

Examples of competition for road maintenance services

The World Bank Study

(Source: Miquel, S and J Condron, 1991. Assessment of road maintenance by contract. *Infrastructure and Urban Development Department Report INU 91*. Washington DC: The World Bank.)

Introduction

This study undertook a survey of road maintenance by contract in a number of countries, and built upon the earlier work at the World Bank (Harral, C. G. and others, 1986. An appraisal of highway maintenance by contract in developing countries. *Transportation Issues Series Report No TRP 1.*). The survey included:

- Countries where contract maintenance had been a well-established practice for several years - Belgium, Brazil, France, Kenya, Malaysia and the United Kingdom.
- Countries where the transition to contract maintenance was relatively recent - Algeria, Canada (British Columbia), Chile and Pakistan.

A summary of the study findings follows.

Contract types

'Unit price' contracting is by far the most widely used method for obtaining road maintenance services. Most countries develop contracts with a clearly defined estimate of quantities, but allow some flexibility for payment of work quantities significantly beyond those originally estimated. Moreover, all countries surveyed have procedures to provide for inclusion of additional work items that are not initially included in the contracts.

Variations of conventional 'unit price' contracts were used in some instances. For example, Belgium and France prepare extensive lists of work items to which the agency assigns unit costs in close co-operation with local contractors' federations. For a given project, the contract documents identify estimated quantities for a reduce number of these items. The established costs for these items are used to arrive at an overall contract cost, or at cost for generic groups of related work items. Bidders offer percentages above or below the established costs for the total contract cost in France, and for each generic group in Belgium. Selection of the successful bidder is based on overall lowest price. Payment is based on actual quantities, and established prices are adjusted by the contractor's percentage increase or decrease. During execution of the contract, established quantities for specific work items may vary, or new work items not quantified previously may be added, at the pre-established unit price. This is also altered by the increase or decrease offered by the winning bidder.

British Columbia makes exclusive use of lump sum contracts for road maintenance in specific areas, defining clearly the work to be performed and maintenance standards to be achieved. However, these contracts provide some flexibility in the quantities to be executed for certain work items that may exceed the quantities forecasted when the lump sum contracts were estimated, particularly work items needed for emergency works. For this purpose, the lump sum contract shows quantities of those items for which unit prices are established during negotiations. Adjustments are made to the lump sum payments, based on actual work performed on these items as compared to the estimated quantities. These unit price items contribute about 10 per cent of the typical contract. Lump sum contracts are seldom used for road maintenance in other countries.

The countries surveyed that initially used 'cost plus' contracts for maintenance works (for instance, Brazil) have ceased to use them because they do not enhance productivity.

In the execution of routine maintenance and minor emergency works, Kenya has contracted lengthmen, usually former construction workers, who use simple hand tools to maintain 1.5 to 2.0 kilometres of road close to

their homes, working three days per week on days of their choice.

Contract provisions

Algeria, Belgium, Brazil's DNER, British Columbia, Chile, Kenya, Malaysia and Pakistan use standard contract documents which may be different for major and minor maintenance works. In France and the United Kingdom, each sub-division or local road administration uses its own contract documents. Sometimes, several different formats are used for different types of work and, in general, these standards vary with each local road administration.

Routine and periodic maintenance operations are sometimes contracted separately. This practice is used mostly in Chile, Kenya and Pakistan, and is applied frequently in other countries to more complex periodic activities, such as pavement or bridge repair work. In Algeria and Brazil, maintenance contracts for specific road sections (on average 244km length in Brazil) combine execution of routine and minor periodic maintenance.

Some countries, including the United Kingdom and Malaysia, combine both periodic and routine maintenance activities in contracts that provide maintenance for all roads within geographic areas. British Columbia uses this method exclusively: contractors additionally are responsible for managing the maintenance and operations programmes, including performing routine patrols and detailed inspections to identify needs, setting priorities, scheduling the work, and public relations.

All countries surveyed have prepared technical specifications for maintenance works. Overall, specifications are comparable to those used for construction works. In all cases, they are more demanding than requirements set for execution of maintenance by in-house units.

Most countries, except Algeria, require performance guarantees based on a certain percentage of the contract value for routine and periodic maintenance:

- One per cent in Brazil
- Five per cent in Belgium, Chile and Malaysia
- About 10 per cent in British Columbia
- Up to 12.5 per cent in the United Kingdom
- 20 per cent in Pakistan

In France, it varies from department to department. Pakistan and Chile deduct retention of 10 per cent of each payment until the amount retained reaches five per cent of the contract value. In the United Kingdom, the retention is five per cent until three per cent of the contract value has been reached. In France, it varies from department to department. No retention is deducted in Algeria, Belgium, British Columbia, Brazil, Kenya or Malaysia.

Mobilisation advances of up to 20 per cent of the contract value are usually authorised in most of the countries surveyed. Warranty periods for maintenance works vary from four months to a year. Chile, Kenya, Malaysia and Pakistan do not require a warranty period.

Scope of works

All contracting groups interviewed expressed the need to expand the scope and duration of maintenance contracts to allow for capitalisation and for the acquisition of specialist equipment.

Smaller contractors have generally shown considerable interest in contract maintenance works and, in particular, for routine maintenance. In many countries, and in particular those that are more developed, maintenance work requires a substantial amount of investment in equipment and materials.

British Columbia, the United Kingdom and Malaysia have experience of including all maintenance activities on specific routes, or within entire geographic areas, in comprehensive maintenance contracts. The contracts

used initially by British Columbia had a duration of three years, whilst those in the United Kingdom had a duration of 18 months. British Columbia now uses five-year contracts, whilst the United Kingdom is using three-year contracts. Malaysia uses contracts of two-year duration. Contractors in these countries indicated that they consider five years is appropriate to provide them with sufficient incentive to invest in costly, specialised equipment.

Tendering of contracts

Competitive bidding among pre-qualified contractors is generally used to tender road maintenance contracts. Most of the countries surveyed pre-qualified contractors on either a regional or national basis. Pre-qualification is based typically on financial capabilities and technical skills, as demonstrated on previous contracts. In France and the United Kingdom, the pre-qualification procedures vary among the sub-divisions and local authorities. The 'lane rental' contract used in Europe has proved to be highly effective in motivating contractors to increase their rate of output, when used in appropriate situations.

The number of bids typically received in response to maintenance tenders varies among the countries surveyed. Competition sometimes varies dramatically within a country depending on location and type of work. Participation is lacking in some isolated areas, such as the desert area of Algeria, the northern and western regions of Brazil, the extreme south region of Chile, the two states on the island of Borneo in Malaysia, and Baluchistan and the Northern Territories of Pakistan. However, in general, contractors have demonstrated a strong interest in road maintenance projects.

Chile and France identified the need to make greater use of performance specifications to encourage the use of innovative techniques, as well as more efficient modern equipment. Officials in several countries also noted that tendering procedures should focus on the quality of the offers based on technical issues rather than lowest cost.

Supervision of works

Supervision is performed exclusively by in-house staff in Algeria, Belgium, British Colombia, France, Kenya and Malaysia.

Supervision and programme administration is performed with strong support from consultants in Brazil, Chile and Pakistan. consultants administer the entire programme for the trunk road system in some administrative areas in the United Kingdom.

In most countries, the contractor assumes the responsibility for works scheduling and execution, while the supervision is confined mainly to controlling the quality and quantity of works performed, and the compliance with specifications and work programme. In Belgium, the functions of supervision include daily scheduling of the works to be performed by the contractor, and general directing of the operations. In Pakistan, the field offices retain close control over the works to be performed, identifying priorities and developing monthly work schedules.

United Kingdom

Maintenance works by contract

(Based on: Audit Commission, 1988. Improving highways maintenance: a management handbook. London: H M Stationery Office.)

Routine maintenance

{PRIVATE } *Paying the right price*

"The comparison of unit costs reveals that in the United Kingdom and Wales £90m (\$140m) could be saved on routine maintenance and diverted to (periodic maintenance). To achieve this, authorities need both to improve the efficiency of in-house works and to make more use of competitive tendering, to ensure that in-

house works are efficient and that private contractors are not charging excessive prices. Putting work out to tender will reduce unit costs irrespective of who wins the work. This is due both to the scrutiny a function needs to receive before it is put out to tender and to the stimulus of the competition. For example, counties which had put gully emptying out to tender achieved an average of 128 gully empties per day compared with 98 for those which had not. One county council achieved a substantial increase in gullies emptied per day after putting work out to tender, primarily from an extension of the working day. In order to be truly competitive, an authority should aim at target costs at the best decile, as it is at this level that the private sector is likely to tender.”

Competition

“In-house units are quite capable of successfully competing for work against the private sector, except in certain specialised work such as road markings. An efficient in-house unit will force contractors to cut their margins and, for many jobs, will be able to under-cut the contractors. However, some authorities have a policy of awarding their in-house units as much work as possible without competition. This has been particularly easy to do for routine maintenance as many of the activities, such as sweeping and gully emptying, are not covered by the *Local Government, Planning and Land Act 1980* (which sets requirements for work put out to competitive tender), while others, such as road markings, often involve small jobs below the threshold at which work must be awarded competitively. The desire to protect in-house units has also led some authorities to use such devices as unrealistically short contract periods or unusual or unrealistic work mixes when seeking tenders.

Failure to expose in-house units to competition means that routine maintenance work is less efficient than it might be. This is particularly true of mechanical street sweeping and gully emptying where bonus schemes have not been updated to take account of improved equipment. Most mechanical sweepers are capable of sweeping at 6-8km/h, whereas many bonus schemes are still based on historic speeds of 4km/h. As a result, employees can earn a full bonus for only part of a day’s work, with predictable results.”

Case Study 1: Out-dated bonus schemes

Road administration	A metropolitan district council
Subject	Mechanical street sweeping
Problem:	The unit cost for mechanical sweeping was £6.06 per swept channel-kilometre compared with the <i>Code of Good Practice</i> ¹ benchmark cost of £3.50, which was being achieved by a neighbouring authority. Although the bonus scheme had recently been reviewed, no change had been made to the standard minute value for sweeping one kilometre of carriageway. This had been set much earlier and represented a sweeping speed of only 1.7km/h.
Action:	Bonus scheme values are being reviewed and brought into line with the capability of the present sweeping equipment.
Outcome:	Potential annual cost reductions of £97 000 (approx. \$150 000) for the same level of service. The review has also focused the in-house unit’s attention on the need to make itself competitive if it is to be successful in winning work in open competition.

“Traffic signal maintenance and street lighting particularly benefit from competition. Much traffic signal maintenance involves complicated electronic and electrical equipment, and is normally carried out by specialist contractors. This is often the supplier of the original installation. Contractors usually offer a lower price per installation the greater the number being maintained. Open tendering has produced major savings: one county’s costs fell by over £200 000 (approx. \$300 000) a year.

Electricity boards maintain street lights for some authorities. Prices are usually low when they have won the work by tender, but are often high when it has been awarded without competition. Boards which have been required to compete have reduced their prices by as much as 30-50 per cent or lost the contract. One county council has identified savings of £1m (approx. \$1.5m) a year in street light maintenance caused by inefficient

in-house practices.”

Periodic maintenance

Contracts

“Unless contracts, specifications, bills of quantities and schedules of rates are tightly drawn up and technically competent, they will be exploited by both private sector contractors and in-house units, with a high incidence of variations and claims, cost over-runs and high unit costs. Contact and on-site supervision levels are often lax on in-house contracts. Reviews of contract out-turn costs compared with tenders showed that the out-turn cost of in-house contracts ran consistently at higher levels than those of private contractors.”

Competition

“Highway maintenance is subject to the requirements of the *Local Government, Planning and Land Act 1980*. Among other things, this specifies that all jobs of work the value of which is above a specified threshold (currently £25 000 - approx. \$40 000) should be put out to competitive tender, as well as a certain proportion of other jobs (currently 60 per cent).

There are a number of ways in which the parent authority could exercise bias in favour of its in-house units:

For example, one county asked its in-house unit and contractors to price a schedule of rates (*i.e.* predetermine the price of a range of commonly occurring jobs). In practice, almost all of the work was awarded to the in-house unit and the schedules were only compared at the end of the year. If the in-house unit's schedule item was less than the lowest contractor's, then the unit was declared to have won the work in competition (this is contrary to the requirements of the Act, since the in-house unit was never at risk of losing the work). If the in-house price was higher, the work was treated as part of the work which could be awarded to the in-house unit as of right.

Some authorities seek labour only tenders for surface dressing, and purchase the materials (oil-based binders and chippings) themselves. This may wittingly or unwittingly give advantage to the in-house unit in tendering for the work, since most of the major contractors in the field are subsidiaries of the companies which supply the oil-based materials, and are not necessarily interested in labour-only contracts.

Authorities should ensure that their tender procedures do not favour their in-house unit. An efficient in-house unit, tendering for most of its work, can be a most effective way of ensuring genuine competition among private contractors. In-house units can be as competitive as private contractors. Equally significantly, the tender prices submitted by contractors to those authorities with efficient in-house units were often among the lowest. The contractors' tendering strategy to authorities with inefficient in-house units seems to vary from submitting low tenders in an attempt to embarrass the authority into awarding them the work, or high tenders on the principle of charging what the market will bear.”

Client and contractor roles

“The primary role of the road authority is the client side task, *i.e.* deciding what work needs to be done, specifying it, arranging for the work to be undertaken and then to supervise it. The authority may also undertake work itself via its in-house unit if that is the most economical way of getting it done, but the contractor role should not become blurred with the client role. Where the divisional engineer has both client and contractor roles, this can place him in an awkward position in supervising the in-house works unit and in situations where the choice has to be made between the in-house unit and a contractor. Most of the examples of prejudice in favour of the in-house unit occurred in authorities where the client/works unit split was not a clean one. Engineers should have clear client or contractor roles with no overlap of responsibility. It should be possible to achieve this in all but small authorities.

A clean split between the in-house works unit and client removes one of the barriers to more flexible budget allocation, since the demands of the works unit no longer dominate the decisions. This does not mean, however, that the in-house unit can be treated in exactly the same way as any private contractor, because it is

unable to seek work outside the public sector and authorities need to retain the capacity to carry out emergency work.”

Road maintenance agency arrangements

Control	County council, as highway authority, is in control and makes final decisions
Policies	County council develops policies, priorities and standards after consultation with agent and non-agent districts
Budget setting	<ul style="list-style-type: none"> • Budgets allocated with the help of objective assessments of need • County-side inventories established to help with budgeting of cyclic maintenance • Regular condition surveys carried out to help with budgeting for periodic works
Service provision	County and agent engineers provide services in line with county council policies
Operational discretion	<ul style="list-style-type: none"> • County council defines virement rules <i>etc.</i> Agents and county engineers with similar responsibilities enjoy similar freedom of action • County council does not penalise success; agents and areas/divisions providing the specified service, within budget, allowed discretion on how to use the remaining funds. Agent’s members do not become involved in current year service provision, except where county has granted discretion
Performance monitoring	<ul style="list-style-type: none"> • County council defines, in advance, the performance it expects from agents and from its own areas/divisions, applying similar criteria to both • County HQ collects and analyses management, financial and performance data from agents and from areas/divisions • County council carries out sample-based financial and technical audits of agents; it does <i>not</i> attempt 100% supervision
Administration fees	<ul style="list-style-type: none"> • County council funds inventory and condition systems (possibly financing initial data collection for inventories as a ‘one-off’) • Agency administration fees cover the costs of providing management, financial and performance data (<i>e.g.</i> a 10% fee, or separate data collection flat fee plus a, lower, works supervision percentage) • Fees cover reasonable local accommodation costs (<i>e.g.</i> by comparison with costs of education or social services offices in the agency area)
Liaison	County and district officers consult on technical matters of mutual concern: efficiency, effectiveness, working methods

Contracts for in-house works units

(Based on:

Madelin, K B, 1993. The case for in-house staff. *Proceedings of the Institution of Civil Engineers: Municipal Engineering*. **98** (June), 85-88.

Madelin, K, 1994. Highway maintenance management in Shropshire. *Proceedings of the Institution of Civil Engineers: Transportation*. **105** (May), 97-103.)

It has been noted that, where in-house works operations are efficient, there is little evidence of savings by using private contractors. Improvement of the efficiency of existing organisations should, therefore, be an approach that should be considered. Savings can be made by separating the client and supplier roles to give a clarity of purpose and a focus for management, and that further savings can be made by revitalising the labour force. Reasons for keeping an in-house works unit include:

- The ability to respond when needed for operational and emergency tasks
- The possession of local knowledge, pride of ownership and responsibility
- Flexibility

- Providing competition for private contractors

In order to give in-house units the chance to improve, there is a need to:

- Separate the client and supplier roles
- Let managers manage
- Apply specifications and use contract procedures
- Publish profit and loss accounts
- Undertake independent audit of procedures and accounts

There is considerable experience in the United Kingdom of using public sector works units in a manner more akin to that of a private contractor. The early UK experience in improving the efficiency of direct labour/force account road maintenance organisations has been described in a World Bank report². This examined the effect of the *Direct Labour Organisation (DLO) Legislation* of 1981. This required all local authority works organisations to operate on a commercial basis as contractors to their client authorities. The experience of the DLO legislation suggested that the introduction of a competitive element into operations had resulted in:

- Improvements in the cost-effectiveness of bonus incentive schemes
- Improved attitudes of employees
- Gains in operational efficiency
- Considerable savings in cost
- No reduction in quality

A more recent example has been quoted for the commercialisation of activities in Shropshire County, where a 15-20 per cent improvement in productivity was obtained in the use of the in-house works unit, and the following cost savings were achieved:

Tenders won by direct labour/force account	£4 216 000
Cost of next lowest contractor	<u>£4 829 999</u>
Saving	£604 000
In-house unit's profit	£100 000
Estimated effect of competition on private sector prices	<u>£300 000</u>
Total saving	£1 000 000
Saving represents 10 per cent of the maintenance budget	

Note:

Revitalised in-house works unit was achieved by:

- Separation of client and supplier functions
- Unit operating like a private contractor, but only allowed to operate in Shropshire County Council

However, this example noted that there is a need to ensure that competition between public and private sectors is fair. There is also a need to achieve a balance between competition and stability.

References:

1. Local Authority Associations, 1989. Highway maintenance: a code of good practice. London: Association of County Councils.
2. Cox, B E, 1987. Evaluation of incentives for efficiency in road maintenance organisation: the UK experience. *Transportation Issues Series Report TRP 2*. Washington DC: The World Bank.