

**Transferring road maintenance to the private sector
The Ghana experience**

by C C Parkman

**Unpublished Project Report
PR/OSC/156/99
[Project No. R6889]**

The Transport Research Laboratory is the largest and most comprehensive centre for the study of road transport in the United Kingdom. For more than 60 years it has provided information that has helped frame transport policy, set standards and save lives.

TRL provides research-based technical help which enables its Government Customers to set standards for highway and vehicle design, formulate policies on road safety, transport and the environment, and encourage good traffic engineering practice.

As a national research laboratory TRL has developed close working links with many other international transport centres.

It also sells its services to other customers in the UK and overseas, providing fundamental and applied research, working as a contractor, consultant or providing facilities and staff. TRL's customers include local and regional authorities, major civil engineering contractors, transport consultants, industry, foreign governments and international aid agencies.

TRL employs around 300 technical specialists - among them mathematicians, physicists, psychologists, engineers, geologists, computer experts, statisticians - most of whom are based at Crowthorne, Berkshire. Facilities include a state of the art driving simulator, a new indoor impact test facility, a 3.8km test track, a separate self-contained road network, a structures hall, an indoor facility that can dynamically test roads and advanced computer programs which are used to develop sophisticated traffic control systems.

TRL also has a facility in Scotland, based in Edinburgh, that looks after the special needs of road transport in Scotland.

The laboratory's primary objective is to carry out commissioned research, investigations, studies and tests to the highest levels of quality, reliability and impartiality. TRL carries out its work in such a way as to ensure that customers receive results that not only meet the project specification or requirement but are also geared to rapid and effective implementation. In doing this, TRL recognises the need of the customer to be able to generate maximum value from the investment it has placed with the laboratory.

TRL covers all major aspects of road transport, and is able to offer a wide range of expertise ranging from detailed specialist analysis to complex multi-disciplinary programmes and from basic research to advanced consultancy.

TRL with its breadth of expertise and facilities can provide customers with a research and consultancy capability matched to the complex problems arising across the whole transport field. Areas such as safety, congestion, environment and the infrastructure require a multi-disciplinary approach and TRL is ideally structured to deliver effective solutions.

TRL prides itself on its record for delivering projects that meet customers' quality, delivery and cost targets. The laboratory has, however, instigated a programme of continuous improvement and continually reviews customers satisfaction to ensure that its performance stays in line with the increasing expectations of its customers.

TRL operates a quality management system which is certificated as complying with BS EN 9001.



Transport Research Foundation Group of Companies

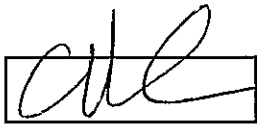
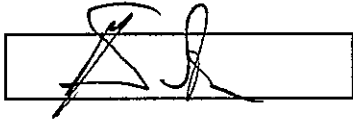
Transport Research Foundation (a company limited by guarantee) trading as Transport Research Laboratory
Registered in England Number 3011746 TRL Limited Registered in England Number 3142272
Registered Office Old Wokingham Road, Crowthorne, Berkshire RG45 6AU

PROJECT REPORT PR/OSC/156/99

Transferring road maintenance to the private sector
The Ghana experience

by C C Parkman

Subsector	Transport
Theme	Reduce the costs of constructing, rehabilitating and maintaining road infrastructure and vehicle operation costs
Project Title	Transferring road maintenance to the private sector
Project Reference	R6889

Project Manager		APPROVALS	
	Quality reviewed		

Copyright Transport Research Laboratory April 1999

This document is an output from an DFID-funded knowledge and research project, carried out for the benefit of developing countries. It is an unpublished report and must not be referred to in any publication without the permission of the DFID. The views expressed are those of the author(s) and not necessarily those of the DFID.

TABLE OF CONTENTS

ABSTRACT	1
1 INTRODUCTION	1
2 BACKGROUND	2
3 THE PRESSURE FOR CHANGE	3
4 GHANA HIGHWAY AUTHORITY	4
4 1 EVOLUTION OF CONTRACTING PROCEDURES	4
4 2 GHA CENTRAL REGION ROUTINE MAINTENANCE OPERATIONS	5
4 2 1 The GHA network and budgets for Central Region	5
4 2 2 Routine maintenance	8
4 3 PERIODIC MAINTENANCE	9
4 4 IMPORTANT ISSUES	10
5 DEPARTMENT OF FEEDER ROADS	11
5 1 EVOLUTION OF CONTRACTING PROCEDURES	11
5 2 DFR ASHANTI REGION ROUTINE MAINTENANCE OPERATIONS	12
5 2 1 The DFR network and budgets for Ashanti Region	12
5 2 2 Routine maintenance	14
5 3 PERIODIC MAINTENANCE AND MINOR WORKS	16
5 5 LABOUR BASED PROGRAMME	17
6 TENDER BOARDS	18
7 THE CONTRACTING INDUSTRY	19
7 1 EQUIPMENT	19
7 2 CONTRACTOR REGISTRATION	19
7 3 THE ROAD CONTRACTORS ASSOCIATION	20
7 4 LABOUR BASED CONTRACTORS ASSOCIATION	21
8 TRAINING AND DEVELOPMENT	22
8 1 CONTRACTOR TRAINING	22
8 2 CLIENT TRAINING	23
9 CONCLUSIONS	23
10 ACKNOWLEDGEMENTS	25
11 REFERENCES	25

APPENDIX 1 - PEOPLE INTERVIEWED DURING STUDY	27
APPENDIX 2 - THE GHANA ROAD FUND	29
APPENDIX 3 - LPC FOR ASHANTI REGION	31
APPENDIX 4 - LOCAL DFR CONTRACT (PRE MPBS)	32
APPENDIX 5 - MPBS CONTRACT	33

TRANSFERRING ROAD MAINTENANCE TO THE PRIVATE SECTOR: THE GHANA EXPERIENCE

ABSTRACT

Many countries are making increasing use of the private sector for road maintenance activities. The West African country of Ghana has considerable experience of this approach for both the national road network and the rural and feeder road network. It provides a useful case study of how the private sector can become increasingly involved in an area which has traditionally been the preserve of in house force account organisations. This report reviews the experience of Ghana, by regional case studies of both the Ghana Highway Authority (responsible for national roads) and the Department of Feeder Roads (responsible for rural and feeder roads). The report reviews how the client organisations have set up road maintenance by contract procedures, how they have evolved to manage this process and how the contracting industry has responded to the developments. Conclusions highlighting the key issues which appear to affect the success of developing the private sector for road maintenance are presented at the end of the report. This study will contribute to a final report which addresses international experience of private sector road maintenance, which it is hoped will be of benefit to countries considering such changes.

1. INTRODUCTION

The Department for International Development (DFID) are funding a Knowledge and Research (KAR) project entitled 'Transferring road maintenance to the private sector'. The aim of this project is to assess how successful different approaches have been in procuring road maintenance from the private sector, and to identify how the change process from using an in-house workforce (IHW) to using the private sector has been managed in various organisations.

The purpose of the study is to identify successful approaches which might be considered by those countries who receive assistance from DFID. The West African country of Ghana previously used an IHW for procuring its road maintenance works, but since the 1980s it has turned over an increasing amount of this work to private contractors. This has occurred on both the national and regional road network, the rural and feeder road network and the urban network. For this reason, Ghana provides a useful case study of the experience of transferring road maintenance into the private sector.

The case study was developed during a visit to Ghana by Mr Chris Parkman from 19/9/98 to 3/10/98. The first point of contact in Ghana was Mr Alex Twumasi-Boakye, Deputy Director (Planning) of DFR. Meetings were held during this time with various people as noted in Appendix 1.

2. BACKGROUND

Ghana is a medium sized country located on the Atlantic coast in West Africa, with a land area of 239,000 km² and a population of 17.5 million (1996), and is bordered to the west by Cote d'Ivoire, to the north by Burkina Faso and to the east by Togo. It is fairly flat, and extends from a dry coastal region of low lying scrubland and plains, through a central area of thick rainforest to the northern plateau of about 500 metres elevation which is predominantly savannah and open woodland. Accra, the capital city, is on the southern coast with a population of approximately four million. Government of the country is exercised both centrally and through assemblies which represent each of the country's 10 regions and 110 districts. Currently there is a process of decentralisation in which much of the responsibility of the regional assemblies is being transferred to the district assemblies.

A period of economic decline set in following independence in 1957, which reached its nadir in the late 1970s when Flight Lt Jerry Rawlings took over leadership of the country in a military coup. Since then, through various initiatives including IMF Structural Adjustment Programmes, this decline has been reversed although the GNP per capita (1996) is still only US\$360 (World Bank, 1998). During this time, there has been a general trend for an increased use of the private sector and a reduction in the number of government employees, and this has been reflected in the road sector by the greater use of private contractors and consultants for both construction and maintenance of the network.

The Ministry of Roads and Transport (MRT) was created in 1997 as the ministry with overall responsibility for all modes of transport in the country. Various agencies are responsible to MRT and in the road sector these include the Ghana Highway Authority (GHA) for trunk roads, the Department of Feeder Roads (DFR) for feeder roads and the Department of Urban Roads (DUR) for urban roads. The MRT replaced the Ministry of Roads and Highways (MRH), which itself was created in 1982 to take over responsibility for the two road agencies then in existence, GHA and DFR, from the Ministry of Works and Housing.

GHA is a semi-autonomous highway authority administered by a Board of Management with representatives from both the public and private sectors (stakeholders). It was founded in 1974 and is the oldest of the authorities. DFR was founded in 1982 and DUR in 1988, both operating with more traditional civil service structures. Reporting to MRT who monitor their performance in terms of budgeting, accounting and contract administration, the 3 authorities receive their funds from both central government budget and the Road Fund, which is managed by an Advisory Board reporting to MRT. The Road Fund can only be used for periodic and routine maintenance, with central government funds allocated for any development works.

The 1998 allocation for road maintenance (from the Road Fund) is given in Table 1, which also identifies the length of road for which each agency is responsible.

Table 1
Maintenance allocations for each authority

	Length of road network (km)	1998 budget allocation (CEDI millions)		
		Routine	Periodic	Total
GHA	14,750	25,000	67,500	92,500
DUR	1,800	10,000	37,500	47,500
DFR	22,420	12,500	25,000	37,500
MRT	-(?)	-	2,500	2,500
Total	38,970	47,500	132,500	180,000

Sources Amoah (1998), World Bank (1996), and this study

Notes 1 Approximate rate of exchange CEDI 2,500 = US\$1

2 DFR only perform maintenance on the 'maintainable' proportion of their network. Currently, this consists of 10,500km but is increasing at a rate of 1,500km per year as various sections of the 'unmaintainable' network are improved through a nationwide rehabilitation programme

The total network includes 1430km of asphaltic concrete roads, 6,300km of surface dressed roads, 19,565km of gravel roads and 11,675km of earth roads. A recent study of the network which rates the condition in terms of good, fair or poor based on an objective rating system suggests the proportion in each category is as given in Table 2. It is hoped that under a current initiative, the Highway Sector Investment Program (HSIP) which continues to 2000, the proportion will improve to 70% good, 20% fair and 10% poor.

Table 2
Current road conditions (per cent)

Road condition	Main roads (GHA)	Urban roads (DUR)	Rural roads (DFR)
Good	18	24	44
Fair	23	26	50
Poor	59	50	6
TOTAL	100	100	100

Source Amoah (1998)

Given the different histories of the three road authorities and the different issues affecting the management of their networks, each authority has developed its own approach to procurement of road maintenance. This report concentrates on the operations of GHA and DFR, drawing attention to practice at DUR where appropriate.

3. THE PRESSURE FOR CHANGE

As noted above, a period of economic decline continued from the 1970's into the early 1980's and pressures for change in the road sector were part of an overall programme of reform established in the Economic Recovery Programme (ERP) of 1983. This was supported by donors and international lending agencies and affected the sector both in terms of its funding and its institutional methods.

In a move to a system of market prices and full cost recovery for all economic services, a Road Fund was established in 1985 with its major source of revenue a levy on petrol, diesel, kerosene and refined fuel oil. The Fund has recently been restructured (1997) and is currently providing a more stable flow of funds than has been realised in the past. Many of the problems associated with procurement of road maintenance in the past were caused by funding and payment mechanisms, and the reformed Road Fund operation appears to be a major reason for recent improvements in this area. A more detailed description of the Fund is given in Appendix 2.

Coincident with financial reform, institutional reform was also implemented which included a policy of reduction in the number of government employees. In 1985 there were approximately 500,000 civil servants but by 1998 this had reduced to approximately 80,000. At its peak, the GHA employed some 8,400 personnel and DFR some 5,000. By 1996, GHA had reduced its staff to 4,650 and DFR currently has a staff of approximately 700. These reductions were achieved by a general move to construction and maintenance by contract rather than by the traditional IHW methods. A view was held amongst policy makers that, in general, as well as achieving reductions in government employees, putting such works on a contract basis in which payments were made for work done rather than work attendance would improve the efficiency and effectiveness of operations.

Each agency had different circumstances and issues related to this general trend. The questions to ask were:

- 1) Which works are suitable for contracting and what type of contract should be used?
- 2) Is there a contracting industry to support these changes and, if not, how can it be developed?
- 3) How can the agency adequately supervise the contractors?

The approach adopted by each agency is outlined below, by noting first the more general circumstances and then by describing in more detail how each agency is currently performing its road maintenance, using case studies at the regional (operational) level of each institution.

4. GHANA HIGHWAY AUTHORITY

4.1 Evolution of contracting procedures

Periodic maintenance and rehabilitation works have been carried out by contract since independence. These works have often been funded in the past by donor and lending agencies who also provided assistance to contractors in the form of equipment and training. However, initially these contracts were let based on rates set by GHA, but this approach has now ceased and almost all periodic maintenance and rehabilitation works are now performed by local contractors (some international contractors for larger packages) based on competitive tendering.

Unlike periodic and rehabilitation works, routine maintenance was originally carried out by an IHW. Regional IHW gangs were responsible for various portions of the network and

worked from camps which were established in different vicinities on a temporary basis. With the economic climate and lack of funding which resulted in the early 1980s, the system became inefficient, not least because members of these gangs were spending considerable amounts of time commuting to these camps so that actual productive time on the network was being diminished.

In 1981/82, GHA therefore decided to experiment with contract procedures for routine maintenance, by paying their labourers based on work accomplishment rather than by an hourly rate. This enabled these labourers to work on other activities (typically agriculture in the rural areas) on completion of the required work, and encouraged productivity. In some instances, 'food for work' schemes were operated where conditions were extremely harsh. By 1985, after a pilot scheme in one district, the scheme was in operation nationwide and labourers, in line with the government's policy of staff reduction in the civil service, were laid off and encouraged to set up as Single Man Contractors (SMCs).

The conditions of retrenchment were determined by the Ministry of Employment and Social Welfare, which developed an initiative under the ERP. Each labourer was awarded severance pay and given the opportunity to retrain to act in his new capacity as an SMC (although the rates for work were fixed by GHA, the SMCs still needed training in technical aspects as well as work scheduling and management). Most of the workforce were reasonably accepting of the change and it seems that this reflects a more general entrepreneurial culture present in Ghana. For older employees, it offered an opportunity to retire and work on their land, many younger employees were also keen to be able to operate more commercially.

SMCs carry out routine, labour based works such as grass cutting, ditch cleaning and culvert cleaning. The system is rather similar to a lengthman system, and each SMC is responsible for typically 3km of road (initially the lengths of section were 5km) and might expect to cut the grass five times per annum, to clean culverts twice per annum and to clean ditches three times per annum. In more rural areas where the population is more sparse, the use of SMCs is impractical and larger contracts were let for typically 30km lengths of road. In addition, even where SMCs were operating, it was clear that they were not large enough to take on more capital intensive activities such as grading operations, and so these works were let to Local Private Contractors (LPCs). The detailed aspects of the system are described in more detail below by means of a case study of GHA operations in Central Region.

4.2 GHA Central Region routine maintenance operations

GHA operates through its 10 regional headquarters which report to the national headquarters in Accra. Within each region, GHA devolves responsibility further to a district level, although these districts are larger than the political districts, often containing between two and four of the latter. Situated to the west of Accra, Central Region extends from the south coast to its northern borders with the Ashanti and Eastern regions. The regional capital is Cape Coast, an old coastal port city.

4.2.1 The GHA network and budgets for Central Region

GHA is responsible for approximately 1447km of road, categorised as shown in Table 3. The region includes 12 political districts, but for ease of administration these are grouped so that GHA operate using 3 road districts as indicated in the Table.

Table 3
Summary highway statistics for Central Region

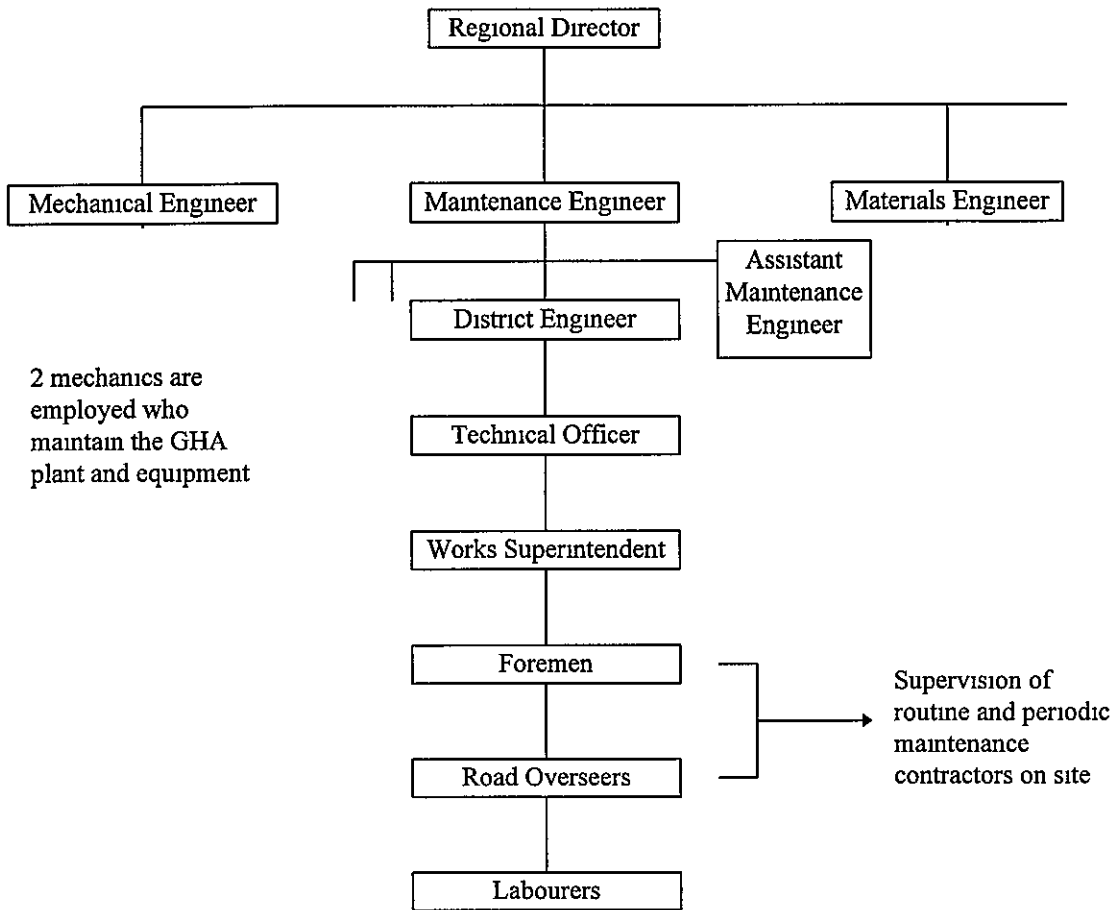
District	Road condition	Surface type			Total road Length (km)
		AC	Surface dressed	Gravel	
CAPE COAST	Good	45 0	80 5	14 8	140 3
	Fair	108 8	16 4	-	125 2
	Poor	-	208 9	139 7	348 6
	Total	153 8	305 8	154 5	614 1
WINNEBA	Good	-	124 3	-	124 3
	Fair	-	185 0	-	185 0
	Poor	-	307 1	30 0	337 1
	Total	-	616 4	30 0	646 4
DUNKWA	Good	-	35 3	7 8	43 1
	Fair	-	-	6 9	6 9
	Poor	-	12 8	123 8	136 6
	Total	-	48 1	138 5	186 6
ENTIRE REGION	Good	45 0	240 1	22 6	307 7
	Fair	108 8	201 4	6 9	317 1
	Poor	-	528 8	293 1	822 3
	TOTAL	153 8	970 3	322 6	1447 1

Source Central region data this study

Notes 1 The road condition rating is based on an indexed score (between 1 and 100) which is derived from a combination of visual assessment of surface distress and road roughness values

In order to manage the maintenance on this network, the organisational structure as shown in Figure 1 is adopted. This shows that there is currently a mix of IHW and contract maintenance operations. The amount of work that the IHW performs is expected to reduce in the near future, under a general departmental strategy which appears to be moving towards procurement solely by contract.

Figure 1
Organisational structure for managing road maintenance in Central Region



Notes

- 1 The Materials Engineer provides some assistance to the Maintenance Engineer for maintenance programming activities
- 2 There are 3 District Engineers (DEs), each responsible for 1 administrative district (there are 12 political districts in the region) The structure shown above below the District Engineer is common to each district, but the number of junior staff in each role varies depending on the size of the district
- 3 For Cape Coast district, there is 1 Technical Officer, 1 Works Superintendent, 2 Foremen, 10 Road Overseers and approximately 20 Labourers
- 4 The IHW operation in Cape Coast district includes 1 grader, 2 tippers, 1 flat truck, 4 cold emulsion sprayers (for short sections of resurfacing), 2 pedestrian rollers and 2 pedestrian compactors
- 5 The Foremen and Overseers are responsible for supervision of contracts on site

The maintenance budgets for Central Region for 1998 are summarised in Table 4 All such funding comes from the Road Fund

Table 4
Central Region routine maintenance budgets

	Road length (km)	Cost (CEDI millions)
SMC (Paved)	1069	808
SMC (Unpaved)	166	47
LPC (Paved)	408	875
LPC (Unpaved)	250	376
IHW	330	169
Traffic control devices		888
Equipment operation and maintenance		68
TOTAL		3230

Source MRT (1998) and this study

Notes 1 The total number of SMC contracts to achieve the above is 390 (179 Cape Coast, 177 Wineba and 34 Dunkwa)

Until the late 1970s, all maintenance work was carried out by an IHW but contract maintenance was introduced in the 1980s, as described above, and nowadays, a mix of contract maintenance and IHW operations is in use as described below

4 2 2 Routine maintenance

Routine maintenance is carried out by SMCs, LPCs and the IHW. On any section of road, the different maintenance activities might be carried out by a combination of the three approaches depending on their suitability.

SMC contracts are approximately 3km in length and of one year's duration, and include grass cutting, ditch cleaning, culvert cleaning and culvert desilting. They are not advertised, as they are of such small contract sums (typically CD1 4m), and locals know of the available contracts. Usually, grass cutting, ditch cleaning and culvert cleaning are combined into 1 SMC contract, and culvert desilting, which represents a more significant effort, is included in a separate SMC contract.

Work is scheduled on a monthly basis as required (in some months, no work will be scheduled), under the direction of the Road Overseer (RO), who is also responsible for supervising, reporting and measuring work for payment. The RO works under the guidance of the DE, who checks measurements of work done and forwards recommendations for payment to the Maintenance Engineer who approves payment at regional headquarters. Since the restructuring of the Road Fund, regions are paid one month in advance for routine maintenance (monthly in arrears for all other activities) and so the regional headquarters are now able to release payment to the districts to enable payment for work done within one month of submission.

Activities which include a need for more equipment, such as pothole patching on paved roads, and grading, sectional regravelling and ditch cleaning by machine (also occasional construction of critical culverts), are carried out by LPCs. The value of these contracts typically range from CD60m to CD90m, and there are 10 contracts (6 for unpaved roads, 4 for paved roads) in operation in the current financial year. Where an LPC contract is in

operation on a paved road, then SMCs will be used for the off-road maintenance, on unpaved roads, the LPC will be responsible for grading and ditch cleaning, with the SMCs responsible for the outstanding activities. A typical contract is included in Appendix 3.

The intention is that the term of each LPC contract is one year, but in practice, due to the budget approval process, the contractors normally only mobilise by July for contracts which need to be complete by the end of the financial year (December). Advertisements are placed in the national press in March or April and the contractors submit their bids so that they are appointed by June, on approval of the Regional Tender Board under recommendation from the regional office. Until this year, the tendering process was selective with the lowest evaluated bidder being asked to accept GHA rates where the bid price was above the engineers estimate. However, this year is the first time that full open bidding has been implemented and awards made to the lowest tenderer.

In order to prequalify for such works, contractors must be nationally registered to a minimum category A4/B4 (see 7.2 for explanation of the rating system), and in practice all are well known to the regional office of GHA. The contracts attract interest from the smaller contractors, but larger national contractors are more interested in larger scale periodic maintenance and reconstruction works. This financial year, 16 contractors tendered for the 10 contracts.

The entire network is apparently not covered by the SMCs and LPCs, in part because sections of road under periodic maintenance or reconstruction are not included (but comparison of Tables 3 and 4 suggest that pavement repairs will only be carried out on 408km of the 1124km paved road network). In addition, the appointment process of the LPCs means those roads to be included in the LPC contract will not have a contractor in place for at least six months of the year. These situations are covered by the IHW gangs, although it can be seen from the budget allocations that not all links will be covered for the funding available. In addition, emergencies are dealt with where possible by the IHW.

4.3 Periodic maintenance

Periodic maintenance, as noted earlier, has been carried out predominantly by contract since independence, although some work is carried out by IHW though the use of two Mobile Maintenance Units (MMUs) described below. Given the objective of this particular project, and the long term use of standard (FIDIC) forms of contract, little attention was given to this during the formulation of the case study. It is interesting to note, however, that there is a current initiative using external technical assistance to improve the delivery of periodic maintenance (paved road resealing) across the network.

Preliminary recommendations arising from this initiative suggest that the quality of resealing can be improved, and one means of achieving this will be to reclassify existing contractors more rigorously for prequalification purposes. In addition, it is being recommended that resealing contracts should be increased in size, to encourage fewer but larger (and hopefully better qualified) contractors to tender for the work more efficiently (by reducing overall mobilisation costs). This will also reduce the supervision requirements of GHA.

The MMUs are used for emergency maintenance in addition to periodic works. One unit is based near Accra (on the Accra-Kumasi road) and consists of two gangs, which progress along the road carrying out a programme of resurfacing and rehabilitation. The other MMU operates similarly and is based in the centre of the country. If an emergency occurs, then one of the gangs within the MMU will undertake the necessary remedial action, the other gang continuing with its programme of work.

The MMUs have been used in the past as a means of 'research', in terms of trialling new methods. They are currently being used in the initiative to improve resurfacing operations, as a pilot study before introducing any changes to the specifications for such work on a nationwide basis.

4.4 Important issues

A number of issues are noted based on the GHA experience in the following paragraphs - more general conclusions which also relate to the other road agencies are discussed in section 9.

A major hindrance to adequate road maintenance in the past has been the issue of payment. All parties note that in a climate where payment was consistently late and uncertain, maintenance was not performed adequately. Contractors were unable to rely on a constant payment stream so that this often became a reason for delayed work, or at worst, lack of work, staff in GHA were unable to let contracts as they saw fit for fear of defaults on payment once contractors were mobilised. This problem has been mentioned consistently as the key constraint on the contract maintenance process to date.

With the recent restructuring of the Road Fund which has brought about a more reliable and efficient funding mechanism, there seems to be common agreement that a solution has been found to the above problem and payments appear to be more certain and are processed more efficiently. Routine maintenance funds are disbursed from headquarters to the regions monthly in advance, based on the annual routine maintenance budget allocation (consistent expenditure throughout the year is assumed), but all other works are paid for in arrears based on approvals of certificates by Regional Engineers and headquarters.

Notwithstanding the above, the planning process still appears to hinder consistent road maintenance, with regard to the use of LPCs and the fact that they are not appointed, in practice, until late in the financial year, and it would be beneficial if this process could therefore be accelerated. The planning process is summarised in Table 5 (but it is understood that a new pavement management system has affected this process).

Table 5
The annual planning process

Time	Activity
July - September	Districts present routine maintenance budget request to regional headquarters
October	Regional headquarters submit draft budget request to national headquarters
October - January	On-going discussion on budget requests
January	Final submission of agreed budget requests by regions to national headquarters
February	Works packaged for LPCs
March - April	Advertisement for LPC contracts in national press
June	Opening of tenders by Regional Tender Boards
July - August	Mobilisation of successful contractors, for contracts which extend until end of financial year (December)

Source This study

Cost comparisons between the current contract maintenance approach and either previous approaches or the current MMUs are difficult, due to the different accounting methods employed for the IHW and contract work as well as the identification of overheads. Nevertheless, it is generally considered that payment for work done rather than attendance at work has increased productivity and hence reduced prices.

There are two issues concerned with supervision of contracts. First, with so many small contracts it is sometimes difficult to properly monitor the work and there is a view that more supervisory staff are required, and these will need to be rewarded by adequate remuneration if they are to be properly motivated. This is particularly true for cases where inexperienced contractors are operating, who will require more intensive supervision. Second, some supervisors within GHA have been discovered to be operating as SMCs as well (which does not encourage rigorous supervision!), and this problem has arisen due to falsification of names of such SMCs. The problem has been overcome by a requirement for photographic identification of all contractors and illustrates the extent to which supervision is required.

5. DEPARTMENT OF FEEDER ROADS

5.1 Evolution of contracting procedures

Unlike the GHA, which transferred its staff into the private sector by encouraging them to set up SMCs, DFR adopted a straightforward new approach of employing and developing small local contractors, without implementing any such policy for future work for its own retrenched workforce. However, many were interested to operate as private contractors but this action was taken of their own initiative. The case study of this experience focuses on Ashanti region.

5.2 DFR Ashanti Region routine maintenance operations

Situated to the north west of Accra, Ashanti is one of Ghana's most important regions. The regional capital is Kumasi, Ghana's second city and one of historical and commercial significance being the seat of the Ashanti tribe and close to much of the country's mining activity.

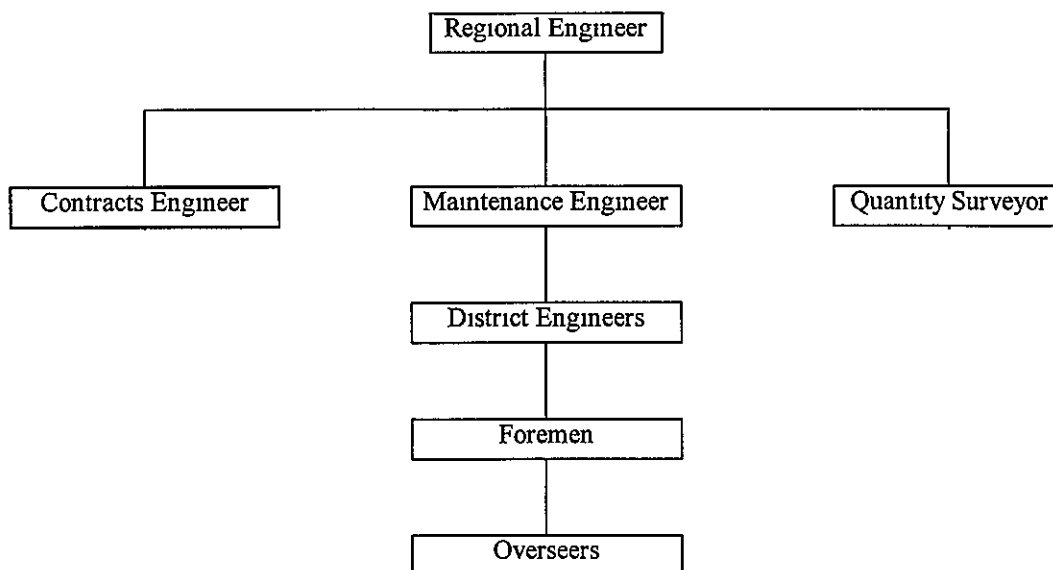
5.2.1 The DFR network and budgets for Ashanti Region

DFR is responsible for approximately 3000km of road. One per cent of this network is paved (the remainder being gravel or earth) and approximately 1900km are considered 'maintainable' (i.e. routine and recurrent maintenance work is only expended on this proportion of the network). The 'unmaintainable' proportion of the network is gradually being improved through a phased donor and Government of Ghana (GOG) programme of rehabilitation and improvement works, so that the requirement for routine and recurrent maintenance will correspondingly increase in each successive year.

Until the mid 1980s, all maintenance work was carried out by an IHW which included in excess of 150 staff. However, retrenchment of the IHW began in the late 1980s over a phased period to the extent that now only 5% of maintenance works are carried out by IHW (see below).

Management of the network is currently in a state of transition, from a centralised regional structure to a decentralised structure which devolves more responsibility and authority to the districts within the region. There are 18 political districts in the region, and under the centralised structure these have been grouped into 3 operational districts reporting to regional headquarters. However, under the new decentralised structure, these operational districts are to be abandoned with each political district taking more responsibility for roads under their jurisdiction. The structure is illustrated in Figure 2.

Figure 2
Organisational structure for managing road maintenance in Ashanti Region



Notes

- 1 The Regional Engineer reports to the Director (Maintenance) at DFR Headquarters, Accra, for maintenance activities
- 2 It is intended that there should be 18 District Engineers (DEs), each responsible for 1 political district. There is only 1 at present, for the largest district (400km network), with the remainder being filled by Foreman temporarily acting as DEs. Currently the DE is responsible to the Maintenance Engineer (ME), and both liaise with the District Councils. Under the new decentralised structure, the DEs will be located in, and responsible to, the District Councils, referring to the Maintenance Engineer as required for technical advice etc
- 3 The intention is for there to be 1 Foreman per district
- 4 There are currently 9 Overseers, all presently acting as Foreman

The maintenance budgets for Ashanti region for 1998 are summarised in Table 6. These show a mix of GOG and donor funding, and GOG funding is procured through the Road Fund.

Table 6
Ashanti Region road maintenance budgets

Activity	Road length (km)	Donor funding (CEDI millions)	Govt of Ghana ¹ (CEDI millions)
Spot Improvement	141		940
Regravelling	179	701	96
Resurfacing ²	28		300
Rehabilitation	416	5,635	1,461
2nd cycle institution	25		250
Routine maintenance	1900		1,400
Bridges		980	
TOTAL		7,316	4,446

Source MRT (1998) and this study

Notes 1 All Government of Ghana funding above comes through the Road Fund

2 Resurfacing refers to paving gravel roads or replacing worn out surfacings on paved roads

5.2.2 Routine maintenance

Routine maintenance includes vegetation control and drainage maintenance (side ditches and culvert cleaning). Reshaping and blading of roads (often referred to as recurrent maintenance) is also included under this heading, as well as surface patching and localised section regravelling.

Procurement of routine maintenance is predominantly by contract although the nature of the form of contract maintenance is currently in a state of transition. There is an IHW although this only carries out 5% of the maintenance work in the region. The IHW owns 5 graders and 13 staff are engaged for its operation (4 tractor operators, 7 grader operators and 2 mechanics). The work carried out includes those emergencies which can be remedied by grader operations and more general recurrent grading/shaping activities. For emergencies which require other plant or equipment, contractors are appointed as appropriate. The appointment of such contractors does not present logistical problems, and approval (required from DFR headquarters in Accra) is usually swiftly granted for their appointment. Such justification of the need for emergency maintenance to headquarters is usually presented by photographs¹.

In the past (and still currently in operation for some of the network, but see below for recent changes), DEs would identify defective roads on which work was required, on an on-going basis throughout the year, and would quantify and group the relevant activities into works

¹ A similar use of IHW is made in other regions. For example, in Central Region, the DFR owns 5 operational graders, 4 tippers, 3 tractors, 1 towed grader and 3 pedestrian rollers, and is responsible for 850km of 'maintainable' roads. This equipment (with operators) is either loaned to labour based contractors, and the hourly rate is deducted from their payment certificates, or is loaned to district councils who use it (free of charge) on their roads and supply fuels etc. On average, in Central Region which has 12 districts, a district has use of a grader and operator for three months per annum. Each region has a mechanic, employed by GBEWAA (a mechanical engineering company - the local agents for the motor graders), who is used to service equipment as required (officially the mechanic is full time on DFR work).

packages of a suitable size for local contractors. The rates for each activity were fixed by DFR headquarters in Accra and took account of regional variation, and adjustment factors were also used to account for inflation. The works package (and hence a contract sum) was determined at Regional headquarters and based on this the RE would propose approximately 3 contractors who would be considered suitable to carry out the work. Such contractors were required to be registered under the Ministry of Roads and Transport (MRT) classification scheme (see 7.2 for further details). The District Tender Board (DTB) would meet as required and appoint the successful contractor, based on an appraisal of past performance and current workload (see 6 for further details of the DTB).

A typical contract sum for the above packages varied between CD5m and CD10m, and would be of a 2 month duration. For the 1998 budget of CD1,400m, it can be seen that this would require upwards of 140 packages which would be administratively very cumbersome. Indeed, this is the reason that the newer system outlined below has been implemented. However, the arguments for such an approach were that it ensured that work was shared out amongst the available contractors, of whom there are approximately 80 in the Ashanti region. In addition, in the past, funding has been extremely erratic and by using a number of small short term contracts, DFR would be better able to avoid defaulting on payments to a sitting contractor when a contract was only partially complete. This latter reason is hopefully something of the past now that a regular funding stream has been established with the restructured Road Fund. A typical contract is included as Appendix 4.

It is intended to replace the above method of procurement by the new Maintenance Performance Budgeting System (MPBS) which was introduced on a pilot basis in 1994. In the current financial year both systems are in use concurrently. The MPBS has adopted 'area wide' routine maintenance contracts, in which a contractor is appointed for a one year term to carry out all routine maintenance operations for a group of roads in a given area. The contractor is appointed early in the financial year (January), and whilst this is usually before the forthcoming annual budget is confirmed, it is considered appropriate since the routine maintenance budget is not expected to vary significantly from year to year so that adequate funding is reasonably certain. The quantity of work in each package is estimated at the beginning of the year, and this covers typically between 50 and 100km of road with a contract sum of CD150m. Rates are established as with the former method, and the appointment of the contractor follows a similar approach, except that the appointment is made by the Regional Tender Board (RTB), rather than the DTB. The RTB is responsible because the system is still in its infancy and is considered a national initiative, better co-ordinated at regional level. However, it is expected that as the system becomes institutionalised this role will be transferred to the relevant DTBs.

There are currently 6 MPBS contracts in operation in the region. A typical contract is included as Appendix 5. During the year, the Foreman supervises the work of the contractor and advises the ME of the completed work for the current month and the proposed work schedule for the forthcoming month. Based on this advice, the ME issues a monthly Works Order to the contractor and submits a monthly payment certificate to the RE for approval and payment. On approval of the RE for the monthly payment, the invoice is forwarded to the Regional Administration for their approval, before being returned to the RE who can then effect payment (no approval from DFR headquarters is required for routine maintenance payment).

The MPBS system is easier to supervise since there are less contractors to monitor and a contractor will only be working in one area of his contract at any one time, this contrasts with the former approach, in which a number of scattered contracts might require supervision simultaneously. However, both methods require substantial administration and generate large amounts of paperwork. For this reason, attempts are currently underway to schedule the MPBS contracts on a bi-monthly basis.

Both methods rely on good supervision by the Foremen. Particularly with the new MPBS, the Foreman needs to be properly trained in monitoring and recording activities and quantities. In the past, as an additional aid to demonstrate completion of works in accordance with the contract, photographic evidence has often been used.

5.3 Periodic maintenance and minor works

A combination of GOG and donor funds are used to finance periodic maintenance and minor works. On the DFR network, such works typically include regravelling, drainage improvements and spot improvements.

All such work is carried out by contract and the engineering studies to justify such works are either performed in-house or through the use of locally engaged consultants. The need for such works is assessed on an annual basis and the procedure for letting such works is similar to most construction type contracts, packages being advertised in the local press. As with the routine maintenance contracts, any contractor is eligible for such work if he meets the pre-qualification criteria defined for the particular contract, in accordance with the MRT contractor classification system. Contractors are usually allowed 45 days in which to submit their bids, which are assessed on the basis of lowest price tendered. Appointment of the successful contractor is the responsibility of either the DTB (projects valued at less than CD500m) or the RTB (projects valued at greater than CD500m, or projects which are considered part of a national initiative).

There is considerable interest from contractors in Ashanti region for such works, which typically attract larger type firms than the routine maintenance contracts. Between 5 and 20 contractors will usually bid for any such project. In 1998, 14 contracts have been proposed (and some of these already awarded as of September) for spot improvements and 11 for regravelling. The form of contract is FIDIC, although it is understood that this has been slightly modified. The Employer is MRT, and the named Engineer is the Director of DFR, with the Engineers Representative being the DFR Regional Engineer.

Four issues have been noted in discussions with the relevant parties in Ashanti region. First, with the Engineers Representative being the DFR Regional Engineer, contractual authority is distanced from activities on site. This means that substantial time is often required in order to obtain approvals for variations to the contract as well as for payment certificates. Second, in order to ensure that good quality work is obtained, foremen and supervisors need to be skilled and well trained, and a need has been identified for more foremen with such expertise. Third, many contractors feel that the competitive bidding procedure in which the lowest bid wins is not the most appropriate approach. This sometimes results in the appointment of a contractor who has, it is believed, not properly understood the scope of the works so that he might be

unable to complete the works in accordance with the contract. Contractors feel that more weight should be given to the engineers estimate before necessarily appointing the lowest tenderer. Finally, many contractors also feel that the requirements for bid securities, mobilisation guarantees and performance bonds are onerous in terms of the collateral required, they feel that these requirements could be reduced, in particular noting that the retention on all payment certificates serves as a means in itself to ensuring performance of the contractor.

5.5 Labour based programme

Labour based methods of construction and maintenance have been in use in Ghana for many years and have been promoted by various donor agencies. The programme originated in 1987 under a pilot scheme in Western region. Seven contractors were trained, primarily for the purpose of carrying out rehabilitation and reconstruction works, of which there was a substantial backlog. Within two years, after further pilot studies in two other regions, the programme was extended nationwide and the intention was that once the rehabilitation backlog was reduced, the contractors would be employed for routine maintenance activities. It was planned that one labour based contractor would be capable of performing maintenance activities for a single political district, so the aim of the programme was eventually to develop approximately 110 contractors.

The MPBS specifications include provision for works to be carried out by either labour based or equipment based methods, with separate activities identified and specified for each approach. Hence, under the present system of awarding maintenance contracts based on established rates, without the use of competitive tendering, DFR is in a position to direct which roads are maintained by the different methods, by selecting the appropriate maintenance activities. In this way, they are able to maintain control of the market in terms of the balance between equipment and labour based contractors.

It is unclear how the current move to full competitive tendering (see section 9) will affect the balance of labour based and equipment based contractors. If the DFR continues to specify the type of activity (labour or equipment based) to be performed in any given contract, and does not allow equipment based contractors to perform equipment based activities as an alternative for labour based contracts (and vice versa), then DFR will maintain control of the marketplace.

However, it is understood that in general, labour based rates are lower than genuine equipment based rates. If the DFR requires contractors to competitively bid, and allows them to propose which method they prefer for carrying out the different activities (either labour based or equipment based), then there is a possibility that equipment based contractors will reduce their rates in order to win the work. If these rates are not sustainable in the long term to maintain and replace the equipment, then these contractors might eventually be unable to perform satisfactorily, at the same time, by implication, the labour based sector will have reduced in size and capacity. Hence the road maintenance sector might face the problem of there being insufficient equipment based contractors, due to lack of adequate equipment, and insufficient labour based contractors, due to their being unable to win enough work. The problem which initially stimulated the labour based initiative.

Strategies to deal with the above problem are currently being discussed, and the issue of how to properly implement competitive bidding is described more fully in section 9

6. TENDER BOARDS

All contracts are signed with the approval of the relevant tender boards, as described previously. GHA contracts are approved by the Regional Tender Boards (RTB). At DFR, for routine maintenance and for periodic maintenance or rehabilitation work valued at less than CD500m, approval of the District Tender Board (DTB) is required. For contracts of value in excess of this, or for works which are part of a national strategic objective (for example, any new donor funded initiative), the approval of the RTB is required. The procedures followed by DFR with the DTBs are outlined below, these are similar to those adopted with the RTBs.

The DTBs meet as required in order to appoint the relevant contractors. Under the existing institutional arrangements, DTBs are still heavily reliant on the advice of Regional Office of DFR. However, it is expected that as the decentralisation process becomes institutionalised, with the transferral of District Engineers to the District Councils, DTBs will become more self sufficient in terms of their ability to approve and appoint suitable contractors.

The DTB usually has 7 members. These include the Chief Executive of the District (a political appointee), the Presiding Member of the Assembly, Chairman of the District Finance Committee, Chairman of the District Works Committee, the District Planning Officer, the local Member of Parliament and the District Engineer. In addition, they have a monitoring team who carry out sampled monitoring of contracts in progress to ensure they are as expected.

Each DTB is developing or has developed a list of approved contractors. This is based on the MRT classification system and advice from the Regional DFR office, but has the added advantage of the additional local knowledge available at the district level. The registration is normally confirmed on an annual basis and typically requires the contractors to submit evidence of licences, social security registration and MRT classification.

Currently, payment certificates are approved by the DTBs but payment itself is effected by the Regional Engineer of DFR. However, with the move to decentralisation, it is anticipated that the Districts will receive relevant funds direct from the Road Fund and will take responsibility for final effect of payment. It is not expected that this will require too much extra work on the part of the District Council as the size of the road maintenance budget is small in comparison with their overall budgets. For example, the district of Agona, with a population of approximately 135,000 and a network of between 150 and 200km manages disbursement of an annual budget of CD2 billion. The road maintenance budget is currently approximately CD100m for the district, so that disbursement of these additional funds represents only a 5% increase.

There appear to be no significant problems with the operation of such arrangements with the DTBs. Sometimes issues occur which are due to a lack of understanding on the part of the districts as to the work being performed under the auspices of the DFR. For example, villagers might voice concern to the District Council that a contractor is not carrying out the

correct or appropriate work, but this might not be true as they may not be fully aware of the contract that has been agreed between the DFR and the contractor. Hence there is an issue of 'laymen' and 'professionals' needing to communicate. It is expected that these situation, whilst inevitable, will nevertheless improve under the new decentralisation programme, given that a District Engineer will be closer to the District Councils (responsible to them rather than the DFR as currently) so that more professional support will be available.

7. THE CONTRACTING INDUSTRY

7.1 Equipment

A major concern in the early days of the move to contract maintenance was the availability to contractors of suitable equipment. The Bank for Housing and Construction (BHC) was established, whose purpose was to provide assistance to contractors in the form of bank guarantees and loans for purchasing of equipment, as well as commercial banking services. In addition, it set up a subsidiary Plant Pool Ltd, which hired equipment (new equipment funded by donor assistance) to contractors.

The plant pool is no longer in operation. It appears that there is a culture within Ghana of ownership, rather than hire, and contractors preference was to only use the pool as a last resort. With less than full utilisation, the rates for hire soon became uncompetitive and some private firms offered equipment at better rates for those contractors who needed to hire. In addition, the plant pool was based in Accra, which made it difficult both logistically and financially for contractors based further afield.

However, it seems that purchase and maintenance of equipment still remains a problem for many contractors. The costs of equipment, and the nature of the business, means that the payback period on loans for purchase are often substantial and therefore unattractive to any lender. For payback of a loan over a period of time, a contractor would need to demonstrate a reliable stream of income, and this has been seen as a risk in a competitive contracting environment. This problem has been further exacerbated in the past with the poor record of payment by the government clients. It seems that this latter problem has been resolved with the recent restructuring of the Road Fund, and the BHC is now apparently more amenable to such lending. Contractors are concerned, however, that equipment purchase might still pose a problem but government and donor policy is currently to allow the market to resolve the issue.

7.2 Contractor registration

A system of contractor classification has been introduced by MRT. This enables each agency to avoid prequalification since for any advertised work, the contract advertisement specifies which class of contractors are allowed to tender. Contractors are categorised as Roads, Airports and Related Structures (Category A), Bridges, Culverts and Other Structures (Category B), Labour Based Roadworks (Category C) and Steel Bridges and Structures (Category S). A contractor can be placed in more than one category if he can demonstrate the relevant competence.

Within each category, contractors are classified within four classes. A contractor in a given class is not allowed to tender for any single contract, or have work on hand, in excess of threshold values which are stated by MRH. For a contractor to be rated in a given class, he must meet the requirements for that class in terms of employing a minimum number of staff, a minimum asset value and annual turnover, recent work experience and minimum qualifications for key staff. Contractors are required to submit an annual licence fee for classification (which varies from CD30,000 to CD750,000 depending on class), and to resubmit for classification every two years (Class 3 and 4) or every three years (Class 1 and 2). Contractors must also undergo some training (discussed in 8).

Table 7 summarises the current size of the contracting industry by the various classes

Table 7
Contractors classified according to MRT classification scheme

Class	Category of work			
	A	B	C	S
1	18	19	(21)	
2	13	25		2
3	84	177		
4	151	315		

Source: MRT (1998a) and this study

- Notes
- 1 Category A = Roads, Category B = Bridges, Category C = Labour based, Category S = Steel bridges (specialist)
 - 2 Some contractors are registered in more than 1 category (for example A1/B1), the table shows the total number in each category. The total number of registered contractors in the above table is 536
 - 3 The Category C statistic is unreliable. Many contractors in this class are registered directly with DFR and do not appear in the MRT records. It is understood there are between 100 and 120 labour based contractors, of which 56 are fully equipped

7.3 The Road Contractors Association

Contractors can choose to become members of the Road Contractors Association (RoCA), which represents their interest at a national and regional level and serves as a point of reference for discussions with client representatives at industry level. Currently the RoCA has 400 registered members, and this excludes the labour based contractors who have their own separate organisation (see 7.4). Each member pays an annual subscription, which is graduated depending on the size of the firm. Most members maintain a *laissez faire* attitude to the RoCA, and interest waned when the industry was having problems of payment, but with the renewed confidence in the sector through the better managed Road Fund, interest has recently increased.

The RoCA was formed in 1993 from a larger group previously known as the Association of Civil Engineering and Building Contractors, and developed because it became apparent that there were problems peculiar to the road sector which might be better served by more specific

association. It has a constitution, with bye-laws, a code of practice and ethics, for which there are disciplinary committees to ensure each member complies. In addition, sub committees sit for various reasons, such as reviewing rates for work and conditions of contract. Benefits of RoCA include a forum for discussion and social support, an opportunity for business collaboration (for example, coordinated bulk procurement of equipment), and representation.

The Chairman of RoCA is a member of the committee which is responsible for classification of contractors, and there is also a representative on the Ministerial Advisory Committee which advises on new development projects. Perhaps a key role is that of the representative which sits on the Road Fund Board thus representing their interests as stakeholders in the network. In addition, representatives of RoCA can bring matters of concern to the various agencies attention - for example, it was felt that the initial requirement for contractors to register with MRT on an annual basis was too onerous, and RoCA requested that this be extended to the current requirements. Also, on occasions where agreed national rates for activities have been found to be unreasonable, RoCA have requested that these be revised by the agency concerned.

Current concerns of RoCA include the lengthy process for approval of payments (and variations to contracts) which slows their time for payment, the need for consistent and standard forms of contract on a national basis, a view that many of the contractual requirements in terms of bonds and guarantees are too onerous, availability of funds for equipment purchase, and the move to competitive bidding and the implications in terms of accepting lowest bidder.

7.4 Labour Based Contractors Association

The Labour Based Contractors Association (LaBCA) exists for similar reasons to RoCA. Labour based contractors consider they have a specific interest which is better represented by a separate organisation, although discussions have been held to consider the possibility of a merger with the RoCA. LaBCA was recognised officially by government in 1989, and its role was important as the labour based programme was innovative and all parties were new to the approach. There are currently 93 members of LaBCA.

Concerns and representation of LaBCA are similar to RoCA. Specific concerns currently include the issue of competitive tendering and the possibility of equipment based contractors gaining a larger share of the market at the expense of labour based contractors (see 5.5). It is considered that many contractors will also need training in competitive bidding. Also, since the labour based contractors are operating at the district level, there is a concern that the new decentralisation initiative will need to be monitored carefully. In particular, it is considered that training of district councils in their client obligations might be required, now that they have increased responsibility for procurement and management of works.

In summary, the role of both LaBCA and RoCA appears to be crucial in the process of developing a contracting industry, by providing a focal point for representation of contractors suggestions for improved methods and also for their grievances.

8. TRAINING AND DEVELOPMENT

8.1 Contractor training

Most formal training in the roads sector has been for the labour based programme, and very little training has been given to the larger equipment based contractors. The training of labour based contractors has been the responsibility of DFR which has a permanent training school at Koforidua, which is approximately 70km from Accra. The unit was set up in 1988 and a Training Officer was appointed, with specialist training expertise. Training was given to supervisors, managers and technical operators as outlined below.

Each labour based contractor, in order to register for works with DFR, must send four supervisory staff on the Supervisors Training Programme. When the programme started in 1988, this consisted of five weeks in the classroom and 18 weeks 'on-the-job' training on site. In 1989 the duration was reduced to 20 weeks, and more recently in 1993 further reduced to 16 weeks, consisting of six weeks in the classroom and 10 weeks on site. The reduction in the length of course was achieved by providing more focused training and represents an improvement with the introduction of new topics. At the same time the participants are now required to be of an acceptable calibre. Candidates are first tested in two subjects (Maths and English) before further screening and interviews, in order to be accepted onto the course. It is also intended that a new course is introduced in 1999 to train towed grader operators which will be of one week duration and will include site based training of both tractor and towed grader operators.

There are usually 24 participants from contractors (i.e. six contractors) and DFR staff also attend the courses so that both client and contractor responsibilities are discussed at the same forum. Currently, contractors pay for accommodation and subsistence for their staff, but the course fees are funded by DFR - from 1999, this is expected to change as the training centre has to become fully self financing. The training unit employs, full time, one principal (Chartered Engineer), one technician engineer (although he has recently been moved from the post) and two foremen for the field training programme. Other trainers are drawn from a pool of 'guest trainers' who are DFR staff, specially groomed to offer services to the training centre when needed.

After completing the training programme, contractors are awarded a trial contract (which normally consists of 5km of rehabilitation work), which will be closely monitored by the relevant Regional Engineer. The aim is to try and develop and improve the contractor during this time, and to date no contractors have failed this part of the programme.

A training programme is also conducted for managing directors and directors of contracting firms, which consists of two, two week courses. The first course covers basic management skills, and the second course addresses financial management issues and is usually undertaken a year after the first course. These courses are run by Ghanaian external consultants.

As stated above, less attention has been given to training equipment based contractors. MRT, in collaboration with RoCA, have been running a programme which is based in Accra and

consists of one week of management training and two weeks of technical aspects Table 8 includes a synopsis of the subjects covered

Table 8
Executive and management training for contractors

Management training topics	Professional / Technical training topics
- Establishment of a company	- Pre contract activities
- Company management	- Tender evaluation and contract award
- Contract management	- Project management
- Plant, equipment and supplies management	- Quality control
	- Record keeping
	- Road design consideration
	- Claims and disputes
	- Securities
	- Road maintenance operations
	- Plant operation and maintenance

8 2 Client training

Since 1994, DFR have recruited foreman of a higher calibre than previously as they are aware that the management role which the client function requires is fundamental to the success of contract maintenance Foremen attend the same courses as the contractors and subsequently have further 'on-the-job' training in supervision aspects

New engineers are formally trained in labour based technology before they are attached to experienced engineers and gain initial experience on site They subsequently attend the seven week course held at the KISU Training Centre in Kenya where management and technical aspects are covered with participants from elsewhere on the continent A further course for engineers is currently being considered, which would address the contractual management aspects of their work, and this will be prepared by an international consultant (for all the agencies within the MRT) Finally, engineers within DFR often receive donor assistance to attend both short term courses and long term studies overseas, although these are obviously less focused on the labour based maintenance programme

9. CONCLUSIONS

Specific conclusions have been noted where relevant in the preceding sections However, there are many conclusions of a more general nature which are presented below

The fundamental message which is noted by all parties involved in the road sector is the need for a constant and reliable stream of funds Where, previously, maintenance was being neglected, much of the reasons appear to have been that the client agencies were unable to pay within contractual terms, so that contractors were unable to continue working in some cases This had implication throughout the industry guarantors and banks were less inclined

to provide loans and charges for guarantees were high, contractors were sometimes unable to carry out work to a satisfactory standard, or timeliness, clients were constrained from applying liquidated damages and had less control over quality of work (since withholding payment for work not in accordance with the specification became an irrelevance) All parties seem to agree that the recent restructuring of the Road Fund, which has resulted in a reliable and consistent source of funds, has made a significant improvement to the industry

It was noted in the discussions on both GHA and DFR contracts that there were many small contracts which require a substantial amount of supervision Historically, one reason for this has been that the client agencies have been unable to commit themselves to large projects for fear of defaulting on payment Now that the funding problem appears to have been addressed, this will allow the client agencies to let contracts of a larger size which they can then manage more efficiently Larger contracts should also reduce mobilisation costs for contractors The MPBS approach at DFR already demonstrates a move in this direction However, considerable care needs to be taken as to how quickly this change is allowed to happen, conclusions elsewhere (Stock and de Veen, 1996) suggest that labour based road works can only be sustained using small scale contractors and whilst these methods remain the only feasible option for delivery of road maintenance, an environment conducive to small scale contracting will be needed

However, the trend of moving from smaller to larger contracts seems to be a natural evolution in the development of a contract maintenance environment (Parkman, 1998) It represents a greater transfer of risk into the private sector, and is only possible with a competent contracting industry For countries which have had to develop a contracting industry for road maintenance it appears that a stepwise process of moving to small contracts first is a suitable approach As the industry develops, so the amount of risk that can be transferred can be increased

The next stage in transferring risk to the contracting industry in Ghana appears to be the introduction of competitive bidding, rather than selective appointments based on established departmental rates In addition to the problem of how to balance the workload of labour based and equipment based contractors (mentioned in 5.5) concern has been expressed by all parties that this needs to be done with care the widely held view is that simply accepting the lowest tender might not be prudent, since many contractors who submit such low bids might have misunderstood the contract obligations and basis for rate build-ups

Training for both contractors and clients will mitigate against the above problems occurring LaBCA are considering the possibility of preparing base rates for their members, allowing them then to adjust these for overheads and profit allowance However, this will rely on members complying with the suggested rates - a situation which might not always be easy to ensure Three options are being considered at DFR First, to develop engineers estimates and allow contractors to bid only on the marginal increase above or below these estimates Second, to define output standards so that contractors then build up rates by incorporating their own labour and equipment rates Third, totally unrestrained bidding could be implemented in which each contractor is solely responsible for tender price

A further transfer of risk could occur by developing more performance based, rather than procedural based, contracts in which the contractors took more responsibility for selecting

which work is required in accordance with performance criteria. This would reduce the supervisory burden of the client agencies but there appear to be significant risks associated with such a move. Apart from the additional skills which would be required of the contracting industry, it is not clear that reduced supervision should necessarily be an objective of the client agencies. The reason for this is that corruption is an issue (the specific example of GHA and the need for photographic identification of contractors has been mentioned) and the only way to mitigate against such practice is to maintain close supervision, both by senior staff over junior staff within the client organisations, and also by close technical monitoring and auditing of work on site². This might also be a reason to maintain a rigorous approval procedure for contract variations and payment, although this has often been cited by contractors as a major hindrance to progress of work on site and payment of certificates.

Decentralisation is the latest government initiative which has required a change of practice in the procurement of maintenance. In general, the view of all parties is that whilst it might increase representation of local opinion in maintenance of the network, it will be more difficult to administer and there is a fear that many of the district councils might not be well qualified to properly monitor contracts. Training will be necessary and it might be that additional staff will be required by the client agencies in order to provide proper support and back up for the districts in this respect.

In summary, Ghana has adopted a stepwise approach to the use of contractors for road maintenance which has involved a gradual transfer of risk to the private sector as their capacity increases. Within this process, care has been taken to ensure that the views and interests of all parties are considered, and to this end the role of representative bodies, such as the contracting associations, appears to be important. Such representation of stakeholders is a feature of the recently reformed Road Fund, which has ensured a more consistent and stable flow of funds.

10. ACKNOWLEDGEMENTS

Without the assistance of staff at MRT, GHA, DFR and DUR, producing this report would have been an impossibility. Assistance was received from numerous people (see Appendix 1) too numerous to mention individually by name. However, the author expresses his thanks to Mr Alex Twumasi-Boakye in particular, who acted as a first point of contact and facilitated the visit.

² An interesting comparison can be made here with recent experience in the UK (reported under this project). In UK, as the trend of moving towards greater use of the private sector has happened, clients have realised over time that they have lost much of their in-house capacity to effectively manage the maintenance function. As a result, there has been a corresponding trend of increased amounts of 'audit' type work, in which clients let auditing contracts to independent consultants to monitor and report on the quality of service which the client is receiving from its contractors (and consultant). Such roles are not apparent in Ghana and suggest the need for developing a local consulting capacity if maintenance is to be contracted out.

11. REFERENCES

AMOAH K (1998) Presentation on Ghana Road Fund to training programme for senior road executives, University of Birmingham (unpublished)

MINISTRY OF ROADS AND HIGHWAYS (1996) Guidelines for the classification of contractors for road and bridge works, Ministry of Roads and Transport, Ghana

MINISTRY OF ROADS AND TRANSPORT (1998) 1998 Detailed maintenance programme, MRT, Ghana

MINISTRY OF ROADS AND TRANSPORT (1998a) Register of classified road and bridge contractors, MRT, Ghana

MINISTRY OF ROADS AND TRANSPORT, DEPARTMENT OF FEEDER ROADS (1998) Maintenance management manual for the maintenance performance budgeting system (National feeder roads rehabilitation and maintenance project) Prepared by Cowiconsult for MRT, Ghana

PARKMAN C (1998) Transferring road maintenance into the private sector preliminary literature review and proposed study area for the project Unpublished Project Report PR/OSC/135/98, Transport Research Laboratory, Crowthorne, UK

STOCK E A and J de VEEN (1996) Expanding labor-based methods for road works in Africa World Bank Technical Paper No 347 World Bank, 1818 H Street NW, Washington DC 20435, USA

WORLD BANK (1998) World Bank Atlas 1998 World Bank, 1818 H Street NW, Washington DC 20435, USA

WORLD BANK (1996) Staff appraisal report for Highway Sector Investment Program, April 19, 1996 report No 14572-GH, Infrastructure and Urban Development Division, West Central Africa Department, Africa Regional Office

Appendix 1 - People interviewed during study

**LIST OF PEOPLE MET WITH WHOM DISCUSSIONS WERE HELD CONCERNING THE
USE OF PRIVATE CONTRACTORS FOR ROAD MAINTENANCE IN GHANA**

Mr A Twumasi-Boakye	Deputy Director (Planning), Department of Feeder Roads (DFR)
Mr C D Antwi	Director, DFR
Mr T Annan	Senior Engineer, Maintenance Performance Budgeting System, DFR ← X
Mr K Antwi-Boasiako	Senior Engineer and recent Eastern Regional Engineer, DFR
Mr R K Abban	Head of Training, DFR
Mr E N K Ashong	National Co-ordinator (Labour Based Project), DFR
Mr J Ashley	Regional Engineer, DFR Ashanti Region
Ms M Obiri-Yeboah	Maintenance Engineer, DFR Ashanti Region
Mr C Afetornu	Quantity Surveyor, DFR Ashanti Region
Mr Boakye	Regional Engineer, DFR Central Region
Mr K N Akosah-Koduah	Maintenance Engineer, DFR Central Region
Mr J Miezah	Assistant Engineer (Maintenance), DFR Central Region
Mr K Amoah	Director, Ghana Road Fund
Mr F Digber	Engineer, Ghana Road Fund
Mr K Abbey Sam	Chief Director, Ministry of Roads and Transport (MRT)
Mr J Lamptey	Director (Monitoring), MRT
Mr T Fitzpatrick	Engineering Adviser, Delegation of European Commission in Ghana (EC)
Mr G Brocke	Director, Department of Urban Roads (DUR)
Mr Duncan	Maintenance Engineer, DUR Ashanti Region
Mr S B K Bonsu	Director (Road Maintenance), Highways, Ghana Highway Authority (GHA)
Mr Sakibu	Chief Executive, GHA
Mr D Adonteng	Senior Engineer (Planning), GHA
Mr J Nsiah	Maintenance Engineer, GHA Ashanti Region
Mr N D Brown	Maintenance Engineer, GHA Central Region
Mr A G Amissah	District Engineer, Cape Coast District, GHA Central Region
Mr T Yoofi Andrews	Secretary, Ejisu District Tender Board
Mr A Berkoh	Secretary, Agona Tender Board
Mr Amoah Mensah	Deputy Director, Building and Road Research Institute (BRI)
Mr Andrews	Principal Research Officer, Traffic and Transport, BRI
Mr J Twumasi-Mensah	Chairman, Nkwantabisa Engineers Ltd and Vice Chairman of Road Contractors Association (ROCA)
Mr R K Tette	Managing Director, Rotek Limited and Chairman of ROCA
Mr J E K Hewton	Managing Director, Johaze Limited and Secretary of ROCA
Mr E Opuku-Mensah	Private contractor and Chairman, Labour Based Contractors Association
Mr A D Apeah	Napu Limited
Mr J Mensah	Jo-Mint Association Limited
Mr E Boateng	Bruku Engineering Services Limited
Mr K Guia Nseah	B K Nseah Company Limited
Mr Osei-Guina	Donyina Contract Works
Mr B K Arthur	Knatto Complex Limited and Chairman of ROCA, Ashanti Region
Mr S Ocran	Broadline Engineering
Mr F O Gya	Gya Construction Limited

Appendix 2 - The Ghana Road Fund

THE GHANA ROAD FUND

Source Amoah (1998)

BACKGROUND

The Ghana Road Fund has been in operation since 1985. It was established to provide a secure source of funding for road maintenance and its revenue is derived from a fuel levy, bridge road and ferry tolls and vehicle examination fees. Until January 1997, it was managed jointly by the Minister of Finance, the Minister of Roads and Transport and the Controller and Accountant - General. Difficulties were encountered with its operation: the Fund covered less than 35% of the sectors needs, there was inadequate support for rate increases, there was no suitable financial management system, the release of funds to agencies was irregular and there was no user participation in its management. The Fund was therefore restructured in January 1997 under the Highway Sector and Investment Program to remedy these problems, and this has passed through legislation in phases since July 1997.

THE RESTRUCTURED ROAD FUND

The Government of Ghana has agreed to systematically increase the fuel levy from its 1995 level of US\$0.016 to US\$0.095 by 2002. The fuel levy contributes about 94% of the total Road Fund revenue, which was US\$47 million in 1996 and is projected to increase to US\$136 million in 2002. Priority for use of the funds is stated in the legislation, which is (1) routine and periodic maintenance (2) upgrading and rehabilitation of roads and (3) road safety activities. Any development activities must be paid for out of the government consolidated funds.

The management of the Fund is by the Road Fund Management Board, which operates through an executive Secretariat.

The Board consists of 5 public sector representatives (Minister of Roads and Transport, Minister of Finance, Minister of Mines and Energy, Minister of Local Government and Rural Development, and the Accountant General or their representatives) and 8 private sector representatives (Association of Road Contractors, Ghana Private Road Transport Union, Ghana Private Enterprise Foundation, Ghana Road Haulage Association, Ghana Institution of Engineers, Ghana National Association of Farmers and Fishermen and 2 nominees of the Minister of Roads and Transport from outside MRT). The Board meets bi-monthly and members hold office for a period of three years, but are eligible for reappointment.

The Secretariat employs a Director, an Engineer, and Accountant and 3 support staff. From the point of view of monitoring road maintenance activities, the Engineer plays a key role as a technical auditor, checking that funds are being spent by the Agencies as set out in their programmes and confirmed by their approved payment certificates.

Routine maintenance funds are released monthly in advance. For 1999, release will be made on current month basis. Agencies submit their programmes at the beginning of the financial year and the funds are then released based on the pro rata annual amount per month. Agencies have to report back to the Secretariat on how the money has been utilised.

All other activities are paid monthly in arrears. Agencies submit their programmes and once approved, let contracts as required. Payment certificates are approved by the agencies who then submit a schedule of all certificates for payment to the Secretariat. Funds are then released and agencies are required to report back on payments made.

Appendix 3 - LPC for Ashanti region

**REPUBLIC OF GHANA
MINISTRY OF ROADS & TRANSPORT
GHANA HIGHWAY AUTHORITY**

ROUTINE MAINTENANCE OF TRUNK ROADS

BIDDING DOCUMENTS

FOR

**LOT 7 ROUTINE MAINTENANCE ON
(I) ANTOAKROM-MANSO NKWANTA-ABORE
(II) PAKYI NO 2 - ANTOAKROM ROAD (26.5KM)**

APRIL 1998

CHIEF EXECUTIVE
GHANA HIGHWAY AUTHORITY
P O BOX 1641

CONTENTS

SECTION 1	(a) Invitation to Bid
	(b) Instructions to Bidders
	(c) Form of Agreement
	(d) Form of Bid
SECTION 2	CONDITIONS OF CONTRACT
SECTION 3	GENERAL TECHNICAL SPECIFICATION
SECTION 4	SPECIAL TECHNICAL SPECIFICATION
SECTION 5	BILL OF QUANTITIES
SECTION 6	DRAWINGS / SKETCHES
SECTION 7	STATEMENT OF QUALIFICATION
SECTION 8	SUPPLEMENTARY INFORMATION

**REPUBLIC OF GHANA
MINISTRY OF ROADS & TRANSPORT
GHANA HIGHWAY AUTHORITY**

**MINISTRY OF ROADS AND TRANSPORT
GHANA HIGHWAY AUTHORITY**

ROUTINE MAINTENANCE OF TRUNK ROADS

INVITATION FOR BIDS (IFB)

BID NO. GHA/ASR/RTM/01/1-10

The Ministry of Roads and Transport acting through the Ghana Highway Authority invites sealed bids from eligible bidders for the construction and completion of the works listed hereunder

- LOT 1 Routine Maintenance on Jiraso-obogri-Nkyesa Road (26km)
LOT 2 Routine Maintenance on Mankranso-Tepa Road (46 Km)
LOT 3 Routine Maintenance on Ejise-Kuntinase and Barekese-Ofinso Roads (36.6Km)
LOT 4 Routine Maintenance on Adlenbra-Kunso Road (45Km)
LOT 5 Routine Maintenance on:
(i) Abofour Kyekyewe-Anyuanu Road (34.2Km)
(ii) Kwadaso-Winso Road (8.4 km)
LOT 6 Routine Maintenance on Asokwa-Anwanaso-Gyadum Road (40 Km)
LOT 7 Routine Maintenance on:
(i) Antokrom-Manso Nkwanta-Above
(ii) Pakyi No.2-Antokrom Road (26.5Km)
LOT 8 Routine Maintenance on Mampong Kofinase-Anyuanu Road (59.0 Km)
LOT 9 Routine Maintenance on:
(i) Ejura-Nhyizem Road (21.8Km)
(ii) Anyuanu-Sekyedumase Road (9.6 Km)
(iii) Sekyedumase-Chiradeso Road (7Km)
LOT 10 Routine Maintenance on:
Nsuta-Aframso and
Oyoko-Nsuta Roads (59.2km)

**SECTION 1
INSTRUCTION TO BIDDERS**

Nsuta-Aframso and

Oyoko-Nsuta Roads (59 2km)

- 2 Bidders may bid for one or several Lots as further defined in the bidding documents Bidders wishing to offer discounts in case they are awarded more than one contract will be allowed to do so provided these discounts are included in the forms of Bid or submitted in writing before the deadline for bid submission All bids and offers of discounts shall be opened and evaluated simultaneously so as to determine the bid or combination of bids including discounts offering the lowest evaluated solution for the Employer
- 3 Bidders may obtain further information from, and inspect and acquire the bidding documents at the office of the Regional Highway Director GHANA, Ashanti Region
- 4 A complete set of bidding documents may be purchased by interested bidders on submission a written application to the above office, and upon payment of a non-refundable fee of \$80 000 00 per Lot Additional set of documents may be purchased each at \$80,000 00
- 5 All bids must be delivered to THE SECRETARY, REGIONAL TENDER BOARD ASHANTI REGION KUMASI before 10 00hrs on 30th April, 1998 Bids will be opened immediately thereafter in the presence of bidders' representatives who choose to attend

CHIEF EXECUTIVE
GHANA HIGHWAY AUTHORITY
P O BOX 1641,
ACCRA.

Section 1 Instructions to Bidders A General

- 1 Scope of Bid
- 1 1 The Ministry of Roads and Transport hereinafter referred to as 'the Employer' acting through the Ghana Highway Authority invites bids for the these bidding documents hereinafter referred to as "the Works as defined in
- 1 2 The successful bidder will be expected to complete the Works within the time stated in Appendix to Form of Tender from the date of commencement of the Works
- 1 3 Throughout these bidding documents the terms 'bid and tenders and their derivatives (bidder/tenderer bid/tendered bidding/tendering etc) are synonymous and day means calendar day and month' means calendar month
- 2 Lots and Discounts
- 2 1 Bidders may bid for one or several lots, as further defined in the bidding documents Bidders wishing to offer discounts in case they are awarded more than one contract will be allowed to do so provided these discounts are included in the Form of Bid or submitted in writing before the deadline for bid submission All bids and offers of discounts shall be opened and evaluated simultaneously so as to determine the bid or combination of bids including discounts offering the lowest evaluated solution for the Employer
- 3 Source of Funds
- 3 1 Payments under the contract will be made by the Government of Ghana through budgetary allocations
- 4 Eligible Bidders
- 4 1 This invitation to bid is open to any bidder meeting the following requirements
 - (a) A bidder (including all members of a Joint Venture) shall be registered with the MRT
 - (b) Bidders should meet MRT Classification eligibility requirements for the elements of the road works for which they are BIDDING

- 4.2 Bidders shall provide the following evidence of their eligibility together with their bids
- (i) copy of valid MRT classification certificate
 - (ii) copy of valid labour certificate
 - (iii) written power of attorney of the signatory of the bid to commit the bidder and Employer shall reasonably request
 - (iv) such evidence of their eligibility satisfactory to the Employer as the Employer shall reasonably request
- 5 Eligible Materials, Equipment, and Services
- 5.1 At the Employer's request, the bidder having offered the lowest evaluated bid may be required to provide evidence of the origin of materials, equipment and services satisfactory to the Employer
- 5.2 For purposes of Clause 5.1 above, origin means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided
- 6 Qualification of the Bidder
- 6.1 To be qualified for award of the Contract, bidders shall provide evidence satisfactory to the Employer of their capability and adequacy of resources to carry out the Contract effectively. Bids shall include the following information:
- (a) major items of construction equipment proposed and available for carrying out the Contract,
 - (b) the qualifications and experience of key personnel proposed and available for administration and execution of the Contract both on and off site
- 6.2 For the purposes of this particular Contract, bidders shall meet the following minimum qualifying criteria:
- (a) proposals for timely acquisition (own, lease, hire, etc.) of essential major equipment as per the minimum threshold specified in the Appendix to Form of Tender
 - (b) key personnel as listed in Appendix to Form of Tender
 - (c) for the bidder to qualify for a package of contracts made up of this and other contracts, he must demonstrate having experience and resources sufficient to meet the qualifying criteria for the package in question as per the minimum threshold specified in Appendix to Form of Tender

7 One Bid per Bidder
 7.1 Each bidder shall submit only one bid either by himself or as a partner in a joint venture. A bidder who submits or participates in more than one bid in any relationship whatsoever will be disqualified

8 Cost of Bidding
 8.1 The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process

9 Site Visit
 9.1 The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into a contract or construction of the Works. The costs of visiting the Site shall be at the bidder's own expense

9.2 The bidder and any of his personnel or agents will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the bidder, his personnel and agents will release and indemnify the Employer and his personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection

9.3 The Employer may conduct a Site visit concurrently with the Pre-Bid Meeting referred to in Clause 20

B Bidding Documents

10 Content of Bidding Documents

10.1 The bidding documents are those stated below and should be read in conjunction with any Addenda issued in accordance with Clause 12

Section

- 0 Invitation for Bids
- 1 Instructions to Bidders
- 2 General Conditions of Contract
- 3 Conditions of Particular Application
- 4 General & Special Technical Specifications
- 5 Forms of Bid, Appendix to Bid, and Bid Security
- 6 Bill of Quantities
- 7 Form of Agreement
- 8 Drawings

- 10.2 One set of Bidding Documents will be supplied. The original and one copy of sections 5&6 should be completed and returned with the bid
- 10.3 The bidder is expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Pursuant to Clause 29, bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

11 Clarification of Bidding Documents

- 11.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or by cable (hereinafter the term cable is deemed to include telex and facsimile) at the Employer's address indicated in the Invitation for Bids. The Employer will respond to any request for clarification which he receives earlier than 30 days prior to the deadline for submission of bid. Copies of the Employer's response will be forwarded to all purchasers on the bidding documents including a description of the enquiry but without identifying its source.

12 Amendment of Bidding Documents

- 12.1 At any time prior to the deadline for submission of bids, the Employer may for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing addenda.
- 12.2 Any addendum thus issued shall be part of the bidding documents pursuant to Sub-Clause 10.1 and shall be communicated in writing or by cable to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum in writing or by cable to the Employer. Failure to acknowledge will imply acceptance.

- 12.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may extend as necessary the deadline for submission of bids, in accordance with Clause 23.

C Preparation of Bids

13 Language of Bid

- 13.1 The bid and all correspondence and documents related to the bid exchanged by the bidder and the Employer shall be written in the English language. Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in the above stated language in which case for purposes of interpretation of the bid, the English translation shall prevail. Failure to comply with the requirements of this clause may lead to the disqualification of a bid.

14 Documents Comprising the Bid

- 14.1 The bid submitted by the bidder shall comprise the following Forms, Bid and Appendix to Bid, Bid Security, Priced Bill of Quantities, the information on eligibility and qualification, and any other materials required to be completed and submitted by bidders in accordance with these Instructions to Bidders. The documents listed under Section 5 & 6 of Sub-Clause 10.1 shall be filled-in without exception, subject to extensions thereof in the same format.

- 14.2 Bidders bidding for this Contract together with other contracts to form a package will so indicate in the Form of Bid together with any discounts offered for the award of more than one contract.

15 Bid Prices

- 15.1 Unless stated otherwise in the bidding documents, the Contract shall be for the whole Works as described in Sub-Clause 1.1 based on the schedule of unit rates and prices submitted by the bidder.

- 15.2 The bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

- 15.3 All duties, taxes and other levies payable by the Contractor under the Contract or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the bidder, and the evaluation and comparison of bids by the Employer shall be made accordingly.

- 15.4 The rates and prices quoted by the bidder are not subject to adjustment during the performance of the Contract.

16 Currencies of Bid & Payment

- 16.1 The unit rates and the prices shall be quoted by the bidder entirely in cedis. All payments by the Employer will be made in cedis.

17 Bid Validity

- 17.1 Bids shall remain valid for a period of _____ days after the date of bid opening specified in Clause 26.

- 17.2 In exceptional circumstances prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing or by cable. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his bid security for the period of the extension and in compliance with Clause 18 in all respects.

- 20 / Pre Bid Meeting
 20.1 The bidder or his official representative is invited to attend a pre bid meeting which will take place at the office of Regional Highway Director on
- 20.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage
- 20.3 The bidder is requested to submit any questions in writing or by cable to reach the Regional Highway Director GHA not later than one week before the meeting
- 20.4 Minutes of the meeting including the text of the questions raised and the responses given will be transmitted without delay to all purchasers of the bidding documents. Any modifications of the bidding documents listed in Sub Clause 10.1 which may become necessary as a result of the pre bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 12 and not through the minutes of the pre bid meeting
- 20.5 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder
- 21 Format and Signing of Bid
 21.1 The bidder shall prepare one original and one copy of the documents comprising the bid as described in Clause 14 of these Instructions to Bidders bound with the volume containing the Form of Bid and clearly marked "ORIGINAL" and COPY as appropriate. In the event of discrepancy between them, the original shall prevail
- 21.2 The original and all copies of the bid shall be typed or written in indelible ink (in the case of copies photostats are also acceptable) and shall be signed by a person or persons duly authorized to sign on behalf of the bidder pursuant to Sub-Clause 6.2(c). All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid
- 21.3 The bid shall contain no alterations, omissions or additions except those to comply with instructions issued by the Employer or as necessary to correct errors made by the bidder in which case such corrections shall be initialed by the person or persons signing the bid
- 22 D Submission of Bids
 22.1 Sealing and Marking of Bids
 The bidders shall seal the original and each copy of the bid in an inner and an outer envelope, duly marking the envelopes as ORIGINAL and COPY

- 18 Bid Security
 18.1 The bidder shall furnish as part of his bid a bid security in the amount stated below
- 18.2 The bid security shall, at the bidder's option, be in the form of a certified cheque, bank draft, standby letter of credit or guarantee from a bank located in Ghana or a foreign bank which has been determined by the bidder to be acceptable to the Employer, or a bond issued by a surety located in Ghana or abroad and determined by the bidder to be acceptable to the Employer. The format of the bank guarantee or bond shall be in accordance with one of the sample forms of bid security included in Section 5. Other formats will not be accepted. Letters of credit, bank guarantees and bonds issued as surety for the bid shall be valid for 28 days beyond the validity of the bid, i.e. days after the date of bid opening
- 18.3 Any bid not accompanied by an acceptable bid security shall be rejected by the Employer as non-responsive
- 18.4 The bid securities of unsuccessful bidders will be returned as promptly as possible but not later than 28 days after the expiration of the period of bid validity or any extension thereof
- 18.5 The bid security of the successful bidder will be returned when the bidder has furnished the required Tax and Social Security Clearance Certificates and signed the Agreement
- 18.6 The bid security may be forfeited
- (a) if the bidder withdraws his bid during the period of bid validity
- (b) if the bidder does not accept the correction of his bid price pursuant to Sub Clause 30.2 or
- (c) in the case of a successful bidder if he fails within the specified time limit to
- (i) furnish the required Tax and Social Security Clearance Certificates
- (ii) sign the Agreement
- 19 Alternative Proposals By Bidders
 19.1 Bidders shall submit offers which comply with the requirements of the bidding documents including the basic technical design as indicated in the Drawings and Specifications and no alternatives will be considered. The attention of bidders is drawn to the provisions of Clause 29 regarding the rejection of bids which are not substantially responsive to the requirements of the bidding documents

22.2 The inner and outer envelopes shall

(a) be addressed to the following address: The Secretary Regional Tender Board
Regional Administration

(b) bear the following identification

Bid for
Bid Reference Number
DO NOT OPEN BEFORE 10 00HRS ON

22.3 In addition to the identification required in Sub-Clause 22.2, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared late pursuant to Clause 24

22.4 If the outer envelope is not sealed and marked as above, the Employer shall assume no responsibility for the misplacement or premature opening of the bid

23.2 Deadline for Submission of Bids

23.1 Bids must be received by the Employer at the address specified above not later than 10 00HRS on

23.2 The Employer may, at his discretion, extend the deadline for submission of bids by issuing an amendment in accordance with Clause 12, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended

24.2 Late Bids

24.1 Any bid received by the Employer after the deadline for submission of bids prescribed in Clause 23 will be returned unopened to the bidder. The Employer however will assume no responsibility for the misplacement or tampering of a late bid

25.2 Modification & Withdrawal of Bid

25.1 The bidder may modify or withdraw his bid after bid submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline for submission of bids

25.2 The bidder's modification or withdrawal notice shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause 22, with the outer and inner envelopes additionally marked MODIFICATION or WITHDRAWAL as appropriate

No bid may be modified by the bidder after the deadline for submission of bids

25.4 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in the forfeiture of the bid's security pursuant to Clause 18

E Bid Opening and Evaluation

26.2 Bid Opening

26.1 The Employer will open the bids, including modifications made pursuant to Clause 25, in the presence of bidders' representatives who choose to attend at 10 00hrs on ~~ASHTATI~~ at the following location: Regional Tender Board, ~~Regional Administration~~ ~~KUMASI~~ The bidders' representatives who are present shall sign a register evidencing their attendance

26.2 Envelopes marked "WITHDRAWAL" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 25 shall not be opened

26.3 The bidders' names, the Bid Prices, the total amount of each bid, any discounts, bid modifications and withdrawals, the presence or absence of bid security, MRH Classification Certificate, Labour Certificate and Power of Attorney (if relevant) will be announced by the Employer at the opening. Any bid price discount which is not read out and recorded at bid opening will not be taken into account in bid evaluation

26.4 Minutes of the bid opening, including the information disclosed to those present in accordance with Sub-Clause 26.3 shall be prepared

27.2 Process to be Confidential

27.1 Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful bidder has been announced. Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of the bidder's bid

28.2 Clarification of Bids

28.1 To assist in the examination, evaluation and comparison of bids, the Employer may, at his discretion, ask any bidder for clarification of his bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the bid shall be sought, offered or permitted, except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause 30

29 Examination of Bids and Determination of Responsiveness
 Prior to the detailed evaluation of bids the Employer will determine whether each bid (i) meets the eligibility criteria of MRT (ii) has been properly signed (iii) is accompanied by the required securities and labour certificate and Power of Attorney where required (iv) is substantially responsive to the other requirements of the bidding documents and (v) provides any clarification and/or substantiation that the Employer may require

29 1

29 2 A substantially responsive bid is one which conforms to all terms, conditions and specifications of the bidding documents without material deviation or reservation. A material deviation or reservation is one (i) which affects in any substantial way the scope, quality or performance of the Works (ii) which limits in any substantial way inconsistent with the bidding documents the Employer's rights or the bidder's obligations under the Contract or (iii) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids

30 Correction of Errors
 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows

30 1

(a) where there is a discrepancy between the amounts in figures and in words the amount in words govern and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity the unit rate as quoted will govern unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate in which case the line item total as quoted will govern and the unit rate will be corrected

30 2 The amount stated in the Form of Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and with the concurrence of the bidder shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid his bid will be rejected and the bid security may be forfeited in accordance with Sub Clause 18.6 (b)

31 Evaluation and Comparison of Bids
 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 29

31 1

31 2 In evaluating the bids the Employer will determine for each bid the Evaluated Bid Price by adjusting the Bid Prices as follows

1

(a) making any correction for errors pursuant to Clause 30

(b) excluding Provisional Sums and the provision if any for Contingencies in the Summary of Bill of Quantities but including Daywork where priced competely

(c) making an appropriate adjustment for any other acceptable variations or deviations

(d) applying any discounts offered by the bidder for the award of more than one contract

31 3 The Employer reserves the right to accept or reject any variation or deviation Variations, deviations and other factors which are in excess of the requirements or the bidding documents or otherwise result in the accrual of unsolicited benefits to the Employer shall not be taken into account in bid evaluation

31 4 If the bid of the successful bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the Contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses the Employer may require that the amount of the performance security set forth in Clause 36 be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the Contract

F Award of Contract

32 Award
32 1 Subject to Clause 33, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has offered the Lowest Evaluated Bid Price for one Contract when evaluated in conjunction with the other Contracts to be awarded concurrently and taking into account any discounts offered by bidders for the award of more than one contract provided that such bidder has been determined to be (i) eligible in accordance with the provisions of Clause 4 and (ii) qualified in accordance with the provisions of Clause 6

33 Employer's Right to Accept any Bid and to Reject any or all Bids
33 1 Notwithstanding Clause 32 the Employer reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of Contract without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer's action

34 Notification of Award
34 1 Prior to expiration of the period of bid validity prescribed by the Employer the Employer will notify the successful bidder by registered letter that his bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") shall name the sum which the Employer will pay the Contractor in consideration of the execution completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called "the Contract Price") and the Engineer for the Works

34 2 The notification of award will constitute the formation of the Contract pursuant to Clause 36

35 Signing of Agreement
35 1 Within two weeks after he notifies the successful bidder that his bid has been accepted the Employer will send the bidder the Draft Contract document for study

35 2 Within _____ days of the Notification of Award the successful bidder shall provide Tax and Social Security Clearance Certificates and sign the Form of Agreement in the presence of the Employer and witnesses at the office of the Regional Highway Director GHA

FORM OF AGREEMENT

AN AGREEMENT made the _____ day of _____ 1998
BETWEEN THE GHANA HIGHWAY AUTHORITY acting through its
CHIEF EXECUTIVE of Post Office Box 1641, and represented by
Regional Highway Director (hereinafter called the EMPLOYER)
of One Part and M/S _____

and also of _____
(hereinafter called "THE CONTRACTOR") of the other Part
HEREBY IT IS AGREED AS follows

1 The Employer hereby engages the Contractor and the Contractor agrees to work for the Employer as a Contractor to execute road maintenance works (hereinafter more specifically described in the schedule) with effect from the _____ day of _____ 19 for a period of not more than one Calendar year

2 (a) The Contractor agrees to execute the work described in the schedule hereunder and any other works which may be assigned him from time to time

3 The Engineer shall appoint a supervisor who shall from time to time assign work to the Contractor
The Contractor shall be notified in writing as to who is the Foreman for the works Whenever the Foreman is changed the Contractor shall be notified in writing accordingly

4 The Contractor shall comply with the instructions and directions of the Supervisor

5 In consideration of the works to be performed by the Contractor the Employer shall pay the Contractor measured work done at the rates agreed with the Employer

6 The Employer shall review the said rates any time the government announces a change in the basic wage rate Payment to the contractor shall be at the Ghana Highway Regional office Kumasi

7 The Contractor's work shall be inspected by the Supervisor at least once every two weeks The Supervisor shall at the of the month measure all the work done by the Contractor for the month and enter the same on a reporting form to be provided for that purpose

The Engineer's representative shall verify work done including quality control reports when necessary and prepare Certificates for payment

8 If the Contractor shall be guilty of any serious misconduct including persistently working behind schedule indulging in any act of dishonesty or any serious breach or non-observance of any conditions of the agreement or shall fail or refuse to carry out the duties assigned to him hereunder, the Employer shall be entitled summarily to terminate his engagement hereunder without notice and without any payment in lieu of notice

All disputes or difference whatsoever which shall at

any time hereunder whether during the continuance of this agreement or upon or after its discharge or termination arise between the parties hereto touching or concerning this agreement or its construction or effect or the rights duties or liabilities of the parties hereto or any of them under or by virtue of this agreement shall be referred to a single arbitrator to be nominated by the Hon Regional Minister, Ashanti Region in accordance with and subject to the provisions of the Arbitration Act 38 of 1961 or any Statutory Modification or re-connectment thereof for the time being in force The place for the Arbitration shall be Accra Ghana

IN WITNESS WHEREOF THE PARTIES HERETO APPEND THEIR HANDS THE DAY AND YEAR FIRST ABOVE WRITTEN

SIGNED, SEALED AND DELIVERED BY THE WITHIN)
NAMED CHIEF EXECUTIVE ON BEHALF of the)
GHANA HIGHWAY AUTHORITY in the presence of)

SIGNED, SEALED AND DELIVERED BY THE WITHIN
NAMED CONTRACTOR

in the presence of

FORM OF BID
FOR ROUTINE MAINTENANCE WORKS

Name of Contract -----

To The Ministry of Roads & Transport

Gentleman
1 Having examined the Conditions of Contract, Specification, Drawings, and Bill of Quantities for the execution of the above-named Works we the undersigned offer to execute and complete such Works and remedy any defects therein in conformity with the Conditions of Contract, Specification, Drawings, Bill of Quantities for the sum of -----

(-----)
2 We undertake, if our Tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and complete the whole of the Works (described in the Schedule) for a period not more than one calendar year
3 We agree to abide by this Tender for a period of 60 days and conditions stated in the contract agreement
4 We understand that you are not bound to accept the lowest or any bid you may receive
Dated this ----- day of ----- 19 -----
Signature ----- in the capacity of -----
duly authorised to sign tenders for and on behalf of -----
(in block capitals or typed)
Address -----

Witness -----

Occupation -----

FORM OF TENDER

APPENDIX I.D. FORM OF TENDER

Appendix To Form of Tender

Sub Clause

Amount of Performance Security	10 1	Not Applicable
Minimum Amount of Third Party Insurance	23 2	C. M per occurrence with the number of occurrence unlimited
Time for Completion	34 1	As stated in Letter of Acceptance
Liquidated Damages	47 1	As Applicable
Defects Liability Period (for contracts involving concrete works)	49 1	Six (6) Months
Retention Money	60 5	15% of Interim Payment Certificate Value
Limit of Retention	60 5	10% of Contract price
Advance Payment	60 7	Not Applicable
Interests on Delayed Payments	60 8	Not Applicable

Appendix To Form of Tender

A EQUIPMENT

Minimum equipment/tools requirements are as follows

EQUIPMENT/ TOOLS	NUMBER REQUIRED			
	GRADING OF GRAVEL SURFACES, PATCHING OF GRAVEL SECTIONS, etc	POT HOLE PATCHING (PAVED ROADS)	ROAD-LINE MARKING	SPOT IMPROVEMENT/CULVERT CONSTRUCTION
1 Motor Grader	1			1
2 Wheel Loader	1			1
3 Tipper Truck	1	1		1
4 Roller (8 - 10 tons)	1			1
5 Water Tanker	1			1
6 Bulldozer	1			1
7 Pick-up	1		1	1
8 Compressor		1		
9 Plate Tamper		1		
10 Pedestrian Roller		1		
11 Watering Can		2		
12 Asphalt Cutter		1		
13 Cold Emulsion Sprayer		1		
14 Bass Broom		4		
15 Thermoplastic Road Marking Machine (Motorised)			1	
16 Pre-Heater			1	
17 Pre-marking Machine			1	
18 Trip Meter			1	
19 Concrete Mixer				1
20 Concrete Vibrator				1

B PERSONNEL

B 1 Minimum experience for key personnel are as below
(Should satisfy the minimum requirement under each column)

Position	Minimum Qualification	Total Experience	Experience In Similar Works
Earthworks Foreman	CTC 2 or Equivalent	6	5
Concrete Works	CTC 2 or Equivalent	6	4
Pothole Patching	CTC 2 or Equivalent	6	4
Roadline Marking Supervisor	CTC 2 or Equivalent	6	4
Equipment Technician	MET or Equivalent	10	4

B 2 Minimum Requirements for Personnel

Position	Minimum No Required Per Lot			
	GRADING ETC	POTHOLE PATCHING	ROADLINE MARKING	SPOT IMPROVEMENT/ CULVERT CONSTRUCTION
Earthworks Foreman	1	-	-	1
Concrete Works Foreman	-	-	-	-
Pothole Patching Foreman	-	1	-	-
Roadline Marking Supervisor	-	-	1	-
Equipment Technician	1	1	1	1

**REPUBLIC OF GHANA
MINISTRY OF ROADS & TRANSPORT
GHANA HIGHWAY AUTHORITY**

SECTION 2

**GENERAL CONDITIONS OF CONTRACT
PART 1**

**Conditions of Contract for works
of Civil Engineering Construction
FIDIC (Fourth Edition)**

**REPUBLIC OF GHANA
MINISTRY OF ROADS & TRANSPORT
GHANA HIGHWAY AUTHORITY**

SECTION 4

SPECIAL TECHNICAL SPECIFICATIONS

SECTION 3

GENERAL TECHNICAL SPECIFICATIONS

**SPECIFICATIONS FOR ROAD MAINTENANCE
WORKS
GHANA HIGHWAY AUTHORITY
(JANUARY 1996)**

ROUTINE MAINTENANCE BY CONTRACT

SECTION 4 SPECIAL TECHNICAL SPECIFICATIONS FOR
ROUTINE MAINTENANCE BY CONTRACT

4 1 GRADING GRAVEL SURFACES

The Contractor shall blade, reshape and smoothen gravel surfaces (without additional material) to restore smooth riding surface, restore proper crown and cross fall for drainage.

In executing this activity the contractor shall

- 1 Place signs as required for safe work
- 2 Grade and windrow material on each side of centre line
- 3 Make additional passes spreading loose material back over surface
- 4 Make sufficient passes for smooth and place windrow material to correct grade and slope
- 5 Check slope with camber
- 6 Remove signs on completion

4 2 PATCH GRAVEL SECTIONS

The contractor shall repair gravel surface in sections by replacing lost material to restore the surface

In executing this activity the contractor shall

- (a) Erect traffic signs
- (b) Grade surface to provide smooth base and water
- (c) Dump subbase on road (tailgate spreading)
- (d) Spread to correct grade and slope and allow for traffic compaction
- (e) Water to the specified moisture content and compact with a static or vibratory roller
- (f) Remove traffic signs on completion

4 3 DITCH CLEANING BY GRADER

The contractor shall clean and reshape ditches to restore gradient and ensure smooth flow of water collected from roadway. This activity shall be carried out only on existing ditches which have silted up, become clogged or overgrown.

In executing this activity the contractor shall

- a) Place safety devices and signs as necessary
- b) Remove rock and debris from the shoulder or road surface
- c) Make sufficient passes with grader to shape and dress front shape of ditch
- d) Make sufficient passes to shape and dress the backshape of ditch
- c) Maintain the correct ditch cross-section and flow line
- d) Dispose of excavated material in accordance with the following priorities:
 - i) Spread evenly over shoulder or road surface where needed
 - ii) Spread over the area behind the top of backslope
 - iii) Remove from site
- e) Remove safety devices and signs on completion

4 4 GRASS CUTTING

The Contractor shall cut grass by hand from shoulders, ditches around signs, kilometre posts and bridges to allow use of the shoulders by distressed vehicles, improve visibility and permit proper drainage from the roadway.

Cutting of grass shall be carried out when the grass has grown to a height of 300mm and should be cut to a height of 75mm.

The cut grass should be removed from roadway shoulders and ditch bottoms.

Under no circumstances should grass be burnt on the shoulders and in ditches.

**REPUBLIC OF GHANA
MINISTRY OF ROADS & TRANSPORT
GHANA HIGHWAY AUTHORITY**

SECTION 5

BILL OF QUANTITIES

4 5 DITCH CLEANING BY HAND

The Contractor shall clean and shape ditches to restore gradient and ensure smooth flow of water collected from the roadway

Debris vegetation etc. shall be removed from the ditches
The front slope and back slopes of the ditches shall be reshaped

Excavated material shall be disposed off in accordance with the following priorities

- (a) Spread evenly over shoulders where needed
- (b) Spread over the area behind the top of back slope
- (c) Remove from site

Generally this activity shall be performed before the rainy season but also during rains if necessary

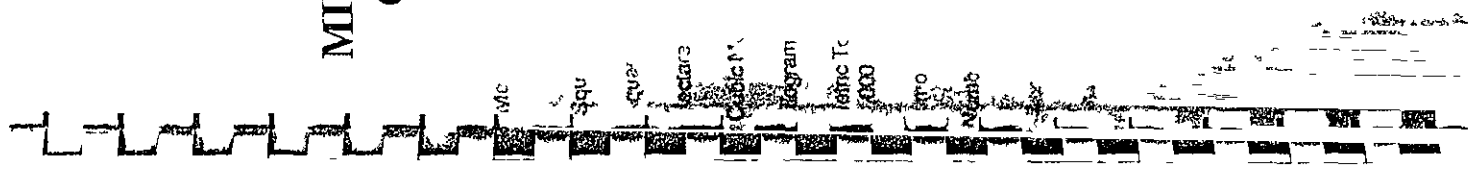
4 6 CULVERT CLEANING

The Contractor shall clean culverts of minor debris and silt to ensure smooth flow of water This shall include cleaning and reshaping of inlets and outlets of culverts.

Generally this activity shall be performed before the beginning of the rainy season but may be required during the rains also

4 7 CULVERT DESILTING

The Contractor shall desilt, choked culverts of silt and debris He shall reshape and clear the inlets and outlets of culverts to ensure free flow of water



1 It is required that all roadways be kept open and access to private properties maintained at all times for the duration of construction and the Contractor should have taken care of these in his rates

2 Units of Measurements

Unit Abbreviation

Millimeter mm

Meter m

Square Millimeter mm² or sq mm

square Meter m² or sq m

ectare ha

Cubic Meter m³ or cu m

Kilogram kg

Metric Ton (1 000 kg)

t

Imp Sum

sum

Number

nr

Kilometer km

km

NETWE

KNH

Abbreviations and Definitions

The following is a list of the more important abbreviations and definitions of terms to which frequent reference will be made in the Contract Documents

AWWA American Water Works Association

ASTM American Society for Testing Materials

BS and BSCP British Standard and British Standard Code of Practice

AASHTO American Association of State Highway and Transportation Officials

Asphaltic Concrete This refers to Asphaltic Concrete designed by the Marshall design method

Asphaltic Cement Bitumen binder

Prime Coat Bituminous coat applied to gravel surfaces prior to asphalt surfacing, or surface dressing

Tack Coat Similar to prime coat but applied to structural surfaces and existing surface dressed surfaces

C.S.A. Canadian Standards Association

Concrete Class Means 28 days strength = 25 N/mm²
25/20 Max. aggregate size = 20 mm

CESMM - 3 Civil Engineering Standard Method of Measurement Third Edition 1991

Further abbreviations and definitions appear in Part I Clause I of the Conditions of Contract (FIDIC - 4th Edition) Standard Specifications for Road and Bridge work published by the Ministry of Roads & Highways (January 1991)

**REPUBLIC OF GHANA
MINISTRY OF ROADS & TRANSPORT
GHANA HIGHWAY AUTHORITY**

SECTION 6

DRAWINGS AND LINE DIAGRAMS

ACT NO	ACTIVITY DESCRIPTION	UNIT	QUANTITY	UNIT RATE CEDIS	AMOUNT
213	GRADE GRAVEL SURFACE	LN KM	273		
215	PATCH GRAVEL SECTIONS	CU M	2915		
232	DITCH CLEANING BY MACHINE	KM	85		
SUB-TOTAL					
ADD 10% FOR PRICE ADJUSTMENT					
CONTRACT SUM					

BILL OF QUANTITIES

REGION ASHANTI
ROAD NAME ANTOAKROM-MANSO NKWANTA-ABOYE & PAKYI NO 2 - ANTOAKROM (LOT 7)
DISTRICT BEKWA
LOT NO GHA/ASR/RTM/01/7

YEAR 1998

1.4 The bidder should list all items of construction equipment proposed for carrying out the works. The bidder should provide all the information requested below for each equipment

Item of Equipment	Make and Age (years)	Condition (new good poor)	Owned Leased (from whom?) to be Purchased (from whom?)

1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract

Position	Name	Years of Experience (general)	Years of Experience in Proposed Position

MESSRS

Dear Sir

LETTER OF ACCEPTANCE
ROUTINE MAINTENANCE CONTRACT

1	ROAD	KM
2	ROAD	KM
3	ROAD	KM
TOTAL LENGTH		KM

I have the pleasure to inform you that by letter No _____ the Regional Advisory Tender Board has given approval for the _____ Routine Maintenance of the above mentioned roads to you at _____ for completion in _____

The Engineer in charge is the Regional Highway Director
Region and the Engineer's Representative is the Maintenance Engineer
Region. The District Engineer is the Supervisor and will schedule and measure work on monthly basis

You are required to commence works as soon as possible after the receipt of notice from the Engineer subject to your signing of the Contract Agreement.

Meanwhile you are requested to submit Income Tax and Social Security Clearance Certificate before signing the Contract Agreement. Failure to respond within 28 days on receipt of this letter will result in this acceptance of offer being withdrawn

Please acknowledge receipt

Yours faithfully

REGIONAL HIGHWAY DIRECTOR

- cc
- Hon Minister (MRT)
 - Chief Executive GHA Accra
 - Dy Chief Executive/Mtce GHA Accra
 - The Director (Audit), GHA Accra
 - The Director (Road Mtce) GHA Accra
 - The Director Contracts GHA Accra
 - The Mtce Engineer GHA
 - The District Head GHA
 - District Chief Executive

District

SECTION 8

SCHEDULE OF SUPPLEMENTARY

INFORMATION

Appendix 4 - Local DFR contract (pre MPBS)

GOVERNMENT OF GHANA

Department of Feeder Roads

ASHANTI REGION

MINISTRY OF ROADS AND TRANSPORT
DEPARTMENT OF FEEDER ROADS

ARTICLES OF AGREEMENT FOR ROUTINE MAINTENANCE CONTRACT

AN AGREEMENT made the _____ day of _____ 19____
BETWEEN THE Government of Ghana (hereinafter called "the
Employer") acting through the Department of Feeder Roads as
represented by the Director on the one hand AND

M/S DAVID WALTER LTD of P. O. Box

01663 OSU ACCRA (hereinafter called 'the Contractor')
on the other hand

WHEREAS it is the intention of the Employer to engage the
Contractor to execute road maintenance works hereinafter more
specifically described and the Contractor having been classified
by the Ministry of Roads and Transport into any or all of the
following categories

- (a) C - Labour based works
- (b) B4
- (c) A4

and having agreed to execute the works above mentioned
NOW IT IS HEREBY MUTUALLY AGREED between the parties that

2 The Contractor shall execute the following labour-based
works and any other works which may be assigned him/her from time
to time

- i) Grass/bush clearing
- ii) Ditch clearing by hand including the repair
of scour checks
- iii) Culvert cleaning
- iv) Potholes/spot patching

2(b) The said works shall be performed on the following roads

ROUTINE MAINTENANCE ON ESU-TIKROM -
KUMASI JUNCTION FEEDER ROAD (12.8 KM)

INSTRUCTIONS

3 The Employer shall appoint a Supervisor who shall from time
to time assign work to the Contractor in accordance with the
Activity Schedule in Appendix A 2 The Contractor shall on
his/her appointment, be notified of the Supervisor Whenever the
Supervisor is changed the Contractor shall be notified in writing
accordingly

4 The Contractor shall comply with the instructions and
directions of the Supervisor

CONTRACT DOCUMENT

PROJECT ROUTINE MAINTENANCE OF ESU-TIKROM -
KUMASI JUNCTION (12.8 KM)

CONTRACTOR

M/S DAVID WALTER LTD

P O Box 01663

OSU ACCRA

REFERENCE No RM/14/1/98

PAYMENT

5 - In consideration of the works to be performed by the Contractor the Employer shall pay to the Contractor the value of measured works done by the Contractor in accordance with the Activity Schedule indicated in Appendix A up to the total sum of **(GHS 376,400.40) SIX HUNDRED THIRTY SEVEN THOUSAND FOUR HUNDRED AND TWENTY TWO CEAS FORTY PERAS**

6 Work executed shall be paid for at the nearest DFR Regional Office

7 The rates indicated in the Activity Schedule shall be fixed for the duration of the contract and shall not be subject to adjustment on any account except where the Government or CEECAG announce a change in the basic rates of wages allowances and/or Employer's contribution to Social Welfare Scheme. The wage rates for this contract shall be those agreed for use by the Civil Engineering and Building Contractors Association of Ghana with effect from

8 The quantities in the Activity Schedule are approximate only and in no case shall such quantities be considered to limit or extend the amount of work to be done and material to be supplied by the Contractor. The details of work to be performed on any occasion on each road shall be recorded on Appendix B.

9 The Contractor will submit monthly invoice for all the works executed and the Supervisor shall verify the measurements and inspect that the works are carried out to a satisfactory standard

TERMINATION

10 In the event of any serious misconduct by the Contractor such as persistently working behind schedule, including in any act of dishonesty or any serious breach or non-observance of any conditions of this agreement or shall fail or refuse to carry out the duties assigned to him/her hereunder the Employer shall be entitled summarily to terminate his/her engagement hereunder without notice and without payment in lieu of notice. However the Contractor will be entitled to claim for payment for work already satisfactorily carried out in the estimation of the Supervisor

DISPUTES

11 All disputes or differences whatsoever which may at any time arise during the continuance of this agreement or upon or after its discharge or termination between the parties hereto touching or concerning this agreement or its construction or effect on the rights duties or liabilities of the parties hereto or in connection with or arising out of this contract or the carrying out of the works including any dispute as to any decision opinion, instruction or direction of the Employer/Supervisor shall be referred first to a person to be agreed between the parties for an amicable settlement or failing such settlement the parties shall refer such dispute to a single arbitrator to be nominated by the Ghana Institution of Engineers in accordance

and subject to the provisions of the Arbitration Act 38 of 1962 or any statutory modification or re-enactment thereof for the time being in force

INDEMNITY The contractor shall at all times indemnify the Employer against all liabilities to other persons for bodily injury damages to property or their loss which may arise out of or in consequence of the execution of the works and against all costs charges and expenses that may be occasioned to the Contractor by the claims of such persons

COMMENCEMENT DATE This contract shall come into force on receipt of a letter from the Employer in which the commencement date shall be stated and the contract shall be valid for a period of twelve (12) calendar months from the date stated herein unless the contract is terminated in accordance with the terms of this contract

APPLICABLE LAW The applicable law shall be the Law in force in the Republic of Ghana

WITNESS WHEREOF THE PARTIES HERETO APPEND THEIR HANDS THE DAY AND YEAR FIRST ABOVE WRITTEN

WITNESS

Name

Address

Description

For and on behalf of the Government of Ghana

WITNESS

Name

Address

Description

CONTRACTOR

Name of Signatory

Designation

Full Name of Firm

In case of copy the number and date of this letter should be indicated

REGIONAL OFFICE
DEPT OF FEDERAL ROADS
PRIVATE POST BAG
KUMASI
ASH/R GHANA
19 98



RM/14/98
Our Ref No
Your Ref No

LETTER OF AWARD
ROUTINE MAINTENANCE OF EJISU-TIKROM-KUMASI JUN (12.8KM)

I have the pleasure to inform you that, the District Advisory Tender Board at its sitting on 24th June, 19 98 awarded you the contract for executing Routine Maintenance works on the above project in the sum of Six million, Three hundred and seventy-six thousand, Four hundred and twenty-two cedis and forty pesewas (G6,376,422 40) for the year 1998

The Supervising Officer of the project is Mr Osei Kwadwo
You are to contact the Regional Engineer immediately for further instructions

The Contract Document shall be ready by 20th Jul '98 for signing
Possession of site shall be given to you after signing the Contract
Under the existing Government regulations you will be required to submit two (2) copies of your latest Income Tax and Social Security Clearance Certificates, upon acceptance of the above offer before signing the Contract

REGIONAL ENGINEER
(J A ASHLEY)

M/S- DAVID WALTER LTD
P O BOX 01663
A C C R A

cc The Director, DFR, Accra
The Secretary, District Tender Board, EJISU
The Dist Chief Executive, EJISU
The DFR Foreman, EJISU

APPENDIX "A"

A 1 PREAMBLES TO ACTIVITY SCHEDULE

- 1 Routine Maintenance
activity which is performed on a routine basis as required throughout the year
- 2 Grass/Bush Clearing
Grass Bush Clearing involves the cutting of road side bush to not more than 100mm above ground
- 3 Ditch Cleaning
Ditch Cleaning involves the removal of all weeds, debris and soil from the side ditch or mitre drain so as to maintain or form the original trapezoidal shape and gradient of the ditch or drain. It also includes the repair/replacement of scour checks in the drains
- 4 Culvert Cleaning
Culvert Cleaning is the clearing of the inlet outlet and inside of culverts of all weeds, debris and silt to permit the uninterrupted flow of water
- 5 Potholes/Spot Patching
Potholes/Spot Patching involves the filling of minor ruts, gullies and minor washouts with gravel of sub-base quality watering and ramming. It is expected that the filling material will be obtained from the close vicinity of the road
- 6 Quantity Standard
Quantity Standard is a measure of the total quantity of an activity expected to be executed per kilometre per year, assuming a given frequency of performance. The Quantity Standard may or may not depend on the class of road



DAVID WALTER LIMITED

GENERAL BUILDING CONTRACTORS AND CIVIL ENGINEERS

P O BOX 01663
OSU ACCRA
GHANA

PHONE 40 17 61
FAX (233 21) 40 17 51
TELEX 2465 DENAL

3rd August, 1998

Dear Sir,

LETTER OF ACCEPTANCE

ROUTINE MAINTENANCE OF EJISU-TIKROM-KUMASI JUN
(12 8 KM)

We acknowledge the receipt of your award letter No RM/14/98 dated 20th July, 1998 on the above project

We wish to inform you of our acceptance of the offer and promise to complete the project on schedule, please

Yours faithfully,

Beky
MANAGING DIRECTOR

THE REGIONAL ENGINEER,
DEPT OF FEEDER ROADS,
KUMASI

ISSUING OFFICE	KUMASIE
DATE	22-4-98

AMOUNT PAID
GH₵ 500

INTERNAL REVENUE SERVICE Tax Clearance Certificate

NAME/ADDRESS: **DAVID WALTER LIMITED**

OCCUPATION: **Contractor**

YEAR OF ASSESSMENT: **1998** FILE No **MNYC 57001**

In compliance with section 70(b) of the Income Tax Decree 1975 (S.M.C.D 57) the Assessee **DAVID WALTER LIMITED** has applied to me for a Tax Clearance Certificate for the following purpose:

To Tender for contract

2. (in confirmation from the information available that **David Walter Ltd of P.O. Box 1155, P.O. Accra**)

a) has paid his/her tax liability up to and including the 1998 Assessment

b) has paid P.A.Y. Earnings and other withholding Taxes up to and including the 1998 Assessment

c) has submitted all tax returns due up to date

d) has registered in accordance with P.N.D.C. Law 156

3. BELOW IS A SUMMARY OF HIGHER TAX POSITION FOR THREE YEARS

YEAR OF ASSESSMENT	CHARGEABLE INCOME	TAX CHARGED	TAX PAID	TAX OUTSTANDING
1996	228,800	10,250,100	10,250,100	245,727
1997	49,500,000	7,255,000	9,099,601	8,225,308
1998	PROV. CASHED	NOT APPLICABLE	115,900	

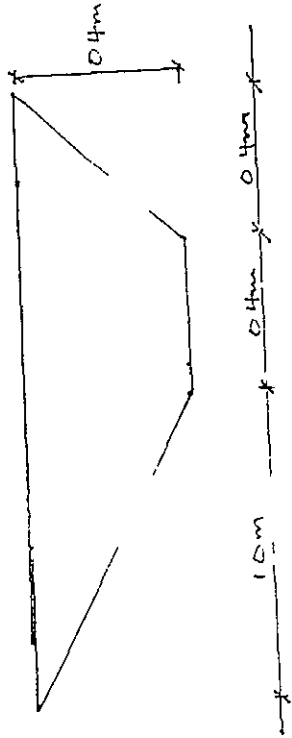
4. I therefore issue this certificate which is valid up to **31st July 1998**

ORIGINAL (for copy)

[Signature]

COMMISSIONER OF INTERNAL REVENUE
C. S. AHU-GOTTIENE

TRAPEZOIDAL DRAIN



Original

**SOCIAL SECURITY AND NATIONAL INSURANCE TRUST
P.N.D.C. LAW 247**



No 021735

CLEARANCE CERTIFICATE

No UA/CH/041149/

21ST APRIL, 1998

ISSUING OFFICER DISTRICT MANAGER, ACHIMOTA

NAME OF ESTABLISHMENT DAVID WALTER LIMITED

BUSINESS REG NO 8385 E/R NO 041149

ADDRESS P. O. BOX 01663 - OSU - ACCRA

COVERABLE DATE 1ST SEPTEMBER, 1988

The above-named establishment in compliance with the provisions under the Social Security Law, 1991 (PNDC Law 247) has applied for a Clearance Certificate for the following purpose(s)

I certify that as at MARCH, 1998 this establishment

employing TWELVE (12) WORKERS

a) paid its liabilities up to and including MARCH 1998

b) fulfilled all its obligations under the Social Security Law

c) made arrangements satisfactory to the Director General for the supply of all relevant information

I therefore issue this certificate which expires on 31ST JULY, 1998

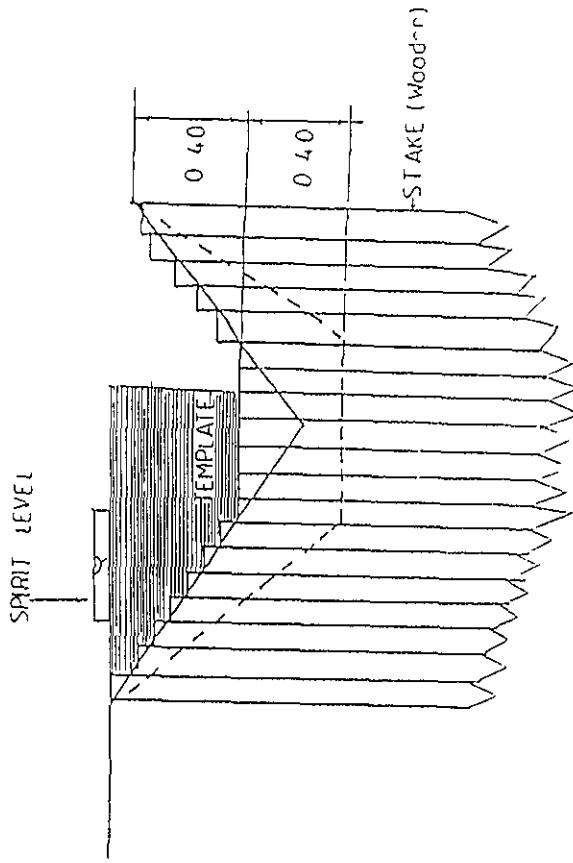
[Signature]
 for DIRECTOR GENERAL
 AG DISTRICT MANAGER

ROUTINE MAINTENANCE OF

(a) EJISU-TIKROH-KUMASI JUN (12 BKM)

(b)

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
31 F	Grass Cutting (Hand)	sq m	76800	23	1 766 400 00
21 F	Ditch Clearing	m	20098 6	181	3 637,846 60
41 F	Culvert Cleaning	No	15	17720	265,800 00
27 F	Cleaning Culvert inlet and outlet	m	150	578	86 700 00
70 F	Progress Pictures	Nr	20	2000	40 000 00
ADD 15% FOR CONTINGENCIES					5,796,746 60
CONTRACT SUM					579,675 80
					6 376,422 40



Appendix 5 - MPBS contract

CONTRACT NUMBER

GOVERNMENT OF THE REPUBLIC OF GHANA
MINISTRY OF ROADS AND HIGHWAYS
DEPARTMENT OF FEEDER ROADS

FEEDER ROAD MAINTENANCE

CONTRACT DOCUMENT

MINISTRY OF ROADS AND HIGHWAYS
DEPARTMENT OF FEEDER ROADS

ARTICLES OF AGREEMENT FOR A ROUTINE MAINTENANCE CONTRACT

Articles of agreement made this _____ day of _____ one thousand nine hundred and _____ between the Government of Ghana (hereinafter called "the Employer") acting through the Department of Feeder Roads as represented by their agent the Regional Engineer of _____ Region (hereinafter called "the Engineer") on the one hand and _____ (hereinafter called "the Contractor") on the other hand.

Whereas it is the intention of the Employer to engage the Contractor to execute road maintenance works hereinafter more specifically described and the Contractor having been classified by the Ministry of Roads and Highways into any of the following categories

- a) A4
- b) B4
- c) C - Labour-based works

and having agreed to execute the works above mentioned NOW IT IS HEREBY MUTUALLY AGREED between the parties that.

- 2 (a) The Contractor shall execute the works as listed in the attached Bill of Quantities and any other work which may be assigned to him/her from time to time
- 2 (b) The above works shall be performed on the following roads

INSTRUCTIONS

- 3 The Engineer shall appoint Supervisors who shall from time to time on behalf of the Engineer assign work to the Contractor in accordance with the Bill of Quantities in Appendix A. The Contractor shall on his/her appointment, be notified of the name of the Supervisors. Whenever the Supervisors are changed the Contractor shall be notified in writing accordingly.
- 4 The Contractor shall comply with the instructions and directions of the Supervisors acting on behalf of the Engineer
- 5 The Engineer may make any variation of the form, type, quality or quantity of the works in the contract for any reason. He shall have the power to order the Contractor to do and the Contractor shall do any of the following
- increase or decrease the quantity of any work included in the contract
 - omit any such work,
 - change the quality or kind of any such work,
 - execute additional work of any kind necessary
- and no such variation shall in any way invalidate the contract. All extra or additional work done or work omitted by order of the Engineer shall be valued at the rates and prices set out in the contract.
- 6 The Contractor shall bear all costs and charges for special or temporary way leaves required by him in connection with access to the site and borrow pits and any royalty or other payments due to land owners in connection with removal of material from borrow pits or the disposal of waste material
- 7 As much as possible work instructions describing activities to be carried out, and their locations, shall be given well in advance
- 8 For the pilot project, the Contractor shall note that his work site is experimental therefore some temporary disruptions to the work (eg. for interviews, recordings, demonstrations, training and close monitoring) shall be anticipated and built into the cost of the works. The Engineer shall, however, ensure minimum interference with the Contractor's work programme

PAYMENT

- 9 In consideration of the works to be performed by the Contractor the Employer shall pay to the Contractor the value of the measured work done by the Contractor in accordance with Bill of Quantities and the Activity Specifications included in Appendix D up to the total sum of

(Cedis

- 10 Work executed to the satisfaction of the Engineer will be paid for in accordance with the method of measurement of work and the basis of payment as laid down in the Activity Specifications and such payments that are due to the Contractor for work done will be made at the Office of the Engineer
- 11 All fluctuation reimbursements will be by means of the Price Adjustment Formula of the Ministry of Roads and Highways as included in Appendix C
- 12 The details of the work to be done on any occasion on each road are indicated in Appendix E. The quantities in the Bill of Quantities and Appendix E are approximate only and in no case shall such quantities be considered to limit or extend the amount of work to be done and material to be supplied by the Contractor
- 13 The Contractor will submit monthly invoices for all works executed and the Supervisors will verify the measurements and inspect that the works are carried out to the Activity Specifications and to a satisfactory standard. Where the Supervisors consider that works have not been carried out to the Activity Specifications and to a satisfactory standard payment for work done will be withheld until the work has been corrected.
- 14 The duration of the contract will be no longer than 12 months
- 15 Within one month of the completion of the contract the Contractor may submit a Final Account showing the total work done in accordance of the contract together with all further sums which the Contractor considers to be due to him under the contract. Whether the Contractor submits a Final Account or not the Engineer will prepare an Engineer's Final Account showing the total and final amounts the Contractor is entitled to under the contract. The Contractor and the Engineer shall sign the Engineer's Final Account as an acknowledgment of the full and final value of the work performed under the contract.

DAYWORK

- 16 The Engineer may, if, in his opinion, it is necessary or desirable order in writing that any additional or substituted work shall be executed on a daywork basis. The instruction in writing to the Contractor will state the expected extent of labour and materials to be paid for on a daywork basis for each particular work activity to be executed in this way
- 17 The Contractor shall be paid for such work under the conditions set out in the Daywork Schedule in Appendix B and at the rates and prices affixed thereto by him in his tender. At the end of each month the Contractor shall provide the Engineer's Supervisor with a fully priced statement of any work undertaken on a daywork basis including receipts of all materials purchased and used in executing the work. Materials used to execute dayworks will be specified by the Engineer and will be paid for on the basis of actual cost supported by invoices for that material plus twenty percent of the invoiced price to cover the Contractor's direct costs and profit

ENGAGEMENT OF LABOUR

- 18 The Contractor shall make his/her own arrangements for the engagement of all labour and for the transport, housing, feeding and payment thereof. The use of local labour to the extent possible is required.
- 19 The Contractor shall pay his/her employees promptly and regularly at monthly intervals and all employees shall be paid in full and up to date before the final contract payment is made to the Contractor.

TERMINATION

- 20 In the event of any serious misconduct by the Contractor such as persistently working behind schedule persistently failing to execute work to the Activity Specifications and to a satisfactory standard, indulging in any act of dishonesty or any serious breach or non observance of any conditions of this agreement or failure or refusal to carry out the duties assigned to him/her by the Supervisors, the Employer shall be entitled summarily to terminate his/her engagement without notice and without payment in lieu of notice. However the Contractor shall be entitled to claim payment for work already satisfactorily carried out in the estimation of the Supervisors.

LIQUIDATED AND ASCERTAINED DAMAGES

- 21 In the event of such default/misconduct as described in clause 20, or in the event of not completing the work as instructed/described within the contract period, the Engineer shall be entitled to deduct \$_____ for each week the work remains uncompleted or unsatisfactorily done. The aforementioned amount will be deducted from any outstanding invoice and the balance paid/or refunded by the contractor as the case may be.

DISPUTES

- 22 All disputes or differences whatsoever which may at any time arise during the continuance of this contract or upon or after its discharge or termination between the parties hereto touching or concerning this contract or its execution or effect on the rights, duties or liabilities of the parties hereto or in connection with or arising out of this contract or the carrying out of the works including any decision, opinion, instruction or direction of the Employer/Engineer/Supervisor shall be referred first to a person to be agreed between the parties for an amicable settlement or failing such an agreement the parties shall refer such dispute to a single arbitrator to be nominated by the Ghana Institution of Engineers in accordance with and subject to the provisions of the Arbitration Act 38 of 1961 or any statutory modification or re-enactment thereof for the time being in force.

INDEMNITY

- 23 The Contractor shall at all times indemnify the Employer against all liabilities to other persons for bodily injury damages to property or their loss which may arise out of or in consequence of the execution of the works and against all costs charges and expenses that may be occasioned to the Contractor by the claims of such persons. The Contractor shall be responsible for taking all necessary precautions regarding the safety of persons and vehicles using the project road(s) and employees of the Contractor working on the road during the execution of the works as stipulated in the General Specifications in Appendix F and Activity Specifications and/or directed by the Engineer.

COMMENCEMENT DATE

- 24 This contract shall come into force on the receipt of a letter from the Employer in which the commencement date shall be stated and the contract shall be valid for a period of twelve (12) calendar months from the date stated therein unless the contract is terminated in accordance with the terms of this contract.

APPLICABLE LAW

- 25 The applicable law shall be the law in force in the Republic of Ghana.

IN WITNESS WHEREOF THE PARTIES HERETO APPEND THEIR HANDS THE DAY AND THE YEAR FIRST ABOVE WRITTEN

For and on behalf of the Government of Ghana

Contractor

Name of signatory

Name of signatory

Designation

Designation

Witness

Witness

Name
Address
Designation

Name
Address
Designation

Full name of firm

BILL OF QUANTITIES

APPENDIX TO ARTICLES OF AGREEMENT

Date of Commencement

Time for Completion

Date for Completion

Minimum Amount of Interim Certificate

Time within which Payment is to be made after Certificate

Date from which Fluctuations shall be calculated

PRICE ADJUSTMENT FORMULAE

1 Formulae

The amount to be added to or deducted from the Monthly Payment Certificates in respect of changes in cost and legislation shall be determined from formulae for each of the main types of maintenance work to be performed. The formulae will be of the following general type

$$P_n = x + a \frac{LL}{LLO} + b \frac{FE \times EP}{FE \times EP_0} + c \frac{F}{F_0} + d \frac{B}{B_0} + e \frac{CH}{CH_0} + f \frac{RE}{RE_0} + g \frac{CE}{CE_0} + h \frac{CO}{CO_0}$$

Where

P_n is the adjustment factor to be applied to the estimated value of the work carried out in month "n",

"x" is a fixed coefficient, specified in Table 1 overleaf representing the nonadjustable portion in contractual payments

'a' 'b' 'c' etc are coefficients representing the estimated proportion of each cost element (labour equipment provision and maintenance fuel and lubricants bitumen, clippings and aggregates reinforcing steel cement and miscellaneous costs) in the Works or sections thereof as specified in Table 1 overleaf

"LL", "FE", "EP", "F", "B", "CH", "RE", "CE", and "CO" are the current cost indices corresponding to reference prices for month "n", determined according to Clause 3 below applicable respectively to the elements of Local Labour, Foreign Exchange, Equipment Provision and Maintenance, Fuel Bitumen, Chippings and Aggregates Reinforcing Steel Cement and Miscellaneous Cost at the specified time prior to the date of the payment under certification for adjustment and

LL₀, FE₀, EP₀, F₀ etc are the base cost indices corresponding to reference prices applicable to the above cost elements at the date specified in Clause 3 below

2 Sources of Indices

The sources of indices shall be those listed in Table 2 overleaf

3 Base, Current and Provisional Indices

The base cost indices corresponding to base date prices shall be those prevailing on the day 28 days prior to the closing date for submission of bids or in case of negotiated contracts the date of signing of agreement Current indices corresponding to current prices shall be those prevailing on the day 28 days prior to the last day of the period to which a particular Monthly Payment Certificate is related If at any time the current indices are not available provisional indices as determined by the Engineer will be used subject to subsequent correction of the amounts paid to the Contractor when the current indices become available

4 Weightings

The weightings for each of the factors of cost given in Table 1 overleaf shall be adjusted if in the opinion of the Engineer they have been rendered unreasonable unbalanced or inapplicable as a result of varied or additional work already executed or ordered under Clause 5 and 15 of the Contract or for any other reason

DAYWORK SCHEDULE

- 1 No work shall be executed on a daywork basis except by the written order of the Engineer Before starting work the Engineer will estimate and agree with the Contractor the extent of the work involved and the man days equipment hours and materials needed to complete the work. This agreed estimate will not be exceeded without the further written instruction of the Engineer
- 2 Tenderers shall enter the basic rates for daywork items in the Schedule and these rates will apply to any quantity of daywork ordered by the Engineer Payments for daywork shall be made on the rates indicated in the Schedule and these rates shall be fixed for the duration of the contract which will be not more than twelve months
- 3 The rates for equipment will be entered on a hourly basis as on site and including all other costs
- 4 The rates for labour and equipment shall cover all direct costs to the Contractor including profit
- 5 Payment for materials used to execute dayworks will be paid for according to Clause 16

DAYWORK RATES

Item	Rate
Labourer	cedis per day
Artisan	cedis per day
Driver/operator	cedis per day
Tractor	cedis per hour
Trailer	cedis per hour
Tipper truck	cedis per hour
Towed grader	cedis per hour
Motor grader	cedis per hour
Pedestrian roller	cedis per hour
Water bowser	cedis per hour
Drag	cedis per hour
Motor cycle	cedis per hour
Cement	per bag
Sand	per m ³
Aggregate	per m ³
Formwork	per m ² (Wawa)

PERCENTAGE ADJUSTMENT

Labour	30% on above
Plant	15% on above
Materials	20% on above

Index for	Cost	Published Source of Index	Base Value on
	Element		
Local Labour	LL	Trades Union Congress (CBWU) / MRH	
Foreign Exchange	FE	Bank of Ghana / MRH	
Equipment & Parts	EP	MRH	
Fuel	F	Ministry of Energy & Mines / MRI	
Bitumen	B	Shell Ghana Ltd / MRH	
Chippings	CH	MRH	
Reinforcing Steel	RE	MRH	
Cement	CE	MRH	
Miscellaneous Cost	CO	Statistical Service (Consumer Price Index)	

Table 2 Sources of Indices

ACTIVITY GROUP	ACTIVITY NO	WEIGHTING FACTORS									
		x	a	b	c	d	e	f	g	h	TOTAL
Labour only	13 21 23 25 27 31	0.1	0.77	0.08	0.05						1
Tractor towed	14 15 19 & 52	0.1	0.14	0.33	0.43						1
Tractor/ Trailer Crew	12 18 42 51 & 51	0.1	0.36	0.26	0.28						1
Motor Grading	16 17 22 24 & 63	0.1	0.04	0.53	0.33						1
concrete Works	43 & 45	0.1	0.13	0.09	0.05				0.32	0.21	1
Concrete pipe works	44 & 64	0.1	0.08	0.05	0.03				0.07	0.21	0.46
Bitumen Paving	11	0.1	0.12	0.14	0.11	0.37	0.16				1

Table 1 Factors for Price Adjustment Formula

ACTIVITY SPECIFICATIONS



APPENDIX E

- 1 Approximate Quantities for each road
- 2 Strip maps
- 3 Road Map (1 50,000)