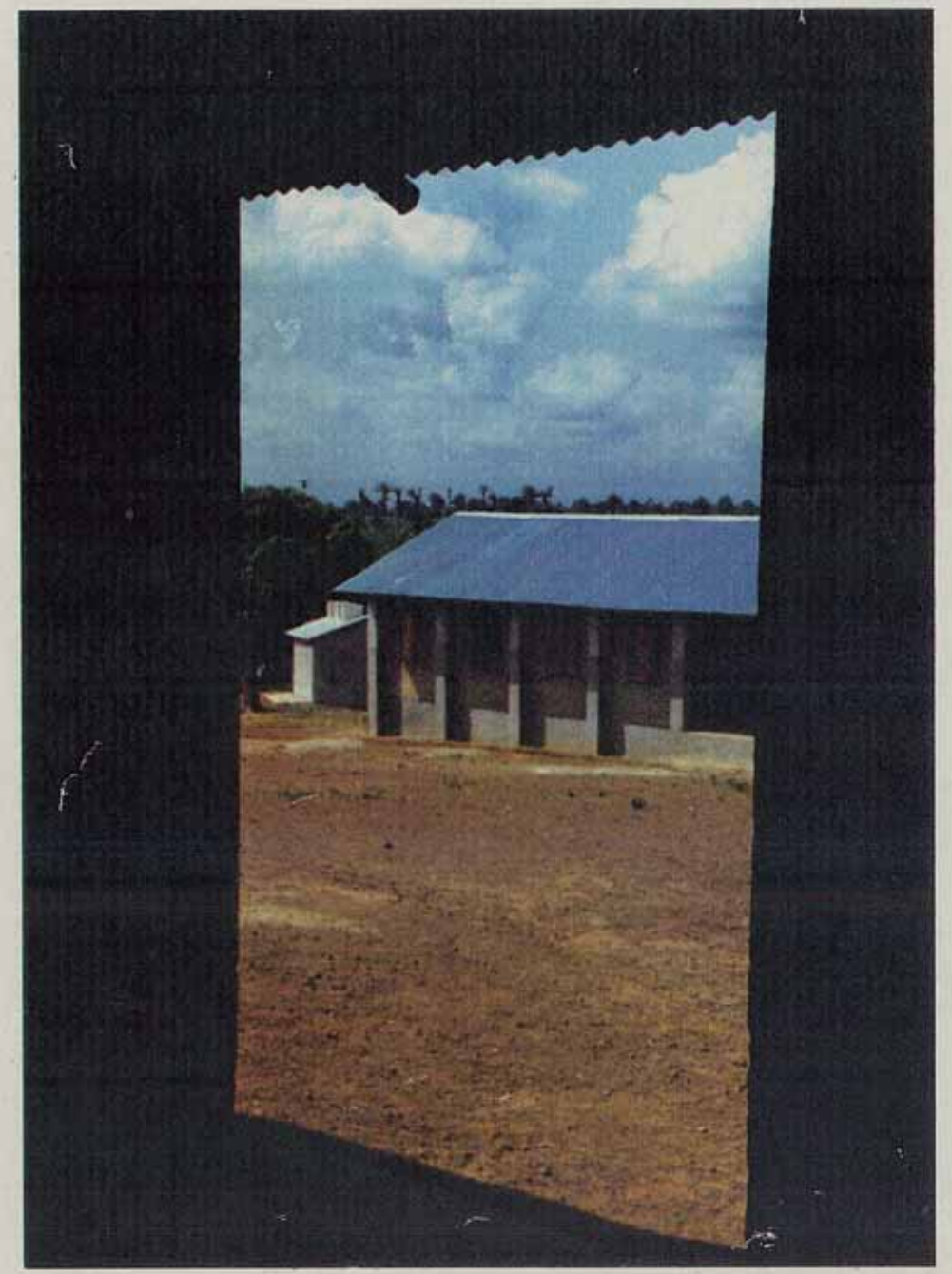

PRIMARY SCHOOL CONSTRUCTION IN SIERRA LEONE

A CASE STUDY

NIGEL WAKEHAM JANUARY 1992

THE UPGRADING OF BO TEACHERS COLLEGE AND THE CONSTRUCTION OF TEN PRIMARY SCHOOLS

BO, SOUTHERN PROVINCE, SIERRA LEONE, WEST AFRICA

UNITED NATIONS CAPITAL DEVELOPMENT FUND : SIL/85/CO2

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GOVERNMENT EXECUTING AGENCY : THE PLANNING UNIT, MINISTRY OF EDUCATION, CULTURAL AFFAIRS AND SPORTS

CO-OPERATING AGENCY : OFFICE FOR PROJECT SERVICES, UNITED NATIONS DEVELOPMENT PROGRAMME

IMPLEMENTATION REPORT

PREPARED BY : NIGEL WAKEHAM CHIEF TECHNICAL ADVISER

JANUARY 1992

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INTRODUCTION

Sierra Leone, in common with many African countries south of the Sahara, has a largely rural population, a high illiteracy rate and a low primary school enrolment rate (particularly among girls). It also has a high infant mortality rate and low life expectancy.

Education is one of the cornerstones of economic growth and social development and the central purpose of primary education must be to produce a literate and numerate population. Numerous studies have now shown conclusively that primary education has a direct beneficial effect upon development in that it will raise farm productivity, reduce the rate of population growth and improve child health and nutrition.

The Upgrading of Bo Teachers College Project, the subject of this report, follows on from a similar construction project carried out at Bunumbu Teachers College in the 1970s and another project, also based at Bunumbu in the 1970s and 1980s, which developed a rural-oriented primary school curriculum.

The major objective of all three projects was to improve the quality, efficiency and relevance of primary education in the country and thus enable the rural population, particularly those engaged in agriculture and allied occupations, to take advantage of modern farming techniques to increase productivity and consequently improve their standard of living.

The objective of this project was to support the introduction in Southern Province of the new, rural-oriented, primary school curriculum by upgrading the teaching facilities at Bo Teachers College and at ten pilot primary schools attached to the College. It was hoped that the improvement of school facilities, using as much as possible the efforts of the communities involved, together with the introduction of the new curriculum, would make a major contribution to development in the country.

The immediate precursor to this project was the work done by the author whilst employed as Educational Building Specialist by the Sierra Leone/IDA Third Education Project. During this time, designs were developed for primary school buildings and furniture, prototypes were built and a report was produced entitled 'Primary School Construction in Sierra Leone'(Freetown 1989). This report summarised the situation in primary education in the country, put the case for the use of self-help in school construction, showed the designs developed for school buildings and, by way of an illustrated construction handbook, also showed one method of building them.

The designs shown in the above report were used, after having been further developed and amended, in this project and the illustrated construction handbook was also used as a training tool for the site supervisers during the construction period. This present report has been written as a case study to illustrate how the ideas illustrated in the original report have been further developed and put into practice and to show that technically assisted 'self-help' does have a part to play as a practical method of constructing primary schools.

The author would like to acknowledge the support and assistance given to the Project Execution Unit by: the Senior Permanent Secretary and professional staff of the Ministry of Education, Cultural Affairs and Sport in Freetown; the staff of the UNCDF and UNDP offices in New York and in Freetown, especially Richard Corsel, UNCDF Field Officer. He would also like to thank United Nations Volunteers Hla Lwin and Sellapah Raveendran without whose hard labours the ultimate success of the project would not have been possible. Particular thanks go to UNV Raveendran for his support throughout the project and for his assistance in preparing this report.

Nigel Wakeham Bristol January 1992

1. SIERRA LEONE : LOCAL CONDITIONS

A. BASIC DATA

Area	27,925sq mls (71,740sq km)
Population (1985 provisional)	3.7 million
Urban population (over 2,000 pop.)	31.9%
Rural population	68.1%
Rate of population growth (1974-85)	2.31% per annum
Life expectancy at birth (1983)	38 years
Infant mortality rate (1983)	201 per 1000 live berths
Illiteracy rate	85%
Primary school population (5-14) from 1987 primary school census	382,939
Gross enrollment	41.4%
Female pupils as % of total	44%
Number of primary schools (est.)	1,952
Pupil/teacher ratio (average)	32:1
GNP per capita 1984 (est.)	US$310
Public expend.on education (1983)	US36.6 million
Public expend.on education as % of total government expend.(1983)	17.6%
Public expend.on education as % of GNP (1983)	3.5%
Public recurrent expenditure per primary school pupil (1983)	US$40
Exchange rate (December 1991)	US$1 = Le425

Compiled from various sources

B. GEOGRAPHY

Sierra Leone is a small country on the west coast of Africa, measuring some 215 miles from north to south and a similar distance from east to west. It lies between latitudes $6^0$55' and $10^0$00' north and longitudes $19^0$16' and $13^0$18' west. It adjoins the Republics of Guinea to the north and east and Liberia to the south-east, with the Atlantic Ocean to the south-west.

The country can be divided into four physical regions: The Western Peninsular mountains rising to nearly 3,000 feet and stretching some 25 miles south of the capital Freetown; the coastal plain varying in width from 5 to 25 miles and rising only a few feet above sea-level; the interior plains ranging in height from 100 to 700 feet with occasional hills rising above 1,000 feet; and the interior plateau and hill region to the north-east of the country lying between 1,400 and 2,000 feet, rising to 6,930 feet at its highest and seperated from the plains by a steep scarp face. The drainage system is dense with nine main rivers and an abundance of other surface water. There are a variety of soil types with a preponderance of lateritic soils and a complete absence of limestone.

The climate of the country is hot and humid with a distinct wet season lasting from May to November. The average rainfall is between 100" and 120" over the central two-thirds of the country, decreasing to 80" in the north and increasing along the coast to 170" in the south and over 300" on the Western Peninsular. Daytime temperatures are high, with a March/April peak (averages 88^0F coastal and 96^0F inland) and a July/August trough (averages 72^0F coastal and 60^0F inland). Relative humidity is also high, varying from 40/50% inland and 60% on the coast in January to 80% inland and over 90% on the coast in August.

There is a diversity of vegetation types ranging from primary forest in the south and east, through secondary forest and farm bush, with mangrove swamps along the coast and Guinea savannah, inland swamps and grassland in the north. See Figure 1.

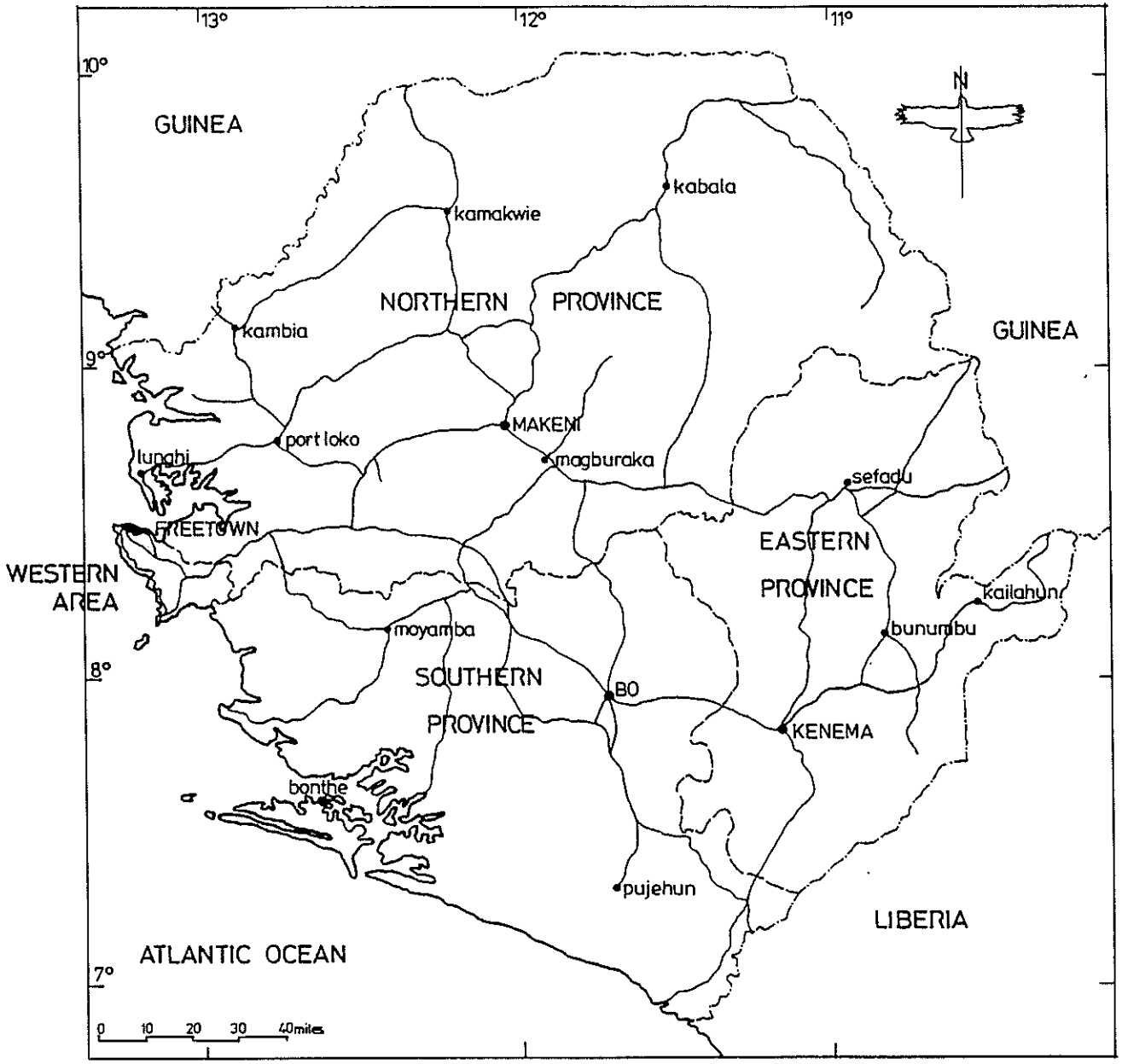


FIGURE 1 : SIERRA LEONE

C. SOCIO-ECONOMIC BACKGROUND

The country is divided into four administrative regions: Northern, Southern and Eastern Provinces and the Western Area (what was the Colony). The Provinces are controlled by Provincial Secretaries and are divided into twelve Districts, each with a District Officer.

Provisional figures from the 1985 census put the total population at 3.7 million with an annual growth rate over the previous ten years of 2.31%. Detailed statistics from the 1985 census were not available at the time of writing, but the population distribution has probably not altered markedly since the 1974 census and the following figures are taken from that: 40.5% of the population were under the age of 15 with 24.5% between the ages of 5 and 14, roughly the primary school years. Literacy rates are very low, it being estimated that 85% of the adult population is illiterate, possibly rising to 98% in the rural areas.

An analysis of the 1974 figures shows that 72.4% of the population lived in settlements of less than 2,000 inhabitants; and while 66.3% of all settlements had no more than 100 inhabitants, they contained 17.2% of the total population. Furthermore, 96.4% of all settlements have less than 500 inhabitants and contain 55.3% of the population, with 15% living in villages of between 500 and 2,000 people. It is clear that Sierra Leone still has a predominantly rural population living in small, scattered settlements with a few larger towns. The only large city is the capital, Freetown with a population of 469,776.

Per capita GNP was estimated at US$310 in 1984 with significant disparities between urban areas (US$700) and the rural areas (US$150). The agricultural and mining sectors have been the main sources of income with the agricultural sector, primarily subsistence farming, providing a livelihood for 65% of the population, although producing only 30% of GNP. Production of diamonds, while still accounting for 37% of the country's export earnings in 1981-82, is steadily declining.

D. EDUCATIONAL BACKGROUND

The education system comes under the Ministry of Education, Culture and Sport. The professional head is the Chief Education Officer and the Primary Division is headed by the Principal Education Officer (Primary) with Inspectors of Schools (Primary) in each of the 12 districts. The formal education system consists of a six year primary cycle starting at the age of six; a five to seven year secondary cycle; and a three to five year University programme supplemented by various other specialised programmes, including teacher training, vocational training, etc.

The administration of the primary and secondary systems is carried out as a co-operative effort between religious and other organisations who, at the primary level, run the schools with the Ministry of Education paying teachers salaries. There is now a move to hand back completely the running of the schools to these organisations.

There are four types of primary schools: a) assisted schools run by employing authorities (96% of the total in 1977/78); b) local government schools; c) independent schools; d) private schools. In 1977/78 there were approximately 1,118 primary schools with 7,088 teachers. Of these, only 30.2% were qualified and 25.3% were female. The overall pupil/teacher ratio was 32:1 but the pupil/qualified teacher ratio was 82:1.

In 1977/78 only 31.7% of those of primary school age (taken as 5-15) were enrolled at school and there were wide differentials between different sizes of settlements. In villages below 2,000 the figure was only 21.2% and there was a marked sex differential with only 15.5% of girls and 26.2% of boys enrolled. Gross enrollment had increased to 44.4% by 1984/85 but this was still a long way below the government's programmed objective of 100% enrollment.

Enrollment is low, particularly amongst girls, for a number of reasons: a) the traditional role of women who are dependent on,

and subservient to men; b) the high cost of education; even though fees have been officially abolished, there is reason to believe that some headteachers still charge them and the other costs of schooling such as pencils, paper, books and uniforms are very high; c) many villages are too small to support full schools and the standard of feeder schools is generally low; d) it is widely recognised by parents that the quality of education is falling and there is little hope of their children getting a proper education.

The existing stock of primary schools range from rented houses to fairly modern sandcrete block buildings with steel windows, the latter mainly in Freetown and the larger towns. The bulk of rural schools are built of mud blocks or of mud plaster on bush-sticks with corrugated steel roofs. Classroom sizes are small and furniture, if it exists, is fairly rudimentary. Many schools are in a very bad state of repair, the Ministry of Education having very little money to spend on maintenance. Few new schools are being built and, at the time of writing, the only government schools project had been stopped for some time because of a ban on disbursement by the World Bank. However, some missions are trying to maintain existing buildings and build new ones.

Thus access to primary education must be improved, especially in the rural areas, in order to: increase literacy; ensure that the next generation of farmers are literate and numerate enough to promote significant increases in agricultural production; contain the rising birth rate through education. The curriculum must be made more relevant to the needs of the rural population and the new curriculum developed at Bunumbu Teachers College has gone some way to meet this. More classrooms must be constructed at a minimal cost and primary schools must become multi-purpose community centres, teaching literacy and other practical skills. The real cost of education must be reduced by improving the distribution of teaching materials. The quality of teaching must be improved by increasing teaching skills and the District Inspectorate must be strengthened. This project tried to address some of these problems in the Bo area.

2. BACKGROUND TO THE PROJECT

A. ORIGINS OF THE PROJECT

The primary and secondary systems established during the colonial era had an academic, rather elitist, bias. Government first started to question this in the early 1970s and undertook, with the financial assistance of UNDP and IDA and the technical assistance of UNESCO, a pilot project based at Bunumbu Teachers College aimed initially at reforming the training of primary school teachers and, later, the primary school curriculum itself.

In 1977, UNCDF provided support to the Government's efforts by financing the construction of twenty pilot primary schools within a twenty mile radius of Bunumbu. The construction works were managed by the Catholic Relief Service with assistance from Peace Corps and VSO. Theoretically, local materials and labour were to be provided by the communities of the villages concerned.

The school buildings were constructed of reinforced concrete frames with sandcrete block infill, BRC mesh windows and heavy, sawn timber roof trusses and purlins with corrugated steel roofs. 120 classrooms, 23 practical arts rooms and 108 pit-latrines were built at twenty sites. Construction was well managed and supervised and the finished buildings were of a high quality. They were however, very expensive, costing around US$12.95 per square foot (US$137 per sq mtr) in 1980 and it is doubtful if this cost included the management and supervision costs.

The curriculum activities at Bunumbu were deemed to be successful and strategies for the dissemination of what had come to be known as the 'Bunumbu Experience' were prepared in the mid-eighties. A project (UNDP SIL/85/009) was prepared which was to: establish the other four primary teacher training colleges as bases for the dissemination process; link about 40 pilot primary schools to these colleges and develop them as community education centres; introduce the new curriculum into the primary schools and the new teacher training curriculum into the colleges.

However, it was felt that conditions were not right for the acceleration of the dissemination process in all four other teachers colleges, primarily because of financial restraints, and Government requested UNCDF assistance for the provision of the buildings, infrastructure and equipment needed to replicate the Bunumbu experience at one other college. Bo Teachers College in Southern Province was selected by the joint Government/UNCDF Programming and Project Indentification Mission in December 1985 and this mission was followed in June 1986 by a Project Formulation Mission. The mission looked in detail at the College and the ten pilot primary schools attached to it.

Bo Teachers College was established as a co-educational, residential college in the late 1960s through the amalgamation of two existing institutions in Bo. A large site (215 acres) situated on the outskirts of Bo Town was donated by the Paramount Chief of Tikonko Chiefdom and a new complex, funded by West German religious organisations, was constructed and completed in 1968. The College was extended in the 1970s and 1980s and at the time of the mission had an enrollment of about 440 students.

The accomodation at the College was deemed adequate for the existing enrollment and courses. However it was obvious that additional buildings would be required for the new curriculum activities. It was also apparent that the existing water and electricity supplies would need drastic improvement. There was no mains water supply from Bo Town and the College was dependent on a small pump supplying water from a well. The electricity supply from Bo was erratic.

Ten pilot primary schools had already been selected in villages within a 20 mile radius of the College. Except for the Experimental School attached to the College and the UBC School at Bumpe which both had some new buildings, most school buildings were inadequate. In this they were similar to most rural primary schools. Classrooms were small and in a bad state of repair. Toilet facilities were poor or non-existent as were furniture and equipment. Access to schools was difficult due to poor roads.

B. BO DISTRICT

Bo District lies in the Southern Province of Sierra Leone and contains the provincial headquarters, Bo Town. The district itself is divided into fifteen chiefdoms each with a Paramount Chief and the major language spoken is Mende.

Preliminary figures are now available from the 1985 Census for Bo District. The estimated total population in 1985 was 268,671 (1974: 217,711) of which 132,131 were male and 136,540 female. This was 7.6% of the total population of the country. The annual growth rate between 1974-1985 was 1.93% and 30.4% of the population of the district lived in urban settlements, that is those with over 2,000 people. The average density of population was 133 people per square mile and ranged from under 50 to over 200. Bo Town is the second largest town in the country with an estimated population of 59,000 people.

Physically, the district lies across the interior plains, ranging in height from a few feet above sea-level in the south-east to around eight hundred feet in the far north. The vegetation is mainly farm-bush with isolated pockets of secondary forest, the latter being dominated by oil palms in the south. There are numerous streams and rivers, the largest being the Sewa and it's tributaries.

The climate is hot and humid, with a mean annual rainfall of around 120 inches and relative humidity of over 80% in August and around 55% in January. Mean daily maximum temperatures rise to 92^0 in March with a mean daily minimum temperature of 67^0 in January.

The population is fairly evenly distributed in small settlements. The main economic activity is subsistence farming, using the bush-fallow system, with hill rice as the major crop. Cassava and millet are also grown as are tree crops such as oil palm, coffee and cocoa. Alluvial diamonds are an important source of income along the Sewa River and its tributaries.

3. DESCRIPTION OF PROJECT

A. PROJECT OBJECTIVES

The development objective was to assist Government to improve the quality, efficiency and relevance of primary education for the rural population and thus enable them to take advantage of simple, modern farming techniques to improve their productivity and consequently, their standard of living.

The immediate objective of the project was to support the introduction of the new, rural-oriented primary school curriculum in Southern province by upgrading the facilities at Bo Teachers College and at ten related primary schools.

B. PROJECT SUMMARY

At the College, facilities were to be upgraded to accomodate the new curriculum activities. Three new buildings were to be constructed: a garage with stores and workshop space for three vehicles; a classroom building containing classrooms, seminar rooms and offices; and a handicrafts workshop with space for wood-work, weaving, a smithy, etc. Furniture and equipment were to be provided for all new and some existing buildings. The water and electricity supplies were also to be upgraded.

At the ten pilot primary schools, new buildings were to be constructed following, as far as possible, the designs, previously developed by the Education Building Specialist for the SL/IDA Third Education Project. The schools were to be extended to cater for between 200 to 300 pupils. Classrooms to accomodate 44 pupils were to be built together with handicraft workshops, offices, stores, pit-latrines and water wells. Furniture was to be provided for most buildings and access roads to the villages were to be upgraded. See Figure 2 for map of project area.

Assistance was also to be given to the National Coordination Office in Freetown to improve communication and implementation.

project villages: *mattru*

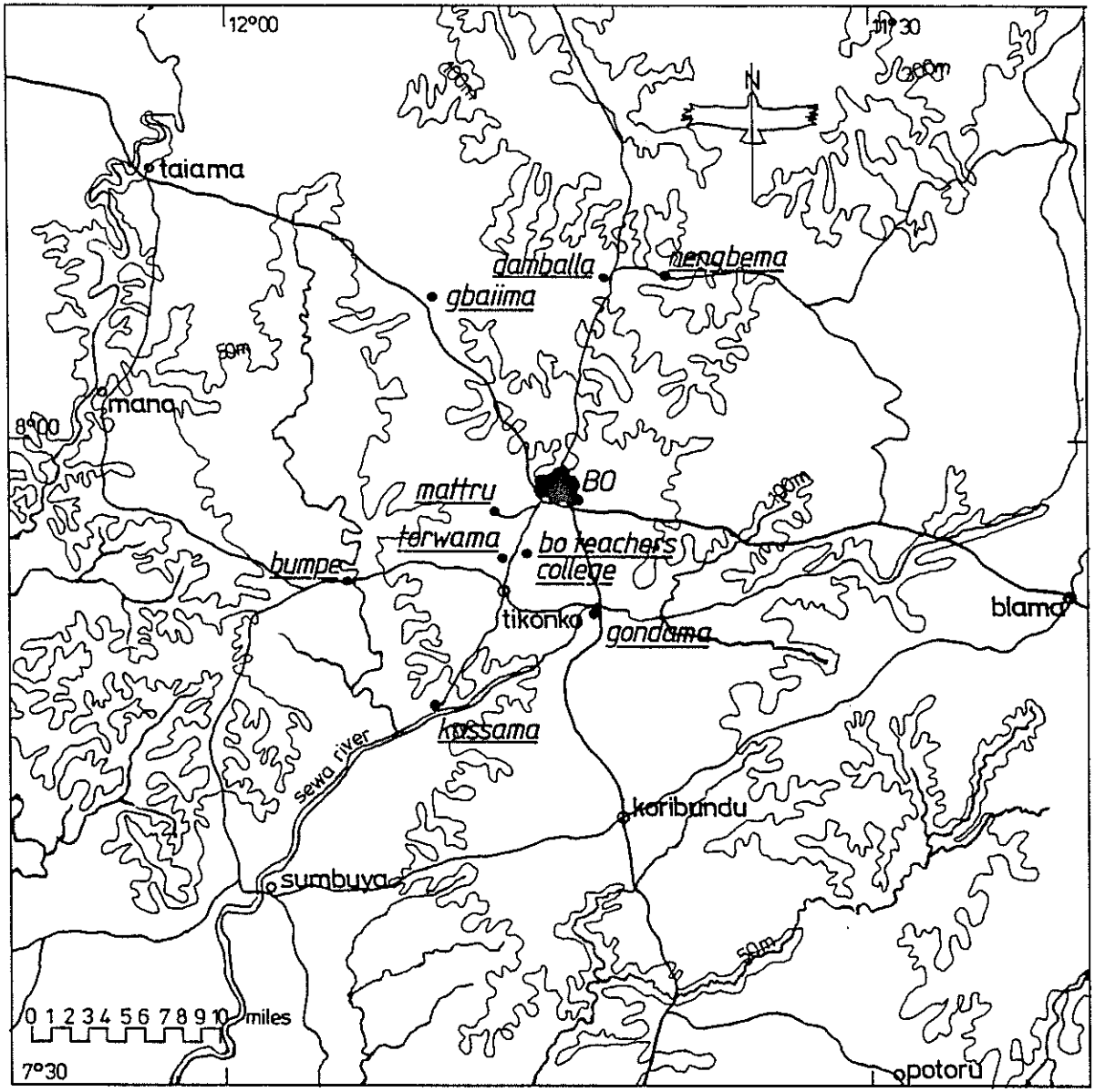


FIGURE 2 : PROJECT AREA

C. THE PRIMARY SCHOOL COMPONENT

According to the Project Document, the project was to be directed and run by a Project Execution Unit (PEU) to be set up by the Ministry of Education, Cultural Affairs and Sports (MECAS), the project executing agency, in the Ministry's offices in Bo. The PEU was to be headed by a national architect assisted by an Educational Building Specialist/Chief Technical Adviser funded by UNDP.

Project assistance at the ten pilot primary schools was to comprise the construction at each school of: two practical arts workshops; from two to nine classrooms of varying sizes; pit-latrines; varying numbers of offices and stores; and a water well with a hand pump. The construction period was to be thirteen months and the construction of the facilities was to be carried out through technically assisted self-help. The villages in which pilot schools were situated were to supply labour and local materials such as sand and aggregate and make blocks for building. The PEU was to supply supervision and training as neccessary. In addition, upgrading work was to be carried out on the access roads to some villages using a local contractor, again supervised by the PEU. 50% of existing school furniture was to be replaced and a few of the new classrooms were to be supplied with furniture. See Annex 1 for details of sites and facilities.

UNCDF was to fund and the PEU was to procure all materials, tools and equipment, whether local or imported, neccessary for the implementation of the project. Vehicles and equipment for the running of the project were to be supplied by UNCDF and UNDP.

The designs for the buildings were to be revised as necessary by the PEU after consultation with the Government and final drawings and schedules of materials, tools, equipment and furniture were then to be prepared. Construction of the school buildings was to be supervised by three national building technicians, assisted by three United Nations Volunteers funded by UNDP, and monitored by the Director and CTA.

4. PROJECT IMPLEMENTATION

A. PROJECT EXECUTION UNIT

The Project Execution Unit was set up and the project officially started with the appointment of the Chief Technical Adviser and the first United Nations Volunteer on June 1st 1988. The second UNV took up his appointment in July 1988 and the third eventually declined to come. The PEU was based and given office space at Bo Teachers College (BTC).

Three national construction technicians were identified in January 1988 and employed on an ad-hoc basis until June 1989 when they were employed by UNDP on special service contracts (SSCs). At the instigation of the CTA, eight site supervisers were employed on SSCs in July 1989 to help oversee construction and keep records of materials and tools issued, food rations given out, and labour utilised on all ten sites. In November 1989, a fourth construction technician, together with four wells technicians were employed to organise the construction of wells. The National Architect/Project Director was not appointed by government until November 1st 1989 after all major decisions had been taken and construction was well under way.

Final design and working drawings for the classrooms, workshops, furniture, pit-latrines and wells and for the site layouts were prepared by the CTA and UNVs working closely with MECAS staff. Lists of tools, materials and equipment required for construction were prepared and put out to international tender. A construction programme for the school buildings was also prepared. See Annexes 1, 2, 3, 4, 5 and 6.

The construction work was directed by the CTA, later assisted by the national architect, and supervised and organised by the two UNVs, assisted by construction technicians and site supervisers. A lecturer from the Community Development Centre at the College and an Inspector of Schools (MECAS) also worked closely with the PEU in their dealings with the village communities.

B. BUILDING AND FURNITURE DESIGN

The designs for buildings and furniture were based on those prepared for the SL/IDA Third Education Unit (see previous report 'Primary School Construction in Sierra Leone') amended and agreed by MECAS. Great emphasis was laid in the report on the maximum use of local materials and building skills and on the use of self-help. This emphasis was continued in this project.

The technologies used for construction were therefore ones that were already in use and well understood. Small scale interventions were made where possible to improve them with the intention that these improvements would pass into general use after the completion of the project. Working drawings for the buildings, furniture, wells and site layouts were started in June and completed by the end of August 1988.

Four classroom types were constructed: 1) a two classroom unit with a central access verandah and an office and store behind; 2) a workshop unit similar to the above; 3) a three classroom unit with a front access verandah and an office and store at one end; 4) a multipurpose unit similar to the three classroom unit but with a double classroom space suitable for assembly, indoor play, theatricals or village meetings. Two types of pit-latrine were also built. See Annex 2 for details.

All classrooms were designed to seat 44 pupils sitting at double desks. See Figure 3 for typical classroom layout. The furniture dimensions were amended after an anthropometric survey was carried out at the project schools. See Figure 4.

The buildings were designed to be constructed as simply and as economically as possible in order to deal with the extremes of climate experienced in the country; to use locally available materials and skills; and to reach a standard of construction that was acceptable to the donor agency, the government and the community. Construction details are given in Annex 2 and details of the construction programme are given in Annex 4.

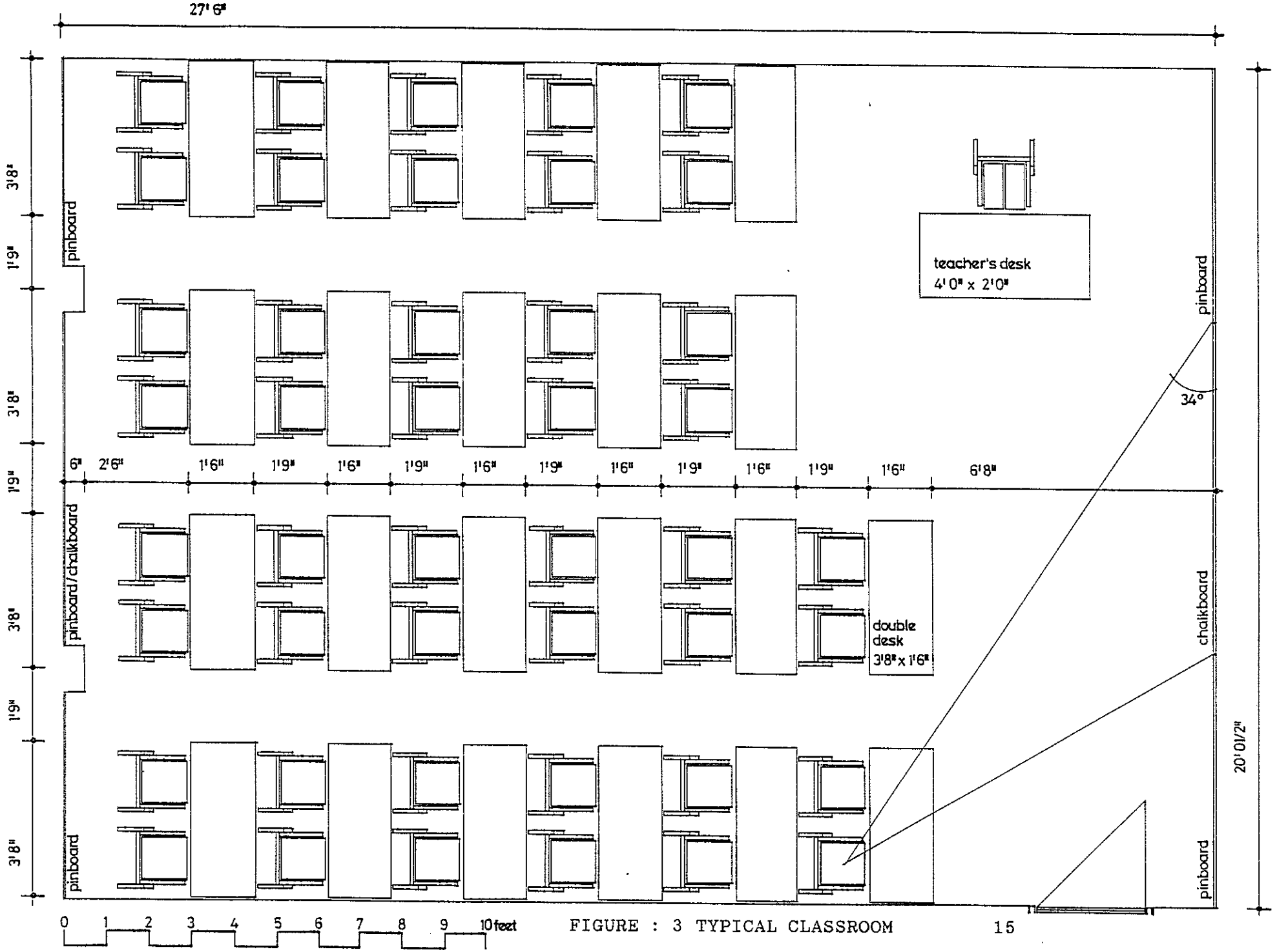
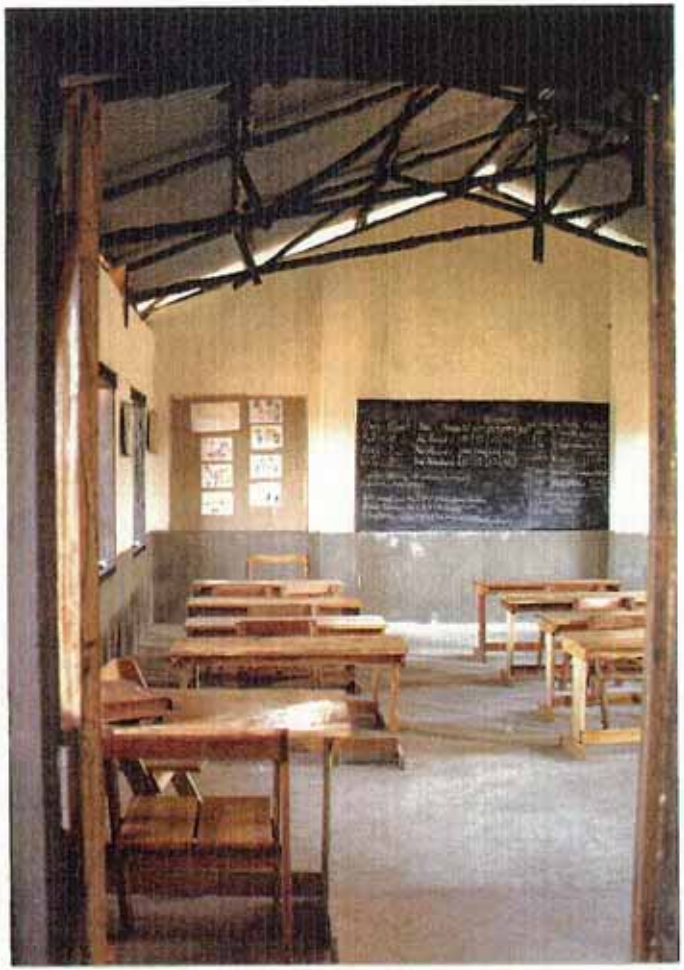


FIGURE : 3 TYPICAL CLASSROOM



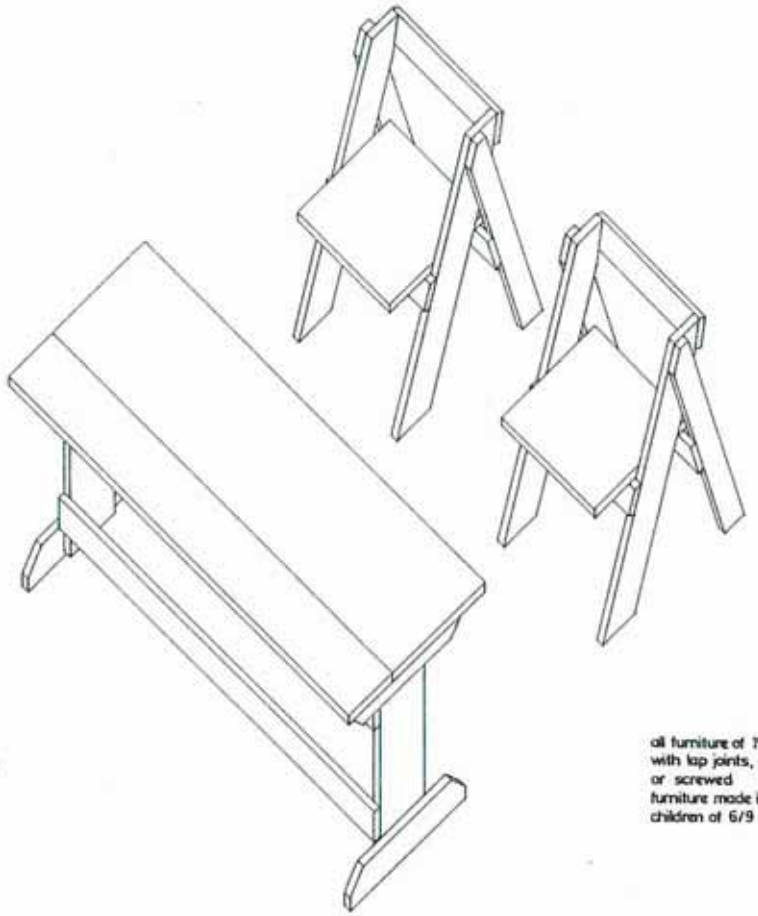


FIGURE 4 : CLASSROOM FURNITURE

C. COMMUNITY PARTICIPATION

Little community development work in relation to the project was carried out in the selected villages before the project started. Immediately upon his appointment therefore, the CTA started holding monthly public meetings in the villages, at first to explain the project and inform the communities of their responsibilities with regard to provision of materials and labour, and later to discuss progress and problems in implementation.

Meetings were usually held in the presence of the town chief and speaker (and in some cases the Paramount Chief), section chiefs, village elders, the head and key teacher (a teacher selected by the College for training in the use of new curriculum material) and members of the communities. Minutes were taken and circulated by the CTA after each meeting. The meetings proved to be very successful in keeping all parties informed of progress and problems and in involving the communities in the running of the project. It is hoped that, through their successful involvement in this project, all communities will continue to be involved in running and maintaining their schools and will have the confidence to embark upon other village projects.

Community Development Committees were already in existence in the villages and in most cases the Chairmen and members of these committees were responsible for organising the provision of materials and labour. In all cases a key member of the community was made responsible for storing materials and tools and for day-to-day provision of labour, under the direction of the UNVs and later with the assistance of the site supervisers.

A great deal of training in constructional techniques was given by project personnel to artisans, to site supervisers and to members of the communities and, although the building materials used were well known, improvements were made to their composition and their use. All of this should lead to a general improvement in the standard of construction in the project villages.

D. IMPLEMENTATION

Sierra Leone has a distinct rainy season starting in May and ending in November, with the heaviest rains in June, July and August. In the project document, fifteen months was allowed for construction, including three months for the preparation of drawings. As the project started in June 1988, this meant that the construction period included one rainy season, effectively cutting the time available for building by 25%. This construction period was judged to be unrealistic and the revised workplan, prepared in August 1988, allowed a period of twenty two months (see Annex 4 for the original and revised construction programmes). All drawings were completed by the end of August 1988 and it was intended to start work in October, by which time the heaviest rains would have finished. However, for a variety of reasons this did not happen.

Even though all orders for tools, materials and equipment were prepared within three months, the actual procurement took longer than anticipated in the project document and delayed the start of construction. For instance, the main order of tools for the construction work did not arrive until March 1989 and the blockmaking machines did not arrive until July 1989 which meant that the whole of one dry season was lost for blockmaking and other construction work.

The project document took little account of the number and distribution of the the construction sites when deciding the number of vehicles to be provided (see Figure 2: map of project area). Only one dump truck was supplied which had to serve ten sites. This meant that it could, at most, visit each site three times a month. However, it also had to transport materials and food supplies from Freetown which greatly reduced its availability for construction work. This made it impossible to transport the large amounts of materials required on each site in the time available. On every site, sand and stone had to be collected and delivered, usually from rivers some distance away and this took a great deal of time.

Therefore, on some sites, the project had to pay to transport materials when it became obvious that the truck would not be available. Only two personnel vehicles, a pick-up and a landcruiser, were supplied initially for the project, the UNVs being given motor-cycles for their own use. This was unrealistic because, as well as carrying out day-to-day supervision of the sites, they had to transport materials and workers and eventually a second pick-up was procured.

In selecting the villages in which to develop pilot schools (and in the case of two villages selecting two schools per village) and in determining the comparatively large numbers of buildings and other facilities to be constructed at each school, little account was taken of the fact that these were all small, fairly isolated, rural communities of subsistence farmers operating largely outside the cash economy. The project document stated that each community had to provide, from its own resources and for little or no remuneration, large quantities of sand, stone, bush-sticks and unskilled labour, throughout the construction period. As this would have meant abandonning their farms for a large part of the year and thus leaving themselves and their families with little or nothing to eat, they were quite reasonably reluctant to do so. It should also be noted that in most of the villages there were few, if any, skilled artisans such as masons and carpenters. When and if they could be found it was usually beyond the means of the communities to pay them to carry out the work.

Ways had to be found therefore, of paying groups of unskilled labourers on every site to work full time throughout the construction period together with the small numbers of skilled artisans required. UNCDF eventually agreed to pay a small daily cash incentive payment which was substantially increased after the first tri-partite review meeting in June 1989. The World Food Programme also agreed to provide 'Food for Work' rations (rice, fish and oil) to those engaged on the project, both those donating their labour voluntarily, and those receiving incentive payments.

Without these incentive and food payments it would have been impossible to find enough labour, both skilled and unskilled, to complete the work even within the extended timetable. Towards the end of the project, difficulties were caused when WFP food rations had to be reduced because of supply constraints. See Annex 7 for labour utilized and Annex 8 for WFP rations supplied.

Although little was done in the way of community development work in the villages before the project started, nearly all communities worked hard to supply the large quantities of local materials required. In many cases the source of these materials was at some distance from the sites which caused both transport difficulties as stated above, and access difficulties for the villagers. In some cases, suitable materials were simply not available and the PEU had to purchase and transport large quantities, especially of sand and stone. Most communities did provide adequate supplies of bush-sticks for scaffolding and roof construction but it proved impossible to obtain sufficient timber in the villages for making doors and shutters. The PEU therefore had to purchase timber from commercial sources.

Further difficulties were created by cash shortages in the country caused by the constant devaluation of the Leone, which started in mid-1989 and carried on to the end of the project. This caused great problems in actually making payments to workers and in purchasing local materials and of course delayed the work (see Annex 9 for incentive payments made). There were also continuous problems with the supply of fuel, especially petrol required for the motor-cycles and the wells pumps, which created delays.

The poor performance of the blockmaking machines also slowed down the progress of the work. There were numerous problems with their operation particularly with obtaining spare parts (see Annex 2).

It was originally intended to make the school furniture using project carpenters but, because of timber supply problems, the work was eventually contracted out to a local manufacturer.

E. PROJECT COSTS

In the project document, UNCDF was committed to providing a total of US$1,728,000 to cover the cost of furniture and equipment, missions, overheads, and programme support.

Government was to contribute US$247,500 to be provided in the form of land for the new college and school buildings, office accommodation and equipment, funding for professional and administrative personnel and for the operation and maintenance of the vehicles and generators provided under the project.

A simultaneous UNDP technical assistance project provided support for the UNCDF project. The original project budget was US$394,900 and this was to finance the cost of the school building expert and three UNVs, administrative support personnel and administrative equipment, materials and vehicles. See Annex 10 for planned and actual expenditure.

As can be seen, at the end of the project period, the UNCDF budget was underspent by a total of US$369,887 and the UNDP budget was overspent by a total of US$66,999.

Various changes to buildings, furniture, roads and wells affected the actual expenditure of the UNCDF budget:

1. The following works were ommitted or reduced:

a) At Nengbema, one classroom building at each of the two primary schools was not built because insufficient materials and labour were supplied by the community. This was the only village where the project had serious difficulties and these were due mainly to political problems and lack of leadership.

b) At some schools, pit-latrines were not built because of material, labour and time constraints. At all of the schools concerned however, there were pit-latrines already provided under other projects.

c) At two schools (ACBC Primary School, Kassama and DEC Primary School, Nengbema), wells were not built because the water table could not be reached. There were however existing wells close by.

d) The funds allocated for improvements to access roads using a contractor were insufficient. It was therefore decided to carry out the work using village labour assisted by Ministry of Works personnel and equipment. All workers were given incentive payments and WFP rations. The actual length of road upgraded was reduced because of changes in location of schools and previous upgrading by other projects.

2. There were the following additional works:

a) A new concrete bridge on the Kassama road.

b) The furniture budget was increased. Initially, furniture was to be provided for new buildings at two schools and replaced in 50% of existing buildings. In the event, furniture was provided for all new and for some of the existing buildings.

It should be noted that careful supervision and close monitoring and control of project expenditure by the CTA and project staff must have contributed to the savings in the UNCDF budget.

The over-expenditure in the UNDP budget was caused mainly by: the three month extension to the length of the project and consequential increases in administration and running costs; salary increases; the cost of additional vehicles.

Towards the end of the project, when it became apparent that there was going to be a large saving in the UNCF budget, Government decided, in consultation with the donors, to use the funds saved to construct teachers houses in a second phase. As the technical assistance budget had been fully utilized and as the proposed houses would have to be built in a very short time, it was decided to use a contractor to build them, supervised by a UNV. See Annex 12 for details of the second phase.

5. CONCLUSION

A. ATTAINMENT OF PROJECT OBJECTIVES

The immediate objective of the primary school component of the project was to support the introduction of the rural-oriented primary school curriculum in Southern Province by upgrading the facilities at ten pilot primary schools. This was to a great extent achieved, largely through the efforts of the members of the communities involved.

After consultation with MECAS officials, various changes were made to the design, type and number of buildings and to the amount of furniture to be provided. A standard size was adopted for all classrooms, with the exception of the multipurpose unit, to accommodate 44 pupils sitting at double desks. The multipurpose unit was requested by MECAS and consists of an office and store, a standard classroom and a large room the size of two classrooms. Furniture was provided for all new classrooms as well as for some of the existing ones. The sites of three of the schools had been changed by the staff at BTC by the time the project started, but this had no effect on the number of classrooms built. See Annex 1 for facilities constructed.

At two schools, classroom buildings were not constructed because insufficient materials and labour were provided by the community. Similarly, pit-latrines were not built at some schools because of material, labour and time constraints but all had pit-latrines already provided under other projects. At two sites, wells could not be constructed because of the ground conditions but wells already existed nearby.

The project document stated that road improvements were to be carried out by a contractor. However, the funds allocated were insufficient for this and all road works were carried out by self-help or direct labour. The amount of road improved was greatly reduced mainly because of earlier improvements, but 10½ miles were improved, and culverts and an additional bridge built.

The project was therefore completed substantially as visualized in the project document, even with all the operational and implementation problems, with only a four month overrun on the original two year project duration.

There was also a substantial saving on the UNCDF budget of some US$360,000 which was due to savings on the road improvement component, to careful design and supervision of the buildings and to close monitoring of all aspects of expenditure. The savings were utilized to construct eight teachers houses in a second phase of the project (for details see Annex 12).

The cost of the classrooms was very low at approximately US$15 a square foot including all administrative and operational overheads (see Annex 11 for details). This can be compared to the cost of the teachers houses which were built by a contractor in the second phase of the project, of US$30 a square foot (excluding administration and supervision costs). It can also be compared with the May 1990 estimate of US$27 a square foot (again excluding administration and supervision costs) for completing the classroom buildings being constructed under the SL/IDA Third Education Project (project at present at a standstill), using small contractors.

The project has therefore proved that, with careful management, technically assisted self-help can deliver good schools at a substantially lower cost than that of using a contractor. The technical assistance costs are high but the rewards in terms of the reduction in total cost and in community and rural development definitely justify these costs.

Maintenance of the buildings and facilities at the pilot schools will depend on the continued support and involvement of the various Paramount Chiefs, Section and Town Chiefs, the Community Development Councils and the Parent Teacher Associations in all the villages and it is hoped that, after their successful involvement in the construction of these schools, this will happen.

B. CONCLUSIONS TO BE DRAWN

Various conclusions can be drawn from the experience of constructing the ten pilot primary schools:

- insufficient consideration was given at the planning stage to the selection of villages whose schools were to be developed as pilot schools.

- having chosen the schools, inadequate community development work was then carried out in order to make the communities aware of the level of commitment expected from them in terms of the amount of materials and labour they would have to provide.

- the number of buildings provided at all schools exceeded both the materials and labour that the communities could provide and their actual needs in terms of accomodation for their children.

- the time allowed for the work to be carried out on a mainly self-help basis was too short and no allowance was made for the effect on the building programme of the extended rainy season.

- the lead time was too short for the ordering and procurement of materials, tools and equipment.

- the original and even the revised vehicle provision was inadequate for the number of personnel involved, the nature of the sites and the amount of materials to be moved. The provision of two tippers would have greatly speeded up the work.

- there is a great demand among members of rural communities in Sierra Leone for improved facilities in their villages particularly for their children.

- if given adequate assistance, most rural communities, even given the problems involved, are prepared to devote a great deal of time and effort into helping themselves obtain these facilities.

C. LESSONS TO BE LEARNED

The principal lessons to be learned from this project, which could be of use to other similar projects are as follows:

- in formulating a self-help project, great care should be taken in the selection of the communities to be involved. Before selection they must be fully informed of the amount of work and time that will be required of them and of the amount of materials they will have to provide. Only when this is understood and agreed should the final selection be made.

- the scale of the development should be kept small in order that the communities are fully able to understand the project and provide adequate labour and materials to complete it.

- the methods and materials to be used to construct the buildings should be appropriate for their use, locally available and familiar to both the communities and the artisans working on the project.

- factors such as the farming cycle, which will have a great impact on the availability of labour, and the effect of a long rainy season on construction work must be taken into account at the project planning stage.

- a system of incentive payments, however small, built into the project from the start will greatly assist small farming communities in providing adequate labour.

- provision of WFP food rations as 'food for work' will also greatly assist in obtaining and maintaining sufficient labour to operate the project.

- it will be beneficial if the implementing agency supplies and pays for skilled artisans (such as carpenters and masons) and adequate numbers of properly trained supervisers to oversee the work on site.

- sufficient time must be allowed in the initial stages of the project for the preparation of documentation and the procurement of materials and equipment, taking into account the fact that most supply items will have to be tendered for.

- adequate transport for project staff and materials must be provided and particular provision must be made for transport of bulky materials such as sand and stone to the sites.

- adequate and secure stores must be available at project headquarters and work sites, for the storage of project equipment, materials, fuel, foodstuff, etc.

- accurate records must be kept and equipment and supplies (particularly food rations if supplied) carefully monitored at both the project headquarters and on the work sites in order to avoid misuse and theft and to establish the actual cost of the project when complete. The provision of a personal computer will be essential in the implementation of the project for setting up project programming and monitoring routines.

- new materials, tools or techniques (such as the BREPAC blockmaking machines in this project), should only be introduced after careful consideration, particularly if the construction period is short.

- if cement stabilised soil blocks are used for construction, a continuous check must kept on the characteristics of the soil being used throughout the period during which they are being made in order to avoid shrinkage due to excess clay content, etc.

- finally, the project director should be appointed at an early stage in order that as much preparatory work as possible can be carried out before the actual project starts. He can also then be usefully involved in other decisions such as the selection of experts, UNVs and other project personnel.

ANNEXES

ANNEX 1 : SITES & FACILITIES CONSTRUCTED

Name of School	As Workplan(1) / As Built(2)	Distance from BTC in Miles	Upgraded Roads	Wells	Pit-Latrines	2Class room Unit	3Class room Unit	Multi-purpose Unit	Work-shop Unit	Total Area As Workplan	Total Area As Project Doc.
BTC Experimental	(1)	-	-	1	2 x 4	-	-	1	1	4,329.5	
Sch.,Torwama	(2)		-	1	2 x 4	-	-	1	1	4,329.5	3,496
SDA Primary Sch.	(1)	4	2.4	1	2.4	1	1	1	1	8,871.5	
Mattru-on-the-Rail	(2)		3.5	1	1.4	1	1	1	1	8,871.5	9,384
Methodist Prim.	(1)			1	2 x 4	1	1	1	1	8,871.5	
Sch.Gondama	(2)	9	(5.4)	1	2 x 4	1	1	1	1	8,871.5	9,384
ACBC Primary Sch.	(1)		7.2	1	2 x 3	1	-	1	1	6,321.5	
Kassama	(2)	12	7.0	-	1 x 3	1	-	1	1	6,321.5	6,624
RC Primary Sch.	(1)		0.6	1	2 x 3	1	-	1	1	6,321.5	
Gbaiima	(2)	12	0.25	1	-	1	-	1	1	6,321.5	6,624.4
UBC Primary Sch.	(1)		4.80	1	2 x 4	1	-	-	1	3,836.5	
Bumpe	(2)	9	0.25	1	2 x 4	1	-	-	1	3,836.5	3,496
DEC Primary Sch.	(1)		(2.4)	1	2 x 4	1	1	1	1	8,871.5	
Bumpe	(2)	9	0.25	1	2 x 4	1	1	1	1	8,871.5	9,384
SDA Primary Sch.	(1)		(1.2)	1	2 x 3	1	-	1	1	6,321.5	
Nengbema	(2)	19	0.25	1	-	-	-	1	1	4,329.5	6,624
DEC Primary Sch.	(1)		2.4	1	2 x 4	-	2	1	1	9,577.0	
Nengbema	(2)	19	-	-	-	-	1	1	1	7,165.75	9,918
RC Primary Sch.	(1)			1	2 x 4	1	1	1	1	8,871.5	
Damballa	(2)	15	-	1		1	1	1	1	8,871.5	9,384
TOTALS	(1)		26.6	10	14x4+6x3	8	6	9	10	72,193.5	
	(2)		11.5	8	9x4+1x3	7	5	9	10	67,790.25	74,318

ANNEX 2: DETAILS OF BUILDINGS AS CONSTRUCTED

Details of the buildings as constructed are given on drawings PPS/1-12 following. The buildings were designed to be constructed simply and economically; to deal with the hot and humid climate; to use locally available materials and skills.

In most rural communities in Sierra Leone there are masons and carpenters capable of constructing simple buildings using mud blocks, bush-sticks and CI sheets. It was therefore decided at the start of the project to use these or similar materials, making improvements where possible.

The use of mud blocks was unacceptable to Government and therefore the buildings were generally constructed of soil-cement blocks (using a ratio of 10% cement to 90% soil on most sites) made in BREPAC blockmaking machines imported by the PEU. Each school site had one machine. One of these machines had been successfully used by the CTA in the SL/IDA Third Education Project, but the machines imported for the Bo project proved to be of inferior quality (the company manufacturing them having changed its management) and there were constant problems with using, maintaining and obtaining spare parts for them.

The blocks produced by the machines were however, generally of a very high quality and were used unrendered where possible. Gable end walls which were exposed to rain were rendered as were columns and piers and walls along verandahs. The masons had no problems with laying the blocks. It should be noted here that, as long as adequate footings and foundation walls are provided, it would be perfectly feasible to construct similar classrooms using unstabilised mud blocks.

Footings were constructed either of concrete using stone gathered and broken on site or gravel from nearby rivers; or of large stones set in mortar. Foundation walls, to a minimum height of one foot above ground level, were constructed of sand-cement blocks made on site in wooden moulds.

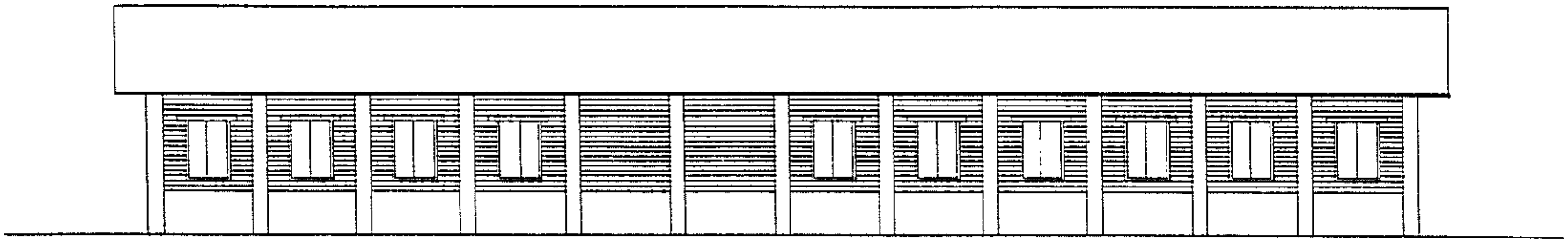
Floors and verandahs were constructed of three inch mass concrete, laid unreinforced on well compacted laterite fill and finished with a steel trowel. No screeds were provided as these inevitably crack unless given expert supervision during laying.

Consideration was given to the use of roofing materials other than CI sheets. The CTA had used fibre-concrete tiles made on a J.Parry machine on a prototype classroom building in the Third Education Project. However, the tile machines are expensive and the manufacturing process is slow and needs a great deal of supervision. The technology is new and, while virtually any carpenter can construct a CI sheet roof with little or no supervision, it proved very difficult to train one to use fibre-concrete tiles properly. This type of roof also requires a lot more timber than a CI sheet roof, an important consideration.

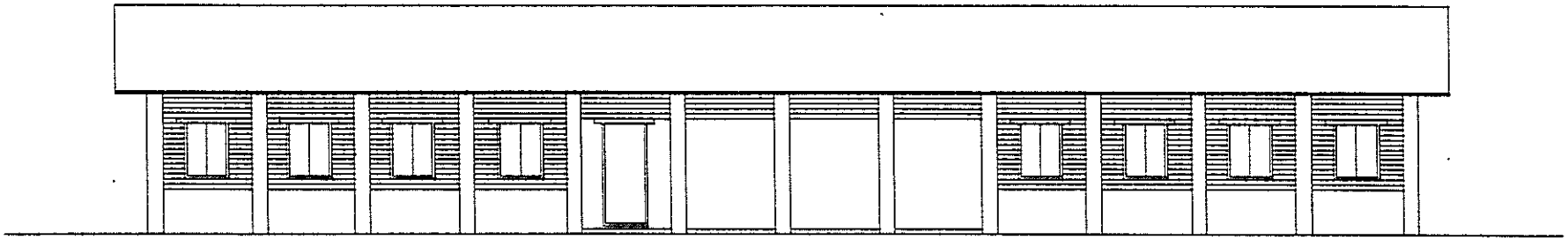
It was decided therefore to construct roofs using CI sheets on bush-stick trusses and purlins. Bush-sticks are a by-product of the bush-fallow agricultural system in general use in the country and are therefore a renewable resource. They are very hard and to some extent termite resistant. The bush-stick truss and method of erection designed for the Third Education Project, having proved successful, was used again. The only modification to the usual method of fixing roof sheets was to blind-rivet the ridge pieces to the top sheets rather than nailing through them into the purlins. This overcame, very simply, the main cause of leaking roofs. Ceilings were provided using locally woven mats where they were available.

Doors and window shutters were made centrally at BTC of local hardwood. The frames were delivered to site complete and were built into the walls as they went up using wire nail holdfasts. All frames had an extended double frame at the top which acted as a lintel avoiding the need for any reinforced concrete.

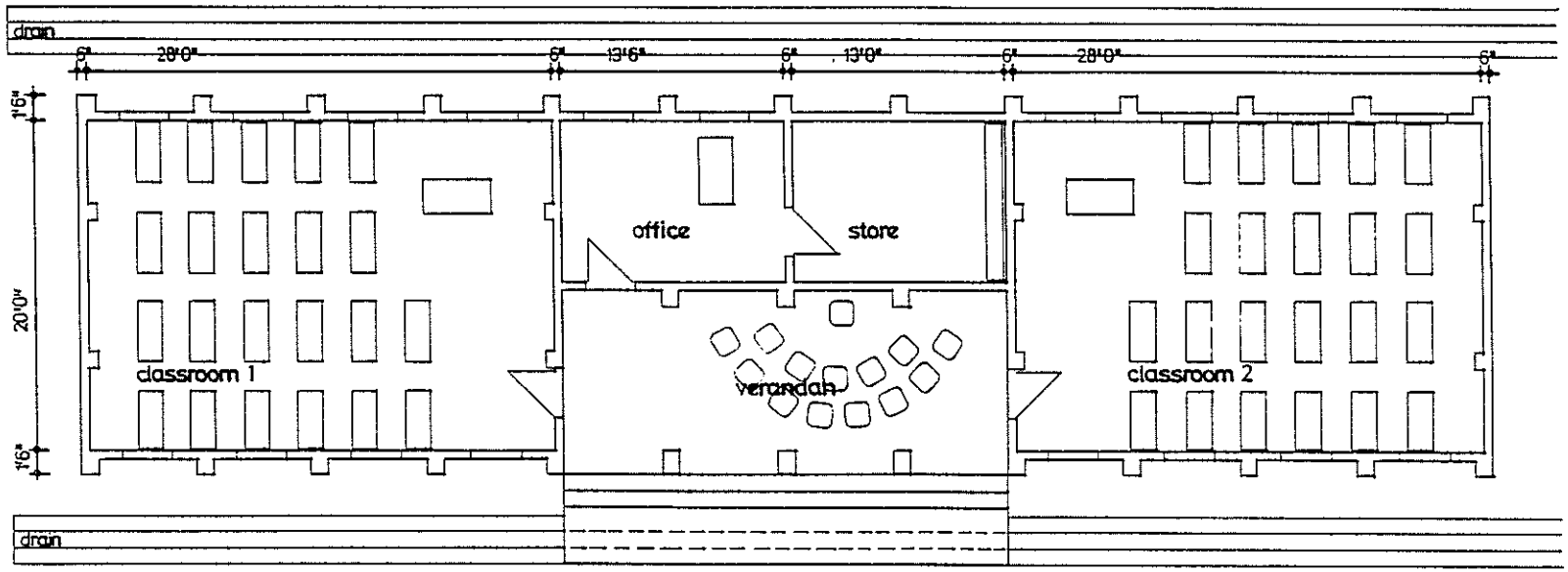
All roof timbers and door and shutter frames were treated with used vehicle engine oil which provided a cheap, effective and relatively innocuous treatment against termite attack.



REAR ELEVATION

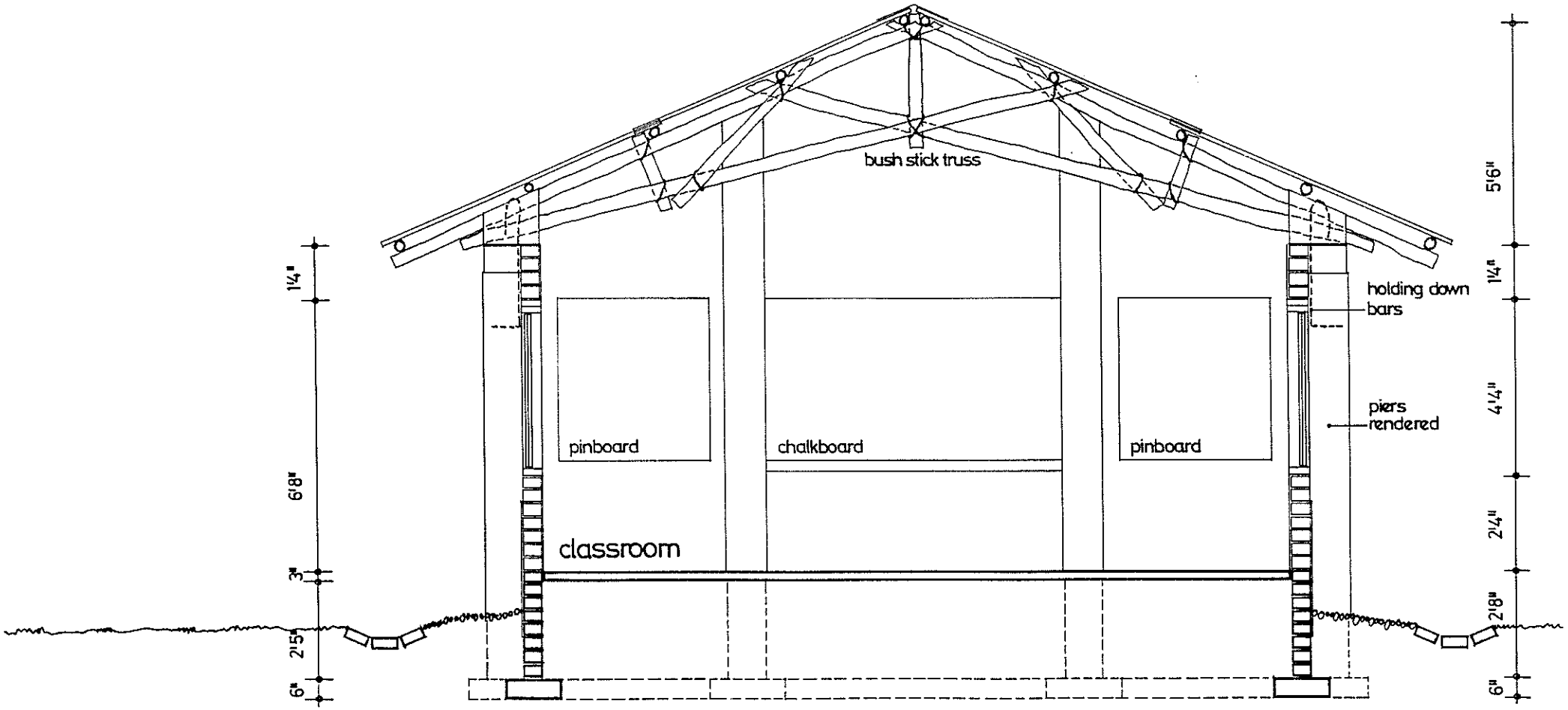


FRONT/ENTRANCE ELEVATION



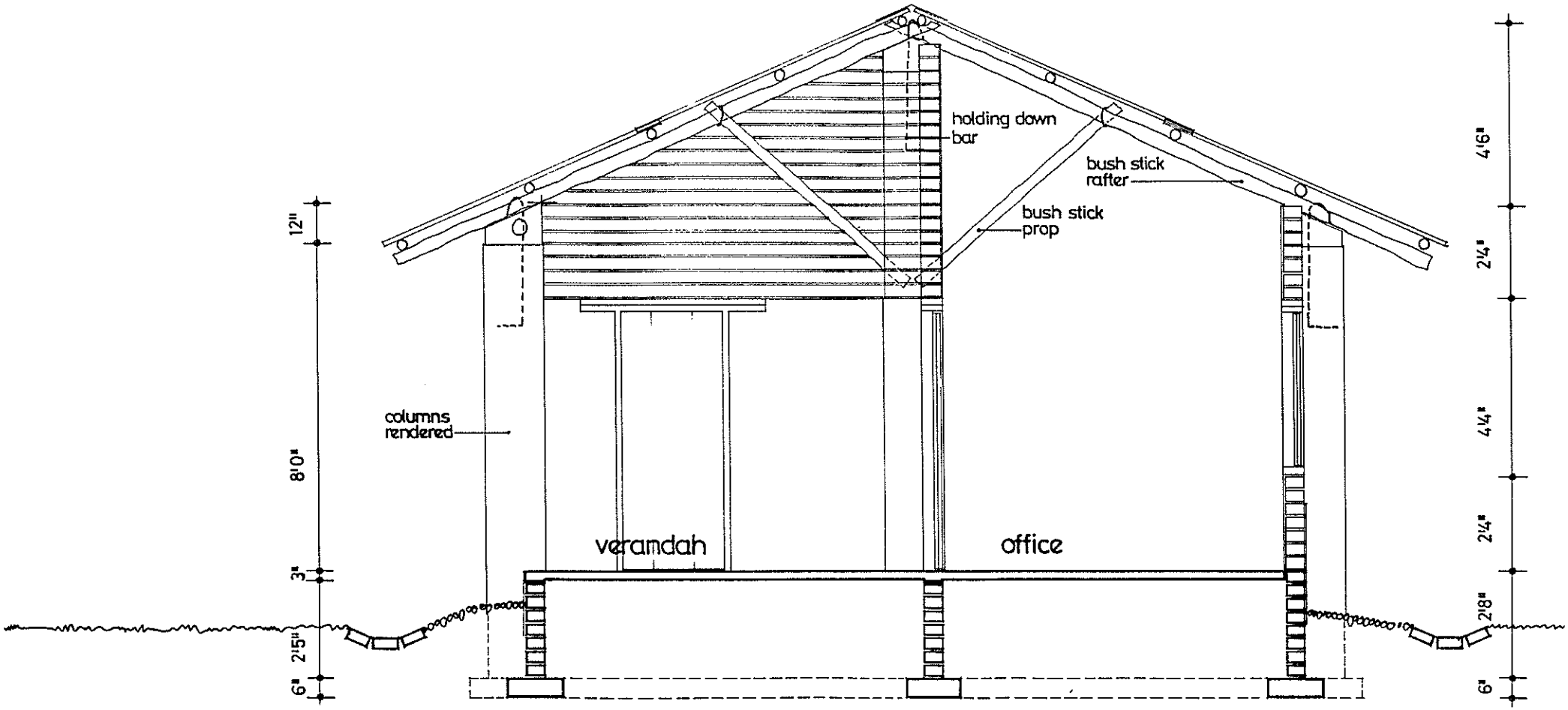
FLOOR PLAN

PPS/1 : 2 CLASSROOM UNIT - PLAN & ELEVATIONS



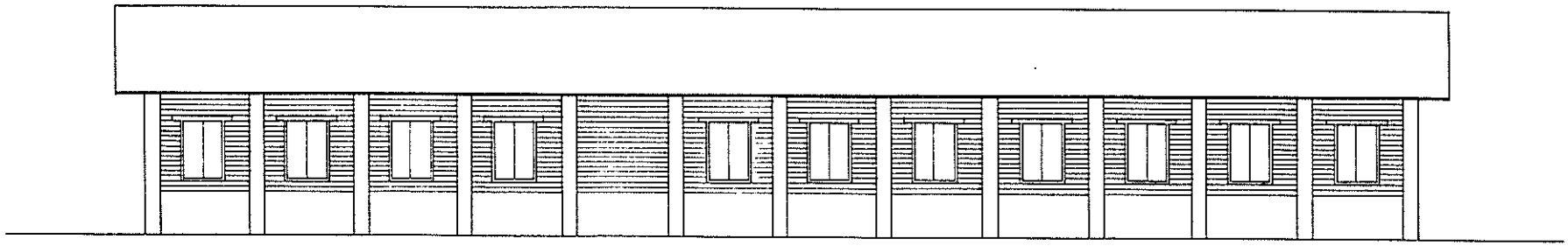
TYPICAL SECTION THRO' CLASSROOM

PPS/2 : 2 CLASSROOM UNIT - SECTION THRO' CLASSROOM



SECTION THRO' OFFICE

PPS/3 : 2 CLASSROOM UNIT - SECTION THRO' VERANDAH & OFFICE



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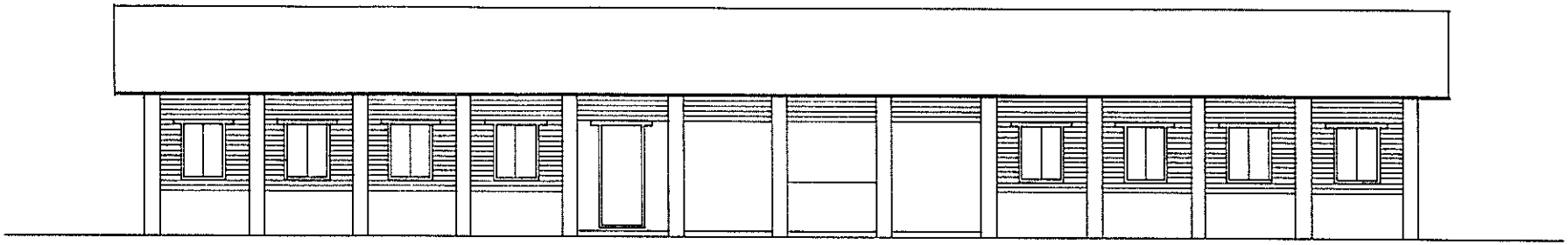

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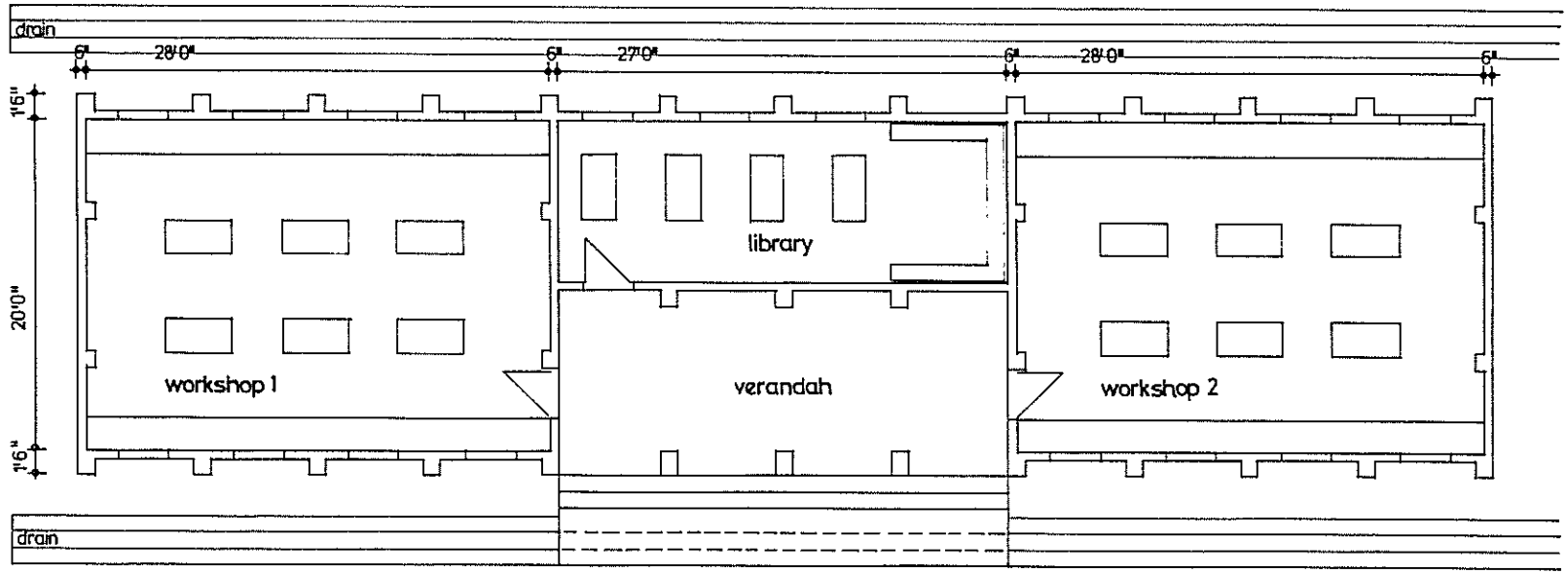
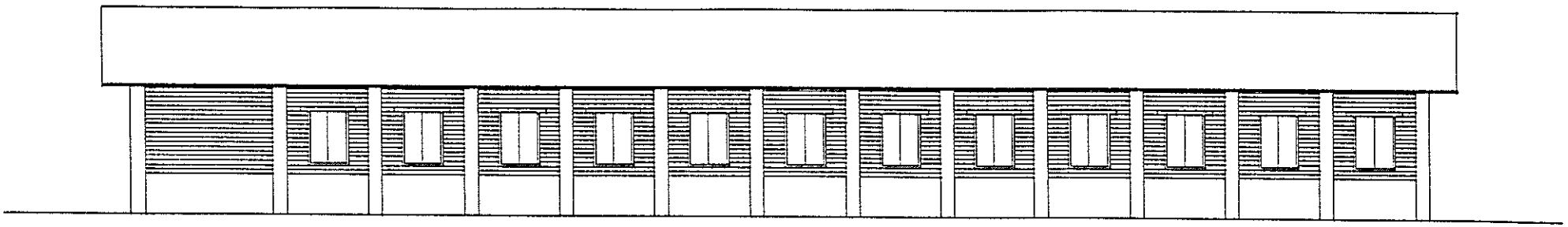


FLOOR PLAN

PPS/4 : WORKSHOP UNIT - PLAN & ELEVATIONS



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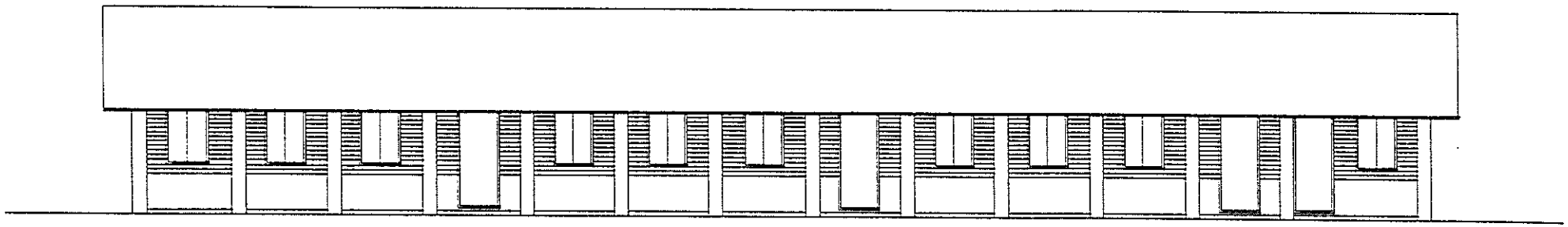

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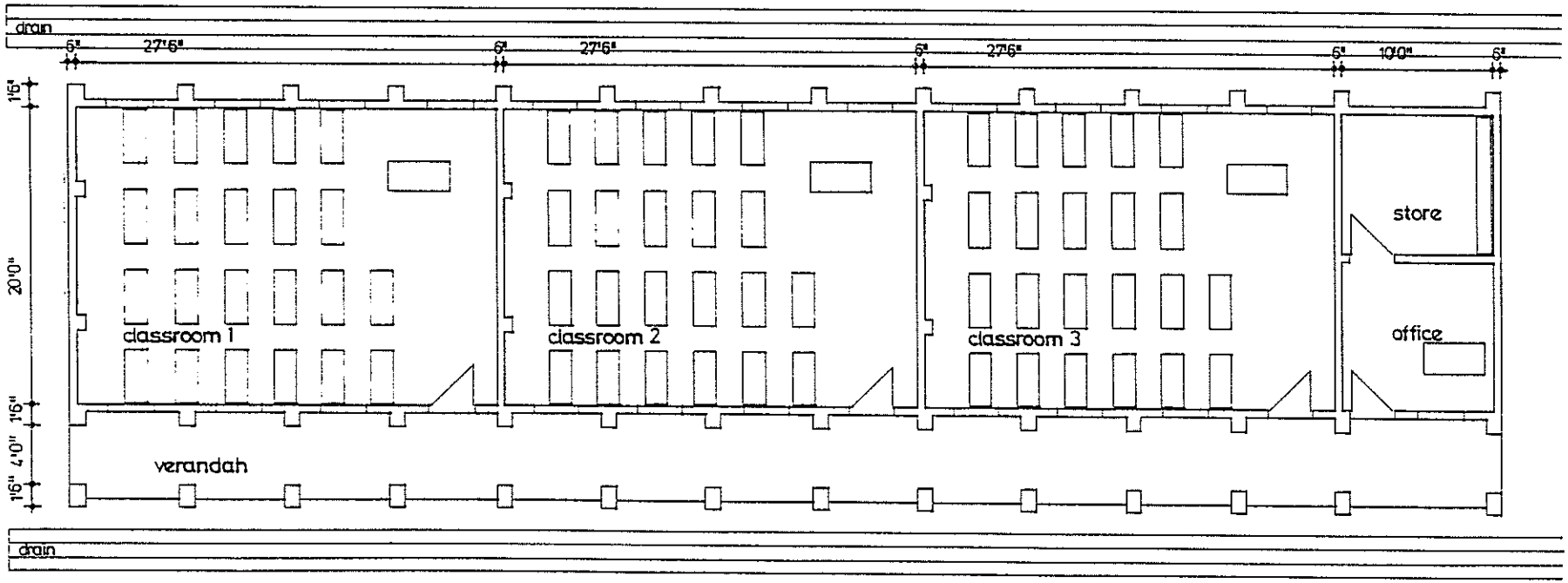
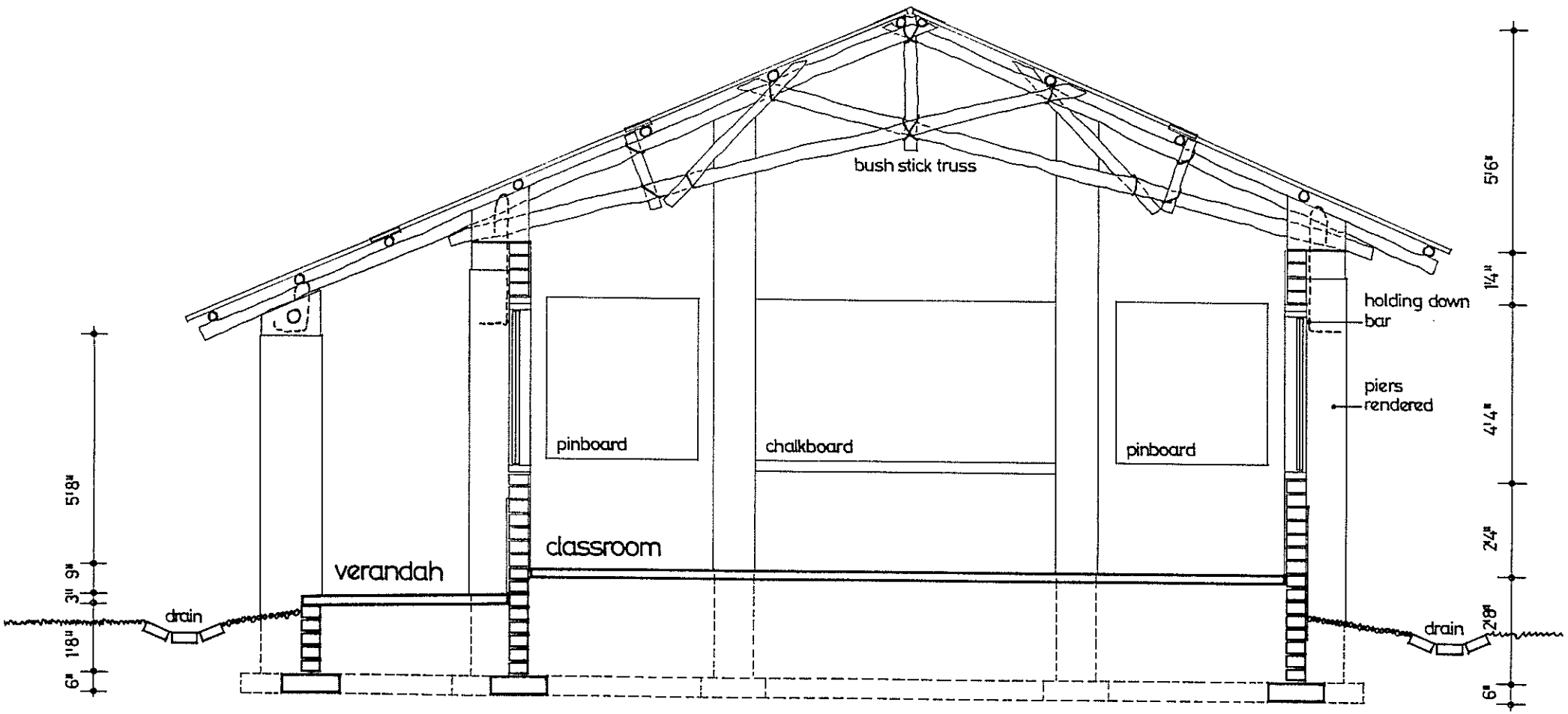


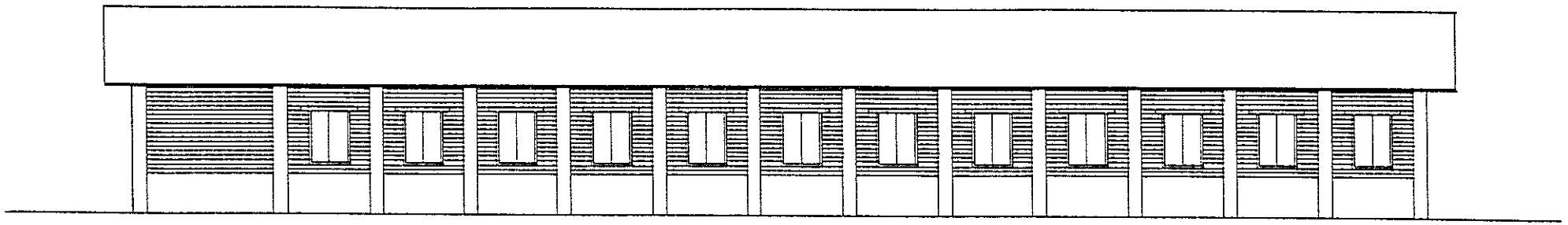
FLOOR PLAN

PPS/5 : 3 CLASSROOM UNIT - PLAN & ELEVATIONS



TYPICAL SECTION THRO' CLASSROOM

PPS/6 : 3 CLASSROOM UNIT - SECTION THRO' CLASSROOM



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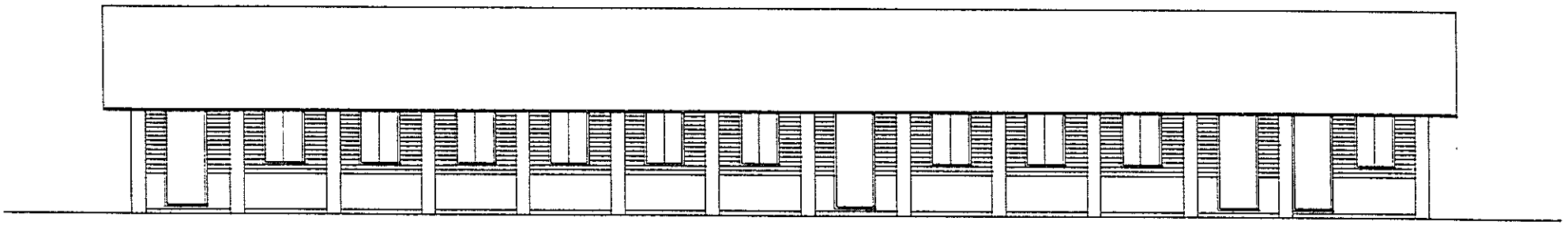

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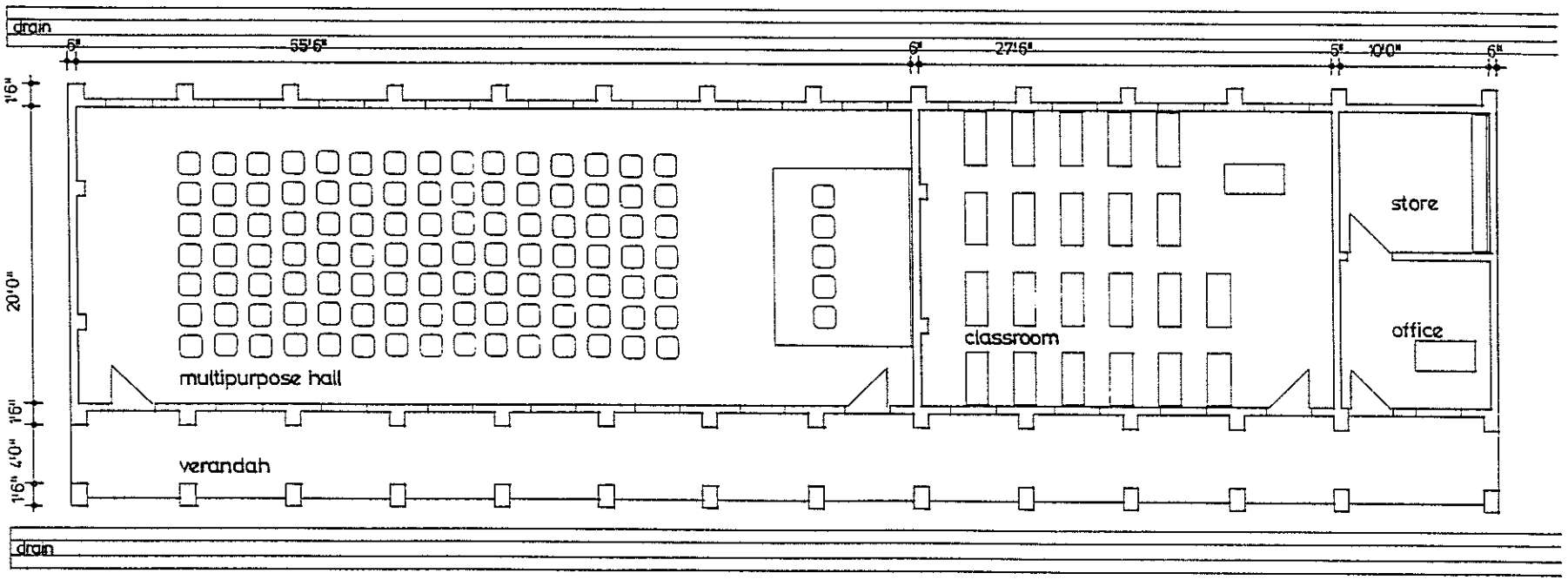
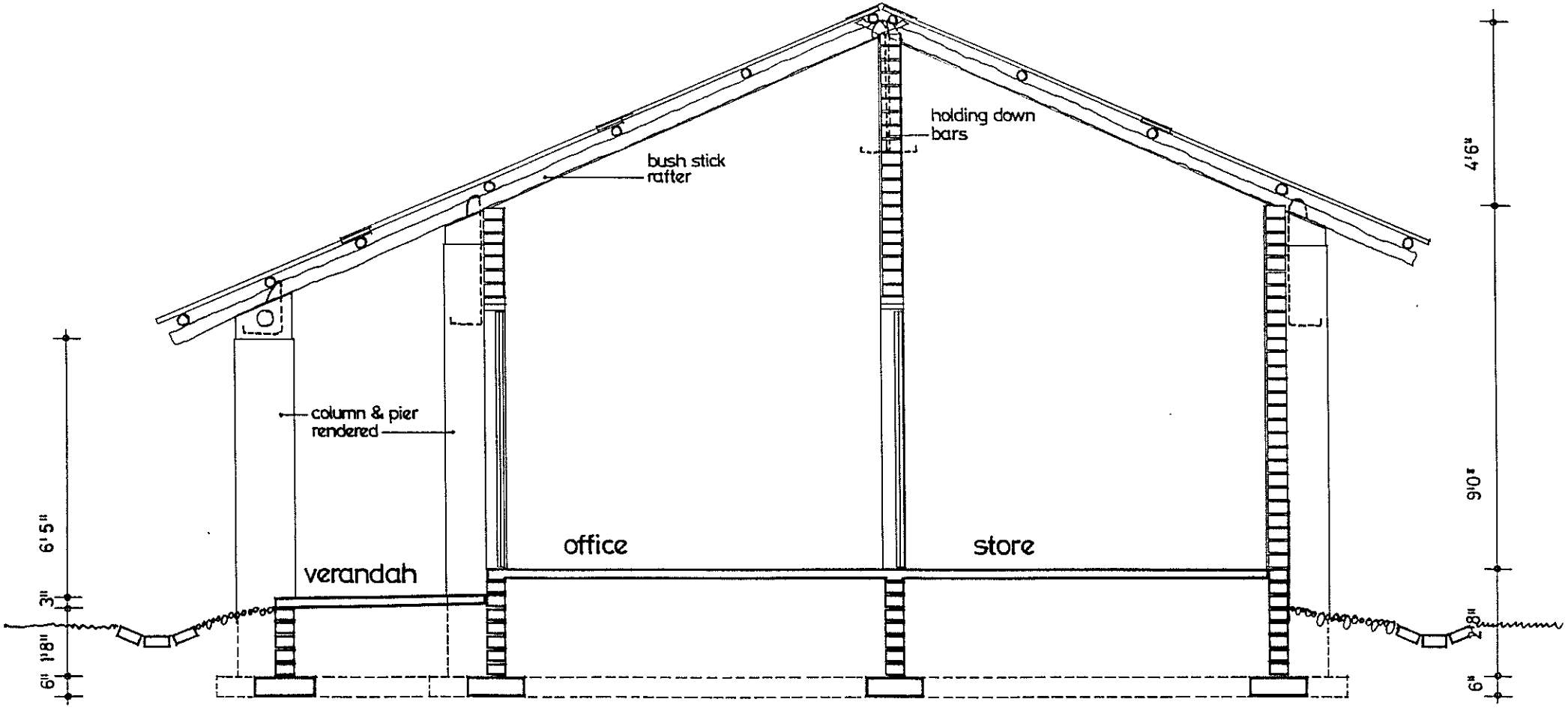


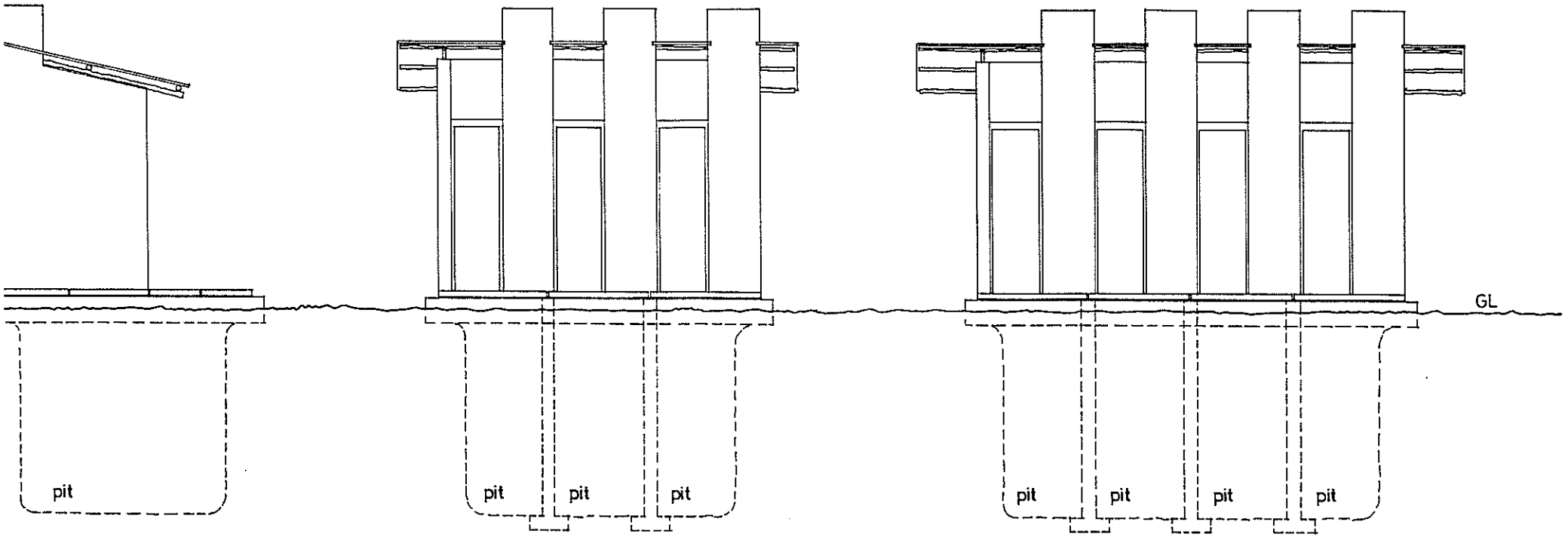
FLOOR PLAN

PPS/7 : MULTIPURPOSE UNIT - PLAN & ELEVATIONS



SECTION THRO' OFFICE & STORE

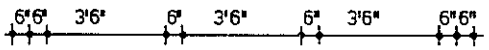
PPS/8 : MULTIPURPOSE UNIT - SECTION THRO' OFFICE & STORE

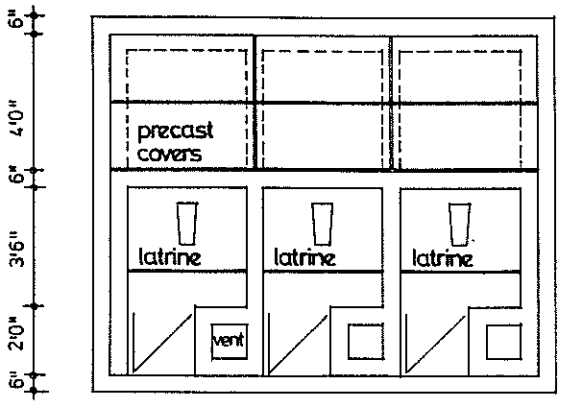


D ELEVATION

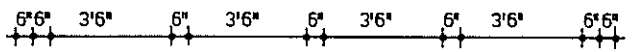
ENTRANCE ELEVATION

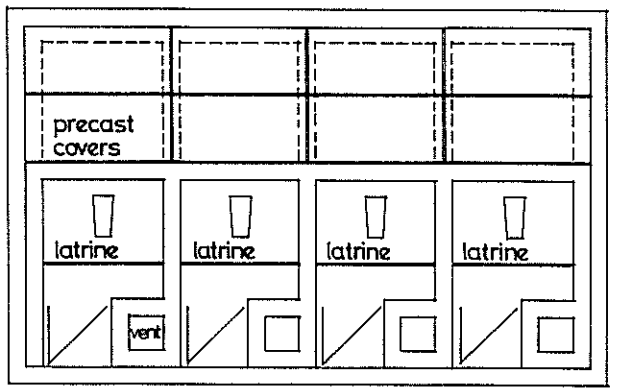
ENTRANCE ELEVATION





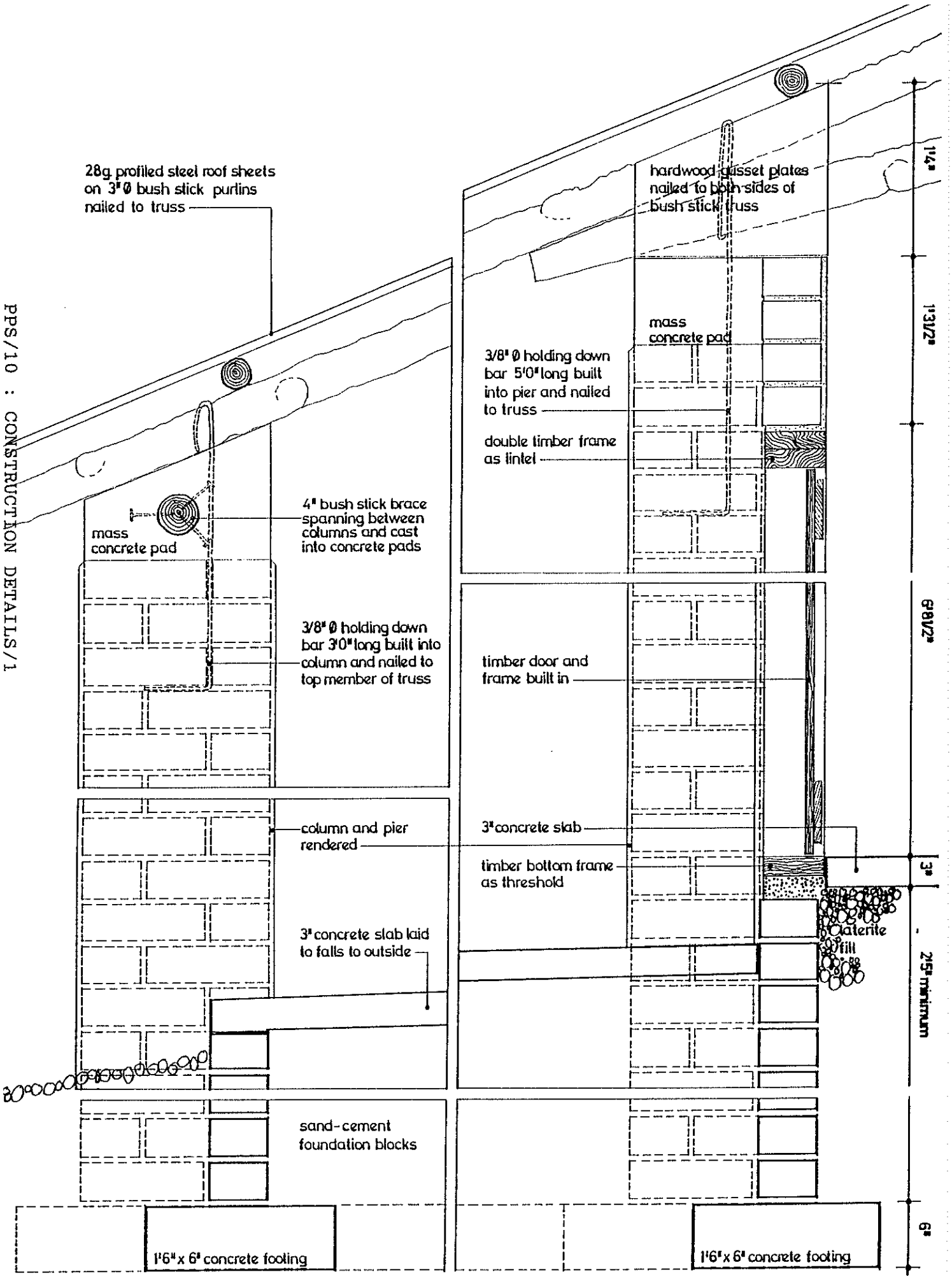
PIT LATRINE/3 FLOOR PLAN

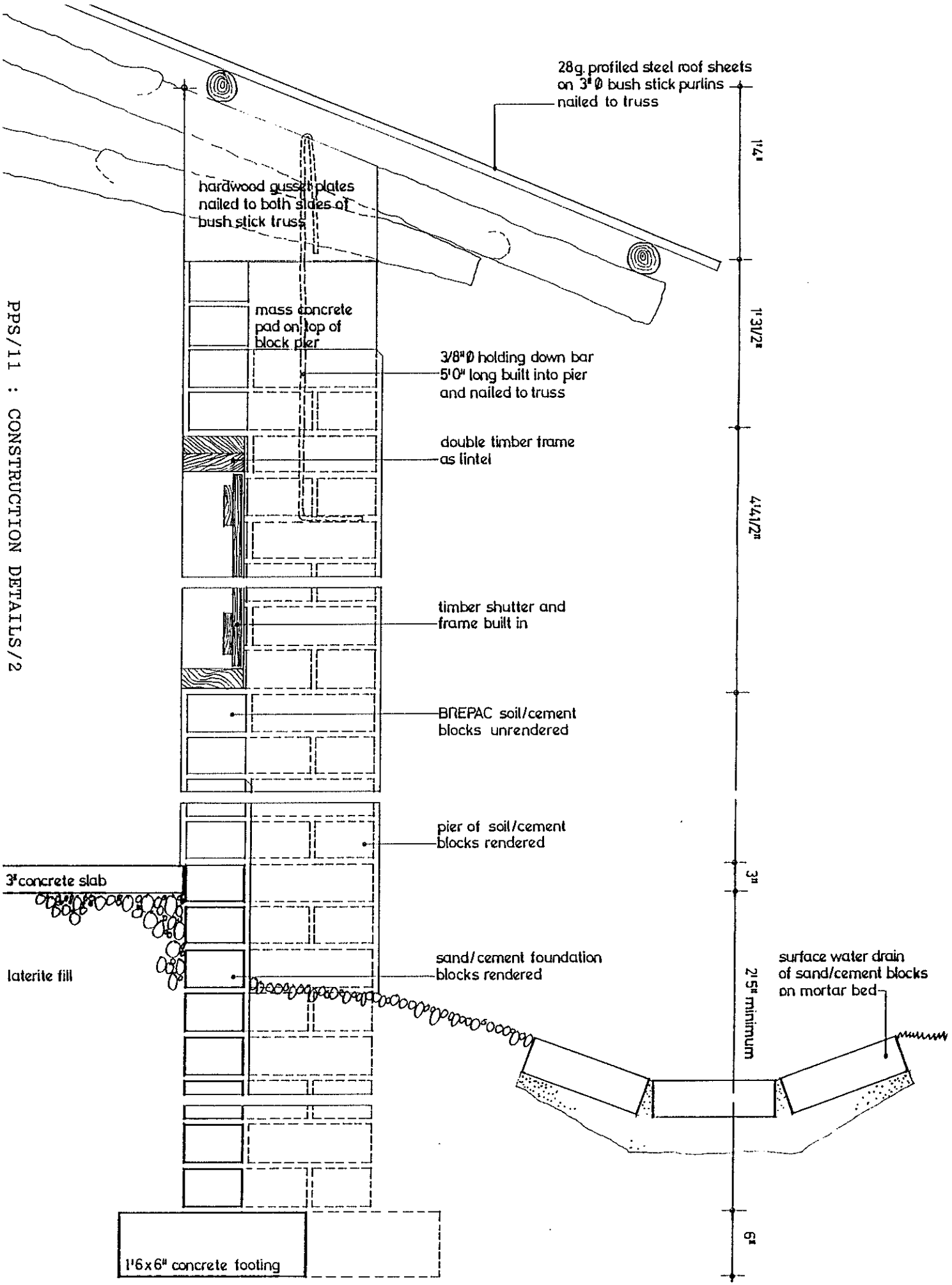


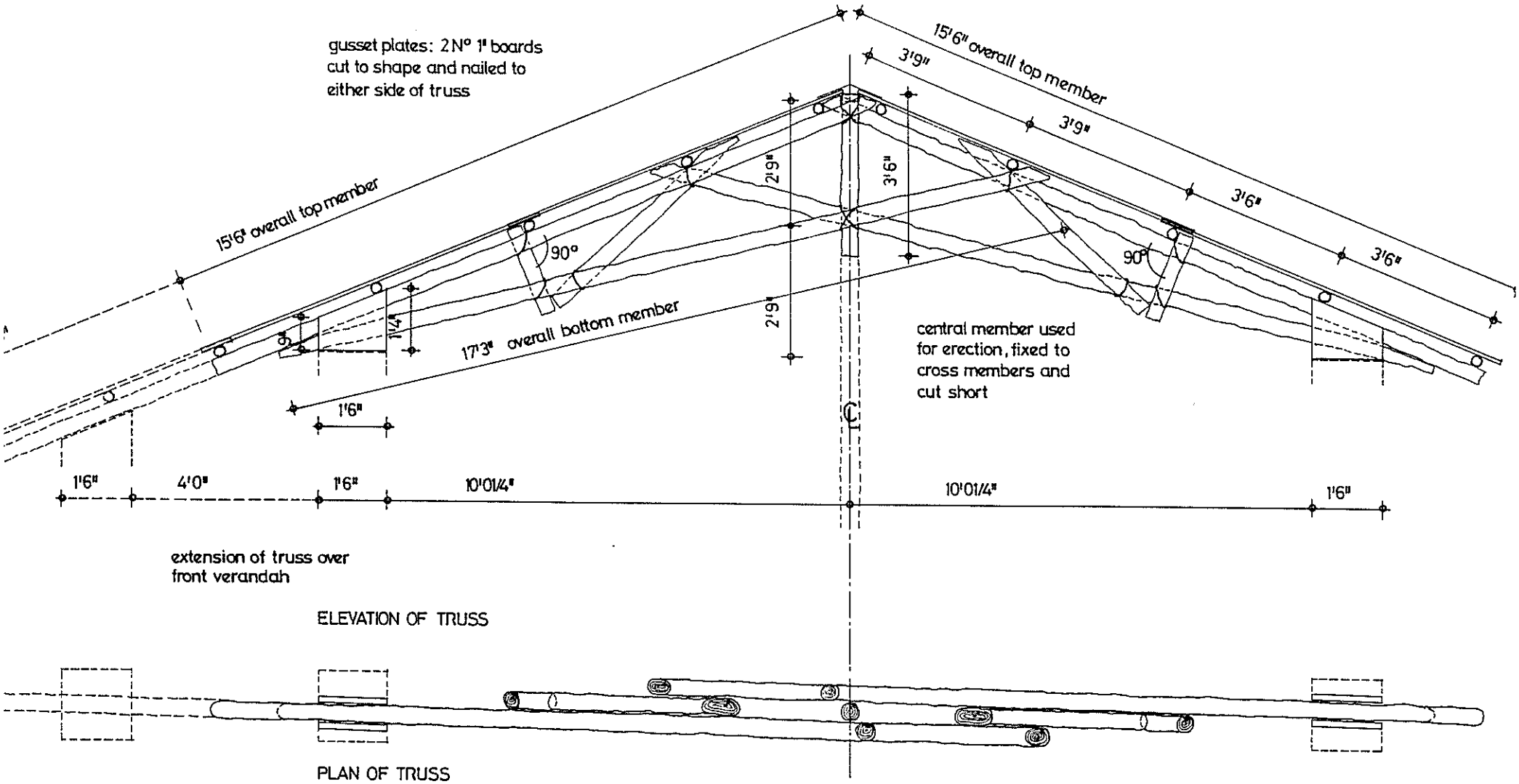


PIT LATRINE/4 FLOOR PLAN

PPS/9 : PIT LATRINES - PLANS & ELEVATIONS


28g profiled steel roof sheets on 3" Ø bush stick purlins nailed to truss
hardwood gusset plates nailed to both sides of bush stick truss
1'4"
1'3 1/2"
mass concrete pad
3/8" Ø holding down bar 5'0" long built into pier and nailed to truss
double timber frame as lintel
4" bush stick brace spanning between columns and cast into concrete pads
mass concrete pad
3/8" Ø holding down bar 3'0" long built into column and nailed to top member of truss
6'8 1/2"
timber door and frame built in
column and pier rendered
3" concrete slab
timber bottom frame as threshold
3"
laterite fill
3" concrete slab laid to falls to outside
2'5" minimum
sand-cement foundation blocks
1'6" x 6" concrete footing
1'6" x 6" concrete footing
6"


28g profiled steel roof sheets on 3" Ø bush stick purlins nailed to truss
hardwood gusset plates nailed to both sides of bush stick truss
mass concrete pad on top of block pier
3/8" Ø holding down bar 5'0" long built into pier and nailed to truss
double timber frame as lintel
timber shutter and frame built in
BREPAC soil/cement blocks unrendered
pier of soil/cement blocks rendered
3" concrete slab
laterite fill
sand/cement foundation blocks rendered
surface water drain of sand/cement blocks on mortar bed
1'6x6" concrete footing
1'4"
1'3 1/2"
4'4 1/2"
3"
2'5" minimum
6"



all truss members of 4" nominal bush poles. all joints nailed and tied with 1/4" rerods

PPS/12 : DETAILS OF BUSH STICK TRUSS

ANNEX 3: SITE PLANS & SITE PHOTOGRAPHS

At most schools, sites were donated by the communities for the construction of the new school buildings. The sites were usually adjacent to the existing school buildings but in some cases, where there was insufficient space, completely new sites were found. Therefore, in most villages families were giving up land usually used for agriculture for the benefit of the community as a whole.

In planning the layout of the buildings, care was taken to orient them north/south wherever possible in order to minimise solar penetration and also to leave sufficient space both between the buildings and around them for possible future expansion. Stormdrains were constructed around the buildings using sandcrete blocks and new playing fields were cleared where they did not exist.

1) BTC Experimental School, Torwama.

This school is located on land belonging to Bo Teachers College. A Workshop Unit was constructed adjacent to the existing buildings and, at the request of the Torwama community, a Multipurpose Unit was constructed close to the village for the community's use as a meeting place, health clinic, etc. Pit-latrines were constructed for the use of the school and the community; the existing well at the school was renovated and a new well built adjacent to the Multipurpose Unit.

2) SDA Primary School, Mattru-on-the-Rail

As there was insufficient space adjacent to the existing school in the centre of the village, the new school buildings, consisting of a 2 Classroom Unit, a Workshop Unit, a 3 Classroom Unit and a Multipurpose Unit together with pit-latrines and a well, were constructed on a large new site on the edge of the village.

3) Methodist Primary School, Gondama

The existing school was on an unsuitable site a long way from the town and therefore the new school buildings were constructed on a new site on the outskirts of the town. A 2 Classroom Unit, a Workshop Unit, a 3 Classroom Unit and a Multipurpose Unit were constructed together with pit-latrines and a well.

4) ACBC Primary School, Kassama

The school consisted of temporary buildings, later demolished, built on a sloping site outside of the village. A 2 classroom Unit, a Workshop Unit, a Multipurpose Unit and pit-latrines were built. A well could not be built because of underlying rock but there are existing wells nearby in the village.

5) RC Primary School, Gbaiima.

The existing school building was on the edge of the village with a playing field and plenty of room for expansion. A 2 Classroom Unit, a Workshop Unit and a Multipurpose Unit were built together with a well. There are existing pit-latrines provided under a previous project.

6) UBC Primary School, Bumpe.

This is a large primary school on the outskirts of the town with an existing hall, classrooms and boarding accommodation. A 2 Classroom Unit and a Workshop Unit were built together with pit-latrines and a well.

7) DEC Primary School, Bumpe.

This is a long established government school next to the UBC school with 3 existing classroom buildings and a large playing field. A 2 Classroom Unit, a Workshop Unit, a

3 Classroom Unit and a Multipurpose Unit were constructed together with pit-latrines and a well.

8) SDA Primary School, Nengbema.

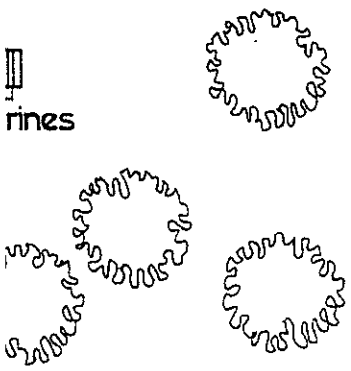
The existing school building was on a large site on the outskirts of the village. A 2 Classroom Unit and a Multipurpose Unit together with a well were built. The Workshop Unit and the pit-latrines were not built because sufficient materials were not provided. There are existing pit-latrines built by a previous project.

9) DEC Primary School, Nengbema.

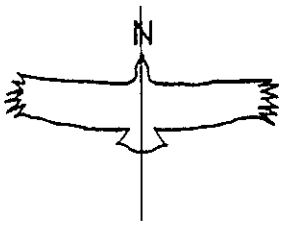
The school is at the other end of the village from the SDA school and consisted of one existing classroom building. There was adequate space for expansion and a 2 Classroom Unit, a 3 Classroom Unit and a Multipurpose Unit were built. The well was started but not completed because ground water could not be reached. There is an existing well at the clinic close to the school. The Workshop Unit and the pit-latrines were again not built because the neccessary materials were not provided by the community. There is an existing pit-latrine on the site built under a previous project.

10) RC Primary School, Damballa.

The existing school was located outside of the town on land owned by the RC mission. This was the most difficult site to build on because of the slope and a great deal of cutting and filling had to be carried out. The two long buildings were stepped along their length and the 2 Classroom Unit was shortened to try and reduce the amount of cut and fill neccessary. A 2 Classroom Unit, a Workshop Unit, a 3 Classroom Unit and a Multipurpose Unit together with a well were constructed. There are existing pit-latrines on the site built by a previous project.



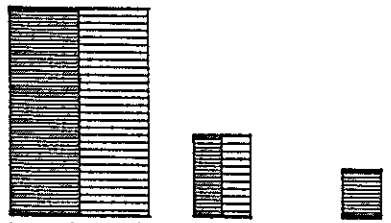
rines



existing well

existing classrooms

ce



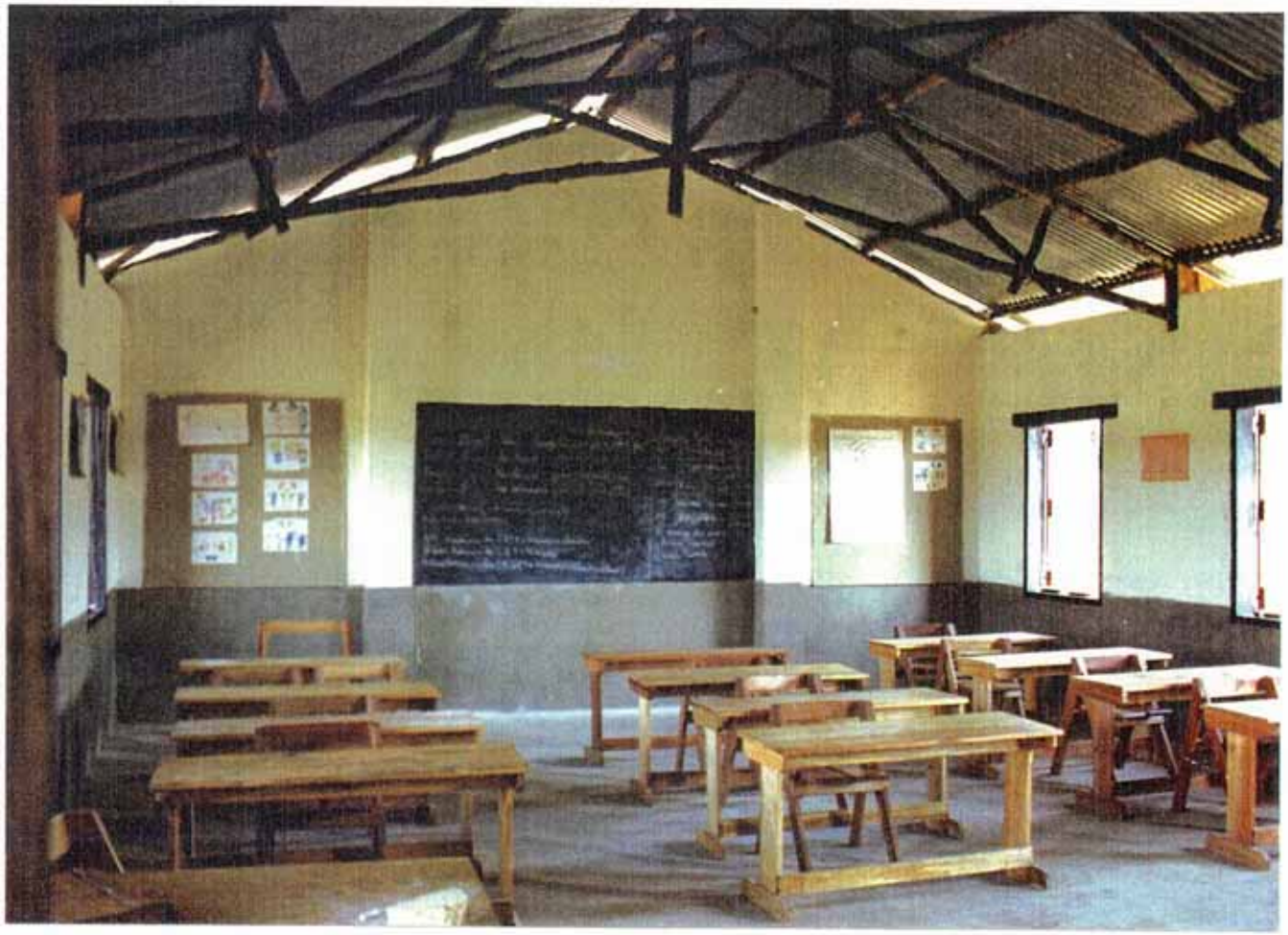
teachershouse
(second phase)

existing classrooms

workshop

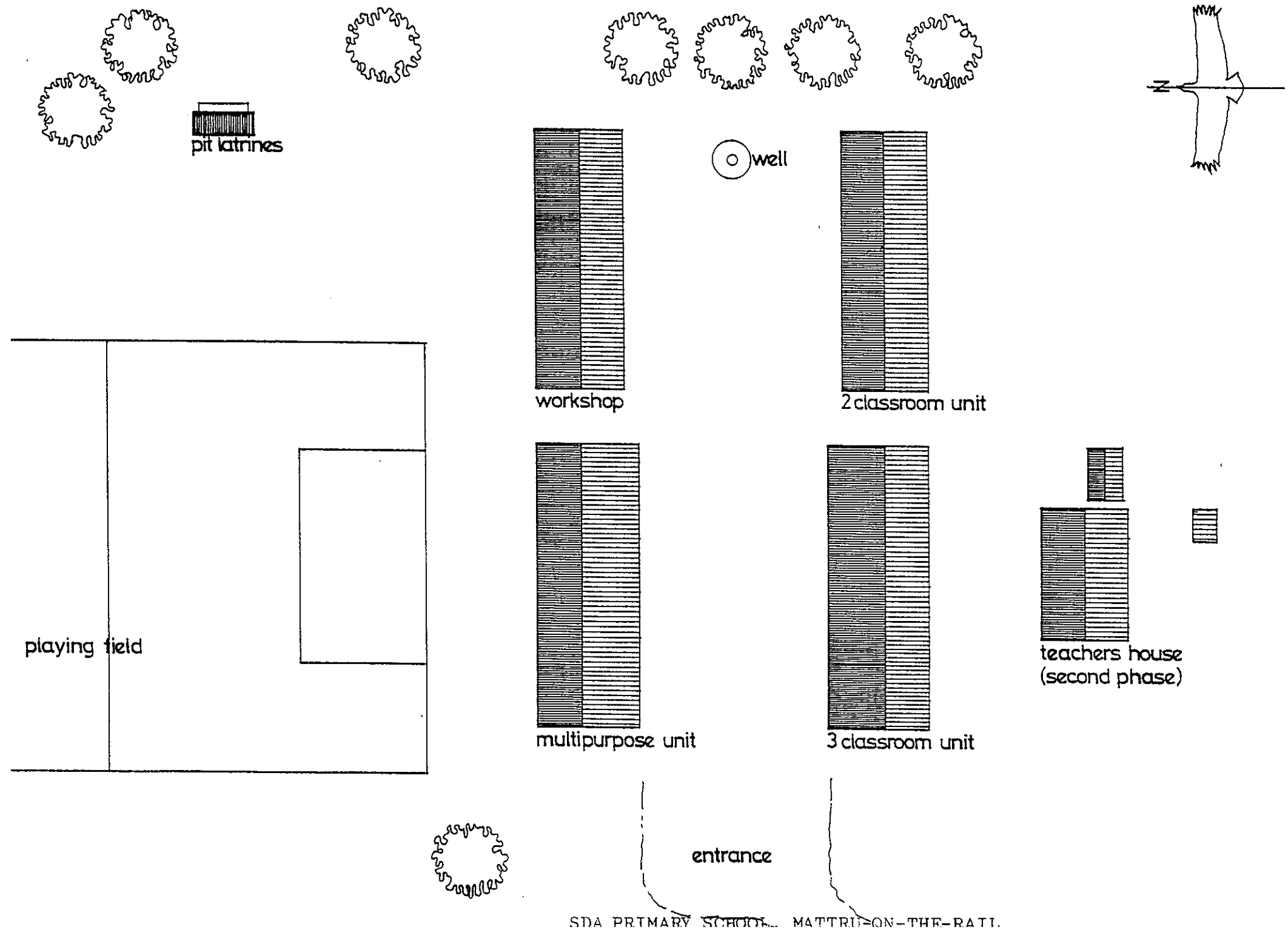
0 10 20 30 40 50 60 70 80 90 100ft

BTC EXPERIMENTAL SCHOOL, TORWAMA



CLASSROOM INTERIOR

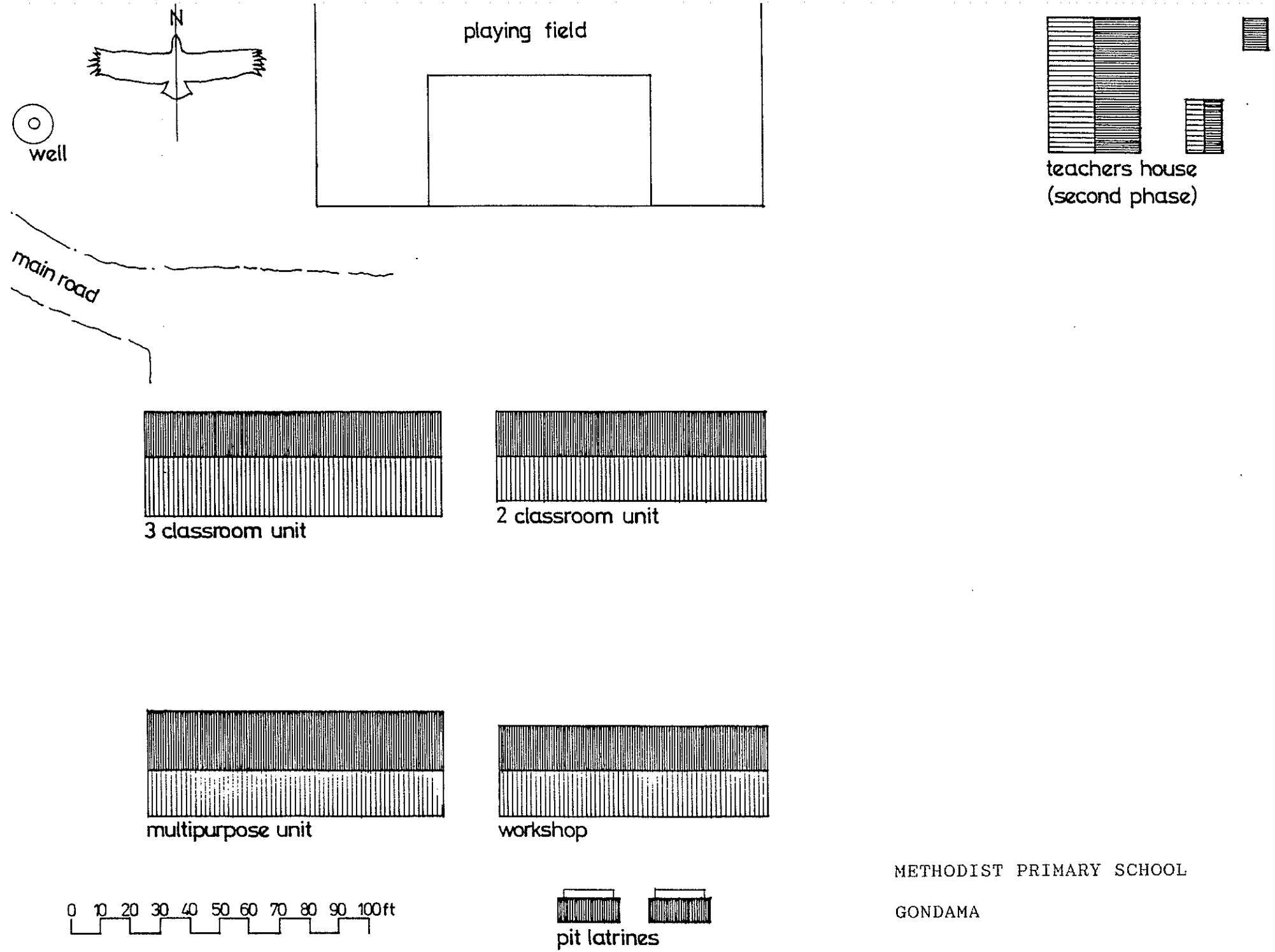
BTC EXPERIMENTAL SCHOOL, TORWAMA



SDA PRIMARY SCHOOL, MATTRU-ON-THE-RATI

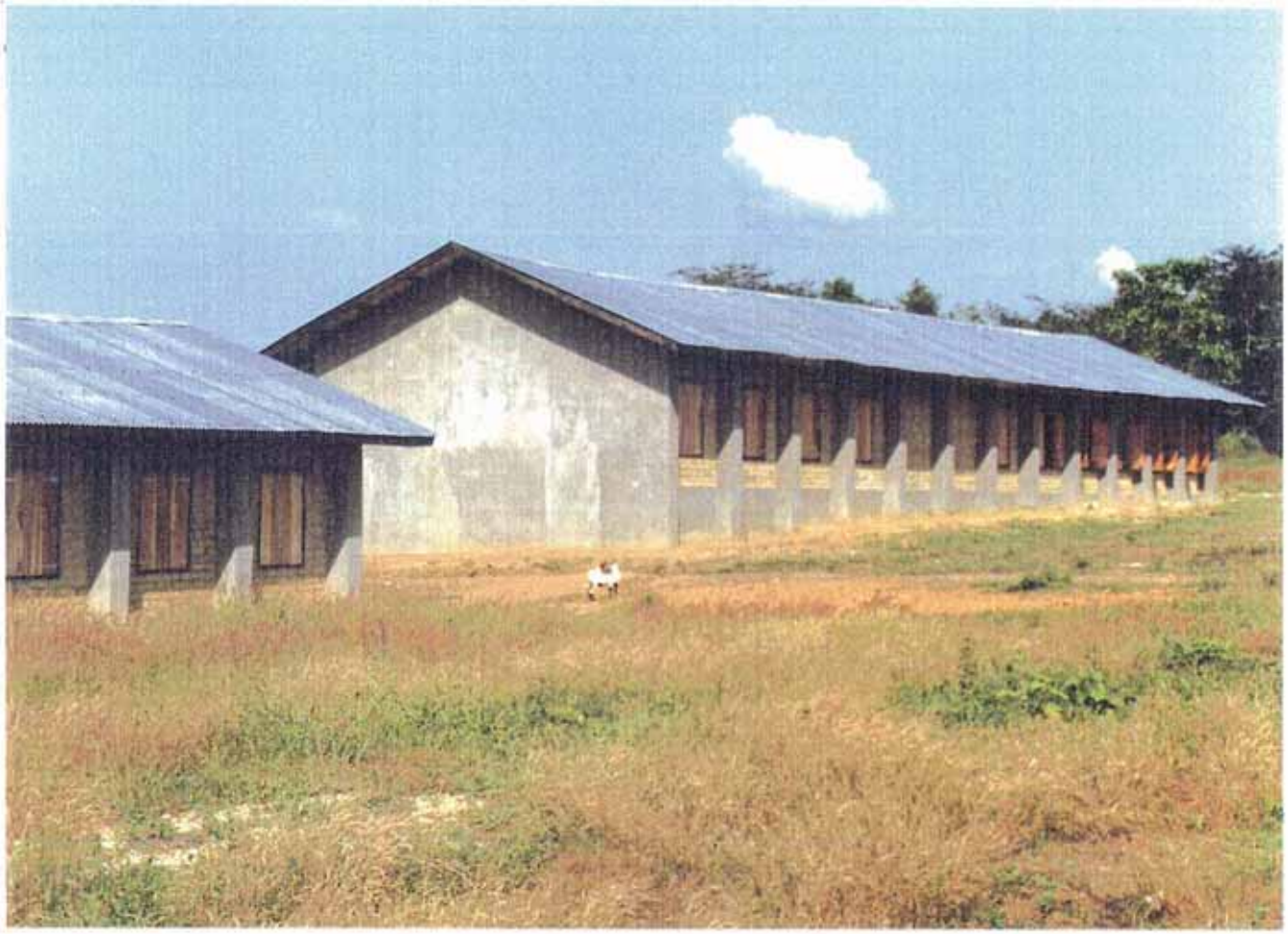
WORKSHOP UNIT

SDA PRIMARY SCHOOL, MATTRU-ON-THE-RAIL



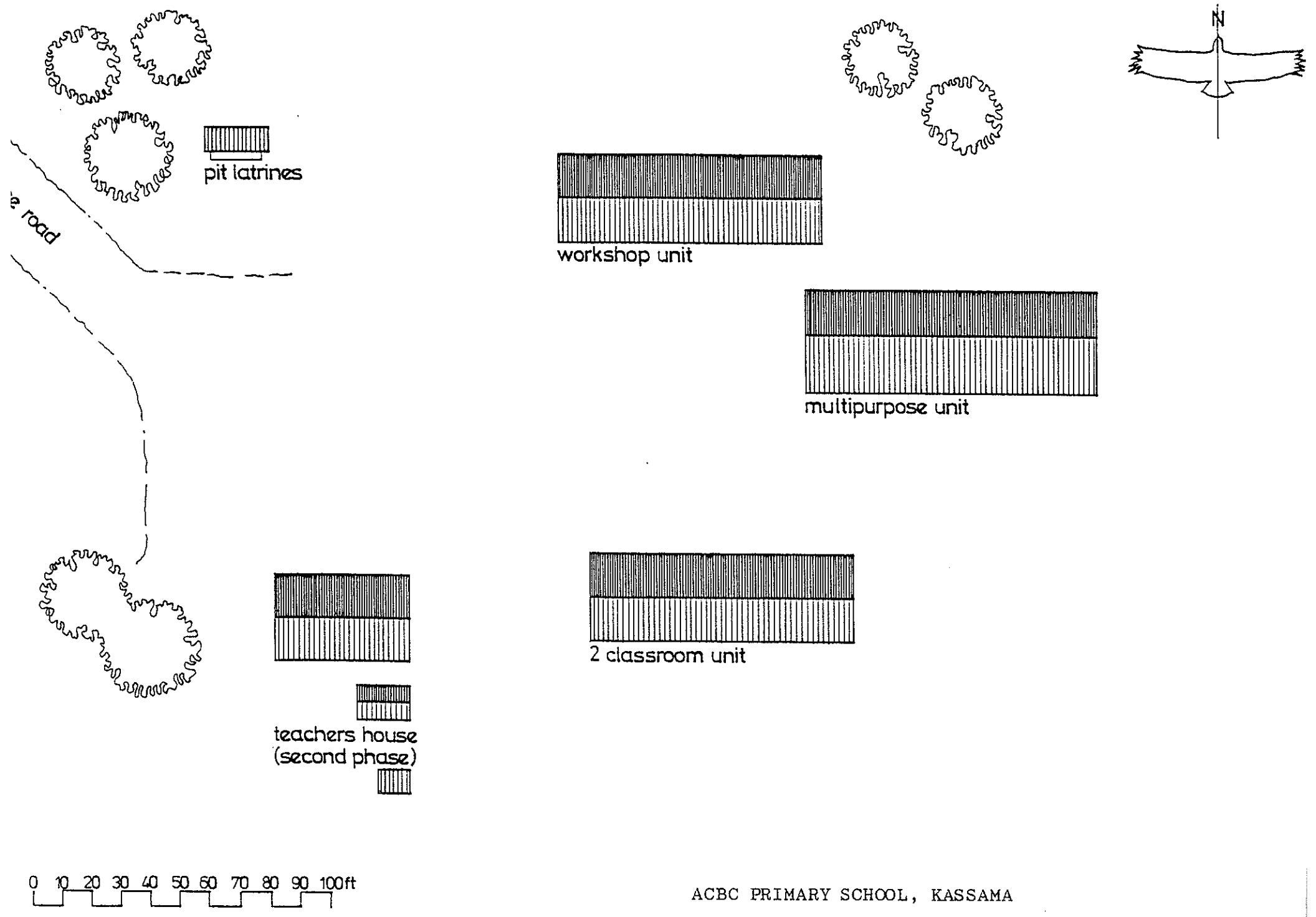
METHODIST PRIMARY SCHOOL

GONDAMA



MULTIPURPOSE & WORKSHOP UNITS

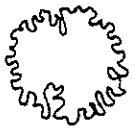
METHODIST PRIMARY SCHOOL, GONDAMA



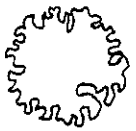
ACBC PRIMARY SCHOOL, KASSAMA

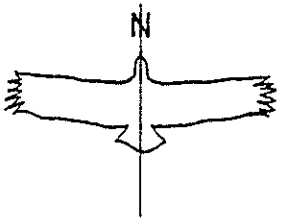
2 CLASSROOM & WORKSHOP UNITS & PIT-LATRINES

ACBC PRIMARY SCHOOL, KASSAMA



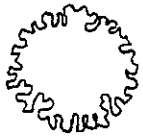
existing
pit latrine

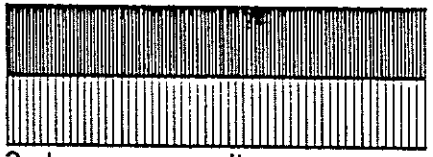




teachers house
(second phase)

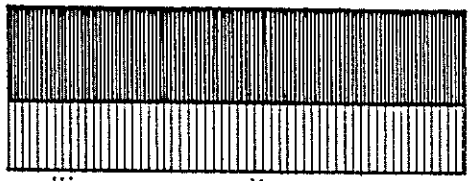
existing classrooms



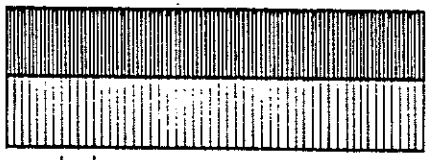


2 classroom unit

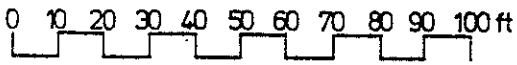
playing field



multipurpose unit



workshop

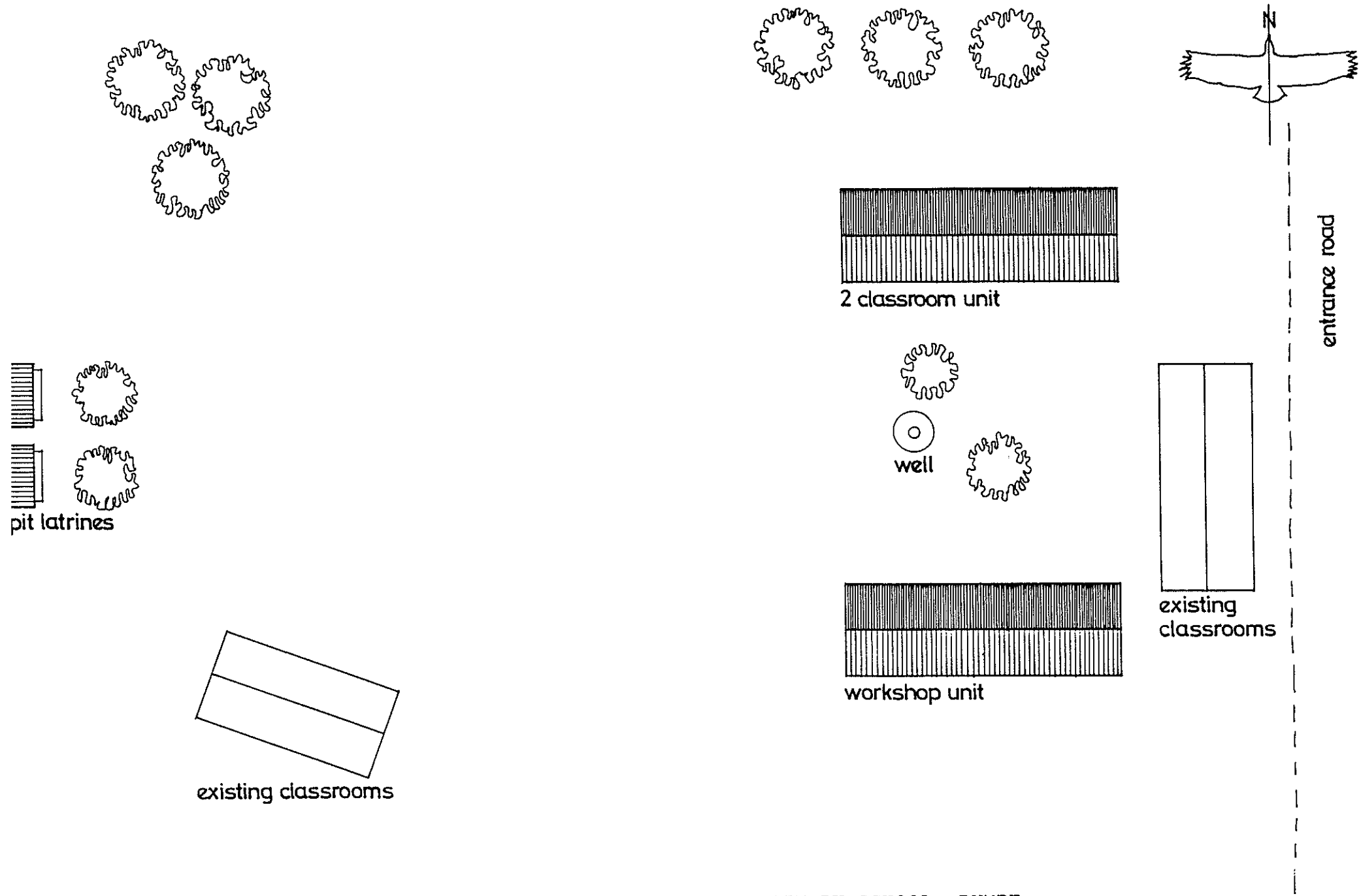


well

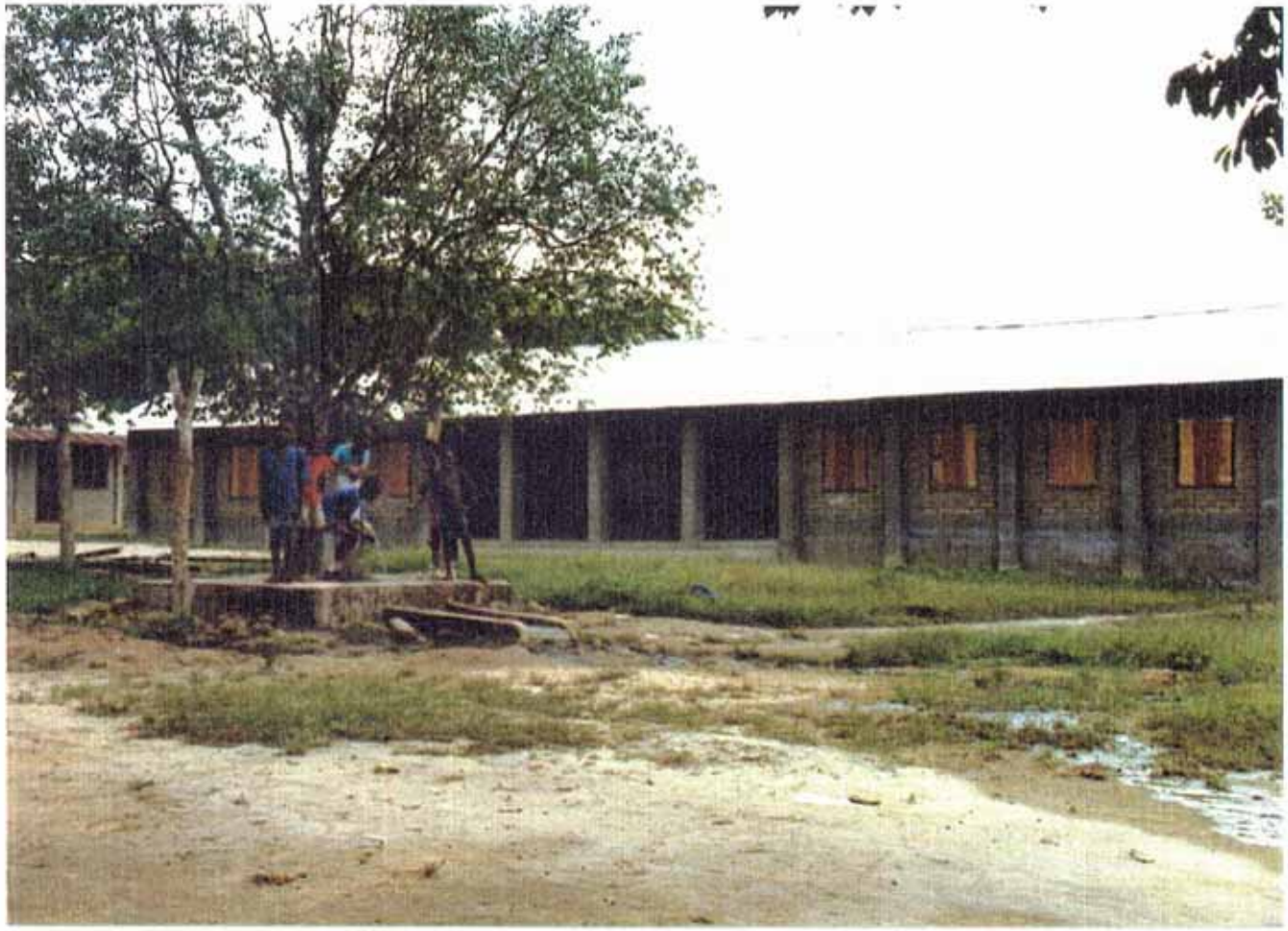
RC PRIMARY SCHOOL, GBAIIMA

2 CLASSROOM UNIT

RC PRIMARY SCHOOL, GBAIIMA

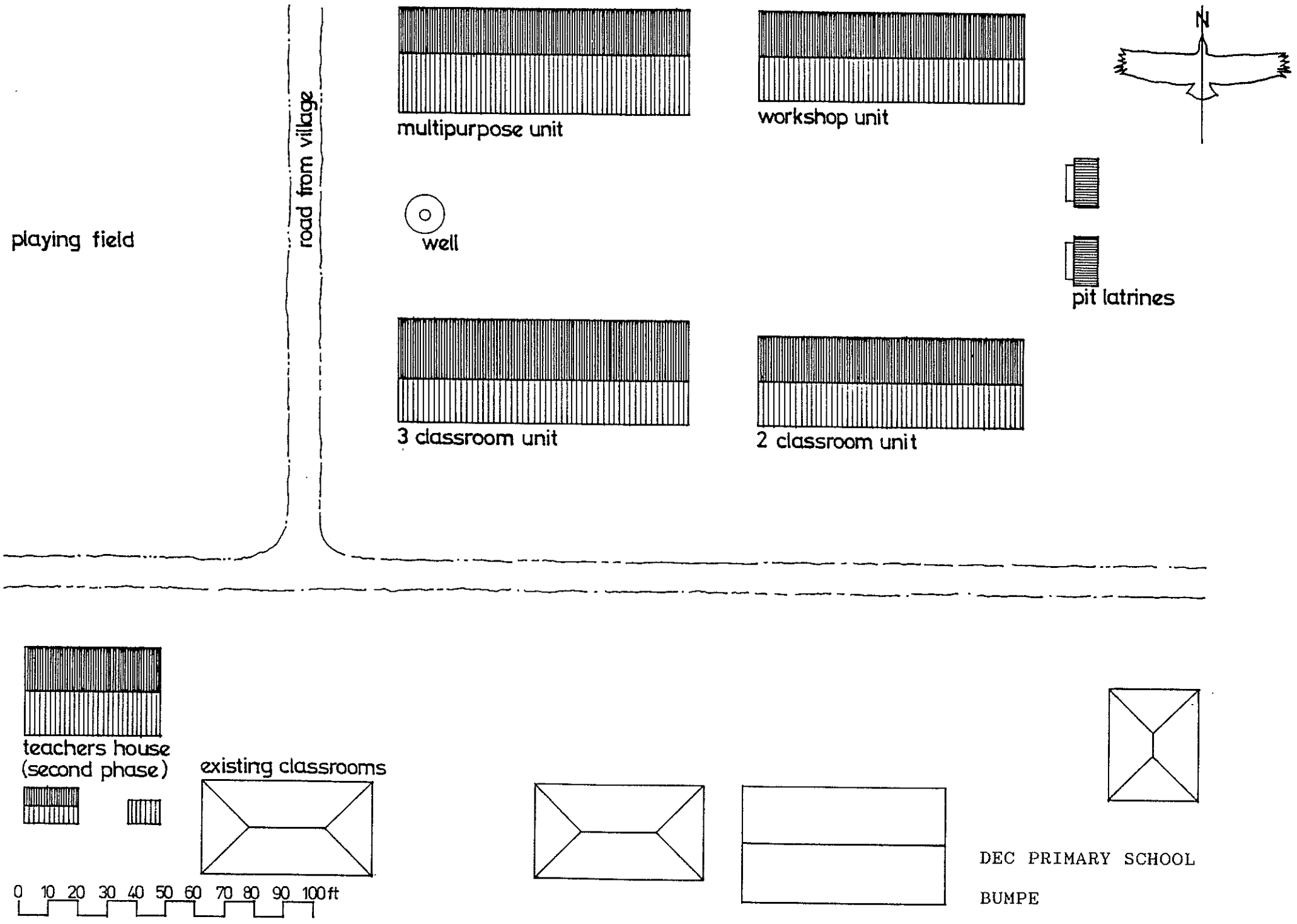


UBC PRIMARY SCHOOL, BUMPE



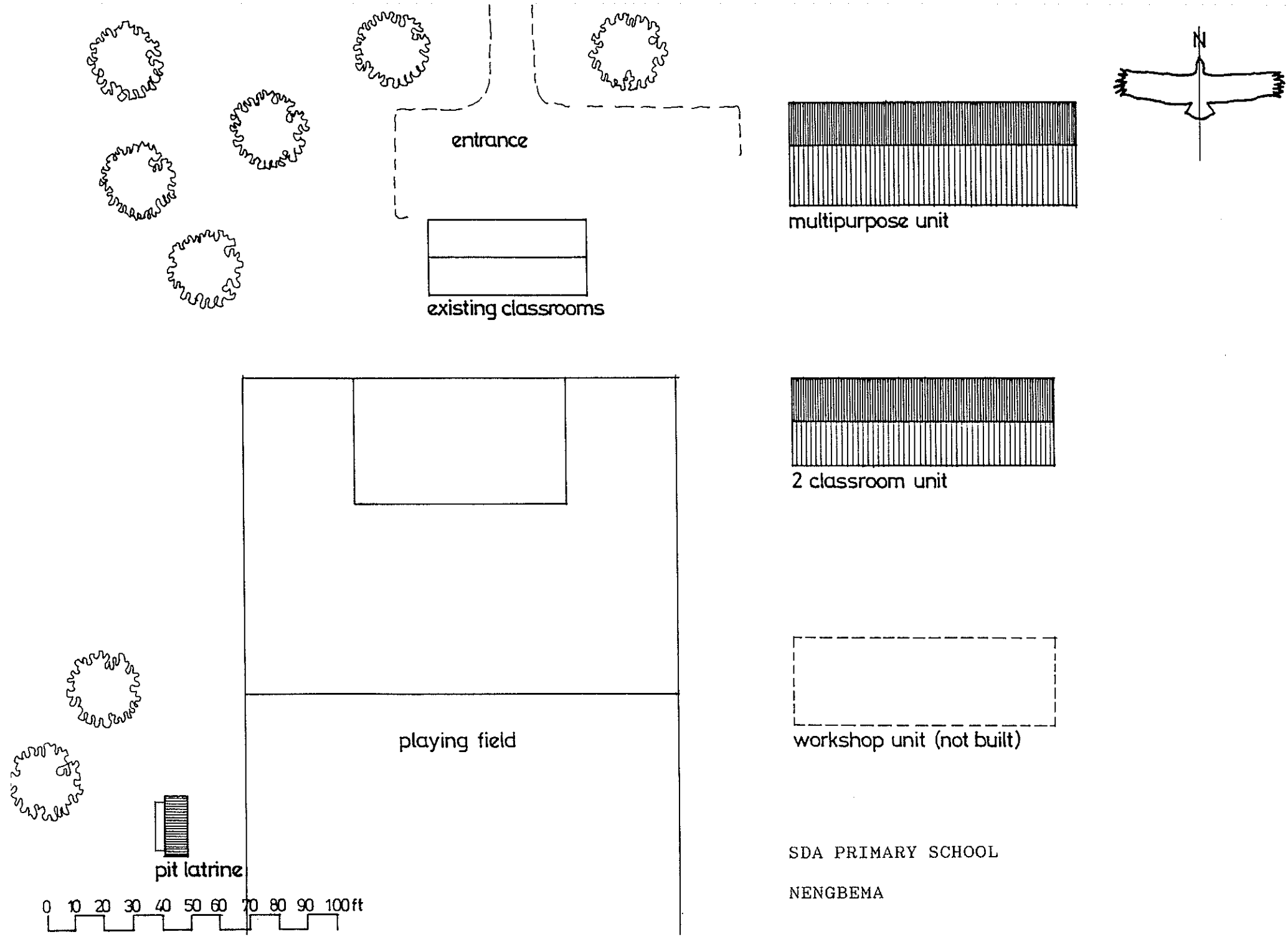
WORKSHOP UNIT & WELL

UBC PRIMARY SCHOOL, BUMPE


N
multipurpose unit
workshop unit
road from village
playing field
well
pit latrines
3 classroom unit
2 classroom unit
teachers house
(second phase)
existing classrooms
0 10 20 30 40 50 60 70 80 90 100ft
DEC PRIMARY SCHOOL
BUMPE

WELL & PIT-LATRINES

DEC PRIMARY SCHOOL, BUMPE

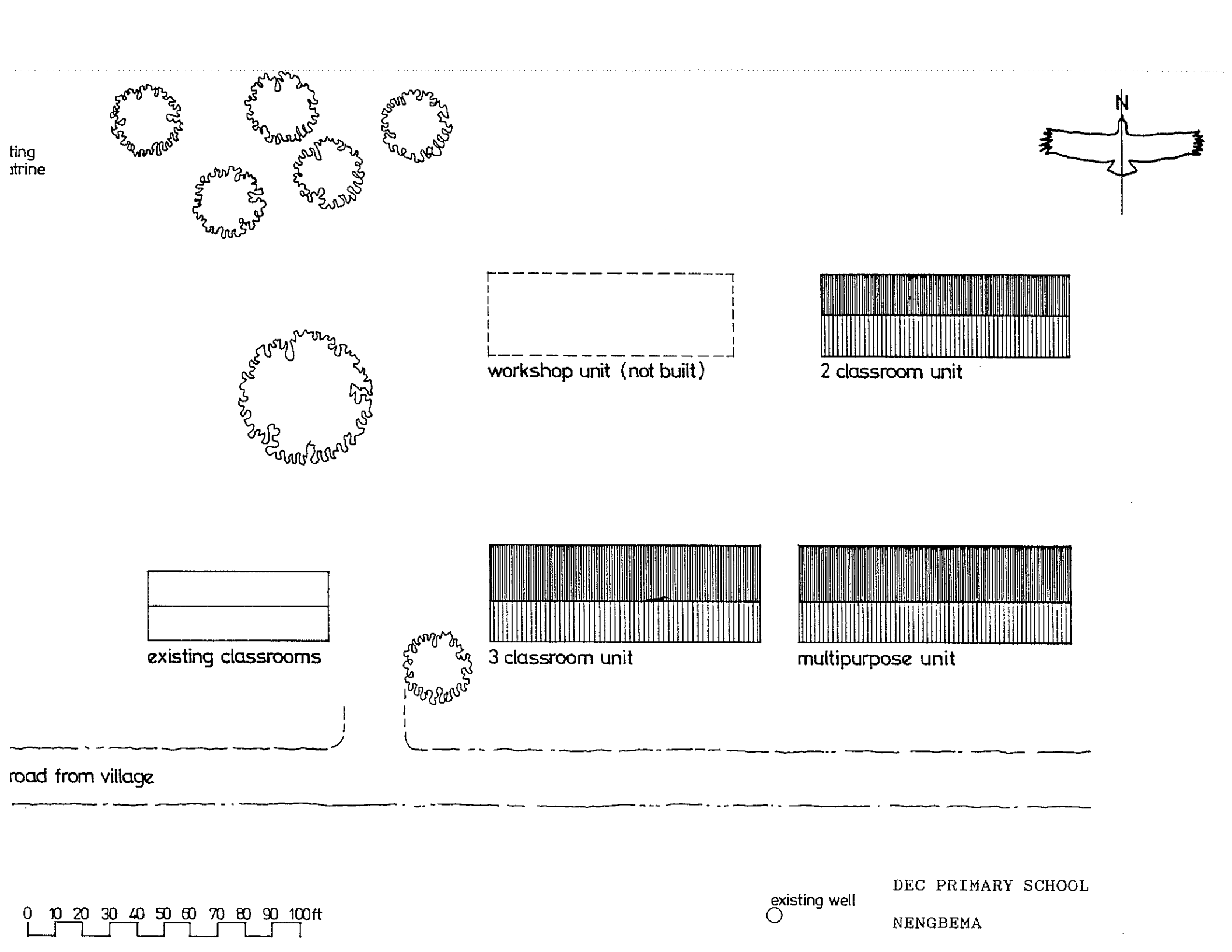


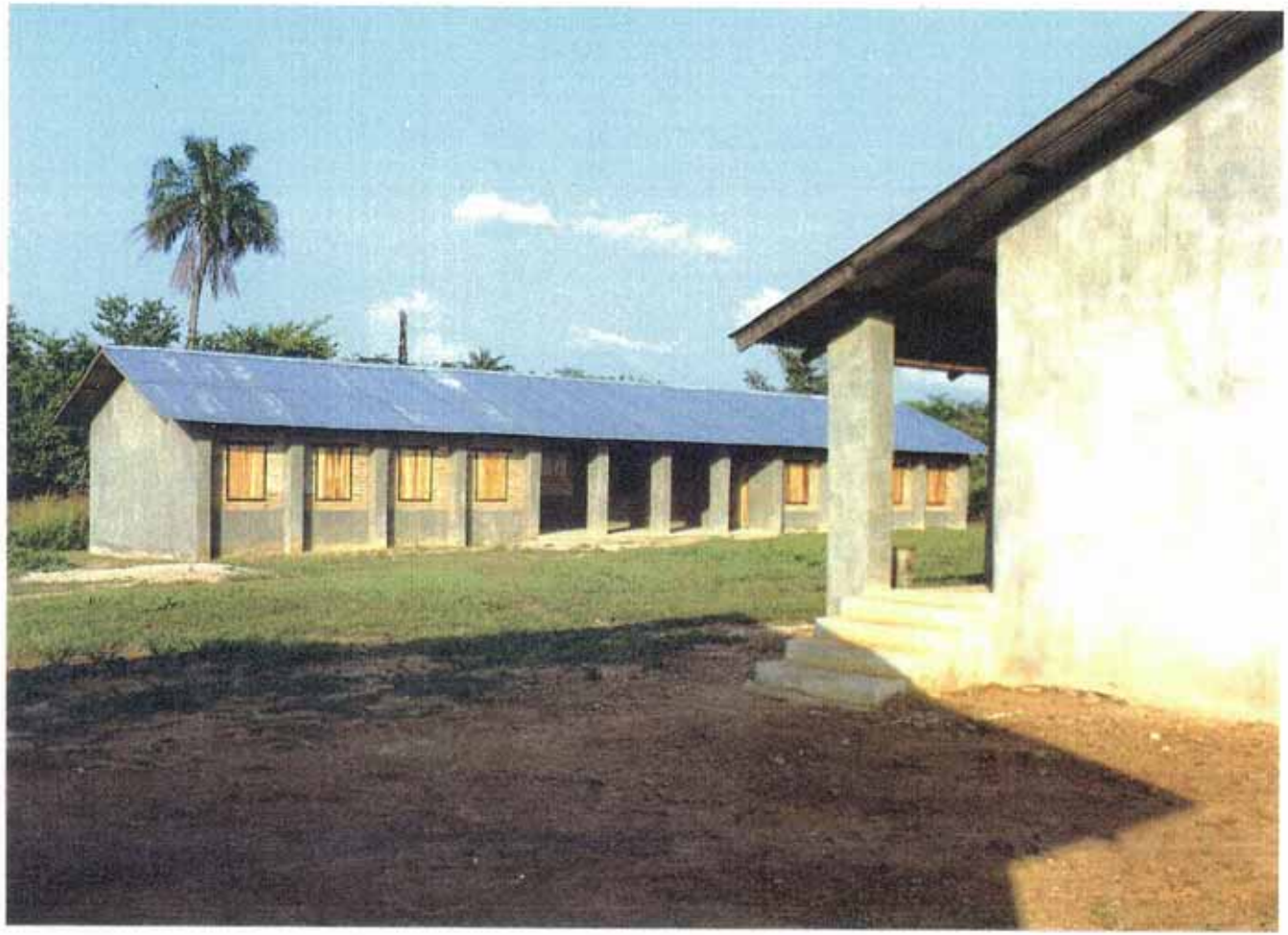
SDA PRIMARY SCHOOL

NENGBEMA

2 CLASSROOM UNIT

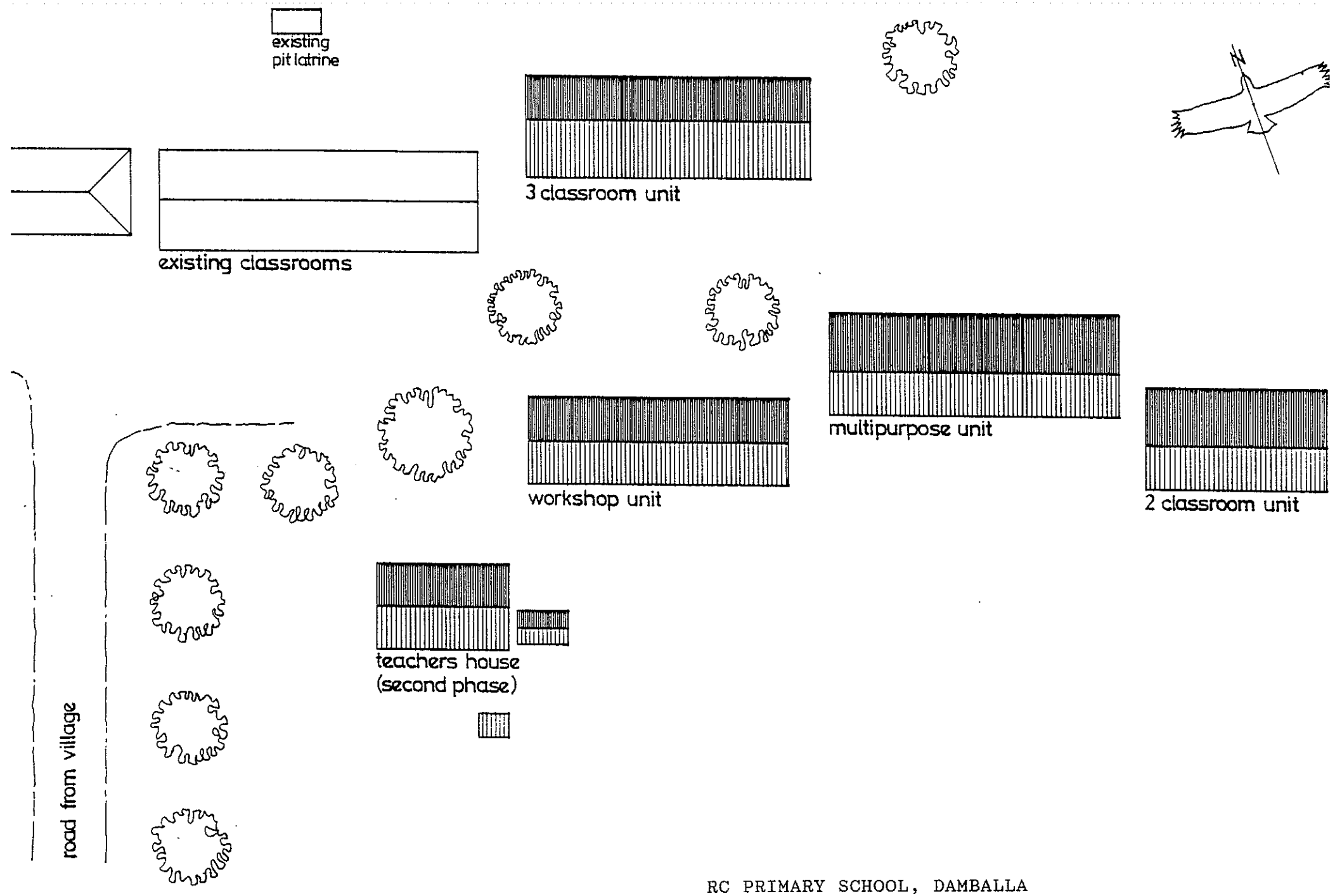
SDA PRIMARY SCHOOL, NENGBEMA


ting
itrine
N
workshop unit (not built)
2 classroom unit
existing classrooms
3 classroom unit
multipurpose unit
road from village
0 10 20 30 40 50 60 70 80 90 100ft
existing well
DEC PRIMARY SCHOOL
NENGBEMA

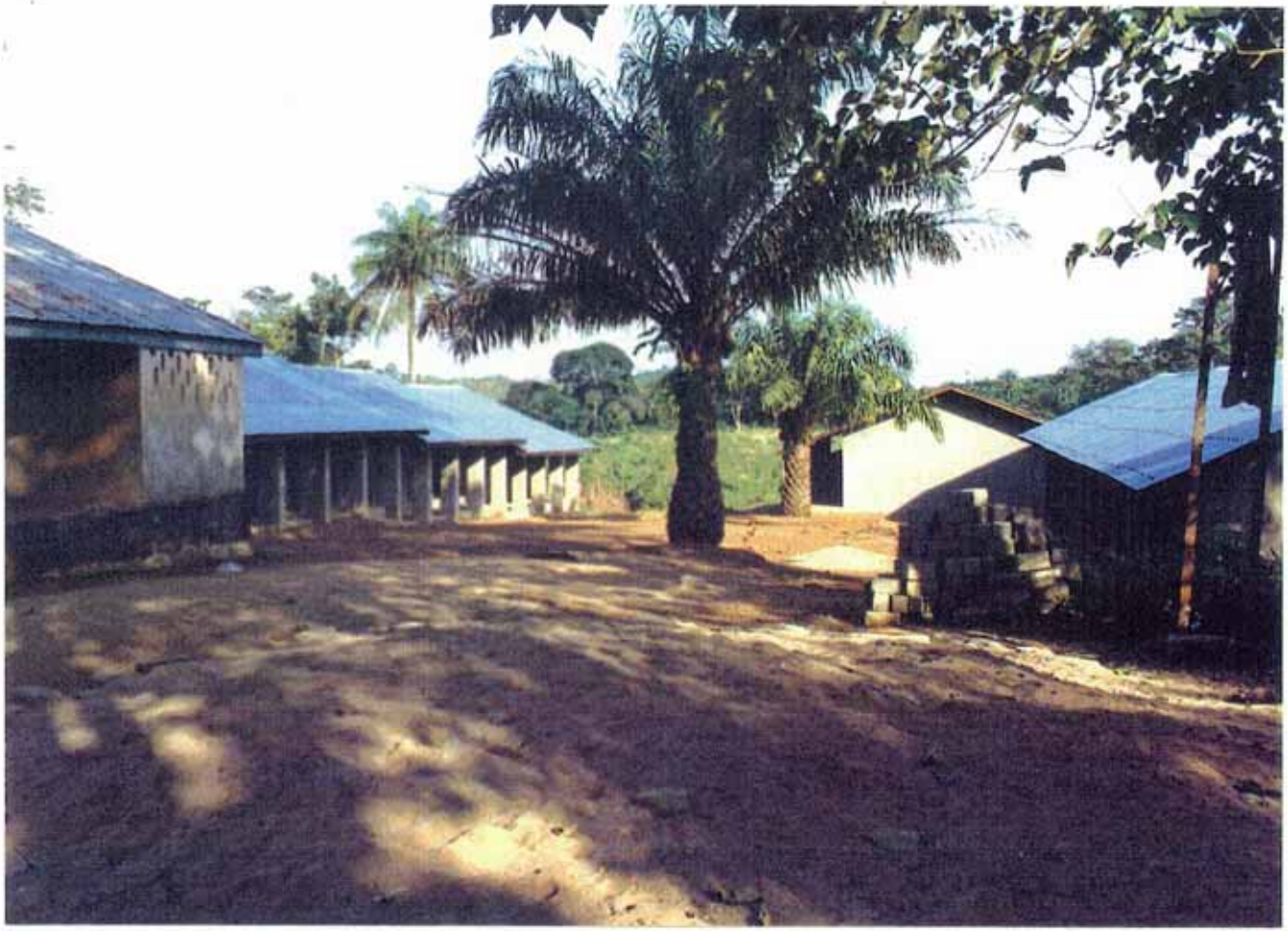


MULTIPURPOSE & 2 CLASSROOM UNITS

DEC PRIMARY SCHOOL, NENGBEMA



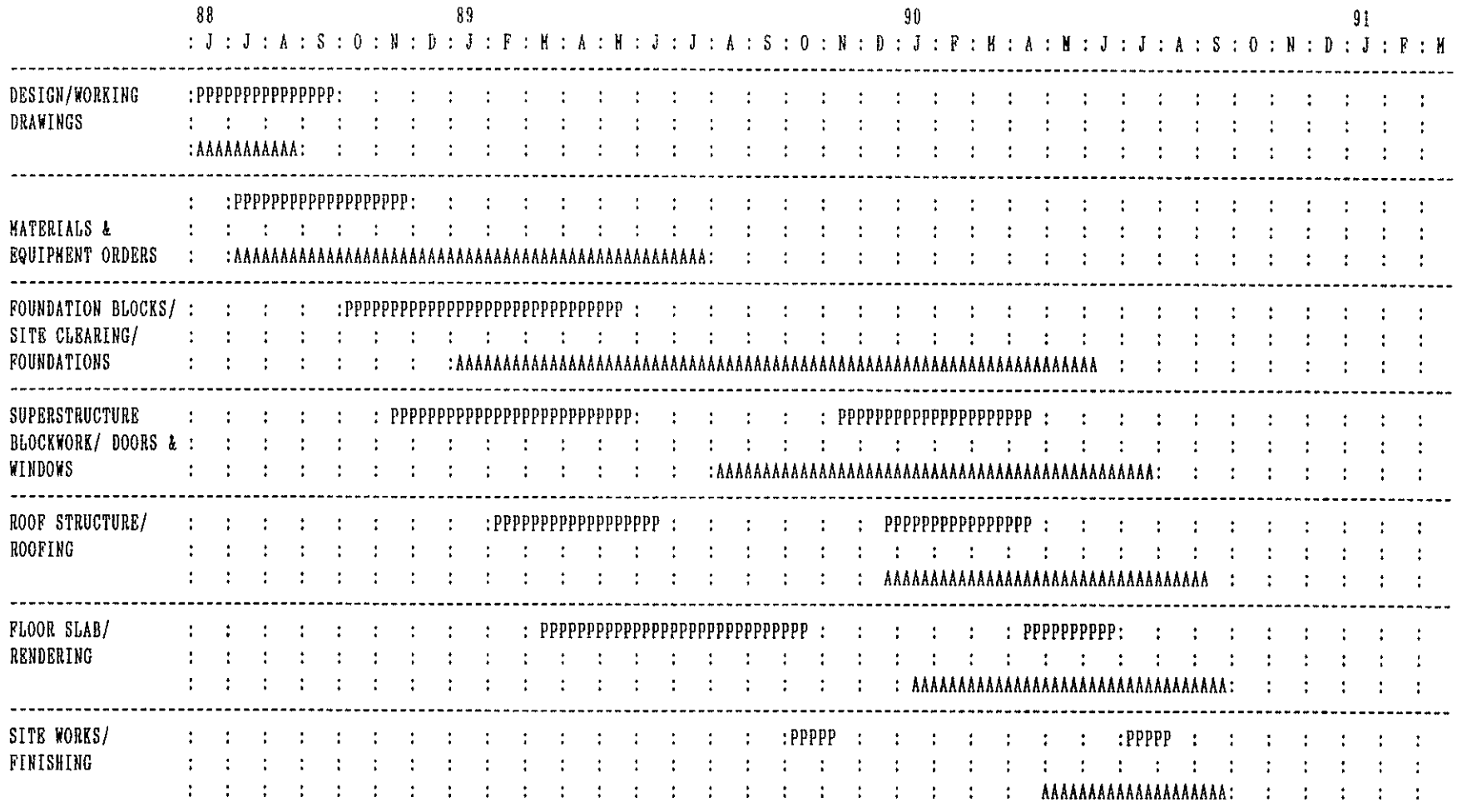
RC PRIMARY SCHOOL, DAMBALLA



3 CLASSROOM, MULTIPURPOSE & WORKSHOP UNITS

RC PRIMARY SCHOOL, DAMBALLA

ANNEX 4 : CONSTRUCTION PROGRAMME - PROPOSED AND ACTUAL



Note: P planned
A actual

ANNEX 5 : TOOL DISTRIBUTION 1

ITEM	RECEIVED	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	CARPENTRY SECTION	WELL SECTION	ROAD SECTION	LOSSES & DAMAGES	TOTAL	BALANCE
RAKE	122	2	6	2	2	2	2	2	2	2	2	0	2	6	0	32	90
EARTH RAMMER	62	4	6	6	4	4	4	6	4	4	6	0	2	6	0	56	6
FELLING AXE	34	1	2	2	1	1	1	2	1	1	2	1	2	2	0	19	15
WEDGE AXE	34	2	2	2	2	2	2	2	2	2	2	2	2	2	4	30	4
CLUB HAMMER 2.5 LB	34	2	3	2	2	2	2	3	2	2	3	0	2	2	0	27	7
CLUB HAMMER 4 LBS	40	2	3	2	2	2	2	3	2	2	3	0	6	6	0	35	5
CLUB HAMMER 8 LBS	40	2	2	2	2	2	2	2	2	2	2	0	2	2	1	25	15
PICK AXE HANDLE	133	4	5	5	4	4	4	5	4	4	5	0	12	12	5	73	60
SHOVEL HANDLE	550	10	15	15	15	15	10	15	10	15	15	0	5	10	0	150	400
SHOVEL	467	12	24	24	18	18	12	24	12	18	24	2	24	21	30	263	204
PICK AXE	234	6	12	12	9	9	6	12	6	9	12	0	8	9	0	110	124
MATTOCKS	42	2	4	4	3	3	2	4	2	3	4	0	5	5	1	42	0
CLUB HAMMER 2.5 LB	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
HOE	211	4	8	8	6	6	4	6	4	6	8	0	3	3	0	66	145
WHEELBARROW	114	4	8	8	6	6	4	8	4	10	10	2	12	24	8	114	0
D. ENDED SAW FILE	16	0	0	0	0	0	0	0	0	0	0	16	0	0	0	16	0
D. ENDED SAW FILE	22	0	0	0	0	0	0	0	0	0	0	22	0	0	0	22	0
BALL PEIN HAMMER	10	1	1	1	1	1	1	1	1	1	1	0	0	0	0	10	0
VICE	10	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5
JACK PLANE NO 7	10	0	1	0	0	0	0	0	0	0	0	7	0	0	0	8	2
JACK PLANE NO 5	22	1	1	1	1	1	1	1	1	1	1	10	0	0	0	20	2
PLANE BLADE 60 MM	10	0	0	0	0	0	0	0	0	0	0	8	0	0	2	10	0
PLANE BLADE 50 MM	22	0	0	0	0	0	0	0	0	0	0	20	0	0	2	22	0
RACHET BRACE	22	1	1	1	1	1	1	1	1	1	1	0	0	0	0	10	12
CIRCULAR SAW	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HAND SAW	28	1	1	1	1	1	1	1	1	1	1	14	2	2	0	28	0
TENON SAW	10	0	0	0	0	0	0	0	0	0	0	10	0	0	0	10	0
SCREW DRIVER	22	1	1	1	1	1	1	1	1	1	1	5	1	0	0	16	6
CLAW HAMMER	52	2	2	2	2	2	2	2	2	2	2	14	8	4	6	52	0
TRY & MITRE SQUARE	10	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	6

ANNEX 5 : TOOL DISTRIBUTION 2

ITEM	RECEIVED	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	CARPENTRY SECTION	WELL SECTION	ROAD SECTION	LOSS & DAMAGE	TOTAL	BALANCE
FOLDING RULE	22	2	2	2	2	2	2	2	2	2	2	2	0	0	0	22	0
SHARPENING STONE	28	1	1	1	1	1	1	1	1	1	1	12	0	0	0	22	6
SASH CLAMP	10	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	8
PINCER	22	1	1	1	1	1	1	1	1	1	1	4	2	2	0	18	4
MARKING GUAGE	22	0	0	0	0	0	0	0	0	0	0	12	0	0	0	12	10
MEASURING TAPE	52	4	4	4	4	4	4	4	4	4	4	4	4	4	0	52	0
WOODEN MALLET	22	0	1	1	1	1	0	1	0	1	1	2	2	0	0	11	11
JOINERS BEVEL	10	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	6
HAND DRILL	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
DRILL BIT SET	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
HOSE PIPE	24	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4	20
SPIRIT LEVEL	24	2	2	2	2	2	2	2	2	2	2	0	2	2	0	24	0
LINE LEVEL	24	2	2	2	2	2	2	2	2	2	2	0	2	2	0	24	0
STEEL TROWEL	24	2	2	2	2	2	2	2	2	2	2	0	2	2	0	24	0
WOOD FLOAT	24	2	2	2	2	2	2	2	2	2	2	0	2	2	0	24	0
MASON SQUARE	36	3	3	3	3	3	3	3	3	3	3	0	3	3	0	36	0
PLUMB BOB	24	2	2	2	2	2	2	2	2	2	2	0	2	2	0	24	0
BUILDING LINE	24	2	2	2	2	2	2	2	2	2	2	0	2	2	0	24	0
MATCHET	226	4	8	8	6	6	4	8	4	6	8	22	6	6	0	96	130
CROW BAR	44	2	2	2	2	2	2	2	2	2	2	0	0	0	0	20	24
CHISELS 6 MM	24	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	21
CHISELS 12 MM	24	0	1	0	0	0	0	0	0	0	0	10	1	1	1	14	10
CHISELS 25 MM	24	1	1	1	1	1	1	1	1	1	1	10	1	1	0	22	2
AUGER BIT 6 MM	12	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	10
AUGER BIT 12 MM	12	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	10
AUGER BIT 25 MM	12	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6
HEAD PAN	600	35	70	70	50	50	30	70	35	55	70	0	15	10	0	560	40

ANNEX 6 : MATERIAL DISTRIBUTION 1 : CONSTRUCTION MATERIALS

ITEM		ITEMS RECEIVED	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	GENERAL USE	LOSS & DAMAGE	TOTAL	BALANCE
NAILS 4"	kgs	350	20	20	20	20	20	20	20	20	20	20	150	0	350	0
NAILS 3"	kgs	125	5	5	5	5	5	5	5	5	5	5	75	0	125	0
NAILS 1.5"	kgs	180	10	10	10	10	10	10	10	10	10	10	80	0	180	0
SCREWS 1.25"	box	188	10	17	18	13	12	10	18	8	12	16	2	2	138	50
SCREWS 1"	box	98	6	12	12	9	9	6	12	6	9	12	2	3	98	0
SCREWS .75"	box	81	3	7	7	5	5	3	7	3	5	7	2	2	56	25
HINGES 375 mm	no	720	51	60	54	48	39	48	78	27	42	45	56	20	568	152
HINGES 230 mm	no	2720	160	340	320	232	240	144	320	160	248	308	80	168	2720	0
TOWER BOLTS	no	2784	80	170	160	116	120	72	160	80	124	154	80	108	1424	1360
HASP & STAPLE	no	90	8	4	8	3	0	8	8	0	0	0	40	11	90	0
RIM LOCKS	no	134	9	16	18	13	13	8	18	9	14	15	1	0	134	0
PAD LOCKS	no	84	8	4	8	3	0	8	8	0	0	0	40	5	84	0
5 lit EMULP'NT	tin	500	29	58	58	40	40	26	58	29	45	56	16	5	460	40
5 lit CHLKP'NT	tin	50	3	6	6	5	5	3	6	3	5	6	2	0	50	0
5 lit VARNISH	tin	240	15	30	30	22	22	14	30	13	22	30	0	12	240	0
7 lb CASCAMITE	tin	30	0	0	0	0	0	0	0	0	0	0	4	0	4	26
SND PPR CORS	sheet	1600	40	80	80	60	60	40	80	40	50	70	0	0	600	1000
SND PPR MDUM	sheet	1500	0	0	0	0	0	0	0	0	0	0	0	0	0	1500
SND PPR FINE	sheet	700	20	20	20	20	20	20	20	20	20	20	0	0	200	500
PAINT BRUSH 6"	no	138	8	16	16	12	12	8	16	8	12	16	6	8	138	0
PAINT BRUSH 2"	no	126	6	12	12	9	9	6	12	6	9	12	6	7	106	20
PIN BOARD	no	210	9	21	21	13	13	8	21	9	14	21	0	0	150	60
POLYTHEN FILM	roll	14	1	2	2	1	1	1	2	1	1	2	0	0	14	0
ELECTRIC SAW	no	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CABIN HOOKS	no	1440	80	170	160	116	120	72	160	80	124	154	0	76	1312	128

ANNEX 6 : MATERIALS DISTRIBUTION 2 : ROOFING MATERIALS

ITEM	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	TOTAL
CI SHEETS 8'	290	559	566	413	408	278	566	276	420	548	4324
CI SHEETS 6'	36	72	72	36	36	0	72	36	72	101	533
ROOF RIDGE PIECES	27	54	54	40	40	26	54	27	41	51	414
ROOF NAILS	2900	5600	5700	4200	4100	2800	5700	2800	4200	5500	43500
ROOF NAIL WASHER	2900	5600	5700	4200	4100	2800	5700	2800	4200	5500	43500
ROOF NAIL CAP	2900	5600	5700	4200	4100	2800	5700	2800	4200	5500	43500
ROOF FILLER PIECES	152	304	304	224	224	144	304	152	232	284	2324
RIVETS	1200	2400	2400	1700	1700	1000	2400	1200	1900	2400	18300
RIVETTING TOOL	0	0	0	0	0	0	0	0	0	0	2
WIRE NAILS 4"(LBS)	50	100	100	70	70	40	100	50	80	100	760
WIRE NAILS 3"(LBS)	25	50	50	35	35	20	50	25	40	50	380
WIRE NAILS 2"(LBS)	10	20	20	15	15	10	20	10	15	20	155

ANNEX 6 : MATERIAL DISTRIBUTION 3 : CEMENT

QUANTITIES IN 50 KGS BAGS

DESCRIPTION	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	LOSS & DAMAGE	TOTAL
BUILDINGS	1200	2600	2900	1950	1900	1100	2500	1300	1950	2700	435	20535
BRIDGE & CULVERTS	0	0	0	720	0	0	0	0	0	0	15	735
PIT-LATRINES	160	150	150	80	0	150	150	0	0	0	20	860
WELLS	110	110	110	0	120	120	120	130	0	130	20	970
TOTAL	1470	2860	3160	2750	2020	1370	2770	1430	1950	2830	490	23100

NOTE: EVEN WITH RIGOROUS CONTROL AND CLOSE SUPERVISION, CEMENT WAS STOLEN FROM ALL THE SITES AND THE ABOVE SITE FIGURES INCLUDE FOR THESE LOSSES. THE FIGURE SHOWN IN THE COLUMN "LOSS AND DAMAGE" ARE THOSE FOR LOSS AND DAMAGE AT THE STORE. IT SHOULD BE NOTED ALSO THAT THE BRIDGE ON THE KASSAMA ROAD WAS NOT IN THE ORIGINAL PROJECT AND THUS A LARGE ADDITIONAL QUANTITY OF CEMENT WAS USED.

ANNEX 6 : MATERIALS DISTRIBUTION 4 : STEEL

QUANTITIES IN LINEAR FEET

DESCRIPTION	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	BRIDGE ON KASSAMA RD	TOTAL
STEEL 12 MM	2640	1320	2640	1100	0	2640	2640	0	0	0	3610	16590
STEEL 8 MM	1200	1200	1200	0	1200	1200	1200	1200	0	1200	7600	17200
STEEL 6 MM	1900	2880	2920	1540	2300	1840	2920	2020	1560	2840	0	22720

ANNEX 7: LABOUR UTILIZED IN MANDAYS

Annex 7a shows the total mandays utilized on each site by month from December 1988 to the end of August 1990, the nominal end of the first phase of the project.

Annex 7b shows: a) the mandays allocated in the PEU's original workplan of August 1988 and b) the actual total mandays utilized on each site. The balance c) is the difference between the two. In all cases except Gondama, the amount of mandays utilized was greater than that originally estimated. This was mainly due to the large number of mandays required to collect stone and sand, particularly the latter.

These materials were supposed to be donated by the communities but in most cases village labour had to be given incentives in order to collect the large amounts of materials required. At Gondama, most of the sand was freely donated by the community resulting in a reduction in mandays utilized.

At DEC Primary School, Bumpe, additional work was entailed because of the condemning of large numbers of blocks and the demolition of some walls when it was discovered that the clay content of the soil being used and thus the shrinkage rate of the blocks, was too high. Other sources of soil had to be found and new blocks made resulting in an increase in mandays utilized.

The project stores were located at the Experimental School at Torwama and the 'food for work' stores at the College and a large number of mandays, which were not originally planned for, were utilized in the loading and off-loading of materials and food.

At Kassama the site was located at a great distance from the nearest water supply. It proved impossible to locate a well near the school site and a large amount of labour had to be employed throughout the construction period in supplying water to the site.

ANNEX 7A : MANDAYS BY SITE AND MONTH

MONTH	CARPENTRY SECTION	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	WELL SECTION	ROAD SECTION	ROOFING SECTION	STEEL SECTION	TOTAL
DEC 88	0	0	60	0	0	0	0	0	0	0	0	0	34	0	0	94
JAN 89	0	60	120	0	0	0	60	60	0	0	0	0	70	0	0	370
FEB 89	0	185	190	64	180	167	180	185	89	115	210	0	0	0	0	1,565
MAR 89	0	235	265	62	145	256	439	265	91	115	248	0	0	0	0	2,121
APR 89	0	349	389	35	143	297	510	339	92	113	289	0	0	0	0	2,556
MAY 89	0	387	400	187	287	377	436	624	162	232	470	0	0	0	0	3,562
JUN 89	0	256	460	260	386	319	236	489	308	349	569	0	0	0	0	3,632
JUL 89	0	355	449	482	563	448	208	521	342	480	582	0	0	0	0	4,430
AUG 89	0	549	468	419	365	434	218	376	413	417	473	0	0	0	0	4,132
SEP 89	345	304	281	401	265	395	212	321	240	258	264	0	0	0	0	3,286
OCT 89	425	623	412	504	439	378	392	669	252	258	321	150	0	0	0	4,823
NOV 89	602	506	668	554	663	361	401	710	589	622	820	286	0	0	0	6,782
DEC 89	532	406	662	559	714	286	266	708	377	415	771	384	205	0	0	6,285
JAN 90	494	527	666	630	724	428	313	840	374	407	844	333	0	133	270	6,983
FEB 90	416	549	698	537	486	429	333	926	300	331	772	316	0	120	294	6,507
MAR 90	453	593	765	514	525	378	511	1,027	360	360	810	276	0	117	306	6,995
APR 90	443	235	589	394	552	450	473	734	495	405	585	284	283	89	198	6,209
MAY 90	413	201	1,045	715	829	651	481	1,086	527	496	930	346	961	108	396	9,185
JUN 90	554	241	995	1,049	618	750	603	1,606	480	570	780	759	806	75	634	10,520
JUL 90	618	366	1,043	1,065	469	742	627	1,554	956	923	952	502	399	75	558	10,849
AUG 90	282	267	834	834	866	368	246	541	411	370	507	342	60	71	217	6,216
TOTAL	5,577	7,194	11,459	9,265	9,219	7,914	7,145	13,581	6,858	7,236	11,197	3,978	2,818	788	2,873	107,102

ANNEX 7B : ALLOCATION AND UTILIZATION OF MANDAYS

DESCRIPTION	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIINA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	TOTAL
A: MANDAYS ALLOCATED											
BUILDINGS	4,114	8,628	8,828	6,536	6,136	3,444	8,328	4,414	6,506	9,028	65,962
ACCESS ROADS	238	1,050	238	2,100	238	0	0	0	0	0	3,864
PI-LATRINES	662	331	662	248	0	662	662	0	0	0	3,227
WELLS	604	604	604	60	604	604	604	804	604	604	5,696
SUPERVISION	1,152	1,152	1,152	1,152	1,152	1,152	1,152	1,152	1,152	1,152	11,520
TOTAL	6,770	11,765	11,484	10,096	8,130	5,862	10,746	6,370	8,262	10,784	90,269
B: MANDAYS UTILIZED	8,614	13,479	10,685	12,361	9,334	8,565	15,001	7,278	9,656	12,617	107,590
C: BALANCE	1,844	1,714	(799)	2,265	1,204	2,703	4,255	908	1,394	1,833	17,321
D: BALANCE (DETAILS)											
COLLECTION OF LOCAL MATERIALS	944	1,714	0	1,350	1,204	900	1,800	908	1,394	1,833	12,047
WATER COLLECTION				915							915
ADDITIONAL WORK	900					0	900				1,800
TOTAL	1844	1714	0	2265	1204	900	2700	908	1394	1833	14,762
	0	0	(799)	0	0	1,803	1,555	0	0	0	

A. MANDAYS ALLOCATED IN THE ORIGIONAL PLAN

B. MANDAYS ACTUALLY UTILIZED

C. DIFFERENCE BETWEEN A AND B

D. DETAILS OF ADDITIONAL WORK DONE

ANNEX 8 : FOOD DISTRIBUTION
(RICE IN 50 KGS BAGS)

MONTH	CARPENTRY SECTION	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	WELL SECTION	ROAD SECTION	ROOFING SECTION	STEEL SECTION	TOTAL
DEC 88	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	3.1
JAN 89	0.0	2.0	4.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	12.3
FEB 89	0.0	6.2	6.3	2.1	6.0	5.6	6.0	6.2	3.0	3.8	7.0	0.0	0.0	0.0	0.0	52.2
MAR 89	0.0	7.8	8.8	2.1	4.8	8.5	14.6	8.8	3.0	3.8	8.3	0.0	0.0	0.0	0.0	70.7
APR 89	0.0	11.6	13.0	1.2	4.8	9.9	17.0	11.3	3.1	3.8	9.6	0.0	0.0	0.0	0.0	85.2
MAY 89	0.0	12.9	13.3	6.2	9.6	12.6	14.5	20.8	5.4	7.7	15.7	0.0	0.0	0.0	0.0	118.7
JUN 89	0.0	8.5	15.3	8.7	12.9	10.6	7.9	16.3	10.3	11.6	19.0	0.0	0.0	0.0	0.0	121.1
JUL 89	0.0	11.8	15.0	16.1	18.8	14.9	6.9	17.4	11.4	16.0	19.4	0.0	0.0	0.0	0.0	147.7
AUG 89	0.0	18.3	15.6	14.0	12.2	14.5	7.3	12.5	13.8	13.9	15.8	0.0	0.0	0.0	0.0	137.7
SEP 89	12.2	10.8	10.0	14.2	9.4	14.0	7.5	11.4	8.5	9.2	9.4	0.0	0.0	0.0	0.0	116.6
OCT 89	14.2	20.8	13.7	16.8	14.6	12.6	13.1	22.3	8.4	8.6	10.7	5.0	0.0	0.0	0.0	160.8
NOV 89	20.1	16.9	22.3	18.5	22.1	12.0	13.4	23.7	19.6	20.7	27.3	9.5	0.0	0.0	0.0	226.1
DEC 89	17.7	13.5	22.1	18.6	23.8	9.5	8.9	23.6	12.6	13.8	25.7	12.8	6.8	0.0	0.0	209.5
JAN 90	11.0	11.7	14.8	14.0	16.1	9.5	7.0	18.7	8.3	9.0	18.8	7.4	0.0	3.0	6.0	155.2
FEB 90	9.2	12.2	15.5	11.9	10.8	9.5	7.4	20.6	6.7	7.4	17.2	7.0	0.0	2.7	6.5	144.6
MAR 90	10.1	13.2	17.0	11.4	11.7	8.4	11.4	22.8	8.0	8.0	18.0	6.1	0.0	2.6	6.8	155.4
APR 90	9.8	5.2	13.1	8.8	12.3	10.0	10.5	16.3	11.0	9.0	13.0	6.3	6.3	2.0	4.4	138.0
MAY 90	13.6	6.6	34.4	23.5	27.3	21.4	15.8	35.7	17.3	16.3	30.6	11.4	31.6	3.6	13.0	302.3
JUN 90	18.4	8.0	33.1	34.9	20.6	24.9	20.1	53.4	16.0	19.0	25.9	25.2	26.8	2.5	21.1	349.9
JUL 90	19.9	11.8	33.6	34.4	15.1	23.9	20.2	50.1	30.8	29.8	30.7	16.2	12.9	2.4	18.0	350.0
AUG 90	9.3	8.8	27.4	27.4	28.4	12.1	8.1	17.8	13.5	12.1	16.6	11.2	2.0	2.3	7.1	204.0
TOTAL	165.6	218.7	350.3	284.7	281.1	244.6	219.5	411.7	210.6	223.6	338.6	118.3	89.9	21.0	83.0	3,261.1

ANNEX 9 : INCENTIVE PAYMENTS BY SITE AND MONTH IN US DOLLARS

MONTH	CARPENTRY SECTION	BTC TORWAMA	SDA MOR	METHODIST GONDAMA	ACBC KASSAMA	RC BAIIMA	UBC BUMPE	DEC BUMPE	SDA NENGBEMA	DEC NENGBEMA	RC DAMBALLA	WELL SECTION	ROAD SECTION	ROOFING SECTION	STEEL SECTION	TOTAL
APR 89	0	18	20	2	8	16	27	18	5	6	15	0	0	0	0	134
MAY 89	0	21	22	10	16	21	24	34	9	13	26	0	0	0	0	195
JUN 89	0	18	32	18	27	23	17	35	22	25	40	0	0	0	0	256
JUL 89	0	146	185	199	232	185	86	215	141	198	240	0	0	0	0	1,826
AUG 89	0	216	184	165	144	171	86	148	162	164	186	0	0	0	0	1,626
SEP 89	172	88	108	97	61	153	83	83	83	93	80	0	0	0	0	1,101
OCT 89	232	244	173	218	153	178	145	178	105	109	138	17	0	0	0	1,888
NOV 89	368	387	275	345	243	283	230	282	167	173	218	27	0	0	0	2,998
DEC 89	332	348	254	319	222	255	204	253	152	159	202	73	0	0	0	2,773
JAN 90	266	261	324	268	325	204	115	366	171	192	412	132	0	104	76	3,215
FEB 90	247	268	342	229	211	189	122	382	148	179	386	115	0	125	68	3,010
MAR 90	253	288	368	214	229	204	180	436	163	181	404	98	0	132	64	3,214
APR 90	213	125	267	191	241	221	210	358	237	181	265	148	115	155	48	2,975
MAY 90	169	70	400	255	261	231	149	349	194	200	348	95	287	154	44	3,206
JUN 90	160	70	376	384	335	280	229	592	193	215	306	210	149	305	28	3,831
JUL 90	311	95	530	510	315	462	233	612	375	352	379	175	89	264	36	4,736
AUG 90	250	149	164	267	522	122	147	233	290	300	311	134	35	63	26	3,013
SEP 90	192	114	126	206	401	94	113	179	223	230	239	103	27	49	20	2,316
TOTAL	3,166	2,926	4,151	3,896	3,944	3,290	2,398	4,753	2,838	2,968	4,194	1,328	701	1,349	410	42,313

ANNEX 10 : OVERALL PROJECT COSTS

A : UNCDF - PROPOSED AND ACTUAL EXPENDITURE

BUDGET CODE	ITEM	DISB. AGENT	BUDGET AS PROJECT DOCUMENT	BUDGET AS AUG.88 WORKPLAN	ACTUAL EXPENDITURE
16	MISSION COSTS				‡
16.01	Missions	UNCDF	40,000.00	40,000.00	40,000.00
42	NON-EXPENDABLE EQUIPMENT				
42.02	Teaching Equipment Bo T.C.	OPS	128,000.00	115,000.00	119,918.21
42.02	Communication Equipment		25,000.00	25,000.00	-
42.03	Furniture	RES.REP	90,000.00	86,200.00	112,172.43
42.04	Construction Equipment & Material	OPS	250,000.00	250,000.00	223,142.77
45	CIVIL WORKS				
45.01	Construction	RES.REP	1,079,000.00	887,198.00	755,380.20
46	TRANSPORTATION EQUIPMENT				
46.01	Vehicles	OPS	55,000.00	59,047.00	50,099.00
57	CONTINGENCIES AND COST ESCALATION				
57.01		UNCDF	-	204,555.00	366,287.39 (Not spent)
93	SUPPORT COSTS				
93.01	Agency Overhead	OPS	11,000.00	11,000.00	‡11,000.00
93.02	Programme Support	UNCDF	50,000.00	50,000.00	‡50,000.00
	Sub-Total		61,000.00	61,000.00	61,000.00
99	GRAND TOTAL		1,728,000.00	1,728,000.00	1,728,000.00

‡ ESTIMATED

B : UNDP - PROPOSED AND ACTUAL EXPENDITURE

	DESCRIPTION	TOTAL MM	TOTAL AMOUNT	1988 MM	1988 AMOUNT	1989 MM	1989 AMOUNT	1990 MM	1990 AMOUNT
10	PERSONNEL								
11.01	BLDG SPECIALIST	28	231,437	7	57,672	12	99,290	9	74,468
13.00	ADMIN. SUPPORT	54	13,726	0	0	18	5,226	36	8,500
14	UNV								
14.01	UNV	21	44,866	0	11,241	12	19,214	9	14,411
14.02	UNV	20	38,511	0	11,568	12	15,396	8	11,547
14.03	UNV	0	1,329	0	1,329	0	0		0
15.00	TRAVEL	0	14,923	0	2,001		7,384		5,538
19	COMPONENT TOTAL	123	344,791	7	83,811	54	146,510	62	114,463
40	EQUIPMENT								
41.00	EXPEND. EQUIPMENT	0	1,600	0	23		1,577		0
42.00	NON-EXPEND. EQUIP.	0	72,541	0	72,465		76		0
49	COMPONENT TOTAL	0	74,141	0	72,488	0	1,653	0	0
50	MISCELLANEOUS								
51.00	OPER/MAINT	0	37,964	0	5,001	*(3,232)	12,963	*(11,277)	20,000 *(21,738)
52.00	REPORT COSTS	0	1,000	0	41	*(41)	361	*(249)	598 *(240)
53.00	SUNDRIES	0	4,003	0	2,558	*(820)	395	*(1,695)	1,050 *(1,164)
59	COMPONENT TOTAL	0	42,967	0	7,600	0	13,719	0	21,648
90	PROJECT TOTAL	123	461,899	7	163,899	54	161,882	62	136,111
99	GRAND TOTAL	123	461,899	7	163,899	54	161,882	62	136,111

* FIGURES FROM PEU RECORDS

ANNEX 11: ESTIMATED CLASSROOM COSTS

1. EQUIPMENT, TOOLS, MATERIALS & LABOUR

a)	Equipment, materials & labour		
	Overseas purchases	198,550	
	Local purchases	16,000	
	Cement	163,275	
	Timber	38,000	
	Ceiling mats	10,000	
	Sand and stone	12,500	
			438,325
b)	Supervision & labour		
	Supervisers (national)	6,773	
	Incentive payments	37,238	
			44,011
	Less estimated cost of wells and pit-latrines		-49,500
	TOTAL		432,836

Total gross built area: 64,730sq.ft (5,993.5sq.mtrs)

Cost/sq.ft: US$6.69 (US$72.22/sq.mtr) Cost/classroom: US$4,074

2. SUPPORT & OVERHEAD COSTS

a)	Expatriate personnel & local travel	342,285	
b)	Office equipment	42,688	
c)	Miscellaneous	40,505	
d)	Vehicles	97,547	
	TOTAL		523,025

Cost/sq.ft: US$8.08 (US$87.26/sq.mtr) Cost/classroom: US$4,920

3. FURNITURE COSTS

Total cost (locally made): US$84,059 Cost/classroom: US$2,102

ANNEX 12: PHASE 2 CONSTRUCTION OF TEACHERS HOUSES

As stated in the report, when it became apparent that the total UNCDF budget would not be utilized, Government decided, with the agreement of UNDP and UNCDF, to spend the surplus funds on the construction of teachers houses. One of the major constraints in getting primary school teachers, especially trained ones, to work in the rural areas, is the shortage of adequate accommodation. It was felt that the construction of teachers houses at the project schools would do much to raise the standard of teaching.

However, as the UNDP technical assistance budget had been fully utilized, it was not feasible to construct the houses using self-help because of the high administration costs. It was therefore decided to use a Freetown based contractor to construct them, supervised by one of the UNVs already working on the project.

The CTA had designed standard rural teachers houses whilst working on the Third Education Project and Government and the donor agencies agreed to the use of this design. The CTA amended the drawings for the use of sandcrete blocks instead of cement stabilised soil blocks and the project was put out to tender. It was initially intended to construct 13 houses but the lowest tender price was high and the number was reduced to 8, one each at the following project schools: BTC EXperimental School, Torwama; SDA Primary School, Mattru-on-the-rail; RC Primary School, Gbaiima; Methodist Primary School, Gondama; ACBC Primary School, Kassama; UBC Primary School, Bumpe; DEC Primary School, Bumpe; RC Primary School, Damballa. The positions of the houses are shown on the site plans in Annex 3.

Each house has an area of 924sq ft with a seperate kitchen of 96sq ft and a pit-latrine and washroom unit to the rear. The total floor area built was 8,160sq ft. Construction started in January 1991 and was completed in mid-June. Whilst construction work was underway, the UNV supervised the completion of some outstanding works on the schools. A summary of the expenditure on Phase 2 and drawings and photographs of the houses, follow.

PHASE 2: EXPENDITURE SUMMARY IN US DOLLARS

A. UNCDF: SIL/85/C02

1) HOUSING COST

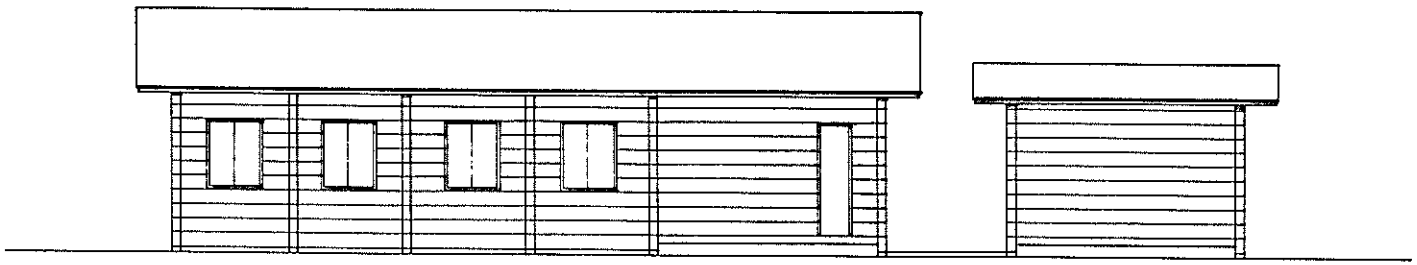
BL 42.03 FURNITURE	3,761.70
BL 45.01 PAYMENT TO CONTRACTOR	234,914.92
TOTAL	238,676.62

2) PHASE 1 COMPLETION COSTS

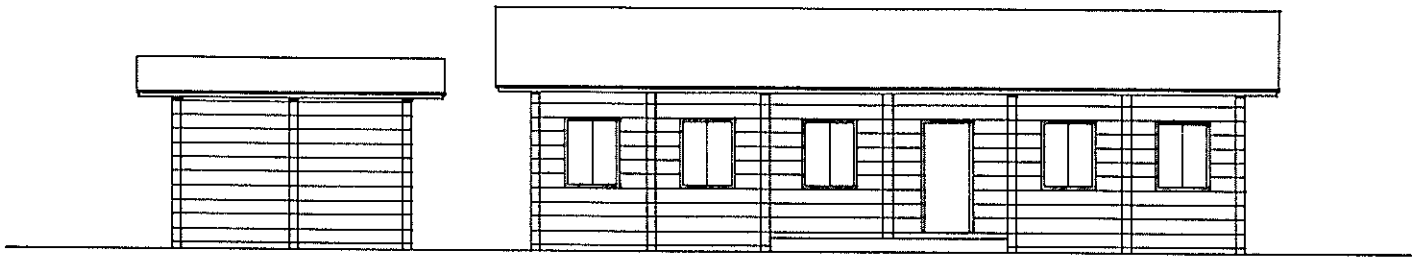
BL 45.01 INCENTIVE PAYMENTS & LOCAL EXPENSES	3,386.89
TOTAL COST	242,063.51

B. UNDP: SIL/87/004

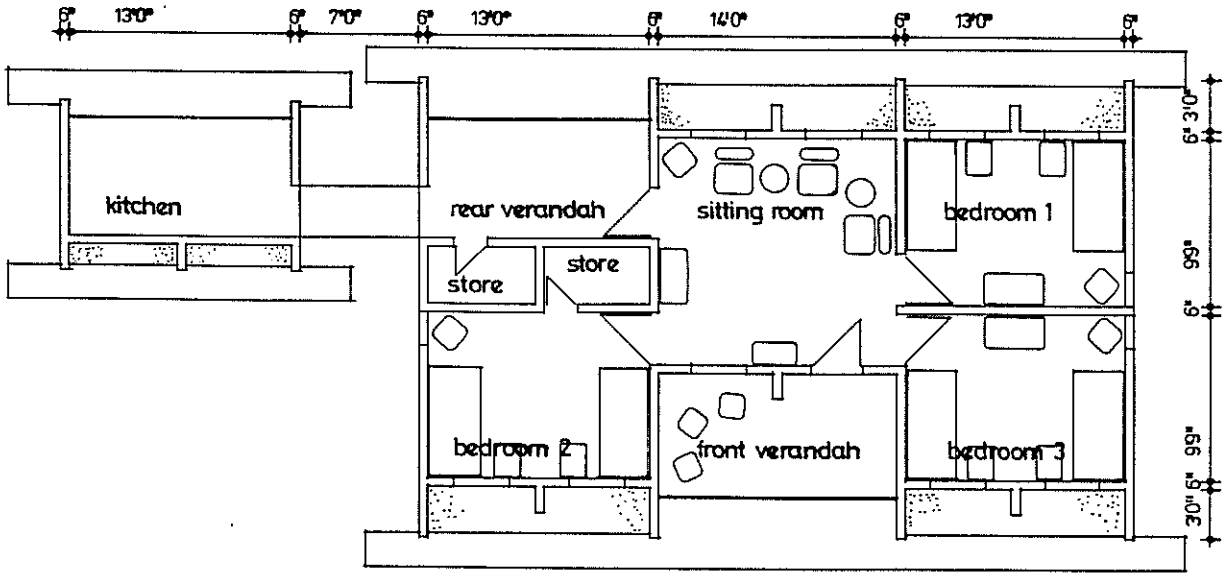
BL 51.00 MAINTENANCE	858.82
BL 53.00 SUNDRIES	105.78
TOTAL COST	964.60



REAR ELEVATION



FRONT/ENTRANCE ELEVATION



TEACHERS HOUSE : PLAN & ELEVATIONS

TYPICAL TEACHERS HOUSES