

**Ministry of Education and Sports
Lao People's Democratic Republic**

**Preparatory Survey Report
on
the Project for Improvement of
Teacher Training Colleges
in the Lao People's Democratic Republic**

April 2020

Japan International Cooperation Agency (JICA)

Mohri, Architect & Associates, Inc.

PADECO Co., Ltd.

INTEM Consulting, Inc.

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Summary

1. Outline of the Country

Lao People's Democratic Republic (hereinafter referred to as "Lao PDR") was established as a socialist state in December 1975. On the economic front, in line with the Soviet Perestroika, the country introduced a "New Economic Mechanism" in 1986 to reform its economy. Since then, Lao PDR has deregulated its banking system, privatized state enterprises, enacted foreign investment laws, etc., to further accelerate the open market. In the 8th party congress in 2006, the Lao People's revolutionary Party stated the policy to graduate from the least developed country (LDC) status by 2020, which was reconfirmed in the 10th party congress in 2016. In line with the policy, the national long-term development policies, "Vision 2030" and "10 Year Socio-Economic Development Strategy 2016-2025", were approved.

The major industries are agriculture, manufacturing, and mining. Recently, Lao PDR enjoys a high economic growth rate. In fact, the average growth rate of annual GDP for this decade is 7.7% (World Bank) overcoming the damages of flood in July 2018. This growth stems particularly from natural resources such as mine development and hydroelectric power. The ratio of each sector of economy to GDP in 2017 is 16% for the primary sector of economy, 31% for the secondary sector of economy, and 42% for the tertiary sector of economy (Lao Statistics Bureau 2017), the share of the last which is expanding. Per capita GDP is US\$ 2,472 (Bank of the Lao PDR 2017).

2. Background of the Project

The Government of Lao People's Democratic Republic (the Lao PDR) aims to graduate from least developed country (LDC) status by 2020 by providing opportunities for quality education for all, which is mentioned in the 8th Education Sector Development Plan (2016-2020) (ESDP8). Although the access to primary education has been improving, marking the primary gross enrollment ratio (GER) at 98.7% in 2017, the low proficiency and motivation for learning are the bottleneck for the improvement of repetition and last grade remaining rates (4.1% and 81.1% respectively in 2017). As reasons, it is pointed out that (a) the common teaching methods are memorization and classroom lecture without application techniques for promoting the students' understanding, (b) the curriculum cannot be completed because of the insufficient teaching ability and understanding of teachers, especially in multi-grade classes and the areas of ethnic minorities, and (c) the teachers at Teacher Training Colleges (TTCs) do not have enough experience.

The 8 TTCs located nationwide are unique institutions for training teachers for pre-primary and primary education. Regarding secondary education, the TTCs train about 60% of teachers. (The remaining 40% are trained at the faculties of education at national universities.) The Government of Lao PDR refers to the strengthening of professional skills of teachers in the pre-primary, primary and secondary education as one of outcomes of ESDP8 and has worked on the improvement of the quality of teachers through more intensive utilization of TTCs and demonstration schools. Since 2015, the TTCs and demonstration schools have been positioned as a base for the improvement of education

quality by providing teachers with educational instruction, by doing research and by applying model educational methods, curriculum and teaching materials. In connection with this, the Ministry of Education and Sports (MOES) has issued a series of decrees and has attempted to develop the capacity in cooperation with development partners.

However, the existing demonstration schools are former ordinary public schools located near the TTCs and have been transformed into demonstration schools by MOES decree. Most of them are lacking basic educational materials and enough space for class observation and are not properly located as a center of education. In addition to this, as some TTC classroom buildings are deteriorated (more than 40 years since establishment) and are lacking necessary facilities (training facilities, educational equipment, classrooms, etc.), the improvement of the educational environment is required.

Against this background, the Government of Lao PDR requested the Government of Japan for a Grant Aid Project (the Project) to build/rebuild the necessary TTC classroom buildings and demonstration schools and to provide the necessary educational equipment at 8 TTCs. The overall goal of the Project is to improve teacher quality through the enhanced utilization of TTC demonstration schools by the improvement of buildings and equipment of the TTCs and demonstration schools in the Lao PDR and to contribute to the achievement of goals set in ESDP8.

3. Outline of Study and Contents of the Project

Based on the request from the Government of Lao PDR, JICA carried out Field survey I from August 26 to October 14, 2018, Field survey I-2 from July 17 to August 3, 2019, and Field survey II (the Explanation of Draft Outline Design (DOD)) from February 9 to 15, 2020. Considering contents of the request from the Government of Lao PDR, outcomes of the field surveys, studies in Japan, and a series of discussions among the stakeholders, it has been determined that the Project is planned in accordance with the following policies.

3-1. Project Scheme

The Project is to be implemented under the Japanese Project Grant for Japanese Consultant and Local Contractors -Tentative Type II (Japanese Project Grant Type II). In the scheme, a Japanese consultant shall be employed, while contractors and equipment suppliers shall be from the recipient country.

3-2. Project Sites

All 8 TTCs across the Lao PDR shall be covered by the Project. Since it is important to avoid regional gaps and facilitate equal teacher development nationwide, covering all 8 TTCs is desirable and thus no priority order among the TTCs is set.

3-3. Priority among the Project Components

Considering the urgent needs of buildings, when examining the priority among the building

components, the following points are taken into account;

- Whether or not a TTC has continuously usable demonstration school buildings
- Whether or not the existing buildings are safe (ex. structural safety, safety from flooding)
- Whether or not the existing buildings are in bad condition hygienically

The priorities of building components are discussed and agreed with MOES through a series of discussions with MOES and representatives from each TTC.

As for the equipment components, the Project will procure mainly the educational equipment for the demonstration schools, because it was confirmed that all TTCs have sufficient educational equipment on the one hand, while demonstration schools do not, during the Field Survey.

3-4. Setting of the Scale of Project Components

Pre-primary demonstration schools consist of N class (N1-N3) targeting age 0-2 and K class (K1-K3) targeting age 3-5. One classroom is planned for three grades of N class (N1-N3), while one classroom is planned for each K1-K3 class under this Project. The capacity of one class for both N and K classes is 30 pupils.

Primary demonstration school buildings consist of 5 classrooms (4 ordinary classrooms and 1 large classroom) which correspond to 5 grades in primary education, a multi-purpose room, a reading room, a first-aid room, a teachers' office, a teaching material room, and so on. The capacity of a classroom is 35 students and a movable partition is provided between two classrooms in order to have a larger space for lesson study and/or workshop for a large number of participants.

Secondary demonstration school buildings consist of 7 classrooms (6 ordinary classrooms and 1 large classroom) which correspond to 4 grades in lower secondary education and 3 grades in upper secondary education, a laboratory, a reading room, a teachers' office, a teaching material room and so on. The capacity of a classroom is 35 students. As is the case with primary demonstration schools, a movable partition is provided between two classrooms.

As for TTC facilities, the Project will cover classroom buildings, toilet buildings and dormitories which are in bad condition and have urgent need of reconstruction, as well as any buildings which are required to be relocated to secure space for new construction of the demonstration schools. The scale of buildings are determined taking into account the user demand at the respective TTCs.

The equipment components to be covered by the Project are selected based on the selection criteria, such as "necessary for curriculum".

3-5. Project Components

The following table shows the outline of the building and equipment components to be covered by the Project by site.

List of Project Sites and Components

TTC	Building Components	Total Floor Area (m ²)	Equipment Components
LNT TTC	Pre-primary demonstration school (4 classrooms)	643.5	(Commonly planned for 8 TTCs) • Educational equipment for pre-primary, primary and secondary demonstration schools • Equipment for teaching materials • Cabinets for experiment equipment at TTCs
	Primary demonstration school (5 classrooms) + Toilet bldgs.	787.2	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
LPB TTC	Pre-primary demonstration school (4 classrooms)	682.0	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
	TTC toilet bldg. (1 bldg.)	64.0	
KKY TTC	Pre-primary demonstration school (4 classrooms)	643.5	
	Primary demonstration school (5 classrooms) + Toilet bldgs.	787.2	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
BKN TTC	Pre-primary demonstration school (4 classrooms)	643.5	
	Primary demonstration school (5 classrooms) + Toilet bldgs.	787.2	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
DKX TTC	Pre-primary demonstration school (3 classrooms)	308.0	
	Primary demonstration school (5 classrooms) + Toilet bldgs.	787.2	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
	TTC classroom bldgs. (8 classrooms)	648.0	
SVK TTC	Pre-primary demonstration school (4 classrooms)	643.5	
	Primary demonstration school (5 classrooms) + Toilet bldgs.	787.2	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
	TTC toilet bldgs. (3 bldgs.)	192.0	
SRV TTC	Pre-primary demonstration school (4 classrooms)	682.0	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
PKS TTC	Primary demonstration school (5 classrooms) + Toilet bldgs.	787.2	
	Secondary demonstration school (7 classrooms) + Toilet bldgs.	867.2	
	TTC students' dormitory bldgs. (2 bldgs.) + ancillary bldgs.	1,832.8	
Grand Total Floor Area (m ²)		18,643.6	

4. Project Implementation Schedule

4-1. Bidding/Contract Lots

The Project sites are 8 TTCs located nationwide. Because the TTC sites are far apart, and because the total floor area to be constructed at each site is approximately 1,500-3,500 m², which is a large contract for a domestic construction company, it is not realistic to set a lot covering several sites. Thus, a lot for building construction of this Project is set as one lot per TTC (8 lots in total), which are grouped into two construction groups.

4-2. Implementation Schedule

After the signing of the Consultant Agreement, the detailed design and the bidding documents will be prepared. Through the process of the bid notice, the bid evaluation and the approval/concurrence from the relevant authorities, MOES will make contracts with the Contractors/Suppliers. Scheduled time periods for such activities for the construction works are as follows.

Preparation of Detailed Design and Bidding Documents

- Group 1 : 7.5 months
- Group 2 : 7.5 months

Bidding and Contract

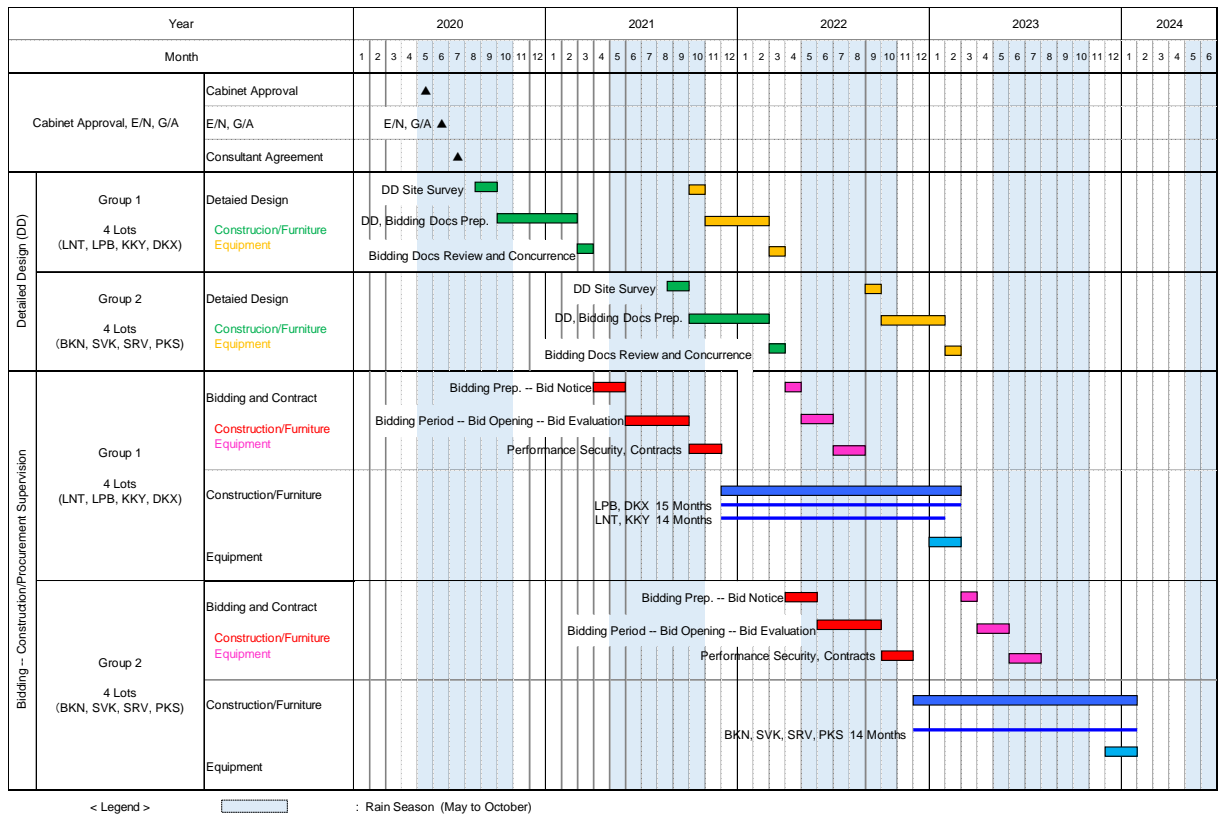
- Group 1 : 8.0 months
- Group 2 : 8.0 months

The contract period for construction works is planned as 14 months; 1 month for preparation, 12 months for main construction works and 1 month for inspection & remedial works. The construction period for LPB TTC and DKX TTC, where the demolition of existing buildings will be done by the Japan side, is set as 15 months. The timing of commencement of works is determined in consideration of the rainy season.

The contract period for equipment procurement is planned as 4 months, including manufacturing, transportation/delivery, installation, inspection, and initial operation training.

It will take 26 months from the commencement of Group 1 until the completion of Group 2.

It is expected that the Grant for this Project will be appropriated in multiple Japanese fiscal years (B-type). The Project implementation schedule, based on the expectation that the Cabinet approval of the Government of Japan is given in May 2020, is shown below.



Project Implementation Schedule (Provisional)

5. Project Evaluation

5-1. Relevance

The direct beneficiaries of the Project are teachers, staff and students for pre-service and in-service training of 8 TTCs and teachers, staff and students of demonstration schools. As it is expected that the capacity of new and in-service teachers will be enhanced through the improvement of buildings and equipment by the Project, students of pre-primary, primary and secondary education all over the country would also benefit indirectly in the medium to long term.

The Project aims at improving an environment of practicum, lesson observation and lesson study for pre-service and in-service training and at providing a place to practice model education by the development of buildings and equipment at the demonstration schools, which is consistent with ESDP8 in terms of purpose and means.

Furthermore, the Project is consistent with the Japanese Country Assistance Policy for the Lao PDR, in which the “Improvement of Educational Environment and Human Resource Development” is referred as one of 4 policy areas. Currently, JICA has implemented the technical cooperation project “the Project for Improving Teaching and Learning Mathematics for Primary Education (iTEAM)” executing the assistant activity for the enhancement of TTCs and demonstration schools in the field of mathematics and other assistances, including the dispatch of volunteers to pre-primary demonstration schools. Through the synergy among the Project and these activities, a higher assistance effect can be expected to be brought about.

Therefore, it is deemed relevant to implement the Project there.

5-2. Effectiveness

The Project is expected to bring about the following quantitative results.

Indicators		Base value (Actual value in 2018)	Target value (Year 2027: 3 years after the completion)
The number of TTCs with demonstration schools (*1) located inside each of 8 TTC sites with proper environment (*2) for teacher training and research activities	Pre-primary education	1	8
	Primary education	2	8
	Secondary education	0	8
The classrooms of TTC demonstration schools with proper environment for teacher training and research activities(*3)	Pre-primary education	5	32
	Primary education	10	40
	Secondary education	0	56

(*1) The number of TTCs with demonstration schools having one or more classrooms per grade. The demonstration school is located inside the TTC compound or having its own compound. The target value is set 8, as all demonstration schools shall have one or more classrooms per grade after the completion of the Project.

(*2) It refers to classrooms meeting the standard design of MOES, not dilapidated, and located close enough to the TTC so that they may be continuously and effectively used for teacher training and research activities.

(*3) The number of classrooms to be built/rebuilt and the existing number of classrooms (base value) to make the

target value.

In addition, the Project is expected to bring about the following qualitative results.

- By constructing TTC demonstration schools, the environment for (1) research of teaching method and curriculum, (2) teacher training, and (3) continuous professional development (CPD) of in-service teachers and pedagogical advisors (PA) will be improved and the quality of education in the Lao PDR will be improved.
- The positive spreading effect on surrounding areas is expected by practicing model education at demonstration schools.

For the above reasons, it is evaluated that there is enough relevance and effectiveness for the Project implementation.

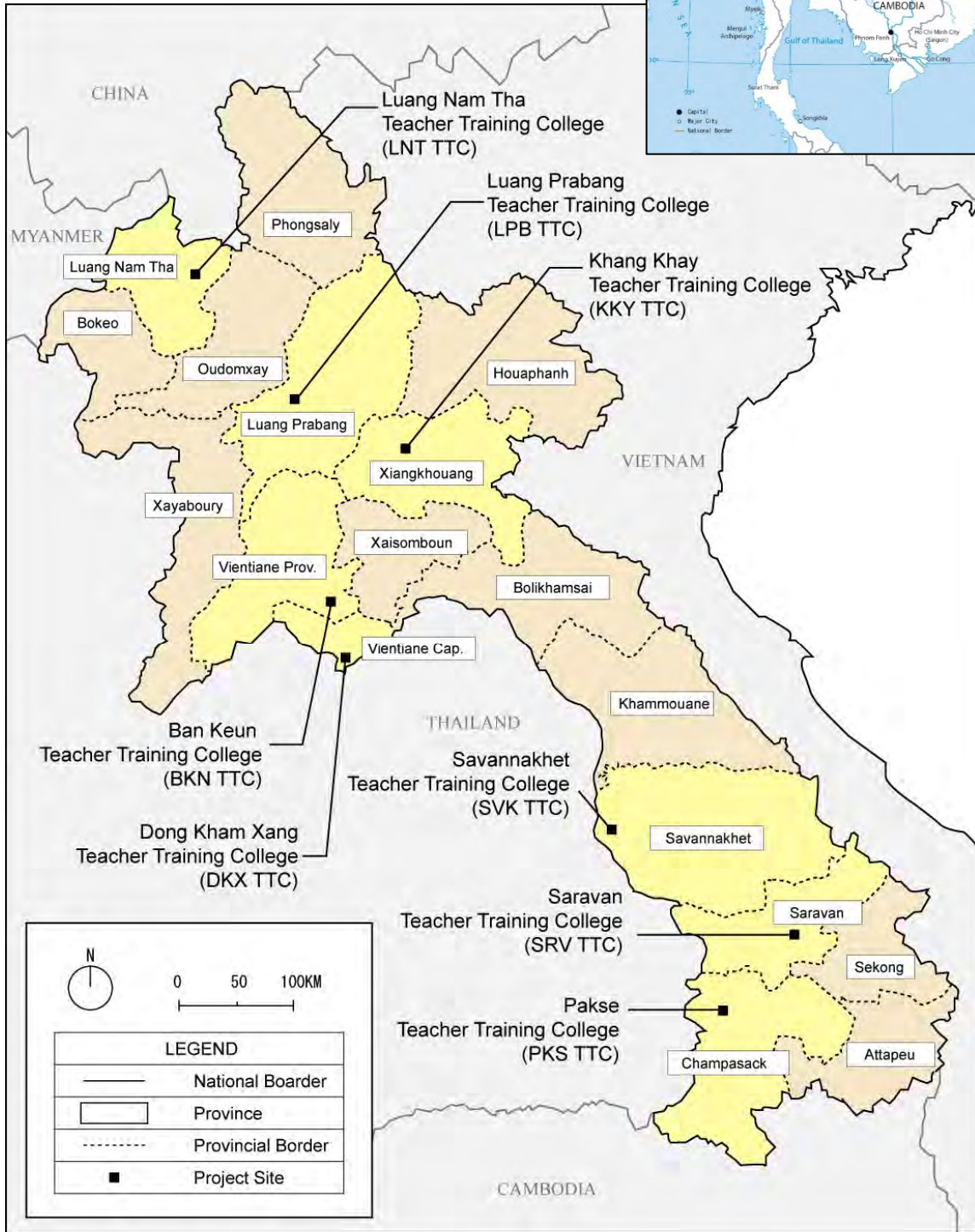
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Abbreviations

A/P	Authorization to Pay
B/A	Banking Arrangement
BEQUAL	Basic Education Quality and Access
BOL	Bank of Lao PDR
CFP	Claims for Payment
CO	Cabinet Office
COD	Center of Development
COE	Center of Excellence
CPD	Continuous Professional Development
DD	Detailed Design
DECE	Department of Early Childhood Education
DER	Department of External Relations
DESB	District Education and Sports Bureau
DFRM	Department of Forest Resources Management
DGE	Department of General Education
DNEP	Department of Natural Resources and Environmental Policy
DOF	Department of Finance
DOD	Draft Outline Design
DOP	Department of Organization and Personnel
DP	Department of Planning
DPPE ¹	Department of Pre-primary and Primary Education
DTE	Department of Teacher Education
E/N	Exchange of Notes
ECDM	Education Construction Design and Management
ECE	Early Childhood Education
ESDP	Education Sector Development Plan
ESSDP	Education and Sports Sector Development Plan
ESIA	Environmental and Social Impact Assessment
G/A	Grant Agreement
GER	Gross Enrolment Ratio
GDP	Gross Domestic Product
IEC	Inclusive Education Center
IEE	Initial Environmental Examination
iTEAM	Project for Improving Teaching and Learning Mathematics
JICA	Japan International Cooperation Agency

¹ DPPE: Department Pre-primary and Primary Education. DPPE was reformed as DECE and DGE when MOES made its organizational change in 2017.

LAK	Lao Kip
LDC	Least Developed Country
MOES	Ministry of Education and Sports
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs
MONRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NRA	National Regulatory Authority for the UXO/Mine Action Sector in the Lao PDR
OD	Outline Design
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
PA	Pedagogical Adviser
PESS	Provincial Education and Sports Service
PMR	Project Monitoring Report
PMU	Project Management Unit
PUCDA	Provincial Unit for Construction and Development Assistance
RFD	Request for Disbursement
RFP	Request for Payment
SBG	School Block Grant
SESDP	Secondary Education Sector Development Program
TEI	Teacher Education Institute
TI	Transfer Instruction
TTC	Teacher Training College
UXO	Unexploded Ordnance
UXO Lao	Lao National Unexploded Ordnance Programme
VAT	Value Added Tax
VEDC	Village Education Development Committee
WB	World Bank

Chapter 1 Background of the Project

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1-1 Background of the Grant Aid

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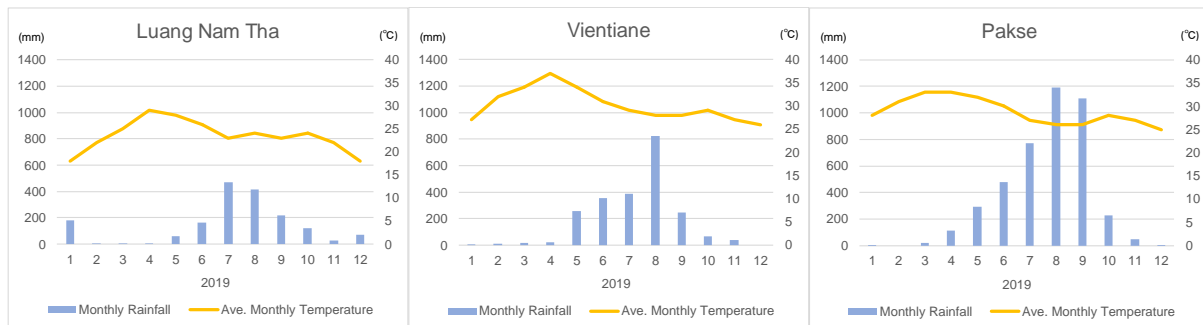
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1-2 Natural Conditions

1-2-1 Climatic Conditions

The Lao PDR belongs to the tropical monsoon climate zone having hot and humid climate in general, and it has the distinct rainy season and dry season. The country lies in north-south approximately 1,000km long. Northern cities have relatively moderate climate because they are located in the mountain area. In contrast, southern cities have severely hot and humid climate, because they are located in low altitude areas along the Mekong River. The southern cities generally have high temperature which often rises above 40 degrees Celsius, ample rainfall and high humidity.



(Source: worldweatheronline.com)

Figure 1-1 Climate Data (Luang Nam Tha, Vientiane and Pakse)

1-2-2 Seismic Conditions

The northern part of the Lao PDR experiences some earthquakes, and a Magnitude 6.1 earthquake struck in the north-west part of the country, nearly on the border with Thailand, in November 2019. The structural calculation and design for this Project is examined considering the seismic force for the northern part of the country, in reference to the seismic hazard map of the Lao PDR.

1-3 Environmental and Social Considerations

1-3-1 System and Organization of Environmental and Social Considerations

The Ministry of Natural Resource and Environment (MONRE) is responsible for environmental issues in the Lao PDR. The Department of Forest Resources Management (DFRM), which had been in charge of the national protected areas, was transferred to the Ministry of Agriculture and Forestry due to organizational restructuring in 2017. Currently, the Department of Natural Resources and Environmental Policy (DNEP) unitarily manages the enactment and evaluation of laws and regulations. Important environment-related laws and regulations in the country are as follows: “Water and water resource law (1996)”, “Land law (1997)”, “Mining law (1997)”, “Electricity law (1997)”, “Environmental protection law (promulgated in 1999 and revised in 2012)” and “Forestry law (revised in 2007)”, etc. These laws were promulgated under article 19 of the constitution (amended in 2003) “All organizations and citizens must protect the environment and natural resources: land surfaces, underground resources, forests, animals, water sources and the atmosphere”.

As for the Initial Environmental Examination (IEE) and the Environmental and Social Impact

Assessment (ESIA), the following rules have been established under the Environmental protection law.

- ① Rule to categorize development projects to determine whether or not IEE or ESIA is required
Ministerial Agreement on the Endorsement and Promulgation of List of Investment Projects and Activities Requiring for Conducting the Initial Environmental Examination or Environmental and Social Impact Assessment, issued on 7 December 2013, Ref no. No. 8056/MONRE
- ② Rule concerning IEE procedures
Ministerial Instruction on the process of Initial Environmental Examination of the Investment Project and Activities (IEE), issued on 17 December 2013, Ref no. 8029/MONRE
- ③ Rule concerning ESIA procedures
Ministerial Instruction on the process of Environmental and Social Impact Assessment of the Investment Projects and Activities (ESIA), issued on 17 December 2013, Ref no. 8030/MONRE

Based upon an interview with DNEP, although Rule ① is being revised to make the division clearer, there is no major change in the rules.

1-3-2 Project Components which might affect Environment and Society

In accordance with the above rules, it has been confirmed that both the contents (i.e. construction of school buildings) and the size of the Project are not categorized into Group 1 which requires an IEE or Group 2 which requires an ESIA. Accordingly, the Project is categorized as “C,” which is likely to have minimal or little adverse impact on the environment and society, according to “JICA Guidelines for Environmental and Social Consideration”.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Outline of the Project

The Project is to build/rebuild the necessary buildings of the TTCs and demonstration schools and to provide the educational equipment at 8 TTCs (Luang Namtha TTC, Luang Prabang TTC, Khang Khay TTC, Ban Keun TTC, Dong Kham Xang TTC, Savannakhet TTC, Saravan TTC, Pakse TTC)² in the Lao PDR. By this, it is expected to contribute to the improvement of the quality of basic education in the Lao PDR through the enhancement of the pre-service and in-service training environment of teachers for pre-primary, primary and secondary education. The outline of the planned building and equipment components covered by the Project is as follows;

Table 2-1 Summary of Building and Equipment Components of the Project

TTC	Building Components	Equipment Components	
LNT TTC	Pre-primary demonstration school (4 classrooms)	(Commonly planned for 8 TTCs)	
	Primary demonstration school (5 classrooms) + Toilet bldgs.		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
LPB TTC	Pre-primary demonstration school (4 classrooms)		<ul style="list-style-type: none"> • Educational equipment for pre-primary, primary and secondary demonstration schools • Equipment for teaching materials • Cabinets for experiment equipment at TTCs
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
	TTC toilet bldg. (1 bldg.)		
KKY TTC	Pre-primary demonstration school (4 classrooms)		
	Primary demonstration school (5 classrooms) + Toilet bldgs.		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
BKN TTC	Pre-primary demonstration school (4 classrooms)		
	Primary demonstration school (5 classrooms) + Toilet bldgs.		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
DKX TTC	Pre-primary demonstration school (3 classrooms)		
	Primary demonstration school (5 classrooms) + Toilet bldgs.		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
	TTC classroom bldgs. (8 classrooms)		
SVK TTC	Pre-primary demonstration school (4 classrooms)		
	Primary demonstration school (5 classrooms) + Toilet bldgs.		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
	TTC toilet bldgs. (3 bldgs.)		
SRV TTC	Pre-primary demonstration school (4 classrooms)		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
PKS TTC	Primary demonstration school (5 classrooms) + Toilet bldgs.		
	Secondary demonstration school (7 classrooms) + Toilet bldgs.		
	TTC students' dormitory bldgs. (2 bldgs.) + ancillary bldgs.		

² The abbreviations are used as follows: LNT; Luang Namtha, LPB; Luang Prabang, KKY; Khang Khay, BKN; Ban Keun, DKX; Dong Kham Xang, SVK; Savannakhet, SRV; Saravan, PKS; Pakse

2-2 Outline Design of the Project

2-2-1 Design Policy

2-2-1-1 Basic Policy

(1) Project Scheme

The Project shall be implemented under the Japanese Project Grant for Japanese Consultant and Local Contractors -Tentative Type II (Japanese Project Grant Type II). In the scheme, a Japanese consultant shall be employed, while contractors and equipment suppliers shall be from the recipient country or a third country. The details of the Project implementation organization of both the Lao PDR and Japan sides are described later in “2-2-4-1 Implementation Policy.”

(2) Project Sites

All 8 TTCs across the Lao PDR shall be covered by the Project. Since it is important to avoid regional gaps and facilitate equal teacher development nationwide, covering all 8 TTCs is desirable and thus no priority order among the TTCs is set.

(3) Initially Requested Components

The Lao PDR side’s initially requested components were to construct TTC facilities and demonstration schools and to provide educational equipment for all 8 TTCs nationwide as below.

① Buildings

- Demonstration schools: Construction of separate buildings for pre-primary, primary and secondary education for each TTC (a total of 24 demonstration schools for 8 TTCs, about 22,000 m²).
- TTC facilities: New construction and/or rebuilding of deteriorated buildings of 4 TTCs (LPB, SVK, PKS and BKN were candidates.)

② Educational Equipment

(4) Priority among the Building Components

During the Field Survey, the preparatory survey team (the Survey Team) studied existing buildings and school operation at all 8 TTCs and heard requests concerning construction of new buildings. Details of the requests varied among the TTCs, however, all of them stated that construction of demonstration schools for pre-primary, primary and secondary education is a high priority.

Site conditions, degree of dilapidation and use of the existing buildings and school operation conditions are different among all 8 TTCs, and thus, it was difficult to apply unified criteria to prioritize the building components. However, considering the urgent needs of building construction, when examining the priority among the building components, the Survey Team took the following points into account;

- Whether or not a TTC has continuously usable demonstration school buildings
- Whether or not the existing buildings are safe (ex. structural safety, safety from flooding)
- Whether or not the existing buildings are in bad condition hygienically

The following table summarizes the priority of the building components of the respective TTCs, considering the above points. The priority below was communicated to and discussed with MOES and representatives from all TTCs at a joint meeting, the discussion results of which were agreed in the Minutes of Discussions.

Table 2-2 Priority of Building Components for each TTC

TTC	Priority A	Priority B	Priority C	Reasons
LNT TTC	Reconstruction of pre-primary demonstration school Reconstruction of primary demonstration school Reconstruction of secondary demonstration school	None	Additional construction of dormitory Reconstruction or rehabilitation of library	Demonstration school: Not usable continuously Dormitory and library: Necessity to extend/rehabilitate/rebuild is acknowledged, but the urgency is low.
LPB TTC	New construction of secondary demonstration school Reconstruction of toilet building	Additional construction or reconstruction of pre-primary demonstration school Reconstruction of primary demonstration school New construction of complex building containing library, laboratories and computer rooms	Additional construction of dormitory	Secondary demonstration school: Not usable continuously Pre-primary and primary demonstration schools: Continuously usable, but there are shortcomings to be addressed such as lack of classrooms. Toilet building: Not usable continuously. Library, laboratories, and computer rooms: Reconstruction as a complex building to improve the function needs to be considered. Dormitory: Necessity to extend is acknowledged, but the urgency is low.
KKY TTC	New construction of pre-primary demonstration school New construction of primary demonstration school New construction of secondary demonstration school	Reconstruction of TTC classroom building	Additional construction of dormitory	Pre-primary and primary demonstration schools: Not usable continuously, as they are dilapidated and/or substandard buildings, and are scattered. Secondary demonstration school: No building (a temporary building will be used.) TTC classrooms building: Extension of classrooms might be discussed to replace old wooden buildings. Dormitory: Necessity to extend is acknowledged, but the urgency is low.

BKN TTC	<p>Reconstruction of pre-primary demonstration school</p> <p>Reconstruction of primary demonstration school</p> <p>Reconstruction of secondary demonstration school</p>	Additional construction of TTC classroom building	<p>Additional construction of dormitory</p> <p>Reconstruction of library</p>	<p>Demonstration school: Not continuously usable.</p> <p>TTC classroom building: Extension of classrooms might be discussed depending on further examination of needs.</p> <p>Dormitory and library: Necessity to extend/rebuild is acknowledged, but the urgency is low.</p>
DKX TTC	<p>Additional construction of pre-primary school</p> <p>Reconstruction of primary demonstration school</p> <p>New construction of secondary demonstration school</p> <p>Reconstruction of TTC classroom building</p>	None	<p>Additional construction of dormitory</p> <p>Reconstruction or rehabilitation of library</p>	<p>Pre-primary demonstration school: Extension is necessary to address a shortage of classrooms</p> <p>Primary demonstration school: Not usable continuously</p> <p>Secondary demonstration school: No building (Establishing the secondary demonstration school needs further examination.)</p> <p>TTC classroom building: The existing building shall be demolished to provide construction space for the extension of the pre-primary school.</p> <p>Dormitory and library: Necessity to extend/rehabilitate/rebuild is acknowledged, but the urgency is low.</p>
SVK TTC	<p>Reconstruction of pre-primary demonstration school</p> <p>Reconstruction of primary demonstration school</p> <p>New construction of secondary demonstration school</p> <p>Reconstruction of toilet building</p>	None	Additional construction of dormitory	<p>Pre-primary and primary demonstration schools: Not continuously usable.</p> <p>Secondary demonstration school: No building.</p> <p>Toilet building: Not continuously usable.</p> <p>Dormitory: Necessity to extend is acknowledged, but the urgency is low.</p>
SRV TTC	<p>Reconstruction of pre-primary demonstration school</p> <p>New construction of secondary demonstration school</p>	<p>Reconstruction of primary demonstration school</p> <p>Additional construction of TTC classroom building</p>	None	<p>Pre-primary demonstration school: Not continuously usable.</p> <p>Secondary demonstration school: No building. (A temporary building is now used.)</p> <p>Primary demonstration school: Continuously usable, but there are shortcomings to be addressed such as size of classrooms.</p> <p>TTC classroom building: Extension of classrooms might be discussed depending on further examination of needs.</p>

PKS TTC	Reconstruction of primary demonstration school Reconstruction or additional construction of secondary demonstration school Reconstruction of dormitory	Reconstruction of TTC classroom building Reconstruction of pre-primary demonstration school	None	Primary demonstration school: Not continuously usable. Secondary demonstration school: It is necessary to consider extension or rebuilding, following the examination of a lack of classrooms and the degree of building dilapidation. Dormitory: Not continuously usable. Pre-primary demonstration school: Continuously usable, but there are shortcomings to be addressed such as size of classrooms. TTC classroom building: Extension of classrooms might be discussed depending on further examination of needs.
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<Legend for Priority>

A: To be covered by the Project with higher priority.

B: Considered to be covered by the Project, if the budget allocated for the Project allows.

C: Not to be covered by the Project in consideration of the budget allocated for the Project.

(5) Policies for Construction of Demonstration Schools

1) Number of Classes per Grade at Demonstration Schools

MOES ministerial document about demonstration schools does not stipulate rules concerning setting the size of a demonstration school, including the number of classes per grade. On the other hand, as Appendix 5-1 shows, a majority of demonstration schools have one class per grade except for a few cases where there are two classes per grade.

The Project sets, in principle, one class per grade for pre-primary (N1-N3: 3 grades, K1-K3: 3 grades)³, primary (P1-P5: 5 grades) and secondary (M1-M7: 7 grades) levels. However, it is agreed in the Minutes of Discussions that the Project sets the number of classrooms per grade, taking into account the current school operation at the respective TTCs, classroom construction needs, available budget, and so on.

Concerning the Project scope for pre-primary and secondary demonstration schools, initially, some of the grades and schools were not part of the request. In order to verify the appropriateness of the scope, the following were studied in Japan after the Field Survey.

2) Pre-Primary Demonstration Schools: Levels to be Covered by the Project

Pre-primary education in the Lao PDR covers both N1-N3 and K1-K3, a total of 6 years of education. According to MOES, as pre-primary teachers are required to cover all N1-K3 levels, a pre-primary demonstration school, which is a model school as well as an action research school, needs to cover N1-K3. Furthermore, it was confirmed that all TTCs except for BKN TTC have demonstration schools covering N1-K3 levels.

On the other hand, the Survey Team collected further information on policies, implementation

³ “Ministerial Decision on Early Childhood Education Management (No:1374/MOES DPPE, dated on March 30, 2015)” stipulates that early childhood education in the Lao PDR is provided at the following four categorized facilities;

(1) Nursery (N1-N3), (2) Kindergarten (K1-K3), (3) Pre-primary, and (4) Pre-group. Meanwhile, a demonstration school which covers N1-K3 is defined as a pre-primary demonstration school for this Project.

structure, and manpower to analyze whether or not the schools shall function as demonstration schools.

- MOES is now in the process of establishing the Early Childhood Education (ECE) policy. A draft was shared among the education sector working group late June 2019 to be followed by the Government's approval in 2020.
- The nursery guideline (manual for N1-N3 level education) is being revised, and it will be printed and distributed once the budget becomes available.
- The contents of pre-service teacher education for N1-N3 levels were improved in the new TTC curriculum (12+4) which has already been introduced at DKX and SRV TTCs and will be introduced at SVK and LNT TTCs in 2019/20.
- However, in reality, pre-primary education heavily depends upon volunteer teachers and N1-N3 children are cared for in one classroom in provinces.

The Project is to provide one classroom for N1-N3 large enough⁴ for a multi-grade nursery, considering MOES's recent approaches towards pre-primary education, and the actual situations at the school level.

3) Secondary Demonstration School: Schools to be Covered by the Project

As for construction of demonstration schools covering both lower and upper secondary education, 3 TTCs, namely LNT, DKX, and SRV TTCs were not initially part of the request, as they are Center of Excellence (COE)/Center of Development (COD)⁵ for pre-primary and primary level education. However, MOES instructed that all 8 TTCs should have demonstration schools covering from N1 to M7, regardless of the subjects of COE/COD at respective TTCs. In fact, 6 TTCs, including LNT and SRV TTCs, had opened secondary demonstration schools by 2018/19. Furthermore, through discussions, MOES confirmed that the policy that all 8 TTCs should have demonstration schools covering N1-M7 will be described in "Education and Sports Sector Development Plan (ESSDP) 2021-2025" which is being prepared. Consequently, it was concluded that this Project would cover the secondary demonstration schools for all 8 TTCs, in principle.

Of the two remaining TTCs which have not opened secondary demonstration schools, DKX TTC, whose COE/COD subjects are pre-primary and primary education, provide pre-service courses in the subjects of Biology and History at secondary level in 2019/2020. In addition, while the Faculty of Education of the National University of Laos (NUOL), which is 19 km away from DKX TTC, currently provides pre-service teacher training courses for secondary education and runs a secondary demonstration school, the faculties of education of all universities, including NUOL, will focus on pre-service teacher training at Master's level. Considering this, DKX TTC will play a bigger role

⁴ The design policy was communicated to the directors of DTE and DECE of MOES, both of whom approved it in August 2019.

⁵ A policy to have the respective TTCs specialize in specific subjects. MOES issued "Ministerial Agreement on Approval Trial Manual of Center of Development and Center of Excellent for Teacher Education (No. 1195) (June 9, 2016)" to establish a Center of Excellence (COE) at the respective TTCs.

in the field of pre-service teacher training for secondary education, as other TTCs will. Furthermore, although there are 4 secondary schools in the neighboring area of DKX TTC, the average number of students per class in those schools is beyond MOES standard of 36-40 per class. From those points, the necessity of a new secondary demonstration school at DKX TTC is justified.

Table 2-3 Number of Students by Secondary School of the Neighboring Area of DKX TTC

No.	School	Village	M1		M2		M3		M4		M5		M6		M7		Total
			No of Classes	No. of students	No of Classes	No. of students	No of Classes	No. of students	No of Classes	No. of students	No of Classes	No. of students	No of Classes	No. of students	No of Classes	No. of students	
1	Salakham Complete Secondary	Salakham	6	342	7	338	6	293	5	246	6	270	6	283	6	295	2067
2	Manachit Lower secondary	Nong hai	2	35	2	33	1	32	1	37		0		0		0	137
3	Mayouly Lower Secondary	Nong hai	2	80	1	50	1	43		0		0		0		0	173
4	Meuang Noy Lower Secondary	Meaung Noy	2	112	2	87	2	77	2	92		0		0		0	368
Total			12	569	12	508	10	445	8	375	6	270	6	283	6	295	
Average No. of students/class			47.4		42.3		44.5		46.9		45.0		47.2		49.2		

(Source: Put together by the Survey Team based upon the answers to the questionnaires to PESS Vientiane.)

As for KKY TTC, which has not opened a secondary demonstration school yet, but there is a policy to open it. However, the opening schedule has been delayed, as the start of the new school year is unusually changed due to a sports event which will be held in Xiengkhouang province.

During the Field Survey II (Explanation of DOD), it is confirmed that the secondary demonstration schools for DKX and KKY TTCs have not been established yet as of February 2020. Through discussions, MOES confirmed that the two secondary demonstration schools will operate from next school year (September 2020). In the meantime, the Survey Team and MOES discussed and agreed that these two secondary demonstration schools may be excluded from the Project if they do not operate from next school year. (Refer to Appendix 4-2)

4) Design Considerations to Better Implement the New Curriculum

The new TTC curriculum, which was introduced in 2018/19 to TTCs, focuses more on new concepts such as student-centered learning and active learning. In line with this, there is a lesson-study subject, and a practicum subject. In the former, while demonstration school students do group work and presentations, TTC students observe the lessons and discuss. Accordingly, a classroom larger than the standard size is necessary and desks and chairs which demonstration school students may carry easily are desirable. Thus, these points are considered in architectural design.

5) Demonstration School Building Layout within TTC Site

Presently, some demonstration schools are using what used to be general school buildings abutting the TTC sites, others are using temporary buildings within the TTC sites. In some cases, a demonstration school is operated at several buildings located in separate places.

Now, MOES and all TTCs request that the demonstration school buildings from N1 to M7 will be built close to one another and within the respective TTC sites. Accordingly, the Project will arrange buildings for the demonstration schools close together in one corner of the respective sites, in principle.

However, as for SRV TTC, the land area of TTC site is limited and there is no available space for new construction, while the TTC intends to have the demonstration schools of all levels in one place.

Thus, the demonstration schools will be aggregated at a separate site, 700 m away from the TTC site, where there is the currently an operating primary demonstration school.

(6) Setting the Project Contents and Scale for TTC Facilities

As for TTC facilities, the Project will cover classroom building, toilet building and dormitory which are in bad condition and have urgent need of reconstruction, as well as any buildings which are required to be relocated to secure space for new construction of the demonstration schools. Specifically, reconstruction of the toilet building of LPB TTC, the classroom building of DKX TTC, the toilet buildings of SVK TTC and the dormitory buildings of PKS TTC are to be covered by the Project. All of them are identified as Priority A. The scales of buildings are determined taking into account the user demand at the respective TTCs.

(7) Building Components of the Project

Following the above-mentioned policies, the buildings identified as Priority A and part of the buildings identified as Priority B are to be covered by the Project. The planned number of classrooms and buildings for the respective TTC sites are shown in the table below.

Table 2-4 Summary of Building Components for each TTC

	Demonstration School					TTC Facility		
	Pre-Primary School		Primary School	Secondary School	Total No. of Classrooms	TTC Classroom Bldg.	TTC Toilet Bldg.	TTC Students' Dormitory
	N Class	K Class				No. of Classrooms	No. of Buildings	No. of Buildings
	No. of Classrooms		No. of Classrooms	No. of Classrooms		No. of Classrooms	No. of Buildings	No. of Buildings
LNT TTC	1	3	5	7	16			
LPB TTC	1	3 ※1		7	11		1	
KKY TTC	1	3	5	7	16			
BKN TTC	1	3	5	7	16			
DKX TTC		3 ※2	5	7	15	8 ※3		
SVK TTC	1	3	5	7	16		3	
SRV TTC	1	3		7	11			
PKS TTC			5	7	12			2
					113			

※1 : The priority of LPB TTC Pre-primary Demo. School was categorized as B. However, the existing pre-primary school buildings need to be demolished and reconstructed in order to secure a construction space for new Secondary Demo. School.

※2 : DKX TTC Pre-primary Demo. School is currently operated at their own building plus two additional classrooms of TTC classroom building due to shortage of classrooms. In order to solve the current situation, a new K-class building (3-classroom building) will be constructed.

※3 : In connection with an additional building construction for DKX TTC Pre-primary Demo. School, one of the existing TTC classroom buildings need to be demolished. Thus a new TTC classroom building will be constructed, also taking into account shortage of classrooms.

The basic design principles of the demonstration school buildings were discussed and agreed in the Technical Notes during the Field Survey, as follows.

Table 2-5 Basic Design Principles for Demonstration Schools agreed in Technical Notes

Item	Pre-primary School	Primary School	Secondary School
Size of classroom	7m x 8m = 56m ²⁶	Regular classroom: 7m x 8m = 56m ² Large classroom: 9m x 8m = 72m ²	Same as primary school
Grades to be accommodated	6 grades (N1 to N3 and K1 to K3)	5 grades (P1 to P5)	7 grades (M1 to M7)
Rooms other than classrooms	Multi-purpose room x 1 Teachers' office x 1 Toilet and shower Space of pupils dining (Kitchen or food preparation corner)	Multi-purpose room with preparation room x 1 Reading room x 1 First aid room x 1 Teachers' office x 1 Teaching materials room x 1	Laboratory with preparation room x 1 Reading room x 1 Teachers' office x 1 Teaching materials room x 1
Capacity of classroom	N1 to N3: 10 pupils K1 to K3: 30 pupils	35 students	Same as primary school
No. of doors for a classroom	4	2	Same as primary school
Type of windows	Aluminum sash sliding window	Same as pre-primary school	Same as pre-primary school
No. of students per toilet booths	To be determined in reference to MOES conceptual drawings	45 students	Same as primary school
Blackboards	Only for kindergarten classrooms	Two blackboards for a classroom (at one side wall)	Same as primary school
Movable partitions	N/A	Between two classrooms	Same as primary school
School furniture for pupils / students	To be determined in reference to recommendation from Department of Early Childhood Education (DECE)	A set of single desk and chair (separate type) made of timber	Same as primary school

(8) Equipment Planning

During the Field Survey, the Survey Team confirmed that all TTCs have sufficient educational equipment, on the other hand, demonstration schools do not.

1) Demonstration Schools

It is necessary for demonstration schools to be equipped with educational equipment according to the standard equipment list of a general school, because they are model schools as well as schools where TTC students' practicum and lesson study are carried out.

Accordingly, the Project in principle will provide demonstration schools with educational equipment in reference to the standard equipment list of pre-primary, primary and secondary

⁶Standard size stipulated in the Ministerial Decision No.1374/MOES dated on March 30, 2015. The size of a classroom shall be determined as a result of further analysis in Japan, taking into account the number of pupils to be accommodated. Ministerial Decision on Early Childhood Education Management (No:1374/MOES DPPE).

education. The equipment plan for the Project is made taking into account the existing equipment, usage status, and compatibility with the building components, etc.

In the equipment list, educational posters in Lao, traditional Lao musical instruments, etc. are exclusively manufactured by the Educational Equipment Production Factory Enterprise under MOES. Since procuring these items may violate the principle of equal competition among suppliers, those items shall not be covered by the Japan side. Rather, it is deemed more appropriate for the Lao PDR side to procure those items on their own.

During the Field Survey, it was found that tools to make teaching materials such as posters, sub-textbooks, materials to better facilitate the understanding of the lessons. etc., were not owned by most of the TTCs. Procurement of such tools by this Project will contribute to improve teaching materials, as it is appropriate to do so from the viewpoint of bettering the quality of education. Such teaching material making tools shall be placed in the teaching materials room of the primary demonstration school, so that they will be commonly used among the demonstration schools of different levels. However, as for LPB TTC and SRV TTC, the tools will be placed in the secondary demonstration schools, as the Project does not provide a primary demonstration schools in either site.

The policy of equipment planning for demonstration schools is as follows.

- Items in MOES's standard equipment list are classified into A: Priority No.1, B: Priority No.2, C: Priority No.3, D: Not to be covered by the Project, E: To be covered by the Lao PDR side, based upon the following criteria. (Also refer to Appendix 5-3)
 - ① Necessary for curriculum
 - ② Available space for usage, installation and/or storage
 - ③ Easy maintenance (Unavailable consumables are not required)
 - ④ Easy handling (Special skill is not required)
 - ⑤ High frequency of use
 - ⑥ Easy procurement
 - ⑦ No substitutability by other equipment
 - ⑧ Not consumables
 - ⑨ Not furniture nor facility
- Teaching material making tools will be placed in the teaching material rooms of the primary demonstration schools (as for LPB and SRV TTCs, they will be placed in the secondary demonstration schools)
- Cabinets to store science experiment equipment are to be procured by the Project
- Playground equipment is not covered by the Project

2) TTC Facilities

Many TTCs have problems in storing and organizing equipment. It was observed at many TTCs, that equipment is left unused and stored in boxes in the laboratories, and that equipment boxes are stacked on the floor which narrows the laboratory space. Thus, in order to facilitate use of the existing equipment, the Project is to provide the TTCs with cabinets to store the equipment. These

are the only equipment to be provided for the TTC facilities.

(9) Demolition of the Existing Buildings

If a TTC has enough suitable land for new construction, new buildings are planned in such open space without demolishing any existing buildings, in principle. It will help a TTC to have continuous use of the existing buildings even during the construction period.

However, the following TTC sites have constraints on land availability, and some existing buildings need to be demolished to secure the area for new construction. In any case, the extent of existing building demolition is planned to be the minimum at each respective TTC site.

Table 2-6 List of Existing Buildings to be Demolished

TTC	Existing buildings to be demolished		Conducted by	
	No. of bldgs.	Name of Buildings (existing building number*)	Japan	Lao PDR
LPB TTC	3	Pre-primary demonstration school (No.16-1,16-2), TTC toilet building (No.17-2)	●	
BKN TTC	1	Old primary demonstration school (No.23)		●
DKX TTC	3	TTC classroom building (No.6), Primary demonstration school (No.19-2), Unfinished building (next to No.19-2)	●	
SVK TTC	4	TTC toilet building (No.33-1, 33-2, 33-3), Temporary teachers' residence (Near No.23)		●
PKS TTC	3	Dormitory (No.11,15,16)		●

*: Refer to Appendix 5-1 for building numbers

Assuming that the Project is approved by the Government of Japan at its cabinet meeting in May 2020 to be followed by signing of E/N and G/A, according to MOES, the budget request to demolish the existing buildings shall be made no earlier than January 2021. The budget shall be allocated a year later, January 2022. Therefore, the demolition of existing buildings will be completed in May 2022 at earliest.

On the other hand, assuming that the cabinet approves the Project in May 2020, the construction contracts for Group 1⁷ between MOES and Contractors are likely to be signed around November 2021, much earlier than May 2022, when the Lao PDR side may complete its undertakings. Thus, it will create a long idle time, during which no earthwork or foundation work may be carried out, if the Project waits for the Lao PDR side to demolish/remove the existing building. Therefore, for the sake of smooth implementation of the Project, the demolition of existing buildings of Group 1 sites needs to be covered by the Japan side. In contrast, for Group 2 sites, because construction starts around November 2022, and the Lao PDR side may complete its undertakings before construction, the demolition of existing buildings of Group 2 sites are undertaken by the Lao PDR side.

As for the demolition of buildings funded by other donors, it has been confirmed that MOES shall be responsible for explaining to the relevant donors for approval through donor coordination meetings, etc.

⁷ Refer to “2-2-1-8 Policy for Methods and Schedule of Construction/Procurement” and “2-2-4-8 (1) Bidding/Contract Lots”.

2-2-1-2 Policy for Natural Conditions

(1) Climatic Conditions

To cope with the climatic conditions of high temperature and humidity in the Lao PDR, a comfortable room environment will be maintained by providing natural ventilation, shades, and heat insulation to control the temperature. In addition, the openings and length of eaves are determined by taking into account the appropriate light levels for lessons and the necessity to prevent rain blowing into the rooms. Moreover, in order to absorb rainwater from the roof and to prevent mud from coming into the rooms and from splashing on the exterior walls, gravel will be filled around the buildings.

Air-conditioners will be installed in the multi-purpose rooms, laboratories, administration rooms, and first-aid rooms of the demonstration schools at all 8 TTCs. Additionally, the classrooms for pre-primary demonstration schools of SVK and SRV TTCs will have air-conditioners, as they are located in the southern part of the Lao PDR⁸, which features high temperature and humidity throughout the year.

(2) Flooding

Some schools may experience flooding during the rainy season when the greater part of the yearly rainfall occurs. Therefore, the level of the ground floor will be raised above the ground level in order to prevent inundation when flooding. Concerning the demonstration schools' zone for BKN TTC, as it is located in a lowland area and often gets flooded, 4 meter-wide embankments shall be constructed around the proposed buildings in order to cope with flooding.

(3) Earthquake

The northern part of the Lao PDR has earthquakes. In fact, in November 2019, an earthquake of magnitude 6.1 occurred near the Thai border in the northwestern part of the Lao PDR. Thus, the Project incorporates anti-seismic design, taking into account the earthquakes of the northern part of the Lao PDR, and referring to the seismic hazard map of the Lao PDR.

(4) Geological Conditions

Geological conditions vary among the sites, as they are scattered nationwide. Accordingly, the Project designs appropriate foundations for the respective sites, based upon the result of the soil investigation survey carried out at each site.

(5) Termites

Many buildings, especially in the southern part of the Lao PDR, are affected by termites. Therefore, the use of wooden materials in building will be limited and appropriate measures against termites will be taken where wooden materials are used.

⁸ PKS TTC is also located in the southern part of the Lao PDR, however, a pre-primary demonstration school will not be constructed by the Project.

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

(1) Clearance of Unexploded Ordnance (UXO)

Unexploded ordnance (UXO) used in the Indochina War still remains all over the country. In particular, southern provinces which were along a military supply route to north Vietnam (“Ho Chi-Minh trail”) and Xiengkhouang province dominated by Pathet Lao⁹ which were fighting the US military and the royal Lao army, were bombed intensively.

The map indicates locations of the TTCs and high-risk zones of UXO. KKY TTC (Xiengkhouang province) and SRV TTC (Saravan province) are located in the high-risk zones.



(Source: US Bonding Sortie Map, 02/08/2016, The HALO Trust)

Figure 2-1 Map of UXO High-risk Zones and TTCs

During the Field Survey, the Survey Team inquired about whether or not the respective TTCs had ever been bombed, whether or not there used to be any bullet storage around the sites, etc. Moreover, the Survey Team interviewed the relevant authorities in-charge of UXO clearance activities such as NRA¹⁰, UXO Lao¹¹, Provincial Labor and Social Welfare, etc. about the UXO clearance statuses.

According to the hearings, apart from KKY and SRV TTCs, the remaining 6 TTCs had never been bombed, and thus no UXO clearance was carried out. However, as there still remains a possibility of small bombs brought into the sites, the team discussed with the relevant authorities to agree that UXO clearance would be carried and the clearance certificate would be issued, regardless of the hearing result, before the implementation of the Project.

On the other hand, as for KKY and SRV TTCs, which are located in the UXO high-risk zones, the team discussed with the relevant authorities as follows.

- **KKY TTC:** Since the site was used as an accommodation for the Pathet Lao, it was bombed intensively during the war. Each time a new building was planned or trees were planted after the war, a UXO detection survey and clearance was carried out, but the entire site was not covered. (The Survey Team has obtained the map showing the cleared areas.) More than a thousand UXOs were discovered in the cleared areas.
- **SRV TTC:** A small bomb was found and cleared from the TTC site in 1997. (There is no telling whether it was from an airstrike or brought into the site.) However, the record of the clearance was not kept, as the organization in-charge of UXO clearance has changed. Moreover, as for

⁹ A communist movement and organization active in 1950s to 70s, as well as a main body of the Lao People's Revolutionary Party which is currently in power.

¹⁰ NRA: National Regulatory Authority for the UXO/Mine Action Sector in the Lao PDR

¹¹ UXO Lao: Lao National Unexploded Ordnance Programme

the demonstration schools' site, there is no record of UXO clearance.

The Survey Team explained the clearance statuses of the respective TTCs to MOES, which agreed for the Project to obtain UXO clearance certificates for all TTC sites. Then, the Japan and the Lao PDR sides confirmed in the Technical Notes that the following procedures would be taken.

- The Japan side presents the proposed construction areas to be cleared from UXO and landmines in the respective TTCs.
- The Lao PDR side conducts detection survey and clearance of UXO and landmines in the areas which are presented by the Japan side and submits the certificates to the Japan side before Field Survey II (Explanation of DOD.)

The UXO clearance status as of December 2019 is shown in the following table. Concerning the sites whose clearance has not been fully completed, it was agreed during Field Survey II that all the necessary areas should be cleared and the reports of completion should be shared with the Japan side prior to the commencement of Detailed Design (DD), which is scheduled at the end of July 2020. (Refer to Appendix 4-2)

Table 2-7 Status of UXO Clearance (as of December 2019) and Agreement at DOD

TTC	Documents submitted by the Lao PDR side	Discovered and Cleared UXOs (if any)	Remarks
1. LNT TTC	Certificate issued by NRA Vientiane (November 28, 2019)	14 pcs of UXO including 4 pcs of the Mortars/60 mm	<ul style="list-style-type: none"> • A northern half part of the proposed area in the demonstration school site has been cleared. • Clearance of the southern part of the proposed area will be completed by the commencement of DD.
2. LPB TTC	UXO clearance certificate issued by UXO Lao (July 22, 2017)	No UXO	<ul style="list-style-type: none"> • A western half part of the proposed area in the demonstration school site has been cleared. • Clearance of the eastern part of the proposed area will be completed by the commencement of DD
3. KKY TTC	UXO clearance completion report issued by UXO Lao (1999, 2000, 2001, 2005, 2011) and UXO clearance certificate issued by UXO Lao (July 31, 2019)	(mentioned only the report in 2001) 42 pcs of UXO including 9 pcs of submunition of cluster bombs and 3 pcs of mortar/60 mm.	<ul style="list-style-type: none"> • During the Field Survey, it was explained to the Survey Team that clearance of the proposed area had not been carried out. However, later, it turned out that clearance was done in 2001. • It is found that the proposed areas shall be cut and levelled as the result of topographic survey conducted after confirmation of UXO clearance. Because the existing ground in wider areas needs to be cut and levelled, and because the previous UXO clearance was conducted 20 years ago, the following items shall be conducted by the Lao PDR side. <ul style="list-style-type: none"> ① Cutting and leveling of the proposed areas ② Re-implementation of UXO clearance
4. BKN TTC	Certificate issued by NRA Vientiane (November 6, 2019)	No UXO	<ul style="list-style-type: none"> • All proposed areas including the ones in the demonstration school site have been cleared. • The clearance completion report will be submitted by the commencement of DD.
5. DKX TTC	Certificate issued by NRA Vientiane (October 28, 2019)	No UXO	<ul style="list-style-type: none"> • All proposed areas including the ones in the demonstration school site have been cleared. • The clearance completion report will be submitted by the commencement of DD.

6. SVK TTC	Certificate issued by UXO Lao (September 17, 2019)	No UXO	<ul style="list-style-type: none"> No clearance survey was conducted, as the site has never been bombed. UXO Lao issued a certificate which states that no search clearance is necessary.
7. SRV TTC	A clearance completion report issued by UXO Lao (2018, 2019)	1 pc of motor/60mm and 2pcs of bullets/20mm	<ul style="list-style-type: none"> Most of the proposed areas of the demonstration school site have been cleared, but a small part of areas including temporary work area were not covered. Clearance of the remaining part of the proposed area will be completed by the commencement of DD.
8. PKS TTC	A clearance completion report issued by UXO Lao (2019)	No UXO	<ul style="list-style-type: none"> Most of the proposed areas of the demonstration school site have been cleared. Clearance of the remaining part of the proposed area will be completed by the commencement of DD.

(2) Certificate of Land Use Right

The Land Law has been enacted only recently in the Lao PDR and the official system for land use rights has not yet been established in all regions. However, the land use right of all 8 TTC sites, including the demonstration school site of SRV TTC, have already been presented, as they are all located in large cities.

(3) Considerations for Inclusive Education

Taking into consideration use by various people including the physically handicapped, the Project incorporates the following in architectural design.

- A ramp from the ground surface to the ground floor level will be constructed for each building.
- A wheel-chair accessible toilet booth will be provided by gender for each toilet building.
- Pictograms will be used to indicate toilets and ramps.

(4) Gender Considerations

In architectural planning, the following points are incorporated.

- The number of male and female toilet and shower booths are the same, assuming that the same number of male and female occupants (teachers, staff, and students) use the buildings.
- The toilet building of the TTCs and demonstration schools are designed in consideration of separation of physical and visual approaches, and thus the buildings have separate entrances for males and females, with pictograms showing the correct entrances for the respective genders.
- Separate toilet/shower buildings for both genders for the student dormitory are designed in consideration of separation of physical and visual approaches. Likewise, pictograms showing the correct entrance for the respective genders shall be indicated.

2-2-1-4 Policy for Local Industries of Construction and Material Supply

(1) Construction Methods

The reinforced concrete structure that is common in the Lao PDR is adopted as the main building

structure for this Project. The roof structure is composed of steel rafters on reinforced concrete posts and purlins. Bricks are used as the wall materials.

Table 2-8 List of Building Materials (Provisional)

Item		Materials
Major Structural Parts	Foundation	Reinforced concrete
	Floor	Reinforced concrete
	Column / beam	Reinforced concrete
	Wall	Brick
	Roofing frame	Reinforced concrete post and purlin + Steel rafter
Exterior Finishing	Roof	Non-asbestos fiber cement sheet
	Wall	Paint finish on mortar
	Door & windows	Paint finish on wooden door & windows
Interior Finishing	Floor	Tile
	Wall	Paint finish on mortar
	Ceiling (Classroom bldg.)	Paint finish on plaster board
	Ceiling (Toilet bldg.)	No finishing

(2) Construction Materials

Cement and reinforcing bars are produced within the Lao PDR, but most other construction materials and equipment are imported from neighboring countries. The imported construction materials are commonly available on the domestic market. It is easy to order and import necessary materials from Thailand even if there is no stock within the Lao PDR. That is to say, the construction materials necessary for this Project can be procured in the Lao PDR. Therefore, as a rule, all necessary construction materials for this Project will be procured within the country.

As for blackboards, in principle, a factory-made product manufactured in a third country, which has good quality and durability will be adopted¹².

(3) Building Permits

As for educational building construction in the Lao PDR, an application for a building permit to the Ministry of Public Works or its provincial offices is not necessary in general, as long as the Division of Education Construction, Design and Management (ECDM), and Department of Finance of MOES approves the design drawings¹³.

However, it turned out that Luang Prabang city has its own city planning and building regulations¹⁴ relating to world heritage. The LPB TTC site is not located in the world heritage area, but in the urban development (UD) area. Accordingly, a building permit must be obtained.

In the UD area, a building needs to comply with the setback from the site boundary line (in principle,

¹² Recently, good-quality “made in Lao” blackboards consisting of parts and materials produced in a third country are also be available.

¹³ Ministerial Decision No.1063/MOES issued on November 26, 2008

¹⁴ ①Decree of Prime Minister on the Adoption of the Urban Regulations and Buffer Zone for Luang Prabang World Heritage, No.31/PM, February 1, 2012, ②The Governor Guideline on the approval and endorsement of the Rules on urban structure, architectural and the buffer zones of Luang Prabang World Heritage, No.5/LPG, March 30, 2012, ③Luang Prabang Urban Regulation, Luang Prabang Province.

more than 3 m, but the rule may be relaxed according to the site situations), roof angle (35-45 degrees), and building height (H=less than 20m). While these building rules and regulations are applied to any development in Luang Prabang city, they are administered by the Department of Public Works and Transportation of Luang Prabang province, to which an application for a building permit is submitted. According to the Department of Public Works and Transportation, it takes about two weeks for them to issue a building permit.

The Survey Team confirmed that a building permit is necessary only for LPB TTC, and is not needed for the remaining 7 TTCs as long as the design drawings are approved by ECDM/MOES.

(4) Building Standards

As for the standards in building construction, the French standard used to primarily govern; however, nowadays, other standards for construction material and construction method are applied. These other standards were developed based upon the Japanese standards, US standards, European standards, etc. It is said that the building codes of Lao PDR is under preparation by the Ministry of Transport and Public Works.

The Project designs based upon the school construction guidelines of MOES, while the relevant standards and specifications in Japan will be referred to for the items which are unavailable or uncertain in the school construction guidelines.

(5) Equipment Procurement

1) Manufacturers of Educational Equipment

The Educational Equipment Production Factory Enterprise under MOES is the only company which manufactures educational equipment in the Lao PDR. The enterprise owns two factories that manufacture picture books and educational posters in the Lao language and educational furniture such as desks, chairs, laboratory tables, etc. The enterprise imports the remaining educational equipment from Thailand, Vietnam and China.

Vietnam has more than 10 companies which supply educational equipment, however, there is no company that manufactures educational equipment for primary and secondary education. According to a company which imports chemical analysis equipment from Vietnam, all educational equipment for all levels from pre-primary to university, is made in China.

Educational furniture, such as desks, chairs, and laboratory tables, is manufactured in the Lao PDR. They are made of wood, plywood, and steel pipes, the design of which is simple. Steel cabinets, which require sheet metal fabrication techniques, are imported.

2) Educational Equipment Suppliers

It is crucial for the Project to select an educational equipment supplier that can install the equipment and instruct users how to use.

As previously stated, the supply of educational equipment to schools is monopolized by the enterprise under MOES. Thus, no competitive domestic bid for educational equipment supply has ever been called for. But, MOES has called for small web-based international bids for secondary

education equipment, as their officials were concerned that there may not be any bidders, if the bid was only for domestic suppliers.

2-2-1-5 Policy for Employing Local Firms

(1) Consultants

The Japanese consultant who has been employed for the Preparatory Survey will be, with recommendation from JICA, appointed as the Consultant for the Project. The Consultant will undertake the consulting services including detailed design work, assistance to bidding procedure, construction supervision and assistance to project financial/administrative management, based on a consultant agreement made between MOES and the Consultant. While the Consultant (Japanese consultant) will dispatch its engineers, who also assist MOES's financial/administrative management, it will hire Lao sub-consultant(s) who work(s) together with the Japanese engineers.

(2) Construction Companies

The Project covers all 8 TTCs across the country. Because the TTC sites are far apart, and because the size of each construction site is rather large (1500 - 3500m²) for Lao contractors, it is not realistic for a single company to manage construction in multiple sites. Thus, the Project plans to set one contractual lot per TTC site (a total of 8 contractual lots).

Contractors shall be selected through a general competitive bidding process out of the construction companies in Lao PDR. In the meantime, aiming at enhancing the efficiency of project management and costs, the procurement component of furniture, blackboards, project plaque and stickers will be included in each construction contractual lot.

(3) Equipment Suppliers

Equipment suppliers in the Lao PDR are official agents of foreign science equipment suppliers and have expertise in procurement of equipment. They also import and sell other equipment. Usually, universities and research institutions in the Lao PDR call for competitive bids to purchase materials and all the suppliers with whom the Survey Team interviewed have experience in submitting bids called by those institutions and delivering the equipment.

During the Field Survey, the Survey Team interviewed two Thai educational equipment manufacturers. One of them expressed no interest in the Project, as they have never exported their products. The other one was not interested in procuring equipment other than their own products or products they usually handle.

Considering the educational suppliers' business situation in and outside the Lao PDR, maintenance practice at the TTCs and their demonstration schools, and spare parts availability in the domestic market, it is deemed better to employ Lao equipment suppliers. In fact, one of the items was left unrepaired, though it was still within the warranty period, because the agent is in Thailand. By employing Lao equipment suppliers and having them responsible for after-sales services, maintenance of the procured equipment will be simplified.

2-2-1-6 Policy for Operation and Management

For general public schools in the Lao PDR, the cost of teacher's salaries, textbooks, teacher's guides and chalk is borne by MOES, and the operation and maintenance of the schools are undertaken by each community. On the other hand, the TTCs are responsible for such operation and management (including staffing and budgeting) of their demonstration schools. The operation and maintenance budget generally consists of School Block Grant (SBG) allocated to schools based upon the number of students and fees paid by the students. The existing demonstration schools are well operated and managed, and thus in this Project, it is also expected that appropriate activities for the operation and maintenance of the schools will be undertaken.

In the architectural plan, the school buildings will basically be designed for durability and ease of operation and maintenance, including cleaning and repair, in order to reduce the cost of operation and maintenance of the buildings. As for the equipment, items that do not require consumables which are not available in the market, or which require special skills to handle, and which are easy to maintain and handle shall be planned.

2-2-1-7 Policy for Grade Setting of Buildings and Equipment

(1) Buildings

The grades for the buildings and furniture appropriate for the Project are determined from the perspective of functionality, economy and maintainability, by referring to the specifications of the secondary schools constructed under the previous Japanese Project Grant Type II and of the existing buildings within the respective TTC compounds that have been constructed by other donors and the Government of Lao PDR.

(2) Equipment

The price of such equipment as computers, printers, microscopes, CD players, and electric pianos varies depending on the specifications of the item. The Project sets appropriate specifications for educational use in school.

As for the remaining items, the specification does not vary among the products of manufacturers. Accordingly, the Project considers the quality of the items, rather than the specifications and plans to procure products by manufacturers with ISO certificate or the equivalent.

2-2-1-8 Policy for Methods and Schedule of Construction/Procurement

(1) Buildings

As previously stated, the Project sets one bidding/contract lot per TTC site (8 lots in total). From the experience of the on-going project under the Japanese Project Grant Type II, it is clear that there are not many Lao contractors eligible and qualified for the conditions set by the Project according to the nature of each lot, and it is not realistic to procure 8 different contractors at one time (that is, in one construction group). Accordingly, from the viewpoints of efficiency and implementation, the Project divides 8 lots into two construction groups. In addition, the rainy season will be taken into consideration when setting the timing of commencement of the works.

(2) Equipment

Equipment procurement schedule is determined in consideration of the construction schedule. The procurement will be divided into lots according to construction group, taking the transportation cost into account. Therefore, one equipment lot per construction group site is set, as is the case with the construction lots.

From the hearings with suppliers in the Lao PDR and from the scale (quantity and price) of equipment set for the Project, no further division of lot by type of equipment is deemed necessary.

2-2-1-9 Policy for Construction Supervision

The construction works will be supervised by two resident supervisors of the Consultant for each construction group. One of the supervisors will assist MOES in project implementation management, financial management, etc. The construction supervision plan is described in “2-2-4-1 (3) Consultant.”

2-2-1-10 Policy for Security Management

The Project shall take safety measures according to JICA’s safety rules. As of March 2020, all the Project sites are located in “Level 1 (be cautious)” area of danger according to the overseas safety information by the Ministry of Foreign Affairs of Japan. In particular, common crimes such as robbery are on the rise in urban areas, thus, all the Project staff shall take necessary safety measures. Furthermore, when travelling between cities by road, the Project staff shall schedule arrival at the destination before sunset. As for travelling between cities in the northern area, the Project staff shall fly whenever possible and avoid travelling by road from the viewpoint of security and traffic safety in the mountainous area.

2-2-2 Basic Plan (Construction Plan / Equipment Plan)

The natural conditions, such as climate, soil and landscape, vary site by site, since the Project sites are located all over the country. The basic plan of the Project is discussed in order to provide easily maintained, sound and safe school environments, in consideration of the various natural conditions of each site. Each room provided by the Project has the appropriate size and finish depending on its usage and function, and the grade of electrical/mechanical systems are determined as required to maintain the room environment. Architectural design including building facade design is determined taking into account the Lao traditional style as well as harmony with the existing buildings within the site. In addition, the presence and visibility as a Japanese Grant Aid project are considered.

2-2-2-1 Site Layout Plan

(1) Current Conditions of Each Site

The current conditions of each site are summarized below.

Table 2-9 Summary of Current Conditions of Each Site

TTC	Site Conditions
LNT TTC	<ul style="list-style-type: none"> TTC classroom bldgs., Lab bldg., Admin bldgs., Students' dormitories, etc. are located in the central zone of an almost flat site (approx. 13 ha). Demonstration school bldgs. and a big sports ground are located in the west zone, while teachers' dormitories and a small sports ground are in the east zone.
LPB TTC	<ul style="list-style-type: none"> TTC site (approx. 8.5 ha) consists of 3 zones divided by the road and river. The site slopes across the river. There are constraints for space for new construction due to the physical conditions and existing building layout of the site. Admin. bldgs., TTC classroom bldgs., Library and Students' dormitory are located in the south zone. TTC classroom bldgs., secondary demo. school temporarily operated at a TTC classroom bldg, and Teachers' dormitories are located in the north-west zone of the site. Another block of Teachers' dormitories and an Education Material Workshop are located across the river, in the north-east zone. Pre-primary and primary demo. schools are at the north corner of the site. Some of the existing buildings need to be demolished in case of new construction in this area.
KKY TTC	<ul style="list-style-type: none"> TTC site (approx. 112 ha) is huge and has a big pond in the center. The site has a hilly landscape, and the road from the south main gate has an upward slope. All the TTC facilities are located in the east zone of the site, and pre-primary and primary demo. schools are located in two sites; TTC site and a separate site. The site has a high potential of UXO risk. The proposed construction area for the new demo. schools was surveyed and cleared by UXO Lao in 2001.
BKN TTC	<ul style="list-style-type: none"> TTC site (approx. 14 ha) is composed of two (east and west) zones divided by the road. River Nam Ngum is located approx. 300m away from the site, and thus the site tends to be affected by flooding resulting from heavy rainfall and/or discharge from Nam Ngum dam. The area for demo. schools is flooded almost every year, and the primary demo. school bldg., whose floor level is low, experienced inundation above floor level three times; in 1990, 1995 and 2018. The west zone has Students' dormitories and Teachers' dormitories, while TTC classroom bldgs., Lab bldg., and demo. schools are located in the east zone. The existing old wooden classroom building for primary demo. school is not in use. The building needs to be demolished in case of new construction within the area.

DKX TTC	<ul style="list-style-type: none"> TTC site (approx. 15 ha) is almost flat and located about 30 min. drive away from Vientiane city center. The east zone of site is used as paddy field. TTC classroom bldgs., Lab bldgs., Admin. bldgs., Dormitories and demo. schools are located in the west zone of site. Due to constraints of the site in terms of the available land area and existing building layout, pre-primary demo. school will be separate from primary and secondary demo. schools. In addition, some of the existing buildings need to be demolished to secure construction areas for the new buildings.
SVK TTC	<ul style="list-style-type: none"> TTC site is located along the national road No.9, 3 km away from the 2nd Thai-Lao Friendship Bridge. The site is generally flat land of approx. 41 ha. The site used to be forest. Some portions of the land are boggy especially during rain. The site does not have significant record of natural disaster.
SRV TTC	<ul style="list-style-type: none"> TTC site (approx. 7.5 ha) has a Sports Ground and Teachers' dormitories at the west side, and TTC classroom bldgs., Lab bldg., Admin bldgs., and pre-primary demo. school at the east side of the site. Demo. school site (approx. 1.1 ha) is located about 700m away from TTC site. There is a primary demo. school and two ponds on the site. Both sites are almost flat. Because there is no available construction area within TTC site, demo. schools will be constructed in a separate site where the primary demo. school is currently located.
PKS TTC	<ul style="list-style-type: none"> TTC site (approx. 13 ha) has TTC classroom bldgs., Lab bldg. and Admin bldgs. at the east side, and Students' dormitories, Sport Ground and demo. schools are located at the west side of the site. TTC site is almost flat, however, available land for construction is limited because of the existing bldgs., a pond and many trees. Demolition of some existing buildings is needed for new construction. There was information that TTC site used to be a pond, and thus a soil investigation test was carefully conducted. However, as the result of test, it has been determined there is no need to adopt pile foundation. Several dormitory buildings are not in use due to deterioration caused by building age.

(2) Site Layout Plan

The site layout plan of each site is determined as per the following policies in principle, but it is adjusted considering the actual situation of the site.

- Pre-primary, primary and secondary demonstration schools are located in the same zone, demarcated from the TTC facilities zone, if possible.
- Toilet and dormitory buildings are planned by gender, and overlapping of access and visual lines are avoided.

The current site map and the proposed site layout plan of each site is shown in Appendix 5-1 of this report.

2-2-2-2 Architectural Plan

(1) Floor Plan

1) Demonstration School

The room compositions for demonstration schools at each education level are basically considered in reference to the conceptual drawings for demonstration schools prepared by ECDM/Department of Finance (DOF)/MOES. “School Construction Guideline” of MOES is also referenced to determine requirements and criteria necessary for floor planning, while the capacities of rooms are set based on the agreement with MOES shown in Table 2-5.

Larger classrooms, such as a large classroom and a multi-purpose room, in addition to ordinary classrooms, are provided for each demonstration school taking into account the function as “TTC demonstration schools” where lesson observation and/or lesson study are conducted. Primary and secondary demonstration schools will have a set of two classrooms connected by a movable partition wall, in addition to a large classroom, to provide a much larger space. Moreover, aluminum sliding windows will facilitate class observation from the corridor side.

① Pre-primary Demonstration School Building

Pre-primary demonstration schools consist of N class (N1-N3) targeting age 0-2 and K class (K1-K3) targeting age 3-5. As described above, one classroom is planned for three grades of N class (N1-N3), while one classroom is planned for each K1-K3 class under this Project. The size of a classroom for K class is 56 m² (8m x 7m) following MOES school construction guidelines, while the one for N class is 72 m² (8m x 9m)¹⁵ responding to multi-grade classes.

The capacity of a classroom is as follows.

- N class: 10 pupils per grade, 30 pupils in total (30 pupils/room, 2.4m²/pupil)
- K class: 30 pupils per grade (K1-K3) (30 pupils/room, 1.86m²/pupil)

The buildings for N class and K class are planned as two separate buildings, and the building layout is arranged depending on the site conditions of each site. In principle, the teachers’ office is located in the N class building, while the multi-purpose room is in the K class building. Pre-primary demonstration schools have toilet and shower rooms within the buildings according to grade. In addition, the corridor of pre-primary demonstration schools are planned to be utilized as a space for semi-outdoor activities as well as dining space for pupils.

As for DKX TTC, which has an existing usable building for pre-primary demonstration school, only the missing rooms are provided by the Project, in order to make it function as a whole.

¹⁵ “Standards for facilities and operation of childcare facilities” of Japan was referenced because there is no relevant standards in the Lao PDR. N1: room for baby 1.65m²/pupil, N2: room for crawling 3.3m²/pupil, N3: room for young children 1.98m²/pupil. Required area for 10 pupils per grade (30 pupils in total) = 69.3m².

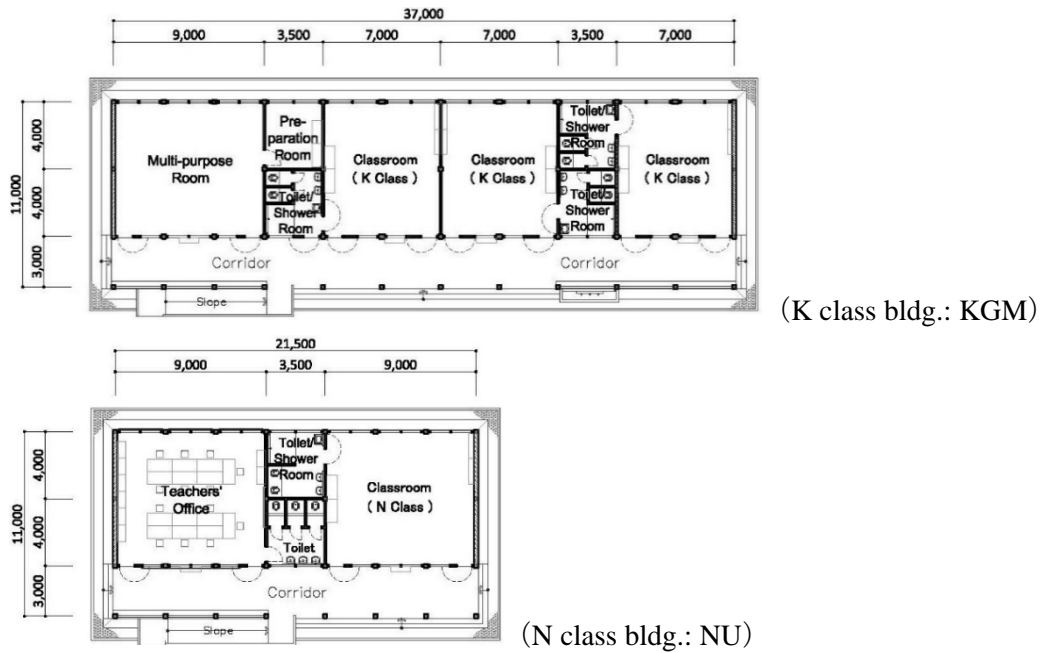


Figure 2-2 Pre-primary Demonstration School Floor Plan

② Primary Demonstration School Building

Primary demonstration school buildings consist of 5 classrooms (4 ordinary classrooms at 56m² (8m x 7m) and 1 large classroom at 72m² (8m x 9m)) which respond to 5 grades in primary education, a multi-purpose room which enables simple experimental exercises, a reading room, a first-aid room, a teachers' office, a teaching material room, and so on. The capacity of a classroom is 35 students (the floor area per student of an ordinary classroom = 1.6 m²). A movable partition is provided between two classrooms on the 2nd floor in order to have a larger space for lesson study and/or workshop for a large number of participants.

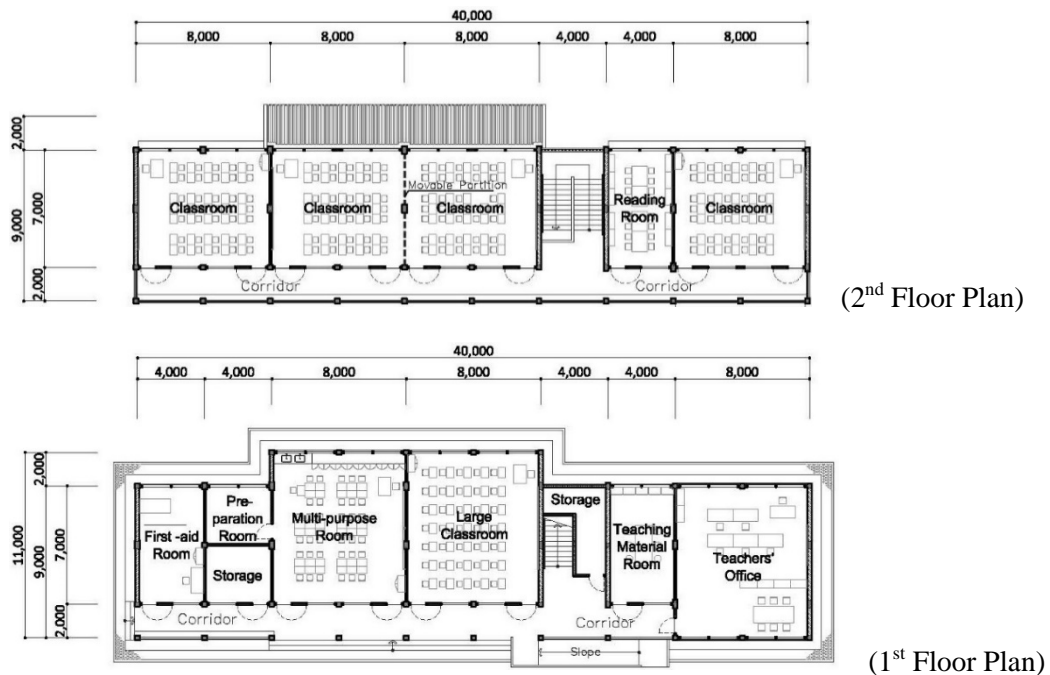


Figure 2-3 Primary Demonstration School Floor Plan

③ Secondary Demonstration School Building

Secondary demonstration school buildings consist of 7 classrooms (6 ordinary classrooms at 56m² (8m x 7m) and 1 large classroom at 72m² (8m x 9m)) which respond to 4 grades in lower secondary education and 3 grades in upper secondary education, a laboratory, a reading room, a teachers' office, a teaching material room and so on. The capacity of a classroom is 35 students (the floor area per student of an ordinary classroom = 1.6 m²). The same as primary demonstration school, a movable partition is provided between two classrooms on the 2nd floor.

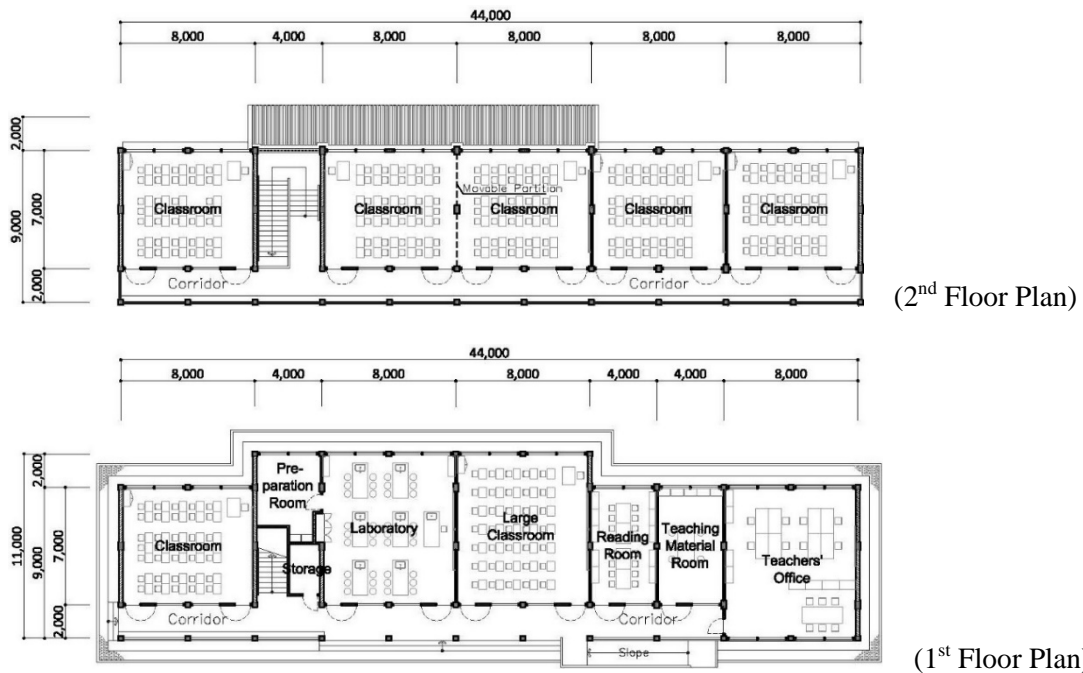


Figure 2-4 Secondary Demonstration School Floor Plan

④ Toilet Building for Demonstration School

Toilet buildings for demonstration schools have a wheelchair accessible toilet per gender, referring to the conceptual drawings prepared by ECDM. The number of booths is determined in line with School Construction Guideline of MOES (one booth per 45 students).

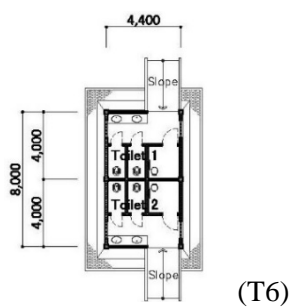


Figure 2-5 Toilet Building for Demo. School Floor Plan

2) TTC Facilities

① TTC Classroom Building

In connection with the construction of pre-primary demonstration school K class building at DKX TTC, one of the existing TTC classroom buildings needs to be demolished. Thus, a new TTC classroom building is to be provided by the Project as an alternative solution. The building consists

of 8 ordinary classrooms (56m² (8m x 7m)) and the capacity of a classroom is 35 students (the floor area per student of an ordinary classroom = 1.6 m²).



Figure 2-6 TTC Classroom Building (DKX TTC)

② TTC Students' Dormitory, Kitchen and Toilet/Shower Buildings

PKS TTC has urgent need for reconstruction of several unusable students' dormitories resulting from the age of the building. Thus, one students' dormitory building for each gender is to be provided for PKS TTC by the Project. A dormitory room accommodates 20 persons, and it is to be furnished with 10 sets of two bed bunks and individual lockers for 20 persons. A kitchen building and a toilet/shower building are also to be provided for each gender, as ancillary buildings of the students' dormitory.

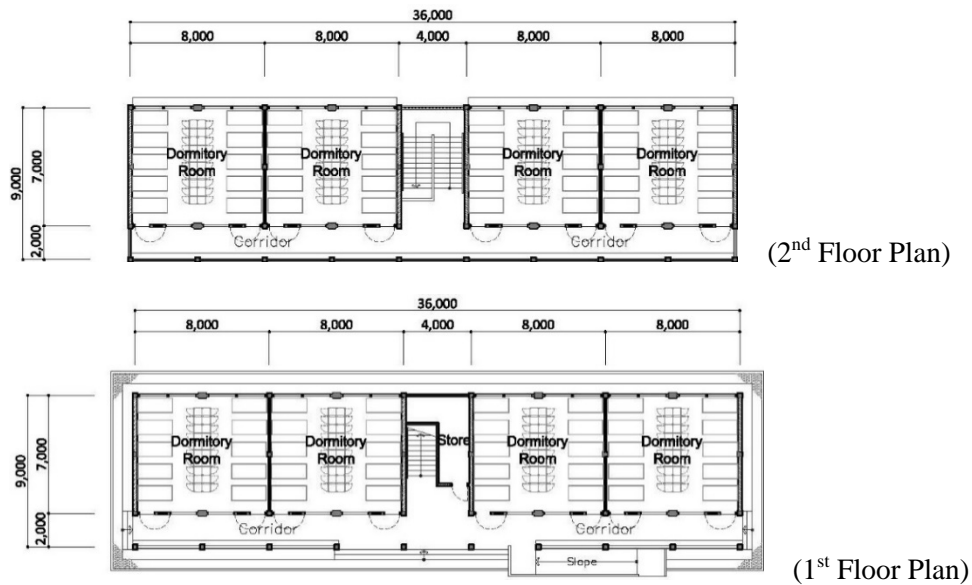


Figure 2-7 Students' Dormitory Building (PKS TTC)

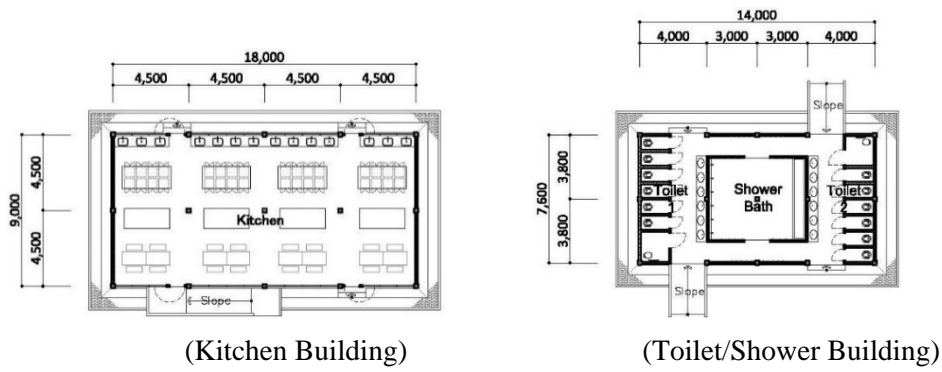


Figure 2-8 Students' Dormitory Ancillary Buildings Floor Plan (PKS TTC)

③ Toilet Building for TTC

Unusable toilet buildings resulting from building age, one building for LPB TTC and three buildings for SVK TTC, are to be reconstructed by the Project. Toilet buildings for TTC will also have one wheelchair accessible toilet per gender, referring to the conceptual drawings prepared by ECDM.

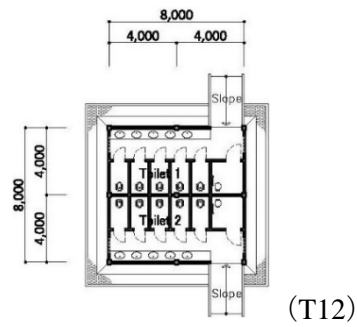


Figure 2-9 Toilet Building for TTC Floor Plan

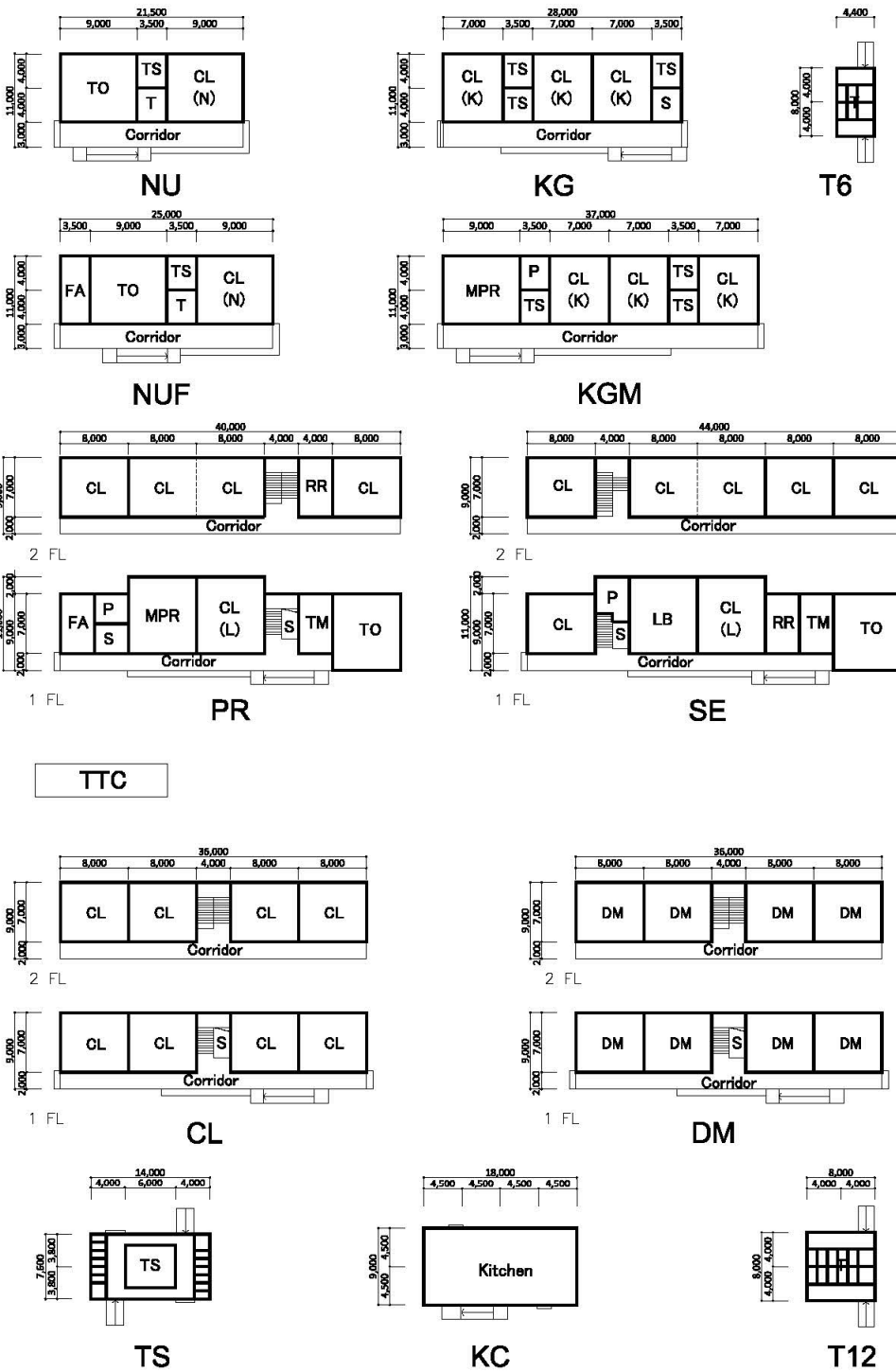
(2) Building Components

The building components planned for each site are summarized in the following “Summary of Building Components”, “Building Prototype” and “List of Building Components.”

Table 2-10 Summary of Building Components

	Demonstration School								Floor Area (m ²)	TTC					Floor Area (m ²)	Total Floor Area by Site (m ²)
	Pre-primary (N class)		Pre-primary (K class)		Primary		Secondary			TTC Classroom Bldg.		TTC Students' Dormitory				
	Classroom Bldg. (incl. toilet)	Classroom Bldg. (incl. toilet)	Classroom Bldg.	Toilet Bldg.	Classroom Bldg.	Toilet Bldg.	Classroom Bldg.	Toilet Bldg.		Classroom Bldg.	Toilet Bldg.	Dormitory Bldg.	Toilet Shower Bldg.	Kitchen Bldg.		
Prototype	NUF	NU	KGM	KG	PR	T6	SE	T6		CL	T12	DM	TS	KC		
Floor Area (m ²)	275.00	236.50	407.00	308.00	752.00	35.20	832.00	35.20	648.00	64.00	648.00	106.40	162.00			
LNT TTC		1	1		1	1	1	1	2,297.90						0.00	2,297.90
LPB TTC	1		1				1	1	1,549.20		1				64.00	1,613.20
KKY TTC		1	1		1	1	1	1	2,297.90						0.00	2,297.90
BKN TTC		1	1		1	1	1	1	2,297.90						0.00	2,297.90
DKX TTC				1	1	1	1	1	1,962.40	1					648.00	2,610.40
SVK TTC		1	1		1	1	1	1	2,297.90		3				192.00	2,489.90
SRV TTC	1		1				1	1	1,549.20						0.00	1,549.20
PKS TTC					1	1	1	1	1,654.40			2	2	2	1,832.80	3,487.20
									15,906.80						2,736.80	18,643.60

DEMONSTRATION SCHOOL



LEGEND

CL : Classroom	FA : First-aid Room	TM : Teaching Material Room
CL(L) : Large Classroom	LB : Laboratory	TO : Teachers' Office
CL(K) : Classroom for Kindergarten	MPR : Multi-purpose Room	S : Storage
CL(N) : Classroom for Nursery	P : Preparation Room	T : Toilet
DM : Dormitory	RR : Reading Room	TS : Toilet/ Shower Room

Figure 2-10 Building Prototype

(3) Elevation and Cross-section

The basic principles of designing the elevation and cross-section are as follows.

- Pre-primary demonstration school buildings are planned as single story buildings, considering easy access and safety for infants and pupils.
- Primary and secondary demonstration school buildings, TTC classroom buildings and TTC students' dormitory buildings are planned as two-story buildings, taking into account efficient utilization of the sites.
- The 1st floor level is set at 500mm above the ground level in order to prevent inundation when flooding.
- The ceiling height is at least 3.3m in line with MOES school construction guidelines.
- The hipped roof, which is common in the country, is adopted in view of aesthetic harmonization within the sites.
- In principle, the roof pitch is set as 5/10 (approximately 26.6 degrees) the same as the existing buildings of each TTC. However, only for LPB TTC, a roof pitch of 7.5/10 (approximately 36.9 degrees) is adopted in compliance with Luang Prabang Urban Regulations, which require the roof pitch within the designated area to be 35-45 degrees.

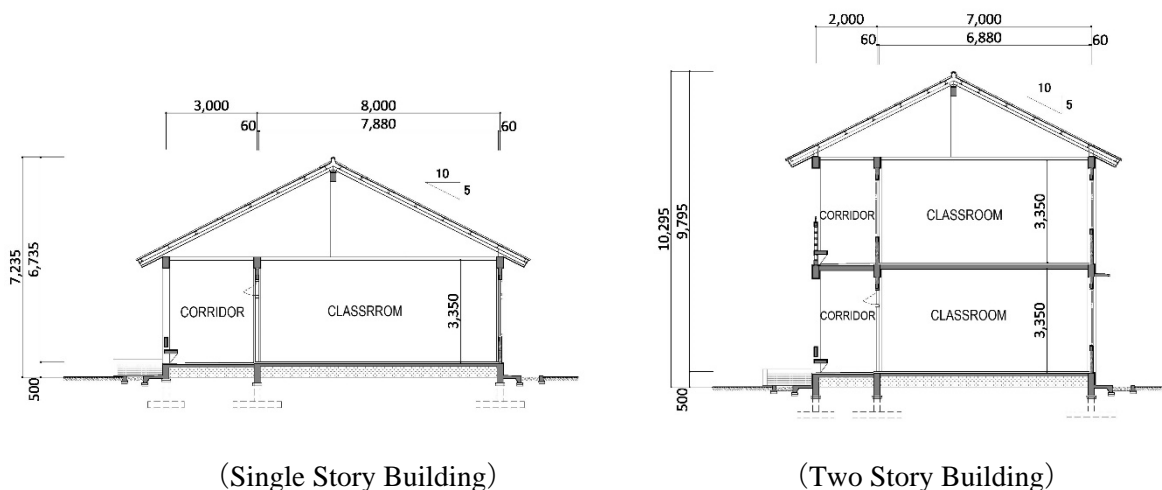


Figure 2-11 Cross Sections for Demonstration School Buildings

(4) Structural Plan

The basic principles of structural design are as follows.

- The northern part of the Lao PDR experiences some earthquakes, and a Magnitude 6.1 earthquake struck in the north-west part of the country, nearly on the border with Thailand, in November 2019. The structural calculation and design for this Project is examined considering the seismic force for the northern part of the country, in reference to the seismic hazard map of the Lao PDR. While the seismic calculations are analyzed based on the Building Standard Law of Japan, category III (factor=1.0) is adopted for the importance factor because there is no record of a huge earthquake involving serious damage to infrastructure or buildings.
- The foundations are designed according to the results of the soil investigations of each site.

However, only for KKY TTC and SRV TTC, where the investigations were conducted in December 2019 after confirmation of the UXO clearances, the proposed buildings are tentatively designed for an independent foundation system of bearing capacity 100kN/m², in reference to the design conditions of existing buildings, although this will be re-examined based on the actual results of soil investigations at the detailed design stage. The following table shows the design bearing capacity and foundation type of each site at this stage.

Table 2-12 Bearing Capacity and Foundation Type of Each Site

TTC	Bearing Capacity	Foundation Type	Remarks
LNT TTC	100kN/m ²	Independent Foundation	According to the soil investigation results
LPB TTC	200kN/m ²	Independent Foundation	According to the soil investigation results
KKY TTC	100kN/m ²	Independent Foundation	In reference to the existing building design conditions
BKN TTC	100kN/m ²	Independent Foundation	According to the soil investigation results
DKX TTC	80kN/m ²	Independent Foundation	According to the soil investigation results
SVK TTC	50kN/m ²	Strip Foundation	According to the soil investigation results
SRV TTC	100kN/m ²	Independent Foundation	In reference to the existing building design conditions
PKS TTC	100~200kN/m ²	Independent Foundation	According to the soil investigation results

- The wind load is set in reference to the relevant standards in Thailand; the wind speed is 30m/s and the wind velocity pressure is 800N/m².
- Reinforced concrete structure, which is common and easy even for local contractors in the regions, is adopted as the main building structure. The major materials for structural works are as follows.
 - Concrete : Design Strength $F_c=21\text{N/mm}^2$
Required Average Strength $F_c + \Delta F=27\text{N/mm}^2$
 - Reinforcing steel bar (D10-D20) : SD390
 - Structural Steel : SS400 (235N/mm²)
- The following design loads are adopted in accordance with the Building Standard Law of Japan.
 - Classroom : 2,300N/m²
 - Corridor, Staircase : 3,500N/m²
 - Students' dormitory : 1,800N/m²
- The roof structure is composed of posts and purlins of reinforced concrete and steel rafters.
- Bricks which are reasonably easy to procure in each region are to be used for walls.

(5) Electrical and Plumbing Installation Plan

While each TTC site has been connected to water supply and electrical power, the existing water/electrical system in each site is complicated and partially confused. Thus, the new buildings provided by the Project are to have new connections to water supply and electricity, separate from the existing systems. However, only in the case of reconstruction of TTC toilet buildings, the new buildings will be connected to the existing water supply systems.

Ceiling fans will be installed at each classroom at demonstration schools and TTC classroom buildings in principle, while the classrooms at pre-primary demonstration schools of TTCs in the

southern provinces will be furnished with air-conditioning systems. The multi-purpose rooms, laboratories, administration rooms and first-aid rooms at all 8 TTCs are also furnished with air-conditioning systems.

(6) Construction Materials

Although the previous project “the Project for Improving Secondary School Environment in the Southern and Central Provinces” adopted metal roofing sheet as the roof material, this Project adopts non-asbestos fiber cement sheet in view of aesthetic harmonization within the sites where the various existing buildings are located. The following table shows the comparison of construction materials adopted for typical schools in the Lao PDR, the previous project and this Project.

Table 2-13 Comparison of Construction Materials

Position		Typical school in the Lao PDR	Previous Project	This Project	Remarks
Main Structure	Foundation	Reinforced concrete independent footing	Same as on the left	Same as on the left	Conforming to local standards
	Floor	Reinforced concrete (Dirt slab)	Same as on the left	Same as on the left	Conforming to local standards
	Column Beam	Reinforced concrete	Same as on the left	Same as on the left	Conforming to local standards
	Wall	Brick masonry	Same as on the left	Same as on the left	Conforming to local standards
	Roof	Reinforced concrete post + wooden purlin & rafter	Steel truss	Reinforced concrete post & purlin + steel rafter	Conforming to local standards
Exterior Finish	Roof	Non-asbestos fiber cement sheet or Corrugated color steel sheet	Alu-zinc coated steel sheet	Non-asbestos fiber cement sheet	Aesthetic harmonization
	Wall	Paint finish on mortar	Same as on the left	Same as on the left	Conforming to local standards
	Door/ Window	Wooden door and window	Same as on the left	Wooden door Aluminum window	Improvement in durability
	Floor	Mortar steel trowel finish	Tile on mortar	Same as on the left	Improvement in durability
Interior Finish	Ceiling	No ceiling or Smart board with wooden backing	Plaster board with paint finish on aluminum backing	Same as on the left	Improvement in durability
	Wall	Paint finish on mortar	Same as on the left	Same as on the left	Conforming to local standards
	Floor	Mortar steel trowel finish	Tile on mortar	Same as on the left	Improvement in durability

(7) External Work Plan

A fence around the premises of pre-primary demonstration schools is to be installed by the Project.

(8) Furniture and Other Fixtures Plan

1) Furniture and Blackboard

Furniture planned for demonstration school buildings and TTC classroom buildings are wooden

furniture which is very common in the Lao PDR. Although student's tables and chairs at primary and secondary education levels are for two students in general, MOES requested to provide individual table and chair for each student in demonstration schools for ease of frequent furniture arrangement taking into account activities such as lesson study and observation. Thus, individual student's tables and chairs are adopted for the Project.

As for blackboards, in principle, a factory-made product manufactured in a third country, which has good quality and durability will be adopted¹⁶. Two blackboards (w: 2,400 mm x h: 1,200 mm per unit) are installed side by side on a classroom wall.

Built-in shelf units for multi-purpose room, laboratory, preparation room and teaching material room are to be provided as a part of the construction works of the Project. Ordinary school furniture is to be provided under the Building Components, while the cabinets for equipment are included under the Equipment Components of the Project.

The following table summarizes the items and quantities of furniture and blackboards provided by the Project.

¹⁶ Recently, good-quality "made in Lao" blackboards consisting of parts and materials produced in a third country are also available.

Table 2-14 List of Furniture and Blackboard

Item	Size (mm)			Quantity per room								TTC		Quantity by TTC																				
	D	L	H	Pre-primary Demonstration School				Primary Demonstration School				Secondary Demonstration School				TTC CL Bldg.	TTC Dorm. Bldg.	Kitchen Bldg.	LNT TTC	LPB TTC	KKY TTC	BKN TTC	DKX TTC	SVK TTC	SRV TTC	PKS TTC	Total							
				Classroom (N class)	Classroom (K class)	Multi-purpose Room	Reading Room	First-aid Room	Teachers' Office	Classroom (lower grades)	Classroom (upper grades)	Large Classroom	Multi-purpose Room	Reading Room	First-aid Room													Teachers' Office	Teaching Material Room	Classroom	Large Classroom	Laboratory	Reading Room	Teachers' Office
ET Table for Pre-primary	500	600	400	* 5	15																					50	50	50	45	50	50	0	345	
ECS Chair for Pre-primary (Small)	270	220	430	* 10	15																					55	55	55	45	55	55	0	375	
EC-L Chair for Pre-primary (Large)	320	250	500		15																					45	45	45	45	45	45	0	315	
PD-S Table for Primary (Small)	450	600	560									35														105	0	105	105	105	105	0	630	
PD-L Table for Primary (Large)	450	600	650								35															105	0	105	105	105	105	0	630	
PC-S Chair for Primary (Small)	360	360	300								35															121	0	121	121	121	121	0	726	
PC-L Chair for Primary (Large)	360	360	360								35															245	245	245	245	245	245	0	2,240	
SD Table for Secondary and TTC	450	600	750																							35						2,240		
SC Chair for Secondary and TTC	410	410	420																							261	261	261	261	261	261	0	2,368	
TD-1 (single side drawers)	750	1,100	750																							13	7	13	13	21	13	7	100	
TD-2 (double sides drawers)	750	1,500	750																							29	23	29	29	15	29	23	15	192
TC Teacher's Chair	410	410	420																							57	39	57	57	51	57	39	43	400
CT Meeting Table	1,000	2,400	750																							4	2	4	4	4	4	2	4	28
PT Reading Table for Primary	900	1,200	650																							4	0	4	4	4	4	0	4	24
ST Reading Table for Secondary	900	1,200	750																							4	4	4	4	4	4	4	4	32
ES-1 Pre-primary Shelf for Bedding	600	1,400	1,550	2	2																					10	10	10	10	6	10	10	0	66
ES-2 Pre-primary Shelf for Lunch Box	300	1,500	800	2	2																					8	8	8	8	8	8	0	54	
ES-3 Pre-primary Shoe Locker	300	1,200	850	1	1																					6	6	6	6	3	6	6	0	39
CS Cabinet for Classroom	450	1,000	1,550																							14	8	14	14	22	14	8	14	108
TS Cabinet for Teachers' Office	500	1,000	1,550																							22	16	22	22	15	22	16	15	150
RS Cabinet for Reading Room	400	1,000	1,550																							20	10	20	20	20	20	10	20	140
LD Laboratory Table	900	1,800	750																							7	7	7	7	7	7	7	7	96
LC Laboratory Chair	330	330	420																							48	42	48	48	48	48	42	48	372
BD-1 Bed	900	2,100	800																							1	1	1	1	1	1	1	1	8
BD-2 Two Bed Bunks	900	2,100	1,850																							10	0	0	0	0	0	0	0	160
DS Locker for Dormitory	500	1,000	2,000																							10	0	0	0	0	0	0	0	160
FP Partition for First-aid	700	1,800																								1	1	1	1	1	1	1	1	8
KT Kitchen Table	900	900	750																							8	0	0	0	0	0	0	0	16
KB Kitchen Bench	900	410	420																							16	0	0	0	0	0	0	0	32
BB Blackboard	60	2,400	1,200																							2	2	2	2	2	2	2	2	32
Total				20	52	3	2	5	38	75	75	75	75	30	5	27	7	75	75	47	30	35	7	2	2	1,382	868	1,382	1,382	1,919	1,382	868	1,531	10,714

<Notes> *: Furniture for N class is planned only for N-3 class (10 pupils).

Unit: Pcs

2) Sign (Pictogram)

In consideration of inclusive education, pictogram signs are to be installed for the toilets and ramps.

3) Project Plaque, etc.

A Project plaque is to be installed on the corridor wall of pre-primary demonstration school buildings, primary demonstration school buildings, secondary demonstration school buildings, TTC classroom buildings and TTC students' dormitory buildings of each TTC. Furthermore, a sticker with a Japanese flag is attached to each item of furniture procured by the Project.

2-2-2-3 Equipment Plan

(1) Examination of Requested Equipment

In considering the equipment planned to be procured by this Project, the items are carefully examined as per the basic policies on equipment planning mentioned above. As for the equipment for demonstration schools in particular, the items are classified into A: Priority No.1, B: Priority No.2, C: Priority No.3, D: Not to be covered by the Project, E: To be covered by the Lao PDR side, based upon the following criteria. (Also refer to Appendix 5-3)

《Selection Criteria for Demonstration School Equipment》

- ① Necessary for curriculum
- ② Available space for usage, installation and/or storage
- ③ Easy maintenance (Unavailable consumables are not required)
- ④ Easy handling (Special skill is not required)
- ⑤ High frequency of use
- ⑥ Easy procurement
- ⑦ No substitutability by other equipment
- ⑧ Not consumable
- ⑨ Not furniture nor facility

(2) Planned Equipment

As the result of the examination mentioned above, the planned equipment covered by the Project is listed as shown below. A sticker with a Japanese flag is attached to each equipment item procured by the Project.

Table 2-15 Equipment List

Item No.	Equipment	Planned Quantity per School	
Preprimary Demonstration School			
1	Pre-1	Gymnastic mat	4
2	Pre-2	Tunnel for child play	2
3	Pre-3	Slide slope, reinforced plastic made	1
4	Pre-4	Large soft building block set	1
5	Pre-5	Large cushion ball	2
6	Pre-6	Hula hoop	5

Item No.		Equipment	Planned Quantity per School
7	Pre-7	Indoor hollow blocks	3
8	Pre-8	Cage or low partition for kids	2
9	Pre-9	Building block, wood or plastic	3
10	Pre-10	Dinner set	5
11	Pre-11	Plush animals, three types	5
12	Pre-12	Wood blocks puzzle	5
13	Pre-13	Doll, girls	5
14	Pre-14	Doll, boys	1
15	Pre-15	CD player/recorder	1
16	Pre-16	Electric piano	3
17	Pre-17	Drum	3
18	Pre-18	JIGSAW	3
19	Pre-19	Abacus	3
20	Pre-20	Soft Plastic Balls	15
21	Pre-21	Speaker, mixer and microphone	1
22	Pre-22	Poster for English Alphabet	1
23	Pre-23	Magnifying glass, small	5
24	Pre-24	Watch Model	3
25	Pre-25	Height measurement instrument	1
26	Pre-26	Weight measurement instrument	1
Primary Demonstration School			
1	PriLao-1	English Alphabet card	1
2	PriLao-3	CD player/recorder	1
3	PriLao-4	Poster for English Alphabet	1
4	PriLao-5	English Consonants Poster	1
5	PriLao-6	Animal Dictionary Poster	1
6	PriLao-7	Kitchen Implementary Poster	1
7	PriLao-8	Fruit Dictionary Poster	1
8	PriLao-9	Body Dictionary Poster	1
9	PriLao-10	Tree Dictionary Poster/card	1
10	PriSSS-1	Binocular stereomicroscope	3
11	PriSSS-2	Volume learning set	1
12	PriSSS-3	The solar system planet model	1
13	PriSSS-4	Plant card/poster	1
14	PriSSS-5	Animal card/poster	1
15	PriSSS-6	Insect card/poster	1
16	PriSSS-7	Astronomical telescope	1
17	PriSSS-8	Projector with Screen	1
18	PriSSS-9	Balance scale, 200gram weight set	2
19	PriSSS-10	Enlarger Magnifying lens, 3x, Approx. ϕ 60mm	15
20	PriSSS-11	Compass	5
21	PriSSS-12	Human body poster	1
22	PriSSS-13	Body Model	1
23	PriSSS-14	Heart Model	1
24	PriSSS-15	Bonne Model	1
25	PriSSS-16	Muscle Model	1
26	PriSSS-20	Globe	5
27	PriSSS-21	World map	5
28	PriSSS-22	World Flag poster	5
29	PriMat-1	Teacher's triangle 60/30/90 degree for magnetic board use, plastic or wood, with a grip handle	3
30	PriMat-2	Teacher's triangle, 45/45/90 degree for magnetic board use, plastic or wood, with a grip handle	3
31	PriMat-3	Teacher's magnetic protractor with a handle, more than 30cm	3
32	PriMat-4	Teacher's chalk board compass	3
33	PriMat-5	Magnetic straight ruler, plastic or wood, more than 60cm	3
34	PriMat-6	Solid model (Cube, Cylindrical shape, Rectangular shape, Triangular prism, Sphere)	1
35	PriMat-7	Big dice set (ivory color or other, 6pcs/set)	1
36	PriMat-8	Watch model, plastic, clock needles can move freely by hand	1
37	PriMat-9	Abacus	1

Item No.		Equipment	Planned Quantity per School
38	PriMat-10	Volume Cube Demonstration Equipment, Equipment for measuring the volume of cube	1
39	PriMat-11	Volume Demonstration Equipment	1
40	PriMat-12	Volume and Cylinder Demonstration Equipment	1
41	PriMus-1	Electric piano	1
42	PriMus-2	Castanets	32
43	PriMus-3	Cymbal	7
44	PriMus-4	Drum	5
45	PriMus-5	CD player/recorder	1
46	PriMus-6	Cabinet for storage	3
47	PriAux-1	Teaching material development set	1
48	PriAux-2	Projector with Screen	1
49	PriAux-3	Desk top PC	2
50	PriAux-4	Printer	1
51	PriAux-5	School first aid kit	2
52	PriSpo-1	Ball for football	6
53	PriSpo-2	Badminton Racket 1 Pair with 1 Dozen of Balls shuttle	6
54	PriSpo-3	hand pump	1
Secondary Demonstration School			
1	SecCh-1	Chart on laboratory safety	1
2	SecCh-2	Chart on laboratory Techniques	1
3	SecCh-3	Desciccator, approx. 8 inch diameter	1
4	SecCh-4	Water still	1
5	SecCh-5	Desiccator Vacuum, approx. 8 inch diameter	1
6	SecCh-6	pH meter	1
7	SecCh-7	Molecular Models	1
8	SecCh-8	Periodic table of the elements	1
9	SecCh-9	Electrolysis	1
10	SecCh-10	Electric conductivity apparatus	1
11	SecCh-11	Triangular prism	1
12	SecCh-12	Micro-voltmeter	1
13	SecCh-13	Kipp apparatus, 500mL	1
14	SecCh-14	Hygrometer	1
15	SecCh-15	Digital thermometer	1
16	SecCh-16	Lab refrigerator	1
17	SecCh-17	Laboratory Safety Gloves	2
18	SecCh-18	Desk top PC	1
19	SecCh-19	Projector with Screen	1
20	SecCh-20	Glass set	2
21	SecCh-21	Burner Alcohol	6
22	SecCh-22	Spoons	6
23	SecCh-23	Gown	35
24	SecCh-24	Safety Goggles	35
25	SecCh-25	Electrolysis process	6
26	SecCh-26	PP Filter Funnel Plastic 80 mm	6
27	SecCh-27	Evaporating porcelain, 75 mm	6
28	SecCh-28	Evaporating porcelain, 100 mm	6
29	SecCh-29	Triple beam balance	6
30	SecCh-30	Hand Centrifuge	6
31	SecCh-31	Stand	6
32	SecCh-32	Burette clamp	6
33	SecCh-33	Mortar and pestle, 130 mm	6
34	SecCh-34	Test Tube Rack Stainless	6
35	SecCh-35	Test Tube Rack Plastic	6
36	SecCh-36	Wind Shield	6
37	SecCh-37	Thermometer Mercury 0-100°C	6
38	SecPhy-1	Whims Hurst	1
39	SecPhy-2	AC/DC voltage transformer	1
40	SecPhy-3	Boyle's Law	1
41	SecPhy-4	Electroscope	1
42	SecPhy-5	DC amplifier	1

Item No.	Equipment	Planned Quantity per School	
43	SecPhy-6	Electromagnet	1
44	SecPhy-7	Bulb holder 2.2 & 6.2 V	1
45	SecPhy-8	Electric field demonstration	1
46	SecPhy-9	Electromagnetic kit	1
47	SecPhy-10	Light Box	1
48	SecPhy-11	Force moment disc	1
49	SecPhy-12	Kinetics model apparatus	1
50	SecPhy-13	Tangential escape apparatus	1
51	SecPhy-14	Motor Controller Apparatus	1
52	SecPhy-15	Spectroscope	1
53	SecPhy-16	Standing wave of sand (Standing wave demonstration)	1
54	SecPhy-17	Surface tension measurement	1
55	SecPhy-18	Newton meter	1
56	SecPhy-19	The solar system planet model	1
57	SecPhy-20	Photo resistance and coupler unit	1
58	SecPhy-22	Star movement model	1
59	SecPhy-23	Moon movement model	1
60	SecPhy-24	Desk top PC	1
61	SecPhy-25	Demonstration Dynamo Model/set	1
62	SecPhy-26	Triangular Prism 25cm	1
63	SecPhy-27	Galvanometer Demonstration	1
64	SecPhy-28	Optical Bench Demonstration, 1 meter Length, 6-8V	1
65	SecPhy-29	Projectile Apparatus	1
66	SecPhy-30	Regulated Power Supply AC/DC	1
67	SecPhy-31	Elastic Potential Energy	1
68	SecPhy-32	Dynamo Demonstration Set	1
69	SecPhy-33	Demonstration of Ohm's Law	1
70	SecPhy-34	Magnetic Field Demonstration	1
71	SecPhy-35	Short Circuit Demonstration	1
72	SecPhy-36	Voltmeter	6
73	SecPhy-37	Ampere meter	6
74	SecPhy-38	Multimeter	6
75	SecPhy-39	Thermometer	6
76	SecPhy-40	Burner Alcohol	6
77	SecPhy-41	Concave Lens Magnifying Glass	6
78	SecPhy-42	Convex Lens Magnifying Glass	6
79	SecPhy-43	Lens set (6pcs/set)	6
80	SecPhy-44	Solar Cells Kit	6
81	SecPhy-45	Solar cell	6
82	SecPhy-46	Runway	6
83	SecPhy-47	Weight	6
84	SecPhy-48	Battery holder	6
85	SecPhy-49	One way switch	6
86	SecPhy-50	Two way switch	6
87	SecPhy-51	Resistance	6
88	SecPhy-52	Manometer	6
89	SecPhy-53	Dynamic Cart	6
90	SecPhy-54	Laser Diodes Demonstration	6
91	SecPhy-55	Force Table	6
92	SecPhy-56	Calorimeter	6
93	SecPhy-57	Low Voltage Generator Power Supply	6
94	SecBio-1	Monocular Microscope (x 600)	1
95	SecBio-2	Binocular stereomicroscope	1
96	SecBio-3	Slide glass	12
97	SecBio-4	Cover glass, 18 x 18 (preparat) (100 sheets/box)	12
98	SecBio-5	Cover slides, 20 x 120 (preparat) (100 sheets/box)	12
99	SecBio-6	Box/ container for slides	1
100	SecBio-7	Dental model	1
101	SecBio-8	Skin model	1
102	SecBio-9	Urinary system (male and female)	1
103	SecBio-10	Dicotyledon model	1

Item No.	Equipment	Planned Quantity per School	
104	SecBio-11	Mitosis cell division	1
105	SecBio-12	Meiosis Cell Division	1
106	SecBio-13	Monocotyledon/Liliopsida Model	1
107	SecBio-14	Bonne Model	1
108	SecBio-15	Skull, Human S	1
109	SecBio-16	1/10 Head model	1
110	SecBio-17	C.15 Model of brain	1
111	SecBio-18	E.10 Ear model	1
112	SecBio-19	F.10 Eye model	1
113	SecBio-20	Heart Model	1
114	SecBio-21	Kidney model	1
115	SecBio-22	Blastulation of frog	1
116	SecBio-23	Photosynthesis apparatus	1
117	SecBio-24	Tripod	1
118	SecBio-25	Poster of food chain	1
119	SecBio-26	Human Torso with interchangeable sex organ	1
120	SecBio-27	Typical plant cell, code: BM0202	1
121	SecBio-28	Animal Cell, Code: BM206	1
122	SecBio-29	Cell of plant slide	1
123	SecBio-30	Plant tissue slide	1
124	SecBio-31	Respiration apparatus	1
125	SecBio-32	Storage Bottle 75cc (one dozen)	12
126	SecBio-33	Storage Bottle 750cc (one dozen)	12
127	SecBio-34	Tissue Culture Bottle, with a plastic screw cap, 200 mL (one dozen)	12
128	SecBio-35	Tissue Culture Bottle, with a plastic screw cap, 500 mL (one dozen)	12
129	SecBio-36	Leaves collection Plate	12
130	SecBio-37	Measuring Tape 50 meters	6
131	SecBio-38	Color Chart	6
132	SecBio-39	Balance scale, 200gram weight set	6
133	SecBio-40	Insect net Aluminum Handle	6
134	SecBio-41	Aquarium Net	12
135	SecBio-42	Monocular Microscope (x 600)	6
136	SecBio-43	Binocular stereomicroscope	6
137	SecBio-44	Basket for test tube	4
138	SecBio-45	Stand for test tube	4
139	SecMis-3	English Consonants Poster	3
140	SecMis-4	Animal Dictionary Poster	3
141	SecMis-5	Kitchen Implementary Poster	3
142	SecMis-6	Fruit Dictionary Poster	3
143	SecMis-7	Human body poster	3
144	SecMis-8	Tree Dictionary Poster	3
145	SecMis-9	Electric piano	1
146	SecMis-10	Metronome	2
147	SecMis-11	CD player/recorder	1
148	SecMis-12	Drum	2
149	SecMis-13	Guitar	2
150	SecMis-15	Dual Side Drum (wood)	2
151	SecMis-16	Maracas/Tambourine	5
152	SecMis-18	Balls of Volley Ball	5
153	SecMis-19	Ball for football	5
154	SecMis-20	Standard Net of Football	1
155	SecMis-21	Standard Net of Volley Ball	3
156	SecMis-22	Skipping Jumping Rope	8
157	SecMis-23	Stopwatch	5
158	SecMis-24	Badminton Racket 1 Pair with 1 Dozen of Balls shuttle	5
160	SecMis-25	Net of Badminton	2
161	SecMis-26	Whistle	3
162	SecMis-27	Human body poster	3
163	SecMis-28	Height measurement instrument	1
164	SecMis-29	Weight measurement instrument	1
165	SecMis-30	Grip force meter	2

Item No.		Equipment	Planned Quantity per School
166	SecMis-31	Measuring Tape 50 meters	2
167	SecMis-32	School first aid kit	1
168	SecMis-33	Desk top PC	7
169	SecMis-34	Printer	2
170	SecMis-35	Projector with Screen	1
171	SecMis-36	Cabinet for storage	11
TTC			
1	TTC-1	Cabinet for storage	9

(3) Operation and Maintenance Plan

Most of the planned equipment for the Project has a simple structure and low frequency for repair, however, the items require basic routine maintenance for durable use. Therefore, the basic instruction on operation and maintenance is to be provided by the supplier upon the installation of equipment.

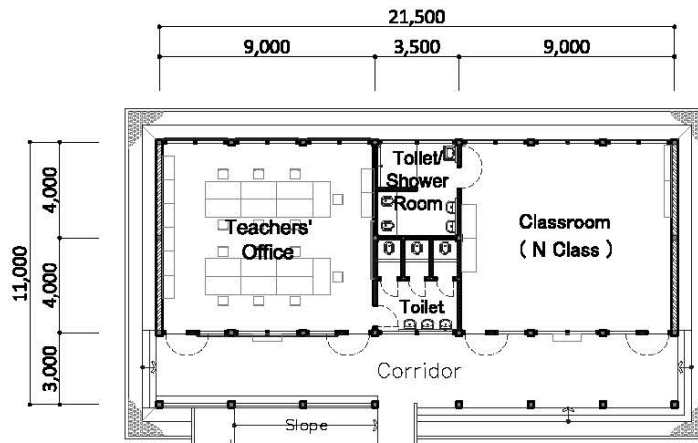
2-2-3 Outline Design Drawings

The outline design drawings for the Project are listed below.

Table 2-16 List of Outline Design Drawings

Bldg. ID	Building Name	Type of Drawings	Page
Demonstration School			
NU	Pre-primary demonstration school N class building	Plan, Elevation, Section	2-42
NUF	Pre-primary demonstration school N class building (with First Aid room)	Plan, Elevation, Section	2-43
KGM	Pre-primary demonstration school K class building	Plan, Elevation, Section	2-44
KG	Pre-primary demonstration school K class building (without Multi-purpose room)	Plan, Elevation, Section	2-45
PR	Primary demonstration school building	Plan	2-46
		Elevation, Section	2-47
SE	Secondary demonstration school building	Plan	2-48
		Elevation, Section	2-49
T6	Toilet building for demonstration school	Plan, Elevation, Section	2-50
TTC Facilities			
CL	TTC classroom building	Plan	2-51
		Elevation, Section	2-52
DM	TTC students' dormitory building	Plan	2-53
		Elevation, Section	2-54
KC	Kitchen building	Plan, Elevation, Section	2-55
TS	Toilet/shower building	Plan, Elevation, Section	2-56
T12	Toilet building for TTC	Plan, Elevation, Section	2-57

NU : PRE-PRIMARY DEMONSTRATION SCHOOL N CLASS BUILDING - 1 STORY BLDG. -



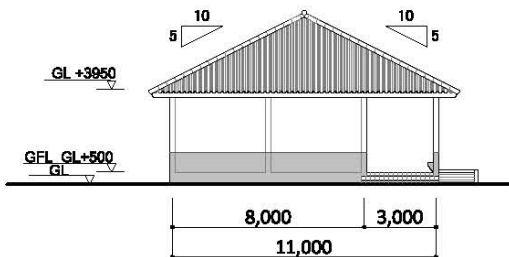
PLAN



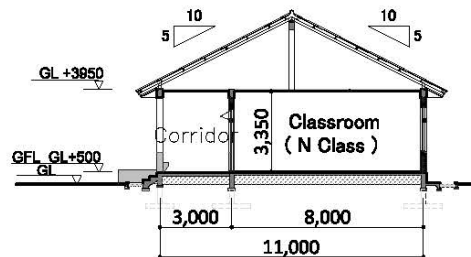
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ELEVATION (CLASSROOM SIDE)

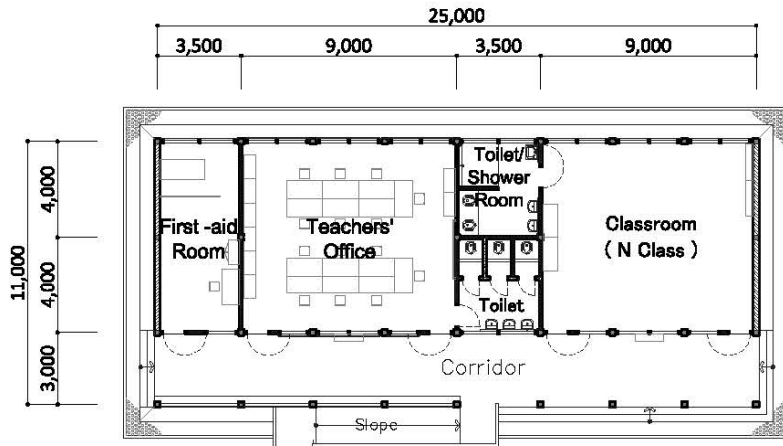


ELEVATION (GABLE WALL SIDE)

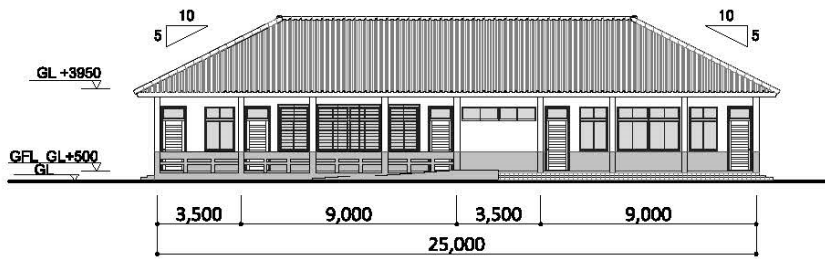


SECTION

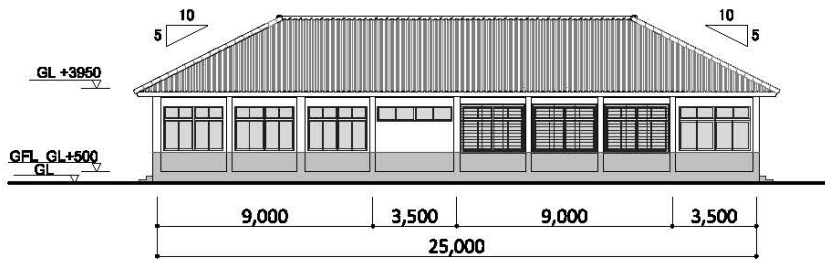
NUF : PRE-PRIMARY DEMONSTRATION SCHOOL N CLASS BUILDING - 1 STORY BLDG. -



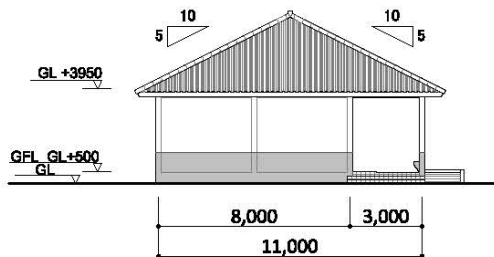
PLAN



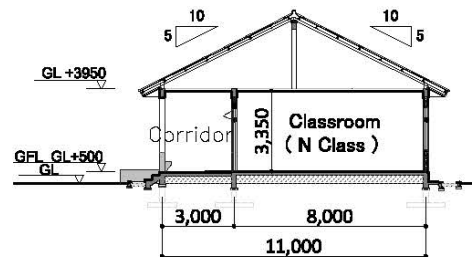
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ELEVATION (CLASSROOM SIDE)

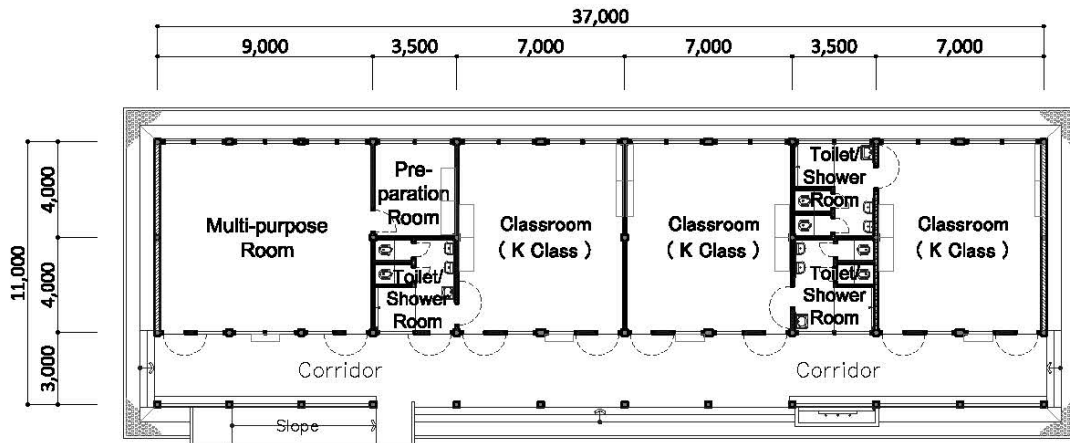


ELEVATION (GABLE WALL SIDE)

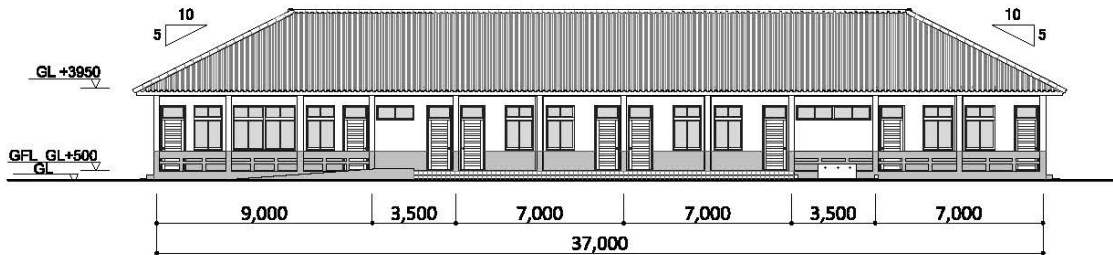


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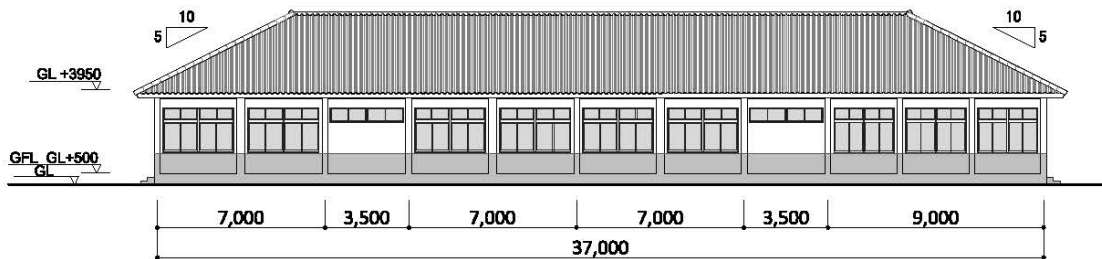
KGM : PRE-PRIMARY DEMONSTRATION SCHOOL K CLASS BUILDING - 1 STORY BLDG. -



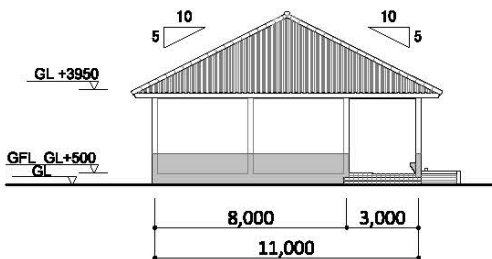
PLAN



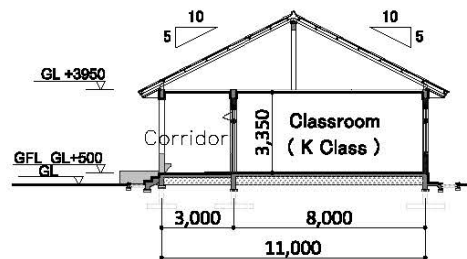
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ELEVATION (CLASSROOM SIDE)

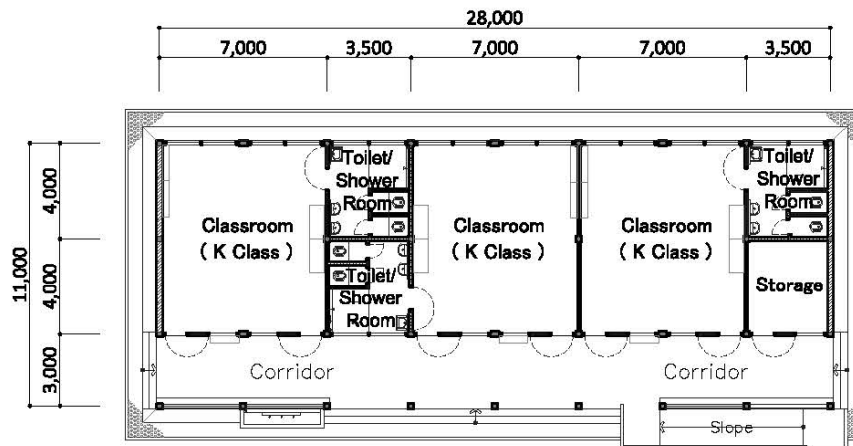


ELEVATION (GABLE WALL SIDE)

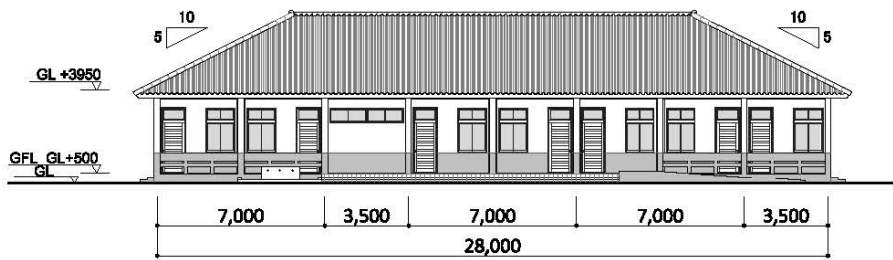


SECTION

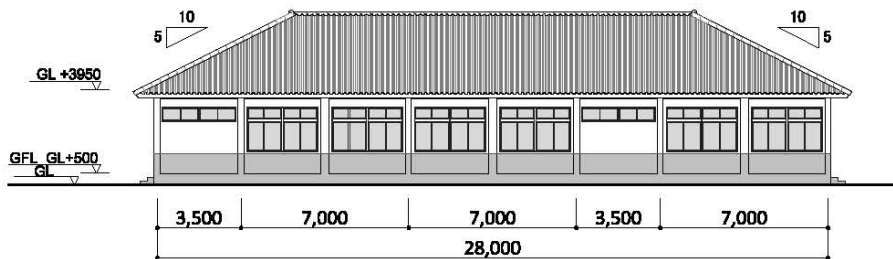
KG : PRE-PRIMARY DEMONSTRATION SCHOOL K CLASS BUILDING - 1 STORY BLDG. -



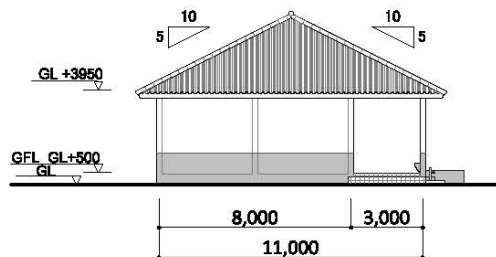
PLAN



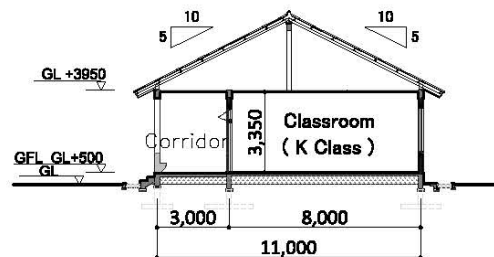
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ELEVATION (CLASSROOM SIDE)

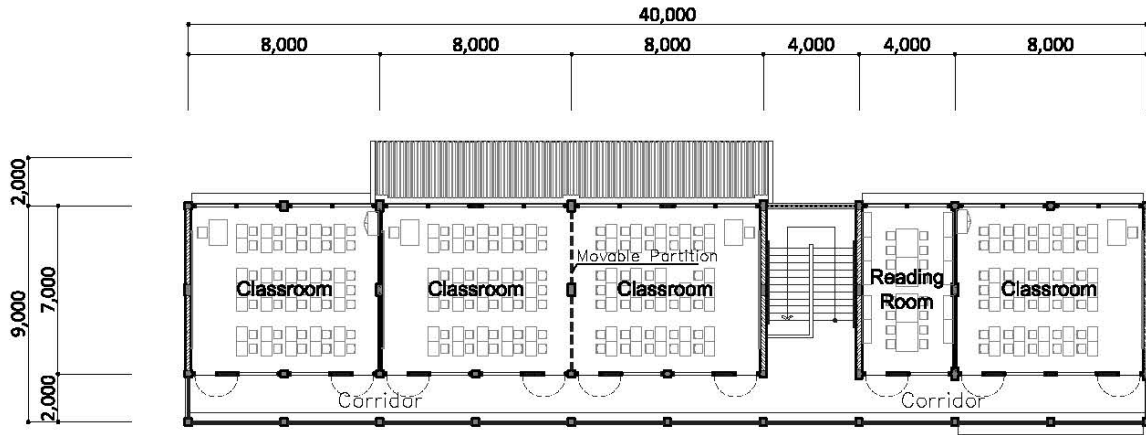


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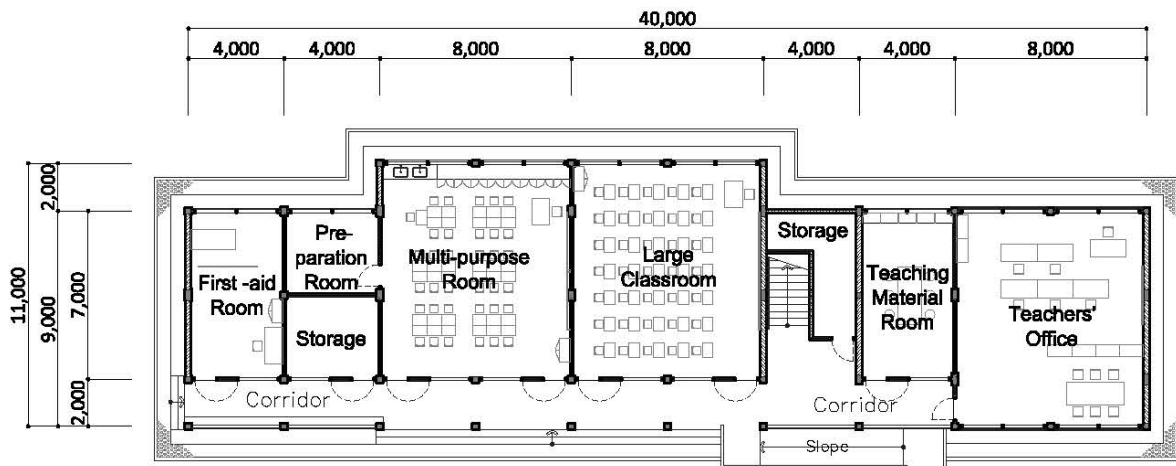


SECTION

PR : PRIMARY DEMONSTRATION SCHOOL BUILDING - 2 STORY BLDG. -



2ND FLOOR PLAN



1ST FLOOR PLAN

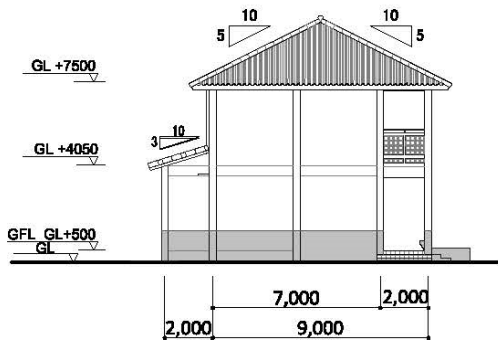
PR : PRIMARY DEMONSTRATION SCHOOL BUILDING - 2 STORY BLDG. -



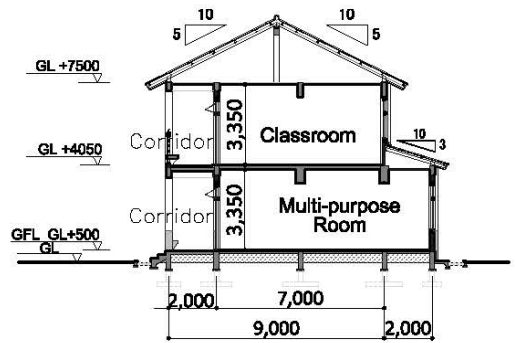
ELEVATION (CORRIDOR SIDE)



ELEVATION (CLASSROOM SIDE)

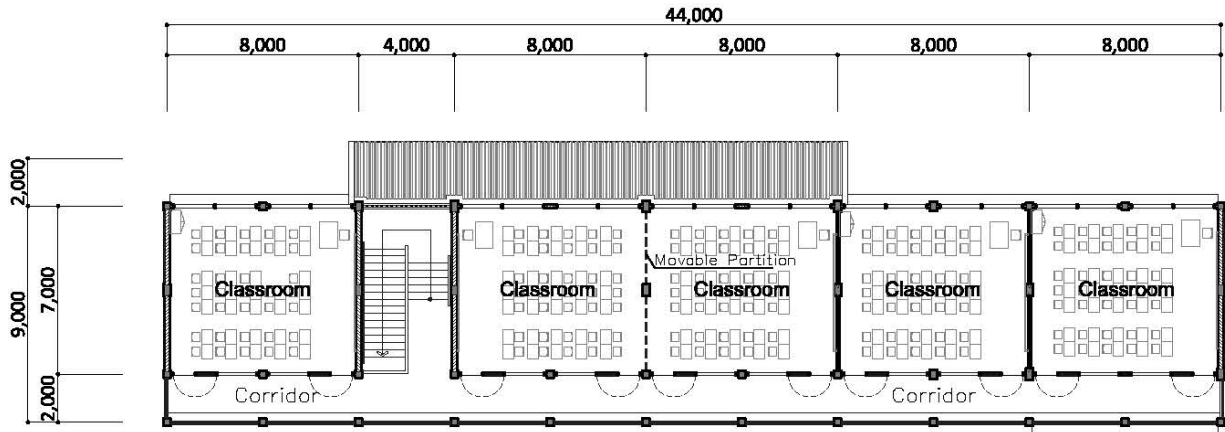


ELEVATION (GABLE END SIDE)

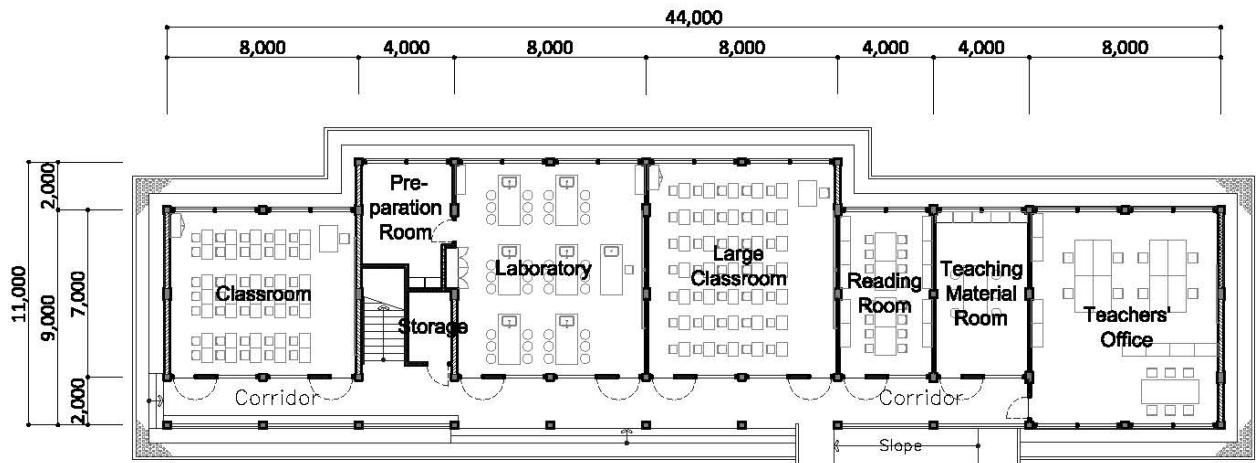


SECTION

SE : SECONDARY DEMONSTRATION SCHOOL BUILDING - 2 STORY BLDG. -

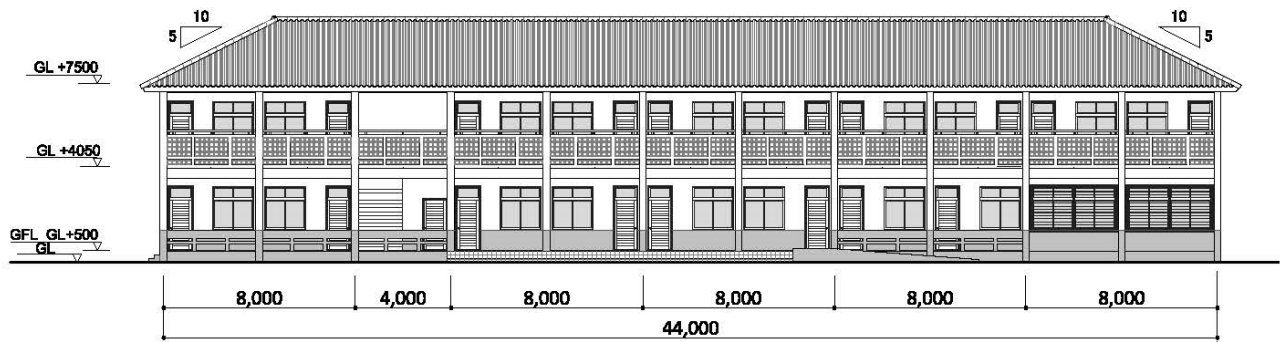


2ND FLOOR PLAN

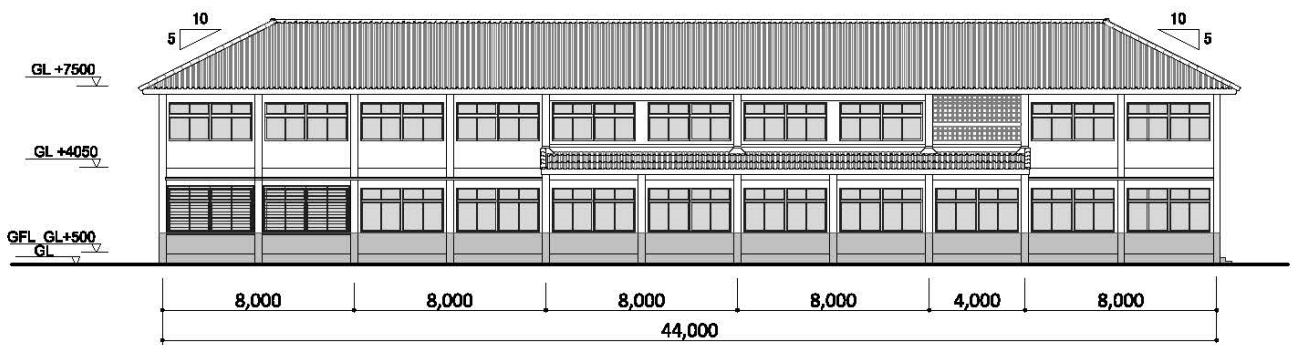


1ST FLOOR PLAN

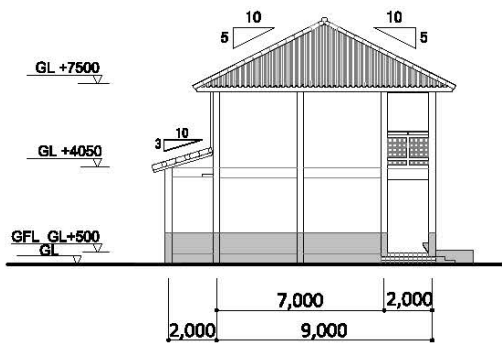
SE : SECONDARY DEMONSTRATION SCHOOL BUILDING - 2 STORY BLDG. -



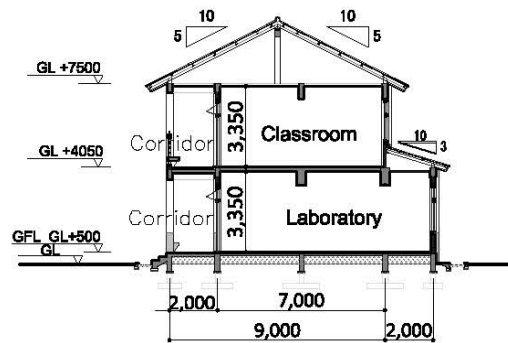
ELEVATION (CORRIDOR SIDE)



ELEVATION (CLASSROOM SIDE)

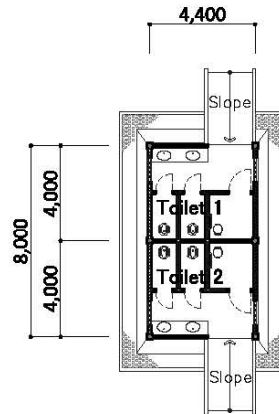


ELEVATION (GABLE END SIDE)

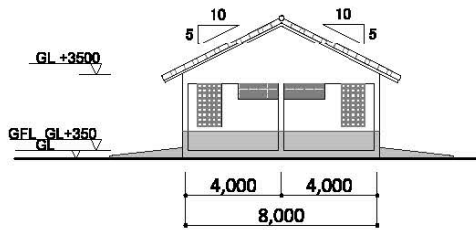


SECTION

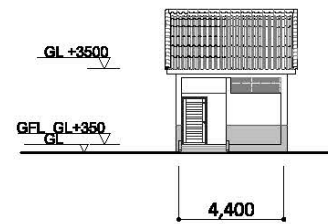
T6 : TOILET BUILDING FOR DEMONSTRATION SCHOOL - 1 STORY BLDG. -



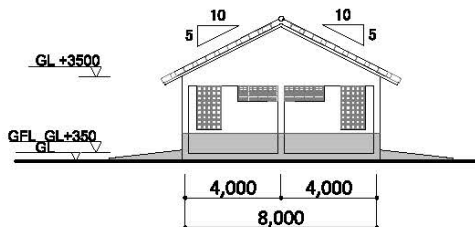
PLAN



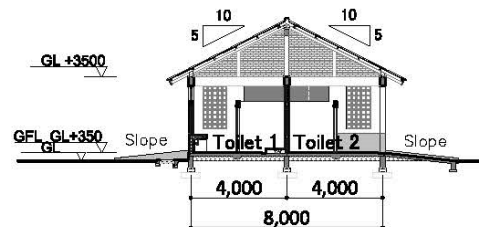
ELEVATION (GABLE WALL SIDE-1)



ELEVATION (APPROACH SIDE)

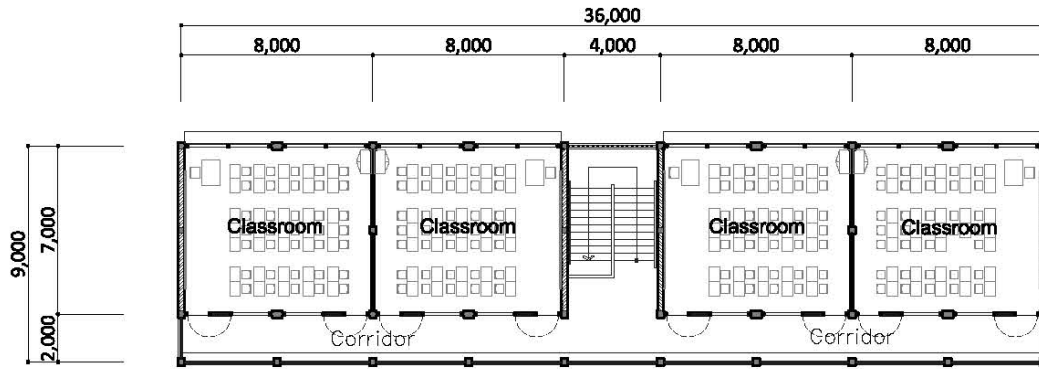


ELEVATION (GABLE WALL SIDE-2)

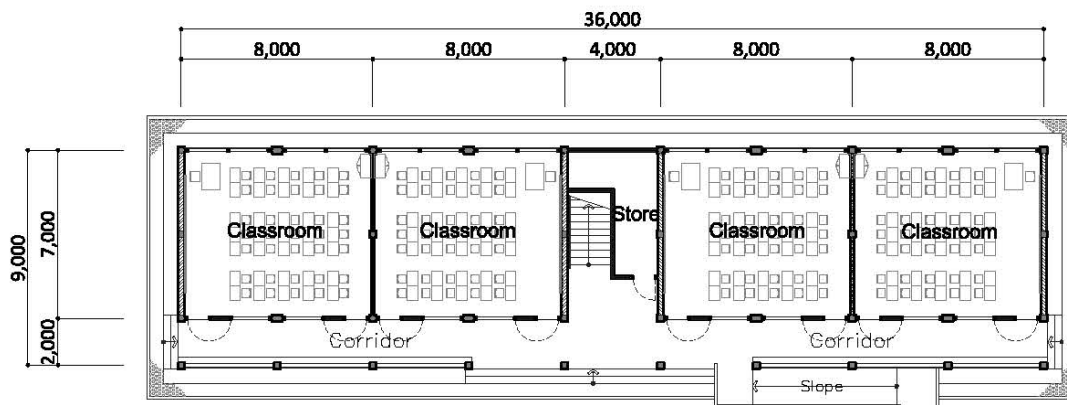


SECTION

CL : TTC CLASSROOM BUILDING - 2 STORY BLDG.-



2ND FLOOR PLAN

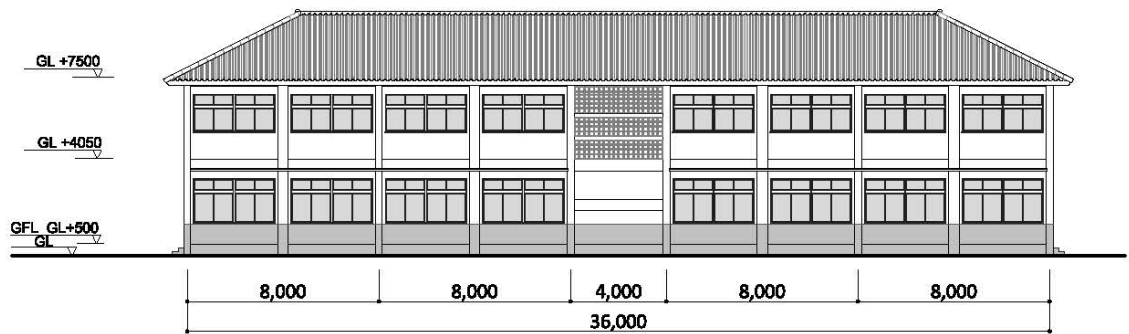


1ST FLOOR PLAN

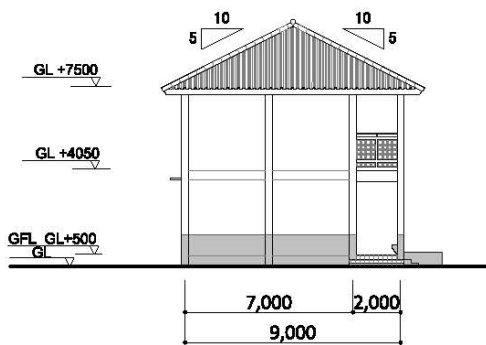
CL : TTC CLASSROOM BUILDING - 2 STORY BLDG.-



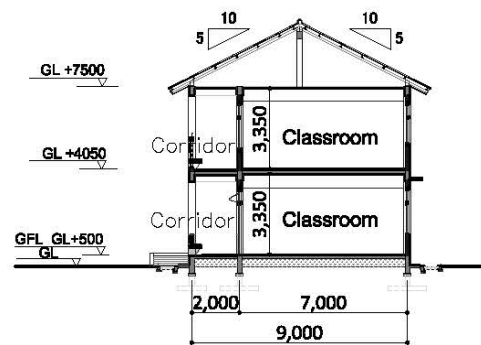
ELEVATION (CORRIDOR SIDE)



ELEVATION (CLASSROOM SIDE)

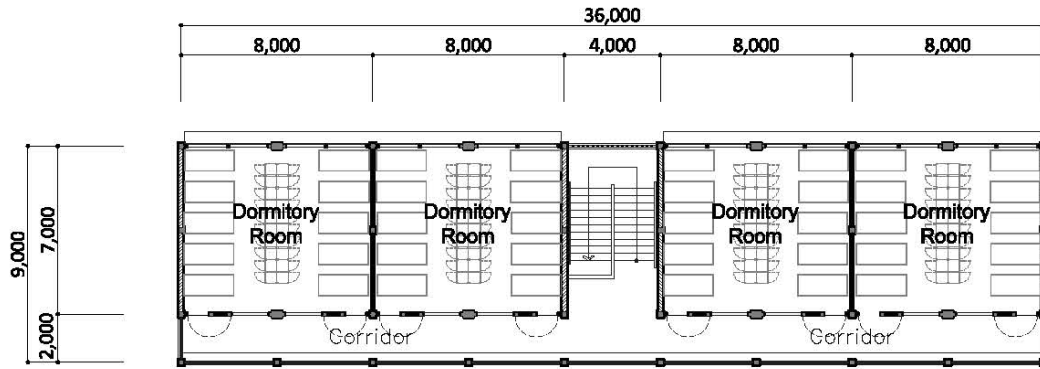


ELEVATION (GABLE END SIDE)

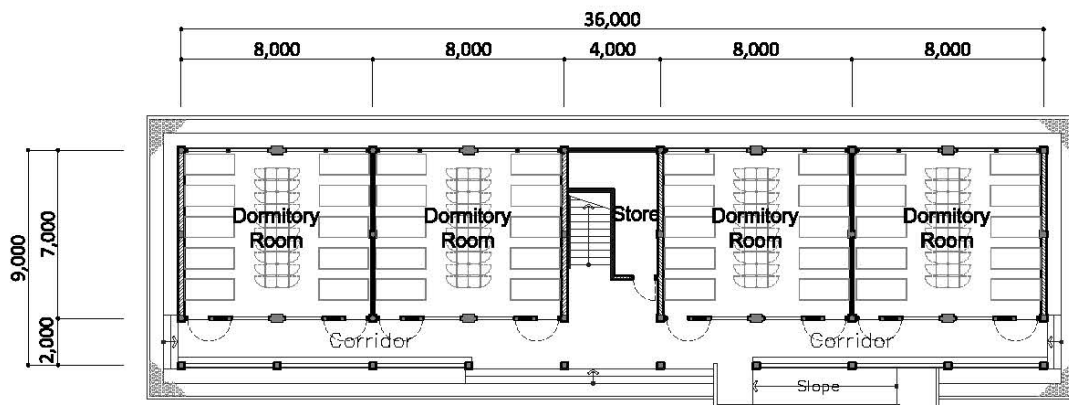


SECTION

DM : TTC STUDENTS' DORMITORY BUILDING - 2 STORY BLDG.-

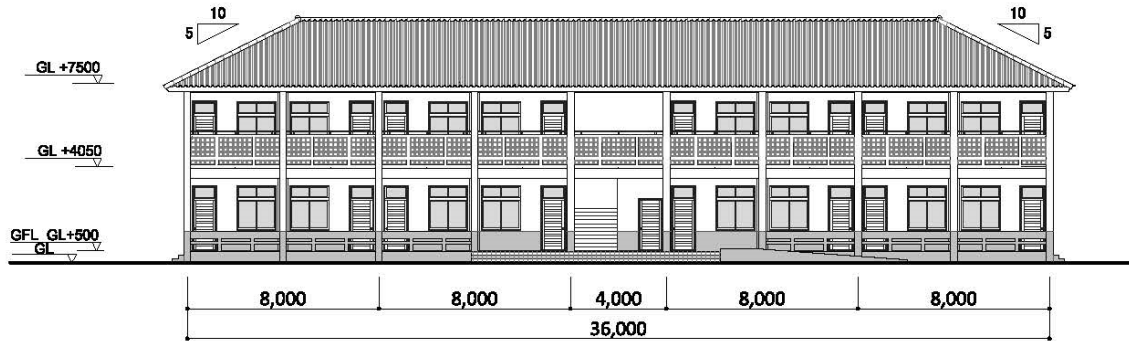


2ND FLOOR PLAN

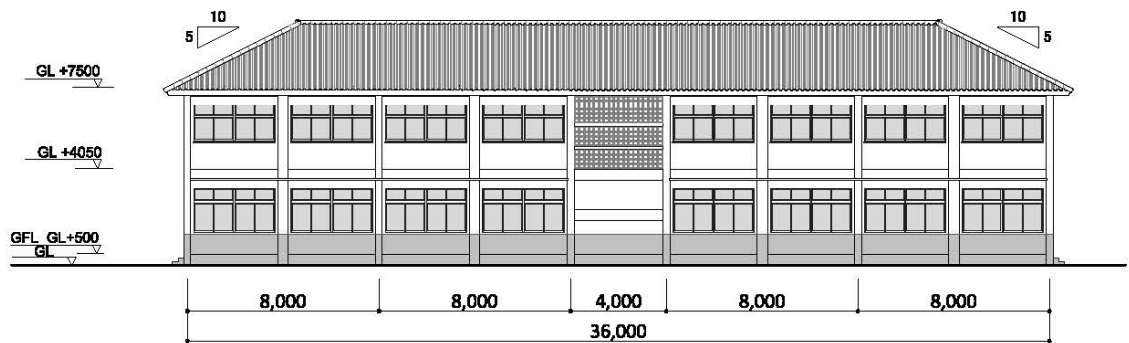


1ST FLOOR PLAN

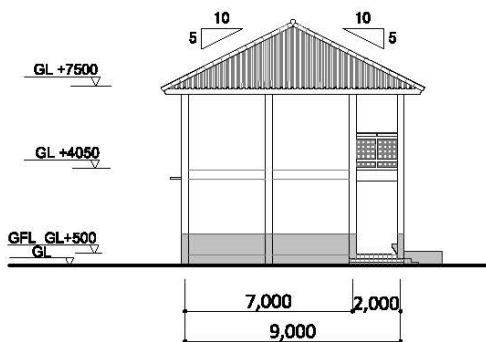
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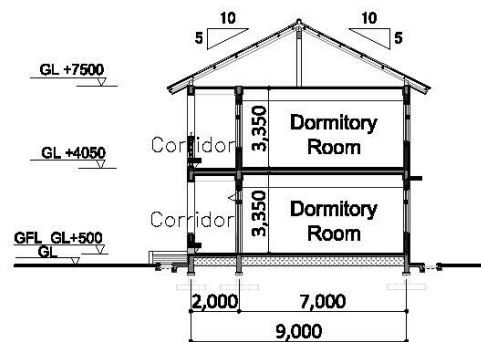
ELEVATION (CORRIDOR SIDE)



ELEVATION (CLASSROOM SIDE)

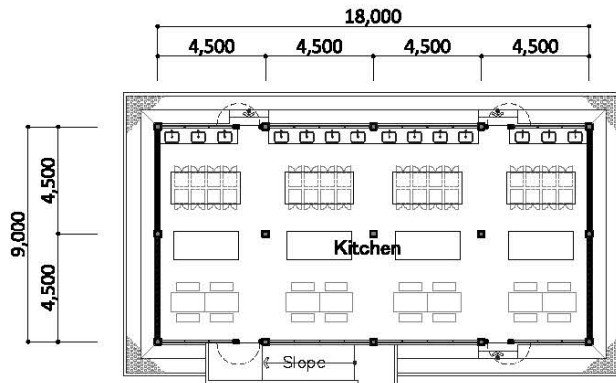


ELEVATION (GABLE END SIDE)

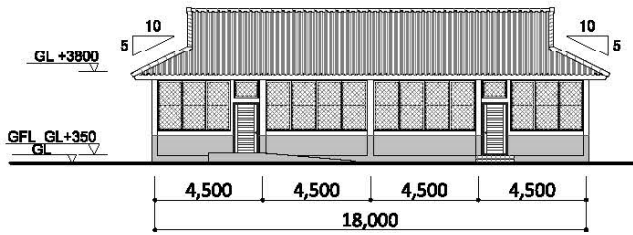


SECTION

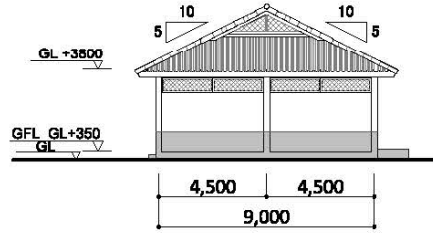
KC: KITCHEN BUILDING - 1 STORY BLDG.-



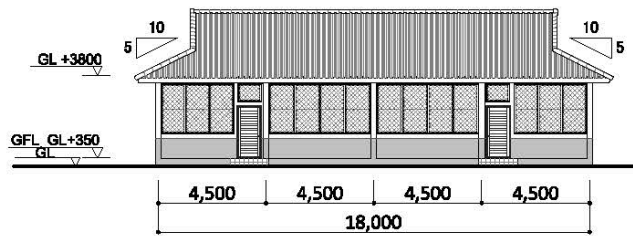
PLAN



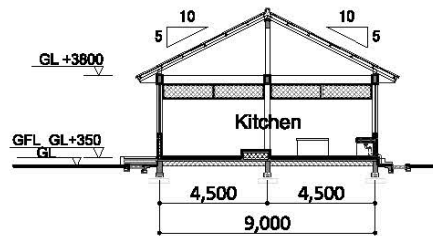
ELEVATION (APPROACH SIDE-1)



ELEVATION (GABLE END SIDE)

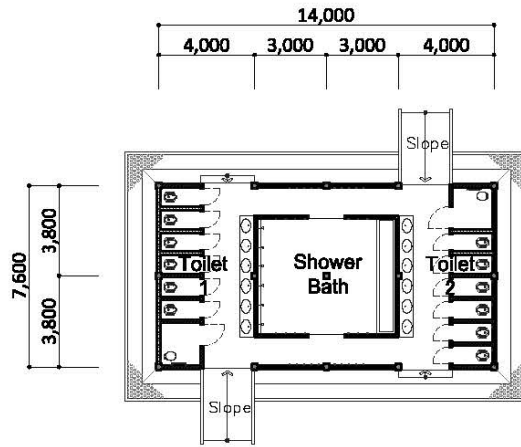


ELEVATION (APPROACH SIDE-2)

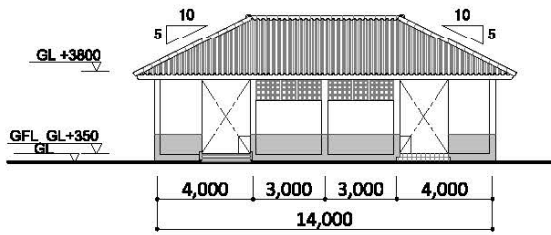


SECTION

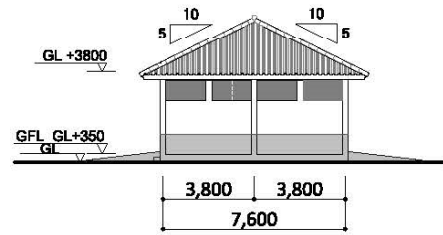
TS : TOILET/ SHOWER BUILDING - 1 STORY BLDG.-



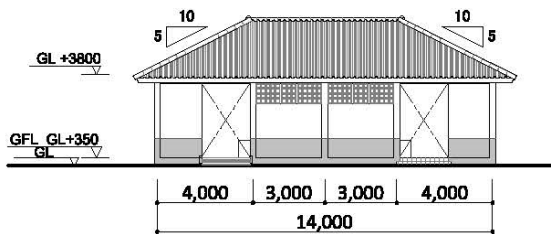
PLAN



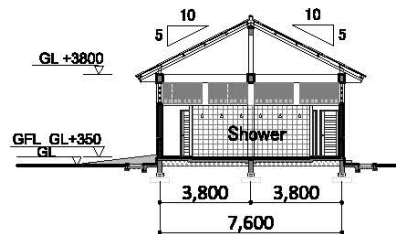
ELEVATION (APPROACH SIDE-1)



ELEVATION (GABLE WALL SIDE)

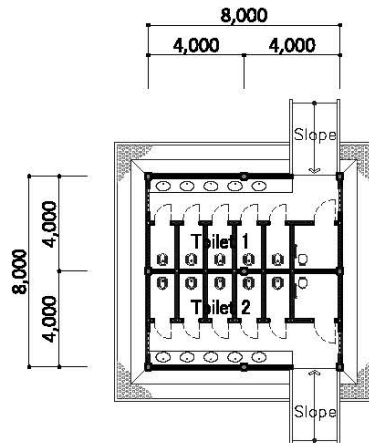


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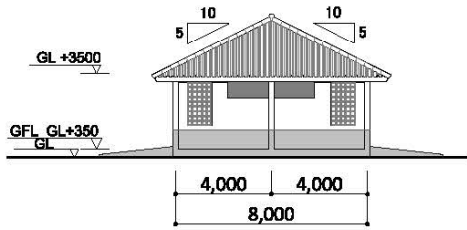


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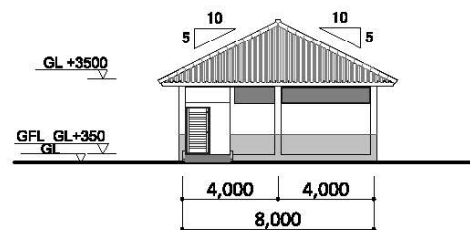
T12 : TOILET BUILDING FOR TTC - 1 STORY BLDG.-



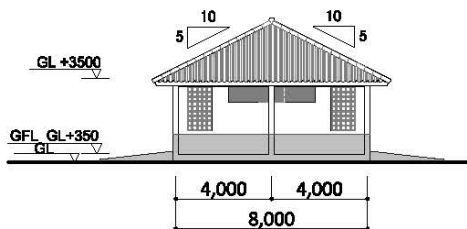
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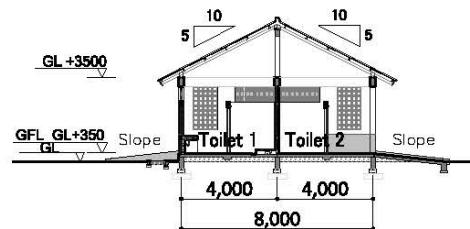
ELEVATION (GABLE WALL SIDE-1)



ELEVATION (APPROACH SIDE)



ELEVATION (GABLE WALL SIDE-2)



SECTION

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Project Implementation under Japanese Project Grant Type II

This Project will be implemented under the Japanese Project Grant Type II scheme, and MOES, as the Employer, will implement the Project in cooperation with JICA and the Consultant.

The Japanese consultant who has been employed for the Preparatory Survey will be, with recommendation from JICA, appointed as the Consultant for the Project. The Consultant will undertake the consulting services including detailed design work, assistance to bidding procedure, construction/procurement supervision and assistance to project financial/administrative management, based on a consultant agreement made between MOES and the Consultant.

As for the Lao PDR side, MOES will act as the Executing Agency while Ministry of Foreign Affairs (MOFA), Ministry of Planning and Investment (MPI), Ministry of Finance (MOF) and Bank of Lao (BOL) will also be involved in the Project. MOES, as the Executing Agency, will coordinate among the relevant ministries and organizations for this Project, while the steering committee was established with the participation of MOES, MPI, MOF and BOL for the previous Grant Type II project.

The provisional organizational chart for the Project is shown below. The details of the Project Management Unit (PMU) shown in the chart will be discussed in a later section hereunder.

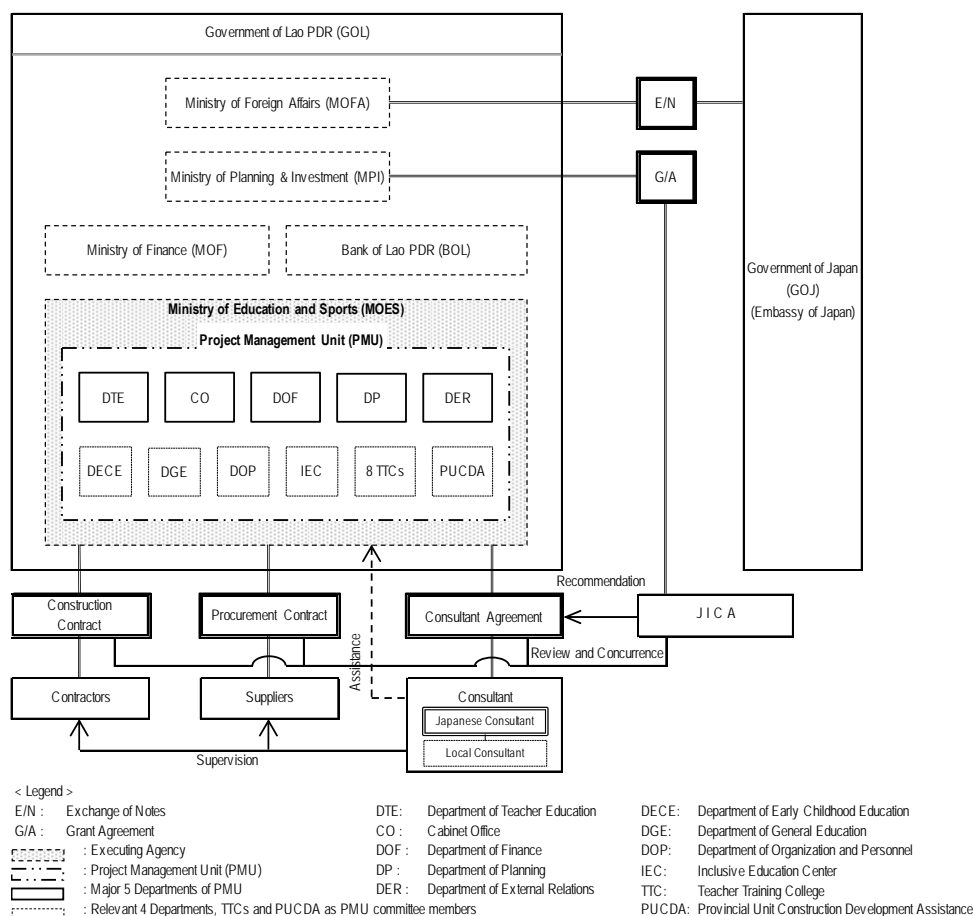


Figure 2-12 Project Implementation Organizational Chart (Provisional)

(2) Implementation Structure of Lao PDR Side

1) MOES and Other Relevant Authorities

As described above, MOFA, MPI, MOF and BOL will be involved in the Project, in addition to MOES as the Executing Agency. MOES will be responsible for necessary coordination among these governmental authorities.

2) MOES

For the previous Japanese Project Grant Type II project, the PMU was established for smooth implementation and management of the project, and in fact, the PMU functioned well. Thus, MOES has started to draft a MOES ministerial agreement for establishment of a new PMU for this Project.

The responsible department for the Project is the Department of Teacher Education (DTE). The PMU for the Project will have five key departments; DTE, Cabinet Office (CO), DOF, Department of Planning (DP) and Department of External Relations (DER). In addition to the five key departments, Department of Early Childhood Education (DECE), Department of General Education (DGE), Department of Organization and Personnel (DOP), Inclusive Education Center (IEC), the 8 TTCs and Provincial Unit for Construction and Development Assistance (PUCDA) will be involved in the PMU as committee members. The Director General of DTE will act as the Project Manager of the PMU, and the directors and staff of those key relevant departments will be assigned to the PMU.

MOES has experienced, through the previous Japanese Project Grant Type II project, various types of document preparation/approval process and communication with JICA for the stages on bidding preparation, bidding, contract, payment, etc. In particular, the knowledge and experience accumulated by DGE (the project manager of the previous project PMU) and DOF (responsible for approval of all payment documents) are very essential, and it is expected that DGE and DOF, who have such useful knowledge and experience, shall support DTE as the project manager for this Project, in actual administrative works for the Project implementation.

3) TTC and Provincial Education and Sports Service (PESS)

The Lao PDR side works at the site level, such as site handing over, monthly progress inspection, technical inspection, completion inspection and taking over, for the previous Japanese Project Grant Type II project were conducted by the concerned Provincial Education and Sports Service (PESS) and the District Education and Sports Bureau (DESB).

This Project is for building construction and equipment procurement at 8 TTCs which are located all over the country. It was confirmed with MOES through discussions during Field Survey II (Explanation of DOD), that each TTC will be responsible for such works at the site level for this Project, while PUCDA will assist its TTC for site handing-over, work progress inspection, final inspection, taking-over, etc..

(3) Consultant

The tasks and duties of the Consultant under the Japanese Project Grant Type II project are as follows.

Detailed Design and Bidding Stages

- Carrying out site visits of all the Project sites to check the up-to-date conditions and additional information necessary for the detailed design works.
- Preparation of detailed design drawings, specifications and bill of quantities.
- Preparation of the bidding documents (bid notice, instructions to bidders, form of contract, etc.)
- Assistance to MOES in bidding procedure, including bid notice, bid evaluation, contractual works.
- Assistance to MOES in document preparation for JICA's review and concurrence.

Implementation Stage

(Construction and Procurement Supervision)

- Site visits for inspections of quality, progress and safety control stipulated in the contract documents, and regular progress report thereof to MOES and the TTCs concerned.
- Various inspections for equipment procurement.
- Inspections for the works completed and report of the results to MOES.
- Final inspections (one year inspections) and report of the results to MOES.
- Assistance in preparation of Project Monitoring Report (PMR) which will be submitted from MOES to JICA.

(Assistance in Financial Management)

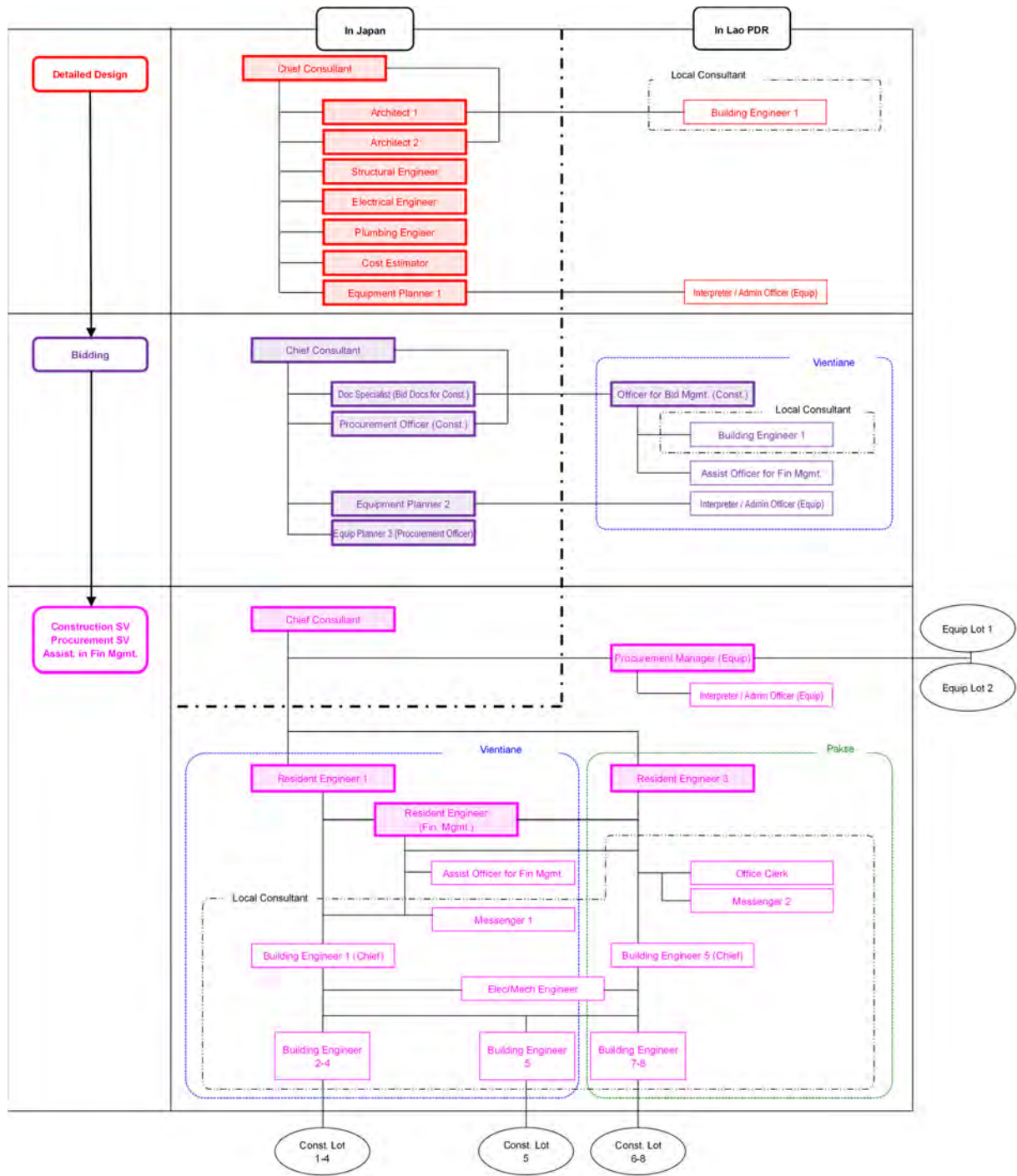
- Check of Claims for Payment (CFP) prepared by the Contractor(s)/Supplier(s) prior to submission to MOES.
- Assistance to MOES for preparation of Request for Disbursement (RFD) and Transfer Instruction (TI) prepared by MOES for submission to JICA.
- Assistance to MOES for document preparation for JICA's review and concurrence.

The Japanese Consultant as a prime consultant will subcontract with local consultant(s), and they will provide the consulting services for the Project.

This Project will be divided into two construction groups as described in "2-2-4-8 (1) Bidding/Contract Lots". The Consultant will have his office for construction supervision in Vientiane (for both Group 1 and 2) and Pakse (for Group 2), and a sub-office for each lot may be set up at each site.

As for assistance in financial management, the Consultant will work from his Vientiane office.

The Consultant's personnel plan is shown below.



<Legend> : Japanese Personnel : Local Personnel

Figure 2-13 Consultant Project Organizational Chart (Provisional)

Table 2-17 Consultant's Personnel Plan (Provisional)

Position		Roles and Responsibilities
Japanese Consultant (Japanese Personnel)	Chief Consultant	Presence at interim and completion inspections.
	Architect 1	Site surveys for detailed design. Detailed design works (architectural design). Overall management of detailed design works.
	Architect 2	Detailed design works (architectural design). Assistance to Architect 1.
	Structural Engineer	Detailed design works (structural design).
	Electrical Engineer	Detailed design works (electrical design).
	Plumbing Engineer	Detailed design works (plumbing design).
	Cost Estimator	Collection of cost information. Cost estimation for detailed design. Document preparation of "Comparison of Outline Design and Detailed Design" for JICA's concurrence.
	Equipment Planner 1	Confirmation of equipment plan and finalization of equipment specifications.
	Docs Specialist (Bid Docs for Const.)	Bidding documents preparation, pre-bid meeting and bid evaluation for construction works.
	Officer for Bid Mgmt. (Const.)	Assistance in bidding-contract process in Vientiane for construction works.
	Procurement Officer (Const.)	Assistance in bid evaluation report and JICA's review and concurrence for construction works.
	Equipment Planner 2	Bidding documents preparation, pre-bid meeting and bid evaluation for equipment procurement.
	Equipment Planner 3 (Procurement Officer)	Assistance in bid evaluation report and JICA's review and concurrence for equipment procurement.
	Resident Engineer 1	Construction supervision of 3 sites in Group 1 (Vientiane) One-year inspection for Group 1
	Resident Engineer 2 (Financial Management)	Construction supervision of 1 site in Group 1 and 1 site in Group 2 (Vientiane) Financial management for Group 1 and 2
Resident Engineer 3	Construction supervision of 3 sites in Group 2 (Pakse) One-year inspection for Group 2	
Procurement Manager	Equipment procurement management for Group 1 and 2	
Local Personnel	Assist. Officer for Financial Management	Assistance in bidding procedure and financial management for Group 1 and 2 (Vientiane)
	Interpreter / Admin Officer (Equipment)	Assistance in equipment procurement
Local Consultant	Building Engineer 1 (Chief)	Site surveys for detailed design and bid evaluation for construction works. Site supervision under directions from Resident Engineer 1&2 for Group 1. Team management of local engineers for Group 1. One-year inspections.
	Building Engineer 2-4	Site management and supervision by lot of Group 1.
	Building Engineer 5 (Chief)	Site supervision under directions from Resident Engineer 3&2 for Group 2. Team management of local engineers for Group 2. One-year inspections.
	Building Engineer 6-8	Site management and supervision by lot of Group 2.
	Elec/Mech Engineer	Site supervision for electrical and plumbing works.
	Clerk	Admin works (Pakse)
	Messenger 1	Miscellaneous office works (Vientiane)
	Messenger 2	Miscellaneous office works (Pakse)

(4) Contractor(s)

The Contractors for construction works under the Project shall be selected through a general competitive bidding process out of the construction companies in the Lao PDR. Extent of the works for the Contractors shall include procurement of furniture, blackboards, project plaques and stickers as well as building construction.

(5) Supplier(s)

The Suppliers for equipment procurement under the Project shall be selected through a general competitive bidding process out of the companies in the Lao PDR. As mentioned above, there are several Lao companies who have experience of bidding/contracting for science equipment procurement (including procurement, installation, initial operation training and after-sales services) for universities and research institutions.

(6) Financial Flow of Japanese Project Grant Type II

Under the Japanese Project Grant Type II scheme, the Executing Agency, namely MOES, will act as the Employer, and the Employer will make contracts with the Japanese Consultant and the Contractor(s) / Supplier(s) in the Lao PDR.

Under the scheme, payments to the Consultant will be made based on the Authorization to Pay (hereinafter referred as to “A/P”) in a manner the same as the one under the general Project Grant of Japan. In contrast to this, as for payments to the local companies engaged as the Contractors / Suppliers, MOES as the Executing Agency will compile “Claims for Payments; CFP” submitted by the Contractors/Suppliers, and will prepare “Request for Disbursement: RFD” and “Transfer Instruction: TI” for submission to JICA. (Refer to Annex 3 of Appendix 4-3 “Financial Flow of Japanese Grant (contract with Japanese consultant and local contractors)” of Minutes of Discussion signed on September 21, 2018.)

2-2-4-2 Implementation Conditions

(1) Project Implementation under Japanese Project Grant Type II

This Project will be implemented under the scheme of Japanese Project Grant Type II. Towards smooth implementation of the Project, the Consultant will assist the PMU of MOES, which is described in “2-2-4-1 (2) Implementation Structure of Lao PDR Side”, at every stage of detailed design, bidding, contract, preparation for commencement of works, and construction/procurement.

Especially for the projects executed by employing local firms in general, it is essential to build smooth, efficient and reliable systems for payment at both the Japan and Lao PDR sides, since late payments may bring financial difficulties to the Contractors/Suppliers, and since such financial difficulties may cause critical delay of works.

(2) Safety Control for Construction Works

Because this Project will employ local construction companies as the Contractors under the Japanese Project Grant Type II scheme, it is essential to improve awareness and know-how on safety control of

the Contractors who are not very safety-conscious in general. In practice, the safety control plan will be prepared in reference with “The Guidance for the Management of Safety for Construction Works in Japanese ODA Projects” to a practical extent, and safety awareness of the Contractors and their labors will be enhanced through the safety activities, such as regular safety check during a morning meeting by the Contractor’s own effort and frequent safety patrol by using check lists.

In addition, it is important to pay due safety considerations to construction activities within the TTC sites which are under operation. The construction areas shall be clearly demarcated from the school areas by temporary fences, and measures for third party accident prevention, such as traffic control at the gates, shall also be considered into the overall temporary plans.

(3) Tax Exemption

In the Field Survey, through the discussions with the Tax Department and Customs Departments of Ministry of Finance, the following are confirmed in line with the stipulations of the Exchange of Notes (E/N) and the Grant Agreement (G/A) to be concluded for the Project.

- Value Added Tax (VAT) to be imposed on the contracts made under this Project will be exempted.
- VAT for domestic purchase and Import Tax for import purchase may be exempted by certification of Master List before purchasing.

In recent years, the responsibility of Master List certification has been transferred between MPI and MOF on some occasions. According to MOF, discussions on responsibility of Master List certification are still being made between the two ministries, and further change may be possible. Because it has not been concluded yet, the information will be continuously updated.

(4) Selection of Contractors (Building Construction)

The conditions for eligibility and qualification for the bidding of previous Japanese Project Grant Type II project were carefully set focusing on financial soundness and work experience of bidders, for the purpose of smooth implementation of the project. Consequently, it is identified that there are approximately 10 construction companies who have the financial capability and experience appropriate to undertake construction works of about 3,000 m² per lot. Since the scale of works for this Project is 1,500-3,500 m² per lot, which is similar to the previous project, competitive selection of contractors can be made for this Project.

In the meantime, the conditions for eligible and qualified bidders for this Project will be reconsidered taking into account the technical requirements for this Project, which are a bit higher than general school construction projects, and include two story buildings.

(5) Selection of Suppliers (Equipment Procurement)

As described above, the Suppliers for equipment procurement of this Project will be selected through general competitive bidding for the domestic companies who deal with educational equipment.

(6) Countermeasures for Asbestos (upon Demolition of Existing Buildings)

In the Lao PDR, slate roofing materials containing asbestos have been used commonly for many years in the past. The existing buildings to be demolished for the Project might have such slate roofing containing asbestos. The necessary costs related to asbestos, such as for protection and disposal, are included in the demolition works under the Project, for prevention of exposure and dispersal of asbestos.

2-2-4-3 Scope of Works

The scope of works for the Japan and the Lao PDR sides are determined as follows.

(1) Japan Side

- Demolition of existing buildings (only for Group 1)
- Land cutting (only for BKN TTC)
- Construction of the planned buildings
- Procurement of the planned furniture and others
- Procurement of the planned equipment

(2) Lao PDR Side

- Land levelling
- Land cutting (only for KKY TTC)
- Implementation of UXO clearance (for LNT, LPB, KKY, SRV and PKS TTCs)
- Removal of trees
- Demolition of existing buildings (only for Group 2)
- Relocation of obstructing existing electrical facilities (poles, cables, etc.)
- Relocation of obstructing water supply pipes
- Connection of electricity for the planned buildings (new connection)
- Connection of water supply for the planned buildings (new connection)
- Procurement of educational equipment to be borne by the Lao PDR side

2-2-4-4 Consultant Supervision

Aiming at the completion of building construction works (including furniture and blackboard procurement) and the equipment procurement under the Project within the given time period, the Consultant will provide proper instructions and supervision to the Contractors/Suppliers. In addition, the Consultant will assist MOES, as the Employer, and the Contractors/Suppliers in financial management and document preparation for smooth project implementation under the Japanese Project Grant Type II scheme.

To this end, the Consultant will conduct his consulting services as mentioned in “2-2-4-1 (3) Consultant”.

2-2-4-5 Quality Control Plan

(1) Building Construction

Quality control will be carried out in accordance with the contract documents and the plan for construction supervisory services; the work plans, shop drawings and samples of materials will be checked and various types of inspections will be made including site inspections at each site. The main items of quality control for structural works are shown in the following table.

Table 2-18 Major Quality Control Items for Structural Works (Provisional)

Work	Item	Inspection / test	Frequency
Earth works	Bottom of excavation	Depth of bottom level Visual inspection (conditions of soil)	Upon completion of excavation
Reinforcement and formwork	Steel bar material	Verification of mill sheets or tensile tests	Per lot, per size
	Bar arrangement	Visual inspection	Prior to concrete casting
	Formwork	Visual inspection	Prior to concrete casting
Concrete works	Materials	Verification of type of cement Grading of aggregate	Upon trial mix
	Mix proportion	Slump,	Once per lot
	Strength	Concrete temperature, Air temperature, Concrete chloride content, Compressive strength	Two story bldg.: 6 tests (foundation, foundation girder, 1F column, 2F beam, 2F column, RF beam) Single story bldg.: 4 tests (foundation, foundation girder, column, beam)
Structural steel works	Materials	Verification of shop drawings, material tests	Prior to assembling

(2) Equipment Procurement

Most of the planned equipment for this Project are selected among products made in Thailand. Qualities of educational equipment made in Thailand are generally equivalent to Japanese products, and the Thai products have advantages in transportation because the country is adjacent to the Lao PDR. However, some of the planned equipment are not produced in Thailand. Thus, the Project will adopt the products made in Thailand or OECD member countries from the aspect of equipment quality and durability.

The appropriateness of each bidder's proposal, including the country of origin of each item of equipment, will be examined at the bid evaluation stage. Furthermore, the quality of each item of equipment will be ensured by checking the country of origin, product quality certificate such as ISO certification, and so on through inspections at site delivery and handing-over.

2-2-4-6 Procurement Plan

(1) Building Construction

Almost all the construction materials can basically be purchased within the Lao PDR. As for some construction materials such as cement, both domestic and import products from neighboring countries including Thailand are available on the domestic markets. As for blackboards, good-quality factory-made products manufactured in a third country will be procured, in principle. The sources of procurement and countries of origin for major construction materials are shown in the following table.

Table 2-19 Sources of Major Construction Materials

Materials	Source of procurement			Remarks (Country of origin)
	Lao	Japan	Third country	
Cement	○			Domestic or imported products (Thai, China, etc.)
Aggregate for concrete	○			
Steel bar	○			Domestic or imported products (Thai, etc.)
Structural steel	○			Domestic or imported products (Thai, etc.)
Forms	○			
Plywood	○			
Concrete block	○			
Tile	○			Imported products (Thai, China, etc.)
Brick	○			
Wood / Timber	○			
Wooden doors/windows	○			
Aluminum doors/windows	○			Imported products (Thai etc.)
Painting material	○			Domestic or imported products (Thai etc.)
Light-weight steel				Imported products (Thai etc.)
Gypsum board, Fiber cement board				Imported products (Thai etc.)
Non-asbestos fiber-cement sheet	○			Imported products (Thai etc.)
Furniture	○			
Blackboard	○			Thai, Vietnam, etc.
Power distribution board	○			Imported products (Thai etc.)
Elec. Cable	○			Imported products (Thai etc.)
Lighting fixture	○			Imported products (Thai etc.)
Pipe	○			Imported products (Thai etc.)
Faucet and accessories	○			Imported products (Thai etc.)
Cement	○			Imported products (Thai etc.)

(2) Equipment Procurement

As mentioned above, the Project will procure the equipment made in Thailand or OECD member countries. The eligible countries of origin for equipment were discussed and confirmed with MOES during Field Survey II (Explanation of DOD).

2-2-4-7 Operational Guidance Plan

The planned equipment are basic educational equipment for general pre-primary, primary and secondary schools, and necessary for teacher education to obtain and/or develop effective pedagogical methods through the practicum and lesson study activities. Most of the equipment has simple construction, and complicated handling is not required for such equipment. Meanwhile, regular cleaning and checking will be needed for durable use of the equipment, and thus initial operation training and maintenance guidance will be performed by the Suppliers upon handing-over the equipment to each TTC.

Furthermore, the importance of equipment inventory management will be facilitated, because it is

observed, through the Field Survey, that the existing equipment are not very well stored and managed at each TTC, due to a lack of inventory management.

2-2-4-8 Implementation Schedule

(1) Bidding/Contract Lots

The Project sites are 8 TTCs located nationwide. Because the TTC sites are far from each other, and because the total floor area to be constructed at each site is approximately 1,500-3,500 m², which is a large contract for a domestic construction company, it is not realistic to set a lot for several sites. Thus, a lot for building construction of this Project is set as one lot per TTC (8 lots in total).

From the experience of the on-going project under the Japanese Project Grant Type II, it is clear that there are not many Lao contractors eligible and qualified for the conditions set by the Project according to the nature of each lot, and it is not realistic to procure 8 different contractors at one time (that is, in one construction group). Accordingly, from the viewpoints of efficiency and implementation, the Project divides 8 lots into two construction groups.

As preconditions for lot and group setting, the Consultant’s travel to 3 TTCs in the northern provinces (LNT, LPB and KKY TTC), which are connected by winding roads in mountain areas, will be by flight, because of safety and efficiency of travel, taking into account factors such as, land slide risks during rainy seasons, road damage caused by frequent heavy trucks and 7-10 hour drive between TTCs. Thus, the Consultant office for those 3 TTCs will be in Vientiane.

Table 2-20 Summary of Bidding/Contract Lots

Group	Site (Province)	Lot No.	
		Building Construction	Equipment Procurement
1	LNT TTC (Luang Nam Tha Province)	Construction-1	Equipment-1
	LPB TTC (Luang Prabang Province)	Construction-2	
	KKY TTC (Xiangkhouang Province)	Construction-3	
	DKX TTC (Vientiane Capital)	Construction-4	
2	BKN TTC (Vientiane Province)	Construction-5	Equipment-2
	SVK TTC (Savannakhet Province)	Construction-6	
	SRV TTC (Saravan Province)	Construction-7	
	PKS TTC (Champasack Province)	Construction-8	

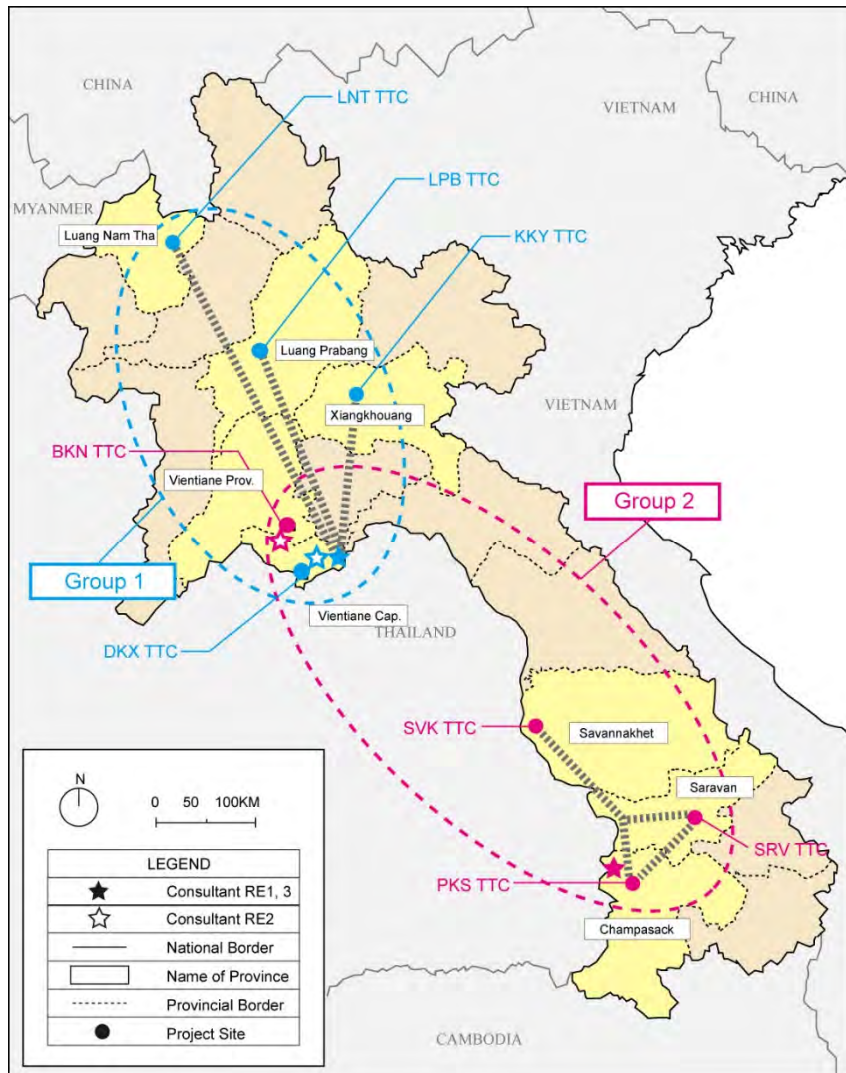


Figure 2-14 Map of Construction Groups and Lots (Provisional

(2) Implementation Schedule

After the signing of the Consultant Agreement, the detailed design and the bidding documents will be prepared. Through the process of the bid notice, the bid evaluation and the approval/concurrence from the relevant authorities, MOES will make contracts with the Contractors/Suppliers. Scheduled time periods for such activities for the construction works are as follows.

Preparation of Detailed Design and Bidding Documents

- Group 1 : 7.5 months
- Group 2 : 7.5 months

Bidding and Contract

- Group 1 : 8.0 months
- Group 2 : 8.0 months

The contract period for construction works is planned as 14 months; 1 month for preparation, 12 months for main construction works and 1 month for inspection & remedial works. The construction

2-3 Obligations of Recipient Country

Specific obligations of the Lao PDR side, which will NOT be funded by the Japan side are as follows.

(1) Before Bidding

1. To open a bank account (Banking Arrangement (B/A))
2. To prepare the lots of land necessary for the implementation of the Project
3. To carry out UXO clearance at LNT TTC, LPB TTC, KKY TTC, SRV TTC, and PKS TTC.
4. To clear the sites including demolition and/or relocation of any obstacles and land levelling (including land cutting/levelling at KKY TTC of Group 1 and demolition of the existing buildings at BKN TTC, SVK TTC and PKS TTC of Group 2.)
5. To obtain a building permit for LPB TTC in accordance with the Luang Prabang Urban Regulations (For the remaining 7 sites, design document approval by ECDM/MOES is required.)
6. To secure temporary facilities for the construction period including classrooms for demonstration schools and part of TTC facilities.
7. To move necessary furniture and equipment out from the buildings to be demolished by the Japan side and store them. (LPB TTC and DKX TTC)
8. To issue Authorization to Pay (A/P) (for Consultant Agreement)
9. To ensure smooth implementation of the bidding procedures and to bear necessary expenses relevant to the bidding procedures including, but not limited to, the following
 - Printing and binding of bidding documents
 - Bid notices in major newspapers, governmental gazette and/or web site
 - Securing places for pre-bid meetings
 - Securing places for bid openings
10. To submit Project Monitoring Report (PMR) (with the result of Detail Design)

(2) During the Project Implementation

1. To bear the following commissions to a bank in Japan for the banking services based upon the B/A
 - Advising commission of A/P (Consultant Agreement)
 - Payment commission for A/P (Consultant Agreement)
 - Remittance charge (contract with local companies, i.e. the Contractor(s)/the Supplier(s))
2. To send a “Request for disbursement” to JICA (contract with local companies, i.e. the Contractor(s)/the Supplier(s))

3. To send a “Transfer Instruction” to the Agent Bank (contract with local companies, i.e. the Contractor(s)/the Supplier(s))
4. To ensure prompt customs clearance and to assist the Contractor(s)/the Supplier(s) with internal transportation in recipient country
5. To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
6. To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted
7. To bear all the expenses, other than those covered by the Grant Aid, necessary for the implementation of the Project
8. To bear necessary expense, including, but not limited to, transportation, per-diem and accommodation, for MOES, PESS and/or TTC personnel who join the site visits and inspections
9. To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities
 - Electricity: New electrical power connection for the buildings constructed by the Project
 - Water Supply: New water supply connection for the buildings constructed by the Project
10. 1) To submit Project Monitoring Report (PMR)
2) To submit a report concerning completion of the Project (PMR Final)

(3) After the Project

1. To maintain and use properly and effectively the facilities constructed and equipment provided under the Project
 - Building maintenance costs
 - School operation costs
 - Establishment of maintenance structure for sustainable and proper use of the facilities and equipment
2. To procure sets of equipment which is undertaken by the Recipient

2-4 Project Operation Plan

2-4-1 Operation Plan

(1) TTC Facilities

The buildings to be built by the Project as TTC facilities are toilet buildings, toilet/shower buildings, dormitories, and kitchen buildings. The size of them are not so large and no equipment is procured for them. Accordingly, it is expected that the newly constructed buildings will be well managed as before.

(2) Demonstration Schools

As of 2018/19, all TTCs' demonstration schools cover pre-primary and primary education levels except for N1-3 of BKN TTC, using their existing buildings. With the construction of new buildings, the number of students will increase as described in (1) below.

Furthermore, two TTCs will newly open their demonstration schools for secondary education, and the secondary education enrollment of the remaining 6 TTC demonstration schools has been on the rise. Therefore, the operation and management of the demonstration schools need to cope with the increase in students.

Table 2-21 Statistics of the Demonstration Schools by TTC (2018/19)

- Demonstration school: Based upon (No.7441/MOES DTE) (December 8, 2015) (No.1601/MOES DTE) (March 29, 2016)
- Year of establishment and No. of students are based upon the answers to the questionnaire to each TTC
- The number of students in Italic is from hearings at the site survey.

(Unit: No. of classes→class, No. of teachers/sutdents→person)

TTC	Demonstration School/ Inside or Outside of TTC site	Year of Establishment	Item	Pre-Primary			Primary					Secondary															
				N1	N2	N3	K1	K2	K3	P1	P2	P3	P4	P5	M1	M2	M3	M4	M5	M6	M7						
1. LNT	Pre-primary: in TTC Primary: in TTC Secondary: -	Pre-primary: 2008 Primary: 2004 Secondary: 2018	No. of Classes	1			1	1	1	1	1	1	1	1	1												
			No. of Students	18			32	24	23	12	16	14	10	11	15												
			No. of Teachers	3			2	1	1	1	1	1	1	1	13												
2. LPB	Pre-primary: in TTC Primary: Sathith PS Secondary: -	Pre-primary: 2006/7 Primary: 1973/4 Secondary: 2018/9	No. of Classes	1	1	0	1	1	2	2	2	2	2	2	2												
			No. of Students	10	12	0	22	23	39	69	67	66	53	58													
			No. of Teachers	3	2	0	1	2	2	2	2	2	2	2	21												
3. KKY	Pre-primary: in TTC Primary: in TTC Secondary: -	Pre-primary: - Primary: - Secondary: -	No. of Classes	1			1	1	1	2	2	2	2	2													
			No. of Students	17			19	17	42	49	56	56	54	56													
			No. of Teachers	4			1	2	2	2	2	2	2	2													
4. BKN	Pre-primary: in TTC Primary: Thongkham PS Secondary: -	Pre-primary: - Primary: - Secondary: -	No. of Classes				1	1	1	1	1	1	1	1	1	1											
			No. of Students				10	15	22	24	30	21	25	19	24												
			No. of Teachers				1	1	1	1	1	1	1	1	2												
5. DKX	Pre-primary: in TTC Primary: in TTC Secondary: -	Pre-primary: - Primary: - Secondary: -	No. of Classes	1	1	1	1	2	1	1	1	2	2	1													
			No. of Students	4	17	20	22	50	30	43	31	62	42	32													
			No. of Teachers	2	4	4	1	2	1	1	1	2	2	1													
6. SVK	Pre-primary: in TTC Primary: in TTC Secondary: -	Pre-primary: - Primary: 2016/17 Secondary: -	No. of Classes	1	1	1	1	1	1	1	1	1	1	2													
			No. of Students	12	8	20	18	26	37	40	37	32	35	72													
			No. of Teachers				5			1	1	1	1	1	11												
7. SRV	Pre-primary: in TTC Primary: Ban Don PS Secondary: -	Pre-primary: - Primary: 2016/17Secondary: 2018/19	No. of Classes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
			No. of Students	5	10	20	15	21	38	30	30	21	24	50	15	15											
			No. of Teachers	1	1	1	1	1	1	1	1	1	1	1	8												
8. PKS	Pre-primary: in TTC Primary: in TTC Secondary: -	Pre-primary: 1995 Primary: 1995 Secondary: 2018/19	No. of Classes	1			1	1	1	1	1	1	1	1	1	1	1										
			No. of Students	Unanswered			20	35	38	37	29	26	30	34	34	7											
			No. of Teachers	Unanswered			2	3	3	1	1	1	1	1	2	2											

(3) Increase of Students

The average numbers of students per class (A) and per classroom (B) are as described in “2-2-2 Architectural Plan.” The increase in the number of students after the construction completion by the Project (C) is calculated as the number of students per classroom (B) subtracted by the number of students in the existing school (D). The result of the calculation is shown in the table below.

Table 2-22 Increase of Demo. School Students associated with New Building Construction

TTC		N-1	N-2	N-3	K-1	K-2	K-3	P-1	P-2	P-3	P-4	P-5	M-1	M-2	M-3	M-4	M-5	M-6	M-7	Total		
No. of students per class (A)		10	10	10	30	30	30	35	35	35	35	35	35	35	35	35	35	35	35	35	540	
No. of students per classroom (B)		30			30	30	30	35	35	35	35	35	35	35	35	35	35	35	35	35	540	
No. of students to be increased (C) (= No. of students per classroom (B) - Current No. of students (D))																						
LNT	Current No. of students (D)	18	32	24	23	12	16	14	10	11	15	0	0	0	0	0	0	0	0	0	175	
	No. of students to be increased (C)	12	0	6	7	23	19	21	25	24	20	35	35	35	35	35	35	35	35	35	367	
LPB	Current No. of students (D)	10	12	0	22	23	Not Covered by the Project					58	0	0	0	0	0	0	0	0	125	
	No. of students to be increased (C)	8	30	8	7						0	35	35	35	35	35	35	35	35	35	263	
KKY	Current No. of students (D)	17	19	17	42	49	56	56	54	56	0	0	0	0	0	0	0	0	0	0	366	
	No. of students to be increased (C)	13	11	13	0	0	0	0	0	0	35	35	35	35	35	35	35	35	35	35	282	
BKN	Current No. of students (D)	0	10	15	22	24	30	21	25	19	24	0	0	0	0	0	0	0	0	0	190	
	No. of students to be increased (C)	30	20	15	8	11	5	14	10	16	11	35	35	35	35	35	35	35	35	35	350	
DKX	Current No. of students (D)	Not Covered by the Project			22	50	30	43	31	62	42	32	0	0	0	0	0	0	0	0	312	
	No. of students to be increased (C)				8	0	0	0	4	0	0	3	35	35	35	35	35	35	35	35	260	
SVK	Current No. of students (D)	12	8	20	18	26	37	40	37	32	35	72	0	0	0	0	0	0	0	0	337	
	No. of students to be increased (C)	10	0	22	23	0	0	0	0	0	0	0	0	35	35	35	35	35	35	35	265	
SRV	Current No. of students (D)	5	10	20	15	21	Not Covered by the Project					50	15	15	0	0	0	0	0	0	151	
	No. of students to be increased (C)	15	10	15	9						0	20	20	35	35	35	35	35	35	35	229	
PKS	Current No. of students (D)	Not Covered by the Project					37	29	26	30	34	34	7	0	0	0	0	0	0	0	0	197
	No. of students to be increased (C)						0	6	9	5	1	1	28	35	35	35	35	35	35	35	225	
Total No. of students to be increased (C)		88	79	79	54	34	34	44	40	44	102	258	265	280	280	280	280	280	280	280	2,241	
		88				212						196				905				840		

※From the answers to the questionnaire. The numbers in italic are from interviews.

※If the current number of students (D) is greater than the number of students per classroom (B), the number of students to be increased (C) is 0.

※As the number of pupils per class in N1-3 is not clear at many TTCs, total numbers of N1-3 pupils are used.

(4) Increase of Teachers and School Staff

According to the ministerial order (7440/MOES.DTE) (08 December, 2015), each TTC is responsible for staffing its demonstration schools with teachers and necessary administration staff, coordinating with PESS and DESB as may be necessary. In principle, the staffing is done by employing new pre-service teachers or transferring in-service teachers from other schools. Some teachers at demonstration schools double as a professor at the TTCs. The percentage of such teachers varies among the education level.

A guideline of operation and management for the demonstration schools is now being prepared by MOES. According to its draft and actual operation and management of general schools, at least one director, one vice director, and class/subject teachers are necessary. The existing TTC demonstration schools have already been staffed with the directors and the vice directors. Thus, the Project requests the secondary demonstration schools of KKY and DKX TTCs, which will newly open the secondary school, to staff a new director and a vice director, respectively.

Each TTC is responsible for managing the demonstration schools, as described in “2-4-2 Maintenance Plan”, and accordingly, it is not necessary for the demonstration schools to have their own maintenance staff for buildings and equipment.

Concerning the number of class/subject teachers to be staffed at a demonstration school, there is no clear standard established so far, while the standard for an ordinary public school was set in Ministerial Decree 177 (2012) and revised in Ministerial Decree 1374 (2015) for pre-primary education. The Survey Team estimated the necessary number of class/subject teachers, based upon the following criteria, referring to the actual practice at the sites, discussions with MOES, and rules applied to ordinary public schools.

- Pre-primary education: the maximum number of pupils per teacher by level is as follows; N-1: 3 pupils, N-2: 5 pupils, N-3: 8 pupils, K-1:15 pupils, K-2: 20 pupils, and K-3: 25 pupils¹⁷ based on Ministerial Decree 1374.
- Primary education: 35 students per teacher¹⁸ (the same as the number of students per classroom) which is almost equal to the number of students for an ordinary school, i.e. 34, stipulated in Ministerial Decree 177.
- Secondary education: As Ministerial Decree 177 stipulates that 1 teacher shall be assigned per 30 students in lower-secondary education and per 25 students in higher-secondary education, and 2 teachers shall be assigned per 35 students of a class in secondary demonstration school. Additionally, the number of teachers shall be examined in terms of the number of subjects in secondary education. In ordinary schools (40 students per class), two teachers per class are assigned¹⁹. A teacher teaches 18 hours per week, and usually, the number of class hours per week is 30 for lower secondary and 32 for upper secondary levels. For the Project, referring to the practice at ordinary schools, 2 teachers per class shall be assigned to the demonstration school, though the number of students in the demonstration schools per class is 35, less than that of ordinary schools. Thus, the assignment of 2 teachers per class is considered to be appropriate.

From the above, the number of class/subject teachers per class to be allocated in a demonstration school is as follows.

¹⁷ Technical Notes signed on October 9, 2018.

¹⁸ MOES school construction guidelines

¹⁹ JICA “Preparatory Survey Report on the Project for Improving Secondary School Environment in the Central and Southern Provinces in Lao People’s Democratic Republic” (2017)

Table 2-23 No. of Teachers per Class in a Demonstration School

Level		No. of students per class	Maximum No. of students per teacher	No. of class/subject teachers per class	No. of class/subject teachers in total by Level
Pre-primary	N1	10	3	4	8
	N2	10	5	2	
	N3	10	8	2	
	K1	30	15	2	6
	K2	30	20	2	
	K3	30	25	2	
Primary	P1-P5	35		1	5
Secondary	M1-M7	35		2	14

Moreover, the number of class/subject teachers to be additionally employed based on the construction of buildings by the Project is calculated in the following equation.

$$\boxed{\text{No. of class/subject teachers to be additionally employed (A)}} = \boxed{\text{Necessary No. of class/subject teachers (C)}} - \boxed{\text{No. of class/subject teachers already assigned (B)}}$$

The number of class/subject teachers to be additionally employed by TTC is shown in the table below.

Table 2-24 No. of Class/Subject Teachers to be Additionally Employed for Demo. Schools

TTC		N1-3	K1	K2	K3	P1	P2	P3	P4	P5	M1	M2	M3	M4	M5	M6	M7	Total		
LNT	No. of teachers already assigned (B)	3	2	1	1	1		1	1									13	23	
	No. of class/subject teachers to be additionally employed (A)	5	0	1	1	0	1	0	0	1								1	10	
LPB	No. of teachers already assigned (B)	5	0	1	2	Not to be covered by the Project												21	29	
	No. of class/subject teachers to be additionally employed (A)	3	2	1	0	Not to be covered by the Project												0	6	
KKY	No. of teachers already assigned (B)	4	1	2	2	2	2	2	2	2								0	19	
	No. of class/subject teachers to be additionally employed (A)	4	1	0	0	0	0	0	0	0								14	19	
BKN	No. of teachers already assigned (B)	0	1	1	1	1	1	1	1	1								2	10	
	No. of class/subject teachers to be additionally employed (A)	8	1	1	1	0	0	0	0	0								12	23	
DKX	No. of teachers already assigned (B)		2	3	2	1	1	2	2	1								0	14	
	No. of class/subject teachers to be additionally employed (A)		0	0	0	0	0	0	0	0								14	14	
SVK	No. of teachers already assigned (B)	5				1	1	1	1	1								11	21	
	No. of class/subject teachers to be additionally employed (A)	9				0	0	0	0	0								3	12	
SRV	No. of teachers already assigned (B)	2	1	1	1	Not to be covered by the Project												8	13	
	No. of class/subject teachers to be additionally employed (A)	6	1	1	1	Not to be covered by the Project												6	15	
PKS	No. of teachers already assigned (B)	Not to be covered by the Project				1	1	1	1	1									4	9
	No. of class/subject teachers to be additionally employed (A)	Not to be covered by the Project				0	0	0	0	0									10	10
Total	No. of class/subject teachers to be additionally employed (A)	47				2					60							109		

※No. of teachers in italic was estimated based upon the maximum number of students per teacher, as the No. of assigned teacher is unknown.

※As for teachers to be assigned to N1-3 and M1-7, No. of class/subject teachers by grades at the existing demonstration schools are unclear.

Thus, a total number of teachers to be assigned is calculated.

At lower secondary education, a total of 14 subjects are taught including Lao/Literature, Mathematics, Physics, Chemistry, Biology, History, Geography, Civics, Basic Technology/ICT, Sport, etc. Accordingly, MOES is requested to assign teachers to the demonstration schools in a way that all subjects are taught by teachers with the respective specialization.

2-4-2 Maintenance Plan

(1) Facility

Periodic maintenance is necessary for the buildings to be constructed by the Project to be kept in appropriate condition.

It has been confirmed that the respective TTCs have necessary staff to manage the entire infrastructure including buildings and equipment within the sites. Overall, the existing infrastructures are well maintained. As for the demonstration schools, according to the ministerial agreement²⁰, the TTCs are responsible for the entire management including staffing, budgeting, and procuring necessary buildings and equipment. Therefore, it is expected that the buildings and equipment to be procured by the Project will continue to be well maintained under the existing organization of the TTCs.

Furthermore, TTC students actively carry out daily cleaning within the compound. Besides, the draft of the demonstration school guidelines stipulate that students of the demonstration schools are responsible for beautification of the school. Thus, daily cleaning is expected to be carried out continuously.

Regarding the operation and management budget, MOES provides the TTCs with SBG²¹ according to the number of students and the fee²² is collected from the students. The budget is managed by the TTCs²³. Accordingly, it is expected that the budget will continue to be secured after the construction of the buildings by the Project.

(2) Equipment

Equipment to be procured by the Project does not require any special maintenance, as most of the items are commonly used in pre-primary, primary and secondary schools. Teachers are required to clean and visually check the equipment from time to time.

²⁰ Ministerial Agreement on Division of Responsibility and Cooperation on Experimental and Demonstration Schools (7440/MOES.DTE) (08 December, 2015)

²¹ An annual SBG amount per student is: 50,000LAK (K1-3), 70,000LAK (P1-5), 50,000LAK (M1-4). The amount is planned to be increased to 80,000LAK, 100,000LAK, and 80,000LAK, respectively from 2018/19 onward. However, it is also reported that SBG is not allocated on time and the allocated amount is cut back.

²² As is often the case, TTC directors and DESB/VEDC discuss to determine the fee, and the amount varies from one TTC to another. For example, at SVK TTC: [N1-K3] 120,000LAK/month, [P1-7]: 130,000LAK/month, and [M1-7] 150,000LAK/month.

²³ The utility costs of the demonstration schools are paid from the maintenance budget administrated by the TTCs. Moreover, other necessary budgets including purchasing teaching materials and equipment are granted by the TTCs, upon request.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Total Cost to be borne by the Lao PDR Side

181,100USD (about 19.86 million JPY)

Table 2-25 Breakdowns of the Cost to be borne by the Lao PDR side

Item	Amount (USD)	Amount (in million JPY)
Preparatory works (Land cutting/levelling, removal/relocation of obstacles etc.)	128,000	14.04
Cost for bidding procedure (Printing bidding documents, bid notice advertisement, etc.)	7,000	0.77
Banking commission	9,100	1.00
Connection of electricity	16,000	1.75
Connection of water	16,000	1.75
Educational equipment for Lao language and culture	5,000	0.55
Total	181,100	19.86

(2) Conditions of Estimation

- ① Time of Estimation : August 2019
- ② Exchange rate : 1USD = 109.71 JPY
: 1 LAK = 0.012810 JPY
- ③ Construction/procurement period : As per the Project implementation schedule
- ④ Other remarks : Cost estimation was conducted based upon the principle of the Japanese Grant.

2-5-2 Operation and Maintenance Cost

2-5-2-1 School Operation Cost

(1) TTC

No significant increase in operation cost is expected, as the Project shall not construct large buildings or provide additional equipment.

(2) Demonstration Schools

Operation budgets of the demonstration schools consist of the following 4 items: ① Salary for teachers and staff, ② SBG for students, ③ Educational materials and equipment, and ④ Workshop fees for lesson-study²⁴.

²⁴ Teachers from wider areas are expected to attend the lesson study workshops, compared to other activities such as open seminars and practicum trainings. A TTC which holds workshops is required to bear transportation and meal costs for attendees.

As for ①, actual salaries of a director's and a Bachelor's degree holding teacher's at 1,800,000 LAK are referred to. Regarding ②, SBG²⁵ per pupils K1-3: 50,000 LAK/year, P1-5: 70,000LAK/year, M1-4: 50,000LAK/year, are referred to information collected from questionnaires and MOES. As for ③, an average cost for a TTC is calculated from the actual budget of TTCs. Lastly, as for ④, the current cost calculated from the actual budget of TTCs and the additional cost²⁶ derived assuming that two more workshops will be carried out per year with the buildings to be constructed by the Project.

The additional costs associated with the implementation of this Project are calculated based on the following conditions.

- ① Amount derived by multiplying the number of teachers to be increased calculated in “2-5-1 (4) Increase of Teachers and School Staff”
- ② Amount derived by multiplying the number of students to be increased calculated in Table 2-22
- ③ No additional cost is considered since necessary educational materials/equipment is provided by the Project
- ④ Amount derived assuming that two workshops will be carried out per year with the buildings to be constructed by the Project

The following table shows the annual operation costs of demonstration schools of a TTC, the same of 8 TTCs, and the additional costs associated with the implementation of the Project.

²⁵ The amount of SBG per pupil or student is as per the footnote No. 21.

²⁶ Cost including accommodation/transportation/per-diem for a 2-days workshop hosting about 50 participants.

Table 2-26 Annual Operation Costs of Demonstration Schools

Operation Costs for Demonstration Schools after the Project										
				(A) Demo. Schools Operation Costs of a TTC		(B) Demo. Schools Operation Costs of 8 TTCs (A)x8		(C) Additional Costs associated with the Project		
Item			Unit Price (LAK)	Unit	Qty	Amount (LAK)	Qty	Amount (LAK)	Qty	Amount (LAK)
① Salary (Personal Costs) ※N1-M7	Directors Vice directors	Pre-primary	2,600,000	man-month	24	62,400,000	192	499,200,000	0	0
		Primary	2,600,000	man-month	24	62,400,000	192	499,200,000	0	0
		Secondary	2,600,000	man-month	24	62,400,000	192	499,200,000	48	124,800,000
	Teachers		1,800,000	man-month	396	712,800,000	3,168	5,702,400,000	1,308	2,354,400,000
Sub-total						900,000,000		7,200,000,000		2,479,200,000
② SBG ※N1-M4	Annual unit amount x Number of students	Pre-primary	50,000	man-year	120	6,000,000	960	48,000,000	300	15,000,000
		Primary	70,000	man-year	175	12,250,000	1,400	98,000,000	196	13,720,000
		Secondary	50,000	man-year	245	12,250,000	1,960	98,000,000	905	45,250,000
Sub-total						30,500,000		244,000,000		73,970,000
③ Education materials and equipment	Current average budget		55,000,000	Lumpsum	1	55,000,000	8	440,000,000	0	0
Sub-total						55,000,000		440,000,000		0
④ Lesson-study workshop	Current average budget		57,000,000	Lumpsum	1	57,000,000	8	456,000,000	0	0
	Additional budget	2 times a year per TTC	23,400,000	Time	2	46,800,000	16	374,400,000	16	374,400,000
Sub-total						103,800,000		830,400,000		374,400,000
Total						1,089,300,000		8,714,400,000		2,927,570,000
Amount in JPY	1 LAK=	0.012810	JPY			13.95 mil JPY		111.63 mil JPY		37.50 mil JPY

Actual Demo. Schools Operation Budget for 2019/20				
(D) Actual Average Operation Budget of a TTC		(E) Actual Operation Budget of 8 TTCs ((D)x8)		(F) Actual Budget + Additional Costs ((E)+(C))
	745,000,000		5,960,000,000	8,887,570,000
	9.54 mil JPY		76.35 mil JPY	113.85 mil JPY

As shown above, the average of actual operation budget for TTC demonstration schools in 2019/20 is 745 mil LAK (9.54 mil JPY) (D), and the total amount for 8 TTCs calculated from (D) is 5,960 mil LAK (76.35 mil JPY) (E). When the additional costs associated with the implementation of the Project, 2,928 mil LAK (37.50 mil JPY) (C) is added to (E), the sum is calculated as 8,888 mil LAK (113.85 mil JPY) (F).

Meanwhile, the total operation costs of demonstration schools of 8 TTCs derived from the above table is 8,714 mil LAK (111.63 mil JPY) (B), and it is equivalent to the total amount of (C) +(E).

2-5-2-2 Maintenance Cost

(1) Facility

Particular maintenance is not necessary for a few years after the completion of the Project. After that, costs for repainting and sludge removal from toilets will be necessary. The cost and frequencies are as follows.

Table 2-27 Estimated Amount of Facility Maintenance (For all 8 TTCs)

Item		Frequency	Annual Cost (LAK)
Re-painting	Interior walls and ceiling	Once per ten years	217,000,000
	Doors and Windows	Once per ten years	41,897,000
Sludge removal		Once a year	11,840,000
Total			270,827,000

(About 3.5 million JPY)

(2) Equipment

No maintenance budget is necessary for the equipment to be procured by the Project, as the items selected are free of maintenance costs, and they may be continuously used with daily cleaning and a basic visual check.

2-5-2-3 Total of Operation and Maintenance Costs

As described above, the additional costs of operation and maintenance, associated with the implementation of the Project, borne by the Lao PDR side are approximately 3,198.4 million LAK (the operation cost (2,927.6 million LAK) + the facility maintenance cost (270.8 million LAK)). This amount is only 0.07 % of 4,488,000 million LAK, the estimated budget of MOES for the education sector (excluding ODA). Hence, it is considered to be a payable amount for MOES.

Chapter 3 Project Evaluation

Chapter 3 Project Evaluation

3-1 Preconditions

The preconditions for starting the Project, which are expected to be implemented by the Lao PDR side without delay, are as follows;

- ① To secure the necessary land for the Project implementation, including the site preparation at KKY TTC;
- ② To implement the UXO clearance at following project sites;
 - LNT TTC: to implement the clearance of the southern part of the construction area
 - LPB TTC: to implement the clearance of the eastern part of the construction area
 - KKY TTC: to cut and level the proposed construction areas
 - SRV TTC: to implement the clearance of the remaining part of the demonstration school site
 - PKS TTC: to implement the clearance of the remaining part of the construction area
- ③ To remove and relocate any obstacles which may impede the construction works (including demolition of the existing buildings at BKN TTC, SVK TTC and PKS TTC);
- ④ To obtain the building permit in accordance with the Luang Prabang Urban Regulations;
- ⑤ To secure temporary facilities for TTC classroom buildings and demonstration schools for the construction period;
- ⑥ To unload and store furniture and equipment, when necessary, at the existing buildings to be demolished by the Japan side (LPB TTC, DKX TTC) ;
- ⑦ To proceed with the necessary procedures for the clearance of import customs regarding the materials and equipment used for the Project;
- ⑧ To proceed with the necessary procedures for the exemption of customs, domestic taxes and other taxes related to the procurement of goods and services required for the implementation of the Project;
- ⑨ To secure and connect electric power and water supply.

3-2 Necessary Inputs by Recipient Country

The necessary inputs by the Lao PDR side to make the Project outcome effective and sustainable are as follows;

- ① To secure the proper number of students at TTCs, to operate the proper educational programme by the development of curriculum, syllabus and teaching materials of TTC teacher training, the utilization of demonstration schools and others;
- ② To allocate the necessary teachers and staff to run the demonstration schools;
- ③ To allocate the budget to run the demonstration schools, including the personnel expenses of teachers and staff, operation and management cost and others;
- ④ To establish the maintenance and operation system of buildings and equipment for demonstration schools and to implement the proper maintenance;

- ⑤ To procure the educational materials to be covered by the Lao PDR side.

3-3 Important Assumptions

The important external factors critical to ensure that the Project outcome is effective and sustainable, but cannot be controlled by the Project activities, are as follows;

- ① There are no major changes of policy, deterioration of security or natural disasters which may cause the cancellation or long delay of the Project;
- ② There is no inflation higher than expected owing to a drastic change of the economic situation, and the necessary materials and equipment are procured as scheduled;
- ③ There is no major change of the education plan of the Lao PDR Government which aims at improving the quality of teachers and education mainly by strengthening the functions of TTCs and demonstration schools.

3-4 Project Evaluation

3-4-1 Relevance

The Project is evaluated to be relevant and eligible for the Grant Aid project of Japan by the reasons mentioned below;

① The Coverage of the Project Beneficiaries

The direct beneficiaries of the Project are teachers, staff and students for pre-service and in-service training of 8 TTCs and teachers, staff and students of demonstration schools. As it is expected that the capacity of new and in-service teachers will be enhanced through the improvement of buildings and equipment by the Project, students of pre-primary, primary and secondary education all over the country would also benefit indirectly in the medium to long term.

② The Contribution to the Achievement of Goal of the Medium and Long-term Development Plan

In the Lao PDR, while the access to primary education has been improving, the low proficiency and motivation for learning caused by the low quality of teachers remain serious issues in the field of basic education. Insufficient teaching ability and understanding of teachers, and inadequate teaching experience of TTC teachers are pointed out as the reasons. The Lao PDR Government refers to the strengthening of professional skills of teachers in pre-primary, primary and secondary education as one of outcomes of ESDP8 and aims for the enhancement of teacher quality through strengthening the TTC function. Since 2015, TTCs and demonstration schools have been positioned as a base for the improvement of education quality by providing educational instruction for teachers, by doing research, and by applying model educational method, curriculum and teaching materials.

The Project aims at improving an environment of practicum, lesson observation and lesson

study for pre-service and in-service training and at providing a place to practice model education by the development of buildings and equipment at the demonstration schools, which is consistent with ESDP8 in terms of purpose and means.

③ Consistency with Japanese Assistance Policy

In the Japanese Country Assistance Policy for the Lao PDR, the “Improvement of Educational Environment and Human Resource Development” is referred as one of 4 policy areas as follows;

“in order to raise the quality of education, comprehensive assistance is provided including improvement of curriculum, textbooks, the teacher training curriculum, and the capacity of teachers, especially in mathematics where the low learning outcomes need to be addressed. This assistance utilizes Japan's rich experience accumulated through past Japanese assistance activities in the Lao PDR. Assistance is also extended to develop infrastructure and improve school management.”

In addition, as the programme strategy mentions that “to raise the quality of education, assistance is provided to improve school management, as well as upgrading the quality of teachers” , the Project is consistent with the Japanese Assistance Policy.

Currently, JICA has implemented the technical cooperation project “the Project for Improving Teaching and Learning Mathematics for Primary Education (iTEAM)” executing the assistant activity for the enhancement of TTCs and demonstration schools in the field of mathematics and other assistances, including the dispatch of volunteers to pre-primary demonstration schools. Through the synergy among the Project and these activities, a higher assistance effect can be expected to be brought about. In addition, in the Lao PDR, the Grant Aid projects to construct primary and secondary schools and a series of technical cooperation projects to improve the quality of school management and education in the field of science and mathematics have been implemented since 2003. Along with the accumulation of outcomes of these assistances, the Project could contribute to the achievement of the overall goal of the Project, “the quality of primary education is improved in the Lao PDR.”

3-4-2 Effectiveness

The project is expected to bring about the following results.

(1) Quantitative Results

Indicators		Base value (Actual value in 2018)	Target value (Year 2027: 3 years after the completion)
The number of TTCs with demonstration schools (*1) located inside each of 8 TTC sites with proper environment (*2) for teacher training and research activities	Pre-primary education	1	8
	Primary education	2	8
	Secondary education	0	8
The classrooms of TTC demonstration schools with proper environment for teacher training and research activities(*3)	Pre-primary education	5	32
	Primary education	10	40
	Secondary education	0	56

(*1) The number of TTCs with demonstration schools having one or more classrooms per grade. The demonstration school is located inside the TTC compound or having its own compound. The target value is set 8, as all demonstration schools shall have one or more classrooms per grade after the completion of the Project.

(*2) It refers to classrooms meeting the standard design of MOES, not dilapidated, and located close enough to the TTC so that they may be continuously and effectively used for teacher training and research activities.

(*3) The number of classrooms to be built/rebuilt and the existing number of classrooms (base value) to make the target value.

(2) Qualitative Results

- By constructing TTC demonstration schools, the environment for (1) research of teaching method and curriculum, (2) teacher training, and (3) continuous professional development (CPD) of in-service teachers and pedagogical advisors (PA) will be improved and the quality of education in the Lao PDR will be improved.
- The positive spreading effect on surrounding areas is expected by practicing model education at demonstration schools.

For the above reasons, it is evaluated that there is enough relevance and effectiveness for the Project implementation.