LIBERIAN PRIMARY EDUCATION RECOVERY PROGRAMME

PRIMARY SCHOOL INFRASTRUCTURE EXPANSION & IMPROVEMENT

Education Facilities Construction Specialist's Report
December 2008

LPERP: Primary School Infrastructure Expansion and Improvement
Education Facilities Construction Specialist's Report: December 2008
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SUMMARY OF REPORT

General

This report is intended to be a discussion document that describes the present situation with regard to the provision of primary school facilities, sets out the scale of the problem to be faced in reconstructing Liberia's primary school system and describes various options that could be adopted for the reconstruction programme.

It should be noted that these recommendations are for the primary school sector only and that the secondary school sector faces similar problems and these also need to be urgently addressed.

Current Provision of Primary Schools

As well as the large-scale destruction of existing primary schools during the civil war, there has been no major primary school construction project for nearly twenty five years, there has been virtually no maintenance or repair of school buildings and there are therefore extremely large numbers of primary school classrooms that need to be either renovated, reconstructed or replaced.

It is estimated that the number of new classrooms that need to be constructed to accommodate 80% of 4 to14 year old children is around 9,769 which is equivalent to over 1,600 6-classroom schools. It should be noted that this calculation is not based on 100% of 4-14 year olds and takes no account of population growth and that the actual needs are therefore bound to be far higher.

The cost of a new classroom is presently estimated at around US$17,000 (this is calculated by taking the cost of the whole school including other facilities such as offices, stores and toilets and dividing by 6) and the cost of constructing 9,769 classrooms would therefore be approximately US$166 million!

The numbers of classrooms that are required to be built could be reduced by for instance concentrating on primary school facilities only and not including pre-schools and by double-shifting primary schools where there are sufficient pupils to do this. The numbers of classrooms that need to be built would still however be very large.

Liberia Primary Education Recovery Programme

The original LPERP targets in terms of infrastructure were based on assumptions about the capacity of the education system to plan, procure and construct additional classroom spaces and make needed improvements to existing schools and it is now clear that these targets, low though they are when compared to the actual needs, will not be met.

It is now planned to construct only 240 classrooms together with latrines, wells and pumps in 2008/2009 due to limitations in time, capacity and funding and it is planned

to construct a further 360 classrooms together with latrines, wells and pumps in 2009/2010. The numbers of new classrooms constructed will not therefore reach the targets set out in the LPERP plan, no existing classrooms will be renovated and no teachers' houses will be constructed. It should also be noted that there is at present no funding available for the proposed 2009/2010 LPERP construction programme.

The planned reconstruction programmes for 2008/2009 and 2009/2010 should therefore be seen as short-term measures to start the reconstruction programme. A different approach will be required in the long term if the existing and growing shortfall in primary school classrooms and other facilities is ever to be overcome.

Implementation of the 2008/2009 LPERP Primary School Construction Programme

As noted in the October report, the window of opportunity to implement the proposed 2008/2009 primary school construction programme is very small and while the critical activities that will have to be carried out before construction can start that were listed in that report have been started or are in progress, they must all be completed quickly if the programme is to have any chance of being successful.

These activities include completing the selection of schools to be reconstructed, completing the documentation for the new designs for primary school facilities and the MOE reaching agreement with [redacted], who will be managing the construction in the current year, on a realistic budget and a memorandum of agreement.

Implementation of the 2009/2010 LPERP Primary School Construction Programme

Preparation work for the 2009/2010 primary school construction programme should start as soon as possible even before the 2008/2009 programme is implemented. It is hoped that this programme will be larger than the 2008/2009 programme but it should be noted that at present there are insufficient funds in the Pooled Fund to pay for any primary school reconstruction after the current programme of constructing 40 schools is completed.

Role of the Division for Educational Facilities in the 2008/2009 and 2009/2010 Construction Programmes

The role of the DEF in the 2008/2009 and 2009/2010 construction programmes should be to monitor the work of both [redacted] and of the contractors that [redacted] hires to reconstruct the schools and ensure that the quality of the construction work is in line with the drawings and specifications. However without additional vehicles, a budget for both fuel and expenses and some technical assistance its capacity to do this is doubtful.

It is proposed therefore that the MOE should employ a local firm of consultants to assist them with supervising the 2008/2009 programme and with preparatory work

for the 2009/2010 construction programme and that this firm should also supervise and manage part of this latter construction programme.

Proposed Long-Term Strategies for the Reconstruction of Primary School Facilities

Liberia is in a post-conflict situation and many primary school facilities have been badly damaged or destroyed, there has been virtually no primary school construction for over 20 years and the needs are therefore enormous: anything between 9,000 and 10,000 plus classrooms are needed now and the demand is likely to increase rather than decrease over the coming years in line with the increase in population.

If a programme was put in place to construct 9,000 classrooms over 5 years this would entail the construction of 1,800 classrooms (or the equivalent of 300 6-classroom schools) a year. If the programme was designed to take place over 10 years then this would entail the construction of 900 classrooms (or the equivalent of 150 6-classroom schools) a year. This is the scale of the problem.

There are only a limited number of strategies that could be adopted for the implementation of a major reconstruction programme of the country's primary schools and these are discussed in the main report.

The Future Role of the Ministry of Education's Division of Educational Facilities

The role of the Ministry of Education at this stage of the development of the country should be to manage the education system not to set itself up as an agency involved in the construction of educational facilities.

The DEF's role in the Ministry should therefore be to: set space and quality standards for educational facilities at all levels; procure the services of consultants to design and supervise the construction of educational facilities; monitor the performance of consultants and contractors and any other agencies involved in school construction programmes; assist the EMIS division of MOE in the management of a school facilities register; manage the maintenance programme for MOE facilities; manage any essential small works that the MOE requires that it is not economic to employ consultants to carry out.

There is an urgent need for the development of the capacity of DEF and other divisions in MOE to enable them to carry out these tasks and the services of a consultant architect with extensive experience of the design and construction of educational facilities in the tropics and of the management of large-scale school construction projects will be required to do this.

Next Steps

The Ministry of Education needs to take a number of steps immediately if any construction is to take place in the 2008/2009 dry season and these include:

- The selection of 2 schools out of the four selected schools in River Cess, Montserrado, Bomi, Cape Mount, Grand Kru, Margibi, Maryland, River Gee and Sinoe Counties. See Annex 1 for the proposed list of 40 schools for the 2008/2009 construction programme.

- There will not be time to carry out surveys of the sites and guidelines should be attached to the list of schools on the preparation of sites and arrangement of the buildings (see Annex 2).

- Finalisation of the revised MOE school design and the bills of quantities/schedules of materials in order that a firm estimate of cost can be arrived at and agreement reached with LACE on the estimated cost of the school buildings.

- Reaching agreement with [redacted] to manage the construction of 40 schools and signing a Memorandum of Agreement with them. This agreement should include the cost of [redacted] management of the construction process including all overheads. [redacted] will be provided with the revised design for the schools and the exact location of each school. The agreement should be finalised by mid-January 2009. [redacted] also needs to sign a Memorandum of Agreement with the Project Finance Management Unit of the Ministry of Finance and set up a special account to receive funds from the Pooled Fund.

Further steps need to be taken as soon as possible by the MOE to facilitate the construction process for 2009/2010 and these include:

- Identifying the schools to be included in the 2009/2010 reconstruction programme based on the attached list of eight schools in a selected district in all fifteen counties (see Annex 3). Only four schools in each district will be reconstructed and these will be selected after the DEF teams have surveyed all eight schools in each district. A survey instrument designed to provide all relevant information required to select the final four schools is attached as Annex 4.

- A total of 60 schools will be reconstructed in the 2009/2010 programme of which 40 schools will be managed by [redacted] and 20 schools by a local consulting firm. The EOIs submitted by three local consulting firms have been reviewed and a recommendation has been made as to which firm should be selected (see Annex 5). Agreement should be reached with this or any other firm selected by the MOE to provide limited technical assistance to the MOE

as soon as the schools to be reconstructed have been selected. See Annex 5 for details of services to be provided.

The Ministry of Education should also take a number of steps to improve capacity within the Ministry and specifically within the Division of Educational Facilities and these include.

- Initiating as soon as possible, the process of engaging a consultant architect to assist them with managing the school construction process and with building capacity particularly in the Divisions of Educational Facilities and Procurement as set out in Annex 6.
- Requesting assistance from the EU in providing short-term technical assistance for upgrading the skills of DEF staff to use Autocad or similar CAD software and with providing the necessary hardware.

MAIN REPORT

Current Provision of Primary Schools

Liberia's primary schools experienced massive destruction during the recent civil war. Public and community schools were worst affected with 31% of public and 24% of community schools totally destroyed. A further 16% of public and community schools experienced major damage and only 45% of existing classrooms in the public sector are in good condition or only require minor repairs. This accounts for the extremely high learner-classroom ratio in public and community schools which is more than 300:1. Furthermore 30% of public primary schools have temporary classrooms made from local materials such as thatch and bush sticks and even where classrooms do exist, large numbers of pupils have to sit on the floor.

It should also be realised that besides the large-scale destruction of existing primary schools during the civil war, there has been no major primary school construction project for nearly twenty five years, there has been virtually no maintenance or repair of school buildings and there are therefore extremely large numbers of primary school classrooms that need to be either renovated, reconstructed or replaced.

To give an indication of the scale of the problem if the 2007/2008 MOE school census results, the preliminary results of the 2008 Liberia National Population and Housing Census and the Core Welfare Questionnaire Indicator (LISGIS 2007) are used and it is assumed that 80% of 4-14 year olds are enrolled in pre-primary and primary schools, 75% of the enrolment is in public schools and the classroom: pupil ratio is 45, then the number of classrooms that are required is 14,421. The number of existing useable classrooms is estimated at 4,652 (though many of these will probably require major repairs, renovation or even replacement) and the number of new classrooms that need to be constructed is therefore 9,769 which is equivalent to over 1,600 6-classroom schools. It should be noted that this calculation is not based on 100% of 4-14 year olds and takes no account of population growth. The actual needs are therefore bound to be far higher. See Annex 9: Liberia Primary Education Index.

The cost of a new classroom is estimated at around US$17,000 (this is calculated by taking the cost of the whole school including other facilities such as offices, stores and toilets and dividing by 6) and the cost of constructing 9,769 classrooms would therefore be approximately US$166 million!

The number of classrooms that need to be constructed could be reduced through a number of measures. The construction programme could for instance at least initially be limited to primary schools only. There appear to be few if any trained pre-school teachers in the country and no pre-school teacher training programme and it would seem sensible therefore to concentrate on primary school construction rather than pre-school construction until a pre-school teacher training programme is in

place and pre-school teachers are available. It should also be noted as stated in the previous report that pre-school 'classrooms' should be different in design to primary school classrooms. This would reduce the numbers of classrooms that are required to around 9,252 which is still however a very large number.

Another measure that could reduce the number of classrooms that are required would be the use of double-shifts at least in urban areas or other areas where the numbers of pupils would justify this. Both of these measures would reduce the number of classrooms and other facilities that need to be constructed but the numbers of classrooms that would be required would still be very large.

Liberia Primary Education Recovery Programme

The MOE developed the Liberia Primary Education Recovery Program (LPERP) in March 2007 to meet the challenge of rebuilding Liberia's primary school system. LPERP represents a collaborative effort on the part of MOE and its partners to mobilize resources and harmonise actions to implement a medium-term development strategy for primary education.

LPERP is financed through the regular Government of Liberia budget and the Liberia Education Pooled Fund which is a multi-donor funding mechanism established by Government and its development partners. An initial estimate of the new infrastructure and improvements that would be required was developed to support the formulation of LPERP using data from the school census 2005/06 and UNDP population estimates and infrastructure expansion and improvement was to be the largest LPERP component.

The original LPERP targets in terms of infrastructure (see Table 1) were based on assumptions about the capacity of the education system to plan, procure and construct additional classroom spaces and make needed improvements to existing schools and it is now clear that these targets, low though they are when compared to the actual needs, will not be met.

	2008/09		**2009/10**	
Facilities	Numbers	Budget ($)	Numbers	Budget ($)
New classrooms	600	3,924,000	900	5,886,000
Classroom rehabilitation	150	450,000	240	720,000
Furniture	50,000	1,000,000	50,000	1,000,000
Latrines	400	930,000	500	1,550,000
Water pumps	300	600,000	500	750,000
Teacher housing	800	2,430,000	800	2,430,000
Total		**9,334,000**		**12,336,000**

Table 1: Original targets for the LPERP infrastructure development programme 2008/2010

The Pooled Fund was only established in June 2008 and therefore no infrastructure work was undertaken under LPERP in 2007/2008. It is now planned to construct only 40 schools (240 classrooms together with latrines, wells and pumps) in 2008/2009 due to limitations in time, capacity and funding and it is planned to construct a further 60 schools (360 classrooms together with latrines, wells and pumps) in 2009/2010. The numbers of new classrooms constructed will not therefore reach the targets set out in the LPERP plan, no existing classrooms will be renovated and no teachers' houses will be constructed. It should also be noted that there is at present no funding available for the proposed 2009/2010 LPERP construction programme.

What is very clear therefore is that the numbers of primary school classrooms and other facilities that are urgently required are very much greater than anticipated when the LPERP programme was first designed and that the present capacity in all organizations concerned with school construction including the MOE, contractors, consultants, NGOs, etc is too low to deal adequately with the problems faced at least in the short-term using the construction methods presently in use.

In this context, the planned reconstruction programmes for 2008/2009 and 2009/2010 set out below should be seen as short-term measures to start the reconstruction programme. A different approach will be required in the long term if the existing and growing shortfall in primary school classrooms and other facilities is ever to be overcome.

Implementation of the 2008/2009 LPERP Primary School Construction Programme

General

As noted in the October report, the window of opportunity to implement the proposed 2008/2009 primary school construction programme is very small and while the critical activities that will have to be carried out before construction can start that were listed in that report have been started or are in progress, they must all be completed quickly if the programme is to have any chance of being successful.

These activities include completing the selection of schools to be reconstructed, completing the documentation for the new designs for primary school facilities and the MOE reaching agreement with [redacted], who will be managing the construction in the current year, on a realistic budget and a memorandum of agreement.

Selection of Schools

During October and November two teams from DEF visited ten of the most "underserved" education districts in seven counties based on the current enrolment and infrastructure provision for primary school age children 14 years and below.

Only schools with official school sites were visited and at each site the teams checked the number of existing classrooms and assessed the condition of the

existing rooms. The teams also determined the number of classrooms that were required and checked the space available for constructing new classrooms, toilets, etc. None of the schools visited in one district met the criteria that had been set and of the 78 sites that were visited and assessed only 71 sites met the criteria. Of these a total of 22 sites have been selected for reconstruction.

While the ten districts visited have the greatest needs in the country it was recognised that the needs in many other districts are very nearly as great and therefore in order to provide more equity in the distribution of the reconstruction programme this year, a further nine districts in nine counties have been selected to each have two schools reconstructed. In these districts, 4 schools have been identified from of which 2 schools will be selected and a total of 40 schools will therefore be reconstructed this year. See Annex 1 for details of the numbers of schools to be reconstructed in each district in the current year.

It must be emphasised however that the MOE needs to make the final selection of the 2 schools to be reconstructed in the nine districts as soon as possible.

Management and Supervision of the 2008/2009 Construction Programme

As stated in the previous report, one of the tasks of the DEF is to manage school construction but its staffing level is low and its capacity to manage a large construction programme is doubtful as it is many years since such a programme has been attempted.

There are a number of local and international NGOs who have been renovating or constructing primary schools in the last few years but the numbers of schools are relatively small, the standard of renovation or construction is generally low and the size of classrooms being constructed is generally small and below standard.

One agency that is involved in school construction on a larger scale than the NGOs is the [redacted] which, since its establishment by the government in 2005 has constructed or renovated more than 50 schools. It has been using a design first developed by DEF and the standard of construction is quite high. It already has a management structure in place for managing the construction of schools together with engineering staff who supervise the construction. It is also prepared to recruit more technical staff so that it can manage an enlarged programme of school construction and reconstruction.

It has been agreed therefore that [redacted] should be used for the management and supervision of the 2008/2009 school reconstruction programme. The organisation will however have to recruit more technical staff and purchase more vehicles in order that they can properly supervise the work of the contractors carrying out the construction work. A draft budget for the management and supervision of the construction work and a draft memorandum of understanding have been prepared by

[redacted] and these must be agreed with the MOE as soon as possible. The draft budget in particular should be revised to reflect the cost of the new designs for school facilities prepared by DEF that will be used this year.

[redacted] should also prepare and sign a memorandum of agreement with the Project Financial Management Unit (PFMU) in the Ministry of Finance in order that they can open a special bank account to receive the funds needed to finance the school construction.

It should be noted here that the Soros Economic Development Fund (SEDF) intends to give [redacted] a grant to assist them with the overhead costs of managing school construction for MOE. SEDF will also be guaranteeing advances from banks for small contractors who win contracts for school building to enable them to purchase building materials, etc.

Revision of Primary School Designs

It has been decided not to use the existing designs for primary schools that [redacted] have been using for the schools to be reconstructed this year but to use the revised designs prepared during the last mission. Agreement has been reached on the details of these revised designs and the two building types that will be constructed at the 40 schools this year are being drawn up by DEF staff and the bills of quantities/schedules of materials will be prepared when the drawings are finished. See Annex 8 for details of the buildings to be constructed this year.

Again it must be emphasised that the revised drawings and bills of quantities/schedules of materials must be completed as soon as possible by DEF and handed over to [redacted] in order that they can complete their budget, reach agreement with the MOE on the memorandum of understanding and start the bidding process.

There will not be time to visit the school sites to carry out topographical surveys and the layout of the buildings at individual schools will vary depending on the site conditions. DEF should therefore prepare guidelines for setting out the buildings on the site for use by the [redacted] supervising engineers (see Annex 2 for details). These will be used for bidding purposes and [redacted] will agree the actual site layout for each site with the contractors before construction starts and following the guidelines. Any additional work required for individual sites will be covered by variation orders and will be paid for from the contingency fund.

Implementation of the 2009/2010 LPERP Primary School Construction Programme

General

Preparation work for the 2009/2010 primary school construction programme should start as soon as possible even before the 2008/2009 programme is implemented. It is hoped that this programme will be larger than the 2008/2009 programme but it should be noted that at present there are insufficient funds in the Pooled Fund to pay for any primary school reconstruction after the current programme of constructing 40 schools is completed.

Selection of Schools

It is proposed to reconstruct 60 schools in 2009/2010, 4 schools in one district in each of the 15 counties. A preliminary list of 8 schools in one district in each county has been prepared using similar criteria as those used for selecting schools in the current programme (see Annex 3). After discounting the districts where the current programme will be renovating schools, the next most "underserved" education district in all 15 counties has been selected based on the current enrolment and infrastructure provision for primary school age children 14 years and below and 8 'makeshift' (pole and mud plaster and thatch) or 'semi-solid' (mud brick and thatch) schools ie those in the worst condition have been selected for possible inclusion in the programme.

These schools should be visited as soon as possible by the DEF survey teams in order to select the 4 schools in each district that meet the selection criteria. The main criterion will be that the school site should be large enough to accommodate the new school buildings. A simple survey instrument has been designed that will enable the survey teams to gather much more basic information on the schools' infrastructure and especially on the size and condition of the sites than was possible in this year's survey. For details of the survey instrument see Annex 4.

It should be stressed that the surveys should take place as soon as possible ie during this dry season in order that the school reconstruction programme for 2009/2010 can start immediately after the 2009 rainy season, assuming that more funds for construction are forthcoming. This will give next year's programme much more chance of being completed before the following rainy season than the current reconstruction programme.

Management and Supervision of the 2009/2010 Construction Programme

It is proposed that the 2009/2010 primary school reconstruction programme is managed in a similar way to the current programme. [redacted] will be engaged to

manage and supervise the reconstruction of a further 40 schools probably, for reasons of efficiency on the basis of 4 schools in 10 districts in 10 counties.

It is proposed that the other 20 schools (4 schools in 5 districts in 5 counties) will be managed and supervised by the local civil works consultancy firm that it is proposed that the MOE will hire this year to assist them with finalising the designs for the new primary school facilities, monitoring the work of [redacted], etc (see below). This assumes that they carry out their duties to the satisfaction of the MOE during the current construction programme.

Role of the Division for Educational Facilities in the 2008/2009 and 2009/2010 Construction Programmes

The role of the DEF is low in the 2008/2009 and 2009/2010 construction programmes should be to monitor the work of both [redacted] and of the contractors that [redacted] hires to reconstruct the schools and ensure that the quality of the construction work is in line with the drawings and specifications. However without additional vehicles, a budget for both fuel and expenses and some technical assistance its capacity to do this is doubtful.

It is proposed therefore that the MOE should employ a local firm of consultants to assist them with supervising the 2008/2009 programme and with preparatory work for the 2009/2010 construction programme and that this firm should also supervise and manage part of this latter construction programme.

The MOE recently placed in the local newspapers a 'Request for Expressions of Interest' (EOI) for the provision, by a local civil works consultancy firm of technical assistance to the DEF. Although the wording of the advertisement was somewhat confusing three local firms of civil works consultants submitted expressions of interest and these have been reviewed and a recommendation has been made to the MOE as to which firm is the most responsive. See Annex 5.

It is proposed that a contract is signed with this firm (or with one of the other firms if the MOE does not agree with the consultant's recommendation) by the MOE to carry out a limited number of tasks relating to primary school construction this year with the possibility of extending their role next year.

It is proposed that the tasks to be carried out this year will include:

- Finalising the revised designs and documentation for all of the new primary school facilities for both the 2008/2009 and 2009/2010 construction programmes and transferring them into a CAD programme.
- Assisting DEF to monitor the work of [redacted] and their contractors and ensuring that the quality of the completed work is as specified.

- Assisting DEF to supervise and manage the reconstruction of three primary schools that are to be funded out of the government's budget.
- Assisting DEF in the process of selecting the schools to be renovated in the 2009/2010 school reconstruction programme.

The firm could also assist DEF in compiling all the existing information on the location and condition of schools from all available sources as part of the preparation process for the establishment of a 'National School Facilities Register'.

Possible Long-Term Strategies for the Reconstruction of Primary School Facilities

The Problem

Liberia is in a post-conflict situation and many primary school facilities have been badly damaged or destroyed, there has been virtually no primary school construction for over 20 years and the needs are therefore enormous: anything between 9,000 and 10,000 plus classrooms are needed now and the demand is likely to increase rather than decrease over the coming years in line with the increase in population.

If a programme was put in place to construct 9,000 classrooms over 5 years this would entail the construction of 1,800 classrooms (or the equivalent of 300 6-classroom schools) a year. If the programme was designed to take place over 10 years then this would entail the construction of 900 classrooms (or the equivalent of 150 6-classroom schools) a year. This is the scale of the problem.

The situation is further complicated in that many of the classrooms that are needed will be located in small, remote rural schools with very difficult access for materials and contractors. It must be recognised that small children should not have to walk more than 2 or 3 kilometres (half an hour to three quarters of an hour's walk) to school at least in grades 1 to 3 and this predicates the provision of large numbers of small schools in the rural areas. In very remote, under-populated areas it will also probably mean for reasons of cost and efficiency, the construction of single classroom, multi-grade schools with the implications this has for training teachers in multi-grade teaching.

Strategies for Reconstruction of Primary Schools

There are only a limited number of strategies that could be adopted for the implementation of a major reconstruction programme of the country's primary schools and these would include programmes that would use:

- A prefabricated construction system and contractors selected through international competitive bidding;

- Traditional construction materials and techniques and international or national contractors selected through international or national competitive bidding;
- International competitive bidding for contractors to construct the roofs and floors of the school buildings and the use of local communities or small contractors managed by local communities to provide the infill walls, windows, etc.;
- A major expansion of the current community-based [redacted] model or a similar community-driven model.

All of these possible strategies and their implications for cost, efficiency, capacity building and the development of the country are discussed below.

Prefabricated Primary School Construction

Prefabricated construction systems are often seen as the solution to the provision of large numbers of classrooms but there are major problems with the implementation of any such system in a tropical developing country and these include:

- Cost: prefabricated systems are by their nature industrially based and the cost of setting up the infrastructure in a developing country to manufacture the components would be prohibitive and the prefabricated elements would therefore have to be imported and the cost would be high.
- Appropriateness: the prefabricated elements would have to be selected from systems already developed for other purposes and are likely therefore not be ideal for school buildings in the tropics.
- Design: most prefabricated systems are based on structural panels constructed either of pre-cast concrete or rigid foam faced with finishing materials. In order to preserve the structural integrity of the panels the openings have to be kept fairly small and this makes them unsuitable for use in schools in the hot, humid tropics where large openings are required to promote good cross-ventilation and comfort.
- Transport: the panels would have to be imported and transported to the school construction sites. Importing any materials through the ports in Liberia is at present a very slow process and this could impede the implementation of the programme. The roads in the country are universally in bad condition and the cost of transport will be very high as will be the likelihood of damage to the panels and, as stated above, many schools are in remote rural locations where there is no road access at all.
- Centralisation: a very centralised project-based approach would have to be used to implement a prefabricated school construction programme which

would provide few if any benefits to either DEF, communities or the local construction industry in terms of capacity building.

The use of a prefabric ated school buildings system particularly one based on the use of prefabricated panels cannot therefore be recommended.

Primary School Construction Using Traditional Methods

In many developing countries, the national construction industry is large enough to take on the challenges of a large school building programme. In Liberia however the national construction industry is small and under-developed with few if any large construction companies. What capacity there is also being overwhelmed by the number of development projects currently taking place in the country.

If there was to be a large school building programme using traditional construction methods (ie concrete floors, concrete block walls, steel or timber roof trusses and purlins and corrugated steel roof sheets) it would therefore have to use international contractors and an international competitive bidding process (ICB). This process will have its disadvantages including:

- Management: the programme would have to be managed by international consultants resulting in very high management and supervision costs.
- Centralisation: a very centralised project-based approach would again have to be used to implement such a school construction programme which provide few if any benefits to either DEF or the local construction industry in terms of capacity building.
- Costs: although costs might be expected to be lower using ICB for a large programme, the difficulties of working in Liberia for foreign firms would probably reduce the numbers of firms interested in bidding and the resulting costs of construction will probably be quite high.
- Transport: again all materials such as roof sheets and cement would have to be imported and transported to the school construction sites. Importing any materials through the ports in Liberia is at present a very slow process and this could impede the implementation of any large-scale school building programme and as the roads are in universally bad condition the cost of transport will be very high.

This method could be used to implement a large-scale school building programme but costs would be very high, particularly for management and supervision and the benefits in terms of capacity building, local ownership, etc would be fairly low.

Primary School Construction: Roof and Floors

A more economic and faster alternative to using traditional construction techniques to construct complete schools would be to construct good quality floors and roofs (with integral ceilings) using international contractors and ICB. Temporary walls could be erected by local communities and permanent walls, windows and doors could be built later by local communities or contractors.

This method would have several advantages over the previous methods:

- Useable covered classroom space would be provided more quickly and the process would involve fewer foreign personnel;
- The key elements, the roof and the floor would be of high quality and would have a long useful life;
- There would be an element of flexibility in that the actual classrooms and other spaces could be re-arranged if necessary (classrooms sizes could be increased for instance) as the walls would not be load-bearing;
- There would be a degree of local ownership if local communities and small builders were involved in the process of completing the buildings.

The disadvantages however would be that unit costs of providing the roofs and floors would be fairly high particularly for management and supervision; the process would again take time; there would be transport problems in importing and transporting the roof structure and roofing around the country and the process of constructing the roofs and floors would be fairly centralised.

The Community-Based Model

The final alternative would be to use a community-based approach to reconstruct schools. There are two forms that this approach could take: 1) using contract management agencies to manage the use of communities and small builders to construct schools or 2) delegating the construction of school facilities directly to local communities.

[redacted] and some NGOs are existing examples of the first approach. [redacted] is constructing schools (as well as other facilities such as markets and roads) using a bottom-up, demand-driven approach and have opened up the construction industry to some of the smallest local construction enterprises which is especially important in remote, rural communities.

The second community-driven development approach (CDD) would be more radical but evidence from other countries in Africa and elsewhere shows that delegation of school construction to communities increases the rate of construction of schools and

lowers costs. It also results in improved commitment by local communities to the maintenance of the school facilities after they have been completed.

Under the CDD approach, school construction is the result of the interplay of four agencies:

- The Ministry of Education plays a strategic and regulatory role, establishing policy and setting standards, providing resources and capacity building and monitoring and evaluating the overall process;
- Local governments incorporate school projects into local development plans and monitor their execution;
- Communities identify their education needs and prepare and implement their school construction projects through a participatory approach.
- The private sector provides local contractors and technical supervisors that are hired by the communities.

An important element of the community-driven approach is that the flow of funds whether to the communities, the contractors or the supervisors has to be fully transparent to avoid any chance of corruption.

The community-driven approach would require oversight and a degree of management by local government at the district level that is probably not realistic to expect at this stage of the country's redevelopment. It is suggested therefore that the first model, that of using [redacted] or similar management agencies such as competent NGOs to manage school construction at a community level would be the most successful approach.

Recommendations for a Reconstruction Programme for Primary Schools

General

As stated above, the numbers of primary school classrooms that are required are very large but before embarking on a major primary school reconstruction programme the MOE needs to decide exactly what is going to be constructed and where. In order to do this the MOE needs to:

- Review the facilities to be provided at all primary schools particularly the libraries that have been included in the present design
- Establish exactly where existing schools should be reconstructed, where new schools are required and what facilities are required at these schools.

Primary School Facilities

The MOE must produce a definitive list of facilities to be provided at all primary schools no matter who they are constructed by. There are at present a number of NOGOs in the country building or reconstructing primary schools with no reference to the MOE. These schools are often being constructed to a very low standard in terms of both quality and classroom size and this is not a good investment for the future. The MOE should endeavour to control this and ensure that all schools are being constructed to an acceptable standard in terms of both quality and space.

Classroom sizes should be reviewed with the objective of providing 'book corners' in each classroom rather than separate libraries that are expensive to provide in terms of space and staffing (to operate properly the libraries would require a librarian) and not as effective in terms of learning outcomes as 'book corners' which provide much easier access to books for pupils. The space at present being allocated for libraries could be re-distributed and used instead for increasing classroom sizes at little or no extra cost. See Annex 8 for details of a proposed classroom with a 'book corner'.

The type of schools to be provided should also be reviewed particularly in remote rural areas. Remote rural areas with very small populations will require primary schools but the provision of 6-classroom, six grade schools will in many instances be inefficient in terms of facilities and teachers and will also be very expensive. The MOE should therefore consider the provision of 1-classroom multi-grade schools for very small communities and 3-classroom, grades 1 to 3 schools that would feed larger schools for less remote communities. The provision of multi-grade schools would require the use of a larger classrooms and the training of teachers in multi-grade teaching. See Annex 8 for details of a proposed multi-grade classroom.

In densely populated urban areas many more facilities might be required such as more staff facilities, offices, etc and sites are restricted there might be a case for the construction of two or three-storey primary schools.

At all sites for primary schools it should be possible to provide recreation space for pupils. This does not seem to be the case in many schools at present and the MOE, during the reconstruction process, should consider if possible moving schools from existing sites with no recreation space to sites where recreation space can be provided. The possibility of providing adequate recreation space should be one of the criteria for the selection of sites in future for the construction of new primary schools.

School Mapping

It is crucial that schools are only reconstructed or constructed in locations where there is a demand for them in terms of the numbers of primary school age children

and that the schools constructed are of a size appropriate to the potential population. To do otherwise will only waste very expensive and scarce resources.

It is essential therefore that a school mapping exercise is started as soon as possible to locate existing primary schools and provide the data for reconstructing and extending these schools and where necessary locating new schools. This need not, indeed should not take the form of an expensive digital mapping exercise. There are existing digital maps of the country which show the positions of most of the existing schools and there is also data from the 2008/2009 school census (the next census is due to take place in January 2009) on school enrolment, pupils' ages, teachers, etc. These maps and the school data if combined with the general population data could form the basis for the preparation of district school maps which could then be used for planning purposes.

Unfortunately the school districts which are the basis for the MOE school data are not the same as the administrative districts which are the basis for the general population data. These two sets of data need therefore to be combined so that the combined data can form the basis for district school maps.

Once the district school maps exist, these can then be updated annually using data collected from the school census and, using this data DEF and EMIS can start to put in place a school facilities register.

A great deal of work needs to be done to correlate the existing data and to start the preparation of district school maps and the MOE will require a lot of technical assistance in carrying out these tasks. It is essential that this work is carried out before any major primary school reconstruction project is started in order that schools are not reconstructed, constructed or extended in the wrong locations and that the sites are large enough for the proposed schools. The MOE should therefore request technical assistance from UNICEF, the EU or any other agency that might be interested in providing assistance to carry out these tasks. If this work can be completed during the next eighteen months to two years then planning can start for the next phase of primary school reconstruction in the country.

Primary School Reconstruction

The scale of the task to be faced in reconstructing the country's primary is so large that more than one approach is probably necessary to tackle it.

While the community-driven development approach has been shown to work in other African countries, after so many years of civil disturbance in Liberia and with so little capacity at every level of government it is probably too early to launch a major school reconstruction programme using local communities and managed by district government.

The approach at present being used by [redacted] could however be greatly expanded so that [redacted] could manage primary school reconstruction on a much larger scale. This would require however a major expansion of the [redacted] organisation and it would require many more engineers and support staff, more vehicles and a much larger budget. Discussions would have to be held with the management of [redacted] to see if the organisation would be interested in taking on this task. If agreement could not be reached then government should consider setting up a similar organisation purely for the purpose of managing a community-based primary school reconstruction programme.

There are at present a number of NGOs reconstructing existing primary schools and constructing new ones. The activities of these organisations must be more strictly controlled by the MOE but they could have a part to play in the reconstruction programme if they were to operate along similar lines to [redacted] ie acting as a management agency for the MOE.

The MOE advertised recently for expressions of interest from local NGOs and other non-profit organisations who might be interested in becoming involved in the school reconstruction programme and a review of the replies is attached as Annex 7. It can be seen that none of the local NGOs were judged competent or experienced enough to manage even a small school construction programme.

Both [redacted] and any NGOs would have to operate under the control of the MOE. Their programmes would have to be agreed with the MOE in advance and the locations and the size of the schools to be built, the facilities to be provided and the standard of construction would have to be agreed.

There is no doubt however that this approach could work and would be particularly effective in the rural areas where access is difficult and construction expertise and capacity is limited. It would also greatly increase local ownership of the schools and possibly assist with the maintenance of the buildings once constructed. Communities could in fact be asked to sign agreements to maintain the schools as a pre-condition to receiving the new buildings.

The other approach that could be effective especially in the more accessible and densely populated parts of the country where larger schools are required is the construction of ‘roofs and floors’. A large-scale programme could be designed, once the basic district maps are completed and decisions have been made on the locations of both schools that require reconstruction and of new schools, that would use a contractor procured through ICB to construct large numbers of basic school buildings consisting of roofs, ceilings and floors in a rolling programme over say five years.

Using this approach large numbers of basic school buildings could be constructed fairly quickly. Communities could in the first instance provide temporary walls and

over a longer time frame, permanent walls, doors and windows could be built. This secondary process could be managed by [redacted] or NGOs using communities or small local contractors in a similar way to that suggested for managing the rural school construction programme and this would give the local communities an element of ownership of the completed buildings. Communities could again be asked to sign agreements to maintain the schools as a pre-condition to receiving the new buildings.

The Future Role of the Ministry of Education's Division of Educational Facilities

The role of the Ministry of Education at this stage of the development of the country should be to manage the education system not to set itself up as an agency involved in the construction of educational facilities. It is considered neither necessary nor practical therefore to build up the DEF to a level where it can manage the actual construction of schools in major school construction programmes.

The DEF's role in the Ministry should be to:

- Set space and quality standards and provide design briefs for architectural and engineering consultants for educational facilities at all levels.
- Procure the services of consultants or consulting firms to both design new educational facilities and to supervise their construction.
- Monitor the performance of both consulting firms and building contractors.
- Monitor the work of [redacted], NGOs and other agencies who may be involved in school construction programmes to ensure that they are constructing schools to the required standards and quality and in the right locations.
- Assist the EMIS division of the Ministry of Education in the establishment and updating of a school facilities register.
- Design and manage a maintenance programme for all of the Ministry of Education's facilities.
- Manage and supervise any essential small works that the Ministry of Education requires that it is not economic to employ consultants to carry out.

There is therefore an urgent need for developing the capacity of the Division of Educational Facilities and other divisions in the Ministry of Education to enable them to carry out these tasks and the services of a consultant architect with extensive experience of the design and construction of educational facilities in the tropics and of the management of large-scale school construction projects will be required to:

- Assist the DEF in the management and monitoring of the 2009/2010 and 2010/2011 primary school construction programmes and any other construction programmes that might be started during the period.
- Assist the DEF in developing a long-term plan for the reconstruction of existing and the construction of new primary school facilities after 2011.
- Assist the DEF in establishing space and quality standards and design briefs for educational facilities at all levels for the use of architectural and engineering consultants in the designing of these facilities.
- Enable both the DEF and the Ministry's Procurement Division to more effectively and efficiently procure the services of architectural and engineering consultants to design, document and supervise construction and to procure if necessary the services of construction firms to carry out the construction of both large and small projects. This will include assistance with the preparation of bidding documents and training in the evaluation of bids, etc.
- Train DEF staff in the use of computer-aided design and the use of other software currently used in the building industry and advise the MOE on the provision of hardware and software.
- Enable the DEF to manage more efficiently and effectively the work of consultants engaged to both design and supervise construction projects for the Ministry and to monitor both their work and the work of contractors.
- Assist the DEF in setting up a data-base of construction costs for educational facilities which can be easily managed and updated.
- Assist both the DEF and the EMIS Division to set up and manage an educational facilities register for the whole country.
- Assist the DEF to set up an effective system for the management and maintenance of all of the Ministry's facilities.
- Train DEF staff in the management and supervision of small construction projects for the MOE.
- Assist the MOE if necessary in the establishment of Educational Facilities Units in the three regions of the country.

The consultant architect should be in place in Liberia by the beginning of July 2009 in order to assist the DEF with the management and monitoring of the 2009/2010 primary school construction programme.

There is a possibility of funding from the EU for short, medium or possibly long term technical assistance for capacity building in the DEF and the Ministry should

approach the EU concerning this if it is felt that this might be more effective than using the services of a single consultant architect for all the activities set out above.

It might be more efficient and appropriate to separate off some of the activities described above and use technical assistance from the EU for, for instance the establishment of an educational facilities register as the EU is already committed to providing assistance to the EMIS Division on school mapping. It may also be possible and more appropriate to use technical assistance from the EU for the training of DEF staff in the use of computer-aided design, etc. See Annex 2 for details of the terms of reference for the consultant architect.

ANNEX 1: Schools Selected for 2008/2009 School Renovation Programme

Schools Selected for 2008/2009 School Renovation Programme					
County & District	***School Name***	***MOE Number***	***Sector***	***Type***	***Condition***
BONG	Dankpansus	0612010	Public	Makeshift	Min. Dam.
Sanoyea	Kelepei	0612011	Public	Makeshift	Min. Dam.
	Vesselee Felemi	0612013	Public	Church building	Min. Dam.
5 schools Selected	Jarkpa-Ta	0612017	Public	Makeshift	Min. Dam.
	Wonorsue	0612032	Public	Church	Destroyed
NIMBA	Duo Boe Public	3324005	Public	Semi-solid	Min. Dam.
Yarpea-Mah	Gaywee	3324010	Public	Makeshift	Maj. Dam.
4 schools Selected	Gbein Yonyee	3324011	Public	Semi-solid	Min. Dam.
	Karwin	3324013	Public	Mud	Min. Dam.
LOFA	Kamboima	2110024	Community	Makeshift	Destroyed
Foya	Yengbimei	2110026	Community	Makeshift	Destroyed
	Njakkah	2110059	Community	Makeshift	Destroyed
4 schools Selected	Koloche	2110070	Community	Makeshift	
GRAND GEDEH	Newtown Elementary	1510011	Public	Makeshift	
Putu	John David Elementary	1510004	Public	Makeshift	Maj. Dam.
3 schools Selected	Nazarene Mission	1510005	Public	Makeshift	Destroyed
GBAPOLU	Palakwelleh	4512001	Public	Semi-solid	Min. Dam.
Goe Walala	Kpanta	4512017	Public	Semi-solid	Min. Dam
	Zeaya	4512007	Public		Maj. Dam.
3 schools Selected					
GRAND BASSA	Mensah Camp	0906014	Community	Semi-solid	Min. Dam.
Compound No 2	Bexley	0906064	Community	Makeshift	Destroyed
3 schools Selected	Glarkon	0906026	Community	Makeshift	Destroyed

RIVER CESS Central River Cess *Note: only 2 schools to be selected*	Nyvor	3606001	Public	Semi-solid	Destroyed
	Gbarsaw Public Annex II	3606003	Public	Semi-solid	Min. Dam.
	Kayah Public No 1	3606009	Public	Other	Destroyed
	Doewein	3606010	Public	Makeshift	Maj. Dam.
MONTSERRADO Careysburg *Note: only 2 schools to be selected*	Rural Mission	3002005	Community	Semi-solid	Min. Dam.
	In Touch Elementary	3002030	Community	Semi-solid	Min. Dam.
	Flahns T/n	3002089	Community	Semi-solid	Min. Dam.
	Walker T/n	3002013	Community		Min. Dam.
BOMI Dewion *Note: only 2 schools to be selected*	Gomai	0306024	Community	Semi-solid	Min. Dam.
	Levuman	0306003	Public	Semi-solid	Min. Dam.
	Kpagbla	0306004	Public	Semi-solid	Min. Dam.
	Jenneh	0306007	Public	Makeshift	
CAPE MOUNT Garwula *Note: only 2 schools to be selected*	Farsekorma ALP/NRC	1202043	Community	Semi-solid	Min. Dam.
	Njagbacca Self-Help	1202034	Community	Semi-solid	Min. Dam.
	Gohn Zodua	1202009	Public	Semi-solid	Min. Dam.
	A B Kroma	1202013	Public	Semi-solid	Min. Dam.
GRAND KRU Buah *Note: only 2 schools to be selected*	Rita B Wesseh	1802002	Public	Makeshift	Destroyed
	Toe Chea	1802003	Public	Makeshift	Destroyed
	Wropluken	1802007	Public	Makeshift	Destroyed
	J N Kartuiah	1802008	Public	Makeshift	Destroyed
MARGIBI Gibi *Note: only 2 schools to be selected*	Kpoe Town	2404010	Community	Makeshift	Min. Dam.
	Beahn	2404004	Public	Makeshift	Min. Dam.
	Blomu	2404005	Public	Semi-solid	Maj. Dam.
	Gibi	2404006	Public	Semi-solid	Min. Dam
.					
MARYLAND Karluway No 2 *Note: only 2 schools to be selected*	Doloken	2714006	Public	Makeshift	Destroyed
	Yederobo	2714008	Public	Makeshift	Min. Dam.
	Yorken	2714009	Public	Makeshift	Destroyed
	Tugbaken	2714010	Public	Makeshift	Destroyed

RIVER GEE **Chedepo** *Note: only 2 schools to be selected*	Torroken	4206008	Public	Makeshift	Maj. Dam.
	Jlowreken	4206012	Public	Makeshift	Maj. Dam.
	Chedepo Geeken	4206014	Public	Semi-solid	Min. Dam.
	Wolee Memorial	4206015	Public	Semi-solid	Min. Dam.
SINOE **Butaw** *Note: only 2 schools to be selected*	Wortuken	3902001	Community	Semi-solid	Min. Dam.
	Upper Murrayville	3902002	Public	Makeshift	Min. Dam.
	Tarsue Beach	3902003	Public	Makeshift	Min. Dam.
	Totoe	3902004	Public	Semi-solid	Maj. Dam.

Notes:

- Only 2 schools to be selected out of 4 named schools in Counties River Cess, Montserrado, Bomi, Cape Mount, Grand Cru, Margibi, Maryland, River Gee and Sinoe.

  The criteria should be that the existing school site is large enough to accommodate the proposed new school buildings ie 7 classrooms, library and 2 offices. If the site is only large enough to accommodate the new buildings if the existing buildings are demolished, then in order for the school to be included there needs to be access to temporary accommodation nearby to be used by the school while the new buildings are being constructed.

- Makeshift means schools built of poles, bamboo, etc with thatched roofs and mud floors.

- Semi-solid means schools built of mud blocks with thatched roofs and mud floors.

- Min. Dam. means minor damage and Maj. Dam. means major damage. As all of the schools are either ‘makeshift’ or ‘semi-solid’ and require replacement, the condition of the buildings is not critical.

ANNEX 2: Guidelines for Laying Out & Preparing a Site for a Primary School

LAYING OUT THE SITE

When laying out the buildings on the site the following rules should be followed:

- Orient all buildings so that the windows face north-south (i.e. with the line of the roof ridge running east-west) to reduce to the minimum the amount of sunlight entering the classrooms. There should be no direct sunlight entering the classrooms between 8am and 4pm.
- Buildings should be positioned along the contour lines rather than across them in order to keep foundation costs to the minimum. A variation of 30º from the optimum east-west orientation is acceptable if this reduces the foundation costs.
- Place classroom buildings at the rear of the site with playing fields, gardens, etc at the front to give privacy and keep classrooms away from the source of any noise such as roads.
- Situate any well used to supply drinking water to the school at least 15 metres and preferably 30 metres away from the school toilets.
- Pay attention to the contours of the site and do not place the buildings across the contours; in a hollow where water will collect or on soft wet ground. It should be possible to run storm drains away from the buildings to dispose of storm water and water from roofs.
- Do not place classroom buildings too close together so as to avoid noise from one building interrupting teaching in another building. A minimum distance of 20 metres should be adequate.
- Do not place buildings too close to trees whose roots could damage foundations or whose branches could damage roofs. As many trees as possible should be kept however to provide shade on the site.

PREPARING THE SITE

Clear the whole site of shrubs and vegetation in order that the buildings can be positioned and set out.

Retain any large trees that are well away from the buildings in order to provide shaded areas on the site.

Orient the buildings to face north-south. This is best done using a compass but if this is not available the person supervising the construction should stand on the site with his arms outstretched and with his left hand pointing to where the sun rises and his right hand pointing to where the sun sets. He will then be facing south and the veranda of the buildings should face in this direction. The roof overhangs will then keep the sun off the windows for most of the day.

The space to be occupied by each building together with an area all round at least 2 metres wide should then be stripped of all top soil and vegetable matter and the soil

stockpiled for future use in a position where it will not interfere with the work. The area around the building will be required as workspace during construction.

It is very important that all roots and vegetable matter within the area of the building are removed. Any vegetable matter that is left will rot and cause subsidence of floors or even of foundations and the cost of remedial work will then be very high.

Any termite nests that are found must also be dug out and destroyed.

ANNEX 3: Schools Selected for 2009/2010 School Renovation Programme

Schools Selected for 2009/2010 School Renovation Programme					
County & District	***School Name***	***MOE Number***	***Sector***	***Type***	***Condition***
BONG	Gbelekpalai	0616002	Public	Makeshift	Maj. Dam.
Zota	Gbarney	0616004	Public	Makeshift	Maj. Dam.
	Kpanya Elemetary	0616001	Public	Semi-solid	Maj. Dam.
4 schools selected in 2008 survey	James M Togbah	0616009	Public	Makeshift	Destroyed
NIMBA	Tiahplay	3316008	Public	Makeshift	Destroyed
Buu-Yao	Nyor Diaplay	3316014	Public	Makeshift	Destroyed
	Tarnwea	3316016	Public	Semi-solid	Destroyed
	Nyanlay	3316019	Public	Destroyed	
	Mahnplay	3316023	Public	Semi-solid	Min. Dam.
	Leaplay	3316024	Public	Semi-solid	Destroyed
4 schools to be Selected	Kaffeelay	3316027	Public	Semi-solid	Destroyed
	Dankuan	3316039	Public	Makeshift	Destroyed
LOFA	Lankama	2112083	Community	Makeshift	Min. Dam.
Kolahun	Karmon Lahun	2112119	Community	Semi-solid	Min. Dam.
	St Joseph	2112121	Community	Other	Destroyed
	F. Banbanyan	2112026	Community	Semi-solid	Min. Dam.
	Bolahun	2112051	Public	Semi-solid	Min. Dam.
	Savalahun	2112109	Public	Semi-solid	Min. Dam.
4 schools to be selected	Kortuvela	2112001	Public	Semi-solid	Min. Dam.
	Loloyahun	2112002	Public	Semi-solid	Min. Dam.
GRAND GEDEH	Myers	1502015	Public	Makeshift	Destroyed
Gbarzon	Zean Town	1502030	Public	Semi-solid	Destroyed
	New Zlea Town	1502045	Public	Other	Destroyed
	Darlue	1502046	Public	Semi-solid	Destroyed
	Quebo	1502005	Public	Makeshift	Destroyed
	Zargba Town	1502007	Public	Semi-solid	Destroyed
4 schools to be Selected	Teladee	1502008	Public	Makeshift	Destroyed
	Baker Gate	1502010	Public	Solid	Destroyed

GBAPOLU ***Belle*** *4 schools selected in 2008 survey*	Kalata	4504004	Public	Semi-solid	Min. Dam.
	Dorbor Memorial	4504014	Public	Semi-solid	Min. Dam.
	Kpawolozu	4504007	Public	Semi-solid	Min. Dam.
	Bowier Memorial	4504001	Public		
GRAND BASSA ***Owensgrove*** *4 schools to be selected*	Faith	0902016	Community	Makeshift	Min. Dam.
	Doewein	0902033	Community	Semi-solid	Maj. Dam.
	Lawgos Town	0902014	Public	Other	Destroyed
	Gon-Gon Town	0902045	Public	Semi-solid	Maj. Dam.
	Vahn Town	0902003	Public	Makeshift	Maj. Dam.
	Totota	0902004	Public	Makeshift	Min. Dam.
	Neegenein Govt	0902007	Public	Makshift	Min. Dam.
	Nyahn-Wein	0902009	Public	Makeshift	Min. Dam.
RIVER CESS ***Monweh*** *4 schools to be selected*	Sawpliu	3602015	Public	Makeshift	Maj. Dam.
	Gbor	3602034	Public	Makeshift	Maj. Dam.
	Goah	3602039	Public	Makeshift	Maj. Dam.
	Buen	3602041	Public	Makeshift	Maj. Dam.
	Sampue	3602042	Public	Makeshift	Maj. Dam.
	Jo-River	3602003	Public	Makeshift	Maj. Dam.
	Tiah Town	3602004	Public	Makeshift	Maj. Dam.
	Joshua G. Logan	3602006	Public	Makeshift	Maj. Dam.
MONTSERRADO ***Left Bank St Paul*** *4 schools to be selected*	Victoria A. Tolbert	3006827	Public	Semi-solid	Min. Dam.
	Gbokolleh	3006062	Public	Semi-solid	Min. Dam.
	J.E.C.C.M.S.	3006125	Public	Semi-solid	Min. Dam.
	Samuka Town	3006126	Public	Semi-solid	Min. Dam.
	Louisiana	3006130	Public	Makeshift	Maj. Dam.
	Robertsville	3006687	Public		Destroyed
	Youth Camp	3006818	Public	Other	Destroyed
	Jnalla	3006087	Community	Semi-solid	Min. Dam.
BOMI ***Klay*** *4 schools to be selected*	Gonje NRC	0302040	Community	Semi-solid	Min. Dam.
	Sackie Town	0302073	Community	Makeshift	
	Zermayan Town	0302075	Community	Makeshift	
	Damah	0302090	Community	Makeshift	Min. Dam.
	Valley Cewtor	0302093	Community	Makeshift	
	Omega Welfare	0302106	Community	Makeshift	Destroyed
	Kamanda Town	0302113	Community	Semi-solid	
	Early Learning	0302141	Community		

CAPE MOUNT	Gold Camp	1204039	Community	Makeshift	Min. Dam.
Gola Konneh	Varguay NRC	1204042	Community	Semi-solid	Min. Dam.
	Mana-Gorduah	1204037	Community	Makeshift	Min. Dam.
	Weasay	1204016	Community	Semi-solid	Min. Dam.
	Gbanie	1204018	Community	Makeshift	Min. Dam.
4 schools to be selected	Bomi Wood	1204031	Community	Makeshift	Min. Dam.
	Monon Community	1204002	Public	Makeshift	Min. Dam.
	Jenneh Brown	1204006	Public	Semi-solid	Min. Dam.
GRAND KRU	Betu	1812002	Public	Semi-solid	Maj. Dam.
Jlo	Botra	1812003	Public	Semi-solid	Destroyed
	Dioh	1812004	Public	Semi-solid	Destroyed
	Niplaikpo	1812005	Public	Semi-solid	Destroyed
	Missepoh	1812006	Public	Semi-solid	Maj. Dam.
	Sobo	1812006	Public	Semi-solid	Maj. Dam.
4 schools to be selected	Karh	1812008	Public	Semi-solid	Destroyed
	Neroh	1812009	Public	Semi-solid	Destroyed
MARGIBI	Grace	2406096	Community	Semi-solid	Min. Dam.
Kakata	Alhaji V Corneh	2406077	Community	Semi-solid	Min. Dam.
	Mission for Today	2406083	Community	Semi-solid	Min. Dam.
	New Kakata	2406084	Community	Makeshift	Maj. Dam.
	Gwepolosue	2406087	Community	Semi-solid	Min. Dam.
	Boubou Town	2406089	Community	Semi-solid	Min. Dam.
	Denda Community	2406068	Community	Semi-solid	Min. Dam.
4 schools to be selected	Bishop L L Reddi	2406069	Community	Semi-solid	Min. Dam.
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MARYLAND	Yoofidi	2708001	Public	Semi-solid	Min. Dam.
Harper No 1	Africa Home	2708002	Public	Solid	Destroyed
	Klayeede	2708013	Public	Makeshift	Maj. Dam.
	Pedebo	2708014	Public	Semi-solid	Min. Dam.
	Whole Graway	2708016	Public	Makeshift	Maj. Dam.
	Karblake	270819	Public	Semi-solid	Min. Dam.
4 schools to be selected	Boryibie	2710015	Community	Makeshift	Maj. Dam.
	Waa-Hodotown	2710022	Community	Semi-solid	Min. Dam.
RIVER GEE	Teajaliken	4208002	Public	Makeshift	Maj. Dam.
Potupo	Siayah	4208004	Public	Semi-solid	Destroyed
	Salkem	4208005	Public	Makeshift	Maj. Dam.
	Sieh Toe	4208006	Public	Makeshift	Min. Dam.
	Peloken	4208009	Public	Makeshift	Min. Dam.
	Pennoken	4208009	Public	Makeshift	Min. Dam.
4 schools to be selected	Mmatu	4208010	Public	Makeshift	Maj. Dam.
	Korltown	4208011	Public	Other	Destroyed

SINOE Central Kpanyan	Wokree	3912001	Public	Makeshift	Maj. Dam.
	Weagbah	3912002	Public	Semi-solid	Min. Dam.
	Wessehpoh	3912003	Public	Semi-solid	Destroyed
	Twah	3912004	Public	Makeshift	Maj. Dam.
	Settra Kru	3912005	Public	Makeshift	Destroyed
	Payne Nyenkan	3912007	Public	Makeshift	Maj. Dam.
	Nua Point	3912010	Public	Makeshift	Maj. Dam.
4 schools to be selected	Nyanpoh Beach	3912011	Public	Makeshift	Maj. Dam.

Notes:

- The 8 school sites already selected in Zota District, Bong County and Belle District, Gbapolu County were surveyed in the 2008 survey and do not need to be surveyed again.
- All 8 school sites listed in Nimba, Lofa, Grand Gedeh, Grand Bassa, River Cess, Montserrado, Bomi, Cape Mount, Grand Kru, Margibi, Maryland, River Gee and Sinoe must be surveyed following the guidelines attached. 4 school sites in each of the 13 districts will then be selected for inclusion in the 2009/2010 school reconstruction programme.
- The first criteria for inclusion in the programme will be that the existing school site must be large enough to accommodate the proposed new school buildings ie 6 classrooms, library and 2 offices. If the site is only large enough to accommodate the new buildings if the existing buildings are demolished, then in order for the school to be included there needs to be access to temporary accommodation nearby to be used by the school while the new buildings are being constructed.
- Makeshift means schools built of poles, bamboo, etc with thatched roofs and mud floors.
- Semi-solid means schools built of mud blocks with thatched roofs and mud floors.
- Min. Dam. means minor damage and Maj. Dam. means major damage. As all of the schools are either ‘makeshift’ or ‘semi-solid’ and require replacement, the condition of the buildings is not critical.

ANNEX 4: School Infrastructure Survey Questionnaire

School Infrastructure Survey 2009/2010

Identification Details

County	
District	
Village	
Name of School	
School Code	
Telephone no	
Email address	

Surveyor Identification	
Date of interview	
Surveyor name	
Date checked	
Respondent Identification	
Contact name	
Job title	

Introduction

To the Head Teacher:

The Ministry of Education is conducting a survey of the infrastructure at selected schools and the survey team is at your school to carry out a survey and ask you some questions about your school's infrastructure and facilities.

It should be pointed out that the undertaking of this survey is in itself not an indication that the Ministry of Education will be undertaking a construction programme at your school. Your co-operation will be greatly appreciated.

Notes to Surveyor:

Please note the current enrolment for each programme being taught at the school ie pre-primary, primary and junior secondary (there should not be any senior secondary pupils at the schools selected) as a check on the school census figures (*Section 1*).

Please note the name of the nearest other primary school and the distance from the school being surveyed (*Section 2: 2.1 and 2.2*)

The schools selected for possible inclusion in the 2009/2010 school reconstruction programme all have, according to the latest school census results, semi-solid or makeshift classrooms and other facilities. It is not necessary therefore to carry out detailed surveys of these buildings as they will eventually be replaced.

You should however take note of the outside dimensions of the buildings and also note what rooms they contain i.e. four classrooms or school office, etc. You should also show the position and size of the buildings on the sketch plan of the site so it is possible to see whether new buildings can be constructed on the site before the existing buildings are demolished (*Section 5*).

If the census data is wrong and there are permanent (solid) buildings on the site note the size and condition of these buildings and what rooms they contain and complete the details for each building on the form below (*Section 3: 3.1, 3.2 and 3.3*).

Section 1: Current Enrolment

Pre-school		Primary school		Junior secondary school	
Girls	Boys	Girls	Boys	Girls	Boys
Numbers					

Table 1: Current enrolment for each programme level (*enter numbers in boxes*)

Section 2: School Site and Services

2.1 What is the distance to the nearest other primary school? (*answer in miles).....*.....

2.2 What is the name of the nearest primary school?.....

2.3 State ownership of site (*circle number below*)

1. Government Land 2. Community Land 3. Private Land

2.4 Are there any sports field or playgrounds? (*circle answer*) Yes No

If yes, please describe: .....

2.5 What services are available on the site?

Service	Available		Reliable	
	Yes	No	Yes	No
Town Power				
Generator				
Solar Power				
Telephone				

Table 2: Services available on site (*enter answers in boxes*)

2.6 Is a water supply available on the site and if so where from? (*circle number below*)

1. Stream or river 2. Well 3. Piped water supply

2.7 Is there a reliable working pump? (*circle answers*) Yes No

If yes, indicate type: 1. Hand pump 2. Diesel pump 3. Electrical pump

2.8 Is there a reliable water supply all year? (*circle answer*) Yes No

If no, when do shortages occur? (*circle months*)

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

2.9 What type of toilets does the school have? (*circle number below*)

1. Flush toilets 2. Pit latrines 3. VIP latrines 4. None

2.10 How many toilets are in working order? (*indicate numbers below*)

Number of Toilets	Male	Female
Pupils		
Teachers		

Table 3: Working toilets

2.11 Are girls' toilets located away from boys' toilets? (*circle answer*)Yes No

2.12 Are there functioning washing facilities near toilets ie water tank or piped water? (*insert answers*)

Washing Facilities	Yes	No
For teachers		
For girls		
For boys		

Table 4: Washing facilities

Section 3: School Facilities

3.1 Indicate the number and type of existing buildings (*complete table below*)

Type of Construction	Buildings (*indicate number of buildings of each type)*	Number of classrooms, offices, etc in each building (*indicate number and type of rooms)*
Temporary/Makeshift (*stick and mud and thatched roof*)		
Semi-permanent (*mud blocks and thatched or corrugated steel roof)*		
Permanent (*concrete or stabilised soil blocks and corrugated steel roof*)		

Table 5: Information on existing buildings

3.2 Information on condition of any permanent buildings (*complete table below)*

Condition Category	Building 1	Building 2	Building 3	Building 4, etc
1.Good (*minor repairs*)				
2.Poor (*major repairs)*				
3.Bad (*demolish and re-build)*				

Table 6: Condition of Permanent Buildings

3.3 Information on facilities in any permanent buildings in Categories 1 and 2 above (*complete table below ignoring any Category 3 buildings that require demolition*)

Facilities	Building 1	Building 2	Building 3	Building 4 etc
Classrooms *(state number)*				
Head teacher's office				
Staff office				
Store				
Library				
Other				

Table 7: Facilities in Permanent Buildings

3.4 Does the school need any additional facilities? *(circle answer)* Yes No

If yes, what facilities are required .....

.....

Section 4: Site Information

4.1 Indicate the size of the site in square feet .....

4.2 Is the size of the site adequate for the existing buildings? (*circle answer*)

Yes No

4.3 Is the size of the site adequate for any additional buildings that are required? (*circle answer*)

Yes No

4.4 Describe the site (*circle number below*)

1. Flat 2. Gently sloping 3. Steeply sloping

4.5 Describe the condition of the site. (*circle number below*)

1. Rocky 2. Good load-bearing soil 3. Swampy or soft ground

4.6 Is there any danger of flooding? (*circle answer*) Yes No

4.7 Is there any danger of earth slips, landslides, etc? (*circle answer*)Yes No

4.8 Are there any large or dangerous trees? (*circle answer*) Yes No

4.9 Are there any power cables crossing the site? (*circle answer*) Yes No

Note: If the answer is yes to either 4.8 or 4.9 or please indicate positions on sketch site plan

4.10 Is this site a suitable location for the existing school and any new buildings or should it be abandoned (*circle answer*)

Yes No

Please comment on any other factors affecting the site.....

.....

Section 5: Site Plan

5.1 Draw a sketch plan of the school site showing the dimensions of the perimeter of the site, all existing buildings in their approximate position (with approximate sizes and dimensions to the perimeter and to each other), services, roads, paths, drains, large trees, beaches, rivers or streams, buildings on adjoining sites and any other notable features. Please show at least approximate north point.

ANNEX 5: Review of Expressions of Interest to Provide Technical Assistance to the Division of Educational Facilities, Ministry of Education

General

The Ministry of Education has advertised for expressions of interest from Liberian civil works consultancy firms to provide technical assistance to its Division of Educational Facilities. Three submissions have been received from AEP Consultants Inc in collaboration with Kiara Development Corporation Inc, Finda Architecture and Construction Company and Milton and Richards Inc and these are reviewed below.

AEP Consultants Inc.

AEP Consultants have submitted an expression of interest in collaboration with Kiara Development Corporation Inc. The latter firm have also submitted a separate priced proposal.

AEP Consultants' submission consists of a number of documents including:

- Cost of services to be provided per annum.
- A capability statement listing major projects completed by AEP, a list of proposals for other major projects, details of the background and origin of the firm and their approach to projects, details of their office location and of the principal partners, details of their capabilities and the services that they offer and of their production resources and of the consultants, associates and affiliated firms.
- Certificates of business registration, registration with the Ministry of Public Works and of accreditation with the Liberian Chamber of Architects.
- Tax receipts.
- A summary of major works completed by the firm.
- CVs for all of the key office staff.

The cost of services has been broken down into four sections:

- Pre-planning and data compilation services: US$3,500 per month.
- Planning services: 5% of the construction cost of the first five standard units plus reimbursable expenses for supervision.
- Construction services: 4% of the cost of construction plus reimbursable expenses.
- Training and other support services: US$5,000 per month.

The expression of interest is comprehensive, well presented and well documented.

This is obviously a long established, very professional and competent firm of architects and engineers who have carried out a large number of medium to large projects over an extended period of time. The two partners, one an architect and one a civil engineer are professionally qualified and have a great deal of experience in their respective fields. The firm also has a range of other professional staff including an architect, a construction engineer/project manager, a civil engineer/quantity surveyor, an Autocad technician/site surveyor and a site supervisor/clerk of works for whom CVs are attached. The firm also has a further nineteen administrative and technical staff and a modern, well equipped office. All design and construction drawings are prepared on Autocad.

As stated above, AEP Consultants' expression of interest was submitted in collaboration with Kiara Development Corporation who attached their own priced proposal. This firm appears to be a design and build firm ie a firm of contractors rather than a consulting firm although it is owned and managed by an architect. Their submission consists of the following documents:

- A list of current and recently completed work.
- A list of key personnel.
- A fee proposal.
- Certificates of business registration, of registration with the Association of Liberian Construction Companies and with the Liberian Chamber for Technical Services.
- Tax receipts
- The proprietor's CV.

The list of current and recently completed work consists mainly of small to medium residential developments with a few other developments and the firm seems to have been acting in all cases as the building contractor.

Key personnel consist of the owner, an architect planner, an architect, a civil engineer and quantity surveyor, a civil engineer and planner, two CAD operators and five construction foremen. Only the owner's CV is attached.

The fee proposal consists of a lump sum of $30,000 to carry out all of the services listed in the MOE advertisement and there is no detailed breakdown.

As stated above, this firm seems to be a construction company rather than a consulting firm and should not be considered independently of AEP Consultants to carry out the assignment.

Finda Architecture and Construction Company

Finda Architecture and Construction Company's submission consists of:

- A statement of works.

- A statement setting out how the firm would administer the works.
- Certificates of business registration (building and construction), clearance from the Department of Revenues and registration with MPW as a construction company.
- A list of most recent projects.
- Basic data on the firm and staff.
- A cost breakdown for the services to be provided.

The statement of works simply sets out the services to be provided as set out in the MOE advertisement with no further detail or breakdown.

The statement setting out how the firm would administer the work is not very clear. It seems to indicate that the firm understands the majority of the work to be a construction project (but whether they are to construct the project or administer it is again not very clear). They also state that they will provide a computer expert to provide training in CAD and other matters.

The list of most recent projects includes a variety of mainly small to medium projects that the firm seems to have constructed.

Staff to be assigned to the project consists of the owner, an architect/construction engineer, a project manager, two architects, a civil engineer and four technicians. The firm also has a further five technical staff and two administrative staff.

The cost breakdown consists of a breakdown of staff salaries for one year together with the cost of purchasing and maintaining vehicles, communications, accommodation and insurance. The total cost is estimated at US321,260.00.

A separate document seems to be a standard document giving further details of the firm. These details include those of: the structure of the firm; associated companies, the firm's field of activities (which are claimed to be extensive but without any back-up documentation); personnel and skills (again extensive but without any back-up documentation); projects completed (again this seems to be as a building contractor); key personnel (this differs from the list in the first document) and methodology (again this relates to construction projects).

As stated above, this firm seems to be a construction company rather than a consulting firm and should not be considered for this assignment.

Milton and Richards, Inc

Milton and Richards, Inc have submitted an expression of interest to carry out the proposed assignment in the form of a summary letter which expresses their interest and sets out their proposed fees. Attached to this letter are a number of other documents including:

- A profile of the firm setting out its history and giving general information on the firm.
- A section on the organisation of the firm.
- A list of associated firms.
- A description of the type of projects that the firm undertakes and a list of selected projects completed over the last twenty years.
- A list of recent commissions.
- A list of key personnel.
- A short section on approach/methodology, capabilities, resources and programme management.
- Certificates of business registration (architectural and engineering), clearance from the Department of Revenues and registration with MPW as an A & E consulting firm, registration with the Ministry of Commerce as a partnership and of accreditation with the Liberian Chamber of Architects.
- CVs of the firm's technical staff.

The expression of interest is quite comprehensive, but not very well presented or documented. The firm is obviously long established, professional and competent and it has carried out a large number of medium to large projects over an extended period of time. There are concerns however that there is now only one partner in the firm and he is of a fairly advanced age.

The initial summary letter notes that it is difficult to attach a price to the services required and proposes to charge a percentage fee (5%) of the total project cost. It will be difficult however to estimate a total cost as this is not a simple construction project. There is also a proposal to train staff in the use of computers (the details of this are rather vague) for ten to twelve months at a rate of US$100 per member of staff per month.

The firm has been established since 1959 and one of the original partners is now deceased. There are a number of associated firms including mechanical, electrical and soil engineers and architects in Liberia and in other countries. The firm's field of activities covers architecture, planning and engineering and projects include industrial, commercial, housing, educational and water supply projects. The firm also carries out feasibility and pre-investment studies. A great many projects carried out over the last twenty years are listed but no dates are given and it is impossible to say therefore how recent any of these are. A further fifty four recent projects (half of them in Monrovia) are also listed but again these do not have any dates.

The technical staff listed are the founding partner, an architect, two other architects, three civil engineers, an electrical engineer and a quantity surveyor/clerk of works. CVs of all but one of these staff are attached. It should be noted that there are no Autocad or CAD technicians on the list and it is probable that the firm has little or any CAD capabilities. There are a further ten technical staff and six administrative staff.

The section on approach and methodology sets out the basic approach to designing and supervising a construction project which does not cover the full scope of the services asked for in the MOE advertisement.

Recommendations

It should be stated here that the advertisement placed by the Ministry of Education in the local newspapers was not very clear as to exactly what services it was asking interested consultants to bid for (the consultants were asked to provide the cost of providing the services on an annual basis so this was really an invitation to bid rather than a request for expressions of interest) and therefore it is not surprising that the consultants interpreted the advertisement in different ways.

However, the advertisement did ask for technical assistance from 'qualified architecture consultancy firms' and this would seem to rule out both Kiara Development Corporation (at least as an individual entity) and Finda Architecture and Construction Company.

Of the remaining two firms, AEP Consultants Inc and Milton and Richards Inc, AEP Consultants would seem from their submission to have a more comprehensive approach to the tasks that the MOE have set, have more technically competent staff (particularly in regard to CAD capabilities and computer training) and more up-to-date offices and equipment.

Following the review of the expressions of interest set out above, it is recommended therefore that the Ministry of Education should negotiate an agreement with AEP Consultants Inc to carry out a more restricted range of activities than those stated in the MOE's original advertisement, activities that can be realistically defined and costed.

It is recommended that these activities should include preparing computer-based documentation for the revised designs for elementary schools being prepared by the Division of Educational Facilities and managing and supervising the construction of a limited number of elementary schools in the 2009/2010 construction season. Draft terms of reference for these activities are attached as Addendum 1.

ADDENDUM 1: TERMS OF REFERENCE FOR THE PROVISION OF CIVIL WORKS CONSULTANCY SERVICES TO THE MINISTRY OF EDUCATION OF THE REPUBLIC OF LIBERIA

BACKGROUND TO THE PROPOSED CONSULTANCY

Liberia's primary schools experienced massive destruction during the recent civil war and there has been no large-scale primary school construction or renovation project since the early 1980s. The needs of the primary sector in terms of the numbers of classrooms that have to be reconstructed, renovated or extended are therefore very large.

One of the tasks of the Division of Educational Facilities (DEF) in the Ministry of Education (MOE) will be to provide designs and documentation for the large numbers of new and renovated primary schools that will have to be constructed in the next few years. The DEF's current staffing level is however low and it does not have the capacity or resources to either produce the required documentation in a short period of time or to supervise the construction and/or renovation of a large number of primary schools.

OBJECTIVES OF THE CONSULTANCY

The objectives of the consultancy are to provide the necessary documentation for the construction of new and renovated primary schools using funds provided by government and donors and to provide management and supervision of the construction and renovation of 20 of these primary schools during 2009/2010.

SCOPE OF SERVICES

Preliminary designs for standard buildings to be provided for new and renovated primary schools have been prepared by DEF and the consultants will be required to provide architectural, engineering and quantity surveying services for the preparation of final designs, working drawings, bills of quantities and bidding documents for the standard primary school buildings.

The consultants will also be required to visit the 20 primary schools that are to be renovated and/or extended in order to establish the work required to renovate and/or extend them, carry out all necessary surveys and to prepare all necessary site specific documentation for these schools.

Final designs, working drawings, structural drawings, electrical drawings, bills of quantities and bidding documents will be required for the following standard buildings:

- Building A: principal's office and store; teachers' room; library and two classrooms.
- Building B: principal's office and store; teachers' room; library and a multi-purpose room that can be divided into two classrooms.

- Building C: principal's office and store; teachers' room; library and one classroom.
- Building D: four classrooms.
- Building E: three classrooms.
- Building F: two classrooms.
- Boys' VIP Latrine (3 cubicles plus one for male teachers for 6 classroom schools).
- Girls' VIP Latrine (3 cubicles plus one for female teachers for 6 classroom schools).
- Any other buildings required for the primary schools being renovated and/or extended.

The consultants will also be responsible for supervising the renovation and construction of 20 school facilities in 2009/2010.

OUTPUTS

Final Designs

The consultants will prepare final designs for the standard buildings based on the preliminary designs prepared by DEF staff.

The designs will include floor plans, elevations and sections and any details deemed necessary, to a scale of ¼'' to 1'0'', ½'' to 1'0'' and ¼ full-size.

The buildings should be designed to deal with the tropical climate. The designs should ensure that the sun is kept out of the buildings during the hours of 8.00am to 4.00pm assuming that the buildings are oriented north/south. Roof overhangs should be sufficient to keep the sun out of rooms on the north side of the buildings with a cut-off angle of 42º from the horizontal. All building should be designed for maximum cross-ventilation.

Working Drawings, Specifications and Bills of Quantities

When the final designs have been agreed with the MOE the consultants will prepare architectural and engineering working drawings for all of the standard buildings.

The buildings are required to be economic and appropriate to the climate and the country. Suggested materials are as follows: sub-structure walls of 6'' and 8'' concrete blocks (filled if hollow); superstructure walls of 5½'' thick stabilised soil blocks rendered where exposed to heavy rain; light and ventilation to classrooms to be provided either by open blockwork panels or by concrete vent blocks; windows to offices and libraries to be timber ledged and braced shutters; all doors to be timber ledged and braced doors with simple locks; roofs of 28 gauge corrugated, galvanised steel sheets on timber trusses; ceilings of ½'' thick plywood fixed to the underside of purlins and floors to rooms and verandas of 4'' thick steel float finished concrete.

Electrical installations will only be required in locations where there is an existing, reliable electricity supply.

Full architectural working drawings and specifications will be prepared for all buildings together with all necessary structural and electrical drawings. Working drawings should be prepared at scales of ¼'' to 1'0'', ½'' to 1'0'' and ¼ full-size. Drawings should include foundation plans, floor plans, ceiling and roof plans;

elevations and sections, structural and electrical drawings and details of all fixtures and fittings. Detailed specifications should be prepared for all materials, fixtures and fittings for all building units.

Site Specific Drawings

The consultants will be provided with a list of 20 elementary schools located in various parts of the country. The consultants will be required to visit the sites of all schools to be renovated, extended or re-built during the 2009/2010 primary school construction programme and carry out surveys of sites and existing buildings as necessary.

Site layouts, site works details and site service drawings will be prepared for all sites showing existing buildings to be retained, renovated and extended and any new buildings, connecting paths, etc.

Bidding Documents, Bid Evaluation and Supervision

Bidding documents will be prepared for each school site, including new and renovated buildings, site works and services and bidding for the construction and renovation of the schools will be carried out on an individual school basis or in small packages. Contractors will be allowed to bid for one or more school or package depending on their capacity.

The consultants will be required to prepare bid evaluation reports for each school or package and assist the MOE in awarding the contracts.

The consultants will be required to supervise the construction of the buildings to ensure that they meet the required specifications and to certify payments to the contractors.

There is very little capacity within the building industry at all levels in Liberia and there are few experienced contractors with any great knowledge of either bidding for, or managing contracts and there are equally few well trained and experienced tradesmen. The consultants will have to be prepared therefore to deal with these issues and the subsequent problems that are likely to occur on sites.

CONTRACT CONDITIONS

The initial contract period will be for one year and this may be extended if necessary.

All drawings are to be prepared using AutoCad and bills of quantities should be prepared using proprietary software designed for that purpose.

Three hard copies of all of the documentation for the standard buildings shall be provided to the MOE together with three hard copies of all site-specific documentation. A copy of all the documentation shall be provided to the MOE on one or more CD-ROMs. The copyright to designs, drawings and other documentation will belong to the MOE.

Payment for the preparation of all of the standard architectural and engineering drawings listed above will be on a lump-sum basis to be agreed.

Payment for the preparation work to be carried out at the 20 school sites will be on a lump sum basis per site to be agreed.

Payment for the site supervision services will be on an agreed daily-rate lump sum basis for each site that will include all per diems, travel costs, etc.

The consultants will report to the Deputy Minister for Planning, Research and Development in the Ministry of Education of the Government of the Republic of Liberia and work closely with the Director of the Division of Educational Facilities and his staff.

ANNEX 6: Terms of Reference for Consultant Architect for the Provision of Technical Assistance to the Division of Educational Facilities in the Ministry of Education in the Republic of Liberia

BACKGROUND TO THE PROPOSED TECHNICAL ASSISTANCE

Liberia's primary schools experienced massive destruction during the recent civil war and there has been no large-scale primary school construction or renovation project since the early 1980s. The needs of the primary sector in terms of the numbers of classrooms that have to be reconstructed, renovated or extended are therefore very large.

One of the tasks of the Division of Educational Facilities (DEF) in the Ministry of Education (MOE) is to manage school construction but its current staffing level is low and its capacity to manage a large construction programme is doubtful as it is many years since such a programme has been attempted. There is an urgent need therefore to increase the capacity of the DEF to carry out its proposed role within the MOE and in the development of the country.

The role of MOE should be to manage the education system not to set itself up as an agency involved in the construction of educational facilities and it is considered neither necessary nor practical therefore to build up the DEF to a level where it can manage the actual construction of schools in major school construction programmes.

The DEF's role in the Ministry should therefore be to:

- Set space and quality standards for educational facilities at all levels in consultation with the other Divisions within the MOE.
- Provide design briefs for architectural and engineering consultants for educational facilities at all levels.
- Procure the services of consultants or consulting firms to both design new educational facilities and to supervise their construction.
- Monitor the performance of both consulting firms and building contractors.
- Monitor the work of [redacted], NGOs and other agencies who may be involved in school construction programmes to ensure that they are constructing schools to the required standards and quality and in the right locations.
- Assist the EMIS division of the Ministry of Education in the establishment and updating of a school facilities register.
- Design and manage a maintenance programme for all of the MOE's facilities.
- Manage and supervise any essential small works that the Ministry of Education requires that it is not economic to employ consultants to carry out.

OBJECTIVES OF THE CONSULTANCY

An experienced consultant architect is required to work in the DEF to develop new space and quality standards for educational facilities at pre-primary, primary and secondary school levels together with a maintenance programme for all of the MOE's facilities and to provide capacity building and training for DEF and other Divisional staff as necessary to enable them to carry out the tasks outlined above.

SCOPE OF SERVICES

The consultant will be required to:

- Assist the DEF in the management and monitoring of the 2009/2010 and 2010/2011 primary school construction programmes and any other construction programmes that might be started during the period.
- Assist the DEF in the development of a long-term plan for the reconstruction of existing and the construction of new primary school facilities after 2011.
- Assist the DEF in the establishment of space and quality standards for pre-primary, primary and secondary schools.
- Assist the DEF in development of design briefs for the use of architectural and engineering consultants in the designing of these facilities.
- Enable both the DEF and the MOE's Procurement Division to more effectively and efficiently procure and manage the services of architectural and engineering consultants to design and document new facilities and supervise construction; to procure if necessary the services of construction firms to carry out construction work and to monitor the work of both consultants and contractors. This will include assistance with the preparation of bidding documents and training in the evaluation of bids, etc.
- Train DEF staff in the use of computer-aided design and the use of other software currently used in the building industry and advise the MOE on the provision of hardware and software.
- Assist the DEF in setting up a data-base of construction costs for educational facilities which can be easily managed and updated.
- Assist both the DEF and the EMIS Division to set up and manage an educational facilities register for the whole country.
- Assist the DEF to set up an effective system for the management and maintenance of all of the MOE's facilities.
- Train DEF staff in the management and supervision of small construction projects for the MOE.

QUALIFICATIONS

The consultant architect should have internationally recognised qualifications including a master's degree in architecture and a professional qualification recognised in the country where he/she is resident.

He/she should have a minimum of 20 years professional experience with at least 10 years experience in managing projects in the developing world. He/she should have extensive experience of the design and construction of educational facilities and of the management of school construction projects in tropical developing countries.

The consultant architect should be proficient in AutoCad and be able to pass on these skills to the staff of DEF. He/she should also be fluent in written and spoken English.

OUTPUTS

The consultant's outputs will include but not be restricted to:

- A long-term plan for the reconstruction of existing and the construction of new primary school facilities.
- New space and quality standards for educational facilities at pre-primary, primary and secondary school levels.
- Design briefs for the use of civil works consultants in the design of pre-primary, primary and secondary schools.
- New standard bidding documents, specifications, etc for school construction projects.
- Training programmes for DEF staff in procurement, management of contracts and computer-aided design.
- An educational facilities register for the whole country.
- A data-base of construction costs for educational facilities.
- An effective system for the management and maintenance of all of the MOE's facilities.

CONTRACT CONDITIONS

The initial contract period will be two years and this may be extended if necessary.

The consultant will be based in the offices of the DEF in Monrovia but will be expected to travel around the country to inspect schools, construction sites, etc.

The consultant will report to the Deputy Minister for Planning, Research and Development in the Ministry of Education of the Government of the Republic of Liberia.

Annex 7: Review of Expressions of Interest from Non-Governmental Organisations and Other Not-for-Profit Organisations to Collaborate with the Ministry of Education in the Area of School Construction and Renovation

General

The Ministry of Education (MOE) has advertised for expressions of interest from non-governmental organisations (NGOs) and other non-profit organisations to implement in collaboration with the MOE, new school construction and school renovation.

Interested organisations were asked to submit an expression of interest and address five topics:

- A description of the organisation, its structure, governance and legal standing in Liberia.
- The financial capacity of the organisation.
- A description of the projects, especially those involving construction, managed and implemented by the organisation.
- The current locations within Liberia where the organisation is working (or has worked).
- The capacity of the organisation to contribute its own resources or leverage third party resources for school construction and renovation.

Expressions of interest were received from eighteen local and three international NGOs or other non-profit organisations and these submissions are reviewed below.

Submissions from Local NGOs

Most of the submissions were from small, local NGOs and details of these submissions are given below.

Feeds Inc:

This NGO seems to have been established in July 2008. Its' technical staff consists of a programme manager/engineer. It seems to have worked as a sub-contractor to a building contractor working for LACE. Very little detail of organisation, etc; more of a building contractor than an NGO.

Modern Construction and Humanitarian Services, Inc:

This is a construction company.

ZAO Development Council:

This organisation was established in 1997 and has renovated/constructed 11 schools and also constructed wells and latrines since that date. It operates in Nimba and Montserrado Counties. No details were given of technical staff or management.

Solidarity Incorporated:

This organisation was founded in 2002 and has no construction experience.

Christian Help Incorporated, Liberia:

This organisation has only constructed a small number of wells and latrines and no schools. No details were given of technical staff.

Community Integral Development Association:

This organisation was founded in 2003 and has constructed one community school. They have a construction coordinator but there were no further details.

Community Aid Liberia:

This organisation was founded in 1995 and has a consultant engineer, a construction engineer and technical supervisors. No details were given however of any completed projects.

Krudf Inc:

This organisation was established in 1996 and operates in Nimba County where they have constructed 3 schools. They claim to have 6 technicians but there were no details of any engineers or management structure.

Community Services Trading Corporation Inc:

This is a construction company.

Bledishap Inc:

This is a construction company.

Liberia Community Development Organisation:

This organisation was founded in 1994 and has renovated one school building. Seems to have no engineers or technical staff.

Permanent Liberian Action for Citizens' Empowerment:

This organisation was founded in 2002 and has constructed two schools together with some latrines and wells. It claims to have an engineer, a field supervisor and some field technicians but no details were given.

Rural Integrated Center for Community Empowerment:

No schools appear to have been built and there were no staffing details with this submission.

Liberian Initiative for Development Services:

Appears to have been founded in 2006 and built one school and renovated another but there were no staffing details with this submission.

Youth for Development and Productivity International Inc:

This organisation was founded in 1998 and constructed a school in 2006. There were no staffing details and the organisation seems to be a building contractor.

Cater for Women and Children:

This organisation has a manager with engineering experience and a construction manager. It has renovated clinics and schools for UNDP but seems to act as a building contractor.

Holy Family Services:

This organisation was founded in 2000 and has constructed one low-cost school. It appears to have a project manager/engineer and a project engineer but there is little other detail of its organisation.

Recommendations:

Unfortunately none of the submissions from local NGOs fully satisfied the conditions of the MOE advertisement mainly due to lack of experience of construction, a lack of technical staff or a lack of detail of the organisation and management of the NGO in their submissions and a number of the submissions were actually from building contractors.

None of these local NGOs can therefore be recommended therefore to undertake any of the MOE's school construction and renovation programme.

Submissions from International NGOs and Similar Organisations

Two international NGOs submitted expressions of interest together with [redacted] that is operating in Liberia. All seem to be reasonably competent, have completed some school or similar construction projects in Liberia and all have engineering and technical staff. Another NGO claims to have submitted an expression of interest but this seems to have been misplaced.

Concern Worldwide:

This is an international NGO that has been established in Liberia since 1996. It has carried out a large amount of construction of markets, wells, water and drainage projects and latrines and has rebuilt one school in Lofa County in the current year. There were no details of construction management or staff in the expression of interest but more information was collected at a subsequent meeting with the Assistant Country Director of Programmes. Concern operates in Lofa, Bong and Grand Bassa Counties and in Monrovia. It has an international engineering coordinator based in Monrovia or Bong and a qualified Liberian engineer in each county who are responsible for supervision of construction. The organisation hopes to move into school construction over the next three years but does not at present have any funding for this. It would be interested in managing the construction of two schools in Compound No 2 District, Grand Bassa County if funding was available from the MOE. This organisation seems to be well organised and uses established management procedures and should definitely be considered for the management of the renovation of two schools in 2009/2010.

Peace Winds Japan:

This is a mainly Japanese-funded NGO that has been involved in community-based school renovation in Lofa County using funds from UNHCR. Peace Winds provides the construction materials and the communities provide skilled and unskilled labour. They use Liberian engineers for supervision together with unqualified monitors. They plan to renovate 1 more school and construct 2 new schools this year using Swiss government funds. The new schools will have six classrooms (same size as LACE designs), a principal's office, a teachers' office, a small store, toilets and a well. The schools will be constructed of concrete blocks and the estimated cost (which has probably gone up) was US$50,000 in February 2008. They would be interested in renovating schools for the MOE next year but would need to recruit more technical staff and would also require funding to pay the additional staff, transport and other overheads. When the list of schools to be renovated next year is finalised they should be considered for the management of the renovation of two schools in Lofa County. They would however have to be closely monitored by the DEF in order to ensure the quality of the completed schools.

[redacted]

[redacted] have been managing construction work for UNDP and UNHCR using documentation provided by local consulting firms much of which has been so poorly prepared that they have had to re-do it themselves. At present they have two expatriate engineers who manage projects and they employ Liberian engineers as site supervisors. Their present contracts are closing and they are looking for other projects. They would like to be involved in the MOE school construction programme and/or with capacity building in the DEF. Their costs are however very high. They

charge 8% of the construction cost of the project plus all direct costs such as salaries, cost of staff holidays, plane fares, vehicle and transport costs and administration costs. Salaries of international staff are based on the UN salary scale. [redacted] estimate therefore that the total cost for the management of the construction of ten schools would be 31% i.e. if the construction cost was US$1,000,000 then their management costs would be in the order of US$341,000! They would be interested in managing school construction for the MOE and when the schools have been selected for next year's construction programme it would be worthwhile asking them for an estimate of their costs for managing a group of ten or twenty schools.

ZOA:

ZOA claims to have submitted an expression of interest but this seems to have been misplaced. This is a mainly Dutch-funded NGO that has constructed more than 50 schools and it has also been using UNHCR funds to construct schools. It does not seem to use any standard plans for school construction but the organisation's engineer designs the schools to fit the sites. Several schools were visited and the standard of construction is not very good and the size of the classrooms is quite small and this is very likely a product of the small amounts of money that it has been using for constructing schools. ZOA intends to continue to construct schools and would like to be involved in any MOE programme but this would mean a step-change in their management and supervision capacity and the MOE would have to ensure that any schools managed by them are constructed to the MOE's standards in terms of classroom sizes, provision of other facilities and quality. They should probably be considered for the management of the renovation of two schools in Montserrado County, one the ones in which they operate (the other is Margibi County). They would however have to be closely monitored by the DEF in order to ensure the quality of the completed schools.

Recommendations:

It is recommended that when the list of schools to be renovated next year is finalised all three NGOs are asked to provide a management and cost plan for managing the renovation of two schools in the Counties in which they are operating and a decision can then be made as to whether to use them or not.

Despite the likely high cost of using [redacted], it is also recommended that when the list of schools to be renovated next year is finalised they are asked to submit their management and cost plan for managing the renovation of either ten or twenty schools and a decision can then be made as to whether to use them or not.

ANNEX 8: Proposals for Improved Primary School Designs

General

A number of factors have to be taken into account when designing new school facilities in countries such as Liberia. These include climate and geography, teaching methods and furniture, available building materials, local construction methods and skills, maintenance and probably most crucially, cost.

A number of factors have also to be taken into account when designing the actual teaching spaces including the maximum class size, type and layout of furniture, teaching methods, light levels, ventilation, thermal comfort, acoustics both within the classroom and between classrooms and if any such services such as water and electricity are required.

Revised designs were agreed during the last mission and these are at present being documented by DEF. See below for details.

Classroom Design

In order to make classrooms as comfortable as possible, they must be designed to cope with the hot humid tropical climate that prevails over most of the country for a large part of the year while still being comfortable in the rainy season and at higher altitudes in the country.

The main determinants for the design of classrooms other than the climate are the number of students, the space allowed per student and the type of furniture. The government has set the maximum number of students per classroom at 45 and the present area per student seems to be around 1.2m² giving a minimum classroom size of 54m² (583.2ft²). A standard classroom size of 20'0'' x 29'6'' (590ft²) has been adopted for the new schools to be constructed this year. See Figures 1 and 2.

The accommodation being provided in the primary schools being reconstructed this year includes a small library. It is suggested that a more effective way to encourage reading amongst pupils and improve educational outcomes would be to provide 'library or book corners' in every classroom. This would also remove the need for a librarian or for a teacher to be removed from his/her teaching duties to operate the library.

If the library is omitted and the floor area of the library is divided between and added to each of the classrooms, then the classrooms will be increased in size at no extra cost and a 'library or book corner' can be provided behind the teacher's desk. See Figure 3.

There is possibly a problem of small class sizes in some of the more remote rural areas and this should be dealt with in other ways rather than reducing classroom

sizes as this will cause problems if and when class sizes increase. One solution would be to provide small, 3-classroom schools with standard classrooms where two classes could be taught. This however has implications for teacher training (teachers would have to be trained in multi-grade teaching) and for the provision of furniture.

These 3-classroom schools could also be provided as feeder schools in small settlements to provide accommodation for grades 1 to 3. Pupils would then walk to larger schools central to several settlements when they reach grade 4 and are able to walk further.

Very small schools, if they exist with up to 45 pupils should probably operate as one classroom, one teacher, multi-grade schools and they would require a larger classroom than the proposed standard one. There would again be the issue of training teachers in multi-grade teaching. The necessity for this type of school requires further investigation. A proposal for a multi-grade classroom is shown in Figure 4.

Proposed Standard Classrooms

The proposal for a standard classroom that would be suitable for use in all parts of the country that was made during the last mission has been adopted by DEF and will be used in the schools to be reconstructed this year. See Figures 1 and 2.

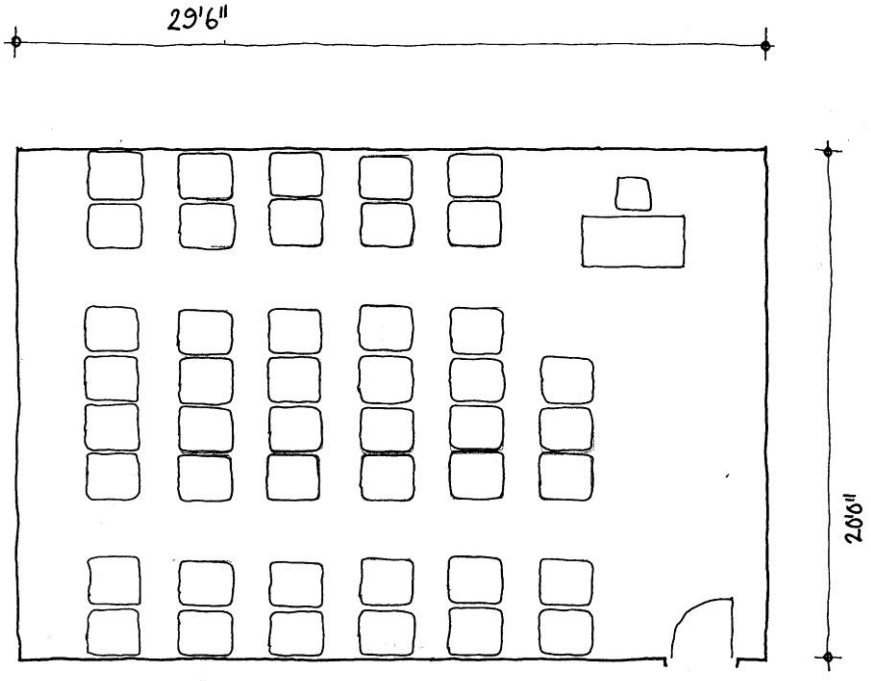

Figure 1: Standard classroom with 45 arm-chairs

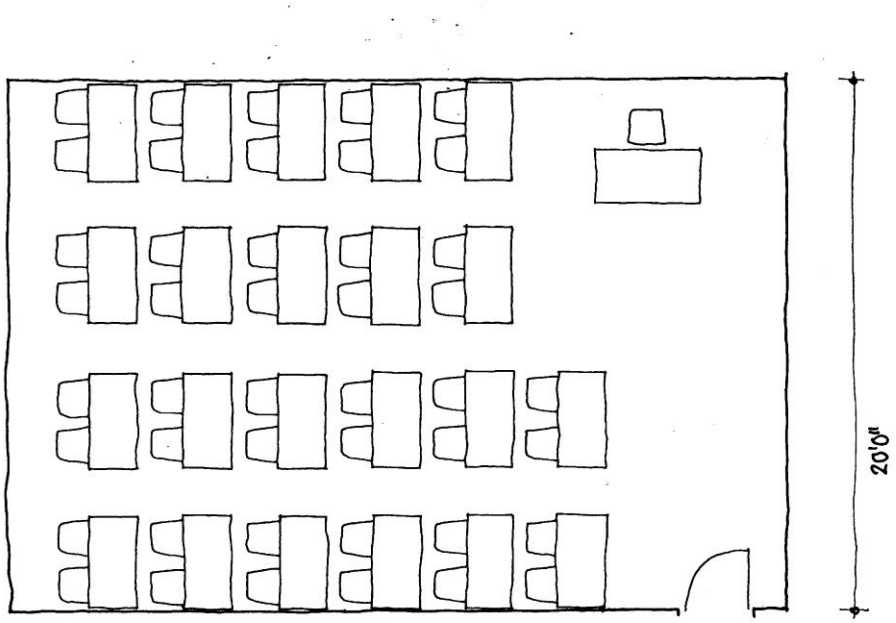

Figure 2: Standard classroom with 22 double desks

The classroom size is 20’ 0’’ x 29’ 6’’ and the side walls are 9’ 0’’ high (this is also the height of the underside of the truss). The classroom can comfortably seat 45 students using single arm-chairs or 44 students at double desks 3’ 8’’ x 1’ 10’’ which can be arranged in different layouts. The internal floor area is 590ft² (54.6m²) giving an area per pupil of 1.21m².

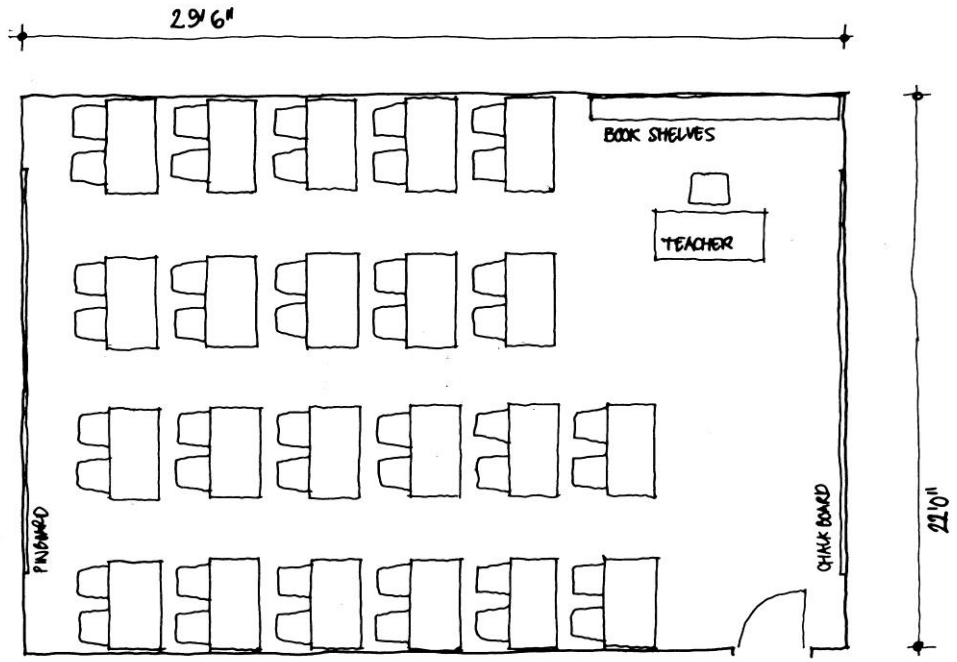

Figure 3: Enlarged standard classroom with 22 double desks and ‘book corner’

A proposal for a larger classroom with a ‘book corner’ is shown in Figure 3. The classroom size is 22’ 0’’ x 29’ 6’’ and the classroom can comfortably seat 45 students using single arm-chairs or 44 students at double desks 3’ 8’’ x 1’ 10’’ which can be arranged in different layouts. The internal floor area is 655ft² (60.6m²) giving an area per pupil of 1.37m².

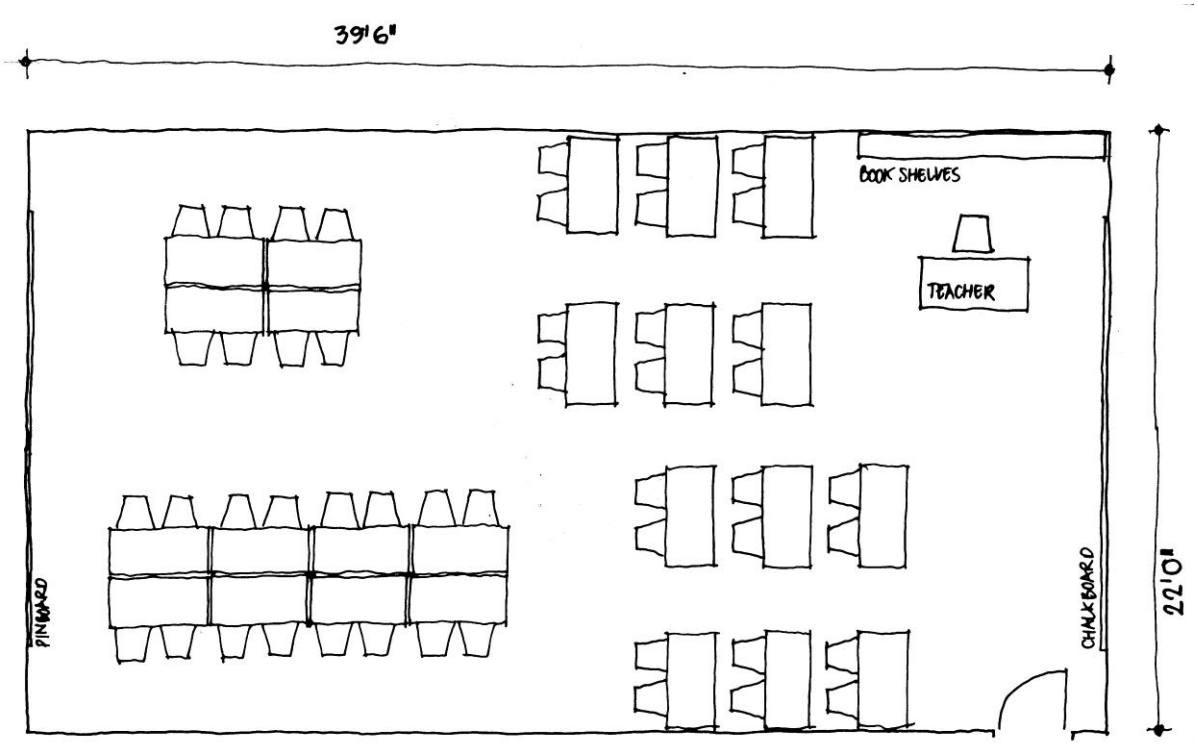

Figure 4: Proposed Multi-Grade Classroom for 44 pupils

A proposal for a multi-grade classroom is shown in Figure 4. The classroom size is 22’ 0’’ x 39’ 6’’ and the classroom can seat 44 students at double desks 3’ 8’’ x 1’ 10’’ which can be arranged in different layouts to suit pupils of different ages and grades. The internal floor area is 869ft² (80.46m²) giving an area per pupil of 1.83m².

Proposed Standard Buildings

A variety of standard buildings will be required to construct new schools and to extend existing schools that are being renovated and the following standard buildings were proposed in the last mission report:

- Building A with a principal's office and store; a teachers' room; a library and two classrooms.
- Building B with a principal's office and store; a teachers' room; a library and a multi-purpose room that can be divided into two classrooms.
- Building C with a principal's office and store; a teachers' room; a library and one classroom.
- Building D with four classrooms.
- Building E with three classrooms.
- Building F with two classrooms.
- Boys' VIP Latrine (3 cubicles plus one for male teachers for 6 classroom schools)
- Girls' VIP Latrine (3 cubicles plus one for female teachers for 6 classroom schools)
- In very large schools it might be necessary to have more accommodation for staff and a larger library and additional standard latrine buildings can also be provided.

With these standard buildings it should be possible to construct new schools and extend existing schools no matter what the site conditions are. For instance a new one-stream grades 1-6 school could have Administration/Classroom Building A together with one 2-Classroom Buildings and one 3-Classroom Building or Administration/Classroom Building B together with one 4-Classroom Building depending on the size, shape and condition of the site. An existing school could be extended using the Administration/Classroom Buildings or 2-Classroom, 3-Classroom or 4-Classroom Buildings as required (if only one classroom is required it would probably be better to add it onto an existing building.

For the 2008/2009 construction programme it is proposed to use only Buildings A and B.

If the proposal to omit the library and increase the width of the standard classrooms is adopted, then these standard buildings could be easily adapted to the new width and the library could be omitted.

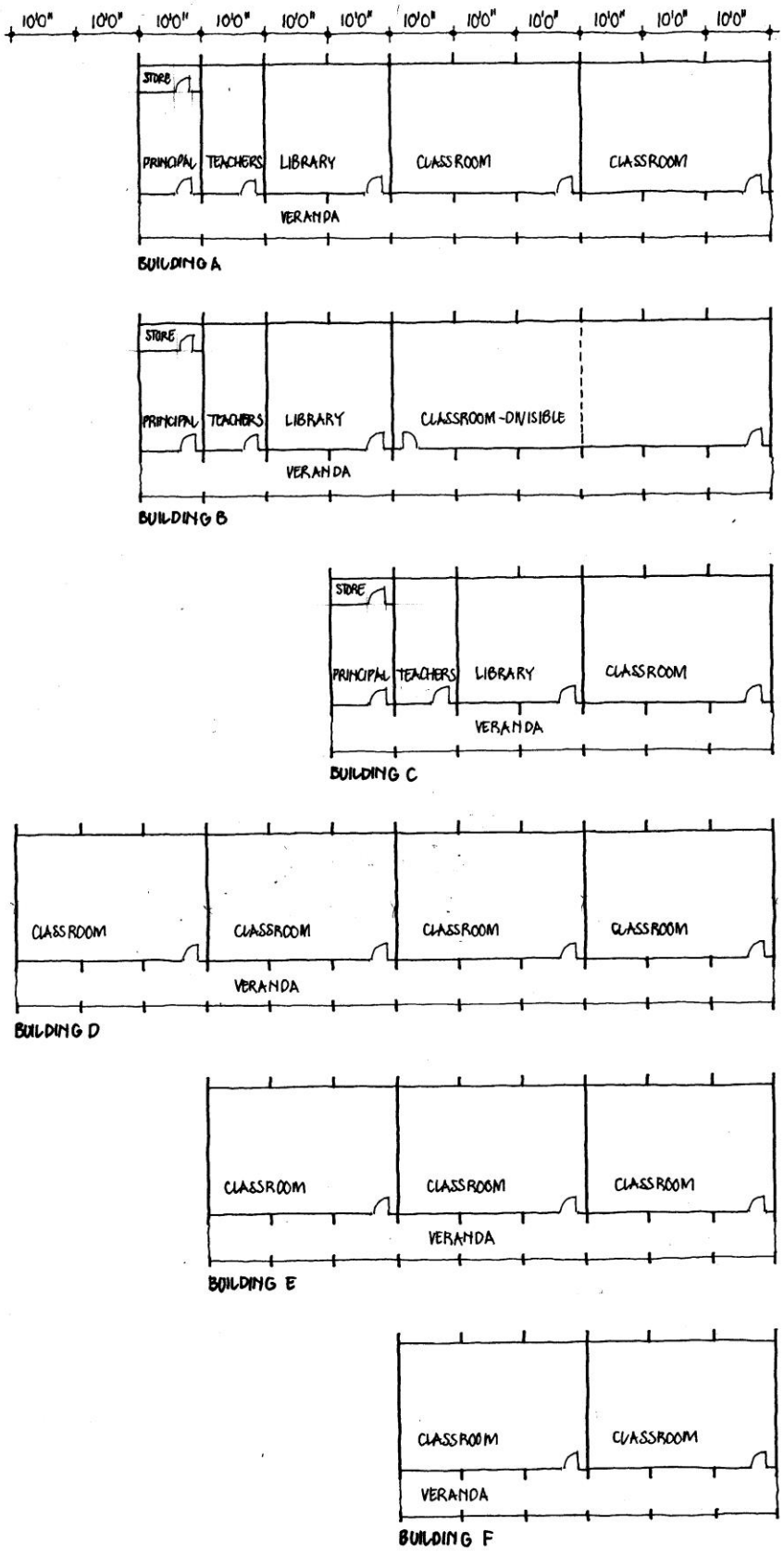

Figure 7: Proposed standard classroom buildings

ANNEX 9: Liberia Primary Education Index

Public Primary enrolment 378,755

Percent of Public Primary enrolment age 15 or greater 60%

Public Pre Primary enrolment 374,165

Percent of Public Pre Primary enrolment age 9 or greater 65%

In public schools 75% of 8 year olds, 70% of 9 year olds and 60% of 10 year olds are enrolled in Pre School rather than Primary School

Primary Net Enrolment Ratio (age 6-11) Girls 31% Boys 32.8%

Percent of Age 16-22 cohort having completed Grade 6 or higher: Male 52%, Female 39%

The probability that a 9 year old boy is currently enrolled in either Pre Primary or Primary school 47.5%

Probability of being enrolled for a 9 year old girl 44.3%

2,924 public schools report enrolment of students in 2007/8[i]

Nearly 75% of public schools are combined Pre School and Primary

About 17% of public schools are combined Pre School, Primary and some Secondary

2007/08 Government of Liberia Expenditure on Primary Education per Pre Primary/Primary Student outside of Monrovia $35

2007/08 Government of Liberia Expenditure on Primary Education in Monrovia per Pre Primary/Primary Student in Monrovia $75

Number of Primary/Pre Primary classrooms required for an 80% 4-14 year old NER 14,421

Number of intact solid Primary/Pre Primary classrooms in 2007/08 4,652

Annualized financial requirement to provide 14,421 classrooms if cost per classroom is $17 thousand = $10.6 million

2008/09 MOE allocation for infrastructure $300,000

About 80% of children 6 -14 years of age live within 30 minutes of an existing primary school

More than 50% live within 10 minutes of an existing primary school

About 17% of the total number of out of school children 6-14 years of age in Liberia are located in Greater Monrovia

More than 50% of the out of school children 6-14 are located in Nimba County, Greater Monrovia, and Grand Bassa County

About 75% of children previously enrolled in school but currently out of school report they are "awaiting admission"

Note: Liberia Primary Education Index supplied by Dr Deweese