No.

BASIC DESIGN STUDY REPORT

ON

THE PROJECT

FOR

CONSTRUCTION OF PRIMARY SCHOOLS

IN SUPPORT OF

EDUCATION FOR ALL

IN

THE KINGDOM OF NEPAL

JULY 2003

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

FUKUWATARI & ARCHITECTURAL CONSULTANTS LTD.

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Preface

In response to a request from His Majesty's Government of the Kingdom of Nepal, the Government of Japan decided to conduct a basic design study on the Project for Construction of Primary Schools in support of Education for All and entrusted the study to the Japan International Cooperation Agency (JICA).

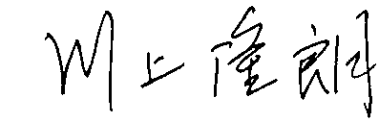
JICA sent to Nepal a study team from February 24 to March 23, 2003.

The team held discussions with the officials concerned of His Majesty's Government of Nepal, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Nepal from June 11 to June 18, 2003 in order to discuss a draft basic design, and as this result, the present report was finalized.

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

I wish to express my sincere appreciation to the officials concerned of His Majesty's Government of the Kingdom of Nepal for their close cooperation extended to the teams.

July 2003



Kunihiko Saito
President
Japan International Cooperation Agency

July 2003

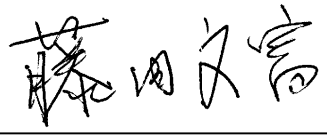
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Construction of Primary Schools in support of Education for All in the Kingdom of Nepal.

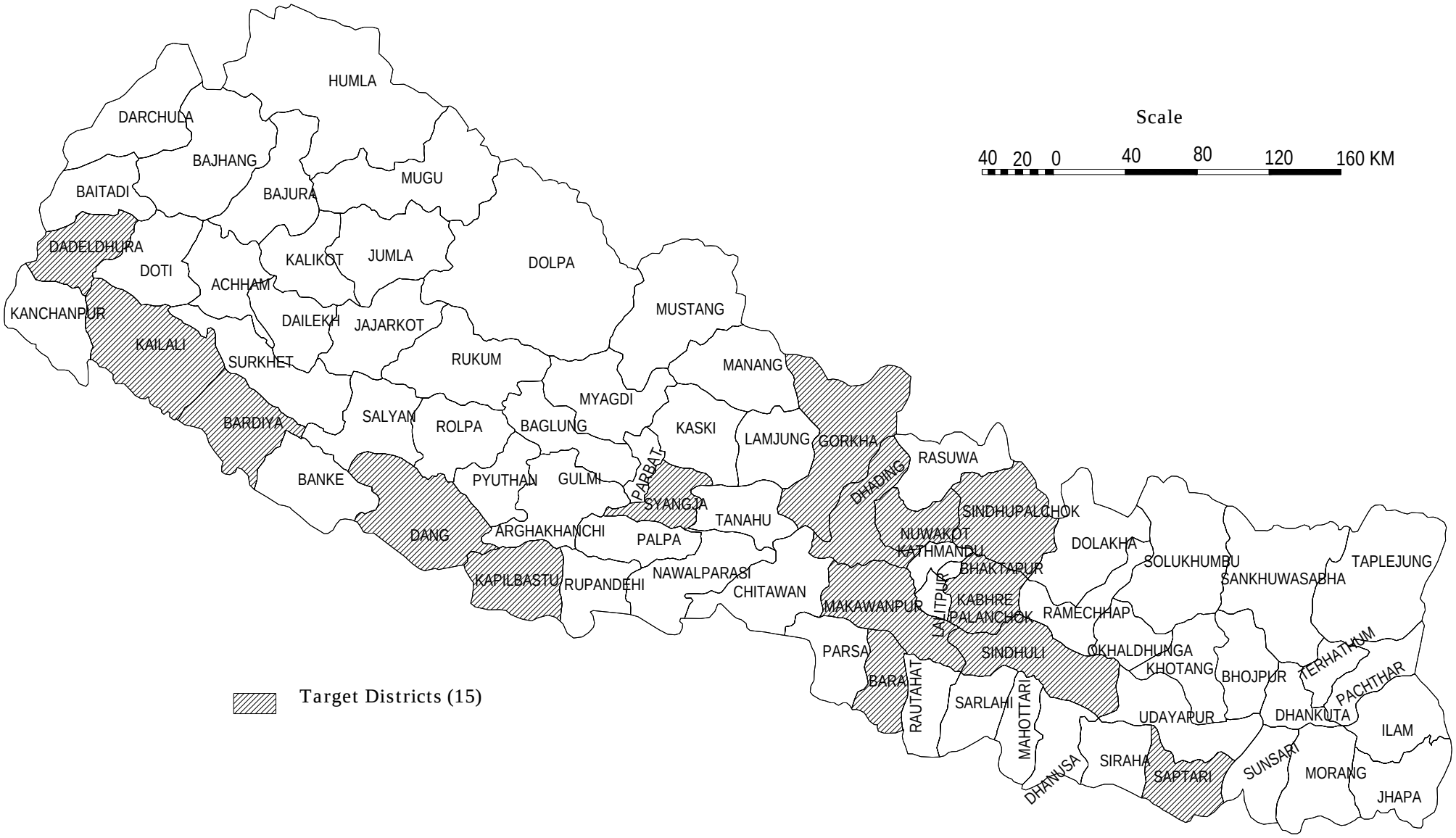
This study was conducted by Fukuwatari & Architectural Consultants Ltd., under a contract to JICA, during the period from February to July, 2003. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Nepal and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

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

Very truly yours,



Fumitomi Fujita
Project manager,
Basic Design Study Team
on the Project for Construction of Primary Schools
in support of Education for All
Fukuwatari & Architectural Consultants Ltd.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DOLPA
KANCHANPUR
DAILEKH
JAJARKOT
MUSTANG
KAILALI
SURKHET
RUKUM
MANANG
MYAGDI
BARDIYA
SALYAN
ROLPA
BAGLUNG
KASKI
LAMJUNG
GORKHA
RASUWA
BANKE
PYUTHAN
GULMI
PARBAT
DHADING
SYANGJA
TANAHU
SINDHUPALCHOK
DANG
ARGHAKHANCHI
PALPA
NUWAKOT
KATHMANDU
DOLAKHA
BHAKTAPUR
SOLUKHUMBU
TAPLEJUNG
SANKHUWASABHA
KAPILBASTU
RUPANDEHI
NAWALPARASI
CHITAWAN
MAKAWANPUR
LALITPUR
KABHRE
PALANCHOK
RAMECHHAP
PARSA
SINDHULI
OKHALDHUNGA
KHOTANG
BHOJPUR
TERHATHUM
PACHTHAR
BARA
RAUTAHAT
SARLAHI
MAHOTTARI
UDAYAPUR
DHANKUTA
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SIRAHA
SAPTARI
SUNSARI
MORANG
JHAPA
Target Districts (15)

Perspective

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Abbreviations

ADB	Asian Development Bank
AWPB	Annual Work Plan & Budget
BPEP	Basic and Primary Education Programme
CDC	Curriculum Development Centre
CIP	Core Investment Programme
COPE	Community Owned Primary Education Programme
DACAW	Decentralized Action for Children and Women
DANIDA	Danish International Development Agency
DDC	District Development Centre
DEC	Distance Education Centre
DEO	District Education Officer (Office)
DEP	District Education Plan
DOE	Department of Education
EAARRP	Earthquake Affected Areas Reconstruction and Rehabilitation Project
EMIS	Education Management Information System
ESRP	Earthquakes School Rehabilitation Programme
EU	European Committee
GER	Gross Enrolment Ratio
H.M.G.	His Majesty's Government
HRD	Human Resource Development
IDA	International Development Association
JSM	Joint Supervision Mission
LRC	Lead Resource Centre
MOF	Ministry of Finance
MOES	Ministry of Education and Sports
MOLD	Ministry of Local Development
MHPP	Ministry of Housing & Physical Planning
MTR	Mid Term Review on BPEP-II
NCED	National Centre of Educational Development
NEC	National Education Commission

NER	Net Enrolment Ratio
NPC	National Planning Commission
NGO	Non-governmental Organization
NNBC	Nepal National Building Code
OSP	Out-of-School Programme
PEDP	Primary Education Development Project (under ADB)
PEP	Primary Education Project
PIP	Project Implementation Plan
PSS	Physical Services Section
PTTC	Primary Teacher Training Centre
RC	Resource Centre
RED	Regional Education Directorate
RP	Resource Person
SEDP	Secondary Education Development Project (under ADB and DFID)
SESP	Secondary Education Support Programme (under ADB and DANIDA)
SIP	School Improvement Plan
SLC	School Leaving certificate
SMC	School Management Committee
SPIP	School Physical Improvement Plan
TA	Technical Assistance
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
VDC	Village Development Committee
VEC	Village Education Committee
VEP	Village Education Plan

Summary

Summary

Nepal is implementing its Tenth Plan (2002-2007) under a four-pillar strategy for poverty reduction:1) Broad-based economic growth, 2) Social sector development, 3) Targeted programs for extremely poor, vulnerable and deprived groups, and 4) Good governance. It is recognized that developing human resources is essential for reducing human poverty, and basic and primary education is one of the most important sub-sectors to be developed. Following the Basic and Primary Education Project (BPEP-I; 1992-1998), which covered 40 districts, Basic and Primary Education Programme II (BPEP-II; 1999-2004), aimed at (1) enhancing access to primary education and retention of primary-aged children in schools, (2) improving learning achievements, and (3) building the institutional capacity to promote greater management efficiencies, is now under implementation in all 75 districts of the country. BPEP-II is a comprehensive sub-sector programme, which is being supported under a common basket funding system by IDA, Denmark, Finland, Norway and EU, while Japan, ADB and UNICEF are extending bilateral support outside the basket framework.

Japan has made important contributions towards improving the physical environments of schools, carrying out the previous phases of the project for primary school construction under Japan's Grant Aid, and procuring construction materials for 2,958 classrooms in 4-year phases under BPEP-I, as well as construction materials for 2,540 classrooms in 3-year phases under BPEP-II. According to EMIS (2001), however, the estimated demand for primary school classrooms is still 17,700 units. Due to potential demand to accommodate students increasing and to compensate for the deterioration of existing classrooms, the shortage of primary school classrooms is still a serious problem.

Under the situation stated above, in April 2001, HMG of Nepal made a request to the Government of Japan for grant aid assistance to continue implementation of the Project for procuring construction materials for 4,000 classrooms and other facilities, classroom furniture and equipment for construction management.

In response to the request, the Government of Japan decided to conduct a basic design study for the Project, and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent a study team

to Nepal from February 24 to March 23, 2003. The team held discussions with the officials concerned of His Majesty's Government of Nepal, and collected necessary information. Then, in Japan, the study team studied the appropriateness and the effects of the Project, reviewed and selected target districts, and worked out basic designs for the volume of the project, as well as the specifications of materials, compiling the results in the draft Basic Design Study Report.

JICA sent a study team to Nepal to explain the draft report from 11 June to 18 June 2003. The team explained and discussed with the Nepalese side the contents of the draft and concluded the basic design as stated below.

During the discussions in March 2003, 19 districts were proposed by H.M.G. of Nepal as candidate districts for the Project. Among the 19 districts, 11 were proposed on the basis of the results of physical surveys already undertaken by DOE, but no physical survey has been done for the other 8 districts. Therefore, while the 11 districts were accepted as target districts for the Project, with their needs for classroom construction were confirmed by the physical survey, the needs for classroom construction of the remaining 8 districts were tentatively estimated using district-wise EMIS data. As a result, of the 8 districts, 4 were found to have enough classrooms or little demand, and were excluded from among the candidates. Thus, the 15 districts shown in the table below were selected as target districts of the Project.

The facilities will be constructed by School Management Committees under funding support and technical guidance provided by H. M. G. of Nepal and with the major construction materials procured by a Japanese supplier. The Japanese side will procure the major construction materials for the following facilities.

- Classroom Building (3 types for Terai, Hill and Mountain)
- Toilet (3 types for Terai, Hill and Mountain)
- Water Supply (for Terai only)
- Furniture for Classrooms, and
- Resource Centres (2 types for Terai and Hill/Mountain)
- Furniture for Resource Centres
- Equipment for Construction Management (Personal Computers, UPS, Scanner, Printer)

The water supply for hill and mountain is to be covered by the Nepalese side.

Then, on condition that construction is implemented within at most 2 consecutive years in a district and within the construction management capacities of DOE, the number of classrooms to be constructed in each target district was assessed on the basis of the results of the physical surveys of the 11 districts, and taking the lesser number either of the number requested or the number assessed by EMIS data for the remaining 4 districts. Also, a Resource Centre building will be constructed in the leading school of a cluster where there is no exclusive RC building, and where at least one target school is planned for classroom construction by the Project. As for Toilet and Water Supply, one set (Toilet: one toilet booth for boys, one booth for girls in separate blocks/Water supply: one hand pump and GI pipes) will be constructed at the target school with classroom construction or RC construction under the Project where there is no toilet or water supply in the compound.

In consequence, the volume of the Project was assessed in detail as shown in the tables below:

Quantities of the Facilities to be provided under the Project (Total)

District Name	Classroom Building*			RC Building**		Toilet***		Water Supply	Furniture for Classrooms	Furniture for RC
	terai	hill	mountain	terai	hill	terai	hill			
Unit	buildings	buildings	buildings	buildings	buildings	sets	sets	sets	sets	sets
Bara	151			2		54		38	5,738	2
Bardiya	80			3		40		40	3,040	3
Dadeldhura		70					23		2,100	
Dhading		66			10		46		1,980	10
Makwanpur		56			6		31		1,680	6
Sindhuli		50			4		52		1,500	4
Sindhupalchowk			78		10		58		1,872	10
Kavrepalanchok		74			9		31		2,220	9
Saptari	141					30		21	5,358	
Syanjga		70			5		33		2,100	5
Dang	140					101		101	5,320	
Gorkha		44			3		49		1,320	3
Kailali	116	24				112	5	112	5,128	
Kapilbastu	78					51			2,964	
Nuwakot		27					17		810	
Total	706	481	78	5	47	388	345	312	43,130	52

*One toilet each in the district will be of a special design for disabled students

**RC: Resource Centre

***One classroom building is of 2 classrooms

The standard design of the facilities covered by the Project is based on the standard design prepared by DOE, the classroom block of which is of steel frame with brick/stone non-load-bearing walls, but some minor alterations were made as necessary.

Table Floor Areas of the Facilities

Facility	Unit Floor Area(sqm)	Number of Blocks	Total Floor Area (sqm)
Classroom (Terai)	90.00	706	63,540.0
Classroom (Hill)	80.40	481	38,672.4
Classroom(Mountain)	72.36	78	5,644.1
RC(Terai)	118.17	5	590.9
RC(Hill/Mountain)	88.25	47	4,147.8
Toilet(Terai)	1.44	382	550.1
Toilet(Hill)	1.88	336	631.7
Toilet for Disabled (Terai)	2.70	6	16.2
Toilet for Disabled (Hill/Mountain)	3.29	9	29.6
Total(sqm)			113,823.0

If the Project is implemented under Grant Aid of Japan, the implementation period will be 35 months in total. The total cost of the Project is estimated to be 2,796 million Japanese yen, with the cost borne by the Japanese side being 2,279 million Japanese yen and the cost borne by the Nepalese side being 3.23 million Nepalese Rupees (5.17 million Japanese yen).

It is appropriate to implement the Project under Japan's Grant Aid Assistance, because the Project will have the following effects:

1) By replacing deteriorated classrooms with new ones of better quality, the Project will contribute to improving the education environment, which will be effective for improving internal efficiency. Furthermore, provision of toilets and water-supply facilities will greatly encourage the attendance of female teachers and students.

2) Community participation in overall primary school management activities will be enhanced through participation in this construction project and by receiving guidance on various educational matters from the government.

3) By constructing exclusive facilities for Resource Centres, the Project will contribute to activating teacher training and information-sharing, which will lead to improved quality of education.

For the effective implementation of the project, it is recommended that HMG of Nepal take the following actions:

1) Coordination with other donors

As and when necessary for the effective implementation of the Project, the DOE should ensure effective coordination with the common basket donors in terms of the Core Investment Plan (CIP) components including the allocation of target districts.

2) Execution of the project components other than those covered by Grant Aid of Japan

On the basis of Whole School Approach policy, DOE shall execute construction of facilities other than those covered by Grant Aid of Japan such as rehabilitation of existing classroom buildings, fencing for school compound, and water supply for schools in hill and mountain region.

3) Measure for Arsenic Problems

To respond to the arsenic problem, DOE will carry out tests based on "Nepal's Interim Arsenic Policy & Preparation Report" for each water supply provided under the Project, and install a filtration system if arsenic contamination is above the limit applied in the said policy (0.05 mg/litre).

4) Maintenance of facilities

Not only the facilities constructed under the Project but all school facilities are to be maintained by communities under the responsibility of SMC. Hence, DOE should support maintenance activities by distributing the maintenance manual to the schools and giving the training required to improve the maintenance skills and the theoretical knowledge of the communities.

Contents

Chapter 1　Background of the Project

Chapter 1 Background of the Project

The Kingdom of Nepal, with a total population of about 23 million (in 2001), is a laterally narrow country with an area of about 147,188 km^2. It extends approximately 220 km from north to south and approximately 880 km from east to west, and is located between 26°20' N. Lat. and 30°10' N. Lat. and between 80°15' E. Long. and 88°05' E. Long. The country consists of a southern region with a subtropical monsoon climate, an upland region with a warm climate to the north, and the Himalayan mountain region with a cold climate to the extreme north. Thus, geographically, the country has three distinct belts running east to west. The lower southern region called the Terai plain is adjacent to India. Historically, the intermediate upland region, which is called the Hill, has been the core of Nepal, with the Mountain region forming the third belt to the north. HMG of Nepal has divided the land into five development regions with borderlines running north to south, i.e., Far Western, Mid-Western, Western, Central and Eastern Development Regions. The five development regions consist of 14 zones, which are subdivided into 75 districts.

The major thrust of His Majesty's Government of Nepal in recent past is the poverty alleviation. Among the multi prongs strategy adopted by the government in eradicating the poverty is basic education. Literacy and basic education programs which are designed keeping in view the needs of its people contribute significantly towards improving the standard of living and, sustained economic and social growth of the country. Keeping this philosophy in mind, HMG of Nepal has earmarked around 15% of its budgetary allocation in the education sector and 59% of total education budget goes to the basic and primary education sub-sector (2002/03).

Through the evaluation of the Ninth Plan (1997-2002), it has been found that further development efforts are required to meet the expected poverty reduction, particularly in rural areas; and that poverty is more widespread and deeper among women, ethnic groups and Dalits, and those living in backward areas – Mid and the Far Western and Mountain areas. Granting that the Plan implementation was affected by inevitable events such as the global slowdown of the economic growth, disruption caused by Maoist activities, etc., the

actual annual growth rate of GDP was estimated as only 3.6% at the end of Ninth Plan, while the target rate was aimed at 6.0%.

Education in the Ninth Plan had remained a main policy as an effective means to poverty alleviation and all-round development. Special emphasis was given to the development and extension of basic and primary education, one of the main objectives of Ninth Plan having been to make primary education easily accessible to people and to conduct program for making primary education gradually compulsory. To achieve this, a target was set to increase the net primary student enrolment ratio to 90% from 69% by adding 3,000 primary schools during the Ninth Plan period, still the result remained to 82% (2001/02).

In such context, Nepal is implementing its Tenth Plan (2002-2007) under a four-pillar strategy for poverty reduction:1) Broad-based economic growth, 2) Social sector development, 3) Targeted programs for extremely poor, vulnerable and deprived groups, and 4) Good governance. It is recognized that developing human resources is essential for reducing human poverty, and basic and primary education is one of the most important sub-sectors to be developed. Following the Basic and Primary Education Project (BPEP-I; 1992-1998), which covered 40 districts, Basic and Primary Education Programme II (BPEP-II; 1999-2004), aimed at (1) enhancing access to primary education and retention of primary-aged children in schools, (2) improving learning achievements, and (3) building the institutional capacity to promote greater management efficiencies, is now under implementation in all 75 districts of the country. BPEP-II is a comprehensive sub-sector programme, which is being supported under a basket funding system by IDA, Denmark, Finland, Norway and EU, while Japan, ADB and UNICEF are extending bilateral support outside the basket framework.

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classrooms is still a serious problem.

Under the situation stated above, in April 2001, HMG of Nepal made a request to the Government of Japan for grant aid assistance to continue implementation of the Project for procuring construction materials for 4,000 classrooms and other facilities, classroom furniture and equipment for construction management.

The items requested are listed below:

1) Project Sites: 20 Districts

2) Construction Materials for:

   a) construction of 4,000 new classrooms

   b) construction of 20 resource centres per year

   c) provision of water and sanitation component

   d) rehabilitation of resource centres

3) Furniture for classrooms and resource centres

4) Communication equipment (Fax and computer) and material transport equipment

Chapter 2　Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goals and Project Objectives

(1) Overall Goals

H.M.G. of Nepal is now carrying out its Tenth Plan (2002-2007), the main target of which is poverty alleviation. The main objectives of the education sector set in the Tenth Plan are as follows:

a) To implement programs of non-formal education, particularly to assist developing communities and women to increase their living standards
b) To expand and develop the quality education required for the development of the country, and to make quality primary education easily available to all
c) To supply human resources with basic and intermediate levels of skills required by the country
d) To develop human resources of an internationally competitive level that supports the national economy for the all-round development of the country; and, to use education as a strong vehicle for economic and social development, and for poverty alleviation
e) To develop sports development and youth mobilization programs that produce capable, high-quality and disciplined human resources required by the country

Moreover, to ensure primary education for all, including access to it by all sections and communities of the population, a numeric target for net enrolment ratio (NER) is set at 90% by the end of the Tenth Plan.

H.M.G. of Nepal, while implementing the remaining construction project until the end of BPEP-II (-July 2004), based on the policies and the criteria agreed at the mid-term review held in March 2002, is now preparing for the incoming programme, Education for All 2004-2009, aiming at three major objectives:(1) Ensuring Access and equity in primary education, (2) Enhancing Quality and relevance of primary education, and (3) Improving Efficiency and Institutional Capacity.

To achieve these objectives, the program will be implemented with the following 6 EFA goals:

1) Expanding and Improving early childhood development
2) Ensuring access to education for all children
3) Meeting the learning needs of all children including indigenous people and linguistic minorities
4) Reducing adult illiteracy
5) Eliminating gender and social disparities
6) Improving all aspects of quality

Regarding the component 2) Ensuring access to education for all children, improvements of the following physical facilities of primary schools are tentatively planned:

a) Construction of 10,000 classrooms
b) Improvement of external environment in 7,500 schools
c) Rehabilitation of 20,000 classrooms
d) Construction of 300 resource centres

(Above are based on "Education for All 2004-2009) Core Document by MOES, HMG/N as of May 29 2003.)

Table 1 Achievement planned in EFA 2004-2009

	2000	2008/09
Indicators	Present status	Target
1. GER at Primary Level	120%	104%
2. NER at Primary Level	80%	96%
3. Primary Exp./ GNP	1.8%	2.3%
4. Primary Exp./ Total Education Exp.	56.7%	60%
5. % of teachers with required qualification and training	15.4%	99%
6. Pupil Teacher Ratio	37	37
7. Repetition Rate Grade 1	42%	10%
Grade 5	11%	3%

(2) Project Objectives

Under the higher ranked policies and programs, the Project for the Construction of Primary Schools in support of Education for All (hereinafter referred to as "the Project") aims to improve educational

environment in primary schools in the 15 target districts listed below by improving school facilities.

1. Bara
2. Bardiya
3. Dadeldhura
4. Dhading
5. Makwanpur
6. Sindhuli
7. Sindhupalchowk
8. Kavrepalanchok
9. Saptari
10. Syangja
11. Dang
12. Gorkha
13. Kailali
14. Kapilbastu
15. Nuwakot

2-1-2 Basic Concept of the Project

To achieve the above objective, school physical facilities are to be constructed under the project with community participation, with Grant Aid from Japan covering procurement of construction materials and furniture for the construction of 2,530 classrooms, 52 RC buildings, toilets for 733 sites, and 312 hand pump sets for water supply.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Policy

1) Selection of the Target Districts

As the request in April 2001 nominated no particular district, during discussions in March 2003, the 19 districts described in **Table 2** were proposed by H.M.G. of Nepal as candidate districts for the Project. The criteria the Nepalese side used to select the candidate districts are as follows:

a) Districts that have need of classrooms to be constructed

b) Bottom-up planning districts and districts not covered by BPEP-I and PEDP

c) Districts whose Human Development Indexes are below the national average

d) Districts that have motor vehicle access roads to district HQs and some motor vehicle road networks from those district HQs

e) Districts covered by Japanese Grant Aid under BPEP-II are excluded

Table 2 The List of the Candidate Districts for the Project

Districts eligible for a), b), c), d), e)	Nos.
Bara, Bardiya, Dadeldhura, Dhading, Makwanpur, Sindhuli, Sindhupalchowk	7
Districts eligible for a), b), d), e)	
Bhaktapur, Dolakha, Kathmandu, Lalitpur, Kavrepalanchok, Saptari, Syangja	7
Districts eligible for a), c), d), e)	
Dang, Gorkha, Kailali, Kapilbastu, Nuwakot	5

The Project will not cover the construction of classrooms and RCs in the same districts as those covered by Core Investment Plan(CIP) by the common basket funding system in the same Nepalese fiscal year, because the introduction of two different implementation modalities in the same fiscal year would cause confusion in the target districts. HMG/N shall select the target districts of the CIP project after 2003/04 in a way that does not duplicate those covered by the Project.

Table 3: Calculation for the Selection of the Target Districts by DOE

		1	2	3	4	5	6	7	8	9	10	11	12	13
District	Topography	No. of public primary schools	No. of students of primary level in the school	No. of classrooms needed	No. of existing classrooms	No. of classrooms constructed before BPEP-II	No. of classrooms constructed under BPEP-II	No. of classrooms to be constructed	Accessibility	Needs of new classroom construction	MTR & bottom-up districts	HDI	Districts covered under Japan's Grant Aid under	Target Districts
Bara	T	264	*36,765	*668		270	370	*127	○	○	○	0.309		○
Bardiya	T	203	62,365	1,134		128	250	802	○	○	◎	0.304		○
Dadeldhura	H	196	22,397	498		414	50	126	○	○	◎	0.265		○
Dhading	H	473	61,614	1,369		0	230	1,139	○	○	○	0.258		○
Makawanpur	H	344	62,146	1,381		176	180	1,064	○	○	○	0.309		○
Sindhuli	H	363	46,010	1,022		606	150	401	○	○	○	0.295		○
Sindhupalchok	M	414	51,505	1,472		678	250	544	○	○	○	0.277		○
Bhaktapur	V	155	20,908	380		124	100	201	○	○	○	0.393		○
Dolakha	M	309	43,947	1,256		682	120	454	○	○	○	0.340		○
Kathmandu	V	236	63,356	*1,267		236	150	*967	○	○	○	0.603		○
Kavrepalanchok	H	424	64,940	1,443		638	250	697	○	○	○	0.380		○
Lalitpur	V	188	28,847	524		244	150	219	○	○	○	0.523		○
Saptari	T	260	60,433	1,099		1,002	330	131	○	○	○	0.374		○
Syangja	H	489	64,612	1,436		516	180	854	○	○	◎	0.378		○
Dang	T	293	65,796	1,196		478	0	892	○	○		0.299		○
Gorakha	H	434	64,203	1,427		392	100	1,022	○	○		0.308		○
Kailali	T	261	65,161	1,185		687	250	498	○	○		0.299		○
Kapilbastu	T	252	52,563	956		608	200	369	○	○		0.286		○
Nuwakot	H	409	55,253	1,228		996	0	453	○	○		0.312		○
Achham	H	272	36,540	812		332	100	454		○		0.235		
Arghakhanchi	H	330	47,587	1,057		118	0	966	○	○		0.331		
Baglung	H	419	57,495	1,278		392	0	973	○	○		0.337		
Baitadi	H	293	36,695	815		290	50	540		○		0.256		
Bajhang	M	242	25,739	735		332	100	303		○		0.201		
Bajura	M	181	17,902	511		332	0	179		○		0.173		
Banke	T	160	*40,944	*744		416	210	270	○	○		0.309	○	
Bhojpur	H	323	45,643	1,014		668	20	475		○	○	0.351		
Chitawan	T	314	74,438	1,353		694	262	650	○	○	◎	0.370	○	
Dailekh	H	287	38,414	854		380	0	558		○		0.246		
Darchula	M	257	22,948	656		440	0	216		○		0.286		
Dhankuta	*T	280	30,304	*551		1,254	0	*-247	○			0.401		
Dhanusha	T	298	37,587	683		772	186	6	○	○		0.329	○	
Dolpa	M	105	6,215	178		0	20	158		○	○	0.218		
Doti	H	265	31,130	692		326	100	338		○		0.249		
Gulmi	H	440	60,518	1,345		398	0	1,035	○	○		0.326		
Humla	M	103	5,309	152		0	20	132		○	○	0.244		
Ilam	H	300	43,748	972		316	0	726	○	○		0.380		
Jajarkot	H	227	23,994	533		112	50	396		○		0.210		
Jhapa	T	321	92,664	1,685		1,415	410	374	○	○	◎	0.421	○	
Jumla	M	116	12,214	349		60	20	269		○		0.218		
Kalikot	M	149	15,524	444		235	0	209		○		0.177		
Kanchanpur	T	190	54,690	994		304	228	573	○	○		0.332	○	
Kaski	H	406	56,297	1,251		669	0	731	○	○		0.450		
Khotang	H	392	50,292	1,118		524	130	580		○	○	0.318		
Lamjung	H	*345	39,531	878		390	0	575	○	○		0.375		
Mahottari	T	229	*46,936	*853		712	196	*204	○	○		0.322	○	
Manang	M	26	883	25		40	0	-15				0.306		

Table 3: Calculation for the Selection of the Target Districts (continued)

District	Topography	No. of public primary schools	No. of students of primary level in the school	No. of classrooms needed	No. of existing classrooms	No. of classrooms constructed before BPEP-II	No. of classrooms constructed under BPEP-II	No. of classrooms to be constructed	Accessibility	Needs of new classroom construction	MTR & bottom-up districts	HDI	Districts covered under Japan's Grant Aid under BPEP-II	Target Districts and Priority
Morang	T	443	103,585	1,883		1,306	260	792	○	○		0.421	○	
Mugu	M	120	5,759	165		186	0	-21				0.147		
Mustang	M	62	1,886	54		141	0	-87				0.316		
Myagdi	H	176	21,018	467		80	0	405		○		0.309		
Nawalparasi	T	374	86,654	1,576		510	210	1,041	○	○		0.300	○	
Okhaldhunga	H	254	30,291	673		602	150	55		○	○	0.340		
Palpa	H	402	63,010	1,400		388	0	1,098	○	○		0.337		
Panchthar	H	282	47,182	1,048		634	50	505		○	○	0.328		
Parbat	H	296	36,217	805		340	0	540		○		0.357		
Parsa	T	240	48,675	885		448	270	330	○	○		0.355	○	
Pyuthan	H	251	36,962	821		296	0	591		○		0.323		
Ramechhap	H	331	40,282	895		620	50	363		○	○	0.315		
Rasuwa	M	89	8,886	254		0	50	204		○	○	0.246		
Rautahat	T	212	51,618	939		408	210	469	○	○		0.308	○	
Rolpa	H	282	36,447	810		0	150	660		○	○	0.264		
Rukum	H	194	29,797	662		250	0	468		○		0.270		
Rupandehi	T	305	73,062	1,328		342	300	811	○	○		0.361		
Sallyan	H	289	45,185	1,004		314	0	760		○		0.250		
Sarlahi	T	347	55,718	1,013		1,008	192	180	○	○		0.327	○	
Shankhuwasabha	*H	283	32,002	*711		660	20	*178		○	○	0.365		
Siraha	T	312	65,645	1,194		1,240	206	198	○	○		0.350	○	
Solukhumbu	M	197	21,055	602		372	20	210		○	○	0.354		
Sunsari	T	273	71,408	1,298		1,250	260	243	○	○		0.382	○	
Surkhet	H	369	56,310	1,251		647	50	698	○	○		0.357		
Tanahun	H	485	60,838	1,352		736	0	780	○	○		0.384		
Taplejung	*H	242	32,693	*727		264	30	*491		○	○	0.363		
Terathum	H	212	26,313	585		746	50	-45			○	0.393		
Udayapur	H	276	39,830	885		1,172	0	-26	○			0.355		
Total		**20,835**	**3,273,330**	**68,646**		**35,756**	**7,940**	**24,950**				**0.325**		

Column1: EMIS2000 (School Level Educational Statistics 2000, Table12)

Column 2: EMIS2000 (School Level Educational Statistics 2000, Table18)

Column 3: (Col.2)÷(Terai, Valley=55, Hill=45, Mountain=35)

Column 6: Districts taken by Japan's Grant Aid (2000、01、02)、CIP2001/02

Column 7: Number of Classrooms to be constructed calculated by the following formula:

(Col.3)−(Col.5)×35÷(Terai, Valley=55, Hill=45, Mountain=35)−(Col.6)

Column 8: Districts with motor vehicle access roads to district HQs and some motor vehicle road networks from those district HQs

Column 9: Classroom Construction Needs

Column 10: (○) Districts not taken by PEDP or BPEP-I, (◎印)Bottom-Up Planning Districts

Column 11: HDI(1996)

*: Figures by DOE　Figures in ( ) are assessed by JICA Team

However, some points were found to be improved or clarified in the list proposed by DOE when calculating the needs for new classroom construction as shown below.

a) some mistakes in topography (Dhankuta, Shankhuwasabha and Taplejung)
b) some mistakes in the numbers of schools and students
c) students' accommodation in Kathmandu numbered 50, while in other districts in the valley area it numbered 55
d) the number of existing classrooms built by communities and local municipalities was neglected, which results in overestimation of the construction needs
e) some discrepancies in the numbers of classrooms built under BPEP-II with those stated in the Status Report on Component 1 of BPEP-II
f) the condition of classrooms (whether they are in a usable condition) was neglected, which is essential in assessing the construction needs

Then, DOE submitted a list of candidate schools in each candidate district on 5th May, 2003, which is shown in Appendix 13. The list was prepared according to the following criteria:

a) The schools were selected according to school selection criteria agreed on the Mid Term Review (MTR) of BPEP-II.
b) The schools were selected on the assumption that the Project will be implemented in 3 phases as initially requested. The districts to be covered by the 1st phase were selected where no construction was planned under the CIP 2003/04 project.
c) The schools were selected not only according to the needs of construction but also the construction management capacity of the Nepalese side.
d) As shown in Table 4, in 11 out of 19 districts, DOE has undertaken a physical survey to assess the needs for constructing school physical facilities. As for the other 8 districts, physical surveys have not been done and the school lists were prepared based on EMIS data. Therefore, while the 11 districts may be accepted as target districts for the Project with their needs for classroom construction confirmed by the physical survey, for the remaining 8 districts, the needs for

classroom construction were tentatively estimated using district EMIS data. The physical surveys will be done by the detailed design stage of each phase of the Project.

Table 4: Summary of the Candidate School List by DOE

District	Physical Survey	Terrain	1st Phase				2nd Phase				3rd Phase				Total			
			NCR	RC	WC	WS	NCR	RC	WC	WS	NCR	RC	WC	WS	NCR	RC	WC	WS
Bara	Y	T					150	2	33	20	152		20	18	302	2	53	38
Bardiya	Y	T	168	3	42	41									168	3	42	41
Dadeldhura	Y	H					90		3		90		25		180		28	
Dhading	N	H					80	5	30		80	5	25		160	10	55	
Makawanpur	N	H					100	5	30		100	5	25		200	10	55	
Sindhuli	Y	H					84	7	42		84	7	45		168	14	87	
Sindhupalchok	Y	M	80	5	24		106	5	45						186	10	69	
Bhaktapur	N	V					130	5	50		120	5			250	10	50	
Dolakha	N	M					80	5	30		80	5	25		160	10	55	
Kathmandu	N	V					140	5	40		140	5	25		280	10	65	
Kavrepalanchok	Y	H					94	7	17		90	6	20		184	13	37	
Lalitpur	N	V					140	5	50		138	5	25		278	10	75	
Saptari	Y	T					152		11	7	130		17	12	282		28	19
Syangja	Y	H					84	4	21		82	4	17		166	8	38	
Dang	N	T	140		50	50	140		50	50					280		100	100
Gorkha	Y	H					80	10	46		80	9	41		160	19	87	
Kailali	Y	T	140		48	43	140		69	69					280		117	112
Kapilbastu	Y	T	156		51										156		51	
Nuwakot	N	H	80		25		80		25						160		50	
Total	**Yes: 11 No: 8**		**764**	**8**	**240**	**134**	**1870**	**65**	**592**	**146**	**1366**	**56**	**310**	**30**	**4000**	**129**	**1142**	**310**
No. of Districts			**6**				**17**				**13**				**19**			

The Study Team recalculated the needs for new classroom construction in the selected 19 districts using the latest EMIS data (Year 2001), following the steps shown in **Figure 1**. As a result, of the 8 districts, 4 districts (Bhaktapur, Dolakha, Kathmandu and Lalitpur) were found to have enough classrooms or few needs according to EMIS data. Therefore, these 4 districts were excluded from the list of candidate districts because of a lack of clear evidence for the need for classroom construction. Thus, the 15 districts shown below were selected as target districts of the Project. **Table 6** shows the needs for new classroom construction calculated by the study team based on EMIS data.

Table 5: Target Districts

Bara, Bardiya, Dadeldhura, Dhading, Makwanpur, Sindhuli, Sindhupalchowk, Kavrepalanchok, Saptari, Syangja, Dang, Gorkha, Kailali, Kapilbastu, Nuwakot

Figure 1: Flow Chart of the Calculation of Number of Classrooms to be Built in Each District

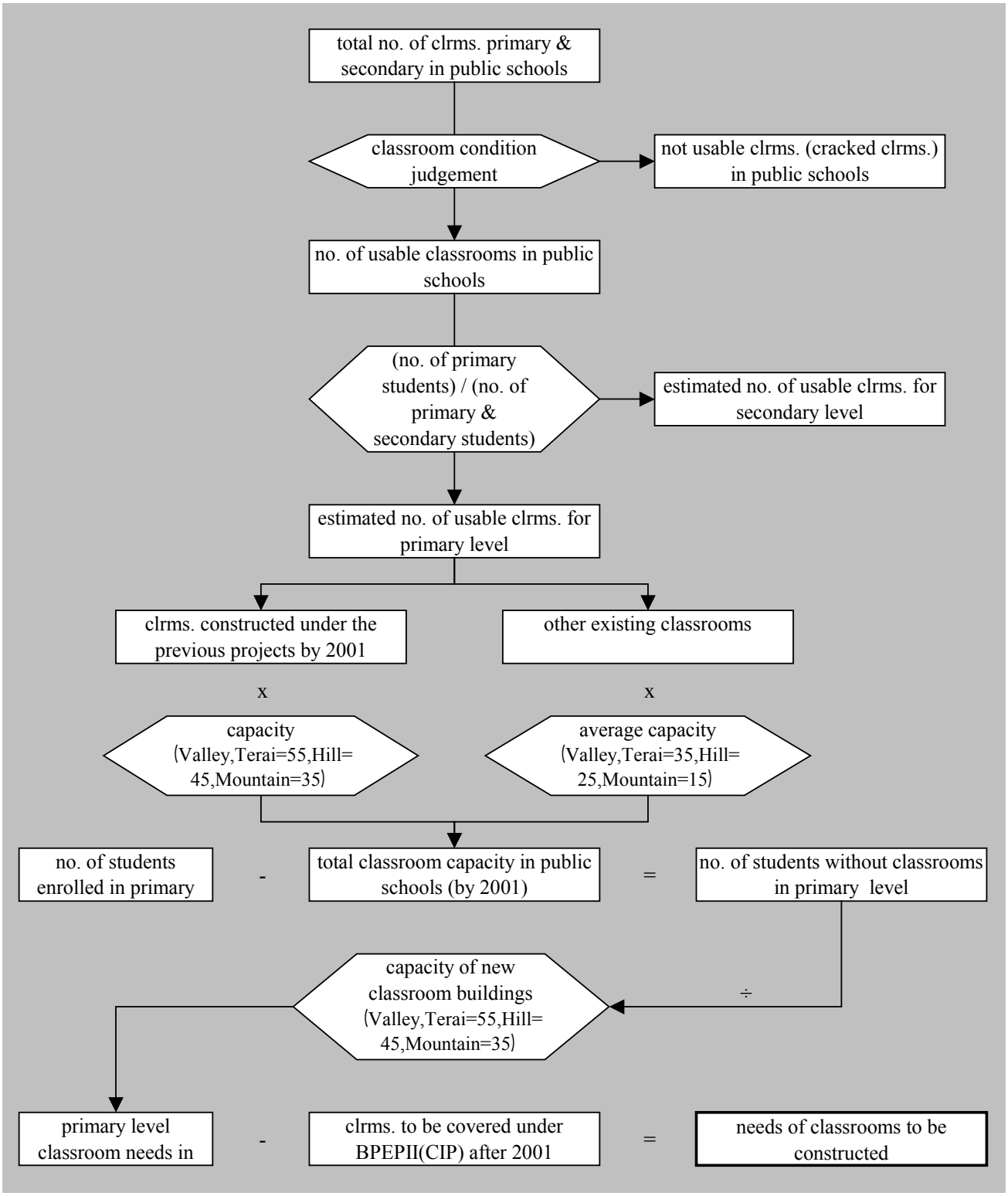


Table 6: Classroom Construction Needs Based on the 2001 EMIS Data

	Districts	Topography	Physical Survey by DOE	Classroom Construction Needs by EMIS	Target Districts	Remarks
1	Bara	Terai	○	548	○	
2	Bardiya	Terai	○	556	○	
3	Dadeldhura	Hill	○	Fulfilled	○	Determined by physical survey
4	Dhading	Hill		407	○	
5	Makawanpur	Hill		521	○	
6	Sindhuli	Hill	○	183	○	
7	Sindhupalchok	Mountain	○	666	○	
8	Bhaktapur	Valley		Fulfilled		
9	Dolakha	Mountain		7		Nearly Fulfilled
10	Kathmandu	Valley		11		Nearly Fulfilled
11	Kavrepalanchok	Hill	○	351	○	
12	Lalitpur	Valley		Fulfilled		
13	Saptari	Terai	○	296	○	
14	Syangja	Hill	○	309	○	
15	Dang	Terai		626	○	
16	Gorkha	Hill	○	405	○	
17	Kailali	Terai	○	503	○	
18	Kapilbastu	Terai	○	138	○	
19	Nuwakot	Hill		53	○	
	Total Number of Classrooms			5,580		Exclude Minus numbers
	Number of Districts		11	14	15	

The details of the classroom construction needs for all the 75 districts are shown in Appendix-11.

2) Criteria for Selecting Target Schools in Each District

Target schools in each districts are to be selected with the same criteria as confirmed at the Mid Term Review of BPEP-II, which are described below:

①Clusters／Schools shall be prioritised on the basis of index of the following educational Criteria：

1) Enrolment of Dalit students(x) = $\frac{\text{No. of Dalit Students in PS}}{\text{Total No. of Students in PS}}$

Weightage for x =40%

2) Enrolment of Girl Students(y) = $\frac{\text{No. of Girl Students in PS}}{\text{Total No. of Students in PS}}$

Weightage for y=30%

3) Ratio of grade 5 to grade 1 students(z) = $\frac{\text{No of students in Grade 5}}{\text{No. of students in grade 1}}$

Weightage z=30%

[Index] =0.4x+0.3y+0.3z

Grater the value of index, higher the priority of the school for program implementation.

For each of the target districts, a long list of schools is to be prepared in the order of priorities stated above, then within the capacity of a particular project, schools will be selected from the long list in the order obtained with the criteria stated in ② below:

②Need for school physical improvement program is determined on the basis of following criteria：

1) Adequacy of Classroom (ACR) = $\frac{\text{No. of Classrooms available in PS}}{\text{No. of running classes in PS including section}}$

ACR＜1, school is eligible for NCR construction

2) Space Requirement (SR) = $\frac{\text{Total area of classrooms (in sqm)}}{\text{Total No. of students in PS}}$

SR＜0.75, school is eligible for NCR construction

3) Student Density (SD) = $\frac{\text{Total No. of students in PS}}{\text{Total No. of Classrooms available in PS}}$

School is eligible if SD＞55 in Terai、SD＞45 in Hill、SD＞35 in Mountain

The schools are selected based on criterion 1), then on criterion 2) and lastly on criterion 3).

The list of schools attached in Appendix-13 is to be reviewed and finalised based on the results of detailed surveys by DOE at the implementation stage.

3) Facilities to be covered by the Project

Following the concept of the Whole School Approach advocated for school construction under BPEP-II, the Project would also provide the following facilities.

a) Classroom Building

Classroom buildings for the primary schools selected by the criteria as stated in 2) above are the main facilities to be constructed under the Project. The number of classrooms in a site is determined by the results of the physical survey by DOE within the capacity of the communities for participating in the construction. (One year is not necessarily enough for fulfilling the entire needs)

b) Toilet

A toilet block with one booth for boys and another toilet block with one booth for girls will be built separately in each of such target school where (a) classroom block(s) or RC is to be constructed by the Project and has no toilet in the compound..

c) Water Supply

The type of water supply in hill and mountain areas, which is to provide surface water from highlands by water pipe, does not come under Japan's Grant Aid scheme, because of the difficulty in estimating the quantity of pipes and monitoring after provision. Thus, the water supply facilities in Hill and Mountain areas are to be covered by Nepalese side, while, under the Project, a water supply facility will be provided to each of such target school located in the terai area where (a) classroom block(s) and/or RC is(are) to be constructed and there is no water supply in the compound.

To respond to the arsenic problem, DOE will carry out tests based on "Nepal's Interim Arsenic Policy & Preparation Report" for each water supply provided under the Project, and install a filter system if arsenic contamination is over the limit applied in the said policy (0.05 mg/litre).

d) Furniture for Classrooms

According to the confirmation survey in 2001/02 of the previous Japan's Grant Aid project, the proportion of schools with enough classroom furniture was 1/8 (**Table** 7). On the other hand, according to the School Level Statistics 2002, around half of the schools in Nepal have less than 30 sets of classroom furniture, which suggests that there is insufficient furniture in most of the schools compared to the number of students per school (approximately 3.3 million students in 20,000 schools in total).

Table 7: Summary of the Confirmation Survey of 2001/02 Japan's Grant Aid

Sufficiency of furniture		No. of Schools
Schools that have enough furniture in all classrooms		32
Condition of the existing furniture	Very Good	5
	Good	76
	Acceptable	116
	Poor/Not enough	43
Total		240

* The survey was done in 6 districts (Siraha, Dhanusha, Mahottari, Sarlahi, Rautahat, and Banke) from Sep. to Nov. in the same year just after the completion. Furniture was not covered by the project but it was provided by communities. 240 schools out of 396 were available due to the absence of the interviewee.

If the furniture is not covered by the Project on the assumption that communities will eventually be provided with financial support by HMG/N, the provision of furniture may be delayed and the Project's impact may not take effect directly after its completion.

Another option for furniture provision was that the Project would construct the classroom building on condition that the communities provide the furniture on their own. In this case, the classroom buildings might be constructed only in communities that can afford to buy furniture. Therefore, furniture will be covered by Japanese side in the Project. Three-seater benches and desks for students will be supplied to each classroom constructed under the Project.

e) Resource Centre (RC)

Resource Centres are mostly located in compounds of leading schools of the clusters. Some of the schools that do not have enough rooms have to use their classrooms or teachers' rooms for RC activities. In such cases, there is an urgent need to construct exclusive RC buildings so that the activities of the RC do not disturb the educational activities of the schools. The RC building should contain a room for storing documents and materials for RC activities, a meeting hall that accommodates over 30 people, and a workroom for Resource Persons (RP).

Under the Project, a RC building will be constructed in a leading school of a cluster where there is no exclusive building for RC, and where at least one target school is planned for classroom construction by the Project.

f) Furniture for RC

Furniture for RCs constructed under the Project will also be provided.

g) Others

On the basis of Whole School Approach policy, other facilities including the following items will be covered by the Nepalese side, either under the government budget or with CIP funding.

- Rehabilitation of existing classroom buildings
- Fencing for the school compound

- Water supply for hill and mountain region
- Water tests for arsenic contamination and installation of arsenic removal plant as necessary

4) Volume of the Project

(Number of Classroom Buildings in Each District)

The maximum classroom construction in each target district will be based on the number of classrooms in the candidate school list submitted by DOE on May 5, 2003. However in the 4 districts in which physical surveys have not been done, the maximum quantity is set to the lesser of either the number in the list or the estimated construction needs based on EMIS 2001, to ensure that the quantity of the classroom construction does not exceed actual needs. As a result, the maximum quantity of classroom construction of the Project has been assessed to be 2,926 classrooms in total as shown in **Table 8**.

Table 8: Maximum Quantity of Classroom Construction

Sr. No.	Target District	Physical Survey	No. of Clrms. listed by DOE	Estimated Needs by EMIS	Maximum Quantity
1	Bara	Y	302	548	**302**
2	Bardiya	Y	168	556	**168**
3	Dadeldhura	Y	180	-	**180**
4	Dhading	N	160	407	**160**
5	Makwanpur	N	200	521	**200**
6	Sindhuli	Y	168	183	**168**
7	Sindhupalchowk	Y	186	666	**186**
8	Kavrepalanchok	Y	184	351	**184**
9	Saptari	Y	282	296	**282**
10	Syangja	Y	166	309	**166**
11	Dang	N	280	626	**280**
12	Gorkha	Y	160	405	**160**
13	Kailali	Y	280	503	**280**
14	Kapilbastu	Y	156	138	**156**
15	Nuwakot	N	160	54	**54**
	Total		3,032	5,563	**2,926**

On the other hand, in the Project, facilities are to be constructed with community participation under the management of HMG/N, so the maximum quantity of the classroom construction in each target district each year should be determined within the capacity of construction and management of the Nepalese side. The construction capacity of each district has been assessed by the steps shown below.

a) Construction Capacity of the Districts with Typical Topography

DOE assigns 1 engineer and 4~10 overseers (5.8 on average) in each target district. On the other hand, the community can afford to build only 1 block (2 classrooms) in one year at most of the schools.

In the previous project under Japan's Grant Aid, all of the target districts belonged to terai districts, but some of the target VDCs were actually located in hilly areas. HMG/N's management capacity was, on average, approximately 130 classrooms per year per district, with a total of 2,540 classrooms in 3 years.

From past experience, as well as from interviews with engineers and overseers of DOE, it can be fairly assumed that one overseer can cover 13~15 schools if all of them are in terai districts, 6~7 schools in hill districts and 3~5 schools in mountain districts. Consequently, if all of the VDCs in a district are located in a terai area, around 160 classrooms can be covered by the average number of overseers (5~6) in the district. Similarly, 70 classrooms can be covered if all the VDCs are located in a hill area, and 40 classrooms if located in a mountain area.

Table 9: Construction Capacity of the Districts with Typical Terrains

all VDCs topographical location in the district	No. of overseers in the District	management capacity of 1 overseer	construction capacity
terai	5~6	13~15 sites (26~30 classrooms)	160 classrooms
hill		6~7 sites (12~14 classrooms)	70 classrooms
mountain		3~5 sites (6~10 classrooms)	40 classrooms

b) Construction Capacity Considering the Topographical Location of VDCs in the District

Not all of the VDCs in a district are located in the same topography as that of the governing district. For instance, Gorkha district is defined as a hill district, but 13% of the VDCs in it are located in mountainous areas according to a recent site survey undertaken by the Study Team. In such a case, it may be difficult to manage construction of up to 70 classrooms, which is the construction capacity assumed for a typical hilly district. Therefore, the construction capacity in each target district has been estimated by the ratio of the topographical location of VDCs in the district as shown in **formula (1)**.

[formula (1)]

$$\left[\begin{array}{c}\text{Construction Capacity of a District (classrooms)}\end{array}\right] = \frac{\left[\begin{array}{c}\text{No. of VDCs located in terai}\end{array}\right] \times 160 + \left[\begin{array}{c}\text{No. of VDCs located in hill}\end{array}\right] \times 70 + \left[\begin{array}{c}\text{No. of VDCs located in mountain}\end{array}\right] \times 40}{\text{Total No. of VDCs}}$$

Table 10: Topographical Location of VDCs in the Target District (Site Survey by Study Team)

	District Name	No. of VDCs and Ratio							Construction Capacity (Classrooms)
		Terai		Hill		Mountain		Total	
1	Bara	99	100%					99	160
2	Bardiya	31	100%					31	160
3	Dadeldhura			21	100%			21	70
4	Dadhing			50	100%			50	70
5	Makwanpur			44	100%			44	70
6	Sindhuli	1	2%	53	98%			54	72
7	Sindhupalchowk	6	8%	70	91%	1	1%	77	77
8	Kavrepalanchok	3	3%	88	97%			91	73
9	Saptari	115	100%					115	160
10	Syangja			62	100%			62	70
11	Dang	35	85%	6	15%			41	147
12	Gorkha			58	87%	9	13%	67	66
13	Kailali	38	86%	6	14%			44	148
14	Kapilbastu	78	100%					78	160
15	Nuwakot	4	6%	58	94%			62	76
	Total	410		516		10		936	

1 and 2 VDC data not available in Dhading and in Sindhupalchok respectively.

c) Construction Capacity Considering the Access to the VDCs in the District

The construction management capacity also depends on accessibility to the sites. Construction management capacities for VDCs that are difficult to access are assumed to be half of those that are easy to access. Therefore, construction capacity should be reduced as shown in **formula (2)**.

[formula (2)]

$$\left[\begin{array}{c}\text{Construction Capacity (classrooms)}\end{array}\right] = \left[\begin{array}{c}\text{Construction Capacity of formula (1)}\end{array}\right] X \left[1 - \frac{\text{No. of VDCs with poor access}}{\text{Total No. of VDCs}}\right]$$

Table 11: Accessibility of VDCs in the Target District (Site Survey by Study Team)

	District Name	No. of VDCs and Ratio							Construction Capacity (Classrooms)
		Good		Fair		Poor		Total	
1	Bara	99	100%					99	160
2	Bardiya	27	87%	4	13%			31	160
3	Dadeldhura	12	57%	9	43%			21	70
4	Dhading	20	39%	24	49%	6	12%	50	66
5	Makwanpur	24	55%	1	2%	19	43%	44	56
6	Sindhuli	14	26%	7	13%	33	61%	54	50
7	Sindhupalchowk	1	1%	75	97%	1	1%	77	78
8	Kavrepalanchok	12	13%	79	87%			91	74
9	Saptari	115	100%					115	160
10	Syanjga	36	58%	26	42%			62	70
11	Dang	29	71%	10	24%	2	5%	41	144
12	Gorkha	5	7%	15	22%	47	70%	67	44
13	Kailali	38	86%	1	2%	5	11%	44	140
14	Kapilbastu	75	96%	3	4%			78	160
15	Nuwakot	9	15%	53	85%			62	76
	Total	516		307		113		936	

In each district, school construction may be carried out in up to a maximum of two years as was done in the previous project. Then, in districts where there is a CIP project in 2003/04, the Project will start one year later than others to avoid duplication, so the total period of the Project will be 3 years. The number of classrooms to be constructed in each district is determined within the constraints of construction capacity and needs. In distributing the total number of the classrooms into three phases, high priority should be given to the first phase and the third phase, so that the number of classrooms for the second phase can be reduced because it is inevitably much bigger than those for the first and third phases. Consequently, the volume of the Project for classroom construction was finally assessed as shown in **Table 12**.

Table 12: Volume of the Project (No. of Classroom Construction)

Sr. No.	District Name	Request by DOE				Volume of the Project					
		No. of Clrms. listed by DOE	Phase			Maximum Quantity of the Project	Const. Capacity (Clrms.)	phase			Total Volume of the Project
			1	2	3			1	2	3	
1	Bara	302		150	152	302	160		**142**	**160**	**302**
2	Bardiya	168	168			168	160	**160**			**160**
3	Dadeldhura	180		90	90	180	70		**70**	**70**	**140**
4	Dhading	160		80	80	160	66		**66**	**66**	**132**
5	Makwanpur	200		100	100	200	56		**56**	**56**	**112**
6	Sindhuli	168		84	84	168	50		**50**	**50**	**100**
7	Sindhupalchowk	186	80	106		186	78	**78**	**78**		**156**
8	Kavrepalanchok	184		94	90	184	74		**74**	**74**	**148**
9	Saptari	282		152	130	282	160		**122**	**160**	**282**
10	Syangja	166		84	82	166	70		**70**	**70**	**140**
11	Dang	280	140	140		280	144	**144**	**136**		**280**
12	Gorkha	160		80	80	160	44		**44**	**44**	**88**
13	Kailali	280	140	140		280	140	**140**	**140**		**280**
14	Kapilbastu	156	156			156	160	**156**			**156**
15	Nuwakot	160	80	80		54	76	**54**			**54**
	Total	3,032	764	1,380	888	2,926		**732**	**1,048**	**750**	**2,530**
	No. of Districts	15	6	13	9	15		**6**	**12**	**9**	**15**

(RC, Toilet, and Water Supply)

A RC building will be constructed in a leading school of a cluster where there is no exclusive building for RC, and where at least one target school is planned for classroom construction by the Project.

One booth for boys and one booth for girls will be constructed separately in the target school (schools with classroom construction or RC construction under the Project) where there is no toilet in the compound.

A water supply will be provided to the target schools and the RCs located in the terai area where there is no water supply in the compound.

The number of each of these facilities in each district has been tentatively assessed on the basis of the list of candidate schools submitted by DOE on 5th May, 2003 by reducing the requested number in proportion to the ratio of the finally assessed number of classrooms to the requested number of classrooms.

The volume for the Project has been assessed in detail as shown in **Tables 13 to 16**. In the tables, volume of the classrooms is indicated in terms of number of classroom buildings since a classroom block

consists of two classrooms according to the standard design.

The numbers of facilities shall be finalized on the basis of the results of physical surveys that are to be carried out by DOE by the beginning of the detailed design phase in each project phase, in accordance with the criteria stated in the Basic Design Report, and in the upper limits of numbers stated in the Report. More specifically, the number of classrooms to be constructed in each district in each project phase shall not exceed the numbers stated in the Report, while the number of resource centres, toilets or water supplies in a district may exceed the number stated in the Report in compensation of decreasing the number in other districts so that the total number of the facility in a project phase should not exceed the number stated in the Report.

In case the finally assessed total number of a facility is less than the total number stated in the Report, the Project shall be implemented with the finally assessed number of the facility. In case the finally assessed number of a facility exceeds the upper limit number stated above, the Project shall be implemented with the balance being covered by the Nepalese side.

Table 13: Quantities of Facilities to be provided under the Project (Total)

District Name	Classroom Building			RC Building		Toilet		Water Supply	Furniture for Classrooms	Furniture for RC
	terai	hill	mountain	terai	hill	terai	hill			
Unit	buildings	buildings	buildings	buildings	buildings	sets	sets	sets	Sets	sets
Bara	151			2		54		38	5,738	2
Bardiya	80			3		40		40	3,040	3
Dadeldhura		70					23		2,100	
Dhading		66			10		46		1,980	10
Makwanpur		56			6		31		1,680	6
Sindhuli		50			4		52		1,500	4
Sindhupalchowk			78		10		58		1,872	10
Kavrepalanchok		74			9		31		2,220	9
Saptari	141					30		21	5,358	
Syanjga		70			5		33		2,100	5
Dang	140					101		101	5,320	
Gorkha		44			3		49		1,320	3
Kailali	116	24				112	5	112	5,128	
Kapilbastu	78					51			2,964	
Nuwakot		27					17		810	
Total	706	481	78	5	47	388	345	312	43,130	52

*RC: Resource Centre

Table 14: Quantities of Facilities to be provided under the Project (1st Phase)

District Name	Classroom Building			RC Building		Toilet		Water Supply	Furniture for Classrooms	Furniture for RC
	terai	hill	mountain	terai	hill	terai	hill			
Unit	buildings	buildings	buildings	buildings	buildings	sets	sets	sets	sets	sets
Bardiya	80			3		40		40	3,040	3
Sindhupalchowk			39		5		24		936	5
Dang	72					52		52	2,736	
Kailali	46	24				43	5	43	2,468	
Kapilbastu	78					51			2,964	
Nuwakot		27					17		810	
Total	276	51	39	3	5	186	46	135	12,954	8

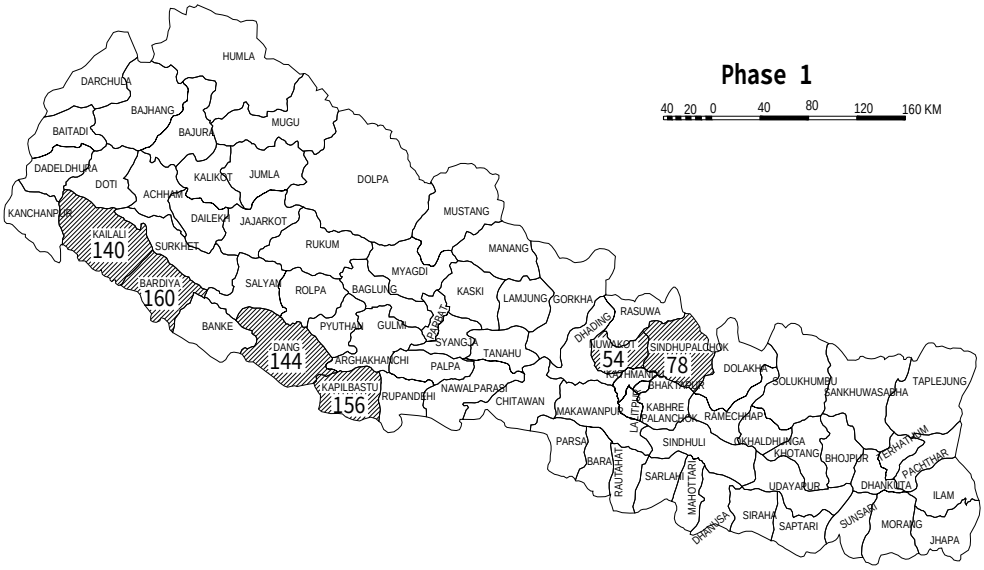
Table 15: Quantities of Facilities to be provided under the Project (2nd Phase)

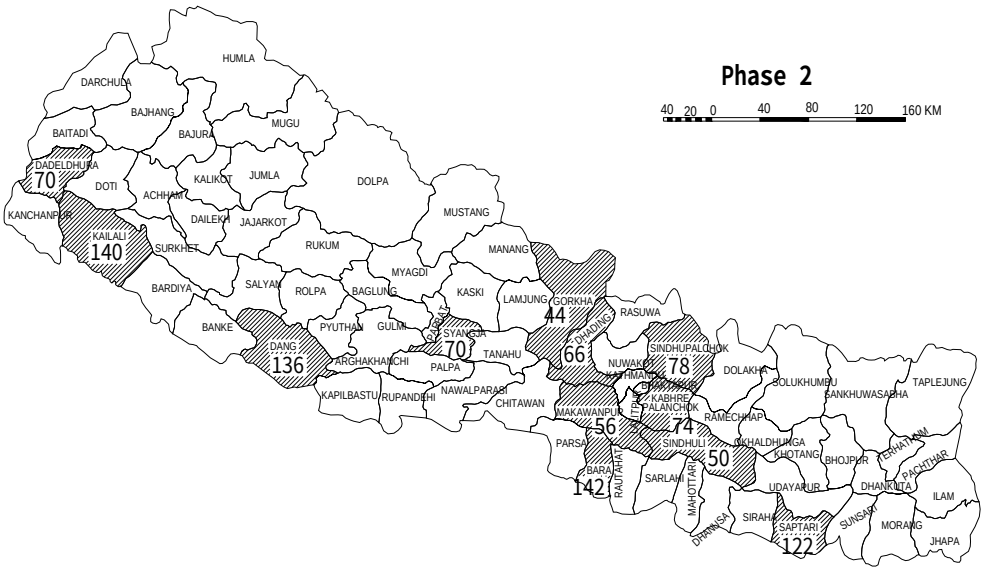
District Name	Classroom Building			RC Building		Toilet		Water Supply	Furniture for Classrooms	Furniture for RC
	terai	hill	mountain	terai	hill	terai	hill			
Unit	buildings	buildings	buildings	buildings	buildings	sets	sets	sets	sets	sets
Bara	71			2		32		19	2,698	2
Dadeldhura		35					3		1,050	
Dhading		33			5		25		990	5
Makwanpur		28			3		17		840	3
Sindhuli		25			2		25		750	2
Sindhupalchowk			39		5		34		936	5
Kavrepalanchok		37			4		14		1,110	4
Saptari	61					9		6	2,318	
Syanjga		35			1		18		1,050	1
Dang	68					49		49	2,584	
Gorkha		22			1		26		660	1
Kailali	70					69		69	2,660	
Total	270	215	39	2	21	159	162	143	17,646	23

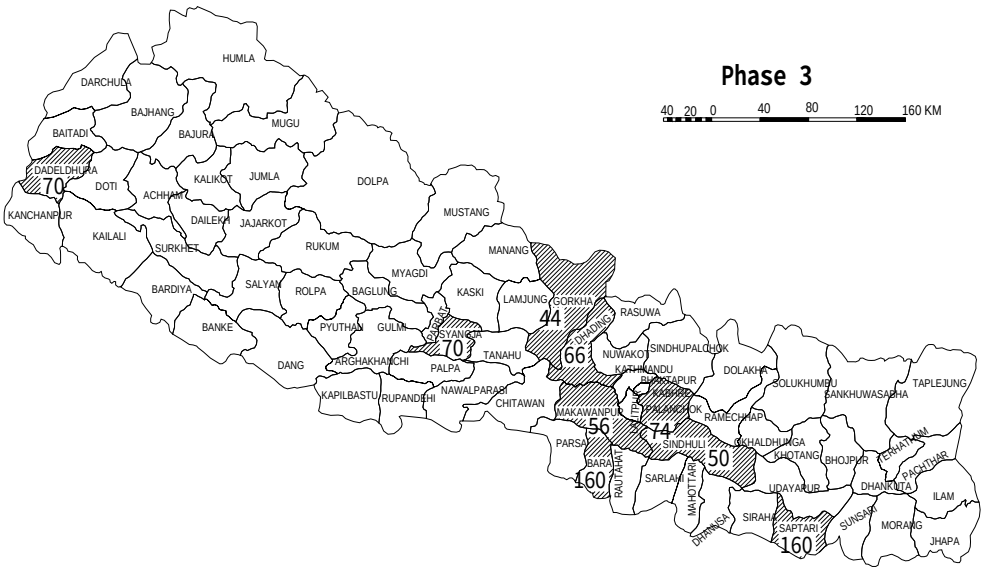
Table 16: Quantities of Facilities to be provided under the Project (3rd Phase)

District Name	Classroom Building			RC Building		Toilet		Water Supply	Furniture for Classrooms	Furniture for RC
	terai	hill	mountain	terai	hill	terai	hill			
Unit	buildings	buildings	buildings	buildings	buildings	sets	sets	sets	sets	sets
Bara	80					22		19	3,040	
Dadeldhura		35					20		1,050	
Dhading		33			5		21		990	5
Makwanpur		28			3		14		840	3
Sindhuli		25			2		27		750	2
Kavrepalanchok		37			5		17		1,110	5
Saptari	80					21		15	3,040	
Syanjga		35			4		15		1,050	4
Gorkha		22			2		23		660	2
Total	160	215			21	43	137	34	12,530	21

Figure 2: Distribution Maps of Target Districts and No. of Classrooms to be Constructed







5) Materials to be Provided

a) Construction Materials

The materials to be covered by the Project are most of the major construction materials covered by the Government side for the construction of school facilities by the community participation including:

- Roofing (CGI sheet, including furnishing metal and training by supplier)
- Roof truss (steel pipe, including furnishing metal and training by supplier)
- Steel post (including furnishing metal and training by supplier)
- Cement
- Reinforcement bar
- Brick
- Doors & windows frame
- Doors & windows shutter
- Furnishing metal for doors & windows
- Paint
- Translucent sheet

b) Water Supply Equipments

In a terai area, a hand pump set with a GI pipe will be provided. Water supply facilities in hilly areas are not to be covered by the Project, and will be covered by the Nepalese side.

c) Furniture for Classrooms and RCs

Three-seater benches and desks, which comprise the standard furniture of DOE, will be provided to the classrooms constructed. The quantity of furniture to be provided in each classroom is shown below:

Table 17: Quantities of Furniture per Classroom

Classroom Plan Type	Students Accommodation	Quantities of Furniture
Terai Type	55	19
Hill Type	45	15
Mountain Type	35	12

A set of furniture for RC will be provided to the RC buildings constructed. The specifications and the quantities for one RC are shown below, which is the same as those of DOE standards.

Table 18: Specifications and Quantities for RC Furniture

	Items	quantities	size (cm)			specifications
			length	breadth	height	
1	meeting desk	12	122	76	74	Wooden, w/o armrest
2	meeting chair	24	56	58	81	Wooden, no drawer
3	RP desk	1	122	76	74	Wooden, with armrests
4	RP armchair	1	56	58	81	Wooden, with drawers
5	white board	1	122	0	76	Wooden, with a frame
6	bulletin board	1	122	0	76	Wooden, with a frame
7	bookshelf	1	122	46	91	Wooden, no door, 3 layers
8	shelf	1	91	51	152	Wooden, with doors and a lock

*RP: Resource Person

d) Other Equipments

Trucks and tractors for transportation of materials, motorcycles for overseers, and 4WD diesel engine jeeps for DOE that have been procured under previous phases of the project shall be fully used for the Project, therefore, no additions to such items will be necessary.

(1) Personal Computer, UPS, Scanner, and Printer

Although the computers procured under the previous Grant Aid Project are still in operation, 2 additional computers with higher performance will be procured to PSS/DOE to respond to the high specification required of recommended software such as CAD and database software for EMIS. The computer must have file convertibility that enables use of files prepared by previously procured computers. An uninterruptible power supply (UPS) will be attached to each of the computers procured in this Project.

A printer is now equipped in PSS/DOE, although the specifications are insufficient. A better printer and a scanner are necessary to prepare reports and other documents, so the latest models of each will be procured under the Project. DOE shall connect the computers, scanner and printer by a LAN for the

functional use of the equipment.

(2) Fax Machine

Fax machines to be equipped at DEOs of the target districts have been planned to be equipped with CIP funding, therefore, no additional fax machines will be provided by the Project.

(2) Consideration of the Natural Conditions

While there is a wide range of environmental conditions (climate, geology, topography, infrastructure, etc.) within the country, all 75 districts in Nepal are divided roughly into three categories; Terai, Hill and Mountain. DOE has made three standard designs for classroom buildings to meet the requirements for each of the categories of natural conditions. Under the Project, 15 target districts are scattered in all three categories. The designs for classroom buildings for the Project also should be prepared for the three categories.

1) Topography

The target districts are mostly scattered in terai and in hill areas, with one exception in a mountain area. According to the standard design of DOE, a brick wall is generally used in a terai area, and a natural stone wall in hill and mountain areas, while all of them have a steel frame main structure. In hill and mountain areas, communities that are financially supported by HMG/N are to collect the stones by themselves. Exceptionally, in some hilly areas where bricks and/or concrete blocks are more easily available than stone, DOE accepts their use instead of stone in the CIP construction project.

Depth of the tube wells in each district is determined based on the average depth of under ground water table in the area, which is reported as follows:

1. Saptari, Dang, Bardiya, Kailali : 30 m
2. Bara : 42 m
3. Kapilbastu : 60 m

2) Precipitation and Heat

In each terai, hill and mountain area, during the rainy season, normally from June to September, measures should be taken against heavy rainfall, which is sometimes accompanied with strong winds.

Schools should not be built at hazardous locations. In front of a classroom, a terrace with an extended roof overhang is designed to accommodate students when it is raining. Moreover, in the Project, a translucent sheet is to be arranged at the opening of the tops of the walls to prevent rain from blowing into a classroom without intercepting natural light.

It gets very hot during the summer in the terai area, therefore, the ceiling height of a terai-type classroom is designed to be higher than those of hill and mountain types to mitigate the effects of heat.

3) Wind Load

The design wind load is to comply with the Indian Code IS 875 Part 3. Considering the highest wind speed shown in the wind map of 55 m/s, the wind pressure works out to be approximately 2 kN/m2

4) Earthquake

For traditional masonry structures it is difficult to assess earthquake resistance through calculations of allowable stresses of structural members. The standard designs of DOE, however, apply steel frame for the main structure, which is safer. A steel frame structure is applied in this Project as well.

5) Natural Lighting and ventilation

By introducing a steel frame structure as in the case of DOE standard design of classroom block, the building can more easily receive as much natural light and ventilation as necessary. The ratio of the total area of the openings to the classroom area ensures more than 20% with the gap between the walls and the roof on assumption that classes are held with windows open.

(3) Consideration of the Social Conditions

As the target districts include many areas that are economically challenged, facilities are designed using local materials and local construction methods so that the communities can easily and economically construct and maintain the buildings.

DOE has recently adopted the policy of accepting disabled students at all schools in the country. Initially, DOE designed a classroom block with one classroom for special education. The policy now, however, is to design all class rooms to accommodate disabled students with one of the classroom doors widened and a ramp added to the classroom block. The design of the classrooms under the Project will follow the policy. It has recently been reported that girls tend to be reluctant to use toilets when the booth is in one block together with the boys' booth. Hence, DOE is now instructing DEOs to construct toilets for boys and girls separately. On the other hand, DOE also adopted a policy of applying a new design of toilet for disabled students with an enlarged booth, a wide door and a ramp to accommodate a wheelchair. So far, however, in the CIP construction project, although the DEOs are making contracts with SMCs according to such policies, there has been no increase in financial support for the construction of such toilets nor have any standard design drawings been prepared. Therefore, the communities are to design and build such toilets by themselves. It will take a long time before the special toilets can be properly provided with other facilities such as wheelchairs and feeder hostels in all of the schools in the country. Therefore, in the Project, a toilet block with one booth for boys and another toilet block with one booth for girls will be built separately in each of such target school where (a) classroom block(s) or RC is to be constructed by the Project and has no toilet in the compound. The design of the toilet will be for students without disabilities. As a pilot project, one of the toilets to be covered by the project in each district will be of the special design for disabled students in case there is a disabled student(s) and a feeder hostel and/or a wheelchair. DOE is to submit a list of schools where a feeder hostel and wheelchairs are available, with one school in each of 15 target districts. The effects will be carefully monitored and analysed in the confirmation survey after completion.

(4) Consideration of the Conditions for Construction

The Nepal National Building Code (NNBC) was authorized in 1997, and the school facilities constructed in

BPEP-II are according to NNBC structural standards and other codes. The standard design of the facilities under the project will also follow NNBC wherever practical.

The structures of the classroom buildings are designed to meet the following structural code:

- IS code No. 875: for all types of loading
- IS code No. 800: for steel structure

The following software is used for the structural analysis:

- STAAD Pro 2001 Indian version, Research Engineers Pvt. Ltd.

(5) Consideration of the Utilization of Local Materials and Sub-contractor

Construction works are to be implemented with community participation. Therefore, the maximum use of local methods of construction, materials and manpower would naturally be advantageous. The standard designs of the facilities have been prepared by applying these principles. The principles are applied in the DOE standard designs as well, although the lipped C-channel steel used for the structural frame is not popular in Nepal and the number of factories supplying the material is very limited. In this Project, steel pipes are used instead of lipped C-channel, because they are widely used in Nepal and have a better appearance.

(6) Consideration of the Maintenance

The operation and the maintenance of the facilities covered by the Project are to be provided by the communities. In this respect, the maximum use of local methods of construction and materials would naturally be advantageous. Furthermore, use of sophisticated equipment, which might result in high running and maintenance costs, is not recommended.

(7) Consideration of the Grade of the Facilities

With proper support from DOE, the quality of the facilities constructed under local community participation is generally acceptable for schools.

The specifications of the facilities to be constructed under the Project are based on the standard design of

DOE, with some modifications made as shown in **Section 2-2-2**.

(8) Consideration of the Time Schedule

In assessing the time schedule of the Project, the following points are important:

1) Rainy season (June to September) makes transportation of materials and construction work impractical in many areas.
2) Avoid busy farming seasons in rural areas; manufacturing of bricks is normally done after harvesting crops in autumn. Therefore, delivery of materials will start from December for six months so that delivery of materials as well as most construction work of the facilities can be done before the rainy season.
3) The fiscal year of Nepal starts in the mid-July. It is advisable, therefore, that the Exchange of Notes between the two countries be done in August at latest, preferably in mid-June or before when the Action Plan is prepared.
4) The construction period for each school is estimated to be about three to five months, and the entire work period for the construction of the schools including delivery and local transportation of materials from depot centres to construction sites will be 8 to 8.5 months.
5) Execution of the entire Project will take a number of years.

2-2-2 Basic Plan

(1) Overall Plan

1) Development of Standard Design of Classroom Building by DOE

DOE made an important alteration to the standard design at the beginning of BPEP-II, applying a steel frame structure instead of brick or stone masonry for load-bearing wall structures. To ensure the quality and the delivery of the major structural materials, steel members are delivered to the sites similarly to the scheme of the school construction project under Japan's Grant Aid, while in previous projects under BPEP-I, only financial support but no material procurement were handled by HMG/N.

DOE has made the following alterations to the standard design of the previous project under Japan's Grant Aid:

a) steel frame structure was applied instead of load baring wall structure.
b) lipped C-channel steel members were applied instead of steel pipe and the thickness was reduced to decrease the weight of each member so that communities can transport the materials easily. The members were galvanized to ensure durability.
c) size and depth of the foundation pier were enlarged and deepened to ensure stability and durability.
d) two doors were attached in one classroom to ensure a two-way refuge, as well as for the classroom to be used for combined classes, while the previous design had only one door.
e) the material for the upper part of the gable wall was altered to CGI sheets from bricks or stones due to the alteration to the main structure.
f) roof pitch was reduced to 18 degrees from 25 degrees.
g) the area of the openings was increased to receive as much natural light and ventilation as possible.
h) the materials for door and window shutters were altered from wooden frame with plywood panel to steel frame with CGI panel to prevent communities from cutting down forests indiscriminately.
i) Plan type of one classroom with ramp for the special education for disabled students was added.
j) Dog walk was added under the eaves to prevent mud spattering the wall and soil flowing out.
k) Training by the supplier was provided to engineers and skilled labourers in each district to introduce the new and unfamiliar structure.

Additionally, the following alternations were made after MTR. CIP construction project, also following the policy of this alteration, but so far no concrete measures have been taken and only instructions to DEOs are provided by DOE for the 2003/04 project.

a) widen one classroom door and set the ramp so that the disabled students can easily use the classroom

b) separate toilet booths for boys and girls so that the girls do not feel ill at ease when using the toilet

c) arrange a water tank for washing hands near the toilet

2) Key Alterations to the Design of Classroom Building under the Project

The standard design of the facilities covered by the Project is based on the standard design prepared by DOE, but some minor alterations were made as necessary, which are summarized as follows:

1) steel pipe members for structural frame were applied instead of lipped C-channel steel members, as steel pipes are widely used in Nepal and thus are easy to procure at competitive prices. Moreover, steel pipes are easier for communities to handle, and their appearance is better than that of lipped C-channel.

2) In compliance with policies oriented towards disabled students, the designs listed below were prepared:

   - difference of the floor level between classroom and corridor of 150 mm in DOE standard design, was removed so that students in wheelchairs can enter and leave easily
   - a ramp was set up along the corridor for the same reason
   - one classroom door was widened for the same reason

3) wooden frame with plywood panel is applied for door and window shutters instead of steel frame and GI panel, because wooden shutters are more durable and have a better appearance than steel shutters. Unlike the CIP construction project, indiscriminate deforestation by communities will not be caused by applying plywood for the panel and by procuring the materials centrally.

4) adding translucent plastic sheets to the upper openings of the walls to prevent rainwater blowing into the classroom in stormy weather, but leaving an upper gap of 200 mm in height for ventilation and lighting in Terai Type.

5) red paint is applied to finish exterior walls instead of cement plaster.

6) to reduce the quantities of materials as much as possible, details such as the foundation size and roof pitch were changed to the minimum order.

In response to a request by DOE, The Study Team studied the feasibility of using interlocking blocks for the walls of the facilities in hill and mountain areas instead of the stone, concluding that it is not feasible in terms of the cost, competitiveness, availability in time, feasibility of construction system for community participation, etc. The interlocking blocks will not be applied to the standard designs of this project. (cf. Appendix 2)

Table 19 to 22 shows a comparison of plan type and specification between the design applied in the previous project under Japan's Grant Aid, DOE standard design, and the design proposed for this Project.

3) Design of Toilet

One booth for boys and one booth for girls will be constructed separately following the policy of DOE . As a pilot project, a set of special toilets for disabled students will be planned in each district in case there is (a) disabled student(s) and a feeder hostel and/or a wheelchair.

4) Design of RC Building

The design will be of a brick or stone masonry structure with steel truss roofing in the same way as the CIP standard design, with the setting of the ramp along the corridor altered and the doors widened to accommodate disabled people.

Table 19: Comparison of Plan Types

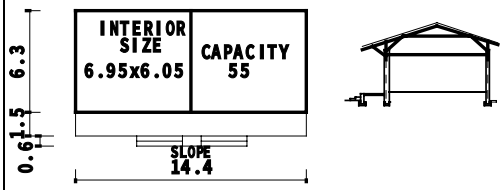
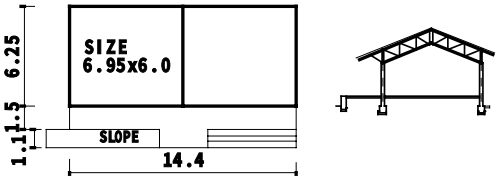
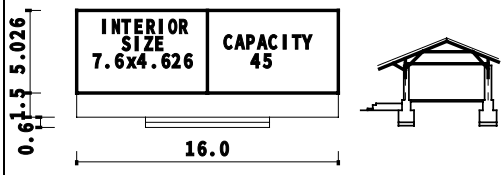
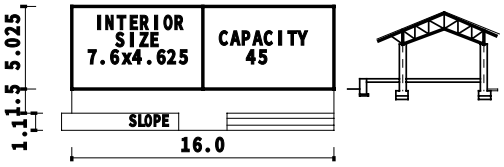
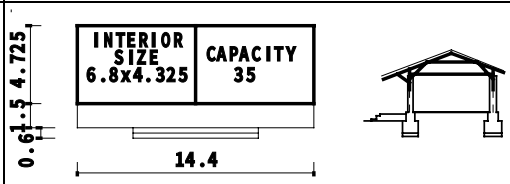
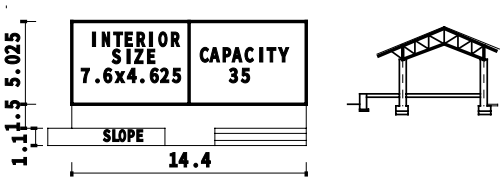
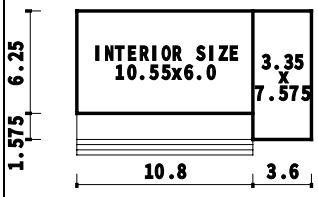
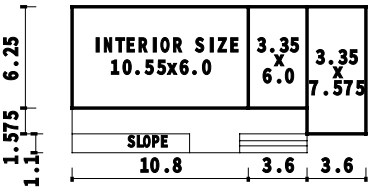
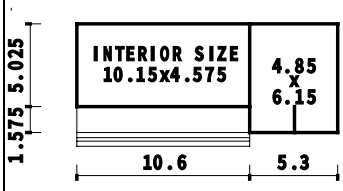
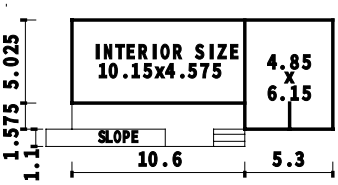
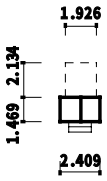
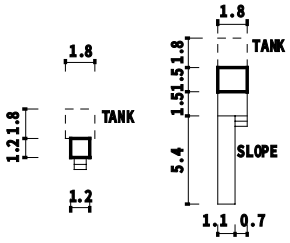
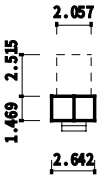
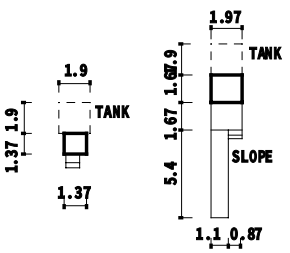
Facilities	B: DOE Standard Design	C: Standard Design Applied in the Project
Terai Classroom Building (TCL)		
Hill Classroom Building (HCL)		
Mountain Classroom Building (MCL)		
Terai RC (TRC)		
Hill & Mountain RC (HRC)		
Terai Toilet (TWC)	 (No DOE Standard Design. The plan type is the design applied in previous project under Japan's Grant Aid)	 (Left: ordinary Right: adapted for disabled students, two booths for boys and girls are to be built)
Hill & Mountain Toilet (HWC)	 (No DOE Standard Design. The plan type is the design applied in previous project under Japan's Grant Aid)	 (Left: ordinary Right: adapted for disabled students, two booths for boys and girls are to be built)

Table 20: Comparison Table of the Standard Design of Classroom Buildings (Terai Type)

No.	Description	A: design applied in previous project	B: CIP standard design	C: design applied in this Project	alterations made from B to C
1	classroom size	6.95m x 6.0m=41.7 m^2	6.95m x 6.05m=42.0 m^2	6.95m x 6.05m=42.0 m^2	
2	corridor size	1.575m x 14.4m=22.7 m^2	1.50m x 14.4m=21.6 m^2	1.50m x 14.4m=21.6 m^2	
3	size of steps	breadth: 14.4m tread: 30cm riser: 15cm 3 steps area: 14.4x0.3x2=8.64 m^2	breadth: 3.0m x 2 tread: 30cm riser: 15cm 3 steps area: 3.0x2x0.3x2=3.6 m^2	breadth: 5.7m tread: 30cm riser: 15cm 4 steps area: 5.7x0.3x3=5.13 m^2	flattened the difference in floor level between classroom and corridor so that students in wheelchair move freely
4	ramp size	no ramp	breadth: 1.2m length: 0.6m area: 1.2x0.6=0.72 m^2 rise: 0.45m pitch: 3/4 (37^0)	breadth: 1.1m length: 7.2m area: 1.1x7.2=7.92 m^2 rise: 0.6m pitch: 1/12 (4.8^0)	size changed according to the new guide by DOE
5	area of openings per classroom	window: 1.35m x 0.9m x 7 door: 2.1m x 0.9m x 1 upper opening (UO): nil total: 10.40 m^2	w: 1.35m x 0.9m x 6 d: 2.25m x 0.9m x 2 UO: 14.4 x 0.36 x 2 total: 21.71 m^2	w: 1.35m x 0.9m x 6 d: 2.1m x 0.9m x 1 2.1m x 1.1m x 1 UO: 14.4 x 0.84 x 2 total: 37.12 m^2	one of the door widen for the student with wheel chair,
6	no. of doors per classroom	1	2	2	
7	structure				
a)	main structure	brick masonry	steel frame	steel frame	
b)	roof structure	steel pipe truss	galvanized lipped C-channel steel truss	steel pipe truss	more popular, easy to build and beautiful
8	doors and windows	wooden frame with plywood panel	steel frame with GI sheet panel	wooden frame with plywood panel	more durable, easy maintenance, and beautiful appearance
9	Classroom floor level	GL+0.6m	GL+0.6m	GL+0.6m	
10	foundation depth				
a)	continuous footing	0.80m	0.30m	0.515m	
b)	Column footing	nil	1.0m	1.0m	
c)	depth of base plate	nil	0.775m	0.535m	structurally required minimum size
11	foundation breadth				
a)	continuous footing	0.75m(brick 3T)	0.375m(brick 1.5T)	brick 2T(app. 0.5m)	
b)	Column footing	nil	1.10m	1.0m	structurally required minimum size
12	roof pitch	25^0	18^0	22^0	minimum with 15cm lap of CGI sheet
13	column for corridor roofing	5	nil	nil	
14	off-set wall breadth	brick 1.5T	brick 1T	brick 1.5T	due to detailing
15	reinforcement of the floor level wall	75mm thick, 10mm dia. reinforced concrete	75mm thick plain concrete	75mm thick plain concrete	
16	reinforcement of the eaves level wall	150mm thick reinforced concrete	nil	nil	
17	openings above windows	by brick pattern	bar grill	translucent sheet	to avoid rain blowing inside and ensure lighting and ventilation
18	considerations to the disabled students	nil	nil	ramp set along the corridor, widen the door	according to the new guide by DOE
19	exterior wall finishing	joint mortar	joint mortar	waterproofed painting	easy work, good appearance

Table 21: Comparison Table of the Standard Design of Classroom Buildings (Hill Type)

No.	Description	A: design applied in previous project	B: CIP standard design	C: design applied in this Project	alterations made from B to C
1	classroom size	7.50m x 4.575m=34.3 m^2	7.60m x 4.626m=35.2 m^2	7.60m x 4.626m=35.2 m^2	
2	corridor size	1.575m x 15.9m=25.0 m^2	1.50m x 16.0m=24.0 m^2	1.50m x 16.0m=24.0 m^2	
3	size of steps	breadth: 15.9m tread: 30cm riser: 15cm 2 steps area: 15.9x0.3=4.77 m^2	breadth: 7.6m tread: 30cm riser: 15cm 3 steps area: 7.6x0.3x2=4.56 m^2	breadth: 6.3m tread: 30cm riser: 15cm 4 steps area: 6.3x0.3x3=5.67 m^2	flattened the difference in floor level between classroom and corridor so that students in wheelchair move freely
4	ramp size	no ramp	no ramp	breadth: 1.1m length: 7.2m area: 1.1x7.2=7.92 m^2 rise: 0.6m pitch: 1/12 (4.8^0)	size changed according to the new guide by DOE
5	area of openings per classroom	window: 1.35m x 1.2m x 5 door: 2.1m x 0.9m x 1 upper opening (UO): nil total: 9.99 m^2	w: 1.35m x 0.9m x 6 d: 2.18m x 0.9m x 2 UO: 16.0 x 0.36 x 2 total: 22.74 m^2	w: 1.35m x 0.9m x 6 d: 2.1m x 0.9m x 1 2.1m x 1.1m x 1 UO: 16.0 x 0.762 x 2 total: 35.87 m^2	one of the door widen for the student with wheel chair
6	no. of doors per classroom	1	2	2	
7	structure				
a)	main structure	brick masonry	steel frame	steel frame	
b)	roof structure	steel pipe truss	galvanized lipped C-channel steel truss	steel pipe truss	more popular, easy to build and beautiful
8	doors and windows	wooden frame with plywood panel	steel frame with GI sheet panel	wooden frame with plywood panel	more durable, easy maintenance, and beautiful appearance
9	Classroom floor level	GL+0.45m	GL+0.6m	GL+0.6m	
10	foundation depth				
a)	continuous footing	0.80m	0.60m	0.60m	
b)	Column footing	nil	0.9m	1.0m	
c)	depth of base plate	nil	0.675m	0.60m	structurally required minimum size
11	foundation breadth				
a)	continuous footing	0.75m	0.75m	0.75m	
b)	Column footing	nil	1.10m	1.0m	structurally required minimum size
12	roof pitch	25^0	22^0	22^0	
13	column for corridor roofing	7	nil	nil	
14	off-set wall breadth	0.45m	0.40m	0.40m	
15	reinforcement of the floor level wall	100mm thick, 10mm dia. reinforced concrete	75mm thick plain concrete	75mm thick plain concrete	
16	reinforcement of the eaves level wall	150mm thick reinforced concrete	nil	nil	
17	openings above windows	no openings	bar grill	translucent sheet	to avoid rain blowing inside and ensure lighting and ventilation
18	considerations to the disabled students	nil	nil	ramp set along the corridor, widen the door	according to the new guide by DOE
19	exterior wall finishing	joint mortar	joint mortar	joint mortar	

Table 22: Comparison Table of the Standard Design of Classroom Buildings (Mountain Type)

No.	Description	A: design applied in previous project	B: CIP standard design	C: design applied in this Project	alterations made from B to C
1	classroom size	No mountain type design	6.80m x 4.325m=29.41 m^2	6.80m x 4.625m=31.45 m^2	
2	Corridor size		1.30m x 14.4m=24.0 m^2	1.50m x 14.4m=24.0 m^2	widened for wheelchairs
3	size of steps		breadth: 6.0m tread: 30cm riser: 15cm 3 steps area: 6.0x0.3x2=3.60 m^2	breadth: 5.6m tread: 30cm riser: 15cm 4 steps area: 5.6x0.3x3=5.04 m^2	flattened the difference in floor level between classroom and corridor so that students in wheelchair move freely
4	ramp size		no ramp	breadth: 1.1m length: 7.2m area: 1.1x7.2=7.92 m^2 rise: 0.6m pitch: 1/12 (4.8^0)	size changed according to the new guide by DOE
5	area of openings per classroom		w: 1.35m x 0.9m x 6 d: 2.18m x 0.9m x 2 UO: 16.0 x 0.36 x 2 total: 22.74 m^2	w: 1.35m x 0.9m x 6 d: 2.1m x 0.9m x 1 2.1m x 1.1m x 1 UO: 16.0 x 0.762 x 2 total: 35.87 m^2	one of the door widen for the student with wheel chair
6	no. of doors per classroom		2	2	
7	structure				
a)	main structure		steel frame	steel frame	
b)	roof structure		galvanized lipped C-channel steel truss	steel pipe truss	more popular, easy to build and beautiful
8	doors and windows		steel frame with GI sheet panel	wooden frame with plywood panel	more durable, easy maintenance, and beautiful appearance
9	classroom floor level		GL+0.6m	GL+0.6m	
10	Foundation depth				
a)	Continuous footing		no detailed drawings	0.60m	
b)	column footing		0.9m	1.0m	
c)	depth of base plate		0.675m	0.60m	structurally required minimum size
11	foundation breadth				
a)	Continuous footing		no detailed drawings	0.75m	
b)	column footing		1.10m	1.0m	structurally required minimum size
12	roof pitch		25^0	22^0	
13	column for corridor roofing		nil	nil	
14	off-set wall breadth		0.40m	0.40m	
15	reinforcement of the floor level wall		no detailed drawings	75mm thick plain concrete	
16	reinforcement of the eaves level wall		no detailed drawings	nil	
17	openings above windows		bar grill	translucent sheet	to avoid rain blowing inside and ensure lighting and ventilation
18	considerations to the disabled students		nil	ramp set along the corridor, widen the door	according to the new guide by DOE
19	exterior wall finishing		joint mortar	joint mortar	

a) Floor Areas of Proposed Facilities

The proposed standard designs of the facilities prepared by the Study team are summarized in **Tables 23 to 25**, and the drawings are attached. The floor areas are calculated according to the method prescribed in the Building Law of Japan, namely the plan sizes are measured at the centrelines of the walls. Half of the area of the terrace/external corridor, and 30% of the area of the ramp are included in the construction work floor area.

Table 23: Floor Areas of Buildings

Plan Code	Plan Type	Seat		Calculation	add in ratio	Construction Work Area (m²)	Total Floor Area (m²)
TCL	Terai Clrm. Building	110	classroom	14.4×6.25	1.0	106.62	90.00
			corridor	14.4×1.5	0.5		
			ramp, stair	15.9×1.1	0.333		
HCL	Hill Clrm. Building	90	classroom	16×5.025	1.0	98.52	80.40
			corridor	16×1.5	0.5		
			ramp, stair	16.7×1.1	0.333		
MCL	Mountain Clrm. Building	70	classroom	14.4×5.025	1.0	88.98	72.36
			corridor	14.4×1.5	0.5		
			ramp, stair	15.9×1.1	0.333		
TRC	Terai Resource Centre	30	rooms	14.4×6.25+3.6×7.825	1.0	134.78	118.17
			corridor	14.4×1.575	0.5		
			ramp, stair	14.4×1.1	0.333		
HRC	Hill/ Mountain Resource Centre	30	rooms	10.6×5.025+5.3×6.6	1.0	100.99	88.25
			corridor	10.6×1.575	0.5		
			ramp, stair	12×1.1	0.333		
TWC	Terai Toilet	1	booth	1.2×1.2	1.0	4.81	1.44
			septic tank	1.8×1.8	1.0		
			ramp, stair	0.6×0.65	0.333		
HWC	Hill/ Mountain Toilet	1	booth	1.37×1.37	1.0	5.62	1.88
			septic tank	1.9×1.9	1.0		
			ramp, stair	0.6×0.65	0.333		
TWCH	Terai Toilet for Disabled Students	1	booth	1.8×1.5	1.0	9.37	2.70
			septic tank	1.8×1.8	1.0		
			ramp, stair	0.7×0.6+1.33×5.4+1.5×1.8	0.333		
HWCH	Hill/ Mountain Toilet for Disabled Students	1	booth	1.97×1.67	1.0	11.0	3.29
			septic tank	1.97×1.9	1.0		
			ramp, stair	0.87×0.6+1.5×5.4+1.67×1.97	0.333		

Table 24: Total No. of Facilities and Floor Areas

Type	Total Floor Area (m^2)	1st phase		2nd phase		3rd phase		Total	
		Nos.	Area (m^2)	Nos.	Area (m^2)	Nos.	Area (m^2)	Nos.	Area (m^2)
TCL	90.00	276	24,840.0	270	24,300.0	160	14,400.0	706	63,540.0
HCL	80.40	51	4,100.4	215	17,286.0	215	17,286.0	481	38,672.4
MCL	72.36	39	2,822.0	39	2,822.0	0	0.0	78	5,644.1
TRC	118.17	3	354.5	2	236.3	0	0.0	5	590.9
HRC	88.25	5	441.3	21	1,853.3	21	1,853.3	47	4,147.8
TWC	1.44	182	262.1	157	226.1	43	61.9	382	550.1
HWC	1.88	44	82.7	155	291.4	137	257.6	336	631.7
TWCH	2.70	4	10.8	2	5.4	0	0.0	6	16.2
HWCH	3.29	2	6.6	7	23.0	0	0.0	9	29.6
Total (m^2)			**32,920**		**47,044**		**33,859**		**113,823**

Table 25: Structure and Finish Schedule

Classrooms (Terai Type)	
(Structure)	
(Main Structure)	Single Story, (Steel Frame Structure)
(Roof/Post)	MS Tubular Truss, 26 Gauge-CGI sheet (Standard)
(Foundation)	Column Brick Footing, Continuous Brick Footing
(External)	
(Roof)	26 Gauge-CGI sheet(Standard)
(Wall)	Brick Masonry, Waterproof Painting
(Corridor Floor)	Cement Plaster Finish
(Internal)	
(Floor)	Cement Plaster Finish
(Wall)	Cement Plaster, Lime Finish
(Opening)	Salwood Framed Plywood Panel for Doors/ Window Shutters, Enamel Paint MS Door/ Window Frames, Enamel Paint
(Blackboard)	Cement Plaster, Paint
(Ceiling)	MS Tubular Truss Exposed

Classrooms (Hill/Mountain Type)	
(Structure)	
(Main Structure)	Single Story, (Steel Frame Structure)
(Roof/Post)	MS Tubular Truss, 26 Gauge-CGI sheet (Standard)
(Foundation)	Column Stone Footing, Continuous Stone Footing
(External)	
(Roof)	26 Gauge-CGI sheet(Standard)
(Wall)	Stone Masonry with Mud Mortar, Mortar Pointing
(Corridor Floor)	Cement Plaster Finish
(Internal)	
(Floor)	Cement Plaster Finish
(Wall)	Cement Plaster, Waterproof Painting
(Opening)	Salwood Framed Plywood Panel for Doors/ Window Shutters, Enamel Paint MS Door/ Window Frames, Enamel Paint
(Blackboard)	Cement Plaster, Paint
(Ceiling)	MS Tubular Truss Exposed

Resource Centre (Terai)	
(Structure)	
(Main Structure)	Single Story, Load Baring Wall Structure
(Roof)	MS Tubular Truss, 26 Gauge-CGI sheet (Standard)
(Foundation)	Continuous Brick Footing
(External)	
(Roof)	26 Gauge-CGI sheet (Standard)
(Wall)	Waterproof Painting
(veranda)	Cement Plaster Finish
(Internal)	
(Floor)	Cement Plaster Finish
(Wall)	Cement Plaster, Waterproof Painting
(Opening)	Salwood Framed Plywood Panel for Doors/ Window Shutters, Enamel Paint MS Door/ Window Frames, Enamel Paint
(Ceiling)	MS Tubular Truss Exposed

Resource Centre (Hill)	
(Structure)	
(Main Structure)	Single Story, Load Baring Wall Structure
(Roof)	MS Tubular Truss, 26 Gauge-CGI sheet (Standard)
(Foundation)	Continuous Stone Footing
(External)	
(Roof)	26 Gauge-CGI sheet (Standard)
(Wall)	Mortar Pointing
(veranda)	Cement Plaster Finish
(Internal)	
(Floor)	Cement Plaster Finish
(Wall)	Cement Plaster, Waterproof Painting
(Opening)	Salwood Framed Plywood Panel for Doors/ Window Shutters, Enamel Paint MS Door/ Window Frames, Enamel Paint
(Ceiling)	MS Tubular Truss Exposed

Toilet (Terai)	
(Structure)	
(Main Structure)	Single Story, Load Baring Wall Structure
(Roof)	MS Tubular beam, 26 Gauge-CGI sheet
(Foundation)	Continuous Brick Footing
(External)	
(Roof)	26 Gauge-CGI sheet
(Wall)	Waterproof Painting
(Internal)	
(Floor)	Cement Plaster Finish
(Wall)	Cement Plaster, Waterproof Painting
(Opening)	Salwood Framed Plywood Panel for Door Shutters, Enamel Paint MS Door/ Window Frames, Enamel Paint
(Ceiling)	MS Tubular Beam Exposed

Toilet (Hill/Mountain)	
(Structure)	
(Main Structure)	Single Story, Load Baring Wall Structure
(Roof)	MS Tubular beam, 26 Gauge-CGI sheet
(Foundation)	Continuous Stone Footing
(External)	
(Roof)	26 Gauge-CGI sheet
(Wall)	Mortar Pointing
(Internal)	
(Floor)	Cement Plaster Finish
(Wall)	Cement Plaster, Waterproof Painting
(Opening)	Salwood Framed Plywood Panel for Door Shutters, Enamel Paint MS Door/ Window Frames, Enamel Paint
(Ceiling)	MS Tubular Beam Exposed

(2) Material Planning

1) List of Materials

The unit quantities of materials necessary for each block of the facilities are shown in **Table 26**.

Table 26: Quantities of Materials Per Block of Each Facility

No.	Particulars	Unit	TCL	HCL	MCL	TRC	HRC	TWC	HWC	TWCH	HWCH
1	Bricks	Pcs	28,000	0	0	53,000	0	4,500	0	7,000	0
2	Ordinary Portland Cement	Bags	163	123	118	235	119	18	8	28	15
3	Reinforcement										
	a) 10/12 mm dia ribbed bar	Kg	22.000	20.000	20.000	676.000	588.000	58.000	71.000	60.000	74.000
	b) 4.75 mm dia steel bar	Kg	2.000	3.000	3.000	103.000	107.000	1.500	2.000	2.000	3.000
	c) Binding wire	Kg	0.500	0.250	0.250	8.000	6.000	1.000	1.000	1.000	1.000
4	MS frames (40 x 40x 4)										
	a) Door frames	sq.m	8.400	8.400	8.400	8.820	6.930	1.190	1.190	2.010	2.010
	b) Window frames with grills	sq.m	14.600	14.600	14.600	20.700	11.800				
5	Wooden shutters										
	a) Door shutters D(1.1*2.1)	Nos	2	2	2	3	3				
	b) Door shutters D1(0.9*2.1)	Nos	2	2	2	1	0				
	c) Window shutters(0.9*1.3)	Nos	24	24	24	34	20				
	d) Door shutter D2 (1.1 x 1.83)	Nos								1	1
	e) Door shutter D3 (0..65 x 1.83)	Nos						1	1		
6	Painting on shutters										
	a) One coat primer	Ltr	4.000	4.000	4.000	5.000	2.500	0.500	0.500	0.500	0.500
	b) Two coats of enamel paint	Ltr	8.000	7.800	7.800	11.000	4.500	1.000	0.400	1.000	0.700
7	a) Truss complete set including posts	Kg	1,840	1,910	1,800	2,060	1,500				
	b) Roof structure for toilet	Kg						42	47	50	55
8	Red water proof cement paint outside	Kg	40			83		8		7	
9	White water proof cement paint	Kg	67	71	62	117	93	7	6	7	7
10	CGI sheets 26 gauge (0.50 mm)	Sq.m	199.000	185.000	170.000	236.000	191.000	5.900	7.800	8.660	10.900
11	GI sheets 26 gauge (0.50 mm)	Sq.m	8.670	9.400	8.530	12.100	10.700				
12	Translucent sheets (2mm thick)	Sq.m	21.400	28.500	25.600						
13	a) J-hooks set (7.5 mm dia)	Pcs	865	958	895	695	555				
	b) J-hooks set (small)	Pcs						37	37	48	55
14	Tower bolt										
	a) 100 mm long	Pcs	48	24	24	68	40				
	b) 150 mm long	Pcs	12	10	10	14	12	4	4	4	4
15	Handles (100mm x 25 mm)	Pcs	32	32	32	42	26	2	2	2	2
16	Sliding bar locking set	Pcs	2	2	2	3	2	1	1	1	1
17	Screws										
	a) 25 mm long	Pcs	700	700	700	1,000	700	30	30	50	50
	b) 30 mm long	Pcs	100	100	100	100	100	45	45	75	75
18	Steel hooks for windows	Pcs	24	24	24	34	20				
19	Orrisa pan with "P / S" - trap, etc	Set						1	1	1	1
20	600mm long 20φ MS tubular hand rail	Kg								3	3
21	Donation board	Pcs	1	1	1	1	1				
22	Water supply set	Set	Hand pump set and GI Pipe (length of the pipe differs by the district ground water table) Bara:42m, Kapilvastu:60m, Saptari, Dang, Bardiya, Kailali:30m								

2) List of Furniture

Table 27: Quantities of Furniture

No.	Particulars	unit	Quantities			
			1st phase	2nd phase	3rd phase	Total
1	3 seater bench and desk for classroom	Set	12,954	17,646	12,530	43,130
2	Furniture set for RC	Set	8	23	21	52

*1: Quantities of furniture to be equipped per classrooms are Terai 19, Hill 15, Mountain 12

*2: Furniture per RC is; 1 desk and chair for RP, 12 meeting table, 24 meeting chair, 1 bookshelf, 1 shelf with door and lock, 1 white board, 1 pinup-board.

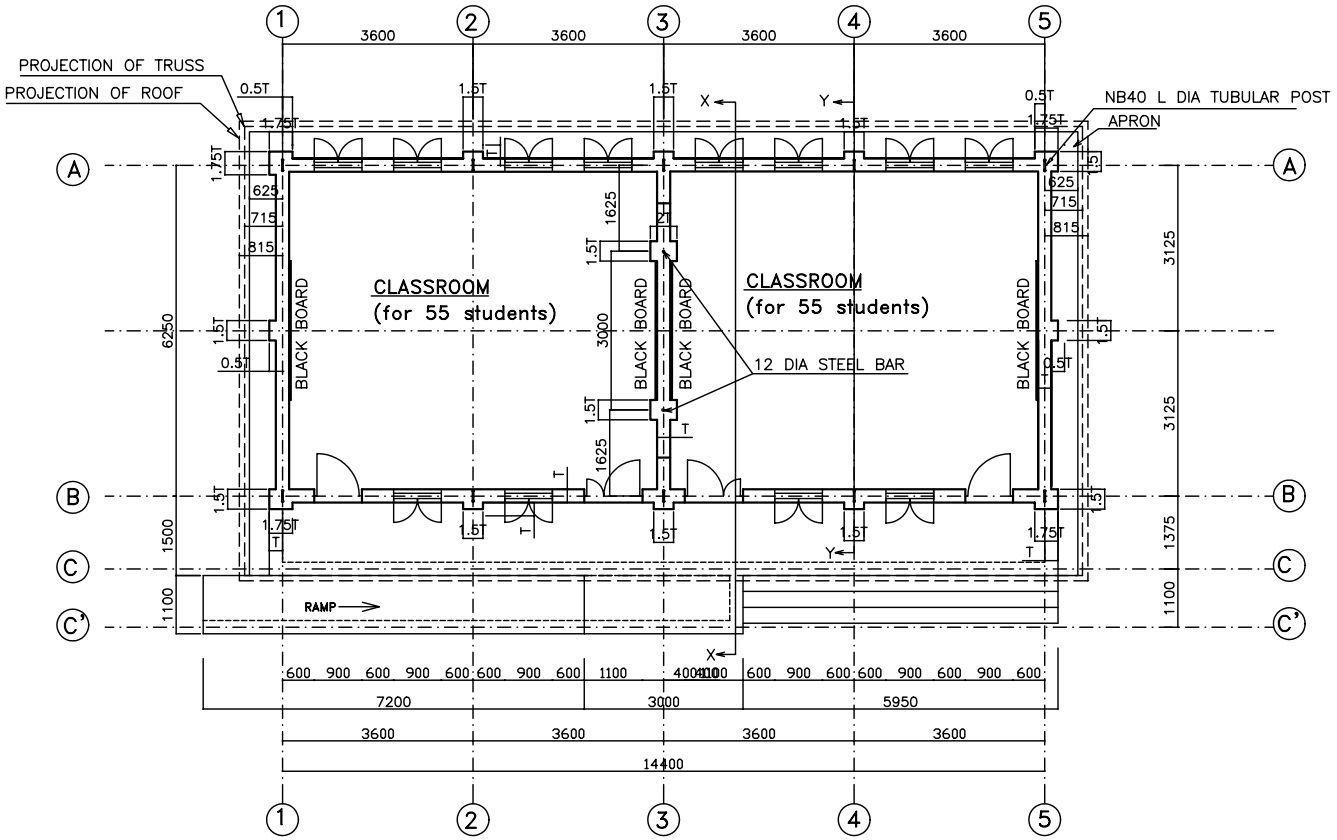
3) List of Equipments

Table 28: Quantities of Equipments

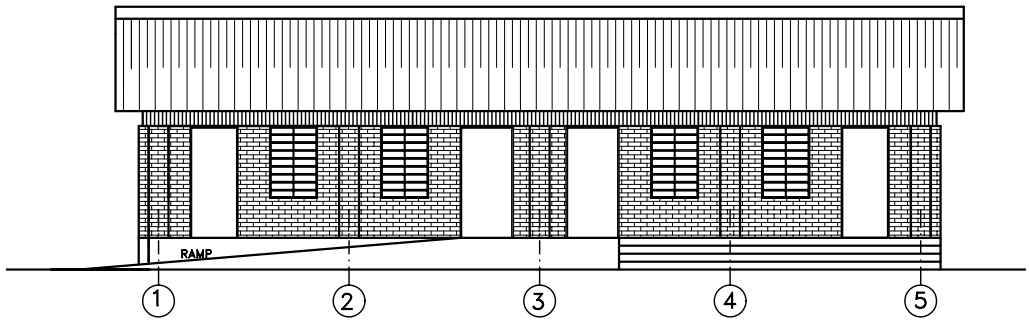
No.	Item	unit	Quantities			
			1st phase	2nd phase	3rd phase	Total
1	Personal Computer(Including UPS)	Set	2	-	-	2
2	Scanner	Set	1	-	-	1
3	Colour Laser Printer	Set	1	-	-	1

2-2-3 Basic Design Drawing

1 School Building (Terai) Plan & Elevation
2 School Building (Terai) Section
3 School Building (Terai) Roof Structure Plan
4 School Building (Hill) Plan & Elevation
5 School Building (Mountain) Plan & Elevation
6 School Building (Hill & Mountain) Section
7 School Building (Hill) Roof Structure Plan
8 School Building (Mountain) Roof Structure Plan
9 Resource Centre (Terai) Plan & Elevation
10 Resource Centre (Terai) Section and Detail of Stitching
11 Resource Centre (Terai) Roof Structure Plan
12 Resource Centre (Hill) Plan & Elevation
13 Resource Centre (Hill) Section
14 Resource Centre (Hill) Roof Structure Plan
15 Toilet Block (Terai)
16 Toilet Block (Hill)
17 Toilet Block for disabled(Terai)
18 Toilet Block for disabled(Hill)



PLAN



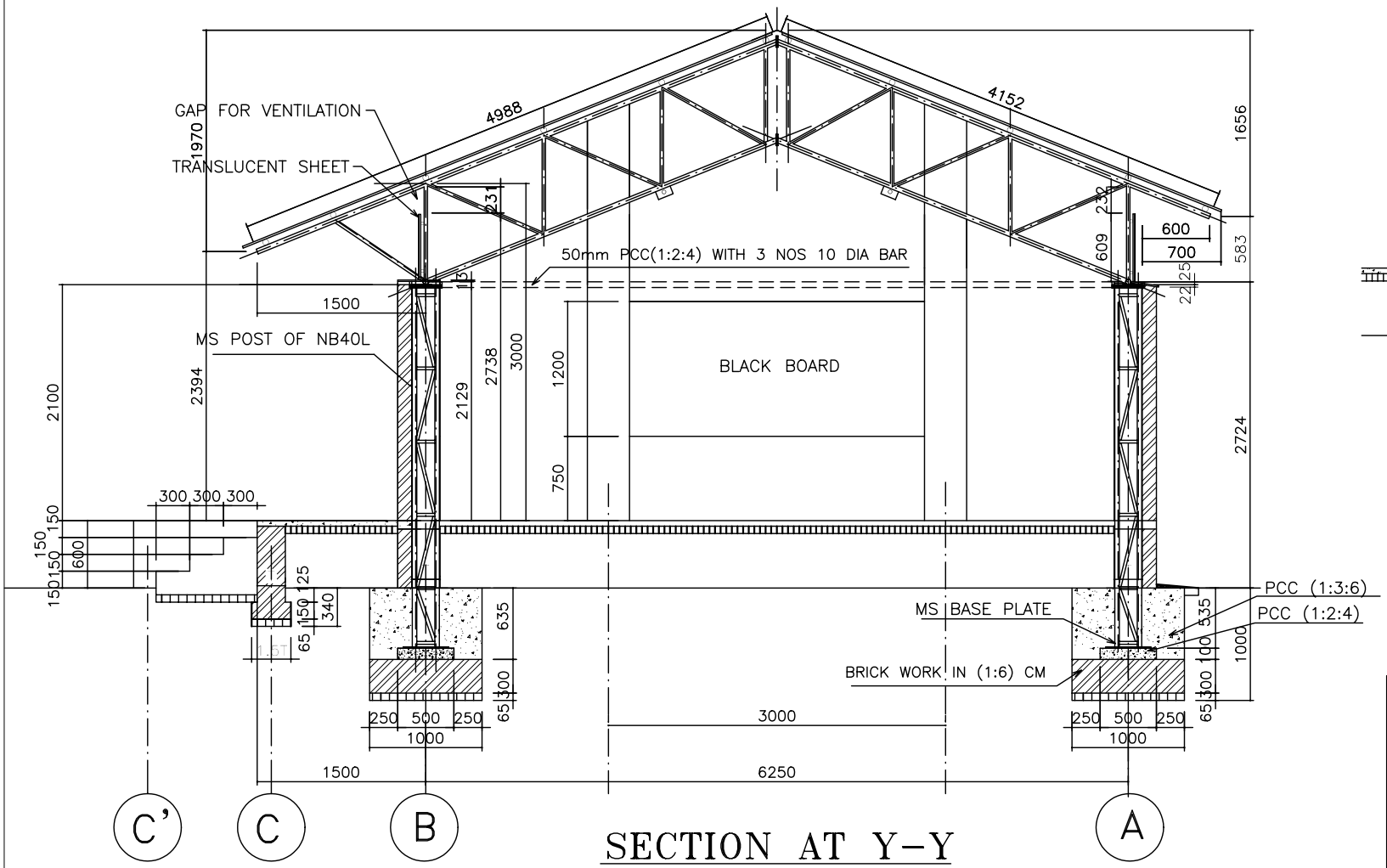
FRONT ELEVATION

SCHOOL BUILDING
(TERAI REGION)

SHEET TITLE

PLAN & ELEVATION

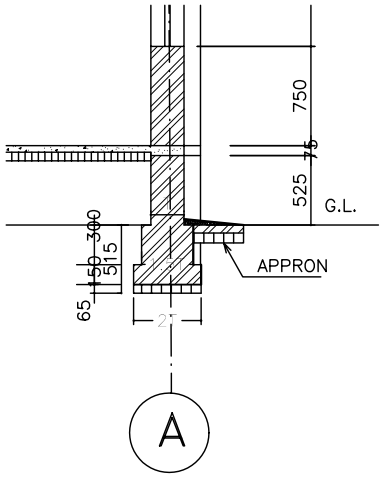
SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



SECTION AT Y–Y

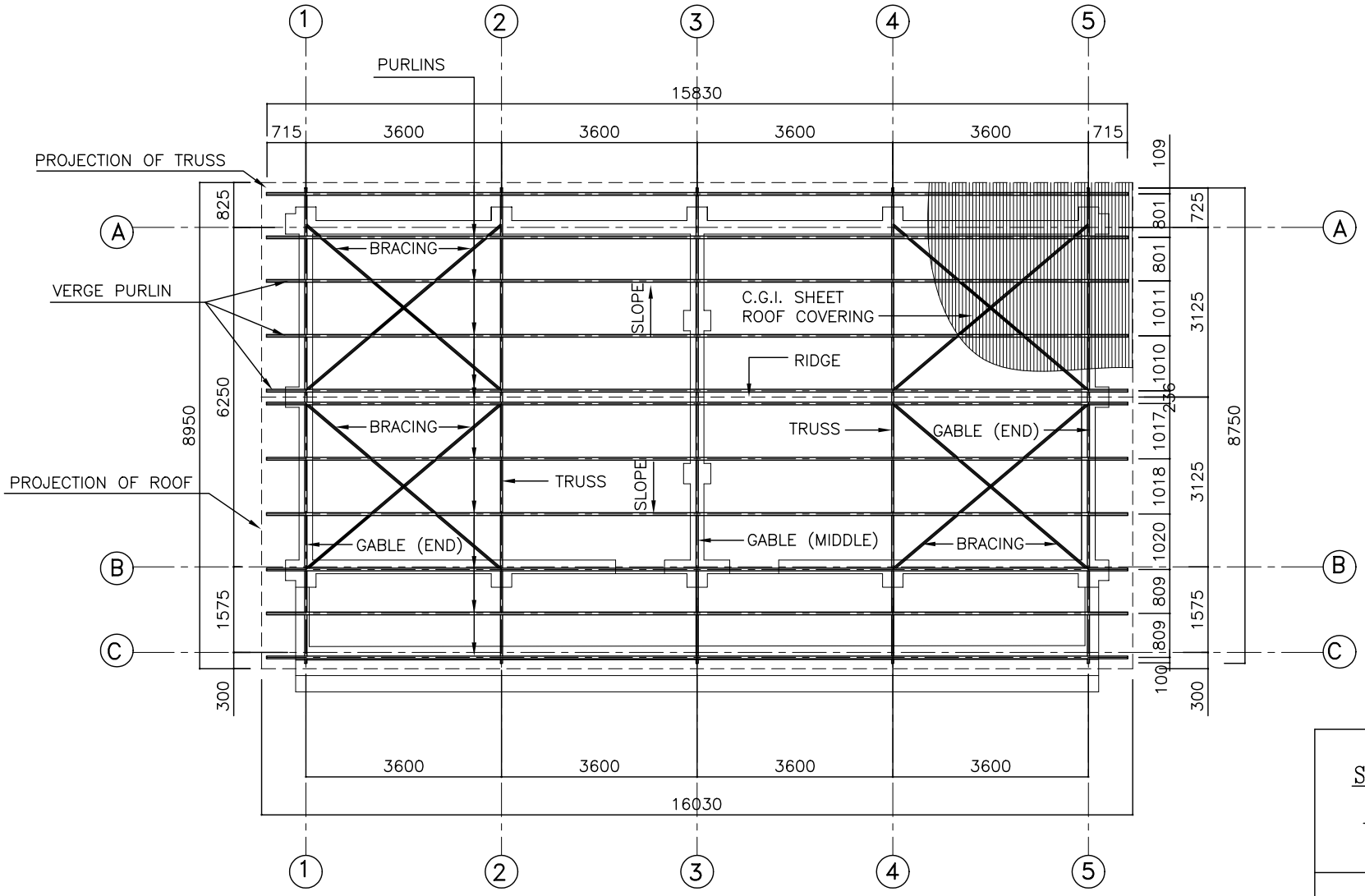
NOTE:

1. RAFTERS ARE OF NB 32L.
2. STRUTS ARE OF NB 25L.
3. PURLINS ARE OF NB 50L.
4. POSTS ARE OF NB 32L.
5. LACINGS ARE OF NB 25L.



SECTION AT X–X

JOB TITLE
SCHOOL BUILDING (TERAI REGION)
SHEET TITLE
SECTION
SCALE 0 0.20 0.40 0.60 0.80 1.00 1.20m



PLAN

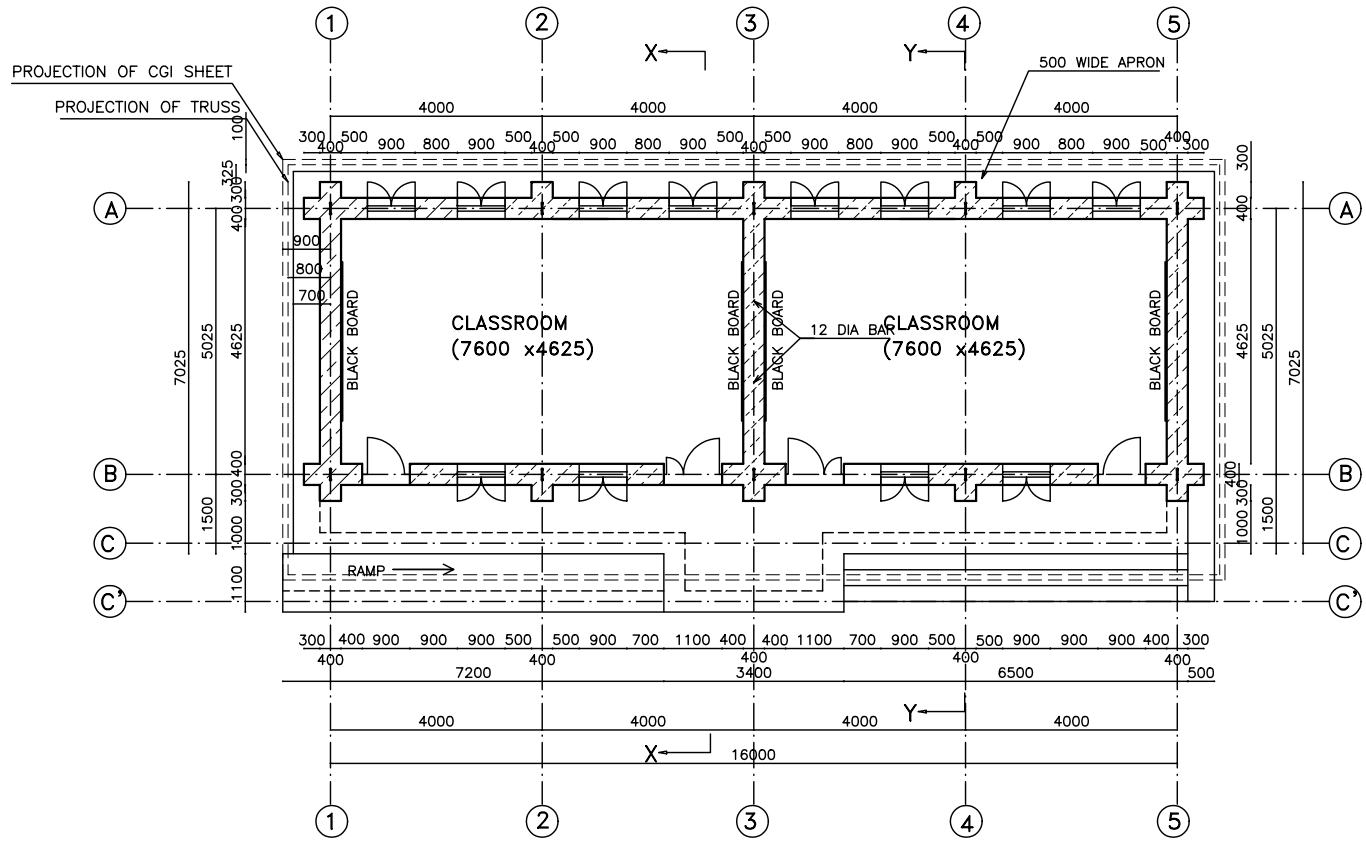
SCALE=1:100

SCHOOL BUILDING
(TERAI REGION)

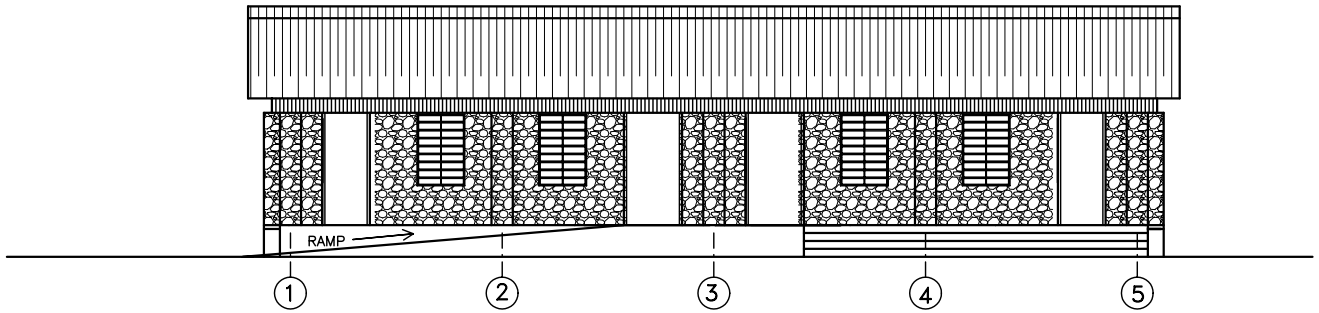
SHEET TITLE

STRUCTURAL PLAN
OF TRUSS

SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



PLAN



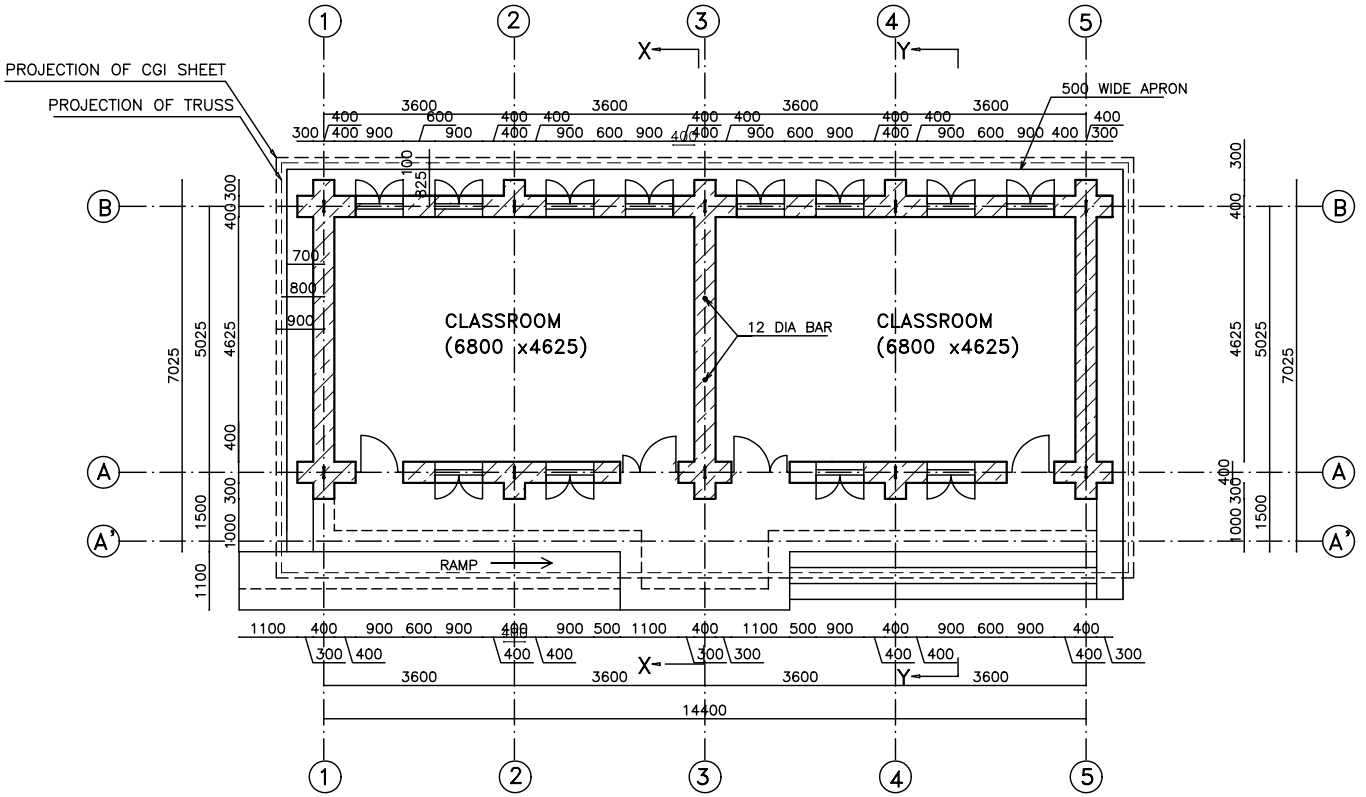
FRONT ELEVATION

SCHOOL BUILDING
(HILLY REGION)

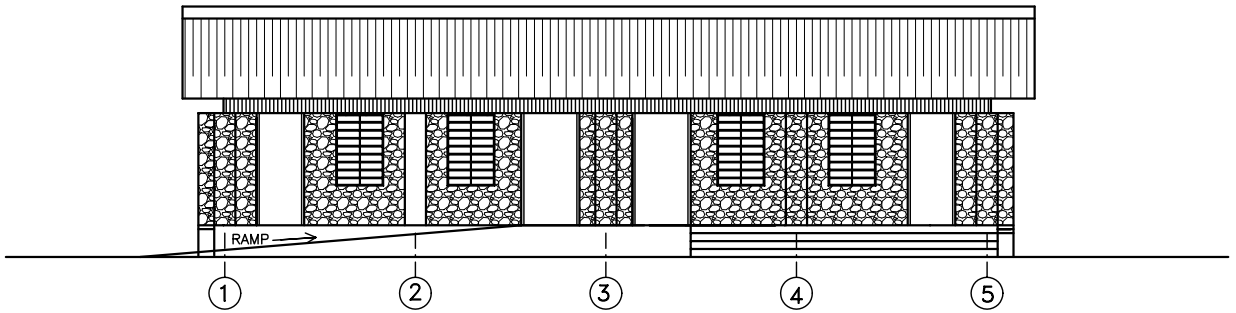
SHEET TITLE

PLAN & ELEVATION

SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



PLAN



FRONT ELEVATION

SCHOOL BUILDING
(MOUNTAIN REGION)

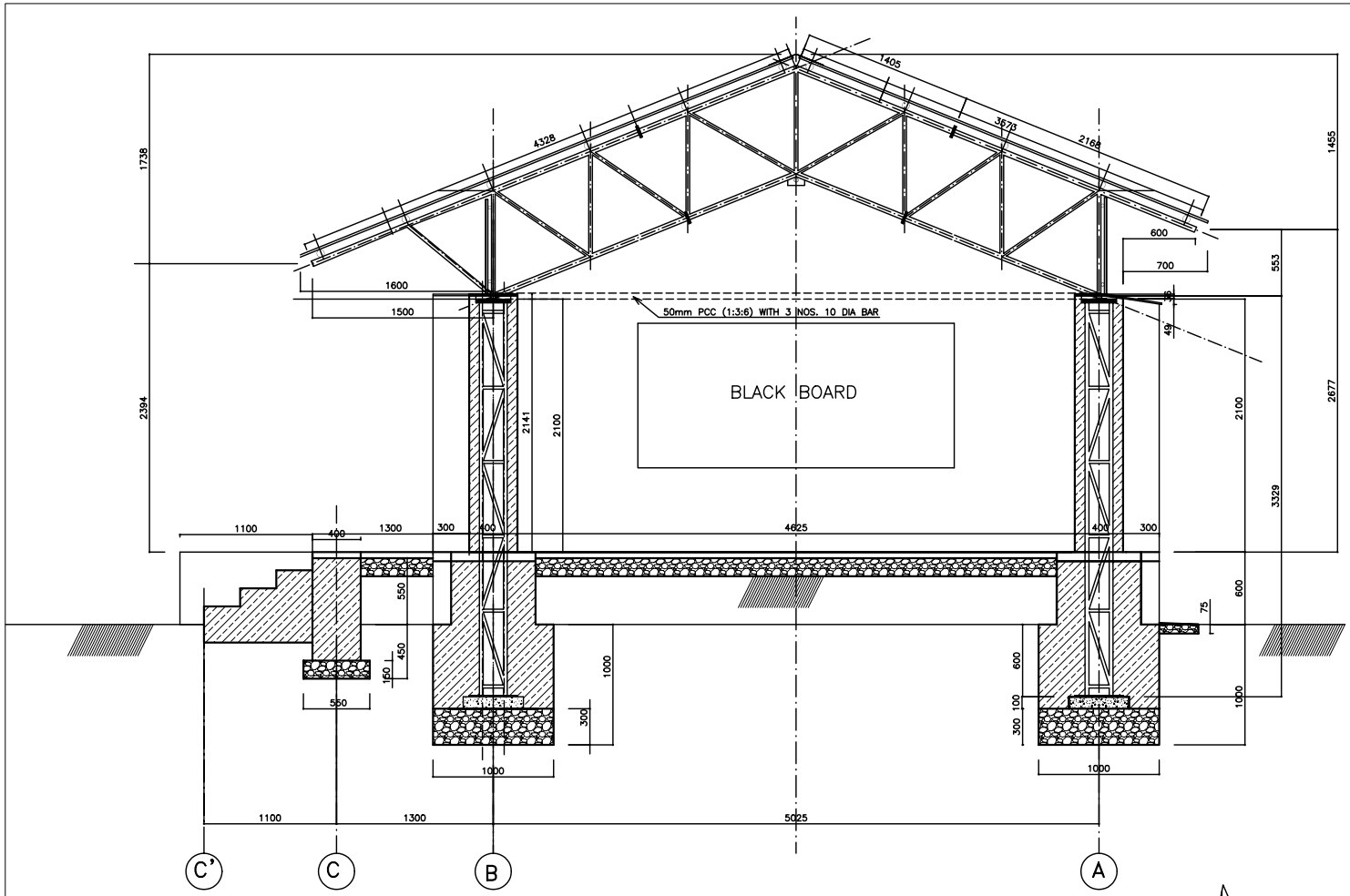
SHEET TITLE

PLAN & ELEVATION

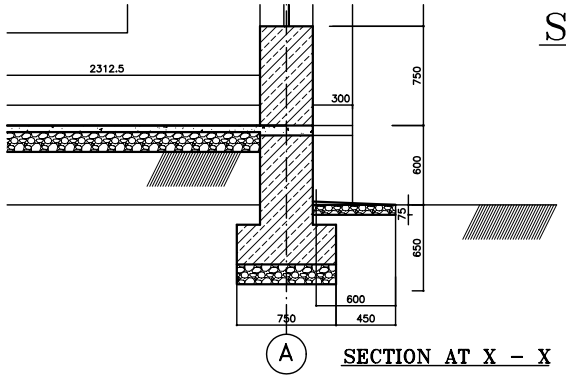
SCALE 0 1.0 2.0 3.0m

NOTE:

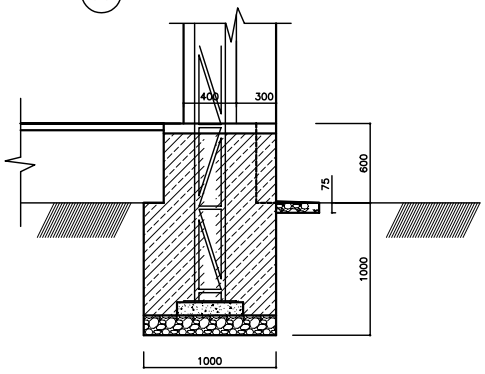
1. RAFTERS ARE OF NB 32L.
2. STRUTS ARE OF NB 25L.
3. PURLINS ARE OF NB 50L.
4. POSTS ARE OF NB 32L.



SECTION AT Y – Y



SECTION AT X – X



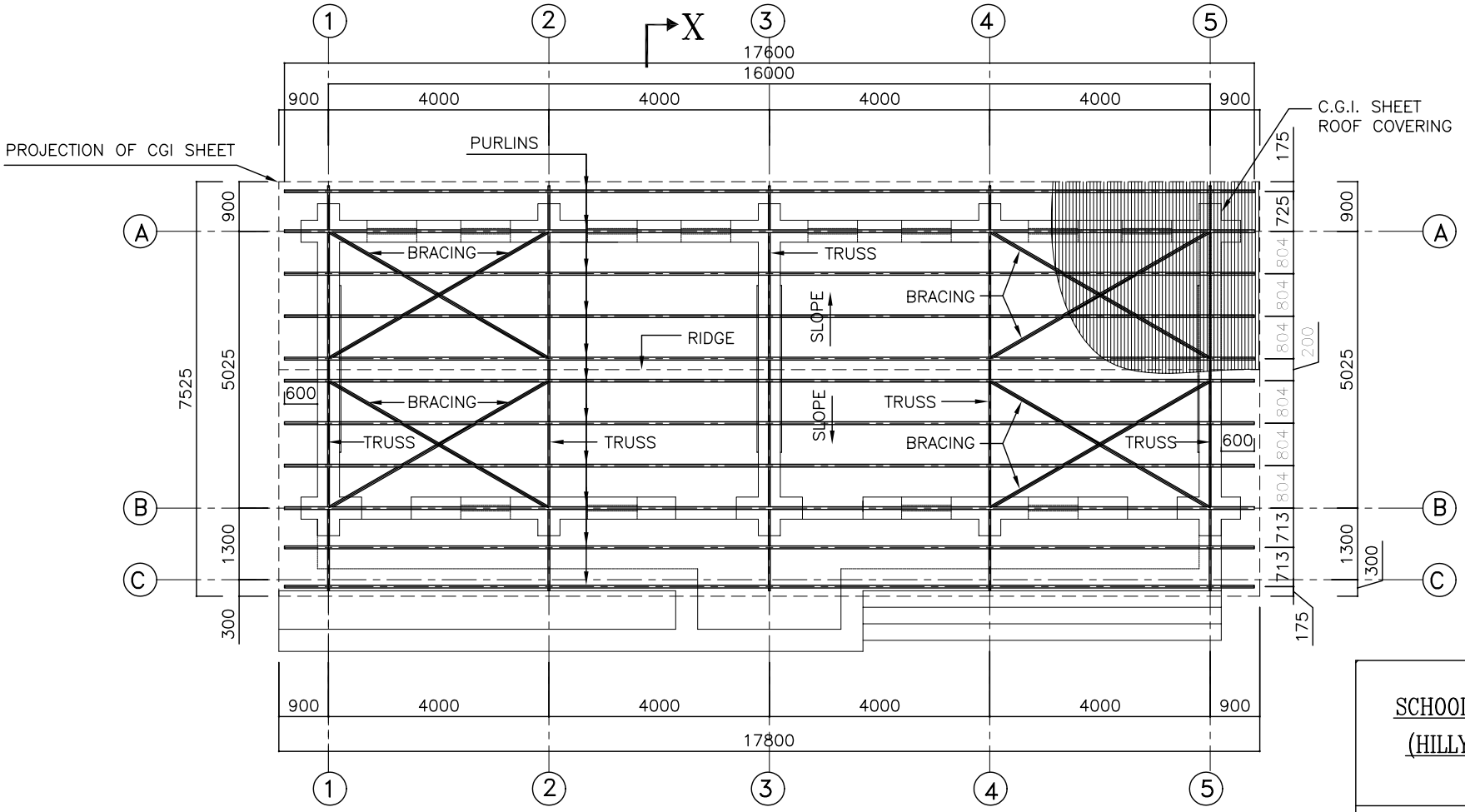
SECTION THROUGH BUTTRESS

SCHOOL BUILDING (HILLY & MOUNTAIN REGION)

SHEET TITLE

SECTION

SCALE 0 0.2 0.4 0.6 0.8 1.0 1.2m



PLAN

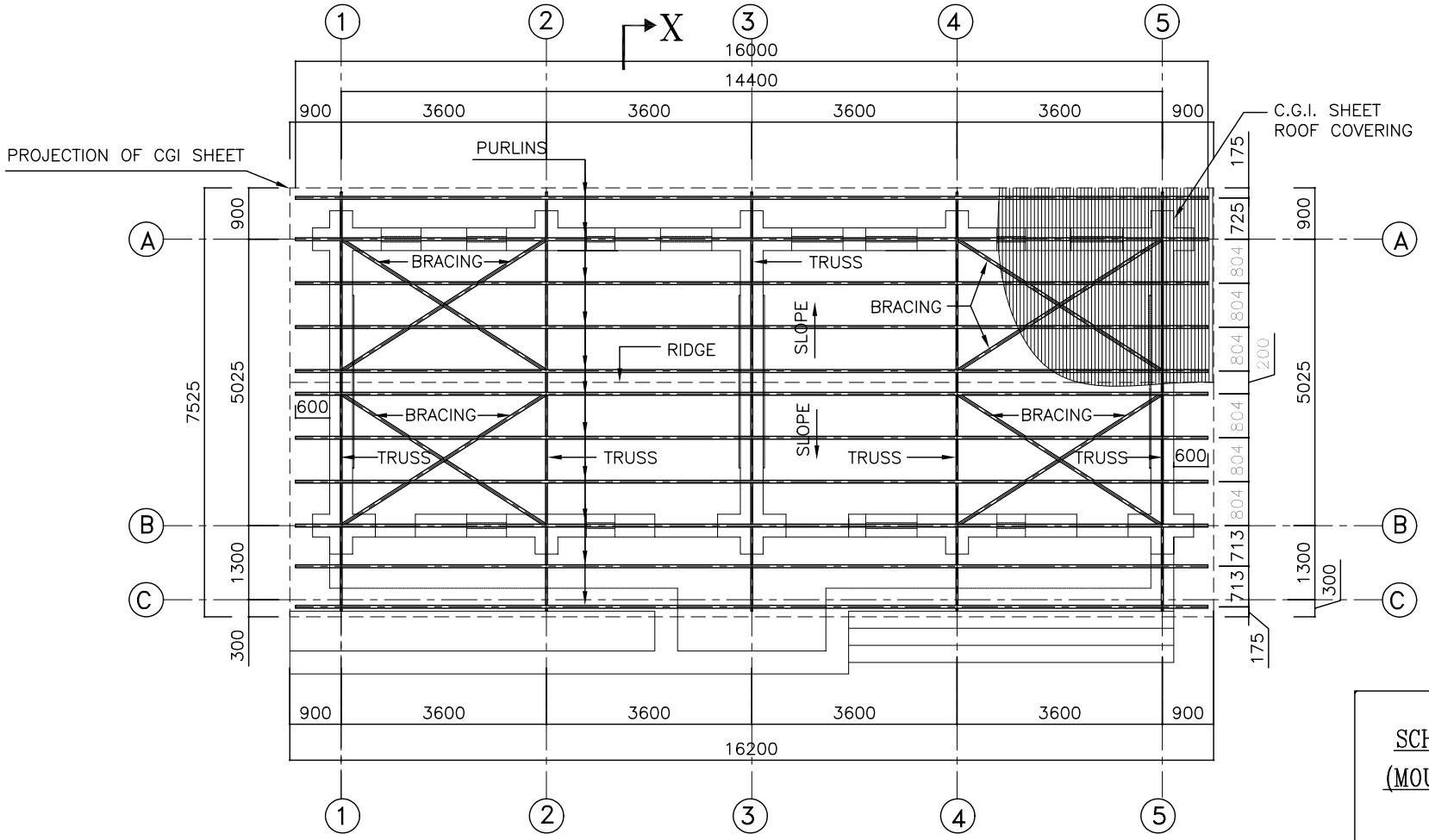
SCALE=1:100

SCHOOL BUILDING
(HILLY REGION)

SHEET TITLE

STRUCTURAL PLAN
OF TRUSS

SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



PLAN

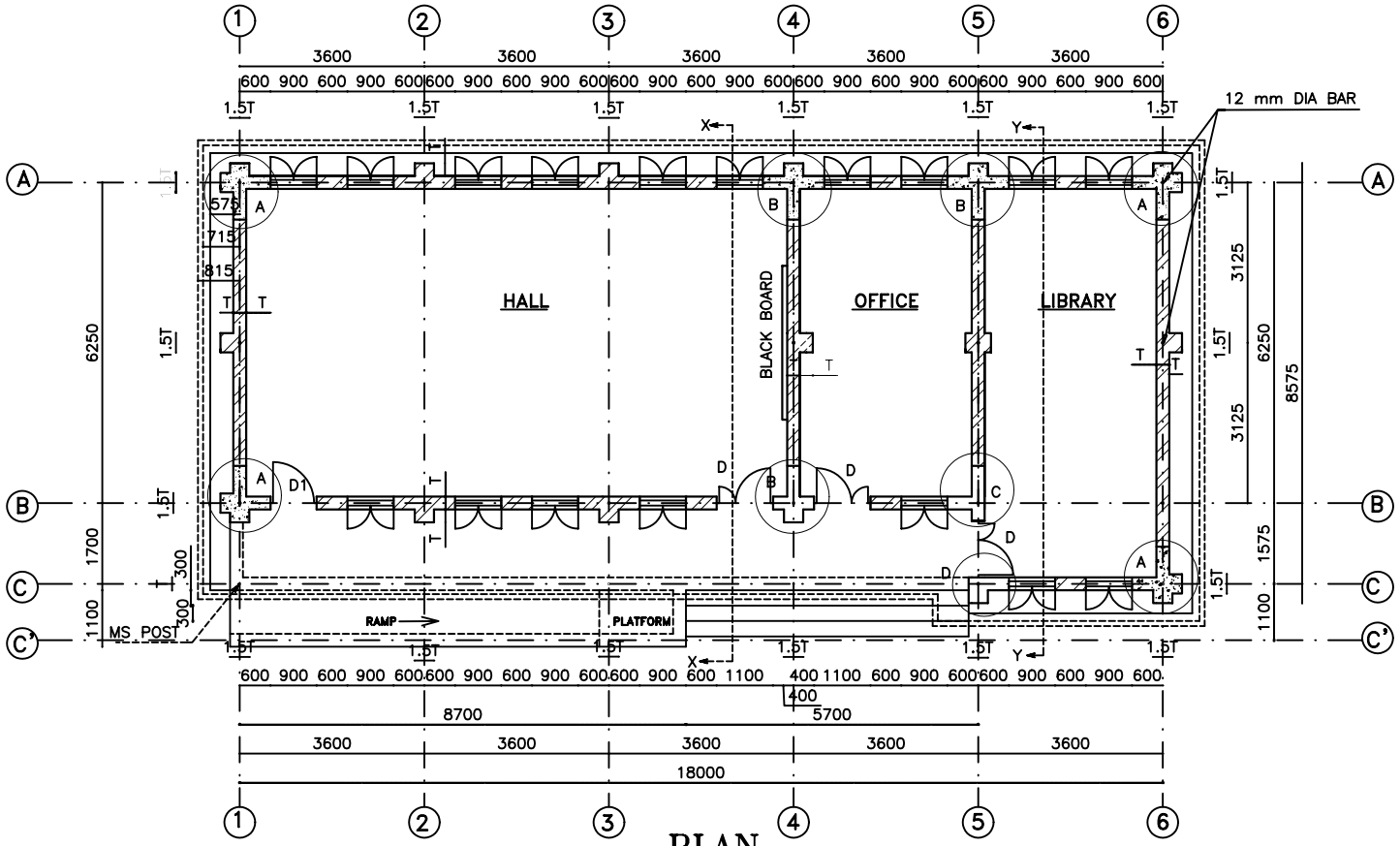
SCALE=1:100

SCHOOL BUILDING
(MOUNTAIN REGION)

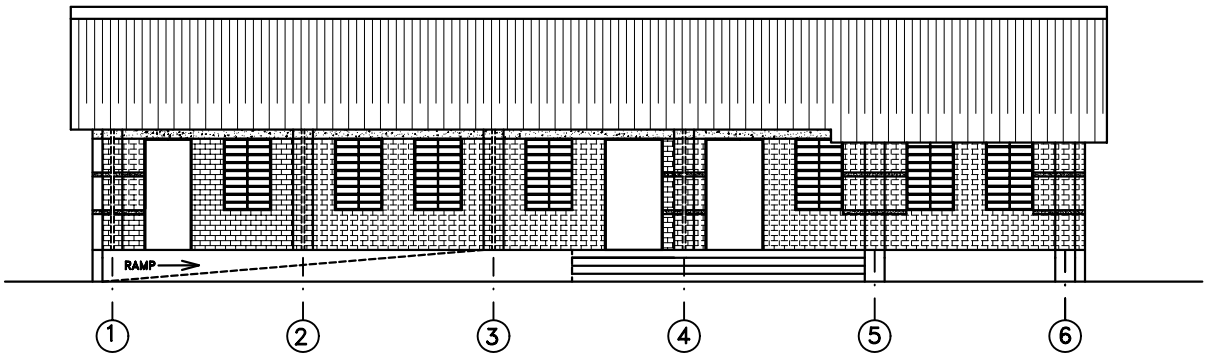
SHEET TITLE

STRUCTURAL PLAN
OF TRUSS

SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



PLAN

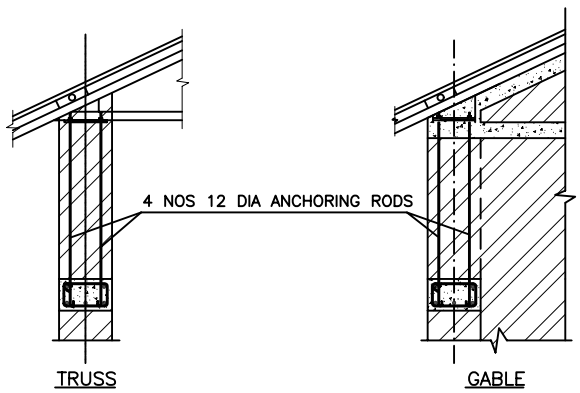


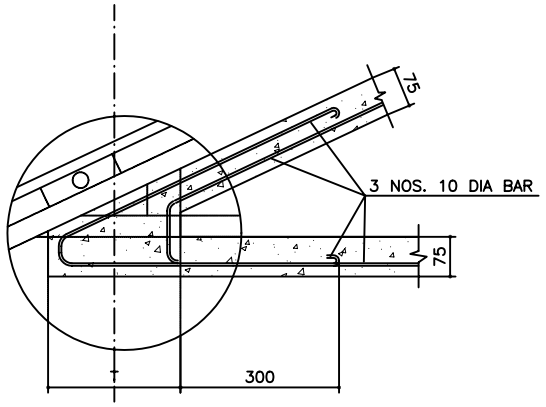
FRONT ELEVATION

NOTE:
1. ONE NUMBER 12 mm DIA BAR GROUTED WITH CEMENT SAND SLURRY IS TO BE KEPT AT 18 PLACES AS SHOWN IN THE DRAWING.
2. ON THE OUTER WALLS OF THE BUILDING CEMENT PLASTER (1:4) IS APPLIED FROM GROUND LEVEL TO PLINTH LEVEL INCLUDING ON STEPS.
3.VENTILATION HOLES WILL BE KEPT OVER THE DOOR AND WINDOW OPENINGS IN THE SAME WAY AS SHOWN IN THE BACK ELEVATION.

JOB TITLE
RESOURCE CENTRE (TERAI REGION)
SHEET TITLE
PLAN & ELEVATION
SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m

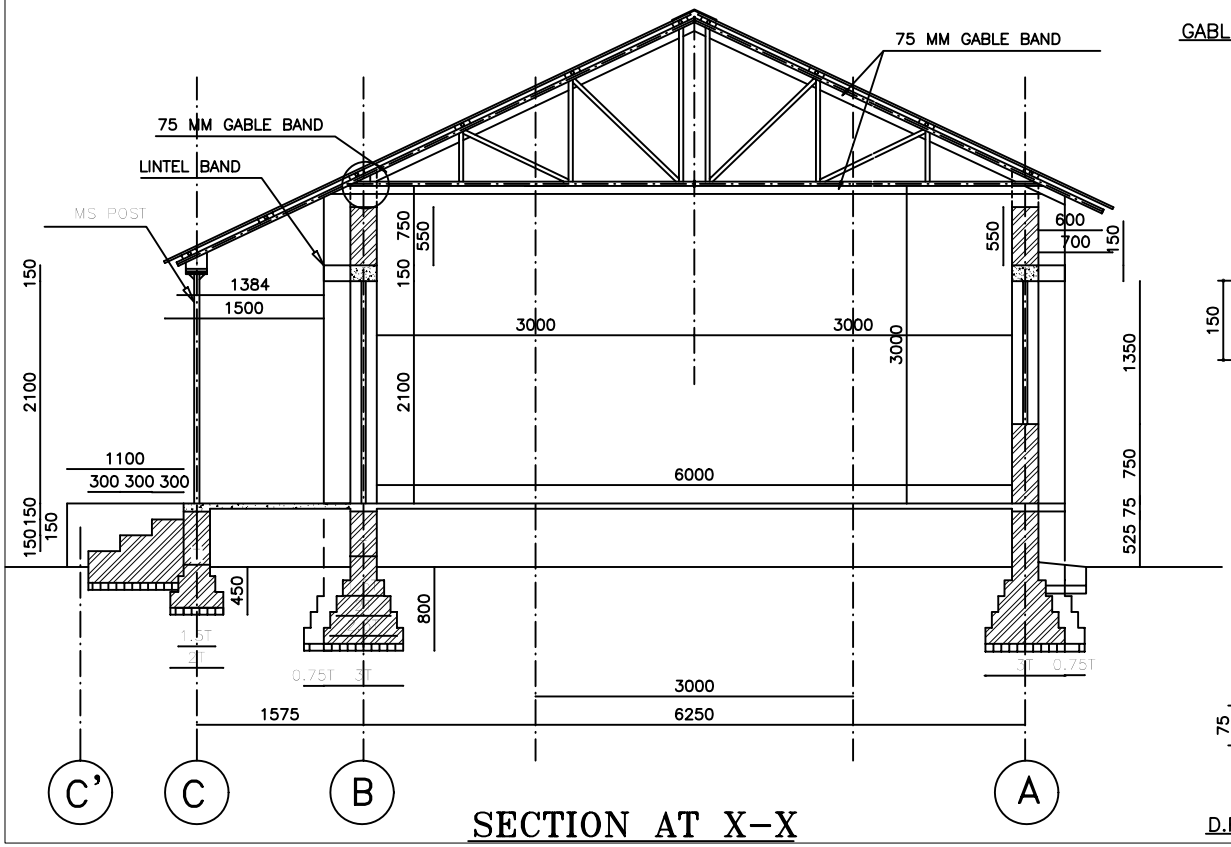
CONNECTION OF TRUSS/GABLE WITH LINTEL BAND



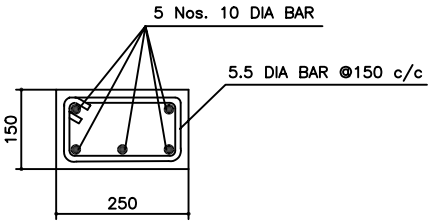


GABLE BAND DETAIL

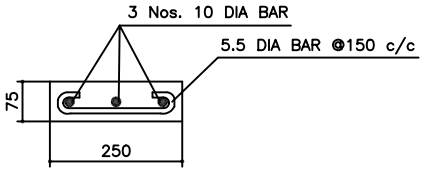
NOTE:
1. T represents Standard length of Local brick
2. 75 mm THICK GABLE BAND IS IMMEDIATELY BELOW THE GABLE RAFTER AND HORIZONTAL GABLE BAND IS 75 mm BELOW THE TRUSS TIE LEVEL.
3. THE MASONARY WALLS OF BUTTRESSES WILL BE UP TO THE BOTTOM OF THE TRUSS BASE PLATE AND OTHER WALLS BETWEEN THE BUTTRESSES IN THE FRONT AND BACK SIDES OF THE BUILDING WILL BE 200mm BELOW THE BASE PLATE OF THE TRUSS.



SECTION AT X–X

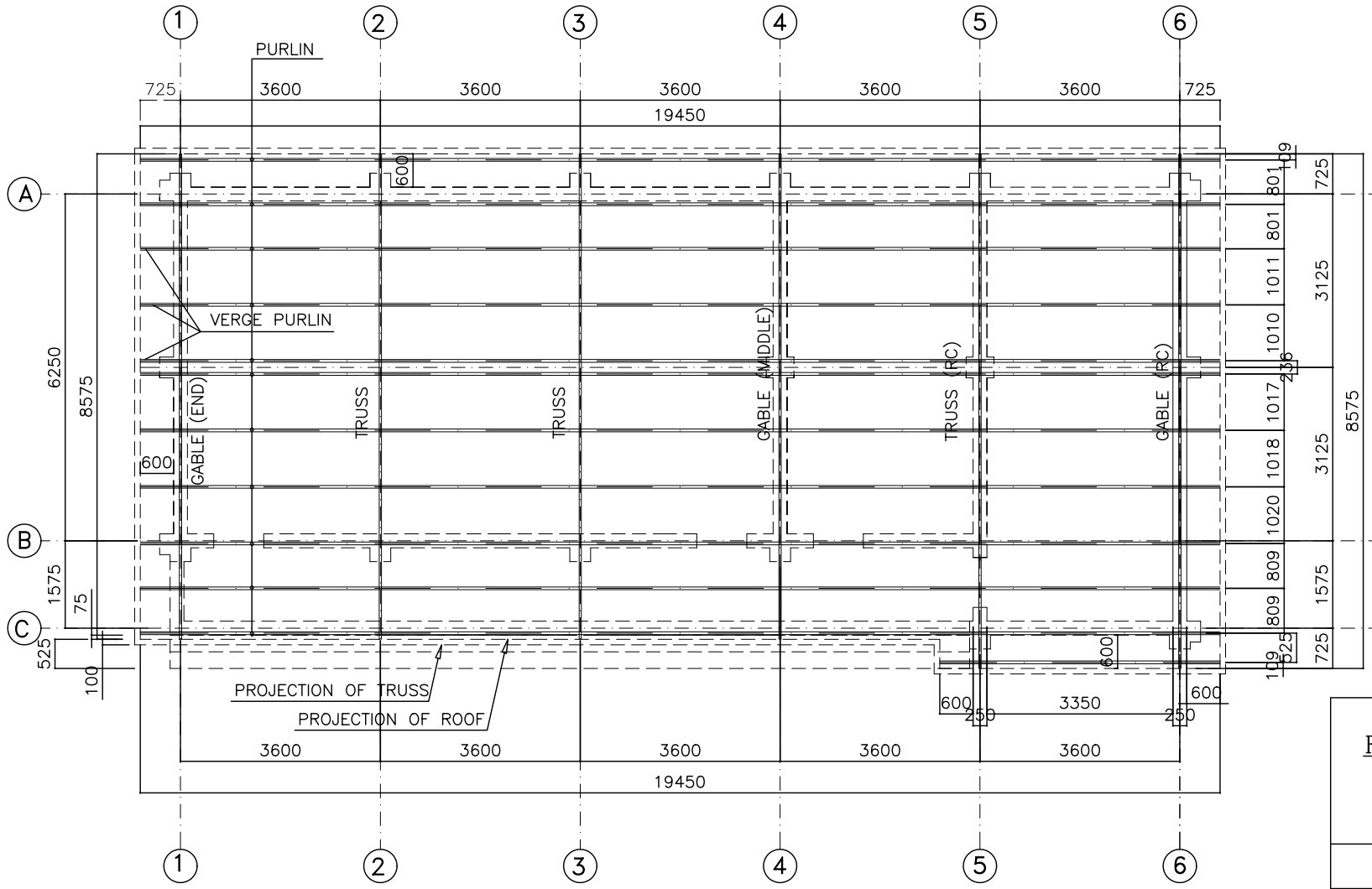


LINTEL BAND



D.P.C. AND GABLE BAND

RESOURCE CENTRE (TERAI REGION)	
SHEET TITLE	
SECTION & DETAILS	
SCALE	1:50, 1:20



NOTE:

1. ALL PRINCIPAL RAFTERS OF BOTH TRUSSES AND GABLES ARE OF NB 50M MS TUBULAR PIPES.
2. ALL PURLINS ARE OF NB 50M MS TUBULAR PIPES.
3. ALL STRUTS ARE OF NB 25M MS TUBULAR PIPES.
4. TIE OF TRUSS IS OF NB 50M MS TUBULAR PIPES.
5. POST IS OF NB 50M MS TUBULAR PIPES.

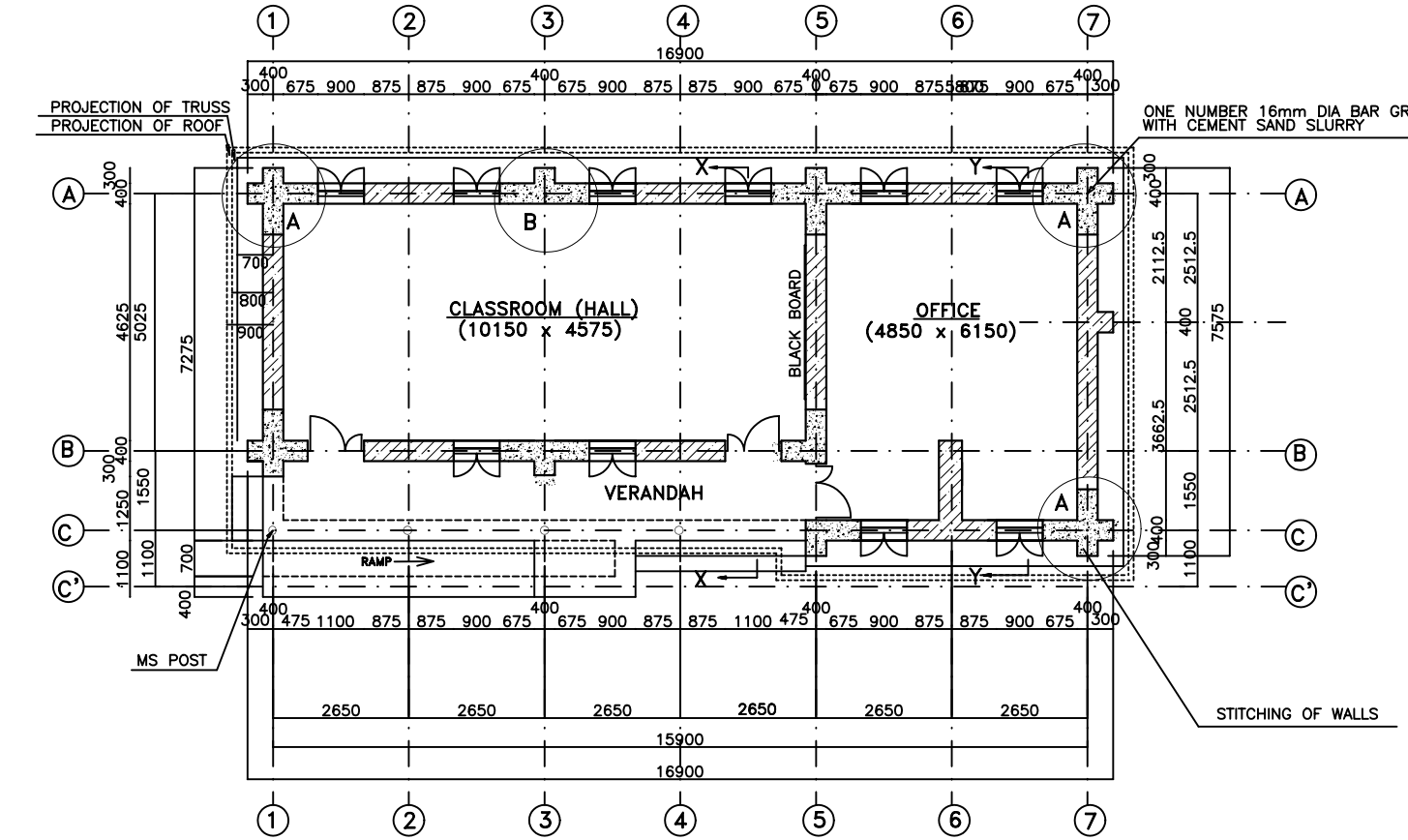
PLAN

RESOURCE CENTRE
(TERAI REGION)

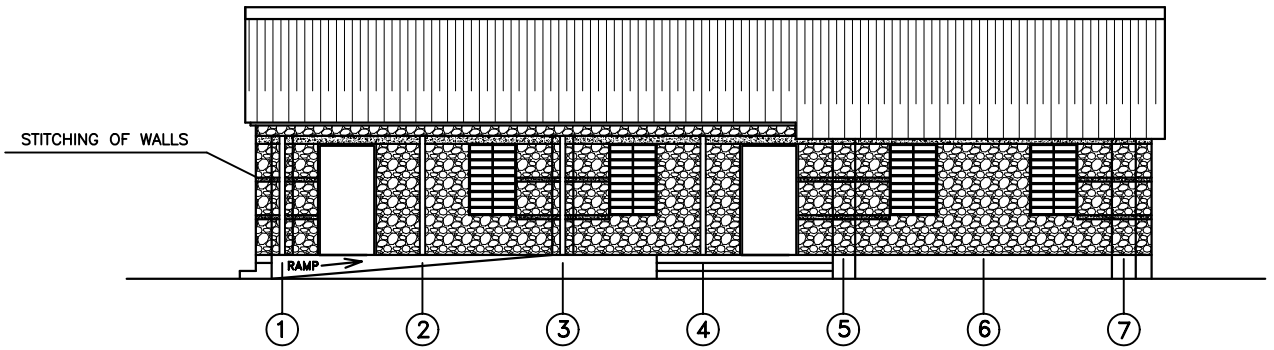
SHEET TITLE

STRUCTURAL PLAN
OF TRUSS

SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



PLAN



FRONT ELEVATION

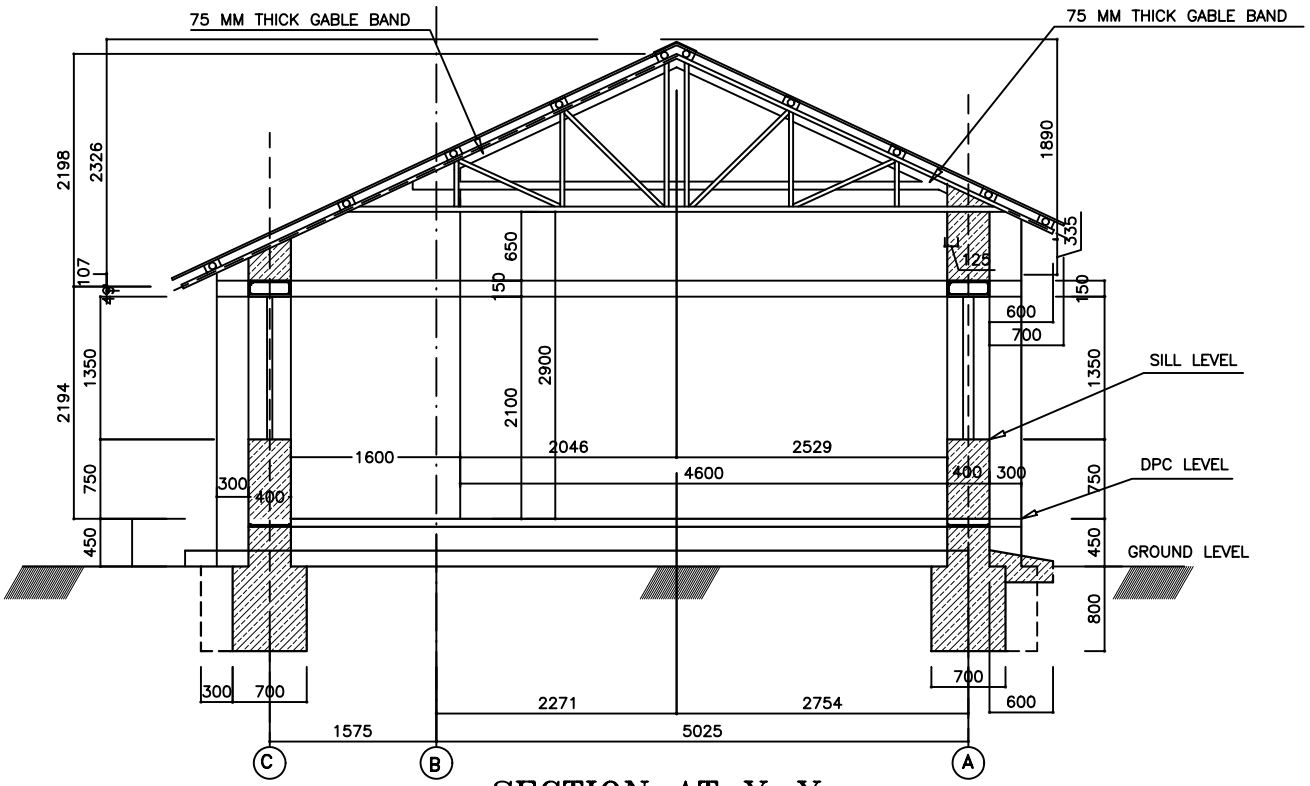
NOTE:
1. ONE NUMBER 16 mm DIA BAR GROUTED WITH CEMENT SAND SLURRY IS TO BE KEPT AT 20 PLACES AS SHOWN IN THE THE DRAWING.
2. DOORS ARE TO BE KEPT OPEN WHILE CONDUCTING THE CLASSES.

RESOURCE CENTRE
(HILLY REGION)

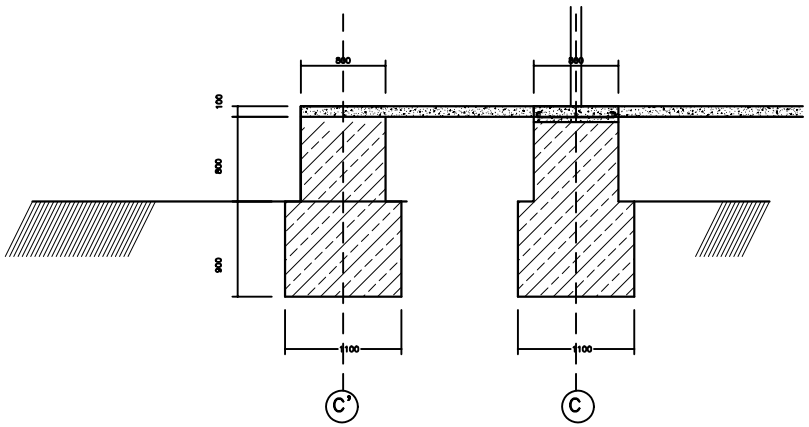
SHEET TITLE

PLAN & ELEVATION

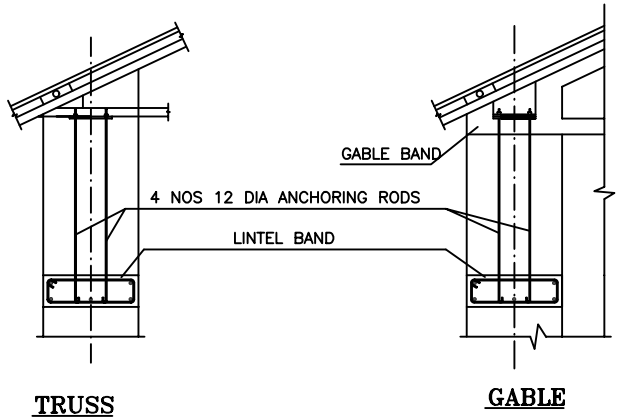
SCALE 0 1.0 2.0 3.0m



SECTION AT Y–Y



FOUNDATION DETAILS OF RAMP AND VERANDAH WALL



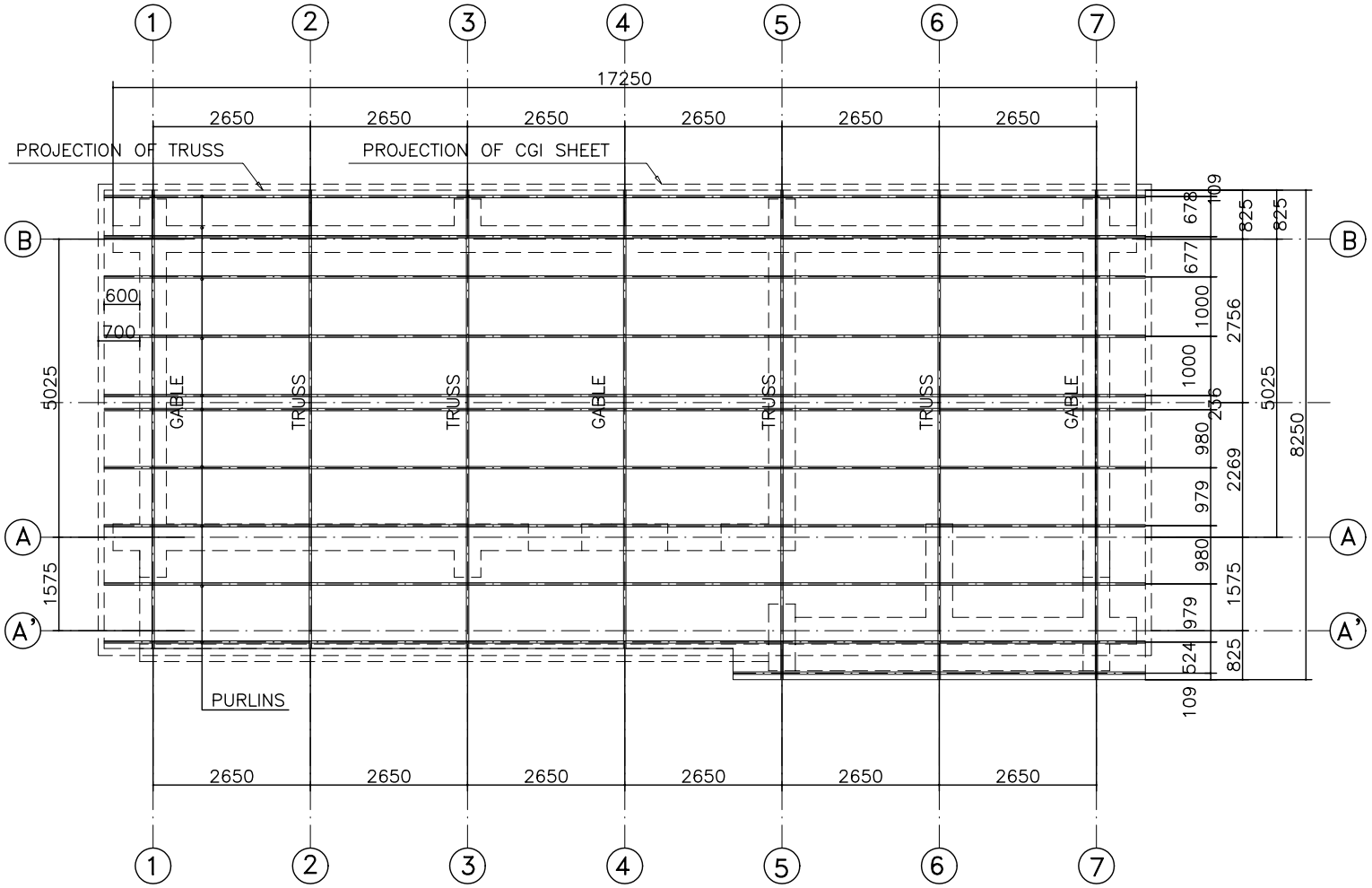
CONNECTION OF TRUSS/GABLE WITH LINTEL BAND

RESOURCE CENTRE
(HILLY REGION)

SHEET TITLE

SECTION

SCALE	1:50, 1:25



PLAN

NOTE:

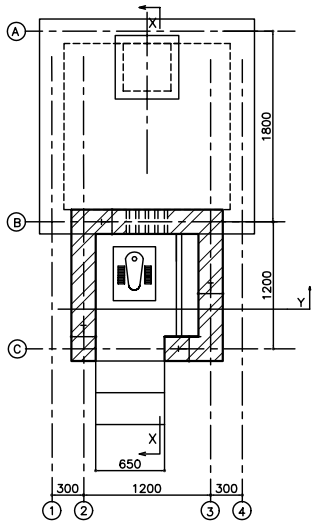
1. ALL PRINCIPAL RAFTERS OF BOTH TRUSSES AND GABLES ARE OF NB 40M MS TUBULAR PIPES.
2. ALL PURLINS ARE OF NB 40L MS TUBULAR PIPES.
3. ALL STRUTS ARE OF NB 32M MS TUBULAR PIPES.
4. TIE OF TRUSS IS OF NB 40M MS TUBULAR PIPES.
5. ALL POSTS ARE OF NB 50M MS TUBULAR PIPES.

RESOURCE CENTRE
(HILLY REGION)

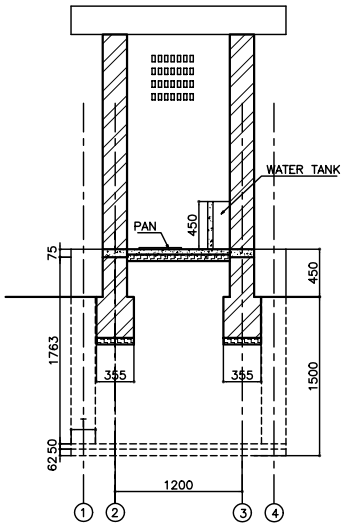
SHEET TITLE

STRUCTURAL ROOF PLAN

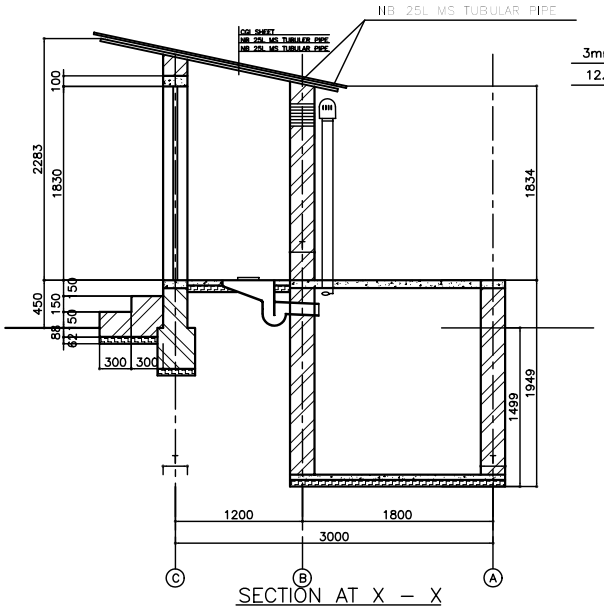
SCALE 0 0.5 1.0 1.5 2.0 2.5 3.0m



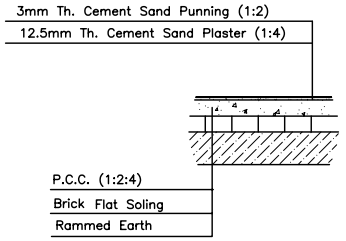
PLAN



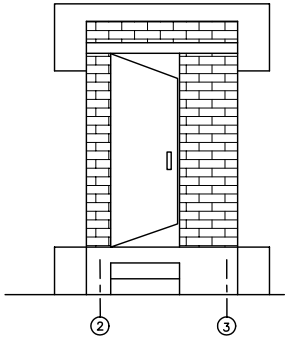
SECTION AT Y – Y



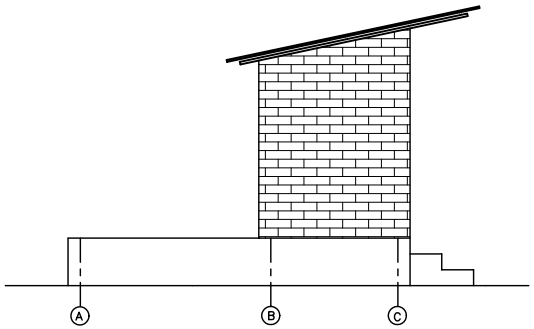
SECTION AT X – X



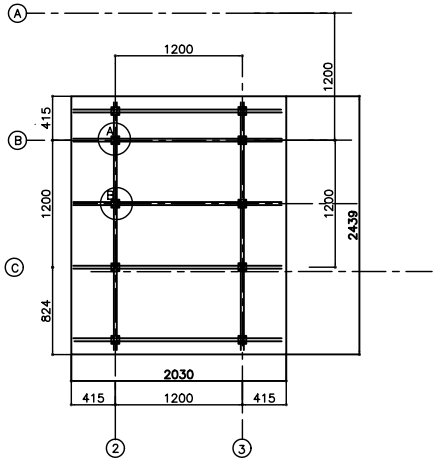
FLOORING DETAIL



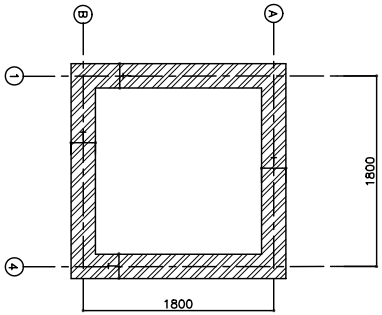
FRONT ELEVATION



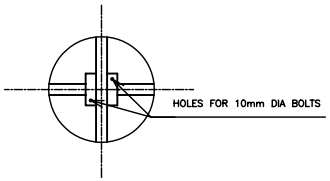
SIDE ELEVATION



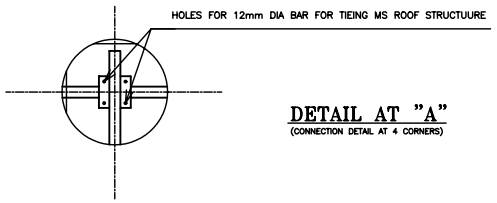
STRUCTURAL PLAN OF ROOF



PLAN OF SEPTIC TANK



DETAIL AT "B"
(CONNECTION DETAIL OF MS ROOF STRUCTURE)



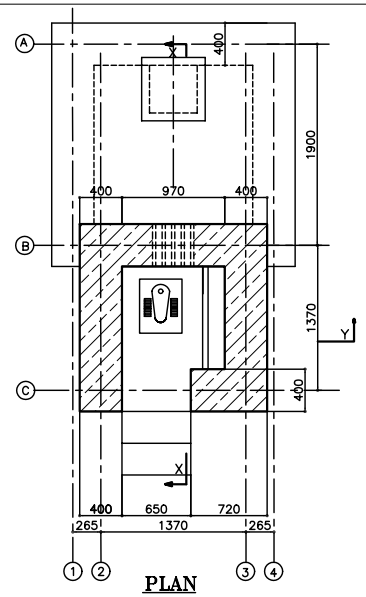
DETAIL AT "A"
(CONNECTION DETAIL AT 4 CORNERS)

TOILET BLOCK IN TERAI REGION FOR ORDINARY PEOPLE

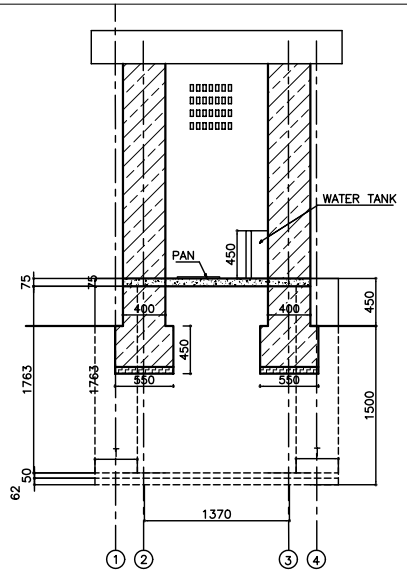
SHEET TITLE

PLAN & SECTION

SCALE 0 0.20 0.40 0.60 0.80 1.00 1.20m



PLAN



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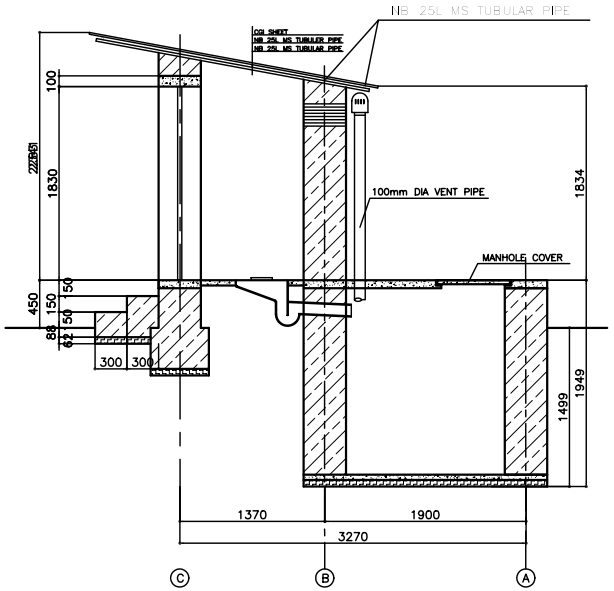
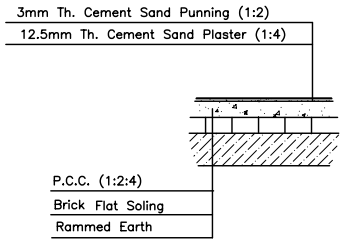
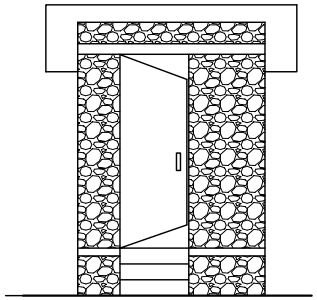


SECTION AT X – X

FLOORING DETAIL





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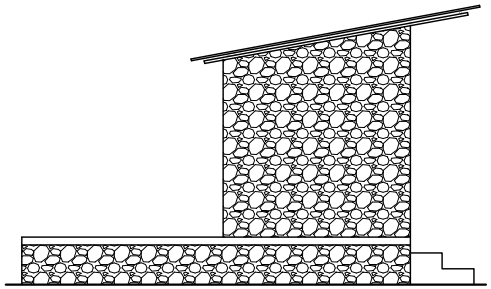

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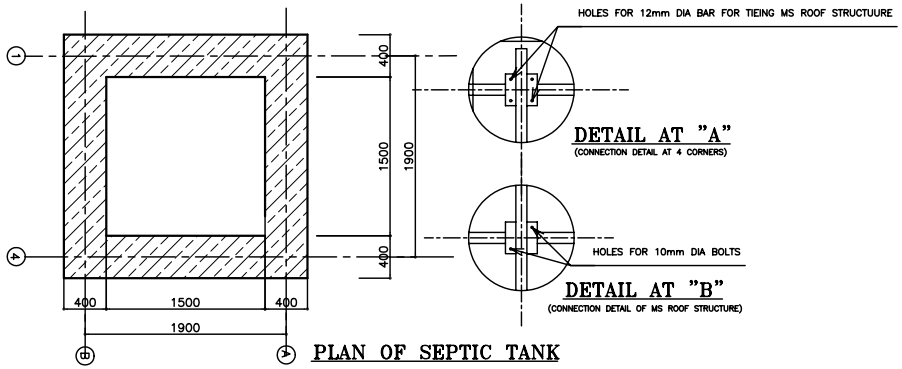
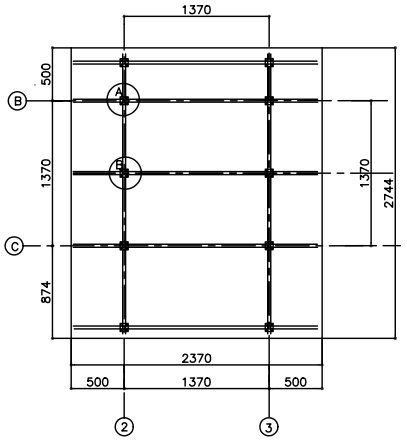


PLAN OF SEPTIC TANK



STRUCTURAL PLAN OF ROOF

TOILET BLOCK IN HILL REGION FOR ORDINARY PEOPLE

SHEET TITLE

PLAN & SECTION

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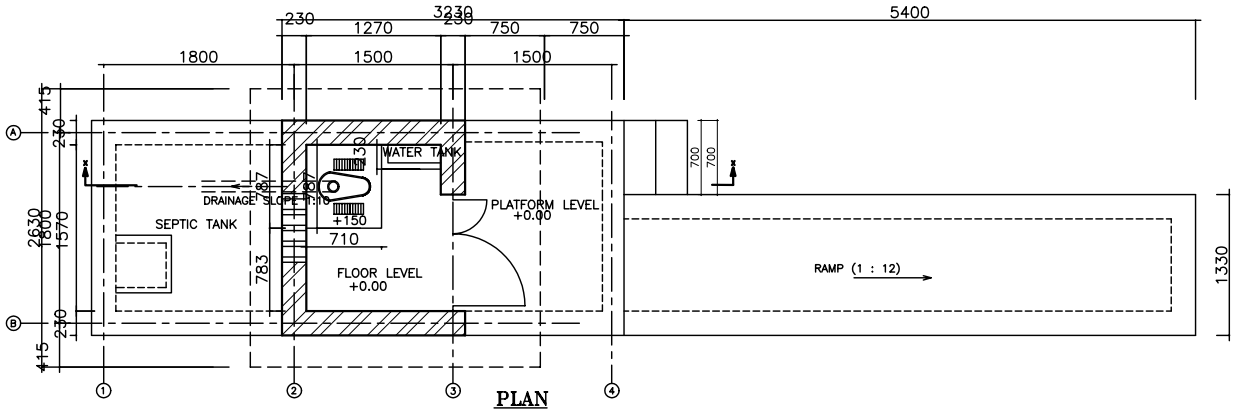
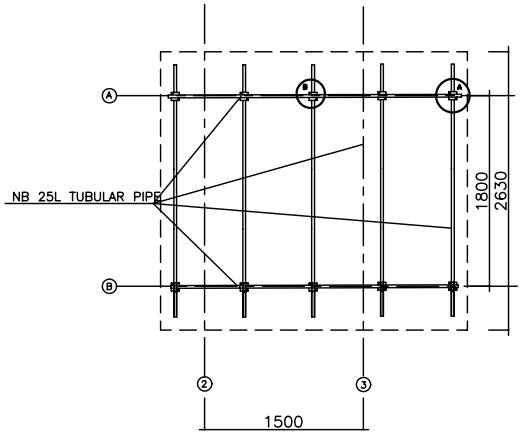
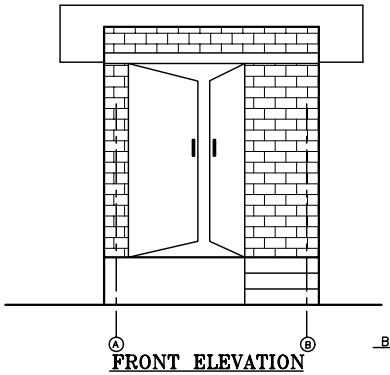


PLAN

ROOF PLAN WITH MS TUBULAR TRUSS





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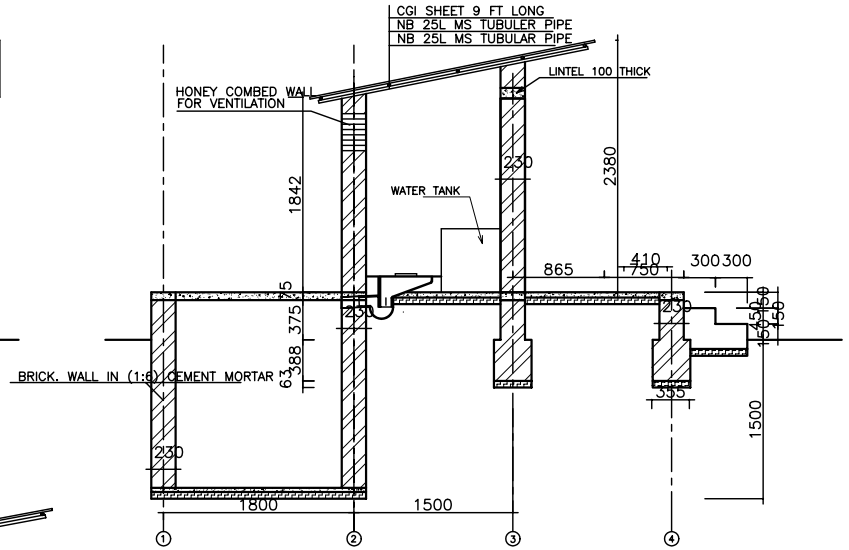

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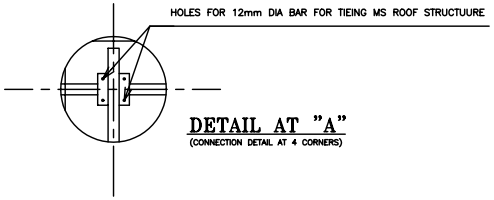
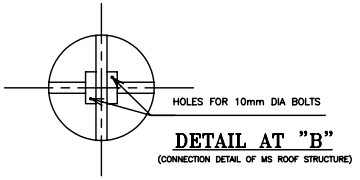
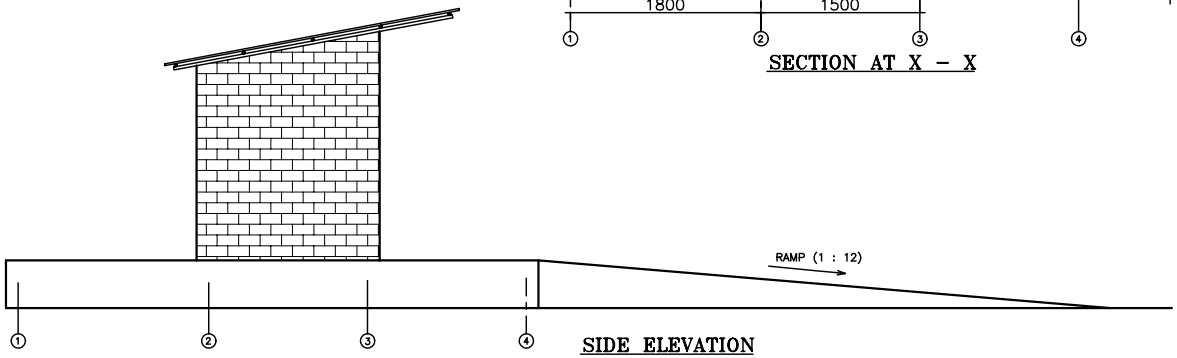


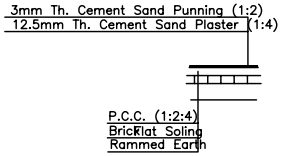
DETAIL AT "A"
(CONNECTION DETAIL AT 4 CORNERS)



DETAIL AT "B"
(CONNECTION DETAIL OF MS ROOF STRUCTURE)



SIDE ELEVATION



FLOORING DETAIL

TOILET BLOCK IN
TERAI REGION
FOR DISABLED

SHEET TITLE

PLAN. ELEVATIONS
& SECTION

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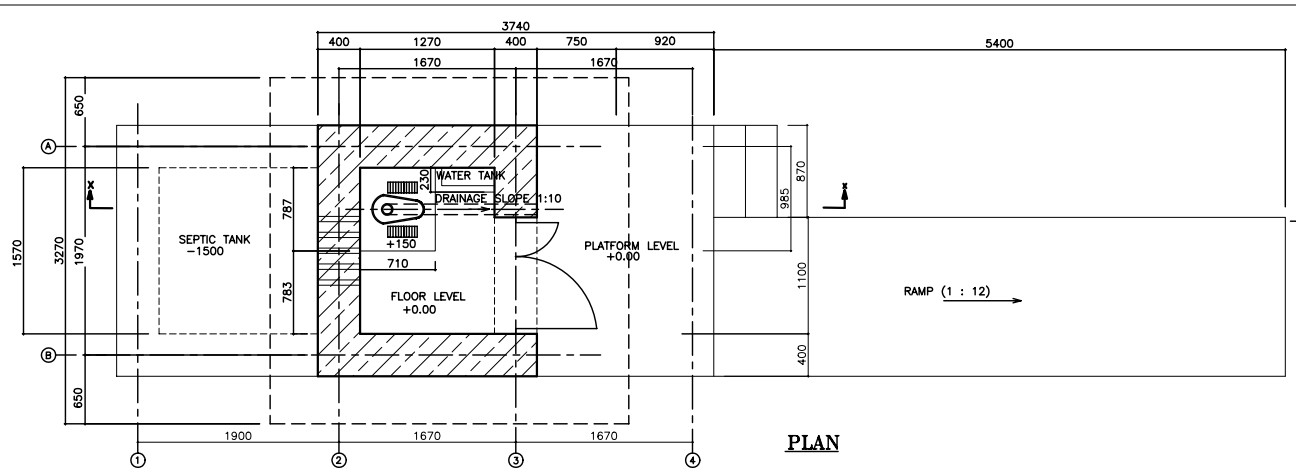

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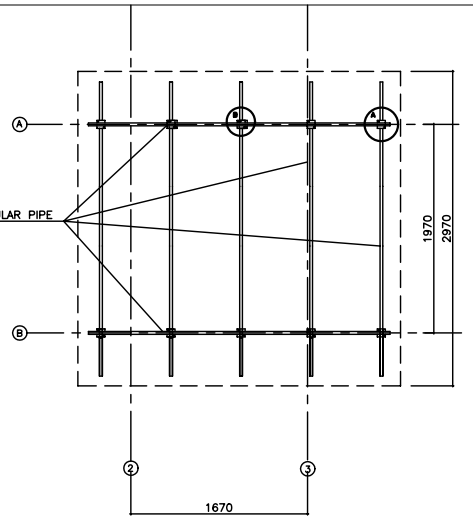
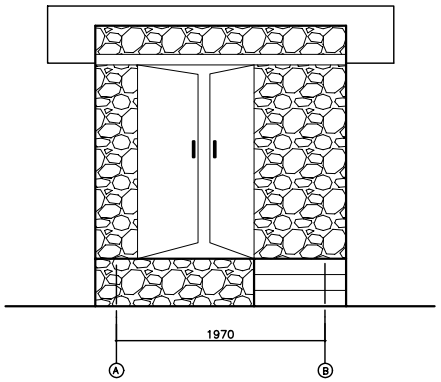


ROOF PLAN WITH MS TUBULAR TRUSS



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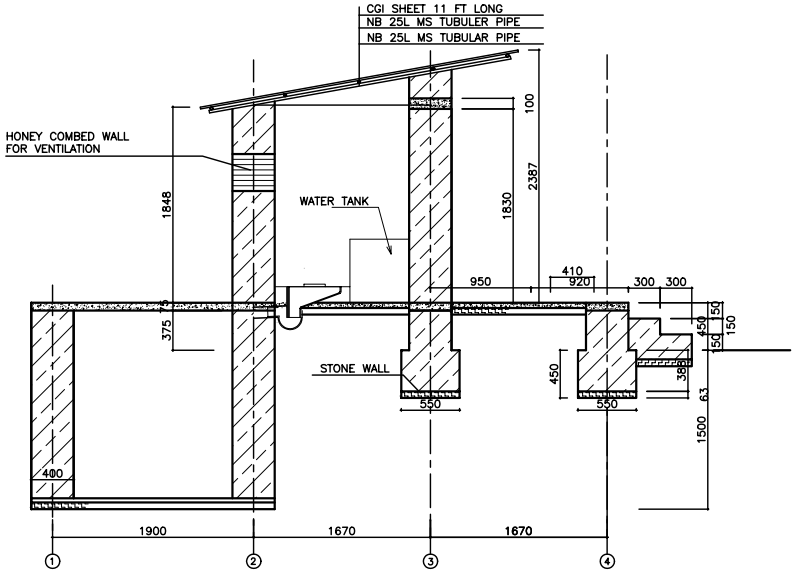
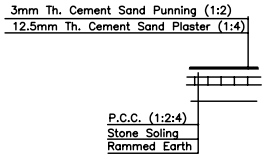
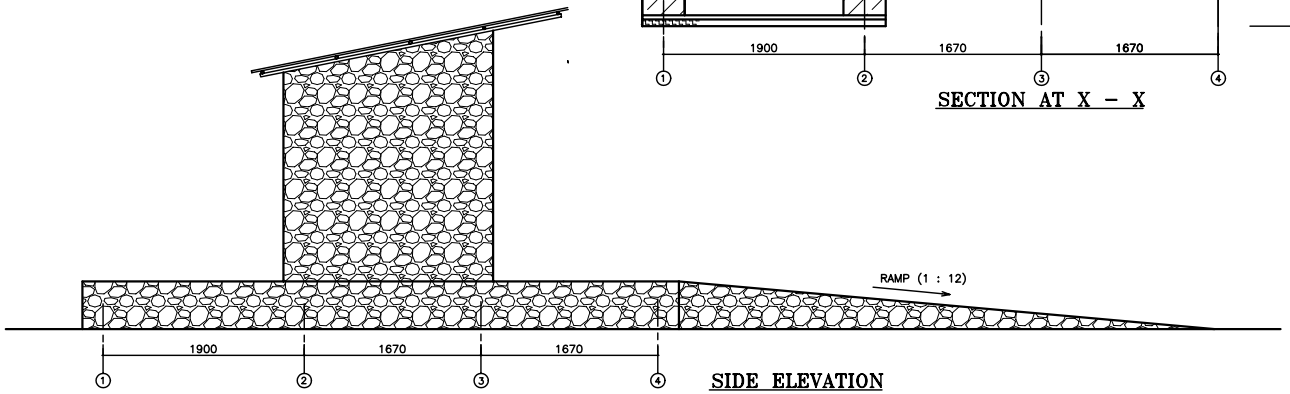


SECTION AT X − X



FLOORING DETAIL



SIDE ELEVATION

TOILET BLOCK IN HILLY & MOUNTAIN REGION FOR DISABLED

SHEET TITLE

PLAN. ELEVATIONS & SECTION

SCALE 0 0.20 0.40 0.60 0.80 1.00 1.20m

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

1) Procedure for Japan's Grant Aid

In case the Project is executed with Japan's Grant Aid, an Exchange of Notes is to be signed by the two governments. Then, works to be covered by the Japanese side will be carried out by a Japanese consultant and a Japanese supplier, with each of them making an agreement or a contract with the Government of Nepal. The agreement and the contract are to take effect upon verification by the Government of Japan.

2) Executing Agency at Nepalese Side

The Project will be executed by DOE under MOES, and PSS of DOE will be in direct charge of implementing the Project. The Director General of DOE will take full responsibility for implementing the Project. The Ministry of Finance is to take responsibility for the procedures for the Exchange of Notes and other bilateral arrangements, and is to handle the Banking Arrangement.

In each of the districts where the Project is to be implemented, the District Education Officer (DEO) is to issue certificates and other documents upon receipt and delivery of materials and/or equipment. The DEO will also be responsible for managing logistics support up to the delivery of materials to local communities.

District overseers/engineers, who are to be recruited and posted by DEO/DOE, may act on behalf of the DEO regarding the procedures stated above, depending on the situation around each construction site.

Construction work shall be done by the Nepalese side within the framework of the Construction of Primary Schools by Community Participation under BPEP-II. The local communities, normally School Management Committees (SMC), are to enter into construction contracts with DEO.

3) Japanese Consultant

Soon after the Exchange of Notes between the two countries, the DOE shall enter into an agreement for

the consulting services regarding the review of the detailed design and supervision with the consultant, which is recommended by JICA, and shall obtain verification of the agreement by the Government of Japan.

After making the agreement, the consultant, in accordance with the Basic Design Study Report on the Project as well as in consultation with DOE, shall conduct the detailed design and prepare tender documents. Then, upon approval of the tender documents by DOE, the consultant shall initiate the tendering procedure for procurement on behalf of DOE. Furthermore, the consultant shall supervise procurement and delivery to depots of the materials.

4) Japanese Supplier

Procurement and delivery to the depot centres of the materials and the equipment covered by the Project (only for bricks should be delivered up to each site) shall be executed by a Japanese supplier, who will be selected form among Japanese companies by tender. The contract will be made at the lowest bid tendered, and shall be effective upon verification by the Government of Japan.

5) Utilization of Local Consultant and Sub-contractors

Because the facilities are to be constructed with local materials and methods of construction, local technical manpower, consultants and sub-contractors for procurement should be fully used, thus contributing to reducing the entire project cost.

2-2-4-2 Implementation Conditions

a) Material Depot Centres

Material depot centres, where construction materials procured by the Japanese side are to be delivered, are expected to be established in the district centres. All depot centres shall be accessible by truck. For the time being depot centres shall be assumed to be located at the headquarters. The location shall be reviewed at the detailed design stage, and the final locations will be decided. The decided location of each

depot centre shall be clearly shown on a map with the locations of schools and clusters, which should be submitted to the Japanese side.

The bricks shall be delivered to the construction sites in terai according to the following conditions:

The cost for transportation of bricks from the brick factory to the construction site will be borne by the supplier up to either a distance equal to the distance between the depot and the factory or 20 km, whichever is greater. Any additional transport cost to this will be borne by communities from the transportation funds made available to them by DOE.

The brick factory shall be selected in such a manner that majority of the schools are located near the brick factory. The supplier shall get the consent of the DOE or the consultant before finalizing selection and location of the brick factory.

b) Storage of Materials at the Depot Centres

DOE will prepare land in each target district for depot centres and necessary facilities such as warehouses and stockyards.

c) Transportation of Materials from the Depot Centres to the Construction Sites

From the depot centres to each construction site, materials are to be transported by communities either by truck, wagon, donkey or porter depending on the situation. While DOE is to support part of the transportation cost, deficits shall be borne by the communities. The materials shall be delivered in suitable size and package for the transportation method in each target district.

d) Storage of Materials at the Construction Sites

Care should be taken to synchronize deliveries of materials with the construction program, so that the materials are not stored at construction sites for an unnecessarily long time.

2-2-4-3 Scope of Works

The Project is to be implemented in cooperation with the Government of Japan, HMG/N and the communities concerned in accordance with the Grant Aid System of Japan. The scope of the works covered by each of the parties is as follows:

a) Works Covered by the Japanese Side

a-1) Organizations

A Japanese consultant and a Japanese Supplier are to do the works listed in a-2) and a-3) below, respectively:

a-2) Works by the Consultant

- Review of site selection (schools, RCs, depots), types and numbers of the facilities in each site
- Review of the detailed standard design of the facilities
- Review of the specification and quantities of the materials
- Support for tender procedure for procurement by DOE
- Supervision on procurement, transportation to depots and delivery at depots of the materials covered by the Project
- Confirmation survey after completion of facilities

a-3) Works by the Supplier

- Procurement of materials and equipment covered by the Project
- Transportation of materials to depot centres (Transportation cost for bricks to the site will be borne up to either a distance equal to the distance between the depot and the factory or 20 km, which ever is greater)
- Delivery of materials at depot centres (Delivery of bricks at school sites)
- Training for the of steel frames to engineers, overseers and skilled labourers in each district
- Delivery of equipment to DOE

b) Works Covered by the Government of Nepal

b-1) Organization

DOE/PSS and its local staff members together with DEOs shall do the following works:

b-2) Works

- Confirmation of types and numbers of the facilities to be constructed in each of the schools
- Making construction contracts with SMCs
- Installation of depots
- Receipt and storing of materials at depots
- Transportation of materials to the vicinity accessible by vehicles of sites
- Supervision, technical advice and monitoring of construction work by communities
- Guidance to communities on the maintenance of facilities
- Provision of funds for skilled labour to the communities
- Provision of funds for local transportation of materials to the communities as necessary
- Selection of site where training for the erection of the steel frame is to be held and preparation for training such as the inviting engineers, overseers and skilled labourers.

c) Works Covered by the Communities

c-1) Organization

SMCs of the target sites are to do the following works:

c-2) Works

- Discussion with DOE on standard design of facilities applied.
- Making construction contract with DEO
- Receipt of materials at the vicinity of each site, transportation to site and storage at the site.

- Procurement of local materials and un-skilled labour
- Construction of facilities
- Maintenance of facilities

2-2-4-4 Consultant Supervision

In case the Project is implemented under the Grant Aid system of Japan, the Japanese consultant will supervise work for procurement up to delivery at the depot centres of the materials. Then, DOE in collaboration with DEOs will supervise and monitor storage and local transportation of the materials to the sites and the construction work. Monitoring of the progress of construction work and follow-up survey after completion will be carried out by the consultant so that use of materials and equipment can be identified separately from the CIP construction project.

1) Japanese consultant

While the head office in Japan will be responsible for controlling overall project implementation, overseers/ engineers posted in each target districts will handle routine work.

A chief local engineer posted in the Kathmandu office will be responsible for controlling all local staff members of the consultant and for coordinating with the contractor as well as with DOE. The Project Manager posted in Tokyo and/or his assistant will visit sites from time to time to attend site meetings and site inspections as necessary. The main services provided by the consultant are as follows:

a) Assist in Making Procurement Contract

b) Checking and Approval of Shop Drawings, Samples, etc.

c) Supervision and Guidance on Procurement by the Supplier

d) Report on the Progress of Procurement

e) Assist in making Payments

f) Inspection on Materials

g) Confirmation Survey after Completion of facilities (cf. **Appendix 9**)

2) Nepalese Side

While DOE will be responsible for controlling overall Project implementation, overseers posted in each of the project clusters will handle routine work, supported by DEO for clerical procedures and by District Engineers for technical matters, who will report to DOE.

DOE shall report the progress of the Project through monthly meetings attended by DOE, Consultant, Supplier and JICA. DOE shall also prepare and present to the Government of Japan reports on how the materials provided under the project have been used as follows:

a) Detailed Design Stage

a-1) List of target schools together with the selection criteria and the report on making construction contracts with SMCs

a-2) List of Depots with location maps

b) Material Procurement Stage

b-1) List of the target schools for double-checking

b-2) Monthly reports on receipt of construction materials at the depot centres with copies of record books attached

b-3) Monthly reports on delivery of construction materials to the schools with copies of record books attached.

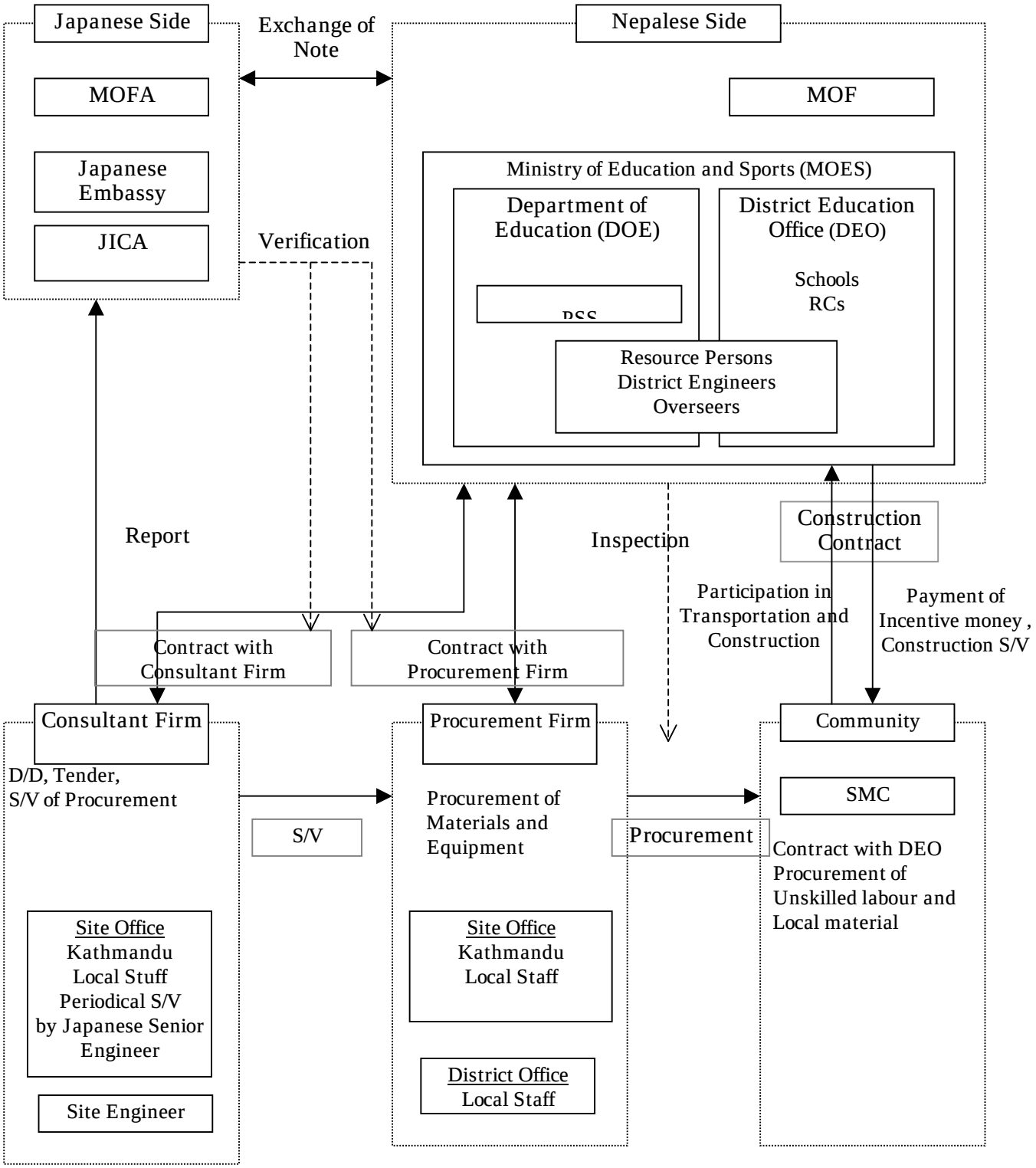
b-4) Monthly reports on progress of construction work at schools

c) Upon Project Completion

c-1) Report on completion of facilities within three (3) months from the completion of the most of the facilities with a list of schools and RCs, facilities constructed, completion dates, copies of completion certificates, etc.

The management organization for the Project is shown in **Figure 3**.

Figure 3: Management System for Procurement and Construction



S/V… Supervision
D/D… Detailed Design

2-2-4-5 Procurement Plan

1) Procurement Contract

Procurement Contract shall be given to a Japanese Company selected by tender.

2) Place of Procurement

All materials and equipment are to be procured locally in Nepal. At the pre-contract stage, however, the situations of the local markets are to be reviewed, and the possibility of procurement from Japan or third countries might be re-considered.

Computers, UPS, printer and scanner are to be those for which maintenance services can be obtained locally in Nepal.

2-2-4-6 Quality Control Plan

To ensure the delivery of the materials of the appropriate quality and standard, inspections will be done at the point of delivery or at the factory where materials are produced or manufactured. Quality of the materials will be checked as laid out in the Guidelines for Quality Inspection by the consultant. (cf. **Appendix 8**)

1) Types of Activities during Inspection

The quality inspection of the construction materials generally involves one or more of the following activities:

1. Dimension Check
2. Weight Check
3. Visual Check
4. Chemical Test
5. Physical Test

2) Location of Sampling and Its Inspection

The sampling of the materials can be done in two locations namely factory and depot or delivery point. For major items such as CGI sheets, MS trusses, MS window/door frames and door/window shutters sampling can be done for both the raw materials and the finished product at the factory. However, sampling at the depot will be done only on the finished product.

Inspections involving activities 1 to 3 as stated above will be carried out at the depot or the factory. The inspection requiring chemical analysis and physical test that are not possible at the place of sampling may be taken in laboratories carefully following standard methods.

3) Inspection Team

In addition to the routine sampling tests by the engineers posted in each target district, an inspection that consists of an engineer from DOE and/or an engineer from the Consultant and an engineer from the Supplier will carry out inspections on major items.

4) Reporting Format

An appropriate reporting format will be used,

5) Conformity of Materials Inspected

Test results are checked in accordance with the specifications of the contract document. Then a brief statement of the test result is recorded for their conformity / non-conformity with respect to the given specifications and drawings.

6) Approval of the Materials Inspected

An Approval / rejection note of the consignment of the materials either at the depots or at the factory, based on the test result, is then issued to the supplier. The authority to issue an approval / rejection note

will be delegated to the joint inspection team.

The general plan that will be followed for maintaining the quality of the construction materials will be as shown below.

	Construction Materials	Check items
1.	Bricks	a) Brick Chimney Selection Supplier will jointly collect sample bricks from various chimneys and lab-test and request for chimney approval for supplying bricks. Bricks will be checked in ad hoc basis at delivery sites and if necessary, samples will be collected and tested
2.	Cement	a) Quality certificate from factory b) Random lab testing of samples if deemed necessary
3.	Reinforcement bar	a) Test certificate from factory b) Random lab testing of samples if deemed necessary
4.	Fabricated doors/windows frames	a) Factory inspection of lot before materials are dispatched b) Random samples will be checked at the depot centres
5.	Fabricated doors/windows shutters	a) Factory inspection of lot before materials are dispatched b) Random samples will be checked at the depot centres
6.	Fabricated truss	a) Factory inspection of lot before materials are dispatched b) Random samples will be checked at the depot centres
7.	Paints, enamel/cement	a) Quality certificate from factory. b) Random inspection in depot centres – also check packing
8.	Plain & Corrugated GI sheets and Corrugated Translucent sheets	a) Factory inspection of lot before materials are dispatched b) Random samples will be checked at the depot centres
9.	Donation Board	a) Factory inspection of lot before materials are dispatched b) Random samples will be checked

	Construction Materials	Check items
10 .	Sanitary ware	a) Quality certificate from factory. b) Random inspection in depot centres – also check packing
11.	Others, hardware fixtures, nuts and bolts, screws, nails etc.	a) Quality certificate from factory. b) Random inspection in depot centres – also check packing
12.	Furniture	a) Factory inspection of lot before materials are dispatched b) Random samples will be checked at the depot centres

2-2-4-7 Implementation Schedule

This Project shall commence upon the Exchange of Notes (E/N) by the two countries, and proceed as follows:

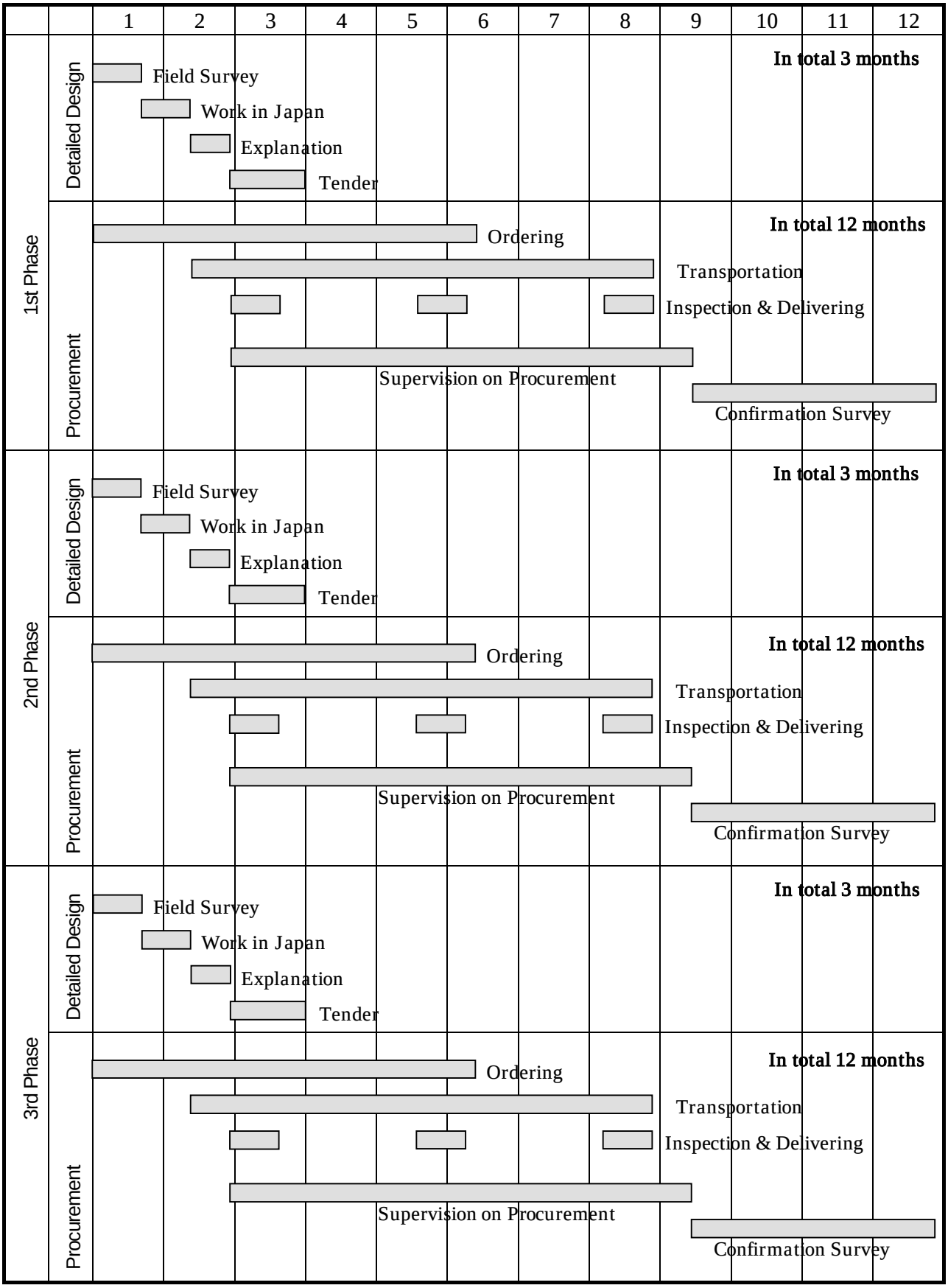
1) Conclusion of consultancy contract
2) Its verification by the government of Japan
3) Detail Design of materials and equipment
4) Selection of the supplier
5) Conclusion of procurement contract for materials and equipment
6) Its verification by the government of Japan
7) Procurement and delivery of materials and equipment to Nepalese side
8) Confirmation survey on the constructed facilities after completion by the Japanese Consultant

The schools to be covered by the Project are to be finalized through a full physical survey of the proposed schools, discussions and conclusion of agreements with the local communities, which start in mid-July.

In Nepal, the four months from June to September are the rainy season, during which transportation of construction materials to sites is hardly practical. Furthermore, in rural areas, bricks are normally manufactured after harvesting crops in the autumn. Accordingly, the procurement of materials should be planned so that delivery of materials and most of the construction work may be completed before the next rainy season. On the basis of the experience obtained from the previous Project, the construction period for each school is estimated to be about three to four months, and the entire work period for the construction of the schools including delivery and local transportation of materials from depot centres to construction sites will be about eight and a half months.

The overall schedule of the process is shown in **Figure 4**.

Figure 4: Implementation Schedule (Japanese Side) (Phase 1/3, 2/3, 3/3)



2-3 Obligations of Recipient Country

The following measures need to be taken by the Nepalese side on the condition that the Grant Aid by the Government of Japan is extended for the Project.

1) do the surveys necessary for finalising the target schools, prepare a list of target schools and number of the facilities therein according to the criteria by the Nepalese side as well as to the conditions stated in this report, and submit the list to the Japanese side within one month after the exchange of note between the two governments;

   In preparing the list, ensure that the list satisfies the selection criteria and upper limit numbers stated in the table below:

Selection criteria and upper limit numbers of the facilities

	Selection Criteria	Upper limit numbers of the facilities	Time limit for submission
Target schools	Criteria confirmed by MTR of BPEP-II	-	Within one month after the exchange of notes for each phase of the project
Classrooms	Needs assessed by physical surveys by DOE	The number in each district in each project phase shall not exceed the numbers stated in the Report	ditto
Resource centres	A RC building will be constructed in a leading school of a cluster where there is no exclusive building for RC, and where at least one target school is planned for classroom construction by the Project.	The number in a district may exceed the number stated in the Report in compensation of decreasing the number in other districts so that the total number of the facility in a project phase should not exceed the number stated in the Report.	ditto
Toilets	One booth for boys and one booth for girls will be constructed separately in the target school (schools with classroom construction or RC construction under the Project) where there is no toilet in the compound.	ditto	ditto
Toilets for disabled	one of the toilets to be covered by the project in each district will be of the special design for disabled students in case there is a disabled student(s) and a feeder hostel and/or a wheelchair.	One set for each district, in total 15sets. If no site that fulfil the criteria, then the toilet should be of normal type	ditto

Water supply	A water supply will be provided to the target schools and RCs located in the terai area where there is no water supply in the compound.	The number in a district may exceed the number stated in the Report in compensation of decreasing the number in other districts so that the total number of the facility in a project phase should not exceed the number stated in the Report.	ditto

2) ensure proper construction management including the appointment of engineers, overseers and depot managers in order that efficiency of management of the Project is realized including technical guidance to the communities, supervision and monitoring of construction;
3) before starting construction, negotiate and make agreements with the communities concerned on the construction under the project;
4) bear the cost of skilled labour and local transportation of materials necessary for the construction of the primary schools under the Project;
5) generate community participation including supplies of unskilled labour, local building materials and local transportation in order that materials and equipment procured are used properly;
6) provide proper depots for the Project area;
7) On the basis of Whole School Approach policy, cover other facilities than those covered by the Japanese side including the following items ;
    - Rehabilitation of existing classroom buildings
    - Fencing for the school compound
    - Water supply for hill and mountain region
8) carry out tests based on "Nepal's Interim Arsenic Policy & Preparation Report" for each water supply provided under the Project, and install a filtration system if arsenic contamination is above the limit applied in the said policy (0.05 mg/litre).
9) ensure prompt unloading and customs clearance of products purchased from outside Nepal under the Grant Aid, if any;
10) bear commissions to the Japanese bank for banking services such as advising the Authorization to Pay

based upon the Banking Arrangement;

11) exempt Japanese nationals from customs duties, internal taxes including VAT and fiscal levies, which may be imposed in Nepal with respect to supplies of products and services under the verified contracts.
12) accord Japanese nationals whose services may be required in connection with supplies of the products and services under the verified contracts such facilities as may be necessary for their entry into Nepal and stay therein for the performance of their work;
13) provide necessary permissions, licenses and other authorizations for the implementation of the Project, if necessary;
14) bear all expenses other than those to be borne by the Grant Aid within the scope of the Project;
15) ensure the facilities concerned are used properly for the planned purposes; and,
16) present to the Government of Japan reports on how the materials provided under the project have been used as stated in **2-2-4-4 Consultant Supervision, 2) Nepalese Side**.

2-4 Project Operation Plan

2-4-1 Organization

(1) Responsible Agency

The responsible organization is Ministry of Education and Sports (MOES).

(2) Implementing Organization

The implementing organization is Department of Education (DOE). In particular, Physical Services Section (PSS) of DOE has a leading role to play in implementing the Project in close coordination with District Education Offices (DEOs). DEOs are responsible for issuing the delivery certificate and other related documents.

The organization chart of MOES, DOE and DEO are shown in **Figure 5 to 7**.

Figure 5: MOES Organization Chart

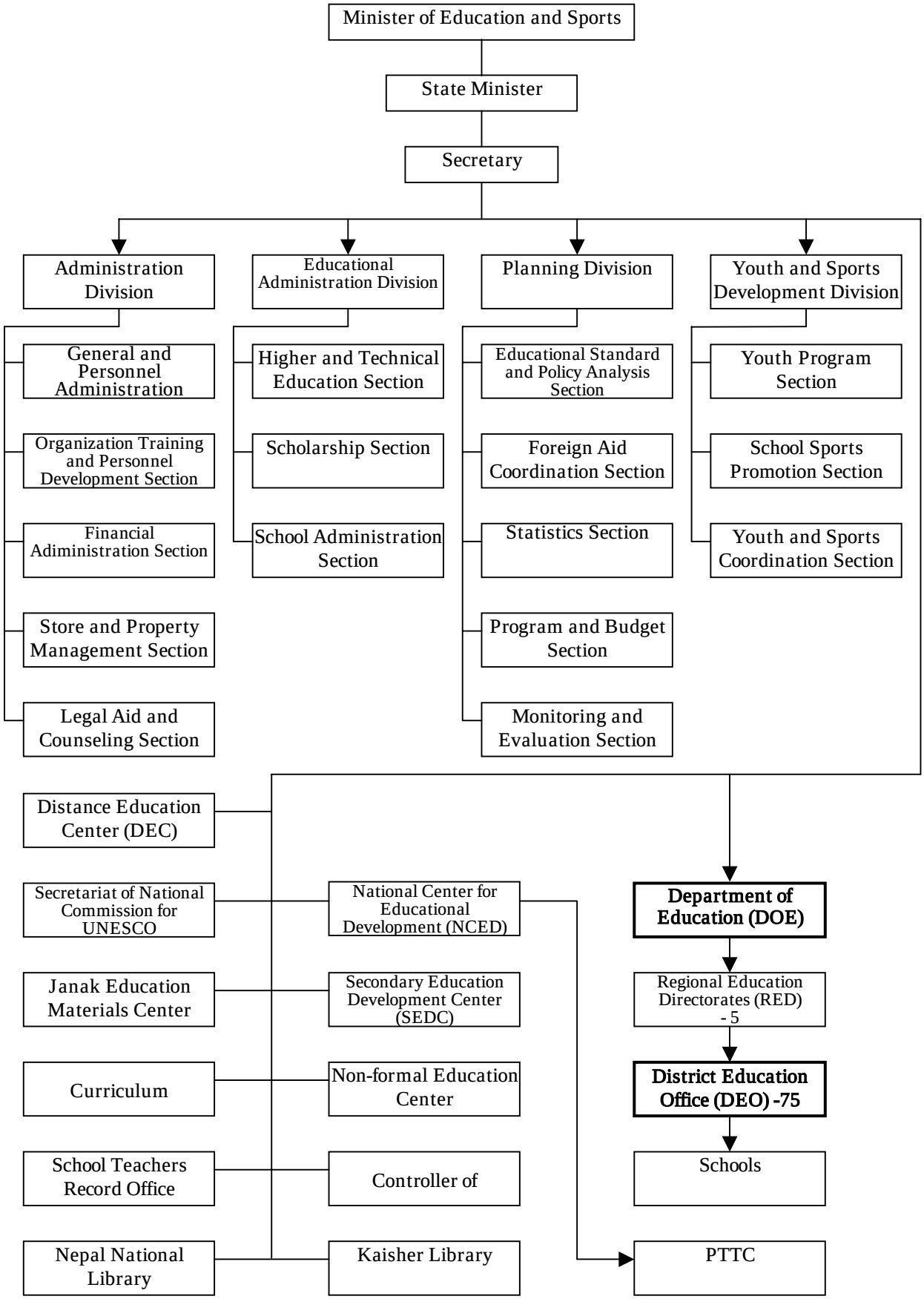


Figure 6: DOE Organization Chart

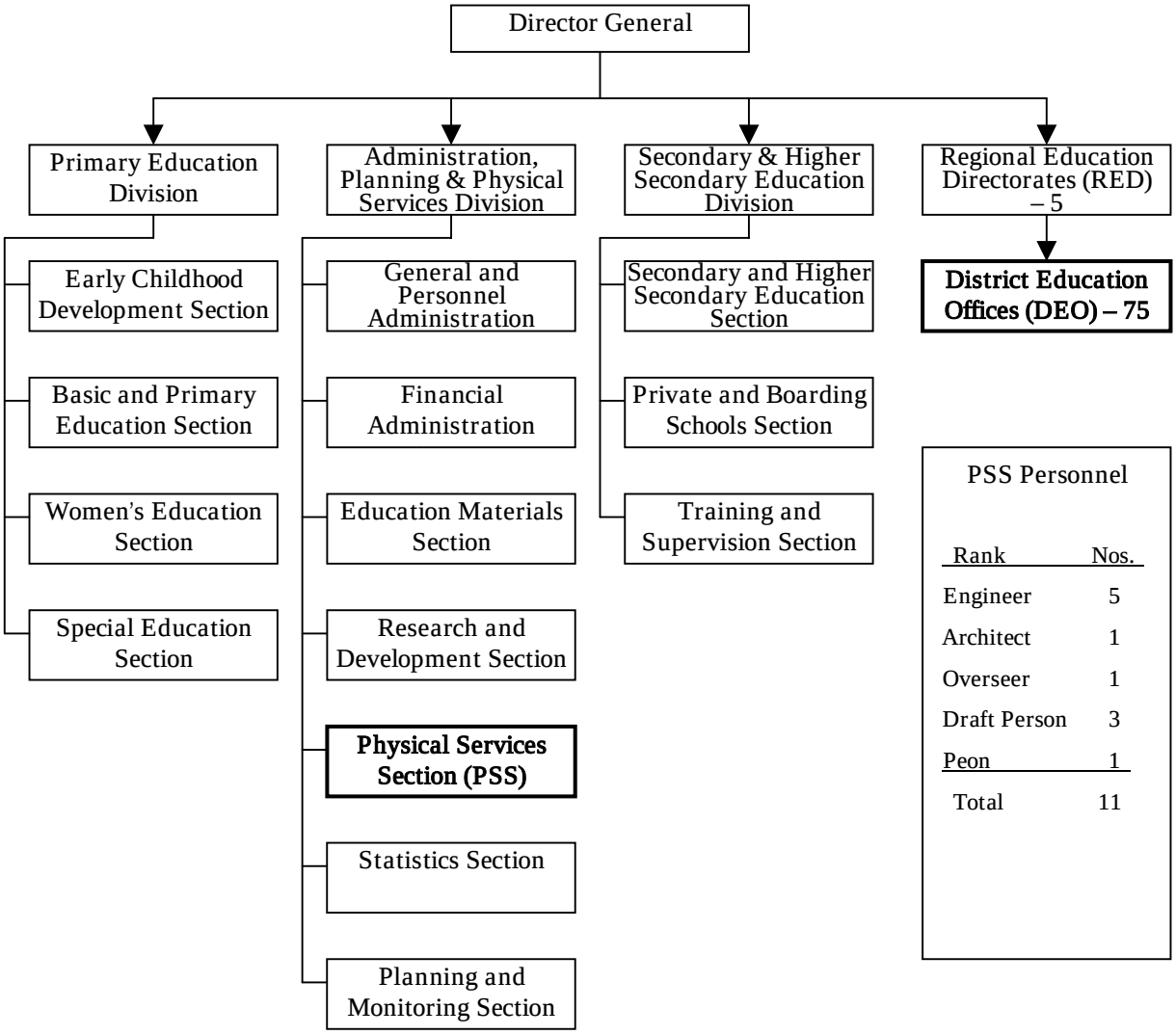
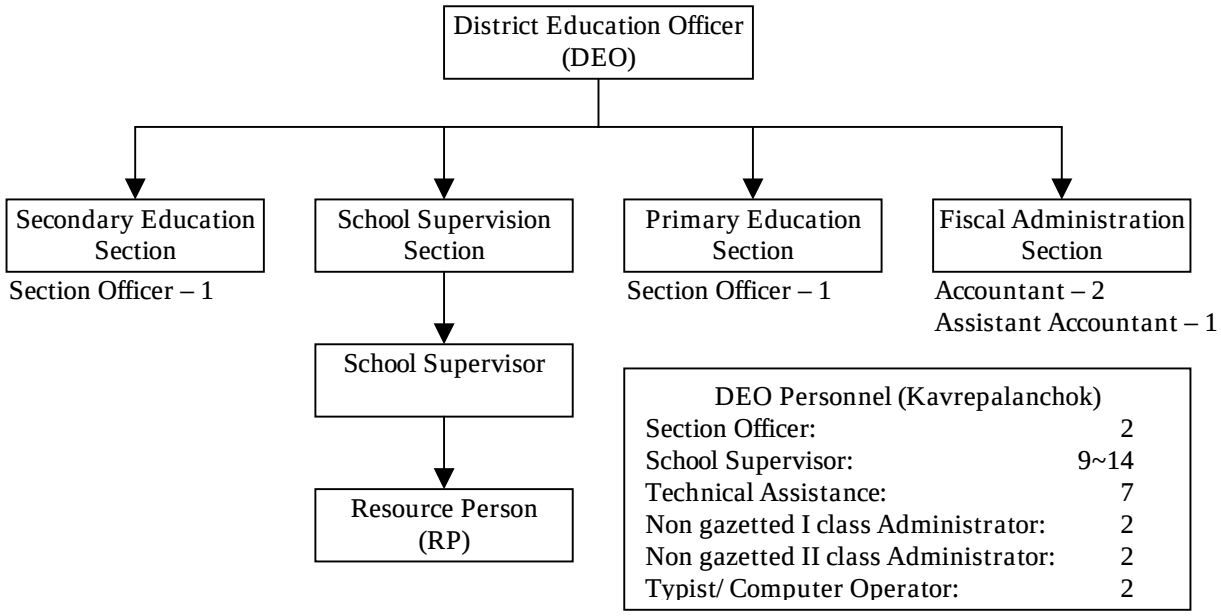


Figure 7: DEO Organization Chart



2-4-2 Budget

The annual budget of MOES and BPEP-II is shown in the tables below:

Table 29: Annual Budget of MOES and Basic & Primary Education Sector (million NRs.)

Fiscal Year	2000/01	2001/02	2002/03
National Budget	79,835	82,401	96,124
MOES Budget	11,134	12,879	14,402
Primary Education	6,104	6,707	8,525
Central Level	890	807	949
(allocation to BPEP-II)	220	156	251
District Level	5,214	5,900	7,576
(allocation to BPEP-II)	701	271	1,745

Table 30: MOES Budget for 2002/03 (thousand NRs.)

Primary Education	8,524,844
Central Level	948,751
District Level	7,576,093
Women's Education	180,506
Scholarship and Student Welfare	103,103
Secondary Education	3,017,096
Central Level	77,096
District Level	2,940,000
Higher Secondary Education	47,083
Non-formal Education	70,395
Curriculum, Textbook, and Education Materials	89,507
Education Administration	684,534
Central Level	516,383
District Level	168,151
Higher Education	1,471,090
Technical and Vocational Education	93,296
Sports	93,000
Youth	750
Others	27,217
MOES Total Budget	14,402,421

In the tables above, Central Level means the budget allocated to each Division in the MOES and the District Level means the budget allocated to DEOs and to schools. Due to the decentralization of education management accelerated in Nepal, around 80% of the primary education budget is allocated at the district level. The expenses at the district level require verification by the National Planning Commission (NPC), and

the budget is allocated to the district level through DEOs.

IDA, EU, DANIDA, Norway and Finland are supporting BPEP-II through common basket funding. The investment share of each organization including HMG/N for the investment plan under the common basket fund, so-called Core Investment Plan (CIP), is shown in the table below:

Table 31: The Investment Share to CIP

Organization	Investment Amount (thousand US$)	Share (%)
HMG/N	5,000	4.7%
DANIDA	25,400	23.8%
IDA	27,600	25.9%
Norway	23,500	22.1%
EU	20,000	18.8%
Finland	5,000	4.7%

2-4-3 Personnel and Engineering Levels

The decentralization of the physical improvement planning of schools is being promoted under BPEP-II. It will take some time to achieve decentralization as it requires a strengthening of the institutions both at central and district levels. For the time being, the School Physical Improvement Planning (SPIP) will have to be supported strongly by the central level until decentralization takes root. PSS/DOE, which is in charge of physical planning, therefore, will be the implementing organization of the Project. It can be said that PSS has reliable abilities for implementing the Project from the viewpoint of its past achievements of physical planning and project management in the previous phase of the Project.

The personnel required for the Project implementation to the Nepalese side are as follows:

7) Physical Services Section (PSS)

High level engineer	1
Engineer	4
Others	6

The staffs of PSS have the experience from the previous project under Japan's Grant Aid for 3 years, and their abilities are trusted.

8) District Education Office (DEO)

District Education Officer	1
District Engineer	1
Overseer	6~7
Resource Person (RP)	1 each in school cluster

District Education Officer will be responsible for Project implementation and management in the district, while keeping in touch with DOE. The District Engineer and Overseers will cover the construction management. RP will act as a liaison between DEO and construction sites.

9) Construction Site

The communities will construct the facilities under the guidance of the District Engineer and the supervision of the Overseer. One overseer will supervise 4~15 sites.

One caretaker is attached at each depot centre under the control of District Engineer.

2-5 Draft Cost Estimation of the Project

2-5-1 Draft Cost Estimation of the Project

The overall cost of the Project is estimated to be 2,430 million Japanese Yen, in case the Grant Aid by the Government of Japan is extended to the Project. The breakdown of the costs borne by the Japanese side and the Nepalese side is as follows:

(1) Cost Borne by the Japanese Government

Table 32: Draft Estimate of the Cost Borne by the Japanese Government

Total **Draft Cost Estimate of the Project: App. 2,279 million JPY**

Items		Draft Estimate (million JPY)			
Construct. Materials	Classroom Bldg.	1,681	2,082	2,084	1,317 site
	RC Bldg.	54			2,530 classrooms
	Toilet	113			52 RCs
	Water Supply	10			733 Toilets
	Furniture	224			312 Water Supplies
Equipment		2			Total Floor Area
D/D Check, S/V on Procurement				195	113,823 sqm.

1st Phase **Draft Cost Estimate of the Project: App. 693 million JPY**

Items		Draft Estimate (million JPY)			
Construct. Materials	Classroom Bldg.	509	634	636	374 site
	RC Bldg.	11			732 classrooms
	Toilet	44			8 RCs
	Water Supply	4			232 Toilets
	Furniture	66			135 Water Supplies
Equipment		2			Total Floor Area
D/D Check, S/V on Procurement				57	32,920 sqm.

2nd Phase **Draft Cost Estimate of the Project: App. 925 million JPY**

Items		Draft Estimate (million JPY)			547 site
Construct. Materials	Classroom Bldg.	687	855	855	1,048 classrooms
	RC Bldg.	23			23 RCs
	Toilet	48			321 Toilets
	Water Supply	5			143 Water Supplies
	Furniture	92			Total Floor Area
D/D Check, S/V on Procurement				70	47,044 sqm.

3rd Phase **Draft Cost Estimate of the Project: App. 661 million JPY**

Items		Draft Estimate (million JPY)			396 site
Construct. Materials	Classroom Bldg.	485	593	593	750 classrooms
	RC Bldg.	20			21 RCs
	Toilet	21			180 Toilets
	Water Supply	1			34 Water Supplies
	Furniture	66			Total Floor Area
D/D Check, S/V on Procurement				68	33,859 sqm.

(2) Cost Borne by the Recipient Country

Table 33: Draft Estimate of the Cost Borne by the Nepalese Side

	Borne by HMG/N	Borne by SMC	Total
1st Phase	37.4 (59.8)	46.4 (74.2)	83.8 (134.0)
2nd Phase	67.6 (108.2)	70.1 (112.2)	137.7 (220.4)
3rd Phase	51.2 (81.9)	50.5 (80.8)	101.7 (162.7)
Total	**156.2** **(249.9)**	**167.0** **(267.2)**	**323.2** **(517.1)**

Million NRs
(Million JPY)

(3) Condition of Estimate

1) The Period of Estimate

April 2003

2) Exchange Rate

1NRs. = 1.54 JPY, 1US$ = 121.00 JPY

3) Period of Plan Implementation

The Project will be implemented in three phases, and the period of Detailed Design and Procurement required for each phase is shown in the Schedule of Works.

4) Others

The Project will be implemented under the scheme of Japan's Grant Aid System. This cost estimate is provisional and would be further examined by the Government of Japan.

2-5-2 Cost for the Maintenance

School facilities are to be maintained by the communities under the responsibility of SMC; however, DOE has been distributing the maintenance manual to school clusters where construction or rehabilitation of

classroom buildings was implemented under the CIP project, under which the district engineer and the overseers have been training SMCs to improve the maintenance skills and theoretical knowledge of the communities. This maintenance improvement scheme is also applied to schools where construction of classroom buildings was implemented under the previous Japan's Grant Aid project, and is to be applied to the Project.

Table 34: Budget and Expenses for the Maintenance Training by DOE

	1999/2000	2000/01	2001/02	2002/03	2003/04
No. of Clusters	0	35	80	135	155
Budget(NRs.)	0	1,050,000	2,400,000	4,050,000	4,650,000
Expense(NRs.)	0	1,050,000	2,400,000	—	—

The schools that are to be the target of physical improvement under BPEP-II are limited to those that have already been established and authorized by HMG/N by 1998, and where teachers are distributed and SMC is established for school management and maintenance activities. Therefore, none of the newly established schools are included in the Project, which indicates that the organization for the school maintenance system has already been prepared. On the other hand, the maintenance cost is not a large amount with the only expense being building maintenance, as most of the schools have no tap water or electricity in the compound. Consequently, it is assumed that there will be no serious problems maintaining the facilities to be constructed in the Project, as they are designed to use as much local materials and construction methods as possible.

Chapter 3 Project Evaluation and Recommendations