

(3) Considerations for Female Pupils

The model schools are to be mixed schools and considerations must be made for the use of the school buildings by girls in line with the policy of raising the enrollment rate of girls. Separate latrines will need to be provided, for this purpose, for boys and girls, and the heights of the walls around the school sites, as well as the railings for the first floor terrace, will have to be raised to prevent people peeping in.

(4) Climatic Conditions

The climatic conditions in Peshawar, D.I. Khan and Dir, sites that are representative of the conditions, respectively, in the central, southern and northern parts of NWFP, are shown below. The average maximum temperatures during the summer months reach 40°C in Peshawar and D.I. Khan. The average maximum temperatures in Dir are lower than those in Peshawar by around 8°C throughout the year. It never becomes very hot here in summer, but can be very cold in winter, with the average minimum temperatures falling below 0°C during four months of the year. There are no major differences between the temperatures in Peshawar and D.I. Khan, both the maximum and minimum temperatures being higher by around 2°C throughout the year in D.I. Khan. The rainfall is relatively high in Dir.

The conditions outlined above will mean that measures will have to be taken against the heat in summer in the architectural planning of the schools in the central and southern parts of the province, while heating will be required in winter in the northern part, and it was, in fact, noted during the Field Survey that there were fireplaces in the classrooms at the existing primary schools in Swat District. Since, however, the two districts of Dir and Swat in the northern part of the province have been excluded from the project area, there will be no need to make provisions for winter heating under the present project.

4-3 Basic Design

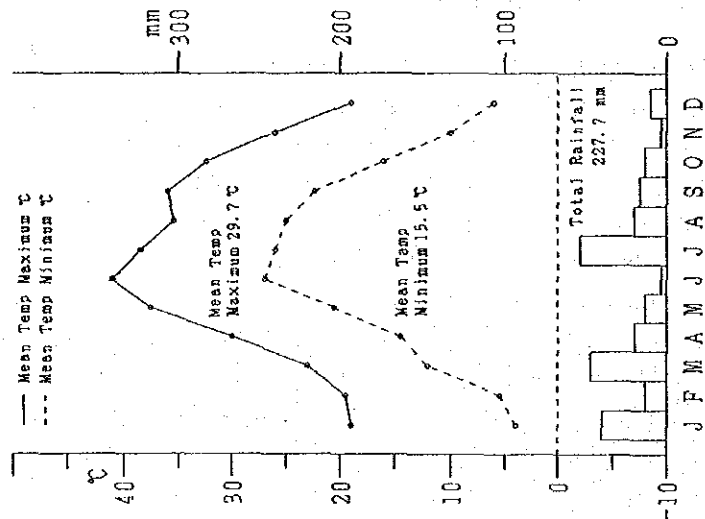
(1) Layout and External Works

The standard site area for the model schools is 2 kanal, which is approximately equal to 1,000 m², or 31.6 x 31.6 m. From this it is assumed that at least one side of each site will be over 31.6 m long, and the school buildings will be designed as two-storey buildings fitting in within this length. (See the "Basic Design Drawings.") As a basic rule, the buildings will be provided with south-facing terraces and the light intake in the classrooms will be from the north side, from the left-hand side of the pupils. Since the positional relationships between the school sites and roads vary from site to site, adjustments are to be made as required to the drawings given here. (e.g. The plan view is reversed if the road is on the eastern side of the school site.)

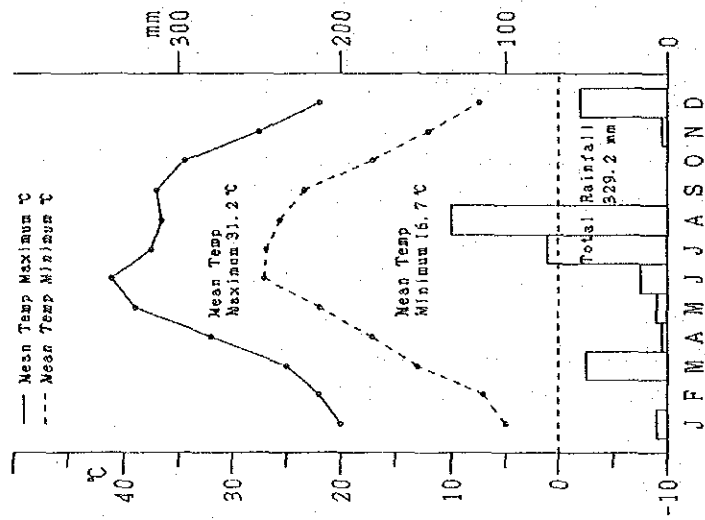
The positions of the latrines for children and septic tanks will be determined according to the shapes of the sites. No provisions are made for pavement and tree-planting on the school grounds. The rain water from the school grounds, together with the rain water from the roofs, will be guided to the infiltration inlets installed on the sites. Two-metre high walls and a gate will be constructed around each school site to prevent people peeping into the schools. The flagpoles are for use in morning assemblies.

CLIMATIC DATA AT RELATED PLACES

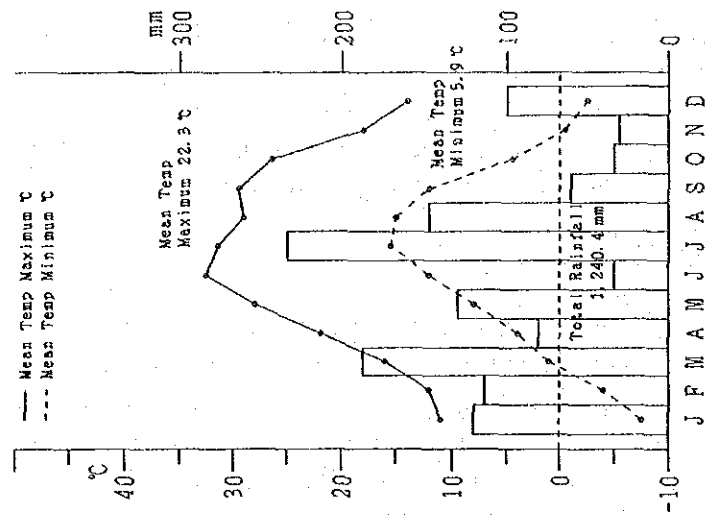
PESHAWAR



D. I. KHAN



DIR



SOURCE: N. W. F. P. DEVELOPMENT STATISTICS 1991

(2) Plan View

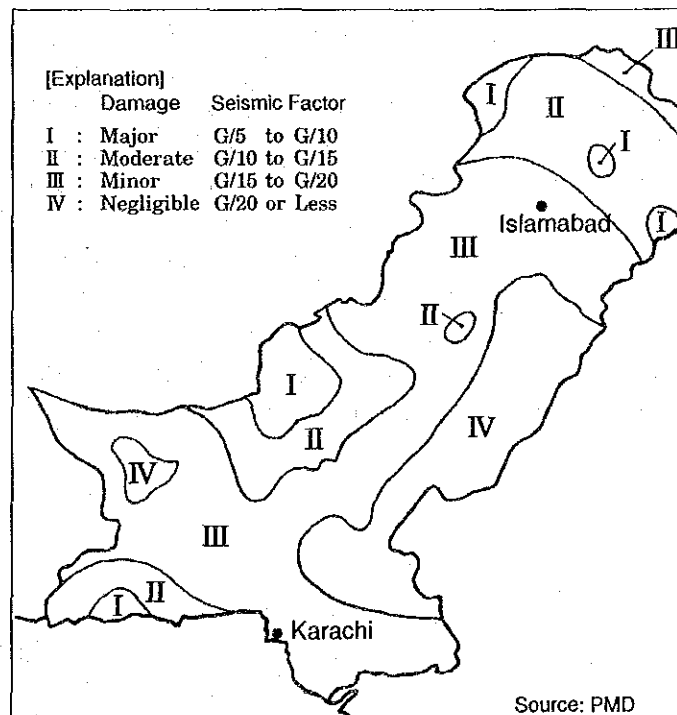
The area of the classrooms will conform to the conditions given in Section 4-2. A total of six classrooms (one of these being a multipurpose room) will be constructed, with three classrooms each on the ground and first floors, with a corridor running on one side. The multipurpose room will be given exactly the same configuration as the other classrooms and will be made available for use as the classroom for the kachi class, storage space for spare furniture and library. The teachers' room will be used, besides as the office for the headmistress, for the recreation of the teachers, as well as for meetings and preparation of classes. The storage space attached to the teachers' room will be used as the lockers for the teachers and for storage of documents and teaching materials. The roof above the teachers' room could be used for various purposes as the first floor terrace.

(3) Sectional View

The ground storey floor will, as a rule, be raised 60 cm above the ground level to prevent inundation during heavy rain. The floor height will be 3.5 m, a slightly larger value than usual being used here to reduce the heat in summer. The lower ends of the windows will be set approximately 1.4 m above the floor level to prevent people peeping in, while allowing the children to open and close them. Double-sliding windows will be provided on both sides of the classrooms for light intake and ventilation. The first floor corridor and terrace will be surrounded by latticework and walls rising to a height of around 1.4 m, to obstruct the view from the outside. The stairway slope will conform to the standards for primary schools and non-slip nosing will be provided.

(4) Structural Plan

Pakistan is an earthquake-prone country situated on the Eurasian Seismic Zone, and the distribution of the seismic grading is as shown in the figure below.



The project area belongs to grade II and III zones, with seismic accelerations of G/10 to G/20. There are, however, no clearly defined structural design standards in Pakistan, and the Karachi Development Authority (KDA) recommends the use of the Uniform Building Code (UBC), the design standard used in the United States. This UBC will be used for the seismic design of the model school buildings, and as the zonal factor Z for grade II zones, according to the KDA data, is 3/8, a value of 0.1 will be used for the standard shear factor Co.

The building frame will be of reinforced concrete, with uniform spans. For the foundations, continuous footings will be used as a basic rule, although this may vary according to the bearing capacity of the ground. The walls will be of brick masonry, as is usually the case in Pakistan. The floors and the roof will be made of reinforced concrete.

(5) Building Equipment

Electric power (single-phase, 230 V, 50 Hz) will be supplied from the WAPDA distribution feeders via overhead cables and via the watt-hour meter to the main switch board. This part is to be the responsibility of the Pakistani Government. Distribution switches are to be installed on the main switch board according to uses, such as lighting, socket outlets, ceiling fans and water pumps. Open wiring will be used for the indoor wiring, as is usually the case in Pakistan, out of considerations for facility of installation, economy and facility of maintenance.

Since primary schools are not used at night, the lighting, even when they are there, in the classrooms at the existing schools are normally only auxiliary. At the model schools too, out of economic considerations, the minimum illuminance will be set at around 50 lx and the lighting will take the form mainly of fluorescent lights. Socket outlets, for use with teaching materials and for general-purpose use, will be installed as required in each of the rooms. The shapes and specifications of these will be those normally used in Pakistan. Suspended ceiling fans will be installed for use in summer.

As for the plumbing equipment, water will be pumped up from the storage tank installed on the school grounds to the water tanks installed on the roofs of the teachers' room and the children's latrines, and supplied from there via water pipes to the taps. A hand pump will be installed in addition to the electric pump in preparation for the breakdown of the electric pump. Wells are to be dug at sites where there is no access to city water supply. While normal western-style water closets will be provided for the teachers, Indian-style latrines will be used for the children out of considerations for facility of maintenance and economy, and these are to be cleaned non-mechanically using water from the taps installed in each booth and appropriate vessels. The soil water and other waste water will be treated in the septic tank and leach pit installed on the school grounds. A wash-place and water taps for various uses will be installed on the side walls of the outdoor latrines.

(6) Materials and Finish

The trowel finished concrete floors will be coated with floor paint to provide appropriate colouring and to prevent generation of dust. The walls will be made of brick masonry as is usually the case in Pakistan. Most parts of the external walls will be covered with sprayed ceramic paint with an undercoating of mortar, while a part of them will be provided with brickwork paint finish to give a variation in colour. The inside walls will be given a mortar-paint finish. On the roofs, asphalt waterproofing and heat-insulation materials will be laid on the concrete slabs, while the roof above the teachers' room will be lined with terrazzo blocks to allow this space to be used as a multipurpose terrace. Firm, wooden doors will be installed at the entrances to each of the rooms, while the windows will be made of patterned plate glass, fitted into double-sliding aluminium sashes. Besides the blackboard and cabinets at the front and the notice board at the back of each classroom, wooden cross battens will be installed along the upper parts of the walls for suspension of pictures, maps etc. Concrete thimbles will be installed on the upper parts of the outside walls to allow installation of stoves.

(7) Design Drawings

The basic design drawings are given on the following pages.

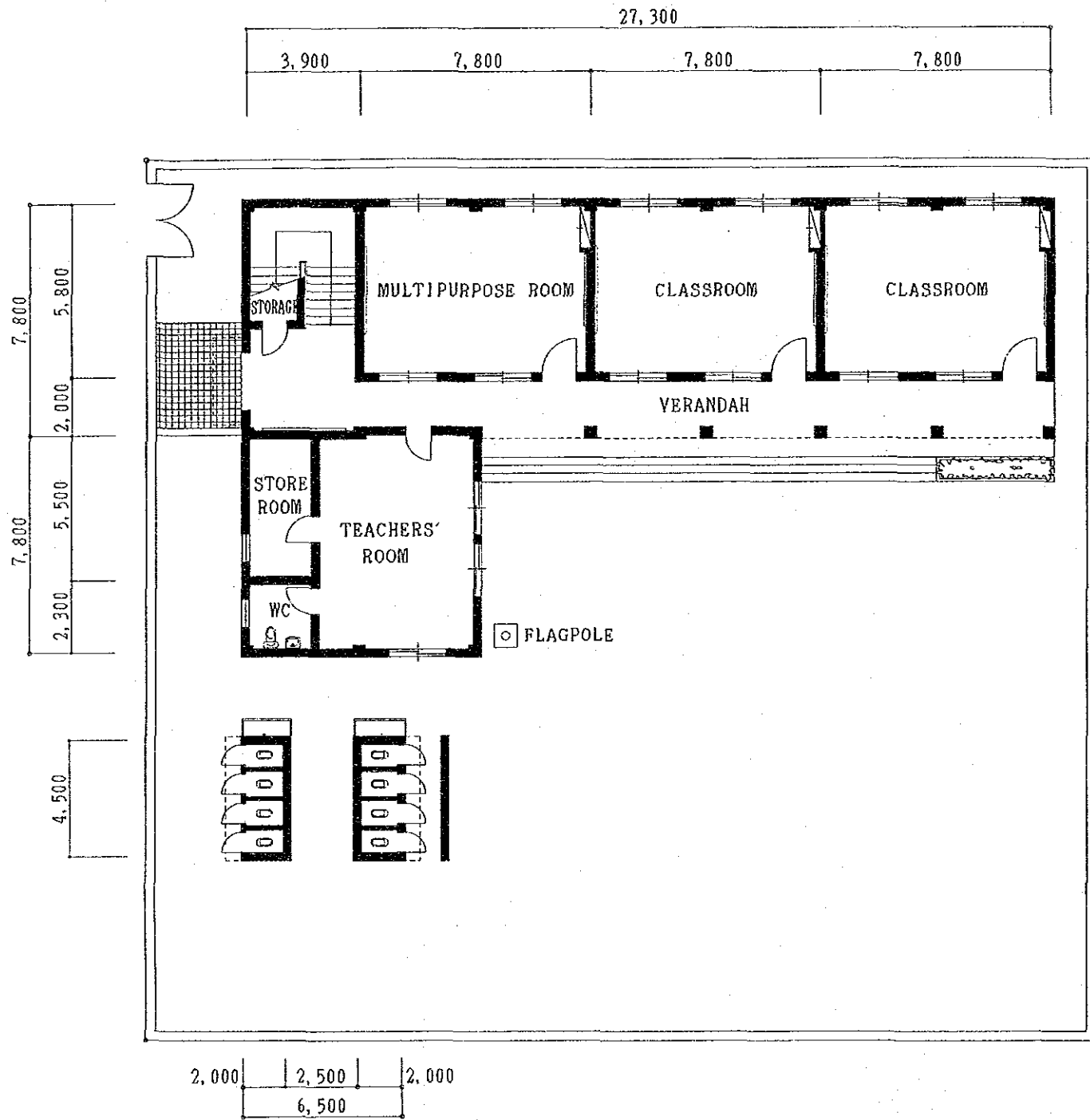
(Principal Items in Basic Design)

School building:	reinforced concrete, two storeys	Floor area: 487 m ²
Latrines:	brick masonry, one storey	Floor area: 9 m ² x 2
		Total floor area: 505 m ²
Others:	well (as required), water tanks, gate, enclosure walls, flag pole, furniture	

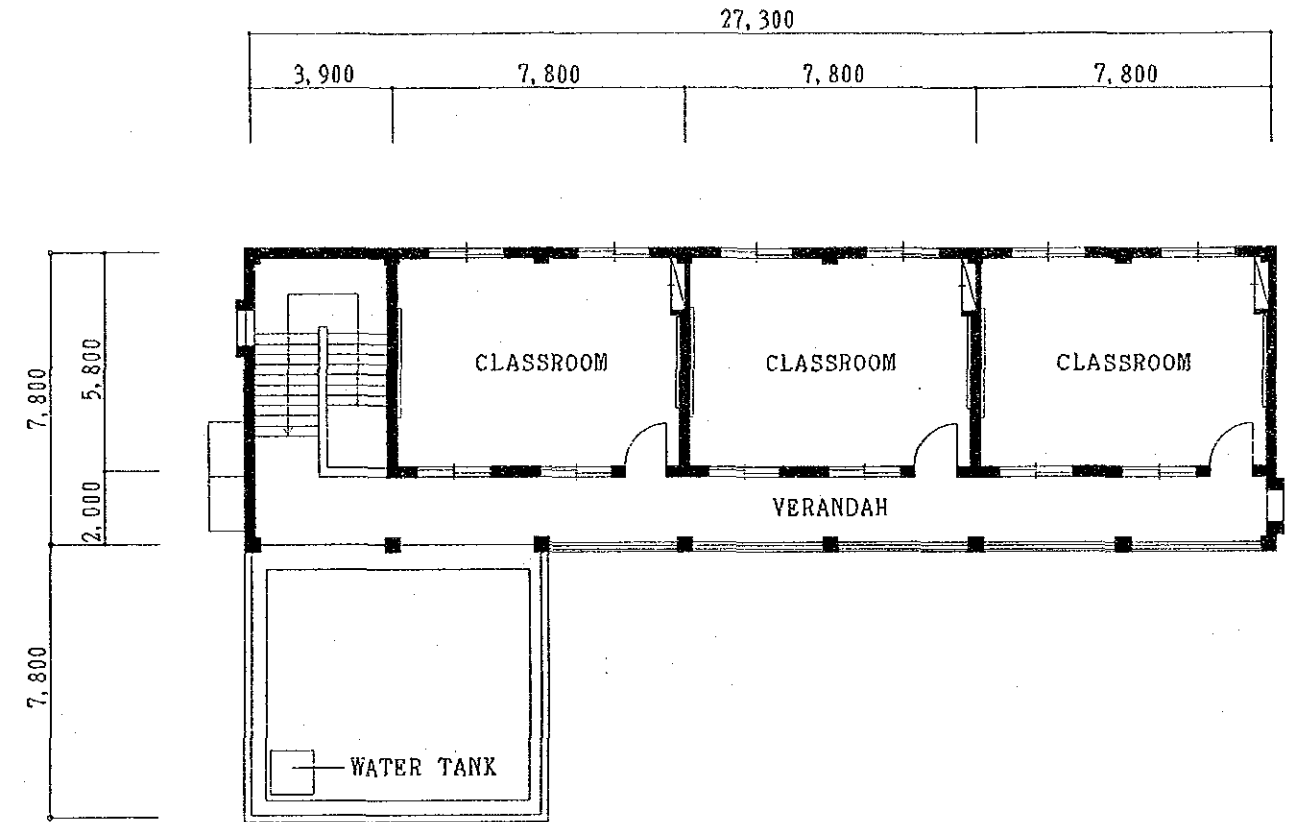
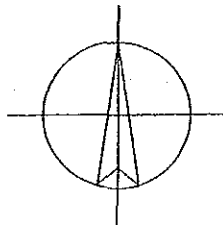
(8) Furniture

Simple, solid furniture will be provided. The plans for these, determined from the numbers required and their arrangement, are as shown in the following table. Frames made of square steel pipes will be used to ensure solidity. Separate desks and chairs will be provided for each pupil to allow free arrangement of the desks, for example, for group learning. Shisham wood, a locally produced hard wood, will be used for the top boards and seats.

BASIC DESIGN DRAWING (1)



SITE LAYOUT • GROUND FLOOR PLAN

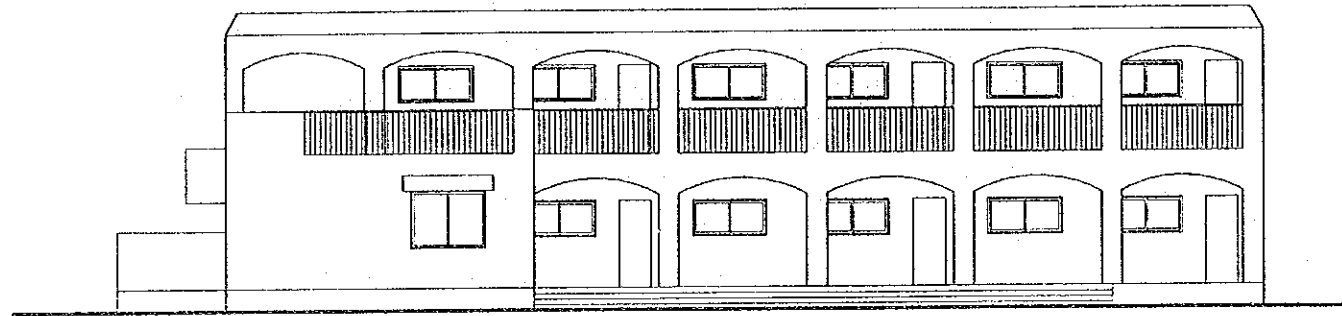


FIRST FLOOR PLAN

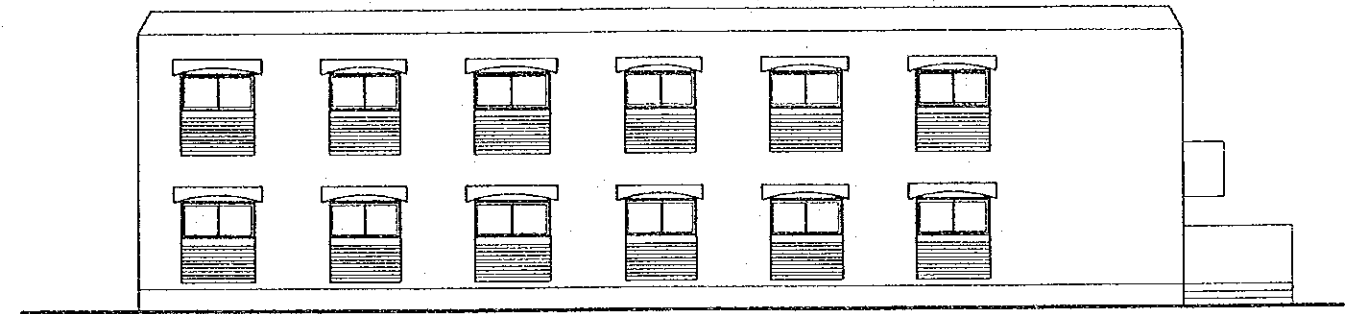
Table of Floor Area			
	School Bldg.	Latrines	Total
Ground F.	273.78 m ²	18.00 m ²	291.78 m ²
1st F.	212.94 m ²	—	212.94 m ²
Total	486.72 m ²	18.00 m ²	504.72 m ² (5,432.76 ft ²)

PRIMARY MODEL SCHOOL
SITE LAYOUT • PLAN S=1:200

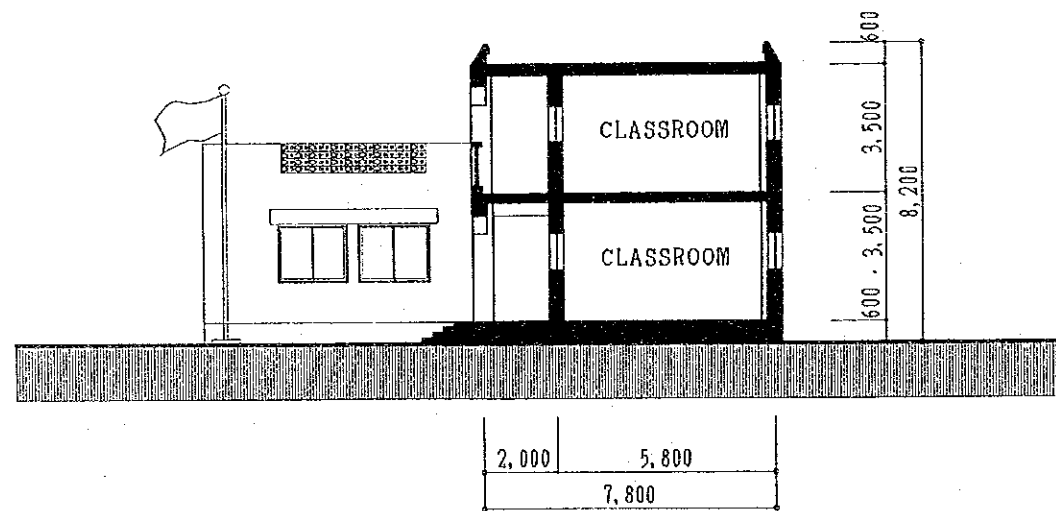
BASIC DESIGN DRAWING (2)



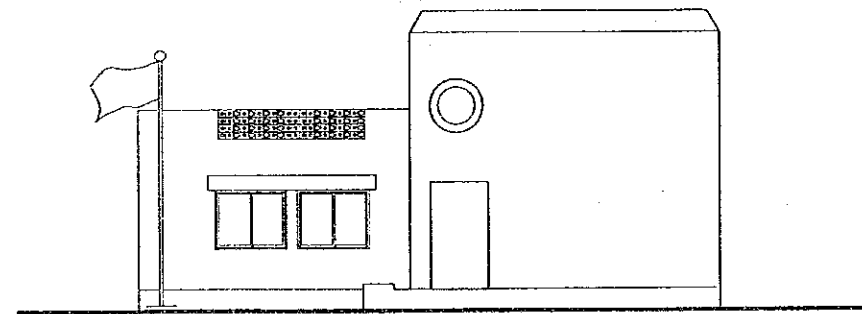
SOUTH ELEVATION



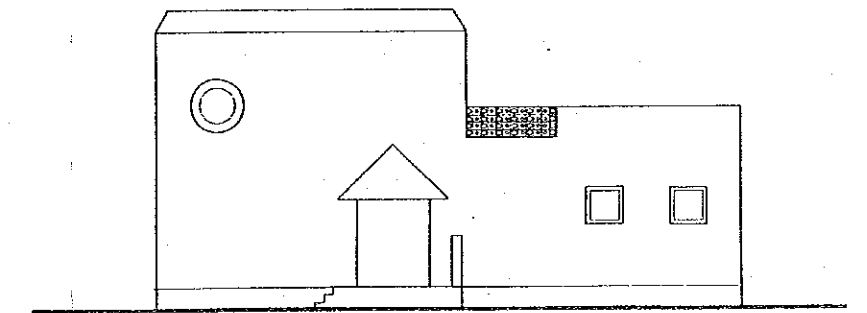
NORTH ELEVATION



SECTION



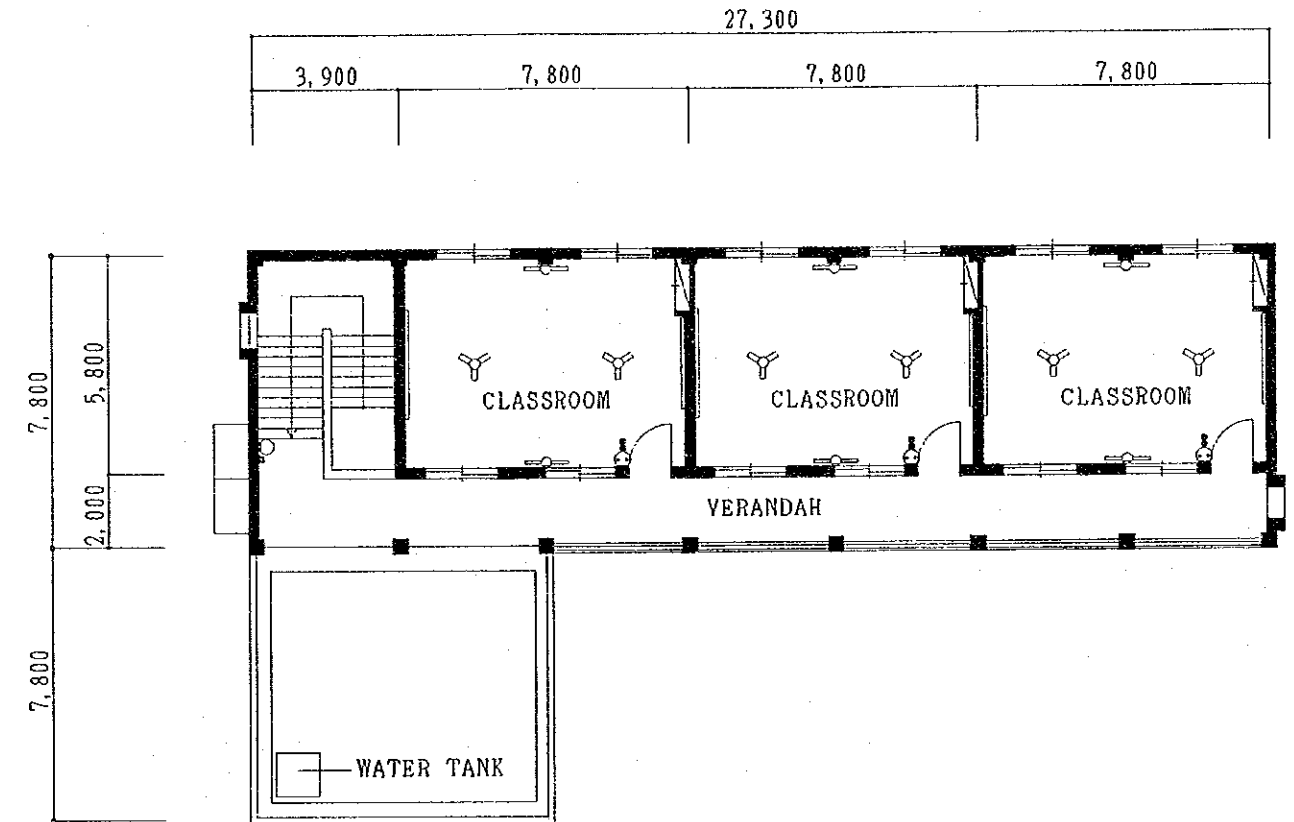
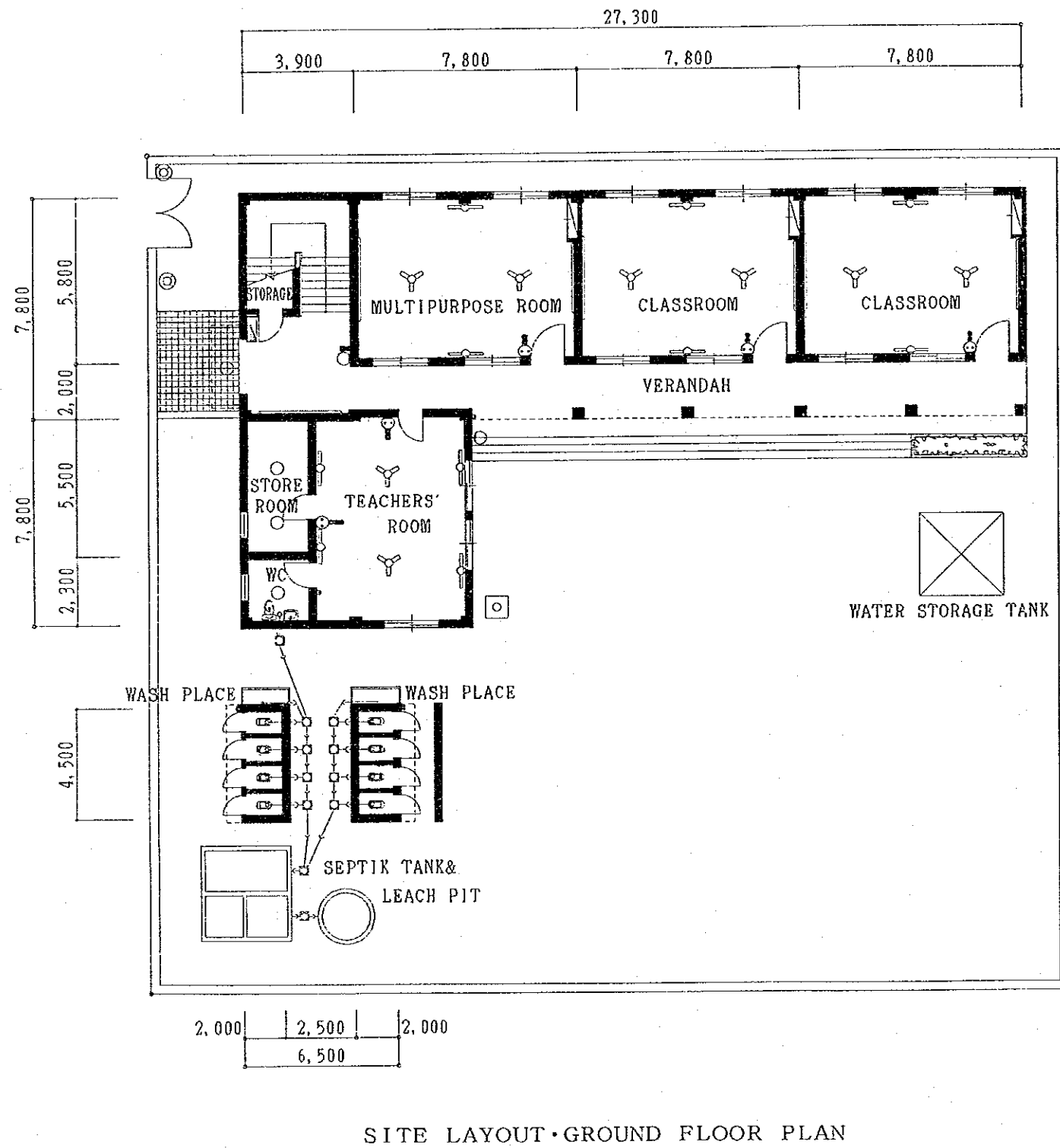
EAST ELEVATION



WEST ELEVATION

PRIMARY MODEL SCHOOL
ELEVATION · SECTION S=1:200

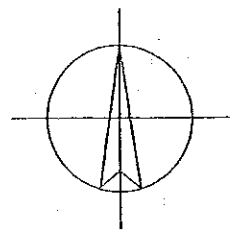
BASIC DESIGN DRAWING (3)



EXPLANATORY NOTES

○	INCANDESCENT LIGHT
○	INCANDESCENT LIGHT (WALL)
—	FLUORESCENT LIGHT
•	SWITCH
○	SOCKET OUTLET
Y	CEILING FAN
⊗	EXTERIOR LIGHT
—	SWITCH BOARD
—	SOIL PIPE
—	WASTE WATER PIPE
□	SOIL PIT
e	CLEAN OUT

FIRST FLOOR PLAN



PRIMARY MODEL SCHOOL BUILDING EQUIPMENT PLAN

<Model School Furniture Plan (for each school)>

<u>Furniture</u>	<u>Remarks</u>	<u>Quantity</u>	<u>Request</u>
1. Greenboards	2.4 m x 1.2 m classrooms: 5 multipurpose room: 1	6	(6)
2. Whiteboard	teachers' room: 1	1	(1)
3. Display boards	2.4 m x 1.2 m classrooms: 5 multipurpose room: 1 corridor: 1	7	(-)
4. Pupils' desks (small)	for smaller children 80 + 20 (spare)	100] (250)
5. Pupils' desks (medium size)	for larger children 120 + 30 (spare)	150	
6. Pupils' chairs (small)	for lower grades 80 + 20 (spare)	100] (250)
7. Pupils' chairs (medium size)	for higher grades 120 + 30 (spare)	150	
8. Teachers' desks	classrooms: 5 multipurpose room: 1	6	(6)
9. Office desk	for headmistress, 1	1	(1)
10. Desks	for teachers (shared)	6	(2)
11. Office chairs	for headmistress: 1 for visitors: 4	5] (30)
12. Teachers' chairs	classrooms: 5 multipurpose room: 1 teachers' room: 9	15	
13. Stools	for visitors (spare) (in teachers' room)	10	(5)
14. Teachers' lockers	each for six persons (in storeroom by teachers' room)	2	(-)
15. Steel cabinets	for teaching materials (in storeroom by teachers' room)	2	(2)
16. Steel drawers	for documents (e.g. school registers) (teachers' room)	2	(10)
17. Rack		-	(2)
18. Steel almirah		-	(10)

4-4 Implementation Plan

4-4-1 Implementation Policies

(1) Basic Policies

The thirty sites selected as the construction sites for the model schools are distributed over ten districts in the central part of NWFP, over an area extending 180 km from east to west and 100 km from north to south. The altitude of the sites varies from 150 m or so above sea level around Peshawar to nearly 1,800 m above sea level in the districts of Abbottabad and Mansehra. In terms of climatic conditions, the average annual rainfall ranges from around 400 mm around Peshawar to nearly 1,200 mm in the mountainous areas around Abbottabad, where average monthly rainfalls approach 300 mm during the July-September monsoon season. There is a variety also in the geological conditions, clay soil being found at most of the sites, but silty soil, sandy soil and combinations of these being found at a number of them. Although there is access to commercial power supply at most of the sites, the conditions relating to water supply vary; while some of the sites either already have wells on them or have city waterworks in the vicinity, excavation of new wells will be required at a number of others. In this way, the construction sites are spread over a wide area and the environmental conditions vary in small degrees from site to site.

As will be mentioned later, the period allocated for the construction of the schools is approximately 24 months. Since the construction period for each school is estimated at eight months, even if efficient operation of the construction teams is ensured, each team will be able to construct only four schools within the period allocated. In order to complete the construction of all the planned schools, therefore, simultaneous deployment of eight construction teams will be required as shown in the table in Section 4-4-5. Since each team will be engaged in the parallel construction of two schools when in full operation, construction of fifteen schools will be taking place at the same time during each half of the construction schedule. Appropriate procurement of the construction materials and their timely delivery to each construction site will therefore be indispensable, while the need for each construction team to carry out the construction work simultaneously at a plural number of sites and to move on to the next site with appropriate timing means that a high level of supervisory capacity will be required of the contractor, so as to achieve not only the creation of high-quality buildings but also a strict adherence to the construction schedule. The following points will therefore be made the basic policies in the implementation of the work.

- 1) An adequate assessment will be made in advance of the environmental conditions at each site, and appropriate scheduling plans will be drawn up to ensure efficient operation of each construction team.
- 2) Detailed plans will be drawn up to achieve certainty in the procurement of the construction materials and their timely delivery to each construction site.

- 3) The supervisory staff will constantly and accurately monitor the progress of work at each construction site and, by keeping in close contact with the headquarters, will endeavour to take various measures to prevent problems and to make the necessary adjustments.
- 4) The contractor, owner and consultant will carry out with responsibility the shares of the work allotted to each of them and will cooperate with each other to ensure the smooth progress of the work.

(2) Contractors and their Status

The construction work under the project, which is to be implemented as a grant aid project, will be entrusted to a Japanese contractor with sufficient experience in and capacity for the construction of the facilities of the type envisaged under the project. Since most items of the furniture to be provided under the project are to be procured in the host country and no specialised installation work is involved, the provision of the furniture will be included in the scope of work of the same contractor.

Experienced construction firms in Pakistan are found concentrated around Karachi, the largest city, and Islamabad, the capital. Islamabad, in particular, is home to several construction firms, which have participated in Japanese grant aid projects implemented in Pakistan in the past as subcontractors. All these firms have commendable records and are capable of operating throughout Pakistan. It seems appropriate, therefore, to select the subcontractors for the project from among these firms.

(3) Management Personnel Plan

As has been mentioned above, construction work requiring a total of 240 months is to be implemented within a 24 month period under this project. Management staff will therefore have to be allocated in numbers corresponding to the amount of work, so as to complete the project within the given term, without compromising the quality of the work. At the same time, the deployment of too many Japanese managers would lead to an increase in the costs, and it was decided that the number of Japanese staff should be minimised. In view of these considerations, able Pakistani building engineers will be selected and eight such engineers will be allocated, one each, to the construction teams mentioned above. The Japanese management staff will consist of five members, namely, one field manager, two building engineers (one each for four construction teams), one electrical engineer (responsible for all sites) and one clerical officer. The types, numbers and dispatch periods of the Japanese management staff are shown below.

(Assignment)	(Number)	(Period of Dispatch)
Field manager	1	24 months (throughout construction period)
Building engineer	2	24 months (throughout construction period)
Electrical engineer	1	20 months
Clerical officer	1	24 months (throughout construction period)

The deployment plan for all the management staff, including the locally-hired staff, is shown in the table on the following page.

4-4-2 Construction Conditions and Points of Note in Implementation

(1) Importance of Preparatory Work

The distribution of the construction sites over a wide area and the differences in the conditions between the sites mean that contractor will have to carry out detailed surveys of all the sites prior to the commencement of the construction work. Utmost care will be required in the investigations on such items as the areas covered by each construction team, the order in which the schools are constructed by each team, the temporary facilities plan for each site and the transportation routes for the construction materials and equipment, as well as in the work of drawing up the most efficient implementation plans. The following points are of particular importance.

1) Construction Schedule for Wells

Wells need to be dug at fifteen of the thirty sites. Although the standard site area is 2 kanal (approx. 1,000 m²), some of the sites are larger, while there are also sites at which their elongated shapes place restrictions on the selection of the water source points. Investigations need therefore to be made separately at each site as to when the wells should be constructed so that this work does not cause hindrance to other items of work. The overall schedule for the fifteen sites needs also to be determined in such a way as to ensure efficient operation of the well-excavation team.

2) Space for Temporary Offices and Other Temporary Facilities

The construction sites are generally small and it is difficult to secure the space required for the temporary site offices, construction sheds and stockyards for construction materials. Although the situation will vary according to the layout within the sites, the likelihood is that a use will have to be made of the adjoining areas at the majority of the construction sites. Requests will therefore have to be made to the local residents for cooperation through the Owner during the preparation period, in order to secure the necessary sites.

(2) Climatic Conditions

As has been mentioned above, the monthly rainfalls reach 200 to 300 mm during the July-September monsoon season in the mountainous areas (e.g. Abbottabad, Mansehra). It is best to avoid earth work and work on the building frames during this period. Where the construction schedule make this unavoidable, utmost care will have to be taken over the drainage of rain water during excavation work and over the measures for preventing adulteration of concrete by rain water.

(3) Work during Ramadan

Pakistan is a Muslim country and there is a month of fasting (Ramadan) each year, in accordance with the Islamic calendar. Since a major drop occurs in the efficiency of labour and a slowdown is observed also in the procurement of materials during this period, allowances will have to be made for the Ramadan and the subsequent 'id holiday period in the scheduling plan and the procurement plan for construction materials.

4-4-3 Supervision Plan

(1) Supervision Policies

Taking into full account the purport of the Basic Design, the Consultant must form an integrated project team for detailed design and construction supervision, who will endeavour to effect the accomplishment of the plans while ensuring the coordination of opinions among those concerned. The following basic policies will apply for this supervision work.

- 1) The Consultant will do its best to ensure the completion of the construction work and procurement of materials and equipment without delays, within the agreed term.
- 2) The Consultant will ensure the smooth progress of the work by reporting to and maintaining a close contact with those responsible in the relevant agencies in the two countries and by issuing appropriate and timely advice and guidance to the contractors.
- 3) The Consultant will ensure the achievement of the intended effect of the work as a grant aid project through its endeavours for technological transfer concerning the construction methods and techniques

(2) Details of Supervision Work

1) Work Related to Contracts

Preparation of design drawings and tender documents, preliminary investigation of qualifications of tenderers, acceptance of bids, evaluation of bids and selection of contractors, preparation of contracts, attendance at conclusion of contracts etc.

2) Examination of Submissions by Contractors

Examination and approval of materials submitted by the contractors (e.g. working drawings, samples of construction and finishing materials, machinery and materials for equipment work)

3) Direction in Construction Work

Examination of works plan and schedule charts, direction to contractors and regular reports on the progress of work to the Owner

4) Cooperation concerning Payment

Cooperation in examining invoices from the contractors for costs of construction to be paid during and after the construction work and in the actual procedure for payment

5) Attendance at Inspection

Attendance and approval at various tests and inspections carried out between the commencement and the completion of work; reports to those concerned in the Japanese Government on the progress of work, payment procedures, completion and hand-over; confirmation of the completion of the work and attendance at hand-over to Owner

(3) Supervision Personnel Plan

While the buildings to be constructed at each site, which are the objects of the supervision work, are small, special circumstances arise from the fact that construction work will be in progress simultaneously at eight to fifteen sites during the construction period. In view of this situation, the thrust of the supervision work implemented by the Consultant will be on the constant monitoring of the overall progress of work and the sustained provision of guidance and advice to the contractors and to those responsible in the Pakistani Government, aimed at ensuring the smooth progress of the work and adherence to the construction schedule. The dispatch of permanently stationed staff will therefore be indispensable, and this will have to be combined with the dispatch of temporary supervisory staff to deal with the tight construction schedule. In addition to being experienced and having the ability to make appropriate judgements, the supervisors selected must have a wide field of vision and a capacity for coordination work. The types, numbers and dispatch periods of the supervisory personnel to be sent by the Consultant are shown below.

(Responsibility)	(Number)	(Period of Dispatch)
Building Work	2	1: 24 months (permanent) 1: 8 months (temporary)
Building Equipment Work	1	20 months (permanent)

4-4-4 Procurement Plan for Materials and Equipment

(1) Procurement Plan for Construction Materials

The construction materials produced in Pakistan are largely limited to such articles as reinforcement steel bars, simple steel members and aluminium fixtures, and primary products, such as concrete aggregate, cement, bricks and concrete blocks. Other materials, such as structural steel frames and various types of interior finish materials, are mostly imported from abroad. Among the materials for equipment work, equipment such as airconditioners and fire alarms are not produced locally. While a significant amount of other materials, such as electric wires and cables, conduit pipes, plug sockets, valves, piping materials and sanitary ware, are manufactured domestically, their quality, specifications and supply are unstable and they often cannot be relied upon. The imported construction materials and building equipment are not exactly cheap, due to the imposition of 40 to 200% custom duties.

While the basic rule under the present project will be to procure the construction materials in the host country, materials that cannot be procured locally and materials, the locally produced equivalents of which are unreliable in terms of quality and supply, will be procured in Japan. The procurement sites of the principal construction materials are shown below.

Procurement Plan for Principal Construction Materials

Item	Origin		Remarks
	Pakistan	Japan	
(Building Work)			
• Aggregate	○		• No problems in terms of hardness, grain size and supply • British Standard materials available
• Cement	○		
• Reinforcement bars	○		• Supply slightly unstable, but no problems in terms of quality • Most widely-used finish materials in Pakistan; quality satisfactory
• Terrazzo	○		
• Bricks	○		• A wide variety of high-quality materials available • Floor paint only imported from Japan, due to lack of appropriate materials produced locally
• Paint	○	○	
• Wooden fixtures	○		• High-quality fixtures made from imported wood available • Local products liable to leakage and supply unstable
• Aluminium fixtures		○	
(Equipment Work)			
• Distribution panels	○		Rather inferior to Japanese products in all cases, but local products judged more suitable in view of the small quantities used and with a view to future maintenance
• Electric wires, conduit pipes	○		
• Lighting equipment	○		
• Switches	○		
• Socket outlets	○		
• Pumps	○		
• Piping materials	○		
• Ceiling fans	○		

(2) Equipment (Furniture) Procurement Plan

There are several firms manufacturing and selling furniture in Peshawar, and two of these are joint ventures with overseas companies capable of supplying fairly high-quality furniture. Most items of furniture, therefore, including pupils' desks and chairs, teachers' desks, steel bookshelves and lockers, will be procured in Pakistan, and only the blackboards, whiteboards and notice boards, which are difficult to procure locally, will be imported from Japan.

(3) Transportation Plan

The materials imported from Japan will be transported by sea to Karachi and from there by lorries and trailers. The number of days required for transportation from Japan to Peshawar will be as follows.

Marine transportation	30 to 40 days
Custom clearance	10 to 15 days
Overland transportation	3 to 4 days
Total	Approx. 40 to 60 days

Troubles often occur during clearance through customs in Pakistan, and materials imported for grant aid projects are no exceptions. The Contractor and the NWFP Education Department, which will be the consignee, should be well acquainted with the tax-exemption procedures and permits relating to importation, and make ample allowances for the time required for these procedures.

4-4-5 Implementation Schedule

(1) Division of Responsibilities

The responsibilities for the various items of work to be implemented under the project should be divided as follows between the Japanese and Pakistani Governments. Of these items, the laying of power lines and waterworks to the construction sites, which is to be carried out by the Pakistani Government, needs to be completed prior to the commencement of the construction work on the sites.

1) Japanese Side

1. Construction of the school buildings and latrines for the thirty model primary schools
2. Construction of fencing and gates around the sites
3. Construction of wells at sites without city waterworks in their vicinity (15 sites)
4. Provision of furniture for pupils and teachers for the thirty model primary schools

2) Pakistani Side

1. Procurement of the school sites and space required for construction work
2. Laying of power lines to the construction sites
3. Laying of water pipes to those construction sites where city waterworks can be used
4. Other necessary works on site (telephones, outside lighting, tree-planting etc.)
5. Payment of bank charges (commission to be paid to Pakistani banks for issue of "authorisation to pay")
6. Implementation of various procedures and formalities required in Pakistan
7. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment imported for the project at the port of disembarkation:

8. To ensure prompt unloading and customs clearance at ports of disembarkation in Pakistan and internal transportation therein of the products purchased under the grant.
9. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into Pakistan and stay therein for the performance of their work:
10. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Pakistan with respect to the supply of the products and services under the verified contracts:
11. To ensure that the facilities constructed under the grant aid be maintained and used properly and effectively for the project.
12. To bear all the agreed expenses, other than those covered by the grant, necessary for the execution of the project :

(2) Implementation Schedule Chart

The procedure for the implementation of the project will be as follows. After the Exchange of Notes (E/N) between the Japanese and Pakistani Governments, a design/supervision agreement will be concluded between the executing agency in the Pakistani Government and a Japanese consultant. This will be followed by the preparation of the detailed design and tender documents by the consultant and bidding by Japanese construction firms. Examination of the bids and conclusion of the construction contract will be followed by the commencement of the construction work. A period of five and a half months has been allocated for the detailed design and bidding, and a period of 24 months for the construction work (including procurement of furniture). The implementation schedule is given in the table on the following page.

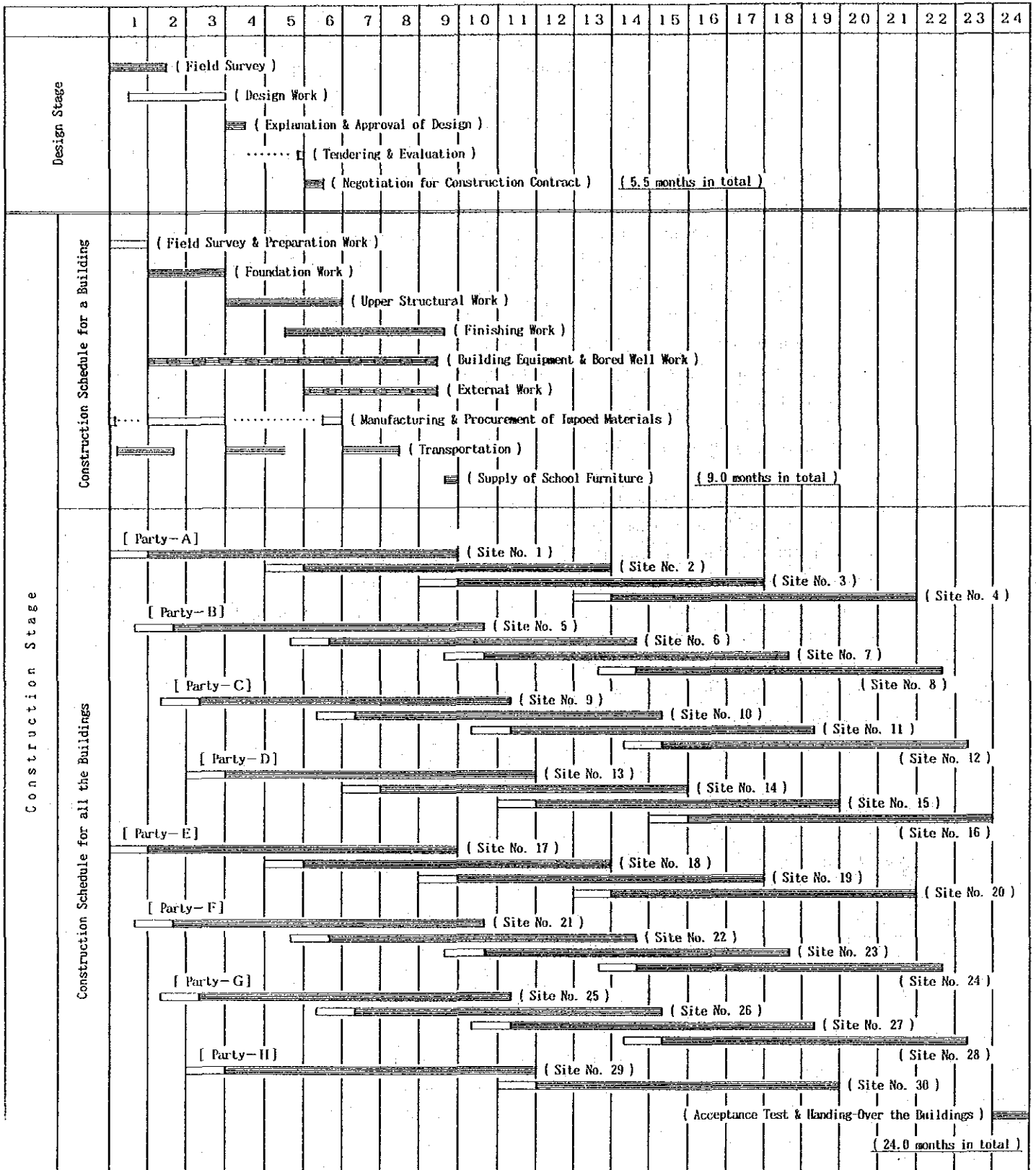
4-4-6 Estimated Project Costs

The estimated costs for the items of work to be implemented by the Pakistani side are as follows.

Costs to be Borne by the Pakistani Government

Power lines	Rs.	766,000
Waterworks		497,500
Bank charges		1,462,500
<hr/>		
Total	Rs.	2,726,000

IMPLEMENTATION SCHEDULE



* Note : Party-A~C / In charge of Peshawar and the surrounding areas
 Party-D~E / In charge of Mardan and the surrounding areas
 Party-F~G / In charge of Abbotabad and the surrounding areas
 Party-H / In charge of Bunir District

Chapter 5 Teacher Training College: Outline of the Project

5-1 Objective and the Appropriateness of the Project

The aim of the project is to rectify the shortage of teachers in NWFP by constructing a teacher training college for females in the province and so to contribute to the improvement of primary education.

Since the improvement of primary education lies at the basis of national development and the proposed project is in full agreement with the policy of raising the enrollment rate in primary education, which is being promoted by the Pakistani Government, the validity of the project is unquestionable, while it is needless to point out that the training of teachers will also be of great benefit to the social sector. It is deemed appropriate therefore to consider the project as a possible Grant Aid project.

5-2 Study and Examination on the Project

5-2-1 Existing and Planned Teacher Training Colleges for Females

(1) Existing Teacher Training Colleges

There are the following seven teacher training colleges for females in six districts of NWFP, which together produce an average of 100 female teachers with PTC's each year.

- Peshawar (Dabgari Gate)
- Peshawar (In-Service)
- D.I. Khan
- Swat
- Kohat
- Malakand
- Mansehra

The oldest of these is the college in the quarter of Peshawar called Dabgari Gate, which was founded 74 years ago in 1920 and which has so far produced 8,400 PTC holders. The other teacher training college in Peshawar (In-Service) provides a re-training course for unqualified female teachers after a three-year period of actual teaching. It has provided training to 600 teachers since its foundation in 1985. The newest of the seven is the teacher training college in Mansehra, which has a capacity for around 300 students, making this the largest teacher training college in the province along with the college in D.I. Khan. While most of these colleges provide courses for both primary school teachers (PTC) and secondary school teachers (CT and drawing mistresses), the In-Service College in Peshawar and the college in Swat have PTC courses only. Since all the colleges have hostels with capacities ranging from 30 to 200, it is possible for students from outside the districts to attend these colleges. While the facilities at these hostels are all in very poor conditions, they play a vital role in eliminating the regional discrepancy in the distribution of female teachers, and the result is that whereas there are teacher training colleges in only six of the districts in NWFP, the home areas of the recent graduates are distributed more or less evenly throughout the twenty-one districts in the province, in numbers corresponding to the population of each district. From Abbottabad District too, which is the site of the proposed teacher training college, a total of 249 female students have entered one or other of these colleges during the past three years. Although little data were available on the numbers of applicants to these colleges each year, it has been reported that there were four times as many applicants as the actual intake over the past two years on average at the Dabgari Gate College and five times as many over the past three years at the In-Service College. The figures for the past four years for the intake at the existing teacher training colleges according to districts of origin, and outline data on these colleges are given, respectively, in Tables 1 and 2 on the following pages.

Table-1 : DISTRICT-WISE ENROLLMENT FOR FEMALE STUDENTS OF GCET IN THESE 4 YEARS

District	1990-1991	1991-1992	1992-1993	1993-1994	Total			
1. Peshawar	31	60	129	101	321			
2. Nowshera	15	33	97	81	226			
3. Charsadda	29	36	69	88	222			
4. Mardan	58	61	91	91	301			
5. Swabi	40	49	91	81	261			
6. Kohat	39	66	89	89	283			
7. Karak	35	54	78	79	246			
8. Abbotabad	60	(34)	55	103	91	(283)		
9. Haripur		(26)	35	76	76	(213)		
10. Mansehra	45	(32)	66	(47)	105	(75)	79	(233)
11. Battagram		(13)		(19)		(30)	32	(94)
12. Kohistan	6	14	10	10	40			
13. Lakki	95	(28)	81	(21)	37	41	(127)	
14. Bannu		(67)		(60)	73	68	(268)	
15. D. I. Khan	106	(78)	79	(58)	121	91	(348)	
16. Tank		(28)		(21)	37	41	(127)	
17. Dir	9	36	73	78	196			
18. Swat	71	(59)	57	91	97	(304)		
19. Bunir		(12)	26	27	24	(89)		
20. Malakand	43	41	66	68	218			
21. Chitral	13	29	25	27	94			
(Total)	695	878	1,488	1,433	4,494			

Table - 2 : OUTLINES OF EXISTING GOVERNMENT COLLEGE FOR ELEMENTARY TEACHERS (FEMALE) IN N.W.F.P.

Item of Inquiry	D. I. Khan	Kohat	Malakand (Dargai)	Mansehra (Ghazi Kot)	Peshawar (Dabgari Gate)	Peshawar (In-Service)	Swat (Khawazakheia)
1. Years of Establishment	1982	1987	1988	1992	1920	1985	1986
2. Total Numbers of Graduates (PTC Holders) so far produced by 1993 (Average of Graduate per Year)	1,210 (110)	450 (75)	475 (95)	200 (200)	8,395 (115)	600 (75)	490 (70)
3. Numngers of Students (Applicants) in these 3 Years							
1) In 1991-1992 : PTC Course	764 (3,814)	482 (1,310)	581 (1,743)	596 (3,020)	601 (2,611)	380 (1,967)	400 (605)
CI Course	120 (395)	80 (320)	100 (372)		130 (650)	80 (338)	80 (120)
DM Course	0 (-)	48 (20)	50 (78)	Not Yet Opened	67 (340)	0 (-)	0 (-)
(Total)	75 (80)	0 (-)	0 (-)		0 (-)	0 (-)	0 (-)
2) In 1992-1993 : PTC Course	195 (975)	128 (390)	150 (450)		197 (990)	80 (338)	80 (120)
CI Course	200 (1,306)	114 (396)	125 (545)	200 (1,130)	166 (619)	150 (681)	155 (235)
DM Course	55 (150)	35 (51)	45 (61)	55 (275)	50 (245)	0 (-)	0 (-)
(Total)	46 (49)	0 (-)	48 (48)	40 (70)	0 (-)	0 (-)	0 (-)
3) In 1993-1994 : PTC Course	301 (1,505)	149 (447)	218 (654)	295 (1,475)	216 (764)	150 (681)	155 (235)
CI Course	177 (1,180)	114 (399)	125 (521)	200 (1,181)	146 (636)	150 (948)	165 (250)
DM Course	53 (99)	41 (74)	48 (68)	55 (290)	42 (221)	0 (-)	0 (-)
(Total)	38 (55)	0 (-)	40 (50)	40 (74)	0 (-)	0 (-)	0 (-)
4. Present Numbers of Instructors	268 (1,334)	155 (473)	213 (639)	295 (1,545)	188 (857)	150 (948)	165 (250)
5. Present Numbers of Boarders (Capacity)	10	10	10	10	10	10	10
6. Availability of Hostel for Head Mistress /Instructors	150 (150)	40 (30)	100 (100)	184 (200)	50 (30)	100 (100)	100 (100)
	Nil	Nil	Nil	Yes	Yes	Nil	Nil

(2) Planned Teacher Training Colleges

In addition to the seven colleges mentioned above, four teacher training colleges are under construction at present in the following districts.

All these colleges are to have a capacity for 200 students and are due to be opened in September 1994.

- Mardan (USAID)
- Nowshera (USAID)
- Karak (USAID)
- Charsadda (GTZ)

5-2-2 Shortage of Female Teachers

(1) Shortage in NWFP

As a part of a USAID development programme, the Research, Development and Evaluation Division of the NWFP Directorate of Primary Education has conducted a study entitled "Educational Management Information System Research" (EMIS) on the state of the primary school children, teaching staff and facilities throughout the province. According to this study, there were approximately 1,614,000 primary school pupils (enrollment rate: 48%) in the province in 1992 as shown in the table below, of whom 1,122,000 (enrollment rate: 64%) were male and 492,000 (enrollment rate: 30%) were female. Female pupils account for around 30% of all pupils. Of the primary school teachers, approximately 35,700 were male (qualified teachers: 29,000) and 12,000 were female (qualified teachers: 8,500). Around 7% of the pupils at boys' schools are girls and around 12% of those at girls' schools are boys. When these are taken into account, the pupil-teacher (qualified) ratio for boys is approximately 38 to 1, while for girls it is 58 to 1. The standard pupil-teacher ratio specified by the Pakistani Government is 40 to 1. While this standard has been attained for the boys, the pupil-teacher ratio for girls exceeds the standard by a factor of around 1.5. This is a particularly high figure among the Asian nations (approx. 2.8 times that in Japan), giving an indication of the serious shortage of female teachers in NWFP.

Table 3 Primary Education in NWFP

	Male	Female	Total
Population (age 4 to 9)	1,741,183	1,636,989	3,378,172
Enrollment (K to 5)	1,122,249	492,329	1,614,578
Participation rate	64.45%	30.08%	47.79%
Teachers	35,657	11,978	47,625
(Trained)	29,249	8,510	37,759
(Untrained)	6,408	3,468	9,876
Pupil-teacher ratio			
(All teachers)	31.5	41.1	33.9
(Trained)	38.4	57.9	42.8

Note: The above figures for the population of school age children are based on the age analysis conducted by the NWFP Education Department using the estimated population data of the NWFP Bureau of Statistics, Planning and Development,

based in turn on the 1972 and 1981 national censuses.

(2) Shortage according to Districts

Given in Table 4, at the end of this section, are the results of the analysis on the female pupil-teacher ratios according to districts, conducted using the EMIS data. The classification into "urban" and "rural" areas adopted in EMIS has been maintained. The calculations were made using as the figures for the pupils both the cases where the Kachi class was included and where it was excluded, and for the teachers, the cases where all the teachers were counted and where only qualified teachers were counted, and investigations were carried out using the following four combinations

A: pupils (Class 1 to 5)/all teachers

B: pupils (Class 1 to 5)/qualified teachers

C: pupils (Kachi class to class 5)/all teachers

D: pupils (Kachi class to class 5)/qualified teachers

The results obtained indicated that the conditions of the shortage of female teachers was not uniform throughout the districts but there were various characteristic features according to districts. Discussions are made below on the conditions deduced from Table 4 for those districts where outstanding features are observed.

1) Buner

The district is covered by hills ranging from 600 to 1,800 m above sea level and no part of it has been classified as "urban." Of all the female teachers in the district, 78% do not hold teaching qualifications, which is the second highest proportion after Dir. The pupil-teacher ratios were the highest under all the combinations A, B, C and D above. The ratio of all female pupils to qualified teachers in particular was extremely high at approximately 352 to 1, a figure nearly twice as high as that for Dir which was placed second in this respect. At the same time, the population of school age girls was estimated at around 40,000 (NWFP Education Department estimate - The same applies throughout this section for figures for school age children.), giving a low enrollment rate of 18% (class 1 to 5 - The same applies throughout below.) and placing this district 16th among the 20th districts considered.

2) Dir

This district, sandwiched between Chitral and Swat, is covered by hills ranging from 600 to 3,000 m. As with Buner, no part of the district was classified as "urban." Unqualified teachers accounted for 81% of all female teachers, the highest proportion among the 20 districts. The ratio of all female pupils to qualified teachers was approximately 198 to 1, making this and Buner the only districts where the ratio exceeded 100 to 1. While this is one of the more sparsely populated areas of NWFP along with Buner and Kohistan, there were approximately 127,000 school age girls in the district, placing it 5th among the 20 districts. The enrollment rate of 19% is only slightly above that for Buner and is ranked 15th among the 20 districts.

3) Abbottabad

This district, to the north of Islamabad, is covered by hills ranging from 600 to 1,800

m. While this district is placed 6th among the 20 districts in terms of the population of school age girls, the number of girls enrolled in schools here was the highest in the province at approximately 53,000, giving the highest enrollment rate of 51%, which is well above that for Peshawar District (28%). The ratio of all female pupils to qualified teachers, at approximately 75 to 1, was the third highest after Buner and Dir. It is also a district where a large discrepancy is observed between "urban" and "rural" areas, the female pupil-qualified teacher ratio being as low as 45 to 1 in "urban" areas, while it is as high as 81 to 1 in "rural" areas.

4) Haripur

This district consists of plains ranging from 300 to 1,200 m above sea level to the southwest of Abbottabad, and was separated from Abbottabad in 1991. The female enrollment rate, at approximately 46%, is the second highest after Abbottabad, and tendencies similar to Abbottabad are also observed in the all female pupil-qualified teacher ratio (74 to 1) and in the discrepancy between "urban" and "rural" areas. A noteworthy feature here is the extremely high proportion of qualified teachers in "urban" areas (99%), which is second only to Lakki (100%) in the southern part of NWFP.

5) Mansehra

This is a hilly area ranging from 600 to 3,000 m to the north of Abbottabad, and has the highest population among the 20 districts. The female enrollment of approximately 24% and the all female pupil-qualified teacher ratio of approximately 55 to 1 both occupy average positions among the 20 districts. The number of qualified teachers is the highest here among the 20 districts at 699 (followed by Abbottabad with 580), and the number of all teachers too, at 1,162, is higher than that in Peshawar (1,050). Together with Abbottabad and Haripur, Mansehra comprises an area called the Hazara Division, which is known in NWFP as an area with high interest in education and an area which has produced a large number of intellectuals. These conceptions of the area are backed by the data concerning primary education for girls.

6) Peshawar

The city of Peshawar is the political and economic centre of NWFP and this district has the second highest population after Mansehra and the highest population density among the 20 districts. Naturally, the number of female pupils, number of qualified teachers and number of all teachers in "urban" areas are all highest here among the 20 districts. While the overall all female pupil-qualified teacher ratio is approximately 51 to 1, there is no marked difference between the figures for the "urban" areas (53 to 1) and the "rural" areas (48 to 1), making this one of the districts with the least discrepancy between "urban" and "rural" areas along with Chitral and Swabi.

7) Kohistan

This is a mountainous area with steep, perennially snow-capped mountains ranging from 1,800 to 4,500 m. There are only 389 girls attending primary schools and the enrollment rate is 8%, both these being the lowest figures among the 20 districts. While

the all female pupil-teacher (all teachers) ratio is the lowest among the 20 districts at 9 to 1, the proportion of qualified teachers too is the lowest at 23%. These figures indicate that special measures which take account of the peculiar regional characteristics will need to be applied for the improvement of primary education here.

8) D.I. Khan

This district consists of plains at around 150 m above sea level. The city of D.I. Khan is the largest in southern NWFP and is the site of Gomal University, the only institution apart from Peshawar University in NWFP offering a B.Ed. course. While this district is considered to be an area with a high level of interest in education along with the Hazara Division, the actual primary school enrollment rate is not very high, the enrollment rates of approximately 51% for boys and 23% for girls both falling below the average for NWFP. At the same time, this is the only district where the pupil-teacher ratios fall below the standard of 40 to 1 under all the combinations A, B, C and D given above and in both "urban" and "rural" areas. The ratio of class 1 to 5 female pupils to all teachers (A) is as low as 18 to 1, while the all female pupil-qualified teacher ratio (D) is 25 to 1. The proportion of qualified teachers too is the highest in the province at 95%. In terms of the teaching facilities too, there is a classroom for every 22 pupils (boys and girls), meaning that the supply of both school facilities and teachers in D.I. Khan is well in excess of the standards set by the government. Similar statements may be made for the three neighbouring districts of Lakki, Bannu and Tank, and it is only in these four districts that the all female pupil-qualified teacher ratio falls below the government standard of 40 to 1 in NWFP.

Table - 4 : DISTRICT-WISE GIRLS STUDENTS / FEMALE TEACHERS RATIO

No.	District	Data on Enrolled Girls Students				Data on Female Teachers			Girls Students / Female Teachers Ratio				Note
		Nos. of Kachi-class Girls	Nos. of Class 1 to 5 Girls	Nos. of Class Kachi-5 Girls	Nos. of Untrained Teachers (UT)	Nos. of Trained Teachers (TT)	Nos. of Teachers (AT) F=D+E	Class 1-5 Girls / AT	Class 1-5 Girls / TT	Class Kachi - 5 Girls / AT	Class Kachi - 5 Girls / TT	Class Kachi - 5 Girls / C/E	
		A	B	C=A+B	D	E	F=D+E	B/F	B/E	C/F	C/E		
1	Buner	U: 3,113 R: 3,112 (T):	U: 6,031 R: 6,031 (T):	U: 9,144 R: 9,144 (T):	U: 93 R: 93 (T):	U: 26 R: 26 (T):	U: 119 R: 119 (T):	U: 50.7 R: 50.7 (T):	U: 232.0 R: 232.0 (T):	U: 76.8 R: 76.8 (T):	U: 351.7 R: 351.7 (T):		
2	Dir	U: 77 R: 7,237 (T):	U: 165 R: 18,704 (T):	U: 242 R: 25,941 (T):	U: 545 R: 545 (T):	U: 132 R: 132 (T):	U: 677 R: 677 (T):	U: 27.6 R: 27.9 (T):	U: 141.7 R: 142.9 (T):	U: 38.3 R: 38.7 (T):	U: 196.5 R: 198.4 (T):		
3	Abbottabad	U: 1,233 R: 12,482 (T):	U: 4,793 R: 34,774 (T):	U: 6,026 R: 47,236 (T):	U: 5 R: 265 (T):	U: 133 R: 580 (T):	U: 138 R: 845 (T):	U: 34.7 R: 41.2 (T):	U: 36.0 R: 60.0 (T):	U: 43.7 R: 55.9 (T):	U: 45.3 R: 81.4 (T):		
4	Swat	U: 1,862 R: 8,181 (T):	U: 6,216 R: 22,465 (T):	U: 8,078 R: 30,646 (T):	U: 11 R: 317 (T):	U: 162 R: 360 (T):	U: 173 R: 677 (T):	U: 35.9 R: 33.2 (T):	U: 38.4 R: 62.4 (T):	U: 46.7 R: 45.3 (T):	U: 49.9 R: 85.1 (T):	*	
5	Haripur	U: 840 R: 7,659 (T):	U: 3,490 R: 23,456 (T):	U: 4,330 R: 31,115 (T):	U: 1 R: 134 (T):	U: 92 R: 387 (T):	U: 93 R: 521 (T):	U: 37.5 R: 45.0 (T):	U: 37.9 R: 60.6 (T):	U: 46.6 R: 59.7 (T):	U: 47.1 R: 80.4 (T):		
6	Nowshera	U: 1,948 R: 4,747 (T):	U: 6,679 R: 15,207 (T):	U: 8,627 R: 19,954 (T):	U: 33 R: 180 (T):	U: 146 R: 243 (T):	U: 179 R: 423 (T):	U: 37.3 R: 36.0 (T):	U: 45.7 R: 62.6 (T):	U: 48.2 R: 47.2 (T):	U: 59.1 R: 82.1 (T):	*	
7	Swabi	U: 1,289 R: 6,226 (T):	U: 4,716 R: 19,984 (T):	U: 6,005 R: 26,210 (T):	U: 22 R: 148 (T):	U: 93 R: 431 (T):	U: 115 R: 579 (T):	U: 41.0 R: 34.5 (T):	U: 50.7 R: 46.4 (T):	U: 52.2 R: 45.3 (T):	U: 64.6 R: 60.8 (T):		
8	Chitral	U: 285 R: 1,689 (T):	U: 912 R: 4,961 (T):	U: 1,197 R: 6,660 (T):	U: 5 R: 62 (T):	U: 20 R: 111 (T):	U: 25 R: 173 (T):	U: 36.5 R: 28.7 (T):	U: 45.6 R: 44.7 (T):	U: 47.9 R: 38.5 (T):	U: 59.9 R: 60.0 (T):		
9	Mardan	U: 3,151 R: 7,066 (T):	U: 9,870 R: 21,999 (T):	U: 13,021 R: 29,065 (T):	U: 47 R: 228 (T):	U: 235 R: 504 (T):	U: 282 R: 732 (T):	U: 35.0 R: 30.1 (T):	U: 42.0 R: 43.6 (T):	U: 46.2 R: 39.7 (T):	U: 55.4 R: 57.7 (T):	*	
10	Mansehra	U: 1,316 R: 12,308 (T):	U: 3,606 R: 28,326 (T):	U: 4,922 R: 40,634 (T):	U: 31 R: 301 (T):	U: 131 R: 699 (T):	U: 162 R: 1,000 (T):	U: 22.3 R: 28.3 (T):	U: 27.5 R: 40.5 (T):	U: 30.4 R: 40.6 (T):	U: 37.6 R: 58.1 (T):	*	

* Remark : 1. Source of the above data is 'Education Management Information System (EMIS) Research', Development & Evaluation Wing, Directorate of Primary Education, N.W.F.P.
 2. U, R, and (T) in the above table mean Urban, Rural and Total, respectively.
 3. Figures with underline is the largest figure in the category.
 4. Figures with the mark 'Ⓢ' is the smallest figure in the category.
 5. District with the mark '*' in the 'Note' columns is the district in which GCET (Female) or the GCETs are already exist or now under construction.

Table - 4 : DISTRICT-WISE GIRLS STUDENTS / FEMALE TEACHERS RATIO

Sheet No. 2/2

No.	District	Data on Enrolled Girls Students			Data on Female Teachers			Girls Students / Female Teachers Ratio				Note
		Nos. of Kachi-class Girls A	Nos. of Class 1 to 5 Girls B	Nos. of Class Kachi-5 Girls C=A+B	Nos. of Untrained Teachers (UT) D	Nos. of Trained Teachers (TT) E	Nos. of Teachers (AT) F=D+E	Class 1-5 Girls / AT B/F	Class 1-5 Girls / TT B/E	Class Kachi - 5 Girls / AT C/F	Class Kachi - 5 Girls / TT C/E	
11	Kohat	U : 2,310 R : 4,524 (T) : 6,834	U : 7,120 R : 11,811 (T) : 18,931	U : 9,430 R : 16,335 (T) : 25,765	U : 25 R : 121 (T) : 146	U : 211 R : 266 (T) : 477	U : 235 R : 387 (T) : 623	U : 30.2 R : 30.5 (T) : 30.4	U : 33.7 R : 44.4 (T) : 39.7	U : 40.0 R : 42.2 (T) : 41.4	U : 44.7 R : 51.4 (T) : 54.0	*
12	Malakand	U : 567 R : 3,934 (T) : 4,501	U : 1,519 R : 12,846 (T) : 14,365	U : 2,086 R : 16,780 (T) : 18,866	U : 10 R : 57 (T) : 67	U : 31 R : 320 (T) : 351	U : 41 R : 377 (T) : 418	U : 37.0 R : 34.1 (T) : 34.4	U : 49.0 R : 40.1 (T) : 40.9	U : 50.9 R : 44.5 (T) : 45.1	U : 57.3 R : 52.4 (T) : 53.7	*
13	Peshawar	U : 7,233 R : 5,055 (T) : 12,288	U : 23,035 R : 12,916 (T) : 35,951	U : 30,268 R : 17,971 (T) : 48,239	U : 28 R : 59 (T) : 87	U : 575 R : 378 (T) : 953	U : 603 R : 447 (T) : 1,050	U : 38.2 R : 28.9 (T) : 34.2	U : 40.1 R : 34.2 (T) : 37.7	U : 50.2 R : 40.2 (T) : 45.9	U : 52.5 R : 47.5 (T) : 50.5	*
14	Charsadda	U : 1,082 R : 4,661 (T) : 5,763	U : 3,659 R : 13,161 (T) : 16,820	U : 4,741 R : 17,842 (T) : 22,583	U : 39 R : 197 (T) : 236	U : 142 R : 306 (T) : 448	U : 181 R : 505 (T) : 686	U : 20.2 R : 26.1 (T) : 24.5	U : 25.8 R : 42.7 (T) : 37.4	U : 25.2 R : 35.3 (T) : 32.9	U : 33.4 R : 57.9 (T) : 50.2	*
15	Karak	U : 414 R : 3,437 (T) : 3,851	U : 1,100 R : 11,342 (T) : 12,442	U : 1,514 R : 14,779 (T) : 16,293	U : 6 R : 118 (T) : 124	U : 40 R : 265 (T) : 325	U : 46 R : 403 (T) : 449	U : 23.9 R : 28.1 (T) : 27.7	U : 27.5 R : 39.8 (T) : 38.3	U : 32.9 R : 36.7 (T) : 36.3	U : 37.9 R : 51.9 (T) : 50.1	*
16	Kohistan	U : 13 R : 210 (T) : 223	U : 49 R : 340 (T) : 389	U : 62 R : 550 (T) : 612	U : 2 R : 48 (T) : 50	U : 2 R : 13 (T) : 15	U : 4 R : 61 (T) : 65	U : 12.3 R : 5.6 (T) : 5.0	U : 24.5 R : 26.2 (T) : 25.9	U : 15.5 R : 9.0 (T) : 9.4	U : 31.0 R : 42.3 (T) : 40.8	
17	Lakki	U : 350 R : 1,784 (T) : 2,134	U : 1,050 R : 3,662 (T) : 4,712	U : 1,410 R : 5,446 (T) : 6,856	U : 0 R : 105 (T) : 105	U : 32 R : 166 (T) : 198	U : 32 R : 271 (T) : 303	U : 33.1 R : 13.5 (T) : 15.6	U : 33.1 R : 22.1 (T) : 23.8	U : 44.1 R : 20.1 (T) : 22.6	U : 44.1 R : 32.8 (T) : 34.5	
18	Bannu	U : 659 R : 3,159 (T) : 3,828	U : 2,138 R : 6,655 (T) : 8,793	U : 2,797 R : 9,864 (T) : 12,661	U : 5 R : 145 (T) : 150	U : 55 R : 343 (T) : 404	U : 60 R : 494 (T) : 554	U : 35.6 R : 13.6 (T) : 15.9	U : 38.9 R : 19.2 (T) : 21.9	U : 46.5 R : 20.0 (T) : 22.9	U : 50.9 R : 28.3 (T) : 31.3	
19	D. I. Khan	U : 1,349 R : 3,200 (T) : 4,549	U : 5,023 R : 8,306 (T) : 13,329	U : 6,372 R : 11,906 (T) : 18,278	U : 2 R : 35 (T) : 37	U : 204 R : 497 (T) : 701	U : 206 R : 532 (T) : 738	U : 24.4 R : 15.6 (T) : 18.1	U : 24.6 R : 16.7 (T) : 19.0	U : 30.9 R : 21.6 (T) : 24.2	U : 31.2 R : 23.2 (T) : 25.5	*
20	Tank	U : 219 R : 872 (T) : 1,091	U : 913 R : 1,519 (T) : 2,432	U : 1,132 R : 2,391 (T) : 3,523	U : 2 R : 26 (T) : 28	U : 28 R : 123 (T) : 151	U : 30 R : 149 (T) : 179	U : 30.4 R : 10.2 (T) : 13.6	U : 32.6 R : 12.3 (T) : 16.1	U : 37.7 R : 16.0 (T) : 19.7	U : 40.4 R : 19.4 (T) : 23.3	

* Remark : 1. Source of the above data is 'Education Management Information System (EMIS) Research', Development & Evaluation Wing, Directorate of Primary Education, N.W.F.P.
 2. U, R, and (T) in the above table mean Urban, Rural and Total, respectively.
 3. Figures with underline is the largest figure in the category.
 4. Figures with the mark '⊙' is the smallest figure in the category.
 5. District with the mark '*' in the 'Note' columns is the district in which GOET (Female) or the GCETs are already exist or now under construction.

5-2-3 Future Demand for Female Teachers

(1) Construction Plans for Primary Schools

1) Eighth Five-Year Plan

The NWFP Education Department has proposed the following targets for the improvement of primary education facilities under the Eighth Five-Year Plan (1993-1998).

1. Construction of boys' primary schools	3,050 schools
2. Construction of girls' primary schools	6,450 schools
3. Construction of mosque schools	2,000 schools
4. Construction of model primary schools	153 schools
5. Provision of new classrooms at existing schools	3,000 classrooms
6. Rebuilding of boys' primary schools	700 schools
7. Rebuilding of girls' primary schools	300 schools
8. Conversion of mosque schools into primary schools	4,000 schools
9. Repair of boys' primary schools	5,325 schools
10. Repair of girls' primary schools	2,475 schools
11. Construction of teacher training colleges (male)	4 colleges
12. Construction of teacher training colleges (female)	10 colleges

Of the 9,500 new primary schools planned (excluding model schools), nearly 70% are to be girls's schools, a fact which gives an indication of the emphasis placed by the Education Department on the improvement of the educational opportunities for females.

2) Seventh Five-Year Plan

The Eighth Five-Year Plan. provides a review of the achievements under the Seventh Five-Year Plan (1988-1993) for the improvement of the principal facilities in the primary education sector as follows.

	(Initial target)	(Results achieved)	(Achievement rate)
New school buildings	2,589 schools	2,170 schools	84%
New classrooms	1,913 classrooms	1,103 classrooms	53%
Rebuilding	418 schools	300 schools	72%

The achievement rates in the secondary and tertiary education sectors came close to 90%, giving an overall achievement rate of 86%.

3) Estimation of Facilities Constructed by 1998

As can be gathered from Sections 1) and 2) above, the actual achievements do not necessarily agree with the targets. This is partly due to the fact the Education Department is dependent on overseas aid for nearly a half of the funds for construction of new facilities, necessitating modifications of the plans each year reflecting the wishes of the donors. The data on the school construction plans, which are either under implementation by the Education Department, or whose implementation using aid from overseas donors is

thought to be more or less guaranteed, are summarised in Table 5. The figures on the numbers of primary school pupils and teachers are based on the EMIS data prepared in 1992, and figures are given here for the 6-year period including the figures for the facilities which were under construction in 1992. The table has been divided into two parts, the top half giving the total figures for the construction plans completed in 1992 and under implementation at present, and the bottom half giving the figures for the construction plans due for implementation from 1994 onwards. The numbers of classrooms are given along with the numbers of schools in both parts. The figures given here reflect all the plans in which overseas donors are involved and to which they have committed themselves. While the differences in the target years prevents a strict comparison, the following remarks may be made when the contents of Table 5 (excluding the data for 1992) are summarised and compared with the Eighth Five-Year Plan (FYP).

1. New primary schools: 8,226 (80% of FYP target)
2. Boys' schools: 3,820 (approx. same as FYP target)
3. Girls' schools: 4,406 (64% of FYP target)
4. Ratio of girls' schools: 54% (ratio in FYP: 68%)
5. Model schools: 301 (approx. twice FYP target)

Table - 5 : FEASIBLE PRIMARY SCHOOLS CONSTRUCTION PROGRAMMES (INCLUDING UNDER CONSTRUCTION) IN 1992-1998

Description	Funds or Names of Donors	Renovation of Existing Schools (Classrooms)	Expansion of Existing Schools (Classrooms)	Construction of New Primary Schools (Classrooms)			Classification of New Classrooms		
				Boys School	Girls School	Model School	For Boys	For Girls	
Number of Schools (Classrooms) which have been or will be Renovated/Expanded/Constructed During 1992-1994 (2 Years)	Government	130 (260)	1,049 (2,088)	900 (1,800)	962 (1,924)	- (-)	2,639	3,183	
	USAID	- (-)	- (-)	140 (280)	210 (420)	100 (500)	530	670	
	World Bank	- (-)	- (-)	- (-)	- (-)	- (-)	-	-	
	ADB	- (-)	- (-)	- (-)	- (-)	89 (445)	222	223	
	GTZ	15 (30)	20 (40)	1 (2)	1 (2)	3 (15)	25	34	
	Others	()	()	()	()	()	()	()	
	(Total)	145 (290)	1,069 (2,138)	1,041 (2,082)	1,173 (2,346)	192 (960)	3,416	4,110	
	Feasible Numbers of Schools (Classrooms) to be Renovated/ Expanded/Constructed in the Present Plan for 1994-1998 (4 Years)	Government	1,000 (2,000)	1,600 (2,000)	2,270 (4,540)	2,454 (4,908)	- (-)	5,340	6,108
		USAID	- (-)	- (-)	- (-)	- (-)	- (-)	-	-
		World Bank	- (-)	- (-)	505 (1,010)	760 (1,520)	- (-)	1,010	1,520
ADB		- (-)	- (-)	- (-)	- (-)	87 (435)	218	217	
GTZ		60 (120)	80 (160)	4 (8)	19 (38)	22 (110)	127	189	
Others		()	()	()	()	()	()	()	
(Total)	1,060 (2,120)	1,680 (2,160)	2,779 (5,558)	3,233 (6,466)	109 (545)	6,695	8,034		
(Grand Total)	1,205 (2,410)	2,749 (4,298)	3,820 (7,640)	4,406 (8,812)	301 (1,505)	10,111	12,144		

* Remarks : In calculation of girls classrooms, it is regarded that 60% of the total expanded classrooms and for girls. As for the Model School, 50% is adopted provisionally.

(2) Absorption and Enrollment of Female Pupils

Investigations are made below on the feasibility of the above plans from the points of view of the capacity for accommodation of female pupils after the implementation of the plans listed in Table 5 and changes in the enrollment rate of girls over the past years.

1) Capacity for Female Pupils in 1998

The total capacity for accommodation of female pupils may be estimated from the number of existing classrooms and the classrooms to be constructed by 1998. It is assumed that each classrooms will accommodate 40 pupils.

Existing classrooms (from EMIS data):	10,054
New classrooms (Table 5)	: 12,144
Total number of classrooms	: 22,198

These classrooms will provide a capacity for 887,920 (= 22,198 x 40) girls.

2) Population of School-Age Girls (4 to 9) in 1998

Population censuses have normally been carried out every ten years in Pakistan. The last census was taken in 1981 and the next one is due in 1994. NWFP Bureau of Statistics, Planning and Development has been providing data on the estimated population for the years subsequent to 1981 assuming an annual increase of 3.32%, a figure based on past national censuses (1972 and 1981). The information on human resources issued by the Education Department too are based on these data and give the estimated population of school-age girls (4 to 9) in NWFP in 1998 as approximately 1,927,000.

3) Enrollment Rate in 1998 (Determined from Capacity of Facilities)

Assuming that all the classrooms allotted to girls in 1998 will be used to their full capacity, the enrollment rate, from 1) and 2) above, will be approximately 46%.

4) Past Changes in Enrollment Rate of Female Pupils

While no data giving definitive figures on the changes in the enrollment rate over the past years were available at the Education Department, the 1991 statistics published by the Bureau of Statistics, Planning and Development give records of the numbers of girls aged between 4 and 9 attending school for the past years. Through a comparison of these records with the estimated populations of school-age girls, we obtain the following figures.

	(Enrollment)	(School-age girls)	(Enrollment rate)
1988-1989	282,240	1,436,500	19.65%
1989-1990	321,191	1,484,200	21.54%
1990-1991	358,534	1,533,500	23.38%
1991-1992	unknown	1,584,400	unknown
1992-1993	492,329	1,637,000	30.08%

According to these figures, the number of girls attending school has increased by approximately 210,000 over the past five years, producing an increase of over 10% in the enrollment rate. The period covered by the above figures coincide with the period of the Seventh Five-Year Plan. Since the number of classrooms newly provided during this period may be estimated at 1,886 (assuming that there were two classrooms each at the 933 newly constructed schools), this means that there was an average of 111 girls for each new classroom, a figure exceeding the target classroom capacity of 40 set by the Education Department by a factor of almost three.

To sum up the foregoing, while the facilities improvement plan shown in Table 5 falls short of the requirements under the Eighth Five-Year Plan, which aims at raising the enrollment rate for girls to 100% by the year 2,000, from the past records, one can expect a high rate of absorption of female pupils into the newly constructed facilities, and it is thought possible, if the required facilities and teaching staff can be provided, to achieve the enrollment rate of 46% (upper limit if the classroom quota of 40 is to be maintained), a figure determined from the number of facilities expected to be in place by 1998.

(3) Demand and Supply of Female Teachers

The demand for qualified primary school teachers (PTC holders) required by 1998 may be estimated as follows from the data given in Table 5. The calculations here assume a classroom quota of 40 and a pupil-teacher ratio of 40 to 1. The retirement rate of the teachers (3% per annum, NWFP Education Department) has not been taken into account.

Shortage in 1992 (EMIS data):	3,798
New demand by 1998 (Table 5):	11,391
[Breakdown]	
New classrooms (60% assumed to be for girls):	(2,579)
New girls' schools (100% for girls):	(8,812)
Model schools (to be staffed by CT holders)	-
Total:	15,189

A total of approximately 15,200 new female teachers will therefore be required by 1998 if the plans shown in Table 5 are implemented.

(4) Supply from Teacher Training Colleges

Calculations are made below on the expected supply of female teachers (PTC holders) from the 11 teacher training colleges (7 existing and 4 planned colleges) by 1998. While the seven existing colleges have been supplying an average of 105 PTC holders per college every year in the past, it is assumed here that each college will in future produce an average of 150 PTC holders, since the average number of entrants over the past three years has been 140 (Table 2 above) and the excess in the supply of secondary school teachers is expected to lead to a reduction in the proportion of students on the CT courses.

1992-1994 (two years):	$(150 \times 7 \text{ colleges}) \times 2 \text{ years}$	= 2,100
1994-1998 (four years):	$(150 \times 11 \text{ colleges}) \times 4 \text{ years}$	= 6,600
	(Total)	8,700

This figure of 8,700 falls 6,500 short of the demand of approximately 15,200 expected by 1998.

This means that eleven more new teacher training colleges for females will have to be provided between now (1994) and 1998.

5-2-4 Appropriateness of Project Area

(1) Investigations on Quantitative Data

While, as has been discussed above, the fact that teacher training colleges for females are provided with hostels for accommodating students from distant areas means that no major discrepancies should result from the selection of the sites in the supply of teachers according to districts, priority should, in principle, be given to those areas with shortages of teachers and those areas with high levels of interest in education. Such a consideration would give high priority to districts such as Buner, Dir, Abbottabad and Haripur (see Section 5-2-2). Among these, Abbottabad, with the highest enrollment rate and highest number of girls attending school, has a particularly high level of interest in education and as such is a most suitable area for the construction of the proposed teacher training college.

(2) Attitude of Residents

Valuable data for assessment of the attitude of the people in various areas towards education are provided by a survey carried out in 1991 by the Directorate of Primary Education covering 4,360 villages in the vicinities of cities (villages within one hour by car of cities with populations of over 5,000) in 15 districts (Peshawar excluded). In this survey, the leading persons in each village were asked over 30 questions to study the circumstances surrounding primary education in each district. Some of the findings of the survey are summarised below.

1. "Are the parents interested in the education of their daughters?"

Of the 765 villages surveyed in Abbottabad, 50% gave the answer that all the parents were interested and a further 43% that the majority of the parents were interested, indicating this district to be a district with a particularly high level of interest in the education of girls along with Chitral and Mardan. (For reference, the lowest level of interest was shown in Kohistan, where 25% of the 150 villages surveyed gave the answer that none of parents were interested, and 69% that less than a half of the parents were interested.)

2. "What do you think are the reasons for the low enrollment rate for girls?"

In Abbottabad, 2% of the villages gave family circumstances as the answer, while 57% mentioned the shortage of facilities. These are, respectively, the lowest and highest figures for these two answers among the 15 districts surveyed. In D.I. Khan, which was judged in Section 5-2-2 above to have an excess supply of facilities, only 11% of the villages gave the shortage of facilities as the answer, which was the lowest percentage by far among the 15 districts, indicating the

peculiar situation of this district. (The most frequent answer in D.I. Khan was the large number of mixed schools, which accounted for 37% of all the answers, as did "other reasons (unknown).")

3. "Is your village cooperative towards expansion of educational facilities for girls (e.g. in donation of land)?"

In Abbottabad, 83% of the villages gave the answer that they would provide positive cooperation, which was second only to 84% in Chitral and far above the figures for the remaining districts. As with Question 1 above, the answers to this question gave an indication of the high level of interest in girls' education in Chitral, despite the severe natural environment of this district in the northernmost part of NWFP and the consequent low enrollment rate of 25%. This may be connected with the assistance provided in this district by the Aga Khan Foundation.

4. "Do you need more teachers in your village?"

Noteworthy figures were obtained in D.I. Khan, where 50% of the villages said that they had enough male teachers and 37% that they had enough female teachers. The figures were more or less the same for the remaining districts, where an average of 80% of the villages said that they needed more male teachers and 90% that they needed more female teachers. Abbottabad had one of the highest figures for villages answering that they required more female teachers at 93%.

The above survey results suggest the residents in Abbottabad show an extremely favourable attitude towards construction of educational facilities in their district.

(3) Geographical Conditions

A teacher training college constructed in Abbottabad would also take in students from the neighbouring district of Haripur (which was a part of Abbottabad until 1991). Haripur comes second after Abbottabad in the shortage of teachers among the districts without teacher training colleges and has a high enrollment rate of 46%, which too is second to Abbottabad. Along with Manshra, Abbottabad also provides an access to urban areas for the residents of Kohistan and a college here could thus provide a base for the training of teachers for sparsely populated areas.

From the foregoing, it is judged most appropriate to locate the project site for the construction of the teacher training college for females in the district of Abbottabad, where, judging from the high level of interest in education and the favourable attitude towards the reception of such a college on the part of the local residents, one can expect the facilities provided to be put to an effective use.

5-2-5 Procurement of Teaching Staff for the Teacher Training College

(1) Human Resources in NWFP

The staff at the teacher training college will consist of one principal, ten regular instructors and one instructor each for physical education and drawing. The minimum qualifications for the principal and the regular instructors will be a B.A. or B.Sc. plus a B.Ed., corresponding to the qualification of so called SET's. An SET qualifies for the grade of BPS (basic payment scale) -16. For the principal, one would require a person with a grade BPS-18 and for the instructors persons with a grade of BPS-17. To rise on the BPS grading, one needs several to over ten years of experience as an SET plus a recommendation by a superior. The numbers of male and female staff holding grades of BPS-17 and 18 during last year and this year in the whole of NWFP are shown in Table 7. It may be seen that there are 68 persons who have the qualifications required for being a female principal and 523 persons with the qualifications required for being instructors in NWFP at present. According to the NWFP Education Department, the annual promotion rate is around 8%, while the retirement rate is 3%, giving a net increase of around 5% in the numbers of those holding the applicable grades. A comparison of the numbers of BPS-17 personnel last year and this year in Table 7, however, showed an increase of only 2.5%, or a half of the expected figure. Overall, even if one principal and ten instructors were to be appointed to the new teacher training college, this would account for only 2.1% of those holding the applicable grades, and there should be no problems in filling the gaps thus created with those newly promoted to BPS-17.

(2) Human Resources in the Request Area

The selection and transfer of the teaching staff at teacher training colleges are made by the Directorate of Secondary Education in the Education Department. The numbers of persons with the applicable grades in Abbottabad and the neighbouring districts, as worked out from a survey of the personnel in the secondary education sector, which has the largest number of BPS-17 and 18 holders, are shown below in Table 6. If a teacher training college were to be founded in Abbottabad, the teaching staff would be recruited from the secondary education sector in Haripur and Mansehra, as well as Abbottabad. It was found that there were seventeen BPS-18 holders and 114 BPS-17 holders with their domiciles in these three districts working at present in the secondary education sector. There should therefore be no problems in securing the required personnel for the principal and the instructors from the project area.

Table 6 Numbers of Persons with Qualifications for Teaching at Teacher Training Colleges in Abbottabad and Neighbouring Districts

	Abbottabad	Haripur	Mansehra	Total
BPS-18	7 + (3)	3 + (0)	4	17
BPS-17	36 + (1)	17 + (2)	33	89
BPS-17 Sub.	5 + (0)	4 + (0)	16	25
(Total)	48 + (4)	24 + (2)	53	131

N.B.

1. The figures in brackets indicate the numbers of teachers with their domiciles in the respective districts who are working outside the districts.
2. "BPS-17 Sub.": numbers of those due for promotion to BPS-17 next year

Table - 7 : LIST OF BPS-18 AND 17 HOLDERS IN PRIMARY AND SECONDARY EDUCATION FIELDS OF N.W.F.P.

BPS No.	Category	Post	Number of Posts					
			1992-1993			1993-1994		
			Male	Female	Total	Male	Female	Total
18	ED	1. Deputy Secretary	0	0	0	3	0	3
	DSE	1. Deputy Director	2	0	2	2	0	2
	DPE	1. Deputy Director	4	0	4	4	0	4
	RDE	1. Registrar	1	0	1	1	0	1
	DDS	1. Deputy Divisional Director	8	0	8	8	0	8
		2. Deputy Divisional Directress	0	4	4	0	4	4
	DSEO	1. District Education Officer	15	14	29	20	14	34
	DPEO	1. District Education Officer	18	17	35	18	17	35
	GSS	1. Principal	147	24	171	138	26	164
	DBC/EES	1. Chief Instructor	1	0	1	1	0	1
		2. Deputy Director	2	0	2	2	0	2
	GCET	1. Principal	11	7	18	11	7	18
	GATTC	1. Principal	1	0	1	1	0	1
		2. Vice Principal	1	0	1	1	0	1
GCPE	1. Principal	1	0	1	1	0	1	
(Total)			212	66	278	211	68	279
17	ED	1. Assistant Accounts Officer	0	0	0	1	0	1
		2. Planning Officer	0	0	0	2	0	2
		3. Section Officer	0	0	0	11	0	11
		4. Statistical Officer	0	0	0	2	0	2
	DSE	1. Assistant Director	6	2	8	7	0	9
		2. Statistical Officer	1	0	1	1	0	1
		3. Research Officer	0	0	0	1	0	1
	DPE	1. Assistant Director	9	0	9	10	0	10
		2. Programmer	0	0	0	1	0	1
	RDE	1. Deputy Registrar	2	0	2	2	0	2
		1. Assistant Director Planning	6	0	6	6	0	6
		2. Assistant Divisional Education Officer	5	0	5	6	0	6
	DDS	3. Assistant District Education Officer	1	0	1	0	0	0
		1. Deputy District Education Officer	14	9	23	14	14	28
		1. Deputy District Education Officer	18	14	32	18	14	32
	DPSO	1. Deputy District Education Officer	18	14	32	18	14	32
	SDEO	1. Sub-Divisional Education Officer	33	24	57	33	24	57
	GSS	1. Vice Pricipal	28	3	31	31	4	35
		2. Head Master	895	0	895	930	0	930
		3. Head Mistress	0	227	227	0	247	247
		4. Subject Specialist	467	128	595	489	143	632
		5. Subject Specialist (H.E.)	0	2	2	0	0	0
		6. Director of Physical Education	0	3	3	0	0	0
		7. Librarian	0	3	3	0	0	0
		8. Senior Account Officer	0	1	1	0	0	0
		1. Senior English Teacher	38	19	57	0	0	0
		1. Assistant Director	2	0	2	2	0	2
	GPS	2. Audiovisual Officer	1	0	1	1	0	1
		3. Assitant Director (Female)	0	0	0	0	1	1
	DBC/EES	4. Assitant Director (Plng. & Dvlp.)	1	0	1	1	0	1
		5. Instructor	7	0	7	7	0	7
		6. Subject Specialist	8	0	12	8	4	12
		1. Instructor	110	70	180	110	70	180
	GCET	1. Instructor Islamiat	1	0	1	1	0	1
2. Senior Instructor		10	0	10	10	0	10	
GATTC	1. Instructor	1	0	1	1	0	1	
GCPE	2. Senior Instructor	10	0	10	10	0	10	
	1. Instructor	8	0	8	8	0	8	
(Total)			1,671	509	2,180	1,713	523	2,236
(Grand Total)			1,883	575	2,458	1,924	591	2,515

* Legend: ED Education Department, Civil Secretariat
DSE Directorate of Secondary Education
DPE Directorate of Primary Education
RDE Registrar Department, Examinations, Peshawar
DDS Divisional Directors of Schools (Secondary)
DSEO ... District Secondary Education Officer
SDEO ... Sub-Divisional Education Officers (Primary)
DPEO ... District Primary Education Officer
GSS Government Secondary School

GPS Government Primary School
DBC/EES ... Director Bureau of Curriculum Development and
Education Extension Services, Abbottabad
GCET Government College for Elementary Teachers
GATTC Government Agro-Technical Teachers Training
Center, Peshawar
GCPE Government College of Physical Education,
Doaba, Kohat

* Remark: The source of the above data is 'DEMANDS FOR GRANTS CURRENT EXPENDITURE (Education) FOR 1993-1994', VOL:III (PART-A) prepared by Finance Department, N.W.F.P.

5-2-6 Result of Study

The above investigations have confirmed the impact and feasibility of the proposed project, as well as the capacity of host country to implement the project, while the expected impact of the project has been found to be compatible with the system of grant aid cooperation. On the strength of these findings, it is judged appropriate to implement the proposed project under grant aid cooperation from the Government of Japan. In accordance with this judgement, investigations will be conducted below on the outline of the project and the basic design will be drawn up.

5-3 Project Description

5-3-1 Executing Agency and Operational Structure

As shown in Section 3-2, education in NWFP falls under the jurisdiction of the Education Department in the NWFP provincial government. The Ministry of Education in the federal government is responsible for devising and promulgating, as well as monitoring and assessing the application of, the national educational concepts, policies and standards, but the powers pertaining to and the responsibilities for their execution lie with the provincial governments.

The executing agency for the project under discussion will, therefore, be the NWFP Education Department, the officer responsible in the headquarters of the NWFP Education Department being the Chief Planning Officer and that in the ancillary sections being the Director of the Bureau of Curriculum Development & Education Extension Services. While the NWFP Education Department is located in Peshawar, the Bureau of Curriculum Development & Education Extension Services is to be found in Abbottabad.

For its operation, the planned college will have one principal, twelve instructors, one projectionist, two clerical officers and one typist, as well as a driver, a janitor (N/Qasid) and a gardener (mali). The student hostel will be staffed by a superintendent and a store keeper. There will also be thirteen others for miscellaneous work (cooks, cleaners, guards etc.). The total number of staff at the college will therefore be 35.

The curriculum at the college will be as follows.

1) Courses and Class Composition

In the original request, the capacity of the planned college was set at 200 and the college was to offer a PTC (primary teaching certificate) course. While the original plan envisaged four classes of fifty students, it was decided during the consultations, as described below, that it would be better to have five classes of forty. The above course will be for pre-service training of new teachers. There are plans also to hold courses during the summer holidays for in-service training of those already teaching. The teacher training colleges also offer CT (certificate in teaching) courses in addition to the PTC courses. The allocation of the quotas for the two courses will vary each year according to the conditions of the demand and supply of teachers.

2) Course

The PTC course is a one-year course offered to high school graduates who have completed ten years of school education (matriculation). The curriculum and syllabi laid down by the Ministry of Education will be used in principle for the PTC course at the proposed college, with the doubling of the period for long-term teaching practice from four weeks to eight weeks, resulting in the extension of the course duration from 39 weeks to 43 weeks. There will be a minimum of 33 hours of teaching each week, consisting of forty-five 45-minute classes (holidays on Fridays). The course will be divided into two semesters with the following composition.

1. First semester	14 weeks
2. Examinations and preparation	1 week
3. Short-term teaching practice	2 weeks
4. Second semester	14 weeks
5. Examinations and preparation	1 week

6. Long-term teaching practice	8 weeks
7. Winter and spring breaks	2 weeks
Total	43 weeks

3) Curriculum

Equal weights will be allocated to the following subjects in accordance with the curriculum and syllabi laid down the Ministry of Education.

- Principles of Education and Methods of Teaching
- Child Development and Counselling
- School Organisation and Classroom Management
- Language and Methods of Teaching
- Mathematics and Methods of Teaching
- Science and Methods of Teaching
- Social Studies and Methods Teaching
- Islamiyat/Islamic History and Methods of Teaching
- Arts and Practical Arts and Methods of Teaching
- Health and Physical Education

All the above are compulsory subjects on the PTC course, where there are no optional subjects. On the CT course, two of the ten subjects are optional.

5-3-2 Plan of Operation

For the budgets to cover the costs of running the planned schools, the following annual costs have been included in the Concept Clearance Paper, which has been approved by the government. While it is judged that there are no major errors in the sums presented, since these have been calculated on the basis of the past records at a large number of teacher training colleges, further investigations will be made in Section 5-3-5 on predictable items, such as the costs of lighting and heating.

1. Staff Salaries

	B.P.S. Class	Number	Annual Salary
Principal	18	1	Rs. 45,180
Instructors	17	10	344,400
Instructor (P.E.)	16	1	26,252
Instructor (drawing)	14	1	18,360
Projectionist	8	1	13,680
Assistant officer	11	1	15,300
Senior clerk	6	1	12,770
Junior clerk (typist)	5	1	12,420
Driver	4	1	12,060
N/qasid	1	1	11,040
Mali	1	1	11,040
Hostel superintendent	9	1	14,220
Hostel store keeper	5	1	12,420
Class IV	1	13	143,520
Total		35	692,662

2. Running Costs

House rent allowance	Rs. 227,922
Medical reimbursement charges	
(BPS 16+)	12,000
(BPS 15-)	16,560
Travelling allowance	10,000
Petrol, oil and lubrication	5,000
Hot & cold weather charges	3,000
Gardening charges	2,000
Electricity charges	8,000
Gas charges	5,000
Telephone (trunk call) charges	5,000
Newspaper charges	1,000
Advertisement charges	2,500
Stationary charges	1,000
Total	307,982

5-3-3 Outline of Project Site

The city of Abbottabad, where the proposed site of the teacher training college is situated, is the administrative centre of the Hazara Division and has a population of approximately 220,000 (1981). It is located approximately 50 km in a straight line to the north of Islamabad, the capital of Pakistan. It occupies an important position on the Karakoram Highway, which leads to Gilgit. By road, it is approximately 130 km, or 3 hours' drive, from Islamabad and 190 km, or 4 hours' drive, from Peshawar. Its latitude is 34°09' north and longitude 73°12' east. Its elevation is around 1,220 m.

The weather in Abbottabad is relatively cool in summer with a maximum temperature of around 30°C, making this a summer resort, and cold in winter with snowfalls sometimes reaching around 15 cm and the temperature occasionally descending below freezing point. The annual rainfall is 1,100 mm and concentrated rainfall is sometimes observed during the monsoon season.

The city of Abbottabad is situated in a wide valley surrounded by hills, and newly developed urban areas are to be found centring around the army camp and the Piffer Mosque to the north of the old city. The principal industries here are forestry and agriculture, the area being a source of fresh vegetables for the large cities to the south, as well as producing wheat and potatoes. There are also copper and phosphate mines in the vicinity.

The proposed site for the college is situated on a slope approximately 1 km to the west from a point on the Karakoram Highway 6 km north of the centre of Abbottabad. The site is to be found at the back of the Government Degree College, where an area of 25 *kanal* (approx. 12,500 m²) has been allocated for this project out of a 79 *kanal* tract of unused government-owned land.

Also to be found near the project site are such institutions as the International College, Government Vocational Institute, Ayub Medical College, Army Burn Hall College and Pakistan Military Academy, making this whole area an educational zone. While the project site is set back from the main road, the isolated location is in fact suitable for a girls' college in view of the local social customs. There is a fine view of the surrounding area from the project site, providing suitable environmental conditions for an educational institution.

Although the site provides rather difficult construction conditions, being a narrow strip of sloping ground requiring levelling and with small valleys to the north and south, it is possible to draw up a design that takes advantage of the slopes.

As regards the urban utilities, power can be supplied from the high-tension cables passing to the north of the project site, while the gas mains reach a point 400 m away from the site on the road in front of the Government Degree College. There are no water supply and sewage works in the vicinity and the neighbouring institutions rely on wells. Under the present project too, water will be supplied from tube wells and sewage will be disposed of by the seepage method.

5-3-4 Outline of Facilities and Equipment

As has been discussed in Section 2-4, the facilities requested for the teacher training college were as follows.

Teaching facilities: classrooms (× 7), laboratories (× 3), library, multi-purpose hall, gallery, principal's office, instructors' room, administration staff room, meeting room etc.

Accommodation facilities: hostel for students (dormitories, common room, dining hall, dispensary, warden's room etc.), accommodation for instructors, accommodation

for staff

Equipment: furniture (blackboards, desks, chairs, cabinets, beds etc.), teaching materials for mathematics and sciences, physical education equipment, books, audiovisual equipment, clerical equipment, utensils for students' hostel etc.

(1) Teaching Facilities

The teaching facilities requested assumed the accommodation of 200 students in four classes of fifty, fifty being the standard class size at the existing teacher training colleges. When the importance of teacher training is taken into account, however, it is thought more expedient to reduce the class size to forty to allow more effective instruction. (The standard class size in Japan, even at secondary schools, is forty or less.) The proposed college will, therefore, be provided with five classrooms for forty students each, and an additional classrooms for optional subjects, adding up to a total of six classrooms. Laboratories will be provided for chemistry, biology and physics, with their sizes corresponding to the above-mentioned class size, and other rooms too will be provided at need. The multi-purpose hall will be provided with the functions holding lectures, assemblies and ceremonies, as well as being used as an indoor sports hall. It will also be used for examinations and audiovisual classes. The floor areas of the other rooms too will be determined in accordance with the planning scales. (See Section 6-2-2 for details.)

(2) Accommodation Facilities

The provision of accommodation facilities will be indispensable for a teacher training college for female students. This is because the social customs in Pakistan (*purdah*) do not, in principle, allow unmarried girls to live away from their parents, necessitating the provision of safe accommodation facilities in cases like that under the present project, and the existing teacher training colleges for females have all, in fact, been provided with such hostels.

The figures at the teacher training college for females in Mansehra, the district adjoining Abbottabad, will be used for reference here in the estimation of the required hostel capacity at the proposed college. As shown in the table below, of the 108 students from within the Mansehra District, 72, or two-thirds, are accommodated in the hostel. While there are, in fact, more students who have applied for accommodation in the hostel, because their homes, though within the district, are rather far from the college and because of the difficulties in commuting, it has not been possible to accommodate all the applicants as the hostel has a capacity for only 200. With a view to raising the efficiency of the training including extra-curricular activities, the policy today at teacher training colleges is to have all the students staying in the hostels and expansion of the hostel capacity is either under implementation or planning at other teacher training colleges.

Of the 200 students at the proposed college, 110 are expected to come from Abbottabad District and 90 from Haripur District. If the actual ratio of two-thirds at Mansehra is applied without modification and it is assumed that two-thirds of the students from Abbottabad and all the students from Haripur are to be accommodated in the hostel, the capacity required will be 163.

In view of the above considerations, it has been decided that the hostel should be provided with a capacity for 160 students, with possibilities for future extension.

Teacher Training College for Females (Mansehra):

Numbers of Students and Students in Hostel Accommodation according to Districts of Origin (Feb. 1994)

District	PTC	CT	DM	Total	Students in hostel
Abbottabad	60	20	8	88	64
Haripur	50	15	8	73	58
Mansehra	80	20	8	108	72
Kohistan	10	-	-	10	-
Peshawar	-	-	2	2	-
Nowshera	-	-	8	8	-
Charsadda	-	-	6	6	6
Total	200	55	40	295	200

Note - DM: Drawing mistress course

Source: NWFP Education Department

The hostel dining room will be provided with a capacity for 80, assuming an average of two sittings, and the hostel will be provided with other necessary rooms. The accommodation for the instructors and other members of staff, as items not used directly by the students, is excluded from the scope of the grant aid cooperation and is included among the items whose costs are to be borne by the Pakistani Government.

(3) Equipment

Of the items of equipment requested, furniture items, such as blackboards, desks, chairs, cabinets and beds, are items which are indispensable for the functioning of the college and its hostel. For the teaching materials and audiovisual equipment, those items that are useful and usable will be provided, while the clerical equipment and hostel utensils provided will be limited to those items that are basic and indispensable for the operation of the facilities. Minor items which can be procured in Pakistan will be borne by the Pakistani Government. Books fall outside the scope of grant aid cooperation. Vehicles will be provided for transportation of the students for teaching practice.

5-3-5 Maintenance and Management Plan

Of the costs of maintenance and management, the power and gas charges have been included among the annual running costs given in Section 5-3-2. Test calculations conducted using the Basic Design indicate that the annual power consumption will be approximately 80,000 kWh. Since the unit electricity charge in the area is Rs. 1.7/kWh, the annual electricity charges will be approximately Rs. 136,000, which is greatly in excess of the costs originally envisaged. Gas will be used mainly for heating in the hostel block, heating the water for showers (winter) and cooking in the kitchen. According to test calculations, the volume of gas used annually will be 54,000 m³, the charge for which, at Rs. 1.98/m³, will be approximately Rs. 106,000. This figure, too, is well in excess of the original estimate and calls for a revision.

5-4 Technical Cooperation

A major problem in NWFP is the low quality of primary school teachers, a situation calling for an urgent improvement of the programme at the teacher training college. At the same time, the manner in which the classes are conducted at primary schools in Pakistan has not moved beyond the traditional format of all-in-one classes conducted by the teachers and learning takes the form mainly of memorisation and rote-learning. While this is due partly to the lack of teaching materials other than the textbooks, it will be desirable, besides making effective use of the teaching materials provided, to consider the adoption of more efficient learning methods, such as group learning. Success in this respect, however, cannot be hoped for unless the teachers themselves are given the necessary experience. For this reason, investigations ought to be made in future on the implementation of assistance, in the form of technical cooperation, aimed at the improvement of the quality of the teachers in the primary education sector, including the introduction of new teaching methods.

Chapter 6 Teacher Training College: Basic Design

6-1 Design Policies

While the conditions of primary education have a great influence in the formation of the personalities, the greatest part in this process is played by the teachers. The qualities and abilities of the teachers, in other words, are major factors determining the future of the children taught by them. It is extremely important therefore to train and provide the best teachers possible, and the facilities and equipment at the college for training these teachers must be in accord with such aspirations. As well as ensuring a design that is in harmony with the surrounding environment with a large number of educational institutions and with the conditions of the site on sloping ground with a hill at its back, a solid and elegant design suitable for a teacher training college will be aimed at.

The college facilities and equipment will be designed under the basic concepts outlined above, with considerations on the following points.

1. Natural Conditions

The architectural specifications must accord with the climatic conditions of the project area. Special care will be required over the heat insulation performance of the walls and roofs in view of the large yearly and daily temperature variation.

2. Social Conditions

The facilities must be in accord with the local customs and religious practices. As a consideration for the female students, measures will be taken to prevent people peeping into the college facilities from the outside.

3. Building Conditions

While there is no equivalent of the Building Standard Law in Pakistan, the standards whose use is encouraged by the Karachi and Islamabad Development Authorities (KDA and IDA) will be referred to.

4. Use of Local Construction Firms and Materials

Since there are a number of construction firms in Islamabad with considerable resources and mobility, which have had the experience of participating in Japanese grant aid projects in the past as subcontractors, the subcontractors for the project can be selected from among these firms. While there are no problems in procuring the majority of the materials in the host country, some items that are not available or are available only at an inferior quality, will be procured in Japan.

5. Design Level of Facilities

The layout of the facilities will be determined with considerations on the shape of the site, the lie of the land and the road and surrounding conditions. While the standards generally in use in the host country will be referred to for determining the design levels, care should be taken here to ensure adequate strengths and durability, as well as over the facility and cost of maintenance and availability of the spares and expendables. Care will also be taken to ensure that the waste water from the college etc. do not provide sources of pollution.

6. Design Level of Equipment

For the teaching materials, audiovisual equipment and clerical and administration equipment, only those items which are not available in the host country, for which major benefits can be derived from the use of high-quality products made in Japan and which are suited to the actual

conditions of use will be provided as grant aid items. For the furniture and utensils, only those basic items which are indispensable for the functioning of the college will be provided, and, with the exception of specialised items, these will be procured in the host country and care will be taken to select solid and durable products.

6-2 Basic Design of Buildings

6-2-1 Site Layout and Exterior Plans

Besides the design conditions given in Section 5-3-3, it has been found through a hearing survey at the proposed site that the direction of the prevailing wind here is from north to south, that there is no need for air-conditioning in the summer, and the sun shining in from the west is not so strong, and that the windows should ideally be made to face east to make use of the morning sun for heating in winter.

The results of the site survey conducted by a local consultant are given on appended sheets. The land dips due eastwards, and there is a height difference of 28 m within the project site. There are several private houses further up-slope from the top of the site. The site has a length of approximately 300 m (east-west) and, while its maximum width (north-south) is around 80 m, the effective usable width is reduced by the presence of the steep slopes and collapses descending towards the valleys to the north and south of the site.

While there are three terraced areas within the site, since the planned facilities are divided into the three blocks of the college building (consisting of the administrative rooms and classrooms), the hostel block (students' hostel) and the sports ground, it has been decided that one should allocate these three blocks to the three terraces, placing the sports ground at the bottom, the college building in the middle and the hostel at the top. The movement of soil for grading of each terrace will be kept to a minimum and the excess soil will be disposed of within the project site. The use of retaining walls too will be kept to a minimum. In the layout planning, care will be taken to position the buildings on cut soil. The accommodation facilities for the instructors and other members of staff (to be constructed by the Pakistani Government) will be positioned in the topmost part of project site. The sports ground, on the bottom terrace, will be approximately 60 m by 40 m.

In line with the above basic concepts, the main gate from the existing road will be made to enter the open space between the college building and the hostel block (see site layout plan). For facility of management and safety, access to the hostel block will be provided only from the open space. However a separate gate for the hostel block will also be provided for delivery of heavy materials.

The open space will be paved with concrete, with the exception of a circle in the middle for vegetation centring around a flagpole. The only other parts to be paved are the approach to the hostel block and the berms around the buildings. The vegetation will be provided by the Pakistani Government. The excess soil will be transferred to hollows to create flat areas for recreation etc. The construction of the sports facilities (tennis courts etc.) will be implemented as required by the Pakistani Government. An elevated water tank will be constructed in the northwestern part of the hostel block. The minimum fencing necessary will be provided around the facilities, as this is indispensable for the purpose of management and ensuring the safety of the female students. The fencing will consist of brick walls. The area enclosed by the fencing will be approximately 10,500 m² (21 *kanal*).

6-2-2 Building Plan

(1) Floor Plan

The buildings will have to be a given compact planar configurations, if, as mentioned in the preceding section, these buildings are to be constructed on cut soil after grading the terraced areas which are not very large.

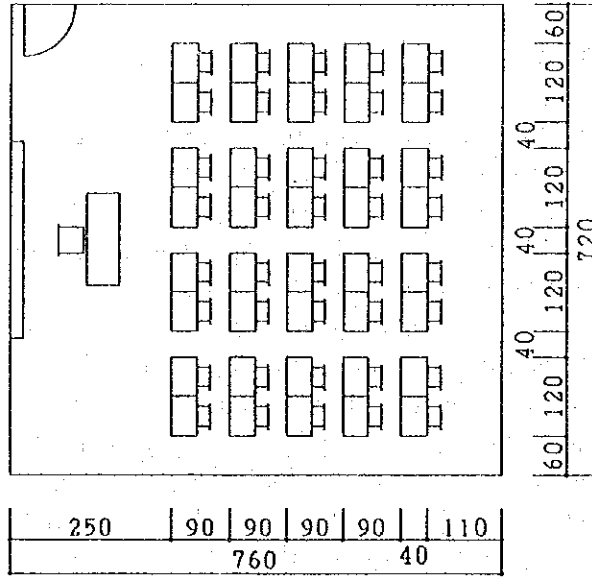
The college and hostel buildings at Mansehra and Mardan (under construction), which are teacher training colleges in NWFP constructed according to the recent design standards, are rectangular buildings with one (college) and two (hostel) courtyards in the middle. While the courtyards are surrounded by open galleries, the windows on the exterior are not very large. This is particularly so in the case of the hostel buildings, where the rooms facing the outside have only small "clerestory" type windows. While this prevents people looking into the rooms, it also means that there is no view of the outside from the rooms. This "defensive" style, thought to be a reflection of the considerations for female students, will also be adopted under the present project.

The college building will be a three-storey rectangular building surrounding a courtyard. The laboratories, where water will be used, will be positioned on the ground floor and the ordinary classrooms will be located facing east on the first and second floors. The hostel block too will be constructed around a courtyard surrounded by a gallery. Rather than being a square-shaped building, it is better described as consisting of two long two-storey buildings facing each other, with the communal parts (dining room, common room etc.) positioned on the extra bottom storey in the lower part facing the college building.

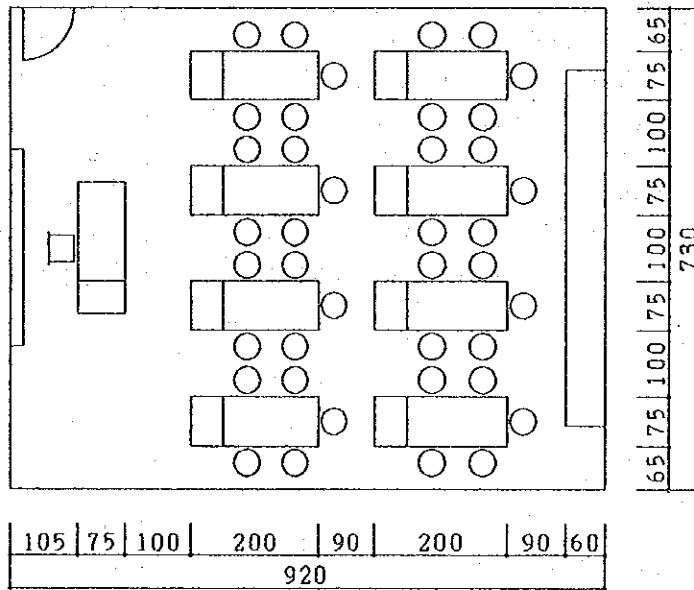
The functions and floor areas of each room and the factors used in the calculation of the room areas are given in the tables on the following pages.

Layout of Furniture in Main Rooms

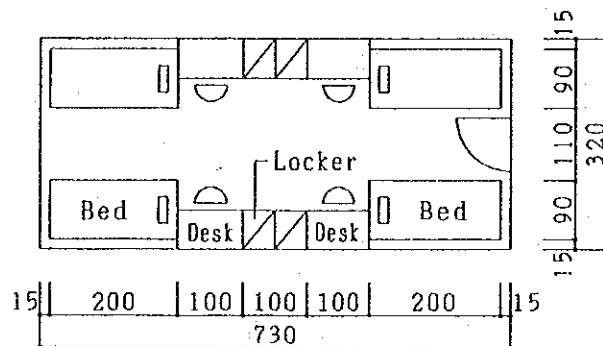
Classroom



Laboratory



Dormitory



Functions and Areas of Rooms (College Building 1)

Name of room	Number of rooms	Functions and users	Requested area (or area at a similar institution)	Design standard	Basis for area calculation	Design area	
						Total area	Remarks
Administration staff room	1	Desk work 1 assist officer, 1 senior clerk; waiting room for 1 driver and visitors	22.30	5 to 10 m ² /person	6 m ² /person, 6 m ² as waiting space for visitors; total of approx. 24 m ²	27.36	Effective area: 24.35 m ²
Principal's office	1	Desk work by the principal; reception for visitors	20.81	(the size of a small conference room)	12 m ² for reception of visitors, 10 m ² for office	24.77	Effective area: 22.17 m ²
Stenographer's room	1	Desk work 1 stenographer waiting room for 1 janitor	8.18	5 to 10 m ² /person	6 m ² /person, allowance for an access to record room	16.51	Effective area: 14.48 m ²
Records room	1	Storage of documents and records	14.86		Requested area judged appropriate from existing facilities	16.51	Effective area: 14.48 m ²
Instructors' room	1	Desk work and waiting room by 12 instructors	46.45	5 to 10 m ² /person	Requested area rather small but all the instructors rest always in the room at once	50.93	
Classrooms	6	Each for 40 students; (5 for compulsory subjects, 1 for optional subjects)	46.45 × 7 = 325.15	≥ 1.365 m ² /person (effective internal area)	Based on minimum layout standards for desks and chairs at high schools; approx. 1.4 m ² /person (Layout drawing on the following page)	371.76	61.96 m ² (average) × 6 Effective area (per room): approx. 56.6 m ²
Laboratories	3	For chemistry, biology and physics; each for 40 students	69.68 × 3 = 209.04		From layout of furniture (8 laboratory tables, 3 observation desks); effective area: approx. 1.65 m ² /person (Layout drawing on the following page)	228.45	76.16 m ² (average) × 3 Effective area: approx. 67.5 m ²
Preparation rooms	3	One for each laboratory; storage of experimental materials	6.96 × 3 = 17.85		Approx. 20 m ² for each room	69.07	19.69 m ² × 3
Gallery	1	Display of works by the students	69.68		Requested area judged appropriate from existing facilities	74.66	Effective area: 69.48 m ²
Multi-purpose hall	1	For lectures and assemblies; maximum capacity: 250 (200 students, 20 teaching staff, 30 visitors)	260.13	0.5 to 0.6 m ² /person (high school standard)	Capacity for 350 in the request considered excessive; 40 m ² for stage, assembly space determined in accordance with the standard	195.59	Effective area: 187.55 m ²
Green room	1	Waiting room for speakers and projectionist, storage of AV equipment	11.15		2 m ² /person as waiting space for speakers, 7 m ² for projectionist and 12 m ² storage of AV equipment	28.77	Effective area: 25.29 m ²
Library	1	Storage and perusal of books and study for 50 students	69.68	2 to 3 m ² /person	Requested area too small for 50 students; minimum standard 2 m ² for perusal	101.64	
Prayer room	1	Worship by students and staff; capacity 50 persons	69.68		Approx. 1 m ² /person for prayers in Islam	54.71	Effective area: 50.15 m ²
Meeting room	1	Meetings between staff and with outsiders; group counselling of students; capacity 30 persons	74.32	2 to 3 m ² /person (small conference room)	2.5 m ² /person × 30 = 75 m ²	74.66	
Kettle room	1	For staff and visitors	Unspecified (7.63 at a similar institution)		4 m ² as minimum area from equipment layout	4.53	
Stores	4	Stores by multi-purpose hall and green room for storage of fold-up chairs and indoor sports equipment; stores under stairways for outdoor sports equipment, gardening equipment etc.	Unspecified (20.60 at a similar institution, excluding the store for storage of furnishings for the multi-purpose hall)		Approx. 30 m ² allocated for stores for multi-purpose hall (for fold-up chairs, table tennis table etc.), and 15 m ² for others	45.52	Total of stores by multi-purpose hall: 29.29 m ² Total of stores under stairs: 16.23 m ²

Functions and Areas of Rooms (College Building 2)

Name of room	Number of rooms	Functions and users	Requested area (or area at a similar institution)	Design standard	Basis for area calculation	Design area	
						Total area	Remarks
Toilets	7	One on each floor for students (× 3); four stall toilets for staff; visitors to use staff toilets	30.56 for students' toilets, staff toilets unspecified	5 closets and 2 hand basins per 100 female students	5 closets and 2 hand basins provided on each floor for 100 students approx. 30 m ² for each toilet; 4 m ² for each staff toilet	111.75	Students': 31.48 m ² × 3 Staff: 4.3 m ² (average) × 4
Entrance hall	1	Front entrance hall for the college building	Unspecified (53.84 at a similar institution)	Approx. 20 to 25% of total as space including passage, stairs etc.	Space at the similar institution judged appropriate	24.34	Total area: 540.40 m ² (approx. 26.7% of total floor area)
Sub-entrance	1	Access from the college building to the sports ground	Unspecified (8.83 at a similar institution)			8.12	
Corridors	—	Communal passageways	Unspecified (372.08 [approx. 21% of total floor area] at a similar one-storeyed building)			367.72	
Staircases	2	Connection between floors	(no staircases, the similar institution being one-storeyed)			140.22	
		(*Other rooms requested) —Visitor's room —Harbarium —Preparation room for Harbarium —Garage (for 4 medium-sized vehicles)	20.81 69.68 12.08 approx. 100.00		The visitor's room to be included in the principal's office; the other three rooms judged unnecessary from the conditions at existing institutions		
Total floor area (college building)			Requested area (estimated): 2,200 m ²			2,027,59 m ²	

Functions and Areas of Rooms (Hostel Block)

Name of room	Number of rooms	Functions and users	Requested area (or area at a similar institution)	Design standard	Basis for area calculation	Design area	
						Total area	Remarks
Warden's office	1	Desk work by warden, waiting room by assistant	16.35	5 to 10 m ² /person	Requested area judged appropriate from existing facilities	16.79	
Warden's room	1	Bedroom for warden	19.32	20 m ² for 200 students	Approx. 20 m ² (including attached toilet)	16.77	Area including warden's toilet: 21.77 m ²
Dispensary	1	First aid of injuries and illness, counselling on health; to be staffed by warden	26.76	20 m ² for 200 students	Requested area to be adopted more or less, on the basis of existing facilities	26.70	Effective area: 24.00 m ²
Common room	1	Rest and communication between hostel residents; capacity 25% (40) of hostel residents	64.66	approx. 2 m ² /person	A value slight lower than the standasrd judged adequate from existing facilities; 1.6 m ² /person	68.92	Effective area: 64.06 m ²
Dormitories	40	Bedrooms for hostel residents; to accommodate 80% (160) of the college students; 4 persons per room	23.78 × 57 = 1,365.46	≥ 5 m ² /person	4 m ² /person, based on minimum layout standard for beds, desks and other furniture (layout drawing on the following page)	1,112.16	27.80 m ² (average) × 40 rooms Effective area (average): approx. 24.0 m ² /room
Dining room	1	Dining for hostel residents; capacity 50% (80) of the residents, assuming two sittings at each meal	197.63	1.2 to 2.0 m ² /person	1.25 m ² /persons	100.54	
Kitchen	1	Cooking space attached to the dining room	46.08	30 to 40% of dining room area	Requested area to be adopted more or less, on the basis of existing facilities	52.12	Effective area: 48.05
Food store	1	Storage space for food	17.84		Requested area to be adopted more or less, on the basis of existing facilities	19.21	Effective area: 16.84 m ²
Store	1	Storage of panel heaters for dormitories and other furnishings	23.78		20 m ² on the basis of the expected storage materials	21.77	Effective area: 19.29 m ²
Boiler room	1	Gas boilers for supplying hot water to shower rooms and ancillary equipment	Unspecified	approx. 1.6% of total floor area	Approx. 35 m ² from layout of the equipment	37.06	
Toilets	6	One on the ground floor and two each on the upper floors for students, and one stall toilet for warden	23.78 × 4 = 95.12	3 closets and 2 hand basins per 30 female hostel residents	Ground floor toilet to have same specifications as college building toilets (5 closets and 2 hand basin for 100 students: first and second floor toilets to have 4 closets and 2 hand basins each for 40 students, 5 m ² for warden's toilet and a shower	120.59	Students' toilets: 27.67 m ² × 1 + 21.98 m ² × 4 = 115.59 m ² Warden's toilet: 5.0 m ² × 1
Shower rooms	4	Fface-washing, bathing and laundry of hostel residents; as with the toilets, located on each dormitory floor in each wing	(Unspecified, 20 shower booths requested)	(no applicable standards for shower rooms)	Request envisaged each booth by 10 students would mean total bathing time at least 2 hours, too long; each shower by 8 students assumed here and 20 booths to be provided (5 on each floor in each wing); approx. 25 m ² for each including changing space, laundry basins etc.	111.96	27.99 (average) × 4 Effective area (average): 25.7 m ² /room
Entrance hall	1	Front entrance to hostel block	Unspecified (43.06 at a similar institution)		An area approximately a half of that at existing facilities judged appropriate, to facilitate monitoring of incomers by the warden	21.77	
Corridors	—	Communal passageways	Unspecified (838.81 at a similar institution)	Approx. 20 to 25% of total as space including passage, stairs etc.	Corridors to take the form of galleries around courtyards; layout of corridors and stairs to allow emergency escape in two direction	333.58	Total area: 540.60 m ² (approx. 23.9% of total floor area)
Staircases	2	For connection between floors	Unspecified (196.26 at a similar institution)			185.25	
Pipe shafts	4	For installation of piping for toilets and shower rooms	Unspecified		Approx. 7 m ² on each floor	13.68	
Total floor area (hostel block)			Requested area (estimated): 3,104 m ²			2,258.87 m ²	

(2) Sectional Plan

The outstanding feature in the sectional planning is the shape of the roofs. On the college building, the interrelationship between the wings is made clear through a direct and simple expression provided by the shed roofs, creating a state of tension. On the hostel block too, the basic composition is that of long wings with shed roofs facing each other, which serve to emphasise the integrity of the building surrounding a courtyard. A continuous big gable roof has been provided on the eastern front of the hostel block to give a sense of welcome for the hostel residents entering the building.

The ground on which the college building is to be built will be positioned 4 m above the sports ground. The ground floor will be raised 30 cm above the ground and the height of each storey will be 3.5 m. The classrooms will be provided with sliding windows, while the laboratories and other rooms will be provided with smaller horizontal pivoted windows.

The elevation of the open space in front of the college building will be set approximately 1 m above the ground of the college building. From here, one will descend the stairs in the entrance hall to reach the ground floor.

The hostel block will be constructed as if it were sitting on the sloping ground, at a level 4 m above the open space and a level a further 3 m above this lower level. The height of each storey, will be 3.5 m. To prevent outside people looking in, the outward-facing windows for the dormitories will be provided with grilles made of concrete (*jalli*) which are quite popular in Pakistan.

(3) Structural Plan

As in the case of the structural plans for the primary schools discussed in Section 4-3, a zonal factor of $Z = 3/8$ and a standard shear factor of $C_0 = 0.1$ will be used as the standards for the structural design. The building frame will consist mainly of uniform-span reinforced concrete structures. As the bearing capacity of the ground, according to a survey conducted by a local consultant, is approximately 20 t/m^2 , continuous footings will be used in the main for the foundations. The walls will be brick walls, as if usually the case in Pakistan, the exterior walls being made one-and-a-half brick walls and the interior walls one-brick walls. The floors and roofs will be made of reinforced concrete.

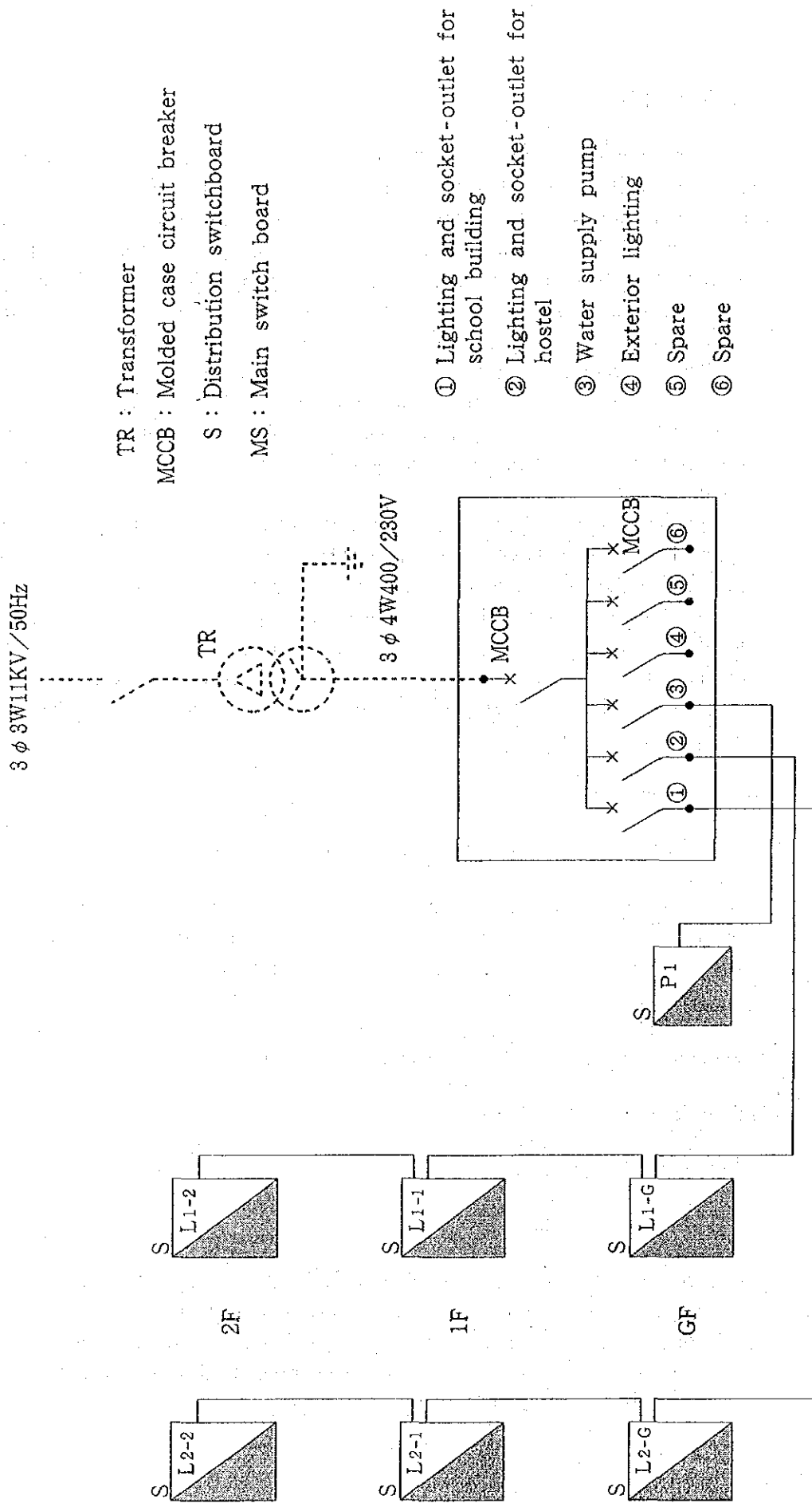
(4) Building Equipment Plan

1) Electrical Installations

a) Power source facilities

Power (3-phase 4-wire, 400/230 V 50 Hz) will be supplied to the college from the high-tension overhead power lines to the north of the project site by an underground cable system via a power transformer. The installation of these facilities are to be implemented by the Pakistani Government. Schematic diagram of electrical installations is shown on the following page.

SCHEMATIC DIAGRAM OF ELECTRICAL INSTALLATIONS



TR : Transformer

MCCB : Molded case circuit breaker

S : Distribution switchboard

MS : Main switch board

- ① Lighting and socket-outlet for school building
- ② Lighting and socket-outlet for hostel
- ③ Water supply pump
- ④ Exterior lighting
- ⑤ Spare
- ⑥ Spare

b) Lighting Installations

Fluorescent lamps, which are superior in terms of the colour rendition of the light produced and economy, will be used in the main as the light sources. The levels of illumination for each room, determined on the basis of the Japan Industrial Standards (JIS) and with reference to the local conditions, will be more or less as follows.

Classrooms, laboratories, gallery, administration office room, instructors' room etc.:	200 to 400 lx
Multi-purpose hall, dining room, kitchen, common room, dormitories:	100 to 200 lx
Corridors, staircases, shower rooms, toilets etc.:	50 to 100 lx

The fluorescent lighting fittings will be of the pipe pendant type in most cases, batten type fittings being used in rooms with false ceilings.

c) Socket Outlets

Besides those for general-purpose use, socket outlets for teaching and heating equipment will be installed as required. The shapes and specifications of these outlets will be those normally used in Pakistan.

d) Loud Speaker System

Wiring for the loud speaker system will be installed at the required positions to allow announcements to be made from the administration staff room to each of the rooms in the college building and the hostel block (excluding the dormitories), corridors and the college grounds.

e) Interphones

Mutual simultaneous transmission interphones will be installed for communication between the principal's office, stenographer's room, instructors' room, administration staff room and warden's office.

f) Telephone Conduit System

Conduits for telephone lines will be laid to the required points in rooms such as the principal's office, stenographer's room, instructors' room, administration staff room and warden's office and the required telephone terminal boxes and outlet boxes will be installed. The laying of the telephone lines and the installation of the telephone sets themselves will be the responsibility of the Pakistani Government.

g) TV Antenna System

The required wiring and apparatus will be installed to allow reception of TV broadcasts in the multi-purpose hall, principal's office and common room via a master antenna.

h) Lightning Protection System

A lightning protection system will be installed on the water tank tower to prevent damage to the buildings by lightnings.

2) Water Supply/Drainage and Sanitary Installations

a) Water Supply Installations

A well will be dug on the project site. The water will be pumped from this well to a grit chamber and then to an elevated water tank (height: 20 m), from which it will be supplied to each instrument via a gravitational water-supply system.

b) Hot Water Installations

Water heated in gas boilers will be supplied to the shower rooms and the kitchen in the hostel block. An electric cooker will be provided in the kettle room for heating for water for making tea etc.

c) Drainage Installations

Ordinary waste water and soil water from the buildings will be drained via separate pipes and ordinary waste water will be made to seep into the ground from leach pits, while soil water will be treated in a septic tank of an appropriate size outside the buildings before being made to seep into the ground.

d) Sanitary Instruments and Installations

The toilets will be provided with sanitary equipment, such as wash basins and closets, as well as accessory items, such as mirrors, toilet racks, and toilet roll holders. Most of the toilets will be Asian-style toilets, but a few will be made Western-style, and water taps will be provided in each booth.

e) Fire-Extinguishing Installations

Fire extinguishers will be installed at strategic points in the kitchen, laboratories and corridors for extinguishing fires in the buildings.

3) Air-Conditioning and Ventilation Installations

a) Heaters

Gas-fired boilers and ventilation convector heaters will be installed in the dormitories, warden's room and warden's office. The principal's office, instructors' room, stenographer's room and administration staff room will be heated by separate electric heaters.

b) Ceiling Fans

Fixed ceiling fans will be installed in the residential rooms (principal's office, instructors' room, stenographer's room, administration staff room, classrooms, laboratories, multi-purpose hall, dining room, common room etc.) for cooling in summer.

c) Mechanical Ventilation Facilities

Mechanical exhaust-type ventilation equipment will be installed in rooms subject to generation of heat, odour, dust and humidity (kitchen, food store, shower rooms, toilets etc.)

(5) Materials and Finish

The specifications for the materials and finish in the principal rooms and parts are given below.

Room/Part	Materials/Finish	Reasons for selection
1. Exterior walls	Brick masonry with sand mortar base, mastic paint finish	Durability and colour effect
2. Roofs	Concrete base, roof tiles on bituminous-membrane waterproofing	Durability and aesthetic design
3. Floors		
a. Ordinary rooms, multi-purpose hall, corridors	Floor paint on steel-troweled concrete base	Dust prevention and colour effect
b. Administrative rooms	Terrazzo	Normal in Pakistan
c. Prayer room	Carpets on steel-troweled concrete base	Religious practice
d. Kitchen, toilets etc.	Mosaic tiles	Waterproofing
e. Stores	Steel-troweled concrete finish	No need for finish materials
4. Walls		
a. Ordinary rooms	Emulsion paint on mortar base	Low-cost and widespread
b. Kitchen, toilets etc.	Tiles	Waterproofing
5. Ceilings		
a. Ordinary rooms	Rock-wool acoustic boards	Sound absorption
b. Toilets and corridors	Calcium silicate boards	Concealment of piping along ceiling

6-2-3 Basic Design Drawings

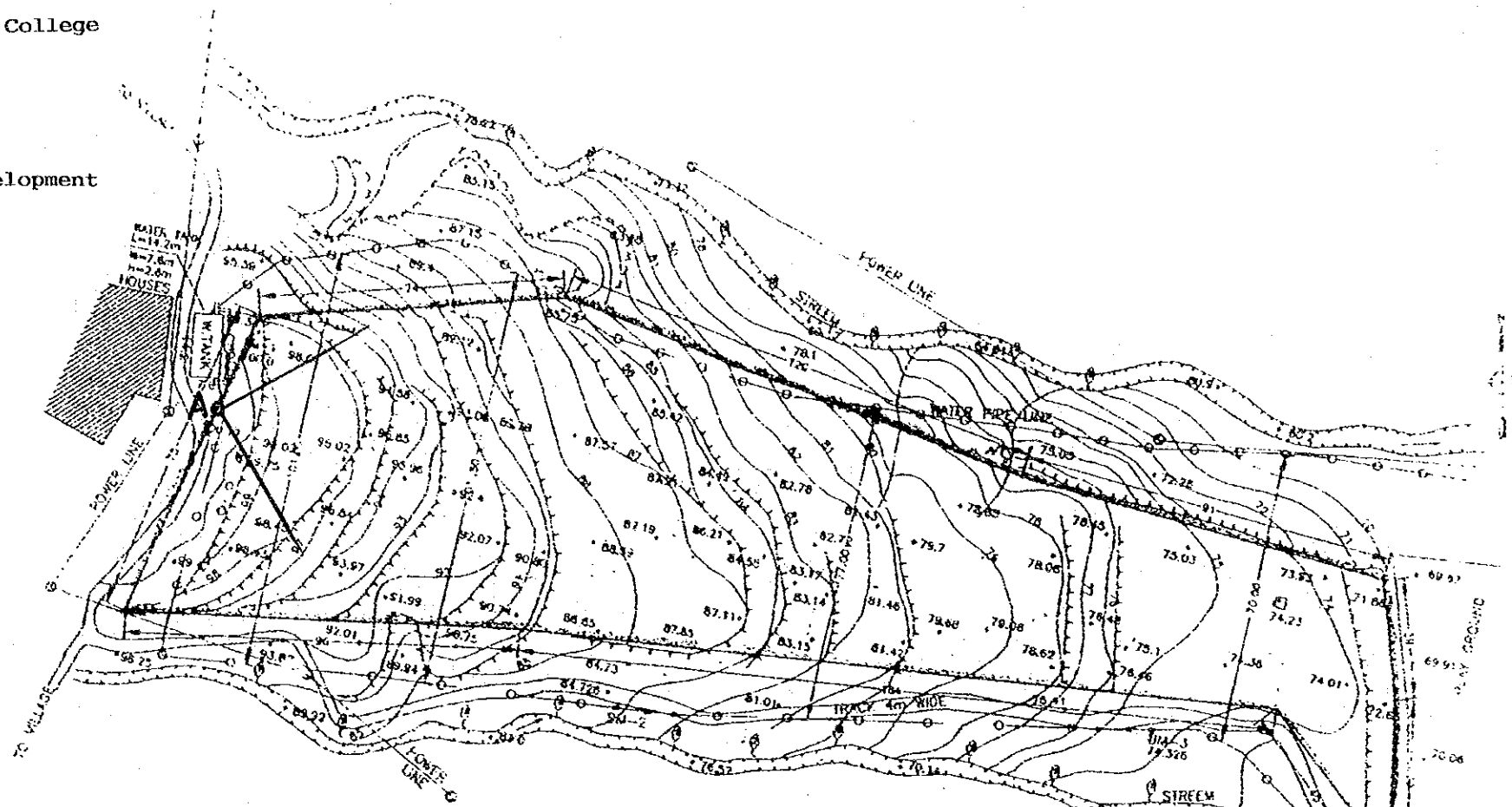
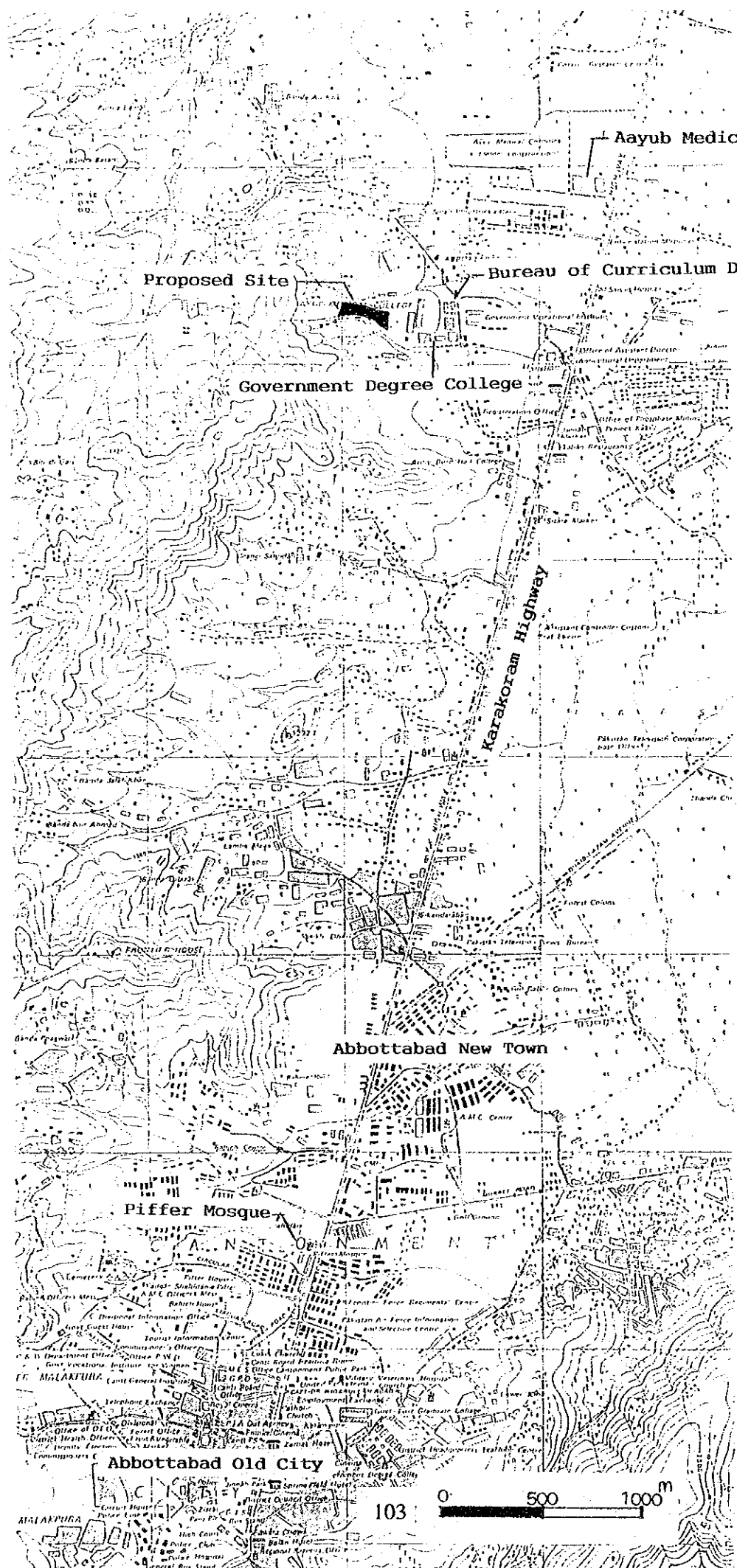
Basic design drawings of the project facilities are shown on the following pages.

Summary of Facilities (total floor area: 4,287 m²)

College building (reinforced concrete, 3 storeys, total floor area: 2,028 m²)

Hostel block (reinforced concrete, 3 storeys, total floor area: 2,259 m²)

Others (well, elevated water tank, pavement, gates, fencing, flagpole etc.)



Location Map and Site Plan

Location Map

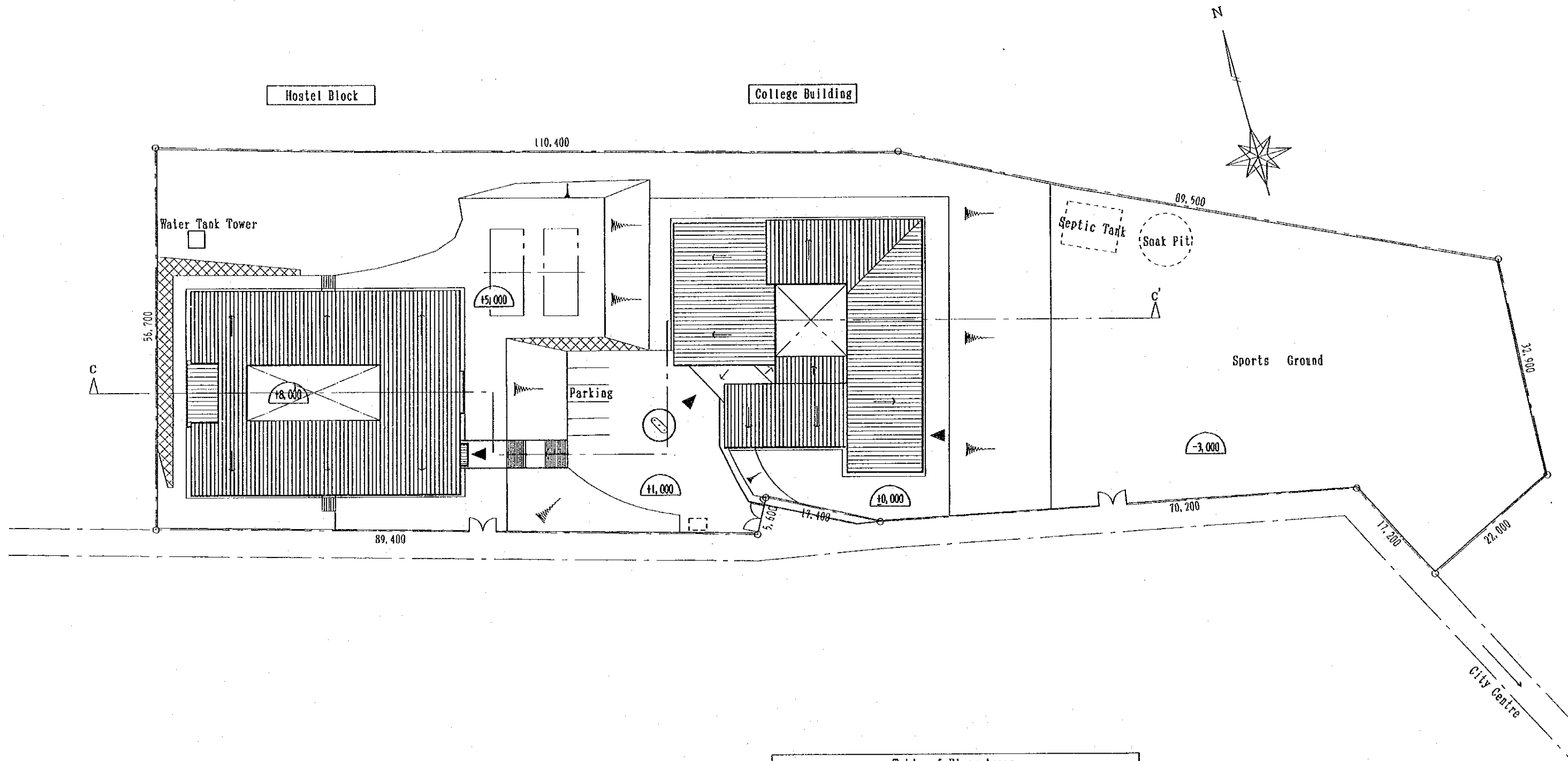
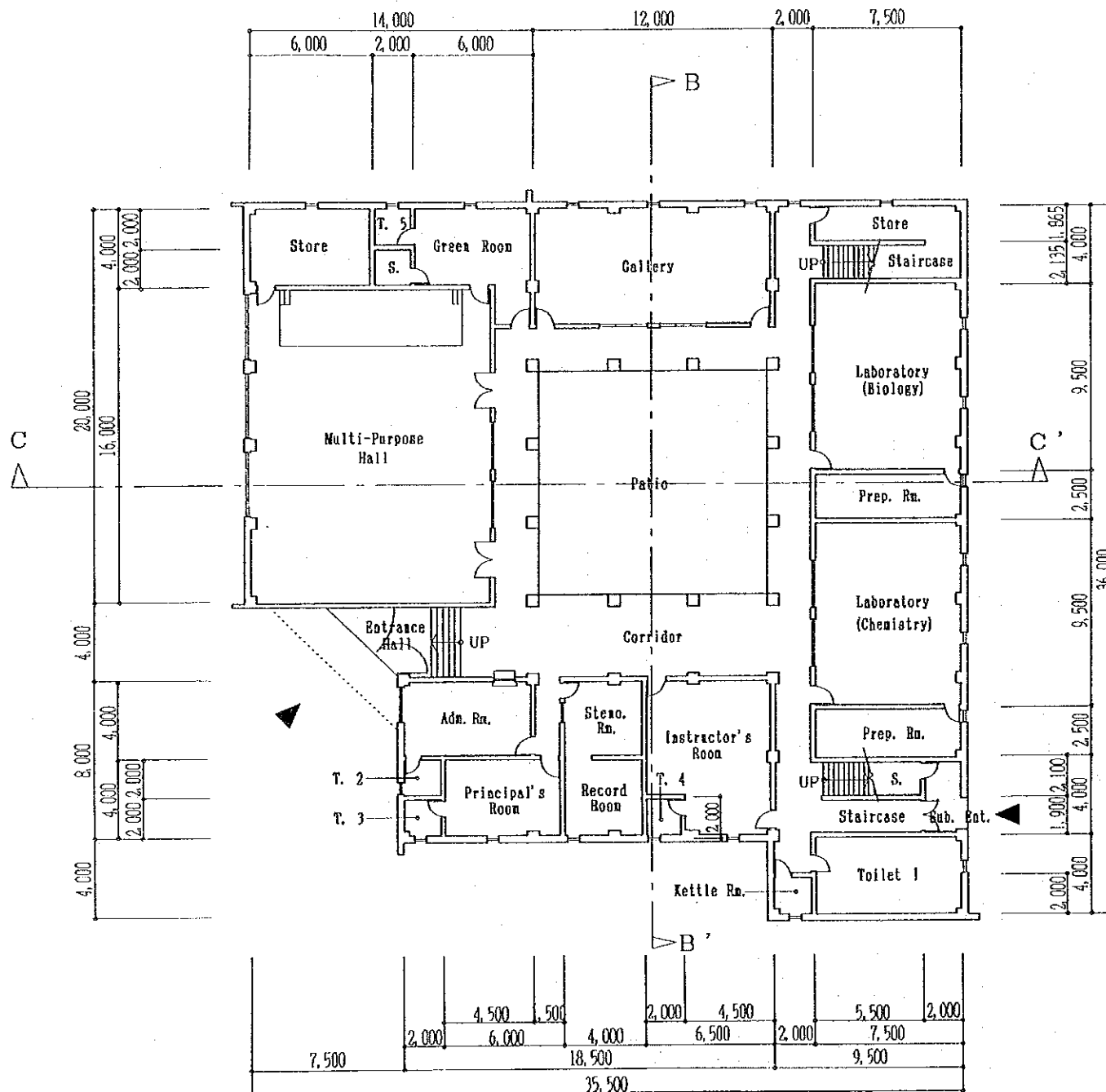
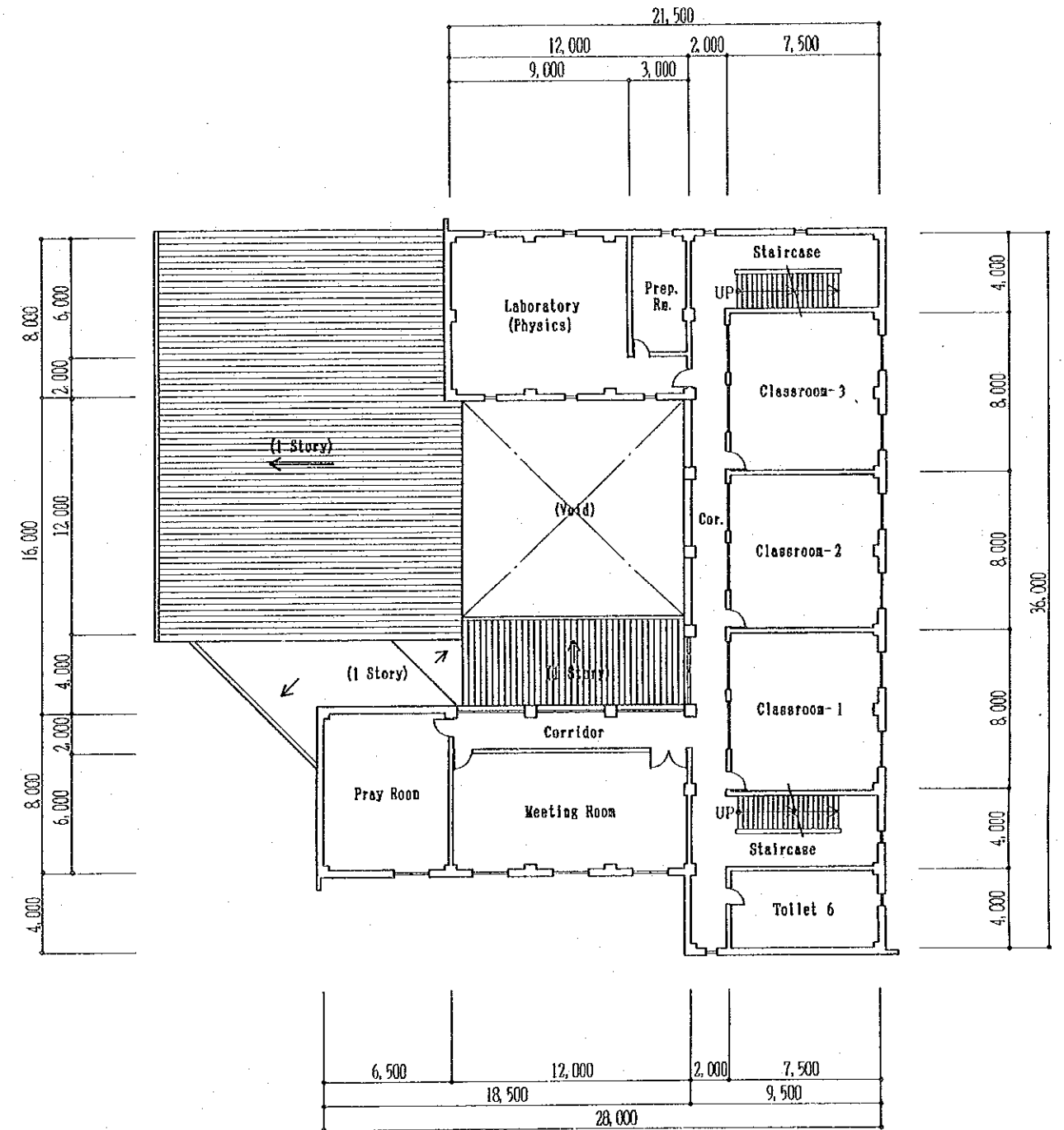


Table of Floor Areas

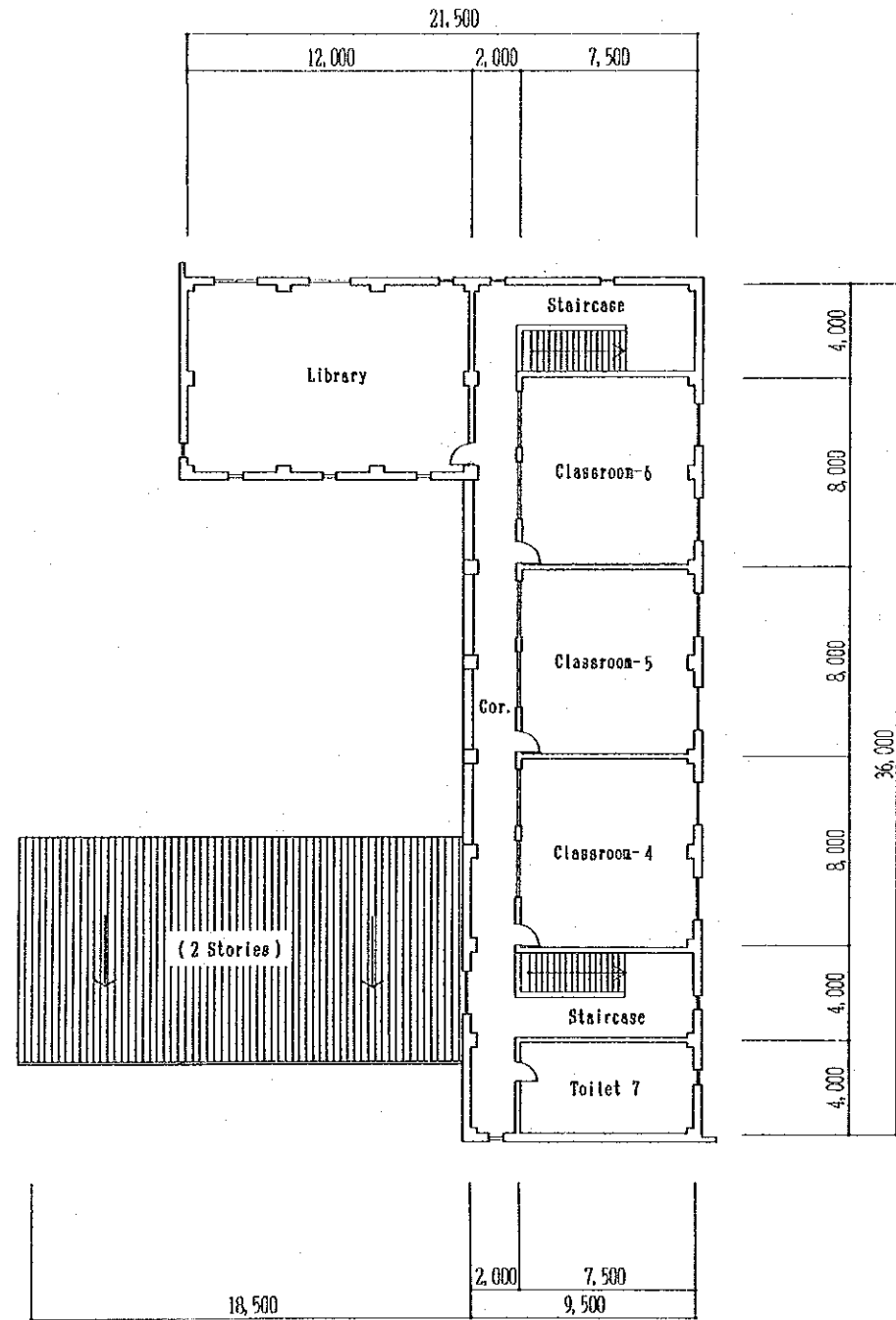
	College Building	Hostel Block	Total
Ground F.	971.38 m ²	445.88 m ²	1,417.26 m ²
1st. F.	604.46 m ²	922.68 m ²	1,527.14 m ²
2nd. F.	451.75 m ²	890.31 m ²	1,342.06 m ²
Total	2,027.59 m²	2,258.87 m²	4,286.46 m²



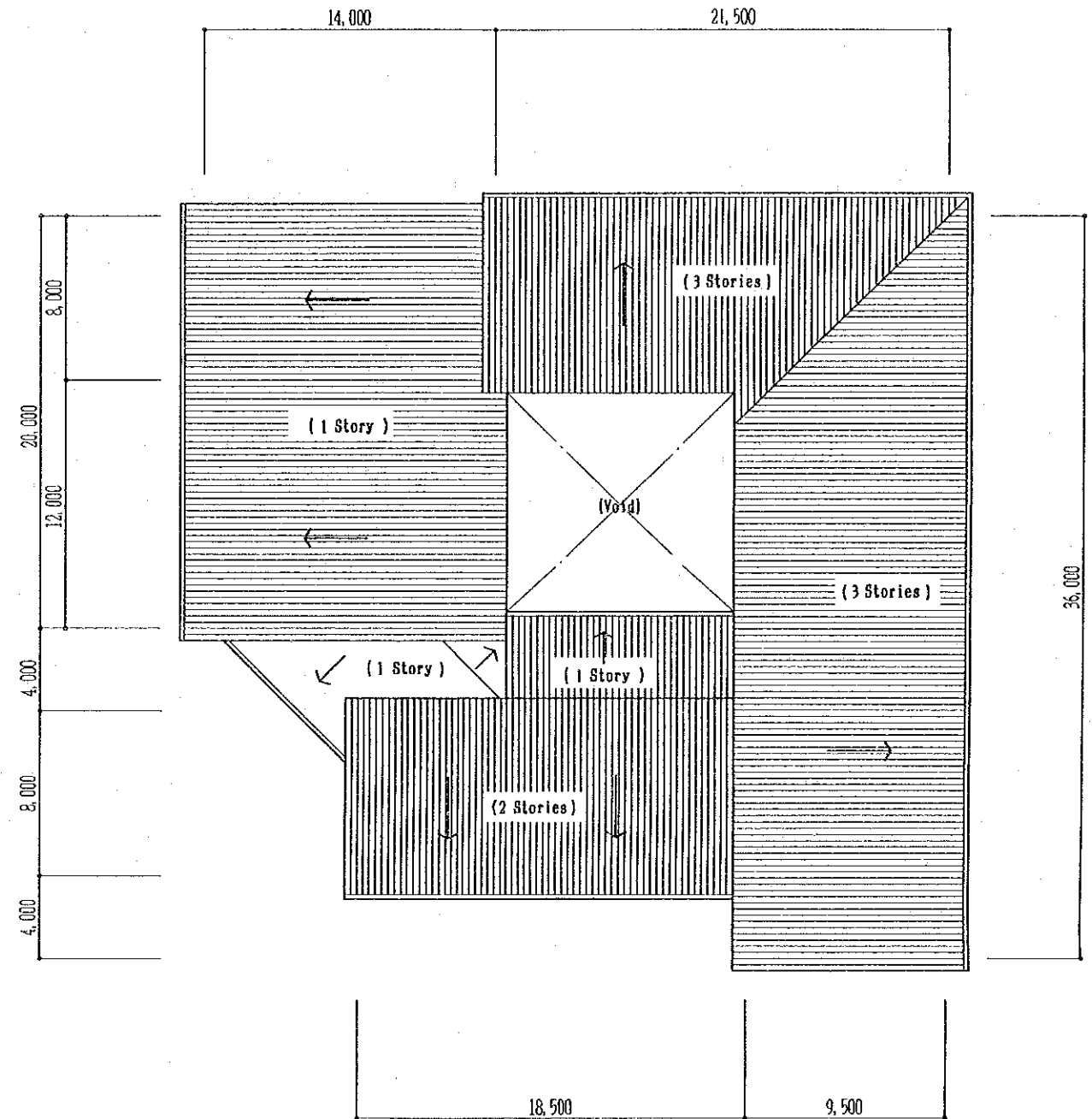
Ground Floor



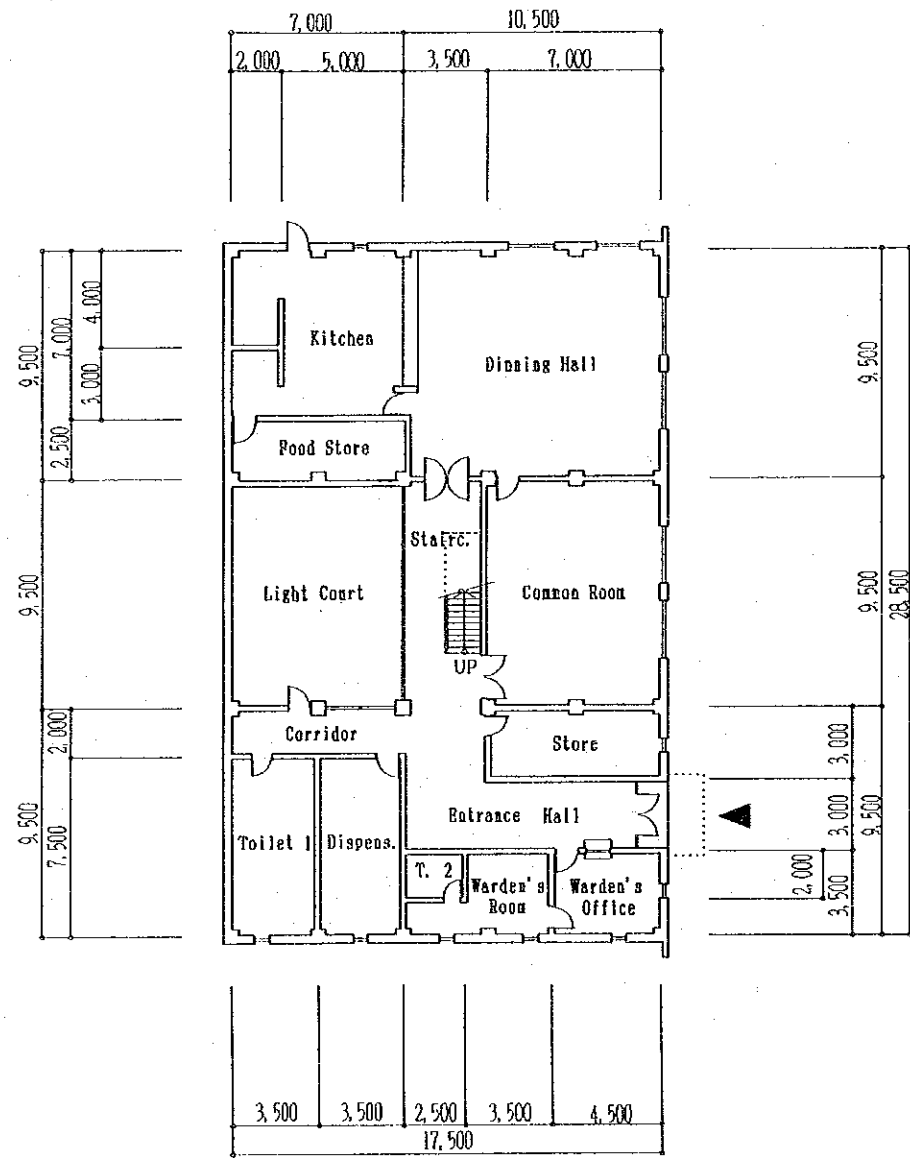
1st Floor



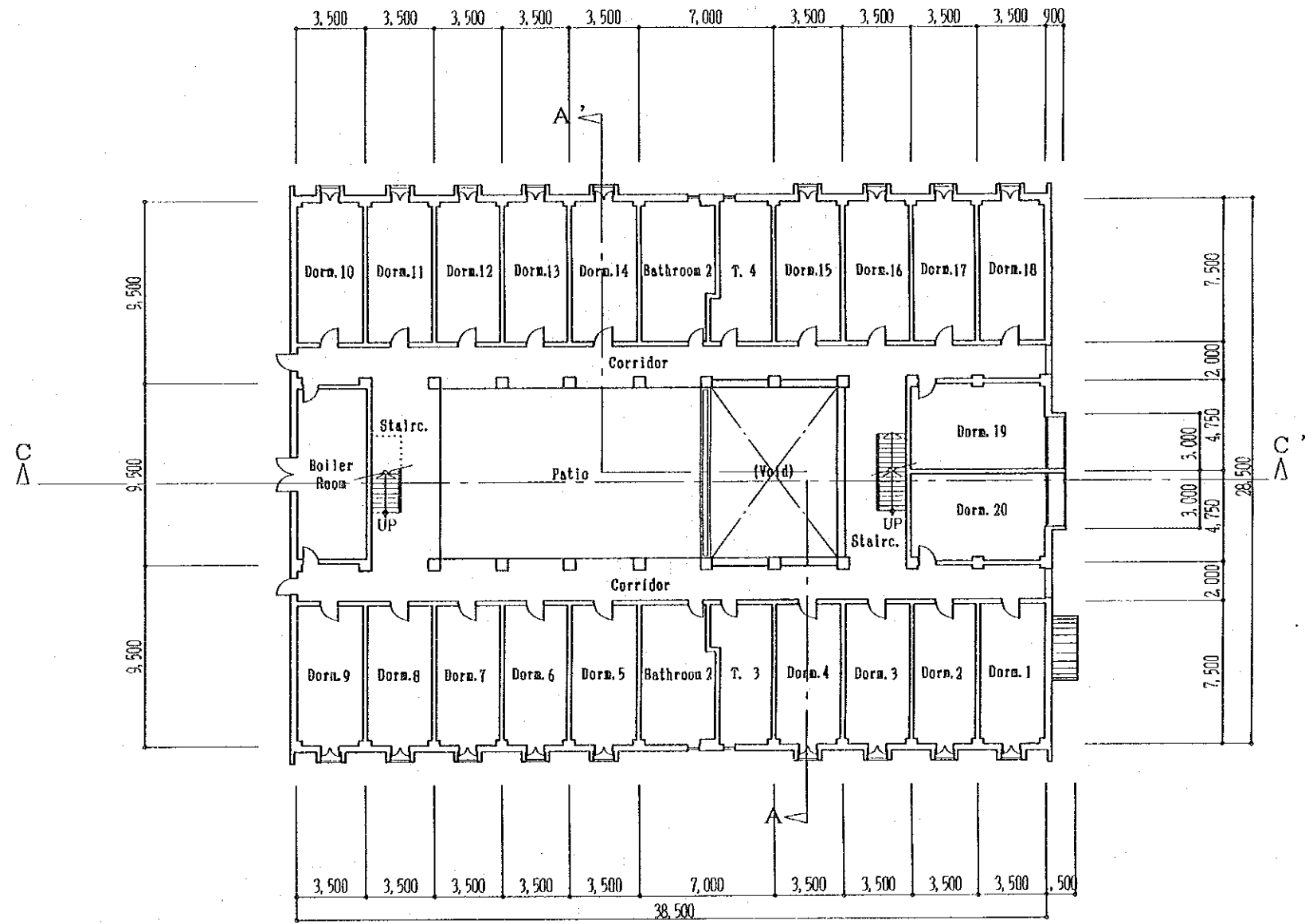
2nd Floor



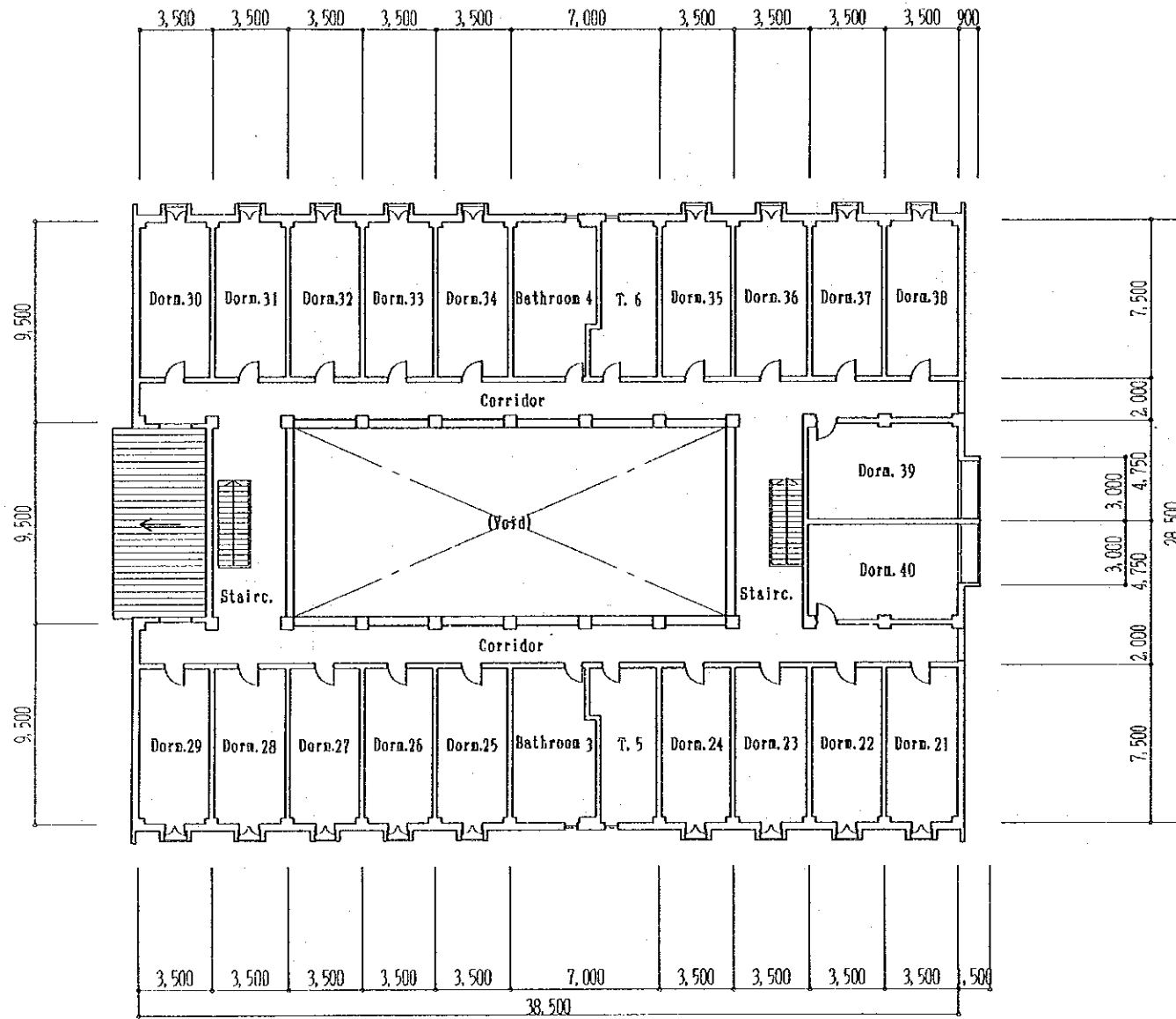
Roof



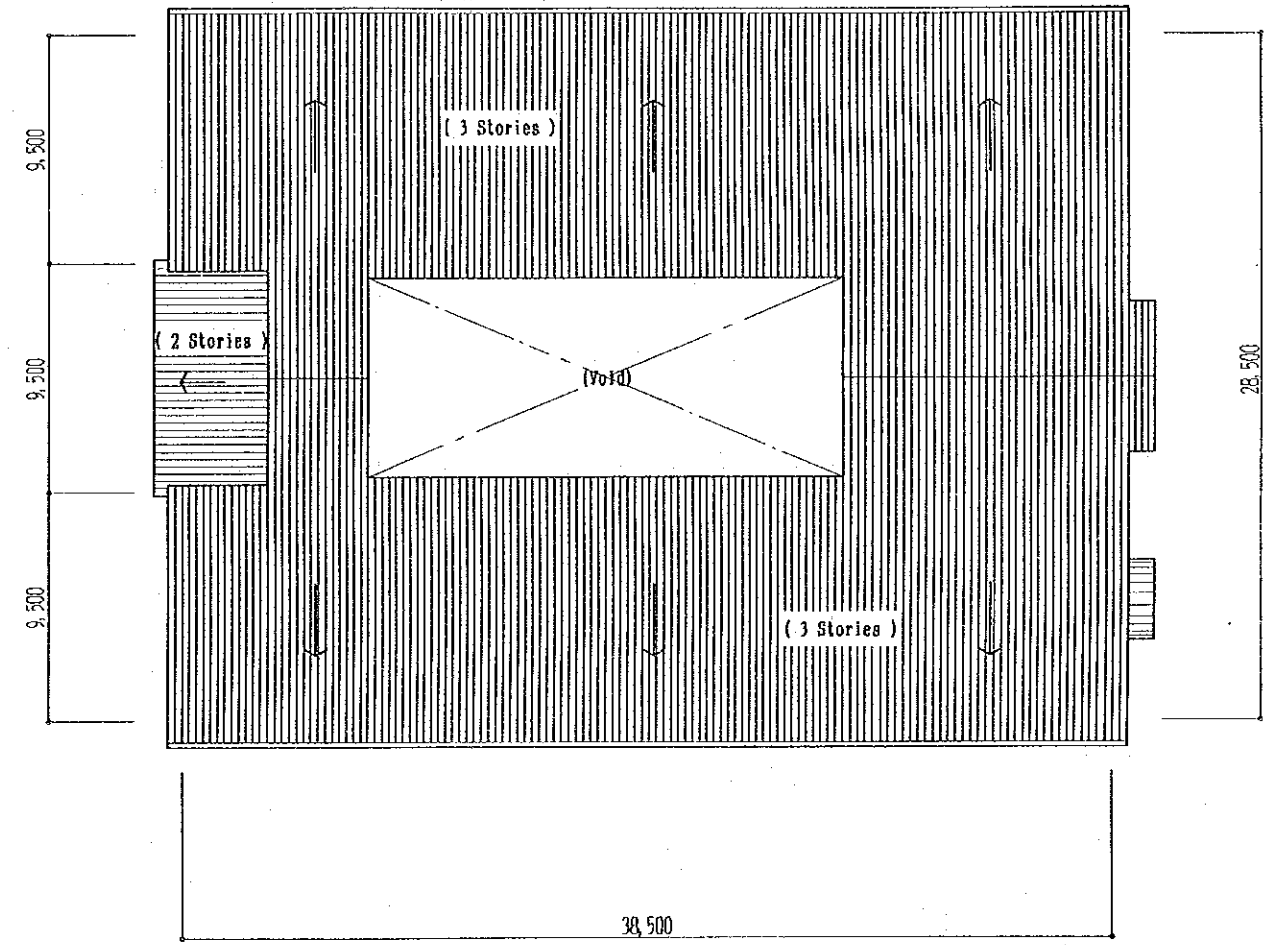
Ground Floor



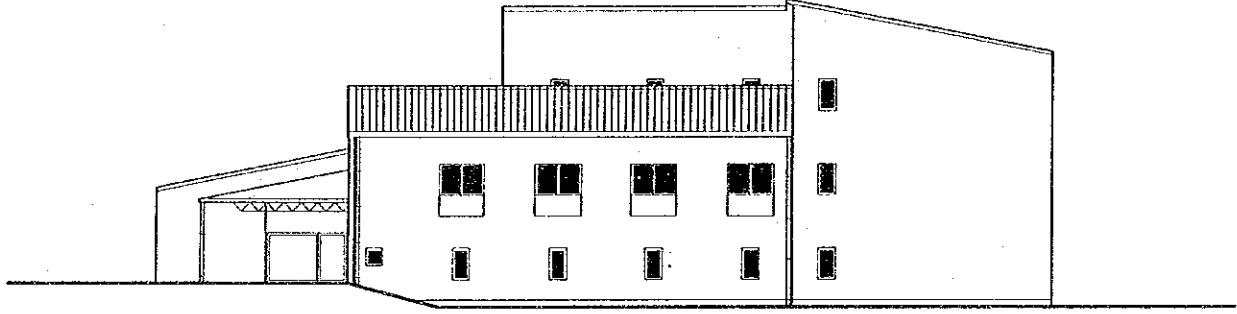
1st Floor



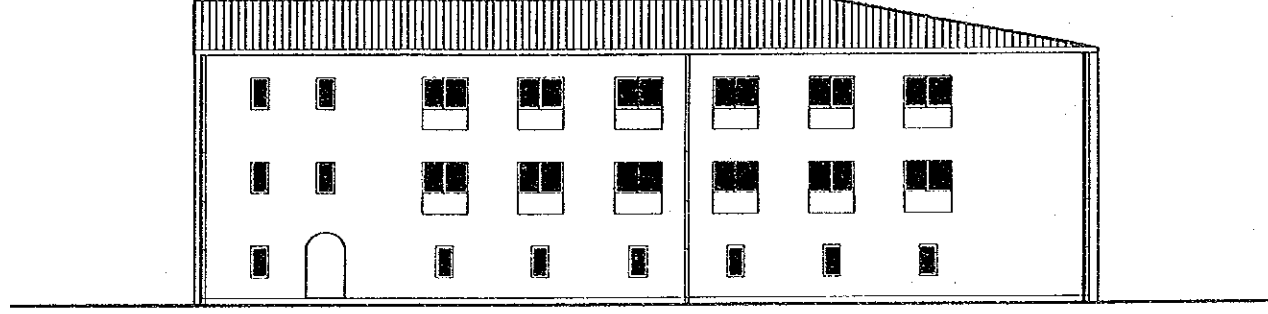
2nd Floor



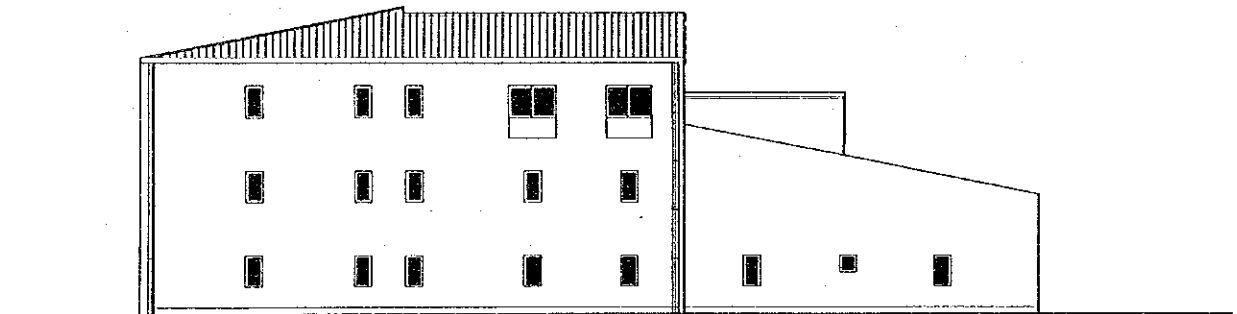
Roof



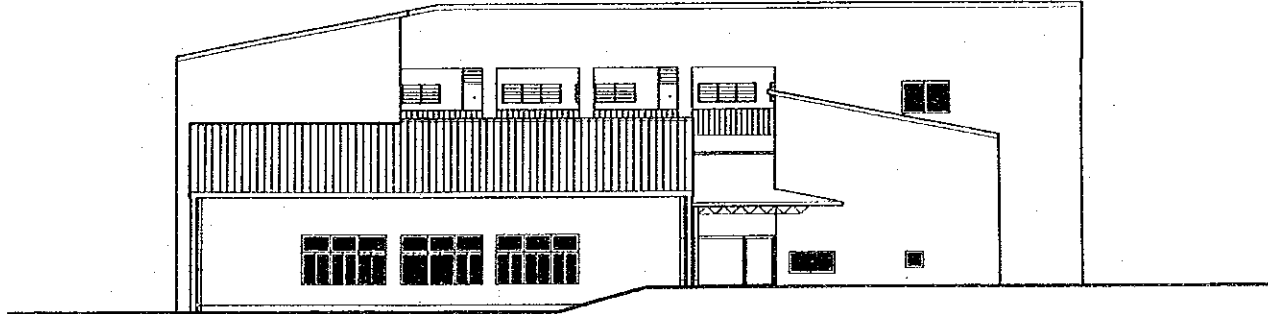
South



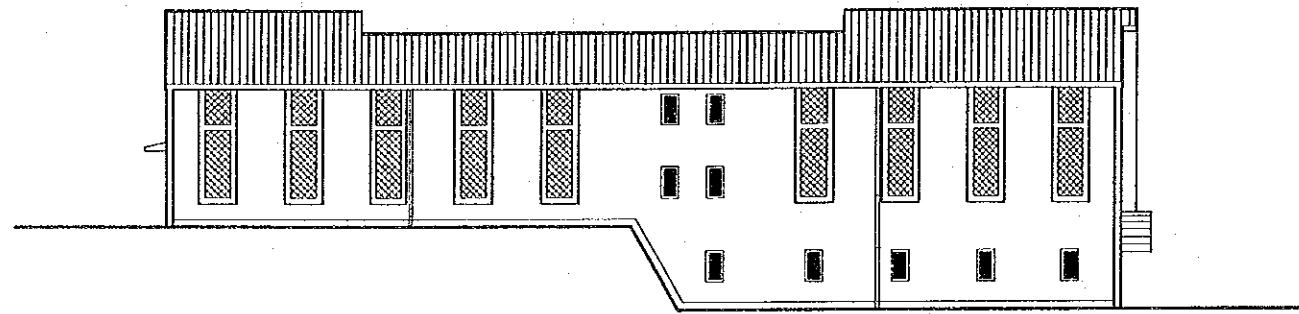
East



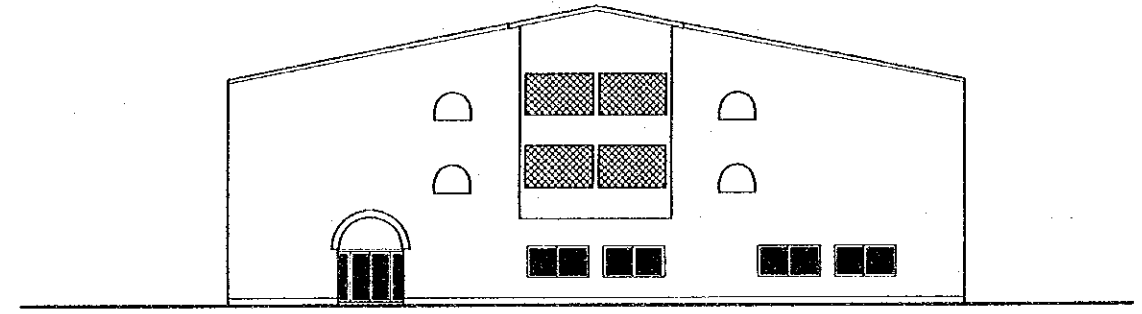
North



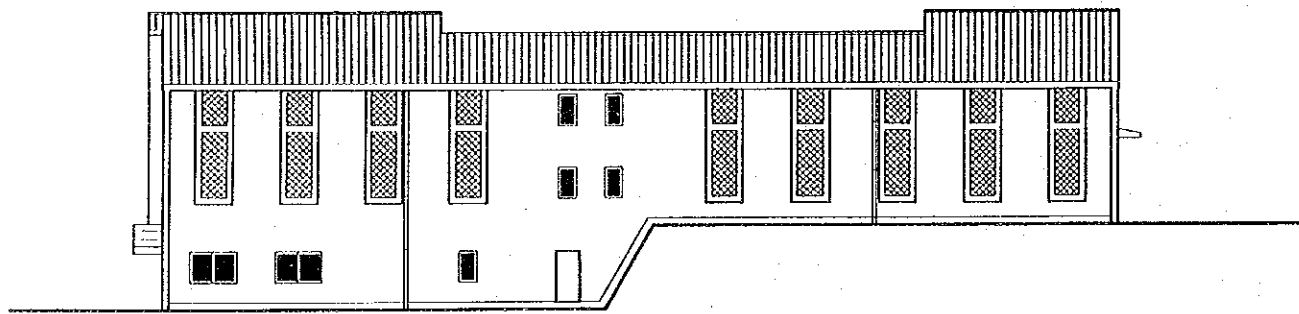
West



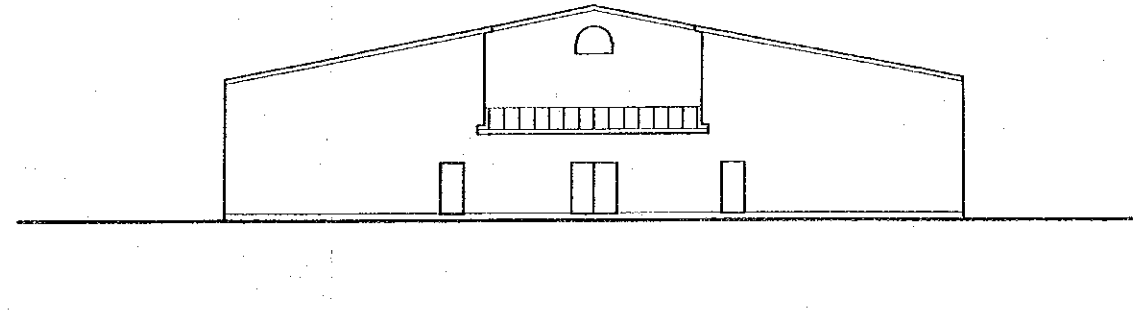
South



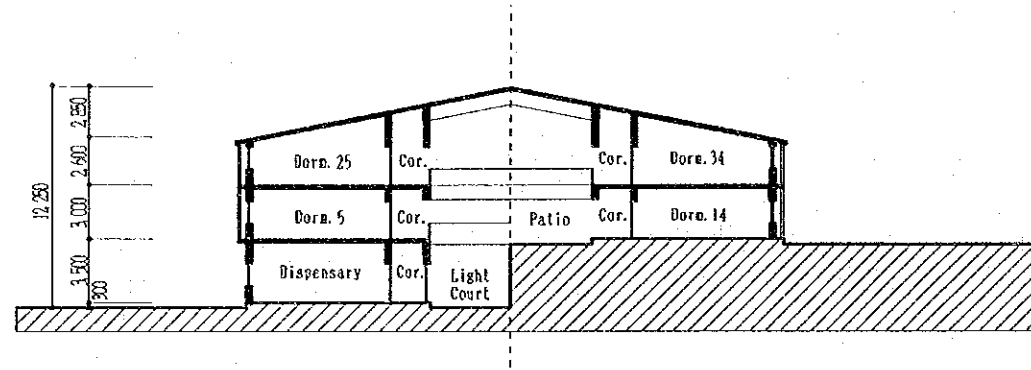
East



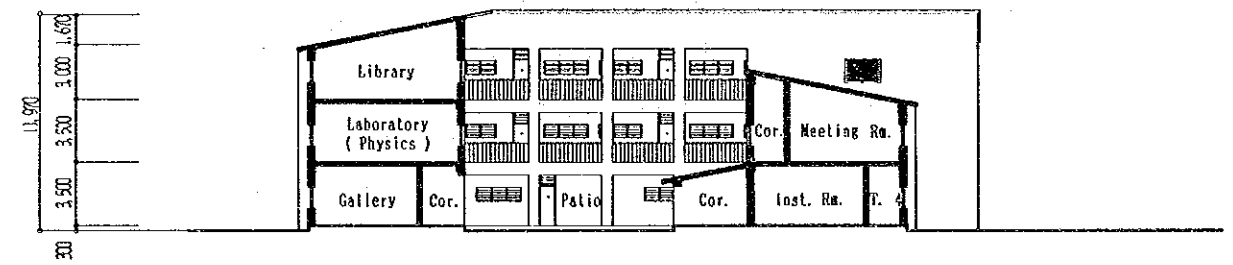
North



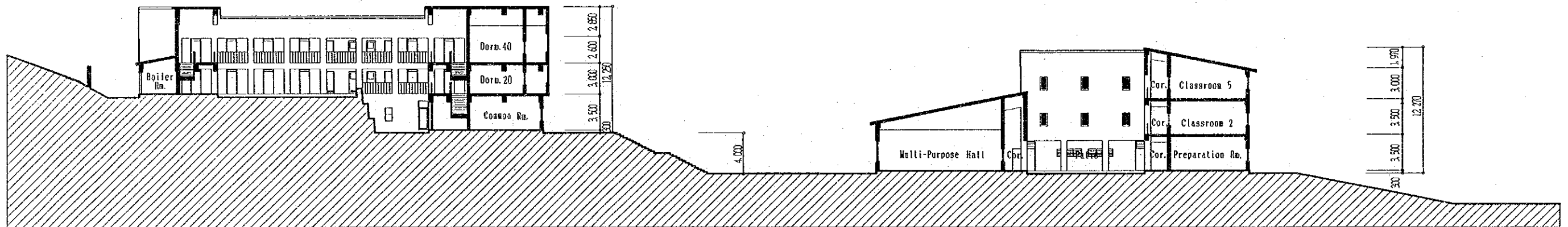
West



Hostel Block / A-A'



College Building / B-B'



Hostel Block & College Building / C-C'

