building layout are highly interrelated works. As it is difficult to design them separately, an integrated master plan shall be made. The concepts for making a master plan are as follows:

- 1) To minimize the quantity of land leveling and retaining walls to save the construction cost.
- 2) To divide a site into several zones and set the level differences, taking advantage of the hilly topography.
- 3) To divide buildings and set the level differences.
- 4) The level gap between each zone shall be designed to look natural by building flower

beds, stairs, audience seats and so forth.

- 5) To design the area from the school gate to the ground floor as barrier-free so that a student in a wheelchair can move around by him/herself.
- 6) To provide a basketball court, a car park and a shade within the site.
- 7) To provide a gathering space for a morning assembly in front of the building entrance. The basketball court can be used as the gathering area if the space is limited.
- 8) To provide fences along the school boundary. The retaining walls also can be used as fences.
- 9) Although it is preferable to make building layout L shape or U shape so that the school staff can overlook the entire school facility from the administration zone. But it is not compulsory, and parallel, single-band and double-band shapes can also be introduced, when the school site is irregular in shape.
- 10) To avoid setting classrooms to face the East in order to prevent the strong morning sunshine from coming in. Classrooms facing the North are ideal, but if there is no choice but to design them to face the South or the West, window sun screens shall be installed.
- 11) To layout at a minimum, a classroom, a toilet, headmaster room, a computer lab on the ground floor.
- 12) To provide 2 or more staircases if the number of classrooms of each floor is 4 or more. If the number of classrooms of each floor is 3 or less, only 1 staircase is allowed.
- 13) To plan a canteen and a shade together as one.

(6) Floor Plan

In principle, the floor plans of the necessary rooms shall be in conformity with the MEHE standard design. Standard sizes and design conditions of the rooms are shown in the Table 2-10.

Table 2-10 Standard Sizes and Design Conditions of the Rooms

Room	Standard size 1 bay=2.7m×6.15m=16.6 m ²	Design Conditions
Classroom	3 bays	The wall by the entrance door is diagonal shape so that the door doesn't hit the students in the corridor
Library	5 bays	The room consists of a reading corner and a bookshelves corner
Administrative unit	3 bays	Headmaster room, secretary room, teachers' toilets and doorkeeper's room & kitchen
Teachers room	Middle: 3 bays Small: 2 bays	16 Classrooms: 2 small rooms Fewer than 16 classrooms: 1 middle room

First aid room	1 bay, 12 m ² +	Adjacent to the administrative unit
Social worker room	1 bay, 12 m ² +	Apart as far as possible from the administrative unit
Physics & Technology Lab	Lab 4 bays + Preparation room 1 bay	6 group working tables and 1 demonstration table with a sink
Chemistry & biology lab	Lab 4 bays + Preparation room 1 bay	6 group working tables with sinks and 1 demonstration table with a sink
General science lab	Lab 4 bays + Preparation room 1 bay	Same as above
Arts & crafts room	5 bays	Floor of 2 bays is a stage and the floor level of the stage is 30cm higher than the adjacent floor. A counter with a sink is installed.
Computer Lab	3 bays	21 computer desks
General Store	Approximately 20 m ²	
Toilet	Middle: 3 bays Small: 2 bays	16 Classrooms: 1 large or 2 small Fewer than 16 classrooms: 1 middle
Canteen	Approximately 20 m ²	Adjacent to shade
Shade	The larger, the better	At least the space for 3 lines of students, and 3m depth is needed.
Home economics room	5 bays	Counters with sinks are installed.
Corridor	2.3m or wider for single band corridor 3.2m or wider for a double band corridor	Single band corridor is recommended to the Jericho site to secure natural ventilation
Staircases	1.6m or wider	1 staircase will be built, if the number of classrooms on each floor is 3 or less. 2 or more staircases will be built, if the number of classrooms on each floor is 4 or more.

(7) Cross Section Design Plan

In principle, the school buildings shall be 3-storey, following the most typical local school buildings. However, it is possible to add a partial basement by utilizing the inclined land. Floor height shall be 3.38m, following the standard design.

Exterior finishing shall use local stones and be supported by concrete walls, and insulation will be sandwiched between the exterior walls and concrete hollow block walls. Columns and beams facing outside are finished with plaster and paint instead of stones.

An aluminum window with a sliding part and a fixed part will be installed full stretch between the columns. Concrete canopies with a depth of 60cm are installed above the windows to prevent rain and sunshine from coming into the classrooms.

The roof is a flat type with parapet walls and covered by asphalt membrane water proofing.

(8) Structural Design Plan

1) Soil Conditions

Soil condition depends on the site. Soil bearing capacity of each site was measured by the borehole tests as follows.

Beita	20 t /m ²
Beit Dajan	20 t /m ² or less
Wadi Fara'a	30 t /m ²
Al Fara'a	40 t /m ²
Jericho	20 t /m ² or less

2) Structural Type of the Buildings

The foundation shall be of footing type. The foundation must be built on the natural ground and must avoid the filled areas. At the three sites where the bearing capacity of the soil is 20t/m² or less, the cast-in-place concrete piles shall be driven. The upper part of the building is concrete rigid frame. The partition walls are made of concrete hollow blocks. The floor is of joist slab with cast-in hollow blocks.

3) Materials and Strength

The specification of the concrete is FC250 of Japan Industrial Standard (JIS) or equivalent or higher. Reinforcing bar is SD295A for D10-13 and SD345 for D16-25 of JIS or equivalent or higher. The fracture strength of concrete blocks should be 35kg/m².

4) Seismic Design

The Jordan Valley is located in the 'Dead Sea Active Fault Zone' and has had frequent earthquakes since ancient times. The further the distance from the Fault, the less frequent the occurrence and the lower the magnitude of an earthquake. The Earth Sciences and Seismic Engineering Center (ESSEC) of An-Najah National University in Nablus made a hazard map which categorizes Palestine into 4 seismic zones.

Table 2-11 Seismic Zones

Zone	1	2A	2B	3
Z	0.075	0.15	0.20	0.30

Z : Ratio of the maximum of seismic acceleration to the gravity
(10% probability of exceedance in 50 years)

As for the Project sites, Jericho is located in Zone 3 while Nablus and Tubas are located in Zone 2B. The structural design shall follow ACI, as stated before, but the maximum seismic force must follow this hazard map for the structural calculation.

An expansion joint shall be installed every 32m for the large size buildings (38m for the small size buildings) in conformity with the standard design.

(9) Electrical and Mechanical Design Plan

1) Electrical Plan

In Palestine, all electricity is imported from Israel. Importation of high voltage electricity and its distribution are under the control of the Palestinian Energy Authority (PEA). Supply of low voltage electricity is managed by each municipality. As electricity is supplied in the entire West Bank, and the Project sites are no exception.

① Supply Method

3 phase - 4 wire low voltage lines shall be connected from 380/220V city supply lines to each Project school site at the electric poles installed nearby the road. Then the lines pass underground to the main distribution board in the building. Power shall be supplied from main distribution board to the power boards and distribution boards. And all boards shall be grounded.

② Power Supply

To pump water to the elevated water tank, 380-volt, 3-phase power shall be supplied to the pump control board. And 380-volt, 3-phase power shall also be supplied to the power board for the air conditioning system installed in the administrative unit and the computer lab at the Jericho site.

③ Lighting and Receptacles

According to the standard design, fluorescent tubes as supplemental lighting system during early morning and for bad weather shall be installed. At the Jericho site, ceiling fans shall be installed to the rooms except for air-conditioned rooms. Further, floodlights which light

up the school ground shall be installed on the top of the exterior wall.

④ Telephone

For the Project sites where telephone lines are available, telephone lines shall be connected from city telephone lines to the telephone poles installed nearby the road. Then the lines pass underground to the terminal board installed in the teachers room. Initially, only one line shall be installed, but there should be room for an additional line in the future. Telephone units shall be of the mutual transfer type. One telephone line shall be installed in the headmaster room, the secretary room, the teachers room, the first aid room, the social worker room and the computer lab respectively. And an independent line for the internet shall be installed in the headmaster room, secretary room, and computer lab respectively.

⑤ Intercom Device

Two outdoor speakers shall be installed on school building walls for morning assemblies, ceremonies and gatherings. An amplifier shall be installed in the teachers room. Several smaller speakers for general information announcement in corridors shall have a timer and a chime to automatically announce the beginning and end of classes. In addition, a small speaker shall be installed in every room.

⑥ Emergency Devices

According to the standard design, a fire alarm system shall be installed. It will include a push button and siren and will work together with smoke detectors (installed in the labs, the computer lab and the home economics room) and heat detectors (installed in corridors). In addition, fire extinguishers shall be installed.

2) Water Supply Plan

Public water supply is available for all the Project school sites. Each municipality in the West Bank receives its water supply from Israel's water supply authority and manages the distribution to the residents.

① Water Supply Method

Water shall be received in receiving tanks, pumped up to elevated tanks and then distributed to each necessary point by gravity flow.

② Water Receiving Tank

The tank shall be ready made polyethylene tanks and installed on the ground. By taking the possible failure of the city water supply into account in the summer, the capacity of the water receiving tank shall be decided upon based on water use of about 40 liters per person.

③ Elevated Water Tank

A combined unit of several ready made polyethylene resin tanks shall be installed on the roof of school building. The number of necessary tanks shall be calculated based on the daily water consumption of each school. However, as water use will be concentrated during the class recess periods, the capacity of the water tank shall be about 4 liters per person.

3) Drainage Plan

① Treatment of Sewage and Waste Water

None of the areas where the Project sites exist have a public sewer system. Furthermore, allowing sewage and wastewater to flow into the ground is prohibited throughout Palestine by the Ministry of Environment. Therefore, sewage shall be pumped and removed from the sewage tank by vacuum trucks of private companies for a fee. However, as there is no final sewage treatment system, the sewage water is ultimately dumped in places such as outlying valleys.

The rainwater shall flow into the ground.

② Toilet Bowls

The toilet bowls for the students shall be an Arabic type, which is the most popular in Palestine. The toilet bowls for the handicapped and teachers shall be of Western type.

4) Other Facilities

① Gas Supply

LPG shall be supplied for the science labs and the home economics room from the gas tanks installed outside.

(10) Finishing Material Plan

1) Finishing Materials used in the Project

The exterior and the interior finishing materials to be used in the Project shall follow the MEHE standard design in principle. The materials are listed in Table 2-12.

Table 2-12 Finishing Materials

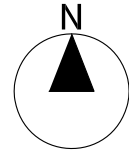
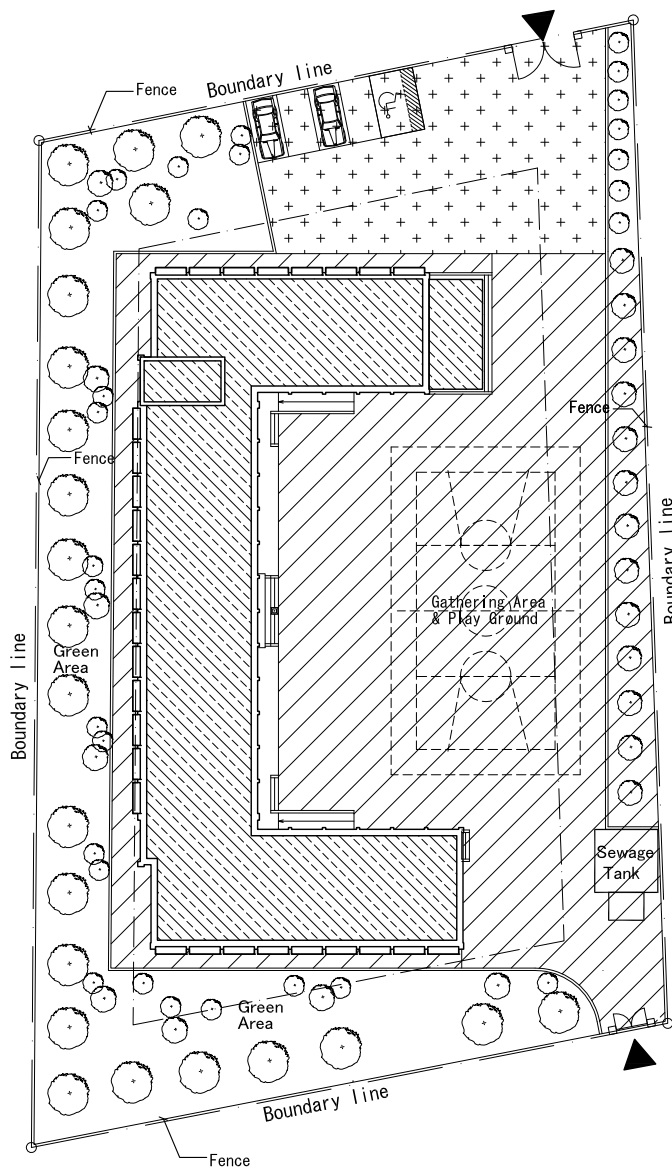
Element	Finishing Materials
Exterior	
Roof	Elastmeric cementitious coating waterproofing
Walls	Local stone and partially plaster and painting
Exterior door	Steel frame door painted
Window	Aluminum
Window sill	Local marble stone
Window grill	Steel
Expansion joint cover	Aluminum ready made
Interior	
Ceiling	Thin plaster and painting
Interior wall	Plaster and painting
Floor	Terrazzo tiles
Base	Terrazzo tiles
Rise and tread of stairs	Local marble stone
Handrail of stairs	Wooden handrail with steel baluster
Toilet floor and wall	Ceramic Tiles
Interior door	Wooden flash door painted

2) Finishing of the Exterior Walls

In urban areas of the West Bank, an exterior finish of stone is required by the municipalities. On the other hand, in rural areas, stone finishing is recommended but not obligatory. However, as MEHE sets stone exterior finishing as the standard design from the point of view of the beauty of the landscape and freedom maintenance, the Project will follow the standard design. However, the following parts of the exterior shall be painted instead of stone finished for the sake of cost saving.

- ① Exposed surface of columns
- ② The walls facing of exterior corridors

2-2-3 Outline Design Drawings

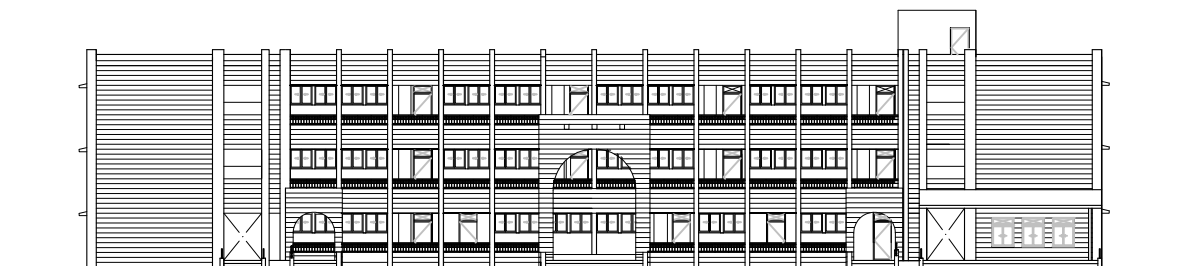


▨: Concrete Pavement
⊕: Asphalt Pavement

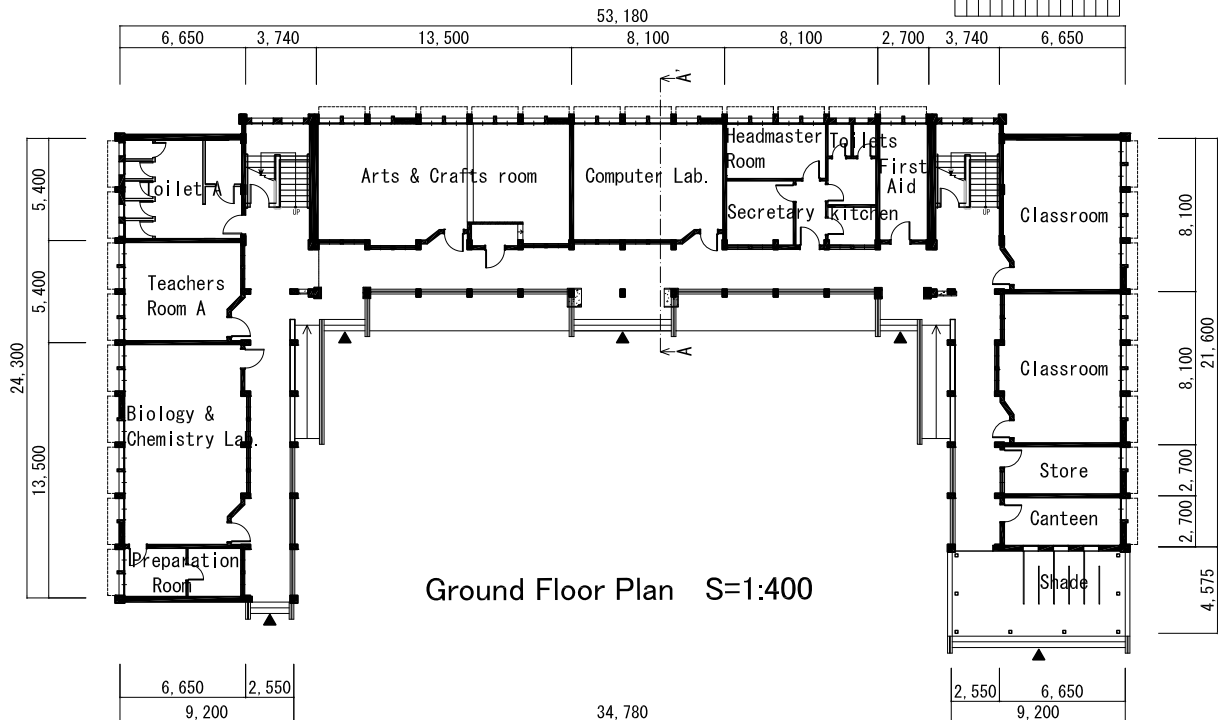
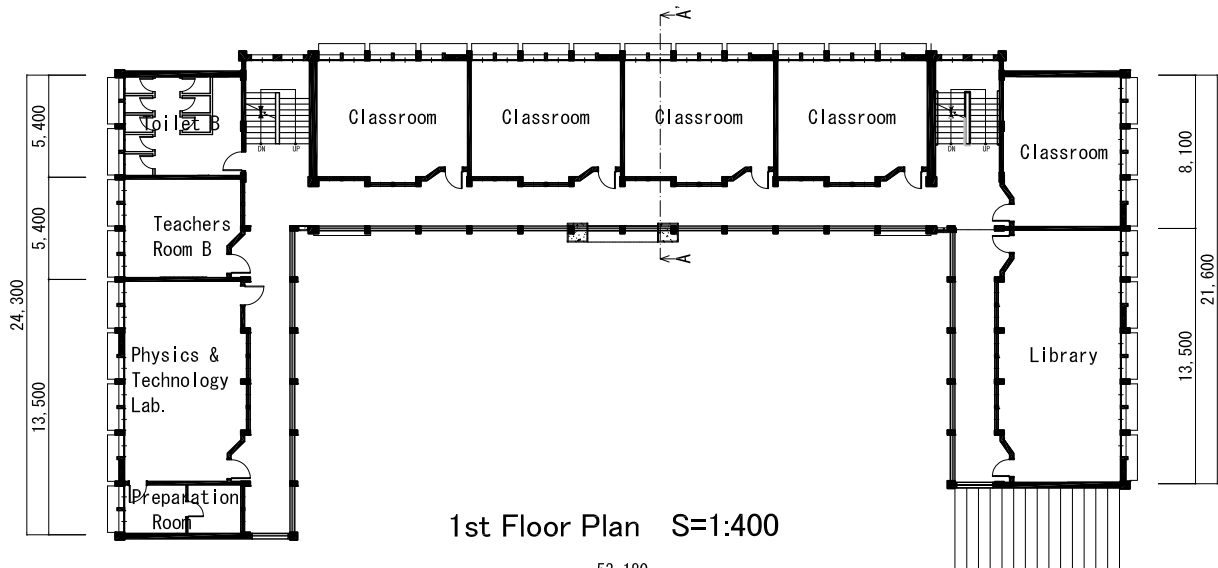
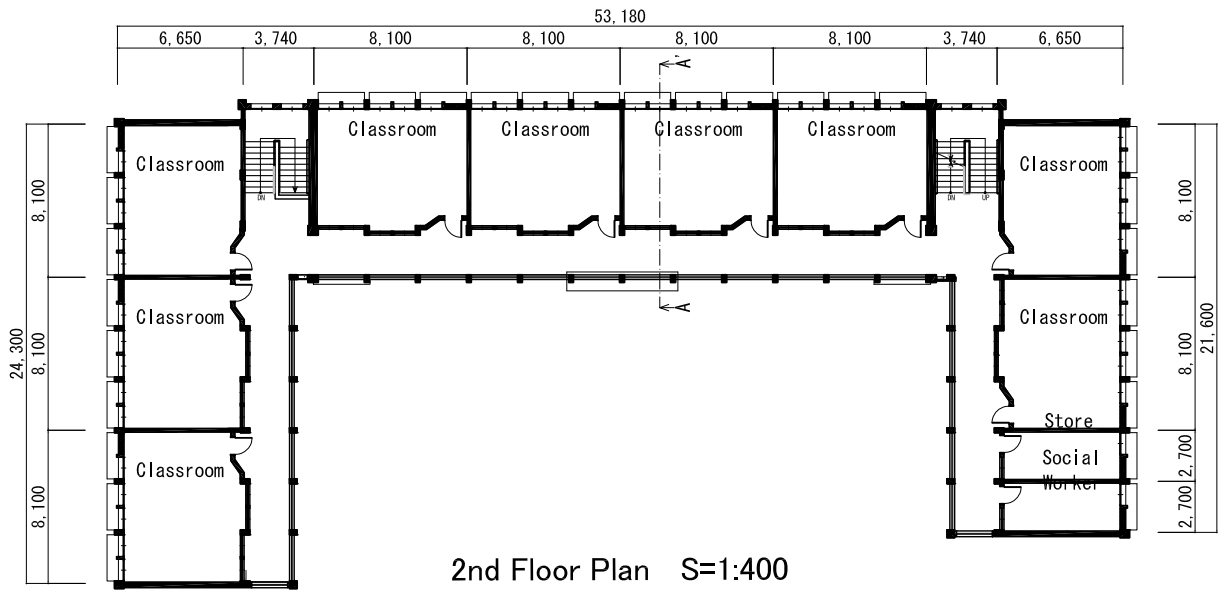
Proposed Site Plan S=1:600

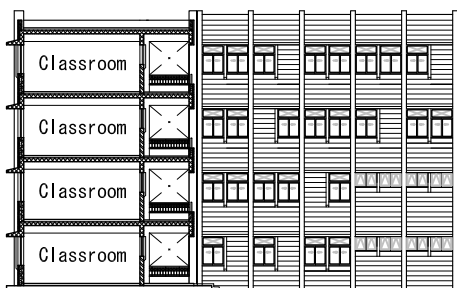
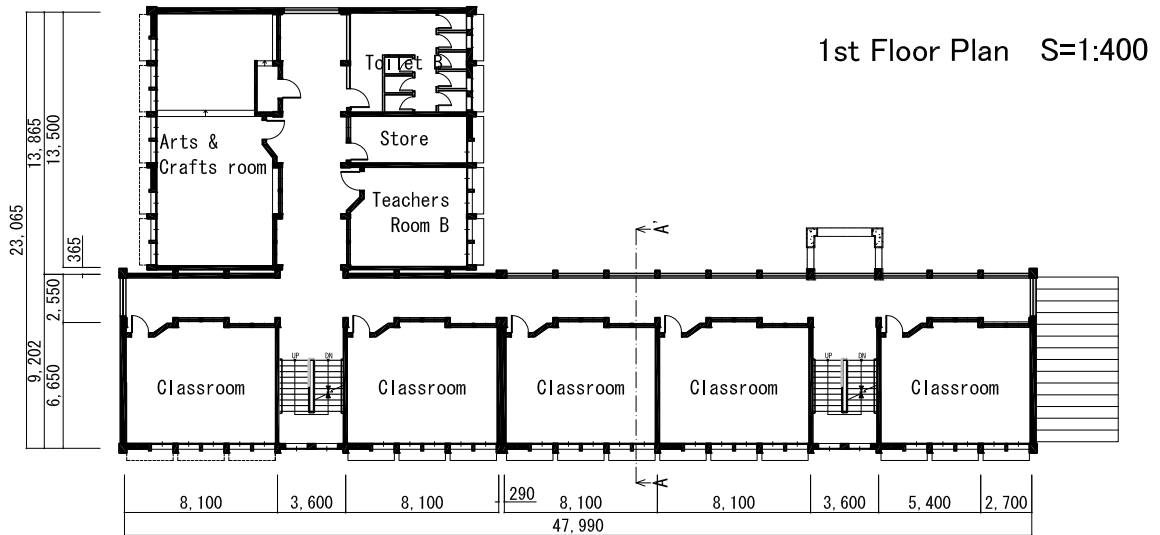
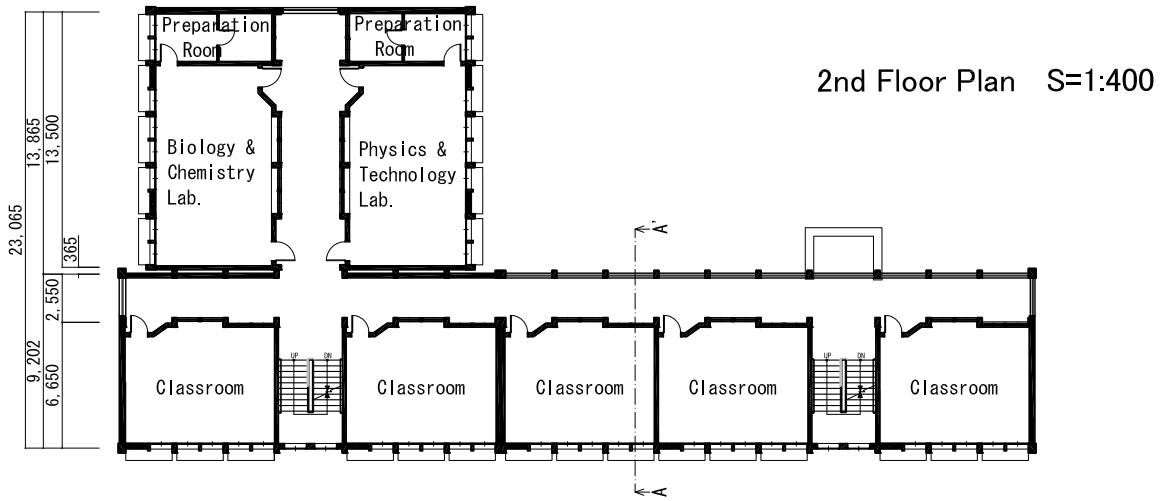
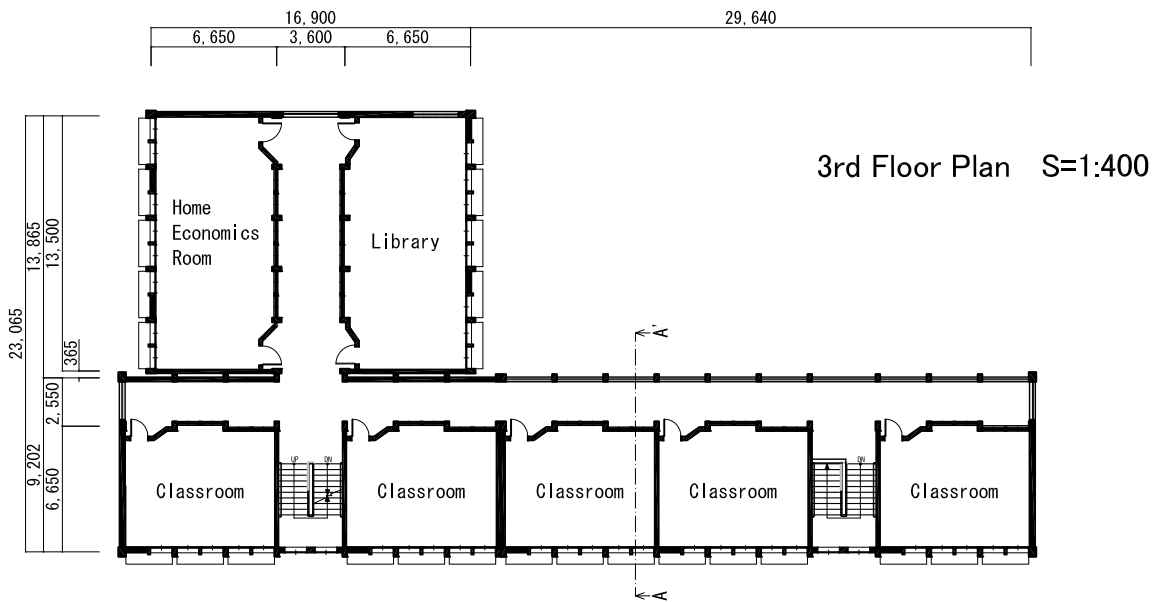


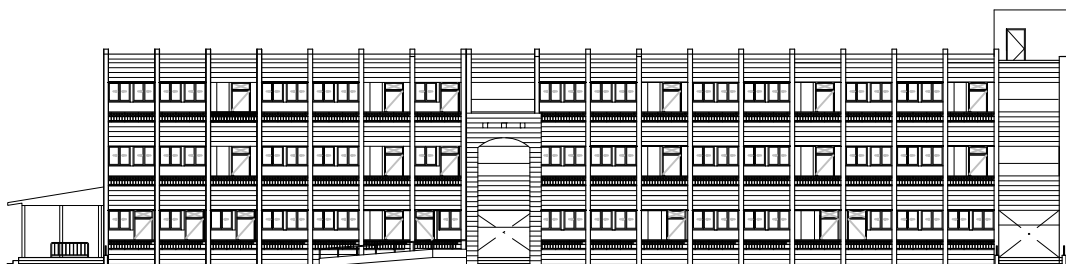
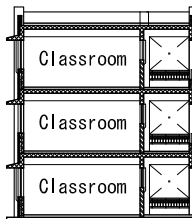
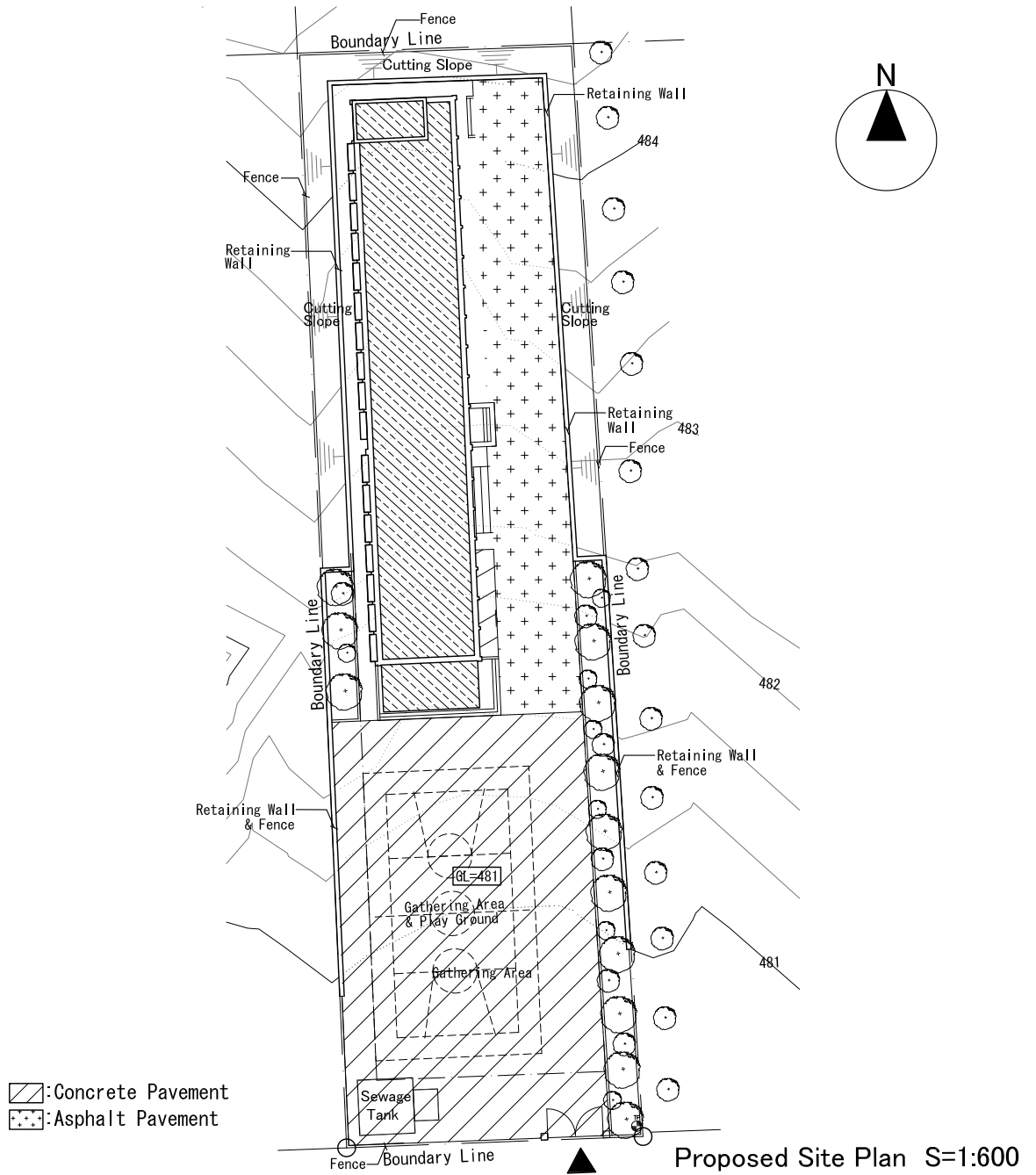
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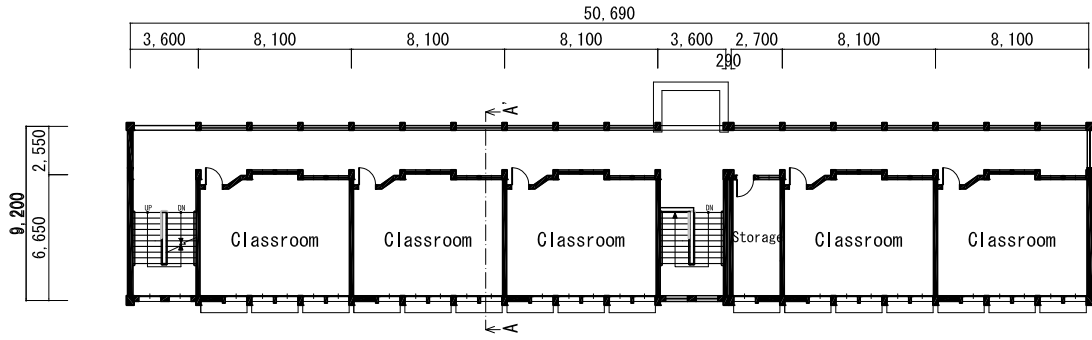


East Elevation S=1:400

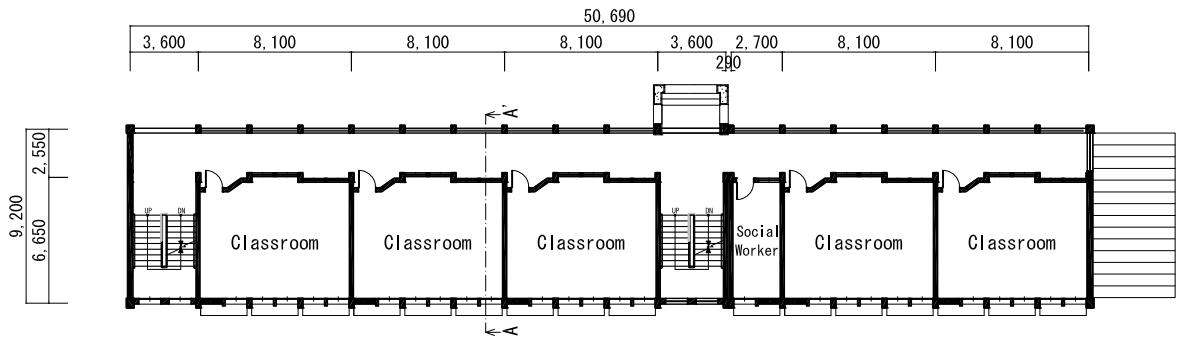




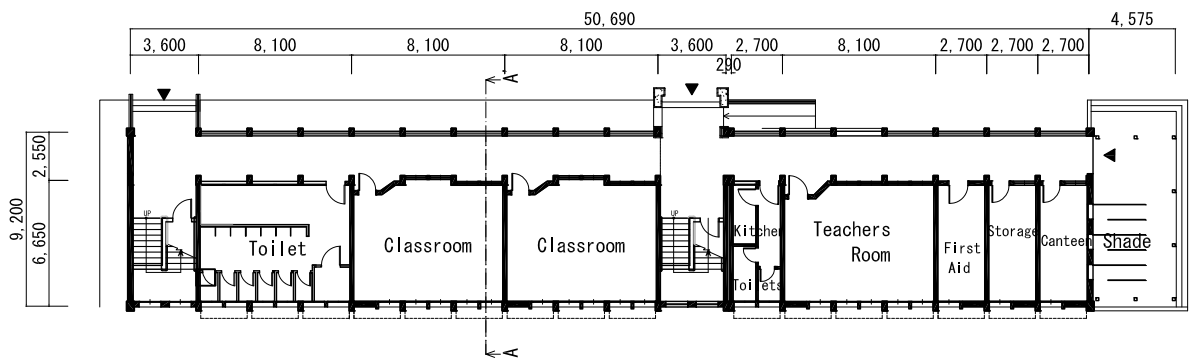




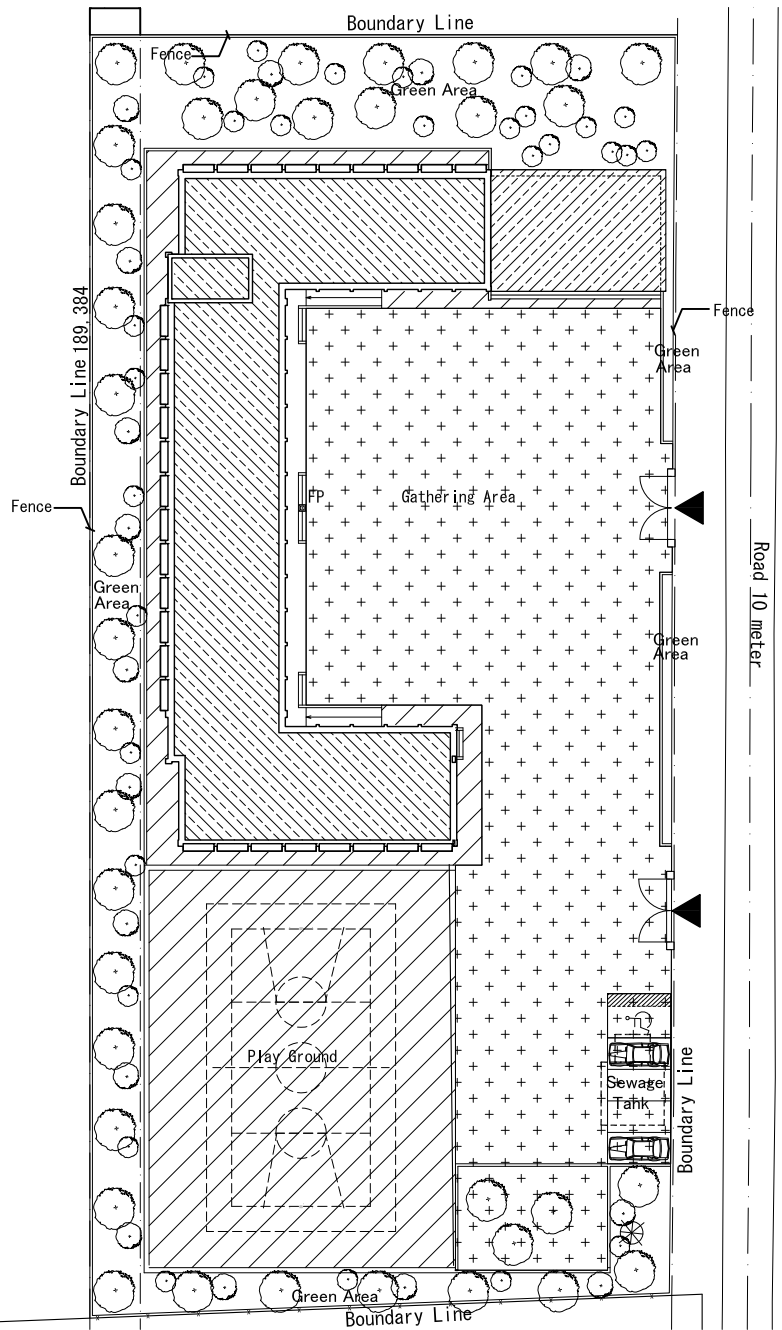
2nd Floor Plan S=1:400



1st Floor Plan S=1:400



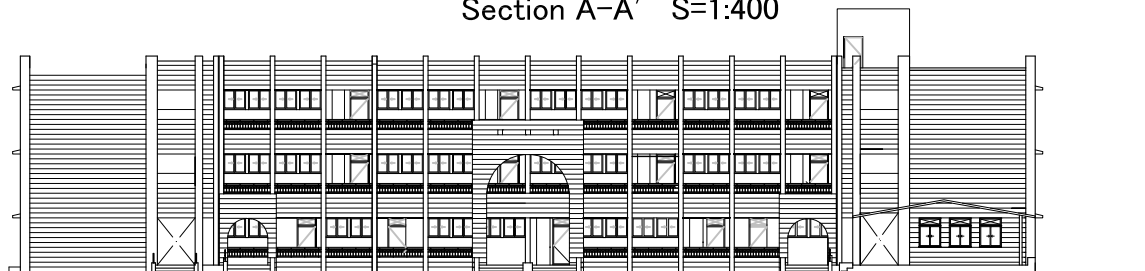
Ground Floor Plan S=1:400



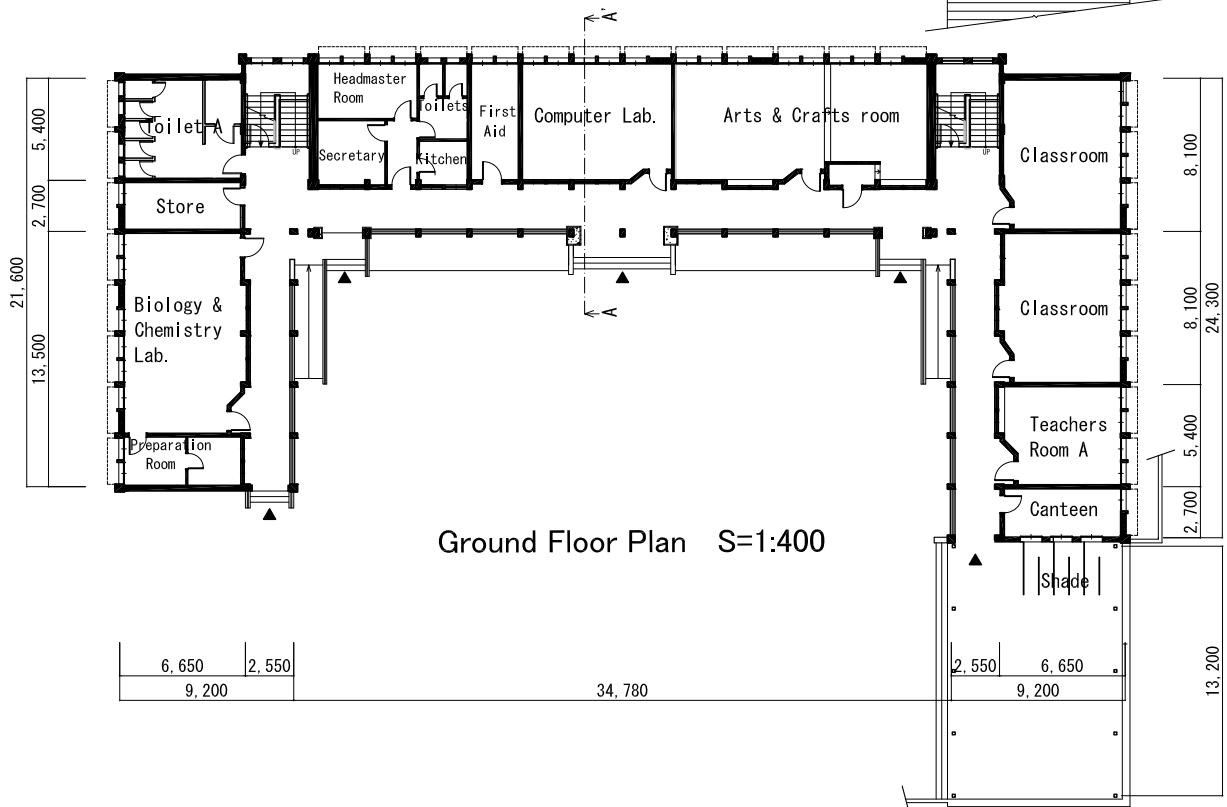
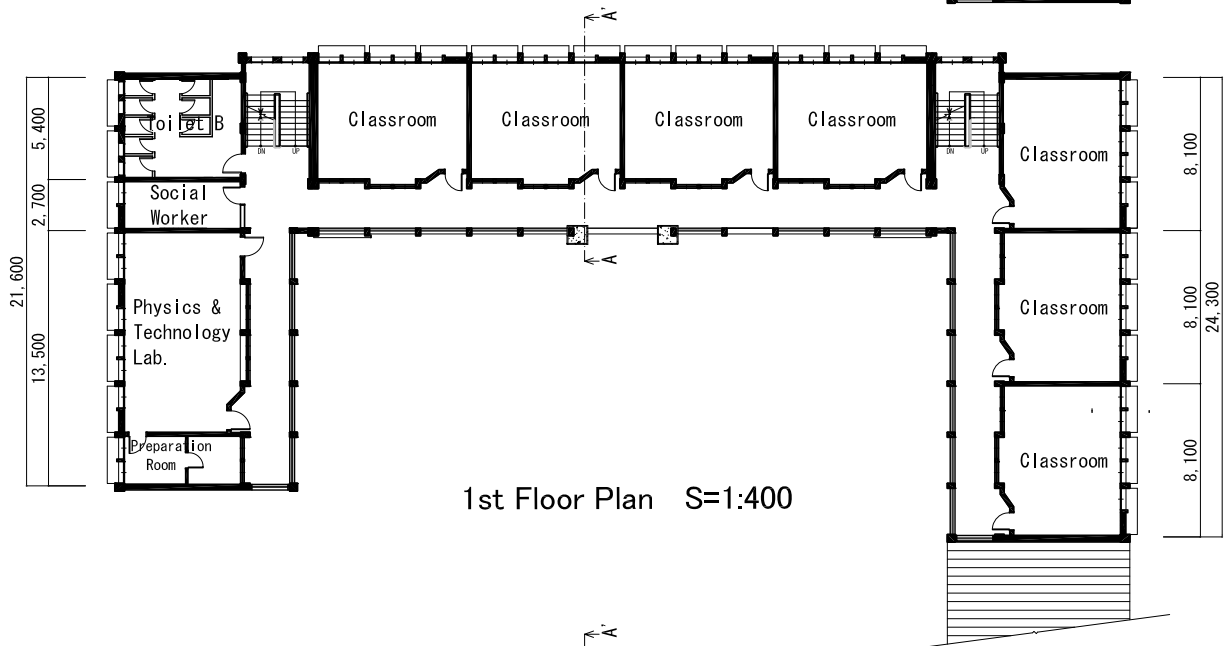
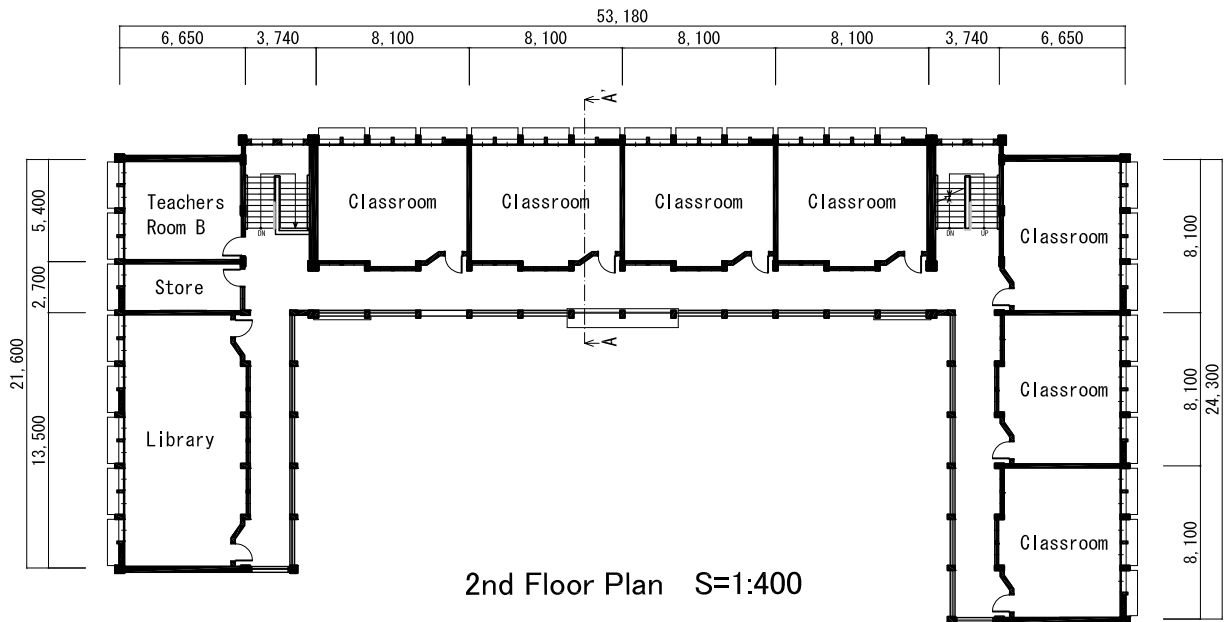
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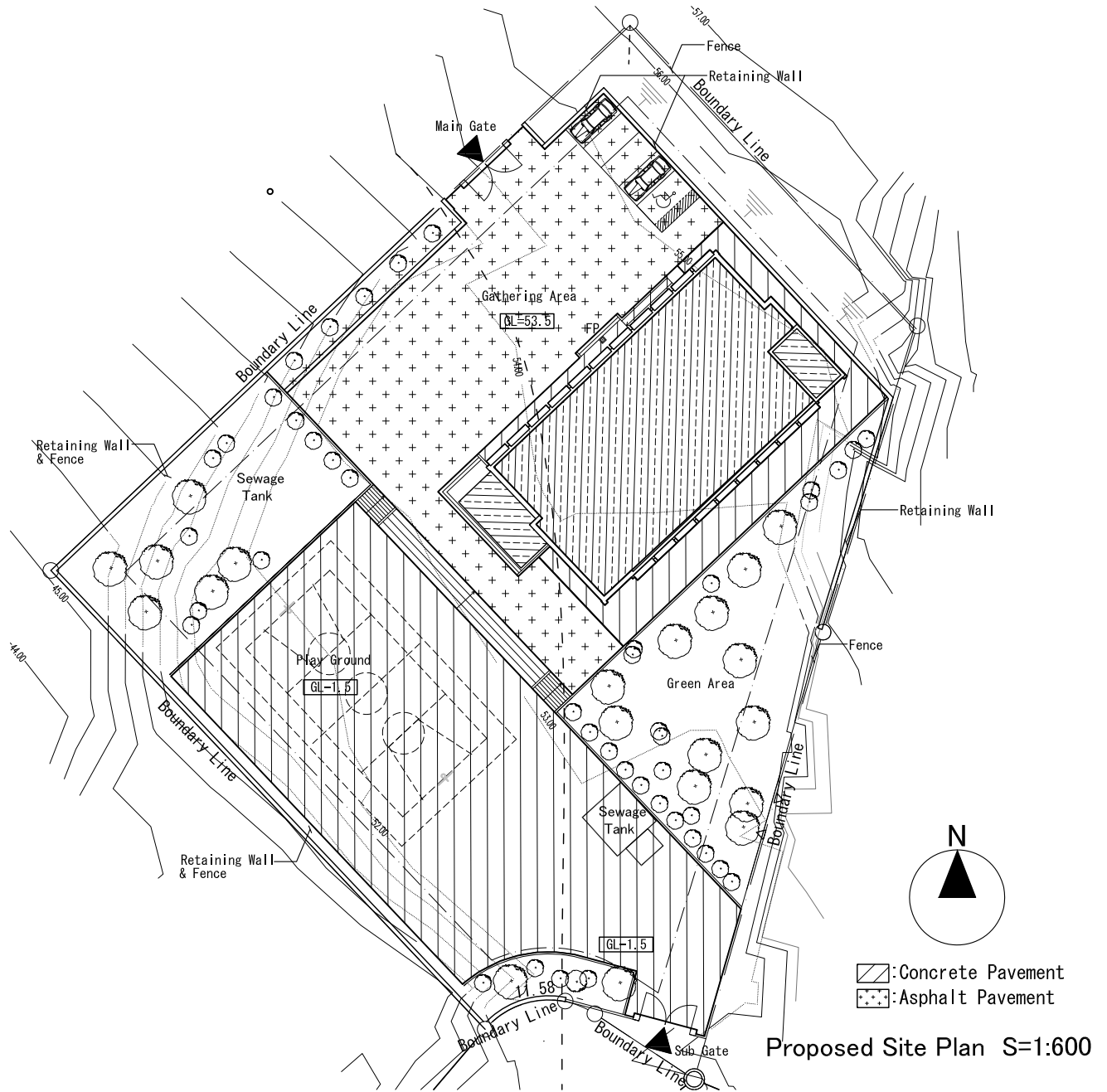


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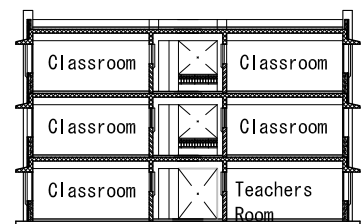


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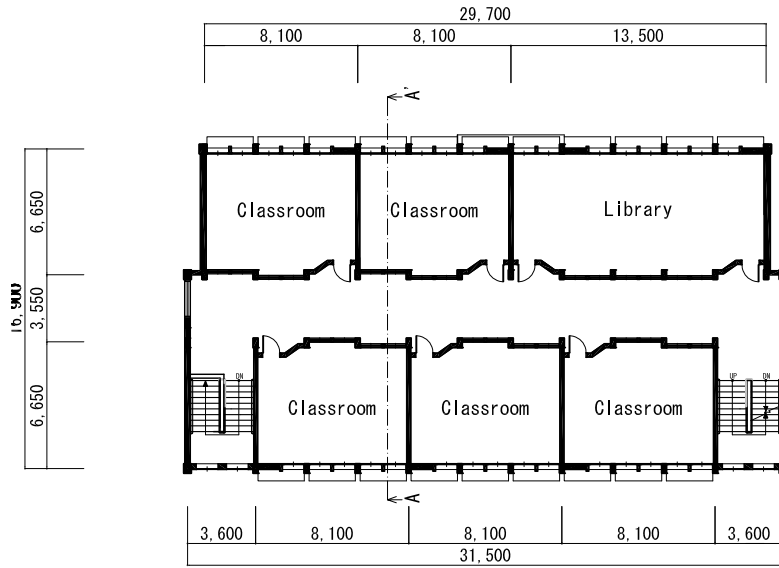




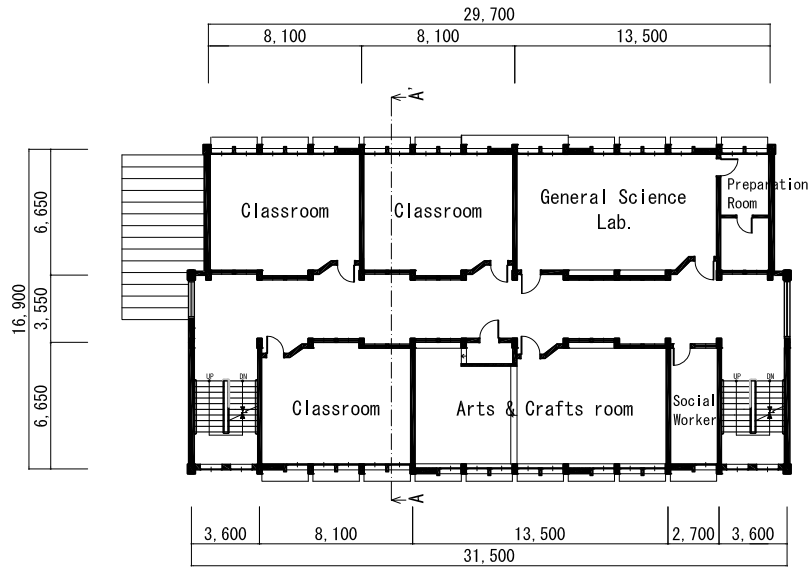
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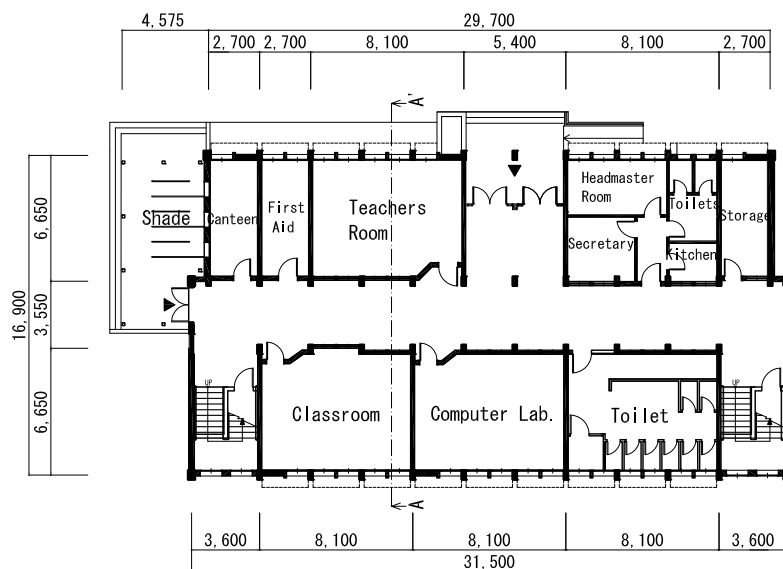
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2nd Floor Plan S=1:400

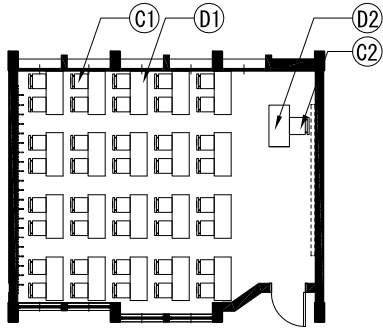


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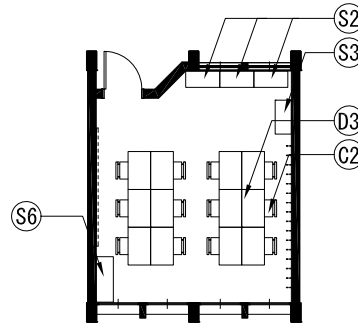


Ground Floor Plan S=1:400

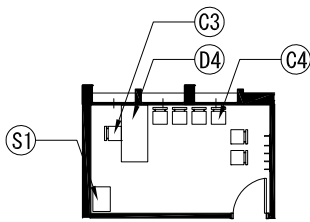
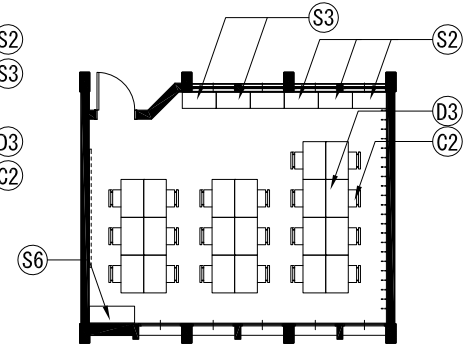
FURNITURE SCHEDULE



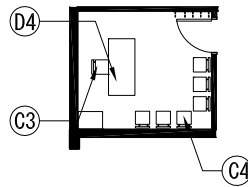
CLASSROOM



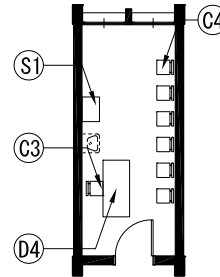
TEACHERS ROOM (S), (M)^{*①}



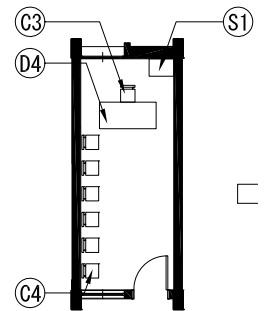
HEADMASTER ROOM



SECRETARY



FAST AID



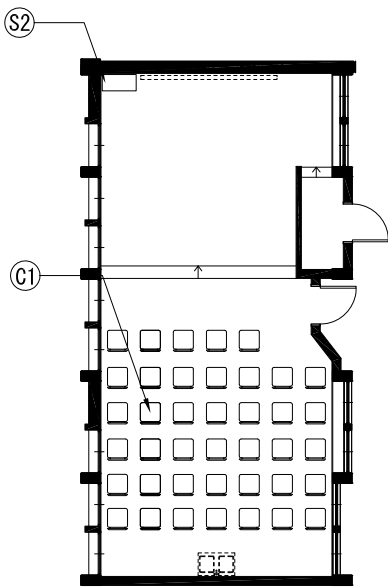
SOCIAL WORKER

LOCATION	SYMBOL	ITEM	DIMENSION(W × H × D)	QUANTITY
CLASSROOM	D1	Student Desk(S)	115 × 64 × 45	20
		Student Desk(M)	115 × 70 × 45	20
		Student Desk(L)	115 × 76 × 45	20
	D2	Teacher Desk	110 × 93 × 55	1
	C1	Student Chair(S)	39 × 38 × 36	20
		Student Chair(M)	39 × 42 × 36	20
		Student Chair(L)	45 × 46 × 42	20
C2	Teacher Chair	45 × 46 × 42	1	
TEACHERS ROOM (S,M)	D3	Teacher Desk	100 × 93 × 60	12(S)/20(M)
	C2	Teacher Chair	45 × 46 × 42	12(S)/20(M)
	S2	Metal Cabinet (2 Doors)	90 × 193 × 43	3(S)/4(M)
	S3	Metal Cabinet (12 Doors)	90 × 193 × 43	1+2(S)/2(M) ^{*②}
	S6	Sports Cabinet	120 × 185 × 45	1
HEADMASTER ROOM/SECRETARY /FIRST AID/SOCIAL WORKER	D4	Headmaster Desk	150 × 93 × 70	1
	C3	Headmaster Chair		1
	S1	Metal File Cabinet (4 Doors)	46 × 132.5 × 65	1
	C4	Multipurpose Chair	53 × 80 × 50	24

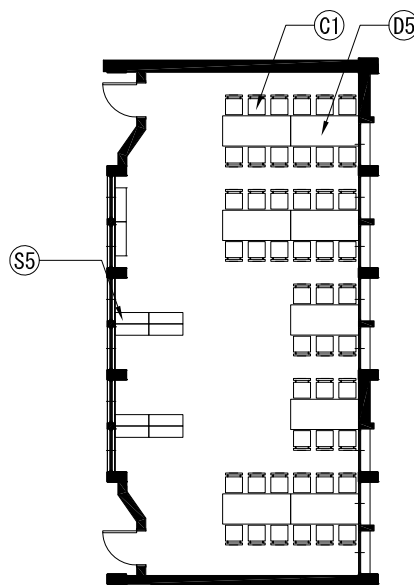
*①→2 × (S)type rooms for 16 classrooms school.

1 × (M)type rooms for 9 or 12 classrooms school.

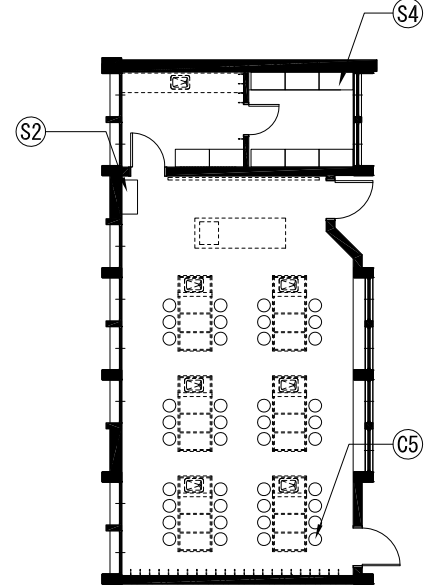
*②→16 classroom type school:1 for Teacher Room A, 2 for Teacher Room B.



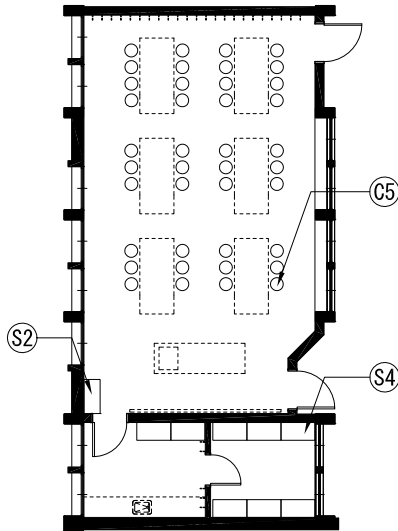
ARTS & CRAFTS ROOM



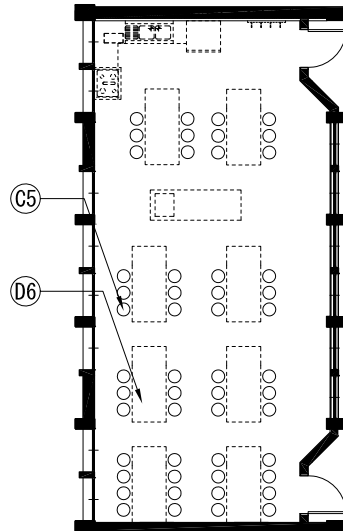
LIBRARY



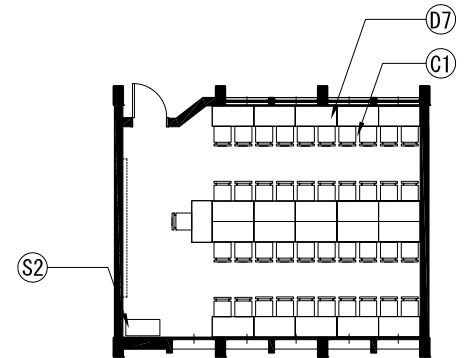
BIOLOGY & CHEMISTRY LAB./
GENERAL SCIENCE LAB.



PHYSICS &
TECHNOLOGY LAB.



HOME ECONOMICS
ROOM



COMPUTER LAB.

LOCATION	SYMBOL	ITEM	DIMENSION(W×H×D)	QUANTITY
ARTS & CRAFTS ROOM	C1	Student Chair(L)	45 × 46 × 42	40
	S2	Metal Cabinet (2 Doors)	90 × 193 × 43	1
LIBRARY	D5	Reading Table	180 × 75 × 80	8
	C1	Reading Chair	45 × 46 × 42	48
	S5	Book Shelves	90 × 200 × 30	10
BIOLOGY & CHEMISTRY LAB./GENERAL SCIENCE LAB.	C5	Stool Chair	34 ϕ × 60	40
	S2	Metal Cabinet (2 Doors)	90 × 193 × 43	1
	S4	Lab Locker	90 × 193 × 43	8
PHYSICS & TECHNOLOGY LAB.	C5	Stool Chair	34 ϕ × 60	40
	S2	Metal Cabinet (2 Doors)	90 × 193 × 43	1
HOME ECONOMICS ROOM	D6	Working Table	200 × 75 × 90	8
	C5	Stool Chair	34 ϕ × 60	40
COMPUTER LAB.	D7	Computer Table	110 × 93 × 54	21
	C1	Computer Chair	45 × 46 × 42	41
	S2	Metal Cabinet (2 Doors)	90 × 193 × 43	1

2-2-4 Implementation Plan

2-2-4-1 Implementation by the Procurement Management Agent

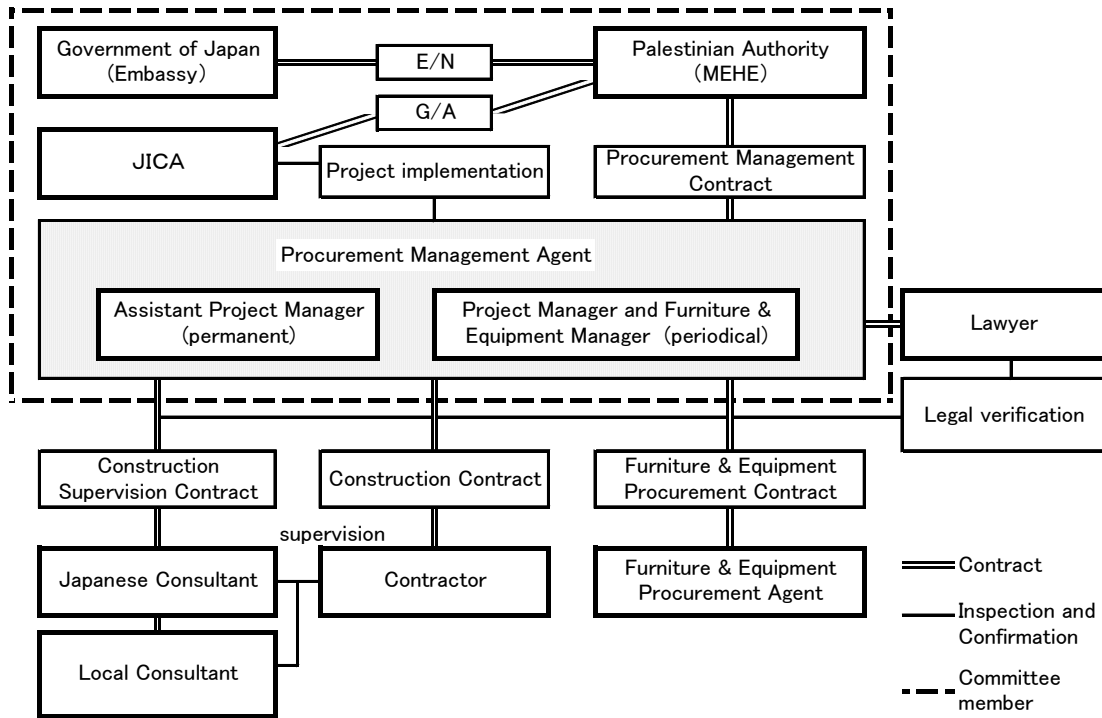


Figure 2-1 Implementation Organization

(1) Project Implementation by the Procurement Management Method

The Project will be carried out in accordance with the Outline Design. After the review of the Outline Design by Japanese agencies related to the Project, an approval by the Cabinet of the Government of Japan shall be required for the Project implementation. After the approval, both countries will sign the Exchange of Notes (E/N) for the Project. MEHE signs the Procurement Management Contract with a Japanese Procurement Management Agent (JICS) in accordance with the E/N, the Agreed Minutes on Procedural Details (A/M), and the Grant Agreement (G/A) signed with JICA to contract out the Project implementation.

(2) Committee

After the signing of the E/N, a Committee shall be organized. The Committee consists of the government representatives of the Japanese and the PA sides and JICA, and the chairman shall be the representative from MEHE. In the Project, the members of the Committee will be from, Embassy of Japan, JICA Palestine office, and MEHE, if necessary, the Ministry of Planning, the Governorates of Nablus, Tubas and Jericho will join the Committee. In addition,

the representatives from the Procurement Management Agent will take part in the Committee as advisors. Various problems that may occur during the implementation of the Project will be discussed in the Committee.

(3) The Procurement Management Agent

The Procurement Management Agent, as an agent of MEHE, will procure a lawyer, a consultant supervision consultant, contractors, a furniture supplier and equipment suppliers. It is appropriate to set up the office of the Procurement Management Agent in Ramallah due to the following reasons:

- ① MEHE, the counterpart of the Project, has its headquarters in Ramallah;
- ② The role and authority of the local governments of the Project sites are relatively small;
- ③ Ramallah is located in the center of the West Bank, and each site can be reached within 2.5 hours by vehicle. It is possible to get to Tel Aviv in about an hour; and,
- ④ In Palestine, most of the tenders of the public works are held in Ramallah.

The organization of the Procurement Management Agent to implement the Project shall be as follows:

1) Japanese Staff

① Project Manger (To be dispatched to Palestine periodically)

The Project Manager will carry out the overall supervision of the Project and the management of the Grant Aid fund. He/she will be dispatched periodically at the time of the tenders and the completion of the Project.

② Assistant Manager

The Assistant Manager will stay in Palestine and assist in carrying out tenders, signing contracts, making payments, and submitting reports to the Committee and so on. Additionally, at the end of the Project, he/she will make a report as to the remaining balance of E/N, put together reports on financial settlements with the contractors to the concerned parties (e.g. Embassy of Japan, JICA Palestine Office, MEHE), evaluate for the final payment, execute the final payment, attend the final inspection and report to the related organizations.

③ Furniture and Equipment Procurement Manager (To be dispatched to Palestine periodically.)

During the implementation stage, he/she will conduct the following works:

< Works in Palestine >

- Research the latest unit cost of furniture and equipment
- Investigate the furniture and equipment market in detail & review the tender lots

< Works in Japan >

- Prepare the tender documents lot by lot
- Evaluate the tenders

④ Staff in Japan

The Procurement Management Agent will arrange supporting staff for preparing the tender documents and for managing the Grant Aid fund.

2) Local staff

- ① Accountant
- ② Assistant for furniture and equipment procurement
- ③ Secretary
- ④ Driver
- ⑤ Office boy

(4) Construction Supervision Consultant

A Japanese consultant recommended by JICA to MEHE will carry out tender assistance and construction supervision. The location of the main supervision office shall be in Ramallah for the same reason as the Procurement Managing Agent office.

The organization of the construction supervision consultant is as follows:

1) Japanese Staff

① Engineering Staff 1 (Tender assistance: periodical basis)

He/she will stay in Palestine during the tender stage for the building construction and will carry out technical works such as finalizing the tender documents lot by lot and the evaluating the tender result from the technical point of view.

② Engineering Staff 2 (Construction supervision: permanent basis)

He/she will carry out the construction supervision by utilizing the local consultant. In order to improve the construction quality, he/she will instruct and advise the local engineers. Further, at the end of the Project, he/she will evaluate the final payment, conduct various inspections such as material inspection, interim inspection, final

inspection, warranty inspection, etc., and, make the progress reports to the Client.

2) Local Staff

- ① Chief Engineer
- ② Site Engineer (For every site)
- ③ Quantity Surveyor
- ④ Structural Engineer
- ⑤ Electrical and Mechanical Engineer
- ⑥ Clark
- ⑦ Driver
- ⑧ Office Boy

(5) Lawyer

The Lawyer will give the advice to the Procurement Management Agent on various contracts, and he/she will handle the disputes or arbitration when needed. A lawyer will be selected from a law firm with experience in other donors' Projects.

(6) Contractors

The Contractors will construct the school facilities according to the contract documents with the Procurement Management Agent.

(7) Furniture and Equipment Suppliers

The Furniture and Equipment Suppliers will procure and deliver the furniture and equipment to the school sites in accordance with the contract documents.

2-2-4-2 Implementation Conditions

(1) Problems anticipated during implementation of the Project.

As projects under the Grant Aid for Community Empowerment scheme are implemented mainly using local resources, various problems are expected during the implementation stage. The problems expected at this moment and how to deal with them are listed in the following table of 2-13.

Table 2-13 Problems Anticipated during Implementation and Their Solutions

Matter	Details	Solution, etc.
Money matter	Embezzlement, running away with or illegal use of the advance payment	Secure the advance payment bond
	Bankruptcy	Thorough check of the financial statements and work capacity of the contractor Secure the performance bond
Contract matter	Dispute on the contract	Utilizing the lawyer's advice
	Forgery of the documents, leakage of the information, false application for the tender	Utilizing the procurement advisor Thorough check of the financial statements and work capacity of the contractor
Construction matter	Delay of the construction/ low quality	Thorough assessment of the progress Frequent site inspections and reports Establish a checking system by the school and the community
	Collusion between the supervisor and the contractor	Establish a checking system by the school and the community

Moreover, building construction in Palestine involves a great risk due to the relationship with Israel. At the moment, the situation is quite stable. And as the frequency of roadblocks and stoppages of material transportation has become low, construction will not be affected by them very much. However, once the security situation turns bad, the construction must be stopped or suspended in order to secure the safety of the construction staff. Therefore, it is necessary to include an article of "Force Majeure" in the construction contracts to deal with these cases with mutual consent.

(2) VAT exemption

In Palestine, VAT is imposed on projects funded by MEHE budget while it is not imposed on projects funded by donors. As most school construction is funded by donors, the VAT exemption system¹ has already been well-established as shown by the following:

- ① MEHE issues a letter to the Ministry of Finance stating that the construction contract is exempted from VAT,
- ② The Ministry of Finance issues a letter of "zero-VAT" to the contractor,
- ③ The contractor purchases materials with VAT,
- ④ The contractor applies for VAT refund to the Ministry of Finance with the above-mentioned, zero-VAT letter and the receipts of the materials, and then gets the refund.

However, according to several parties including contractors, although the zero-VAT system

¹ VAT exemption system is called "Zero-VAT" in Palestine.

has been well established, the Ministry of Finance is afflicted with tight cash flows. Therefore, in reality, it is impossible for contractors to receive a VAT refund promptly. It takes at least a year, sometimes more than three year to get refund. Nevertheless, serious problems due to the delay of VAT refund such as construction stoppage or contractor's bankruptcy rarely occur. Because the contractors know from their experiences that VAT is invariably refunded, even if it takes long time, they manage their company's cash flow accordingly, taking the late VAT refund into consideration.

2-2-4-3 Lot Plan / Tender Plan

(1) Lot Plan

1) Construction Group and Lot Plan for Facility Construction

Considering the typical size of the local contractors and the local tender method, it is appropriate to apply a one site - one lot tender system. And to avoid concentration of the tender works to the Procurement Management Agent, the Project sites shall be divided into two groups. The first group of 3 sites, Beita Boys School, Beit Dajan Boys School and Jericho Boys School, where pile driving work is needed, starts construction prior to the remaining 2 sites, Al Fara'a Boys School and Wadi Fara'a Girls School. Hence, the construction works of all the sites are expected to complete simultaneously.

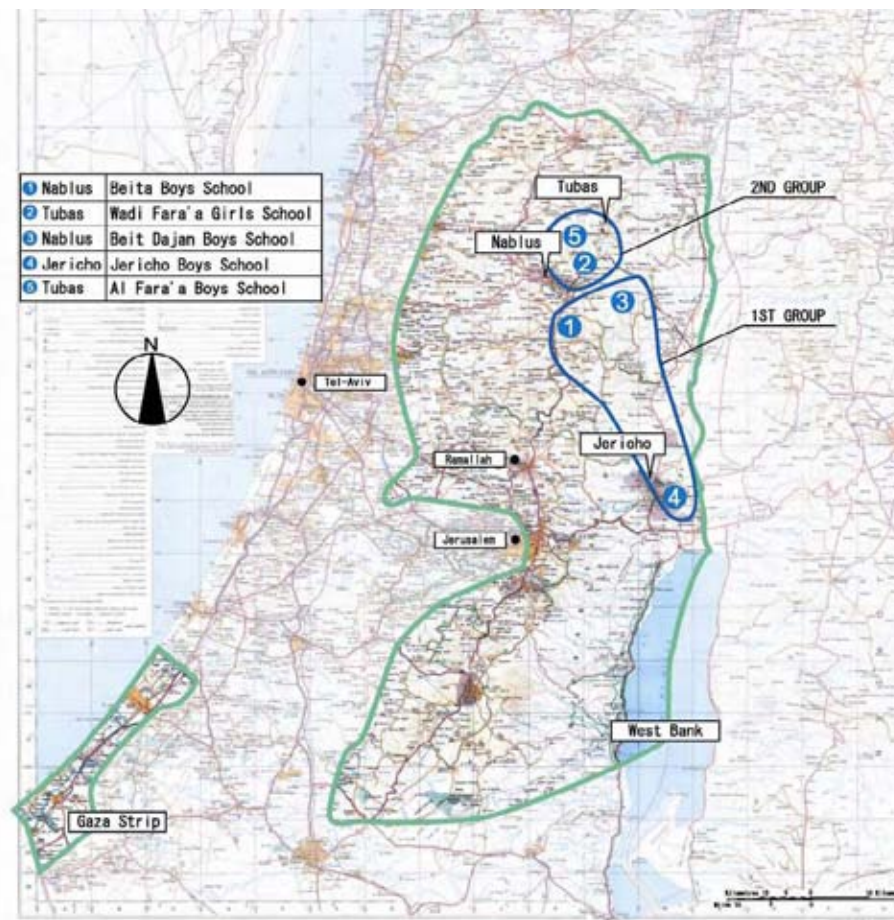


Figure 2-2 Construction Group and Lot Plan (draft)

2) Lot Plan for Furniture and Equipment

Requested furniture and equipment under the Project are the following 5 categories.

- ① Educational Furniture
- ② Computer Equipment
- ③ Educational Media Equipment
- ④ Science Equipment
- ⑤ Home Economics Equipment

When MEHE procures this furniture and equipment, they set lots separately by equipment category. The reason is that furniture and equipment suppliers and agents in Palestine are specialized and that the items which one supplier or agent handles are limited. Though there are general equipment agents who cover many kinds of items, the number of such big agents is very few and an appropriate tender can hardly be held if a tender is called for among the big agents. On the other hand, each specialized agent has enough capacity to supply equipment for 5 schools, and as the product prices are almost equal within the West Bank, selecting a supplier

per equipment category is enough. Therefore, it is appropriate to apply such a 1 category – 1 lot system, that is, 5 lots in total.

(2) Tender Plan

1) Registration

According to the Palestinian tender law, contractors are obliged to satisfy the following conditions. Any foreign contractor is allowed to register with them. Therefore, the Project includes these conditions as prerequisites for participation in the tenders.

- ① Prior registration with the Ministry of Finance
- ② Prior registration with the Contractor's Association
- ③ Prior registration with and classification in the National Classification Committee

2) Tender Procedure

For school building construction projects funded by other donors, the entire tender procedure from announcement to evaluation is conducted under the supervision of the Central Tender Department (CTD). CTD consists of 2 staff from MEHE, 2 staff from the Ministry of Public Works, 1 staff from the Ministry of Finance and 1 staff from PECDAR². In addition, 3 staff of the Procurement Department of MEHE, as working staff, carry out preparation of tender documents, announcement, pre-tender meeting, site explanation, etc. Further, a technical and financial evaluation of the tender result is undertaken by the tender evaluation committee, a lower level of CTD. The evaluation committee consists of an accountant from the Ministry of Finance, 2 engineers from MEHE and 2 engineers from the Ministry of Public Works. The tender comes into effect after CTD approves the tender evaluation.

Table 2-14 Procedure of Tender for Other Donors' Projects

Item		Remarks	Time needed
1	Newspaper announcement	To be announced for 2 days in 2 local newspapers. (In Arabic or English Language.)	Tender documents are available for purchasing for 2 weeks
2	Site Explanation	To be held at the construction site	1 day
3	Questions and Answers	To be held at MEHE	1 day
4	Preparation of documents for tender opening	Contractors make cost estimation. (Consultants prepare a proposal.)	2 weeks
5	Evaluation by	Technical and financial evaluation takes	2 weeks (a few days)

² Palestine Economic Council for Development And Rehabilitation

	evaluation committee	place	shall be added in case of a cost negotiation)
6	Approval by CTD	All the tenders of public works are approved by CTD	1day
7	Approval by the donor	Evaluation report shall be sent to the donor headquarters	2 to 3 weeks (depends on donors)
8	Contract		Approx. 1week

In other donor's projects, consultants are selected by a proposal method. The procedure of the proposal is similar to that of tender for contractors. However, while in selecting a contractor, the lowest price tenderer wins a contract, in selecting a consultant, a technical proposal is usually weighed more (70-80%) than a financial proposal (20-30%). Depending on the size and the content of projects, the work of the consultant varies: design only, design and construction supervision, and supervision only. As mentioned before, when MEHE selects site engineers, it does not call for a proposal but employs individual engineers directly through interviews and evaluations of the CVs.

In this Project, the selection of a construction supervisor is not necessary, because the Japanese Consultant will carry it out. Thus, the Procurement Management Agent will call only for tenders to select contractors, furniture and equipment suppliers.

With regard to the tender procedure, the Project follows examples of other donors'. However, a significant difference is that the tenders of the Project are held by the Procurement Management Agent while tenders for other donors' projects are conducted by CTD. Therefore, item 5 to 7 of Table 2-14 should be replaced with a new system so that the Procurement Management Agent can lead the tenders instead of CTD. Regarding the tender results, the technical evaluation report of the tenders will be put together by the Procurement Management Agent and the Japanese Consultant, and the tender results will be approved by MEHE and CTD.

3) International Tender

A national tender is usually applied for school construction projects in Palestine. EU projects regulate that in case the total estimated cost exceeds €5 million, an international tender must be called for. But, MEHE has no experience of a tender lot exceeding €5 million thus far.

As the Project must follow "Procurement Guideline of the Grant Aid for Community Empowerment" by the Ministry of Foreign Affairs in Japan, an international tender should be called for in principle. Nevertheless, considering the unusual situation in Palestine, the generally used tender method shall be applied in the Project.

4) Contract and Negotiation

If all the tender proposals exceed the engineer's estimation, a cost negotiation shall take place with the tenderer who proposed the lowest price. And, if the negotiation is unsuccessful, a re-tender shall be held. If a contract price is less than the estimation, the balance shall be the reserve fund of the Project.

5) Tender documents for Facility Construction

At the Outline Design Study stage, the following documents will be put together as a technical reference for tender documents for Facility Construction: 1. Drawings, 2. Technical Specifications, 3. Bill of Quantities, 4. Engineer's Estimate, 5. Structural Calculation, and, 6. Electrical & Mechanical Capacity Calculation. At the implementation stage, the Procurement Management Agent and the Japanese Engineering staff in tandem will make the final tender documents based upon the technical reference.

6) Tender Documents for Furniture and Equipment

At the Outline Design Study stage, the following documents will be put together as a technical reference for tender documents for Furniture and Equipment Supplies: 1. List of Furniture and Equipment, 2. Furniture Drawings, 3. Specifications, and 4. Engineer's Estimate. At the implementation stage, the Procurement Management Agent will make the final tender documents based upon the technical reference.

2-2-4-4 Construction Supervision Plan

In principle, the Japanese Consultant who is in charge of the Outline Design Survey will carry out construction supervision after receiving a recommendation letter from JICA. An Engineering Staff of the Japanese Consultant will carry out the works listed below utilizing a local consulting firm.

1) Major Works

Checking the construction achievement according to the tender documents, quality control, quantity inspection, coping with any design alteration, general technical instruction, report to Procurement Managing Agent and MEHE, interim inspection, final inspection, warranty inspection, making monthly reports, etc.

2) Supervising Organization

A supervising organization will be a combination of the Engineering Staff of the Japanese consultant and the local sub consultant. The Japanese Engineering Staff will stay in Ramallah

and the local sub consultant will dispatch a site engineer to each construction site. In addition, a chief local consultant, a quantity surveyor, a structural engineer, and a mechanical and electrical engineer will be designated in the local consultant's headquarters, and they will provide technical support to the site engineers, report to the Japanese Engineering Staff, and inspect for payment and so on.

Table 2-15 Construction Supervision Organization

Specialty		Number of staff	full-time/part-time
Japanese Consultant	Engineering Staff	1	full-time
Local Consultant	Chief Engineer	1	full-time
	Site Engineer	5	full-time
	Quantity Surveyor	1	full-time
	Structural Engineer	1	part-time
	M & E Engineer	1	part-time

2-2-4-5 Quality Control

It is necessary to have Japanese Engineering Staff in order to secure the construction quality level required of the Project under the Grant Aid for Community Empowerment scheme. However, because a Japanese Engineering Staff can hardly visit five sites frequently, a full-time local engineer is dispatched to each construction site. Therefore, achieved construction quality depends on how efficiently and effectively the Engineering Staff instructs and advises the Site Engineers. It seems effective to introduce the 'check sheets' for major works in order to minimize the difference of quality control skill among the Site Engineers.

Further, to increase the quality, it is necessary to instill a sense of quality control in local Site Engineers. Therefore it is recommended that the Japanese Engineering Staff hold 'Quality Control Courses' for the local Site Engineers before and/or during construction. All the Site Engineers should have the same check sheets for Re-bar arrangement, form work and concrete pouring to make the quality level of all the sites uniform. The proposed contents of the Quality Control Course are as shown in the table below.

Table 2-16 A Sample of the Quality Control Course

Time	Items
Before Construction	<ul style="list-style-type: none"> • Items to be inspected (Explanation of table 2-19) • Appropriate frequency of the site inspection • Quality control for re-bar arrangement, forms and concrete pouring with the check sheets • Safety measures • Confirmation of the quality of the re-bar product • Trial mix of the concrete

	<ul style="list-style-type: none"> • Compression test of the concrete test piece • Test for slump, air contents, temperature and etc
During Construction (On the job site course is also available)	<ul style="list-style-type: none"> • To improve the accuracy of the plastering work • Curing of the plastering to prevent cracks • Curing of the painting to prevent peeling off • Inspection of the furniture factory • Inspection of the electricity and plumbing works

The table below shows the major quality control items during structural works stage.

Table 2-17 Major Quality Control Items during Structural Works Stage

Works	Items	Method	Frequency
Excavation	Check the excavated bottom	Observation	On completion of the excavation
Re-bar and Forms	Re-bar material	Check the mil sheets or Tensile test result	Every diameter (3 pieces per size)
	Re-bar arrangement	Inspection of the re-bar arrangement	Before concrete pouring
	Forms	Inspection of the forms	Before concrete pouring
Concrete	Strength, Slump, Air contents, Temperature	Compression test, In situ concrete tests	Upon trial mix Upon every pouring
Concrete Hollow Blocks	Strength	Compression test	Upon making the sample

2-2-4-6 Procurement Plan

Major construction materials are produced in the West Bank and their quality and quantity are adequate. Though electrical fixtures, sanitary apparatus, etc. are imported from Europe and surrounding Arabic countries, they are procurable in the local market. It is also possible to purchase necessary materials in the Project areas, i.e. Nablus, Tubas and Jericho. Besides, there has been little difficulty stemming from the relations with Israel in importing foreign products and raw materials.

Table 2-18 Countries From Which Major Materials Are Procured

Items	Countries where materials are procured			Country of origin
	Local	Japan	Third country	
[Materials]				
Portland cement	○			Local product
Aggregates	○			Local product

Items	Countries where materials are procured			Country of origin
	Local	Japan	Third country	
Reinforcing bars	○			Local product
Forms for concrete	○			Local product
Concrete hollow blocks	○			Local product
Stone	○			Local product
Timber	○			Local product
Metal hardware	○			Imported form Asia and Europe
Aluminum window	○			Local product
Glass	○			Local product
Paint	○			Local product
Roofing metal sheet	○			Local product
Distribution board	○			Imported form Europe
Cable & wire	○			Imported form Europe
Conduit pipe	○			Local product
Lighting fixture	○			Imported form Europe
Pipes	○			Local product
Valve & pipe fittings	○			Imported form Asia and Europe
[Construction machinery]				
Bulldozer	○			Imported from UK and Germany
Hydraulic excavator	○			Imported from UK and Germany
Dump track	○			Imported from Sweden
Percentage (%)	100%			

2-2-4-7 Implementation Schedule

In the tender stage, it is estimated to take a longer time than usual to establish the status of the Procurement Management Agent office and the Japanese Consultant office in the West Bank, and to reach an agreement as to how CTD shall be involved in the procurement management system. Also, it is likely to take a longer time to evaluate and approve the tender results than usual. Therefore, considering the above situation, the Project sets the tender stage at 4.5 months in total.

The construction period for 3-storey school buildings with standard design is approximately 12-13 months. However, as the Project has pile-driving work for Baita Boys School, Beit Dajan Boys School and Jericho Boys School. Hence, the Project sets the total construction period 17 at months as shown below.

2-3 Outline of Undertakings to be Borne by the PA Side

The purpose of the Japanese Grant Aid for Community Empowerment Scheme is to assist development projects in conjunction with the “self-help” spirit of the recipient countries. Based on such a spirit, the Government of Japan demands that the recipient countries bear a certain level of the burden involved. This rule is applied equally to all recipient countries. Thus, if the Government of Japan decides to implement the Project, the PA side shall be responsible for completion of the following tasks:

- (1) To provide the Japanese side with information and data related to the Project;
- (2) To obtain the necessary land to implement the Project and secure the rights for MEHE to construct school facilities;
- (3) To remove obstacles and demolish existing buildings prior to the Project construction;
- (4) To plant flowers and trees in the green areas after the completion of the construction;
- (5) To lead and connect power supplies, water supplies, telephone lines and other incidental facilities to the completed Project facilities;
- (6) To procure additional furniture and equipment necessary for the completed Project facilities except for the basic furniture and equipment included in the Project;
- (7) To secure sufficient staff and budget necessary for the adequate operation, repair and maintenance of the Project facilities constructed within the Project;
- (8) To bear commissions for Blanket Disbursement Authorization, handling charges and other necessary fees related to the banking arrangement with a bank in Japan for receiving the Grant Aid for the Project;
- (9) To exempt all companies, organizations and individuals from any customs duties, internal taxes and levies with respect to the supplies, products and services under the contracts of the Project, i.e. the procurement management contract and contracts with the Procurement Management Agent;
- (10) To accord all individuals entry into the country and the staying therein, along with such facilities as may be necessary for the performance of their work and whose services may be required in connection with the Project, including the supply of products and services under the procurement management contract and contracts with Procurement Management Agent;
- (11) To ensure that all facilities and products constructed and purchased under the Project will be effectively used and properly maintained under the jurisdiction of MEHE;
- (12) To provide free of charge, for the duration of the construction period and in a vicinity close to the Project site, adequate land space for the storage of supplies and materials and for a site construction office to be used by contractors;

- (13) To grant all the required permits and approvals needed for implementation of the Project;
- (14) To bear all the necessary expenses for the Project not covered by the Grant Aid for Community Empowerment Scheme (including demolition of existing facilities, lead and connection of infrastructure lines, etc.);
- (15) To obtain, in cooperation with and under the guidance of the Procurement Management Agent, all the various necessary permits including those needed prior to construction, and those needed for the use of Project facilities after construction completion;
- (16) To respond promptly to the Procurement Management Agent's requests for decisions and judgments regarding implementation of the Project.

2-4 Operation and Maintenance Plans of the Project

2-4-1 Operation Plan

(1) Additional Teachers Appointment

The Project constructs school facilities to transfer one of the double-shifts at schools to the new facilities, to resolve the rented school facilities, and to replace dilapidated school buildings. Thus, all the Project schools have been assigned with the appropriate number of teachers and no additional teachers will be assigned due to the implementation of the Project.

(2) Additional Staff Appointment

School staff in a school in Palestine consists of a headmaster, a sub headmaster (who doubles as a teacher), a secretary and janitors. As all the Project schools are staffed with the necessary staff, no additional staff will be appointed subsequent to implementation of the Project.

(3) School Operation System

At governmental schools in Palestine, personnel costs, i.e. teachers' and staff salaries, and utilities such as water, electricity and telecommunications are borne by MEHE. And, utilities are paid directly to the relevant companies. Consumables and office stationary needed in each school are bought from the school budget. The sources of the school budget are contributions from students, rent from the canteen vendors, and other occasional donations. The school budget is managed by the headmaster at each school.

2-4-2 Maintenance Plan

Since every school is staffed with more than one janitor, school facilities including classrooms, teachers rooms and toilets are always kept clean and hygienic. Janitors are considered regular school staff and employed by MEHE. To add, students are not responsible for cleaning school facilities.

Maintenance and repair costs for school facilities and educational materials at each school are, in principle, covered by the school budget as well. From time to time, donations from PTA and communities are applied to cover maintenance and repair costs. In the event that a major maintenance project is needed, the cost of which cannot be covered by the school budget, schools turn to the Education Directorate Office for financial and/or technical assistance.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

Based upon the demarcation of responsibilities stated in the previous section, the following costs are estimated for the PA side.

(1) Total Cost to Be Borne by the PA Side US\$ 113,300.-

Table 2-20 Total Cost to Be Borne by the PA Side

US\$ 113,000.- (Approx. JPY12.1 Million)

Item		Estimated Cost (US\$: Thousand)	(Equivalent to JPY: Million)
Capital Cost	Power Connection	60.0	6.4
	Water Connection	15.0	1.6
	Demolition Cost	30.0	3.2
	Banking Arrangement Fee	8.3	0.9
Total		113.3	12.1

(2) Conditions

- (i) Time of Estimation: June, 2008.
- (ii) Currency Exchange Rate: 1US\$ = JPY 106.73
1NIS = JPY 31.391
- (iii) Construction Period : Detailed design and construction period are stated in the previous chapter.
- (iv) Other Remarks :Cost estimation shall be conducted based on the principles of the Government of Japan's Grant Aid for Community Empowerment.

2-5-2 Operation and Maintenance Cost

(1) Teacher Salaries

As no additional teachers will be hired in the implementation of the Project, there will be no additional cost for hiring teachers.

(2) School Operation Cost

Utility bills of every government school in Palestine are borne by MEHE. In order to resolve double-shift, new school facilities are to be built for Beita Boys School and Wadi Fara'a

Girls School in the Project. An annual average utility cost per school with 16 classrooms is about 6,000 NIS. Therefore, MEHE is obliged to pay an additional amount of 12,000NIS per year for the two schools.

Further, as the school facilities will be enlarged in the remaining three schools, namely, Beit Dajan Boys School, Jericho Boys School, and Al Fara'a Boys School, an additional cost of 3,000 NIS per year per school is anticipated for utilities. Thus, MEHE is incurred with an additional cost of 9,000 NIS per year for the three schools.

Therefore, in implementing the Project, MEHE is responsible for paying an additional 21,000NIS per year for school operation costs.

(3) School Maintenance Cost

Repair is not necessary for a few years after the completion of the Project, because the Project aims to construct facilities for which repair is not necessary for a certain period of time. However, wastewater disposal charge must be paid regularly. Also, repainting is needed at an interval of certain period as shown in the next table.

Table 2-21 Maintenance Cost

Item		Frequency	Cost Per Year (NIS)
Repainting	Column, eaves, parapet, corridor	Once a decade	45,738
	Steel sash	Once a half decade	2,806
Wastewater disposal		When a sewage tank gets full	145,000
		Total	193,544

(Approx. JPY 6,076,000. 1NIS = JPY 31.391)

(4) Total of Operation and Maintenance Cost

Additional operation and maintenance costs in implementing the Project are utilities, repainting and wastewater disposal costs. Of them, monthly utilities and repainting which should be taken care of once every five or ten years, are covered by MEHE. In addition, wastewater disposal in Jericho Boys School is paid by MEHE. The total of operation and maintenance costs covered by MEHE is 98,544NIS per year. This is no more than 0.007% of the MEHE budget (1.52 billion NIS), and thus considered a payable amount.

Furthermore, the annual cost for wastewater treatment for Beita Boys School, Wadi Fara'a Girls School, Beit Dajan Boys School, and Al Fara'a Boys Schools is 29,000NIS per school. The amount is between 0.42% - 2.12 % of the budget of each village, and therefore, it is considered a payable amount.

Table 2-22 A total of Operation and Maintenance Costs

Paid By	Expense Item	Annual Cost (NIS)
MEHE	Utilities (for the 5 Schools)	21,000
	Repainting	48,544
	Wastewater disposal (for Jericho)	29,000
	Total	98,544
Beita Village	Wastewater disposal	29,000
Wadi Fara'a Village	Wastewater disposal	29,000
Beit Dajan Village	Wastewater disposal	29,000
Al Fara'a Refugee Camp	Wastewater disposal	29,000
Grand Total		214,544

(Approx. JPY 6,734,000. 1 NIS = JPY 31.391)

Table 2-23 2007 Budget of Each Village and the Percentage of the Additional Expense to the Budget

	Beita Village	Wadi Fara'a Village	Beit Dajan Village	Al Fara'a Refugee Camp
Wastewater disposal (NIS)	29,000	29,000	29,000	29,000
Budget 2007 (NIS)	6,745,068	1,370,218	1,460,395	6,315,421
% of wastewater disposal cost to Budget	0.42	2.12	1.99	0.46

Chapter 3: Project Evaluation and Recommendations

Chapter 3 – Project Evaluation and Recommendations

3-1 Project Effects

The Project constructs 69 classrooms as well as special classrooms such as science labs, administrative unit including teachers' room, and toilets at the 5 Project schools in Nablus, Tubas and Jericho Governorates. Also, furniture and equipment are procured. The Project is expected to bring about the following effects.

Table 3-1 Project Effects

Issues and Problems	Project Intervention	Direct Effect	Indirect Effect
<p>Due to the classroom shortage, some schools are forced or will be forced to operate under the double-shift system.</p> <p><Currently Double-shift school></p> <p>*Beita Boys School *Wadi Fara'a Girls School</p> <p><Double-shift school in the future></p> <p>*Beit Dajan Boys School³ *Jericho Boys School⁴</p>	<p>School facilities will be constructed so that one of the two shifts at the schools will be transferred to the new facilities. (A total of 32 classrooms will be constructed.)</p>	<p>The double-shift will be resolved. A total of 1,750 students currently studying in the double-shift schools will be able to study in single-shift schools.</p>	<p>*Students' study performance will be enhanced.</p> <p>*School management and operation will be better.</p> <p>*Students, staff and their family are able to live in the regular time schedule.</p>
<p>Schools are unable to teach in accordance with the curriculum due to the rented facilities.</p> <p><Schools renting facilities></p> <p>*Jericho Boys School *Al Fara'a Boys School</p>	<p>School facilities including special classrooms such as science lab, computer room, library as well as classrooms will be constructed for the schools currently renting facilities.</p>	<p>The schools will be able to teach in accordance with the curriculum.</p> <p>The issue of inadequate size classrooms will be resolved.</p>	<p>*Students' study performance will be enhanced.</p>

³ Beit Dajan Boys School needs to demolish its dilapidated classrooms and will have to adopt the double-shift using the remaining classrooms.

⁴ If Jericho Boys School stops renting the school facilities, other schools in Jericho must operate under the double-shift in order to accommodate Jericho Boys School students.

3-2 Recommendations

3-2-1 Issues to be addressed by the PA side

The following issues must be addressed by MEHE, the responsible and implementing organization of the Project, in order that the facilities constructed by the Project will be used continuously and effectively.

1. Enroll the appropriate number of students in the Project schools and divide them into classes appropriately.
2. Allocate the Project schools the necessary amount of operation and maintenance costs. Especially, every 5 and 10 years, relatively a large amount of repainting cost must be budgeted.
3. Direct and supervise local authorities of the Project schools to dispose wastewater continuously.