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Maintenance by Contract

Experience gained during four years of progressive privatization of Road Maintenance Activities.

Background:

The Privatization of the Department of Public Works and Highways (DPWH) maintenance operation was initiated in 1987 under the ADB-Technical Assistance (TA) grant to the Philippine government. Under the TA, two pilot areas were identified, the Province of Batangas, located about 100 km. south of Manila, and the island Province of Bohol, located off the coast of Cebu.

The objective of the Pilot Project was to establish Contract Maintenance in the Pilot areas and to compare (efficiency, costs) to the traditional mode of Maintenance by Force Account, by the Department's own resources.

In the two pilot provinces, 50% of the road network was selected for maintenance by contract; those selected representing an equal share of road conditions ranging from very good to poor.

Suitable work items for unit rate contracts were identified, specification, work programs and estimates were prepared and by mid 1988 the first projects were bid.

In 1989 the implementation of Contract Maintenance continued in the Pilot Provinces, and by mid 1989, following satisfactory results, the Department formulated a Nationwide implementation plan.

The plan aimed for gradual implementation of Maintenance by Contract over a five years period, as follows:

Year	1990	1991	1992	1993	1994
By Contract	40%	51%	61%	72%	84%
1. Routine Maintenance	9%	19%	28%	38%	48%
2. Periodic Maintenance	31%	32%	33%	34%	36%
By Force Account	60%	49%	39%	28%	16%

(Percent of the maintenance allocation)

However, experience gained during the Pilot project showed that Maintenance contracts consisting of only Routine Maintenance are less

attractive to the contracting Industry, as well as the fact that maintenance is traditionally implemented in the proportions 60% Routine and 40% Periodic lead to typical packaging of combined Routine and Periodic Maintenance activities, covering a length of about 20-50 km.

Reviewing the 1990, 1991 and 1992 implementation, and as a result of 1990 Central Luzon earthquake and the 1991 Mt. Pinatubo eruption and reviewing the experience gained in other countries, it was found advisable to scale back the target implementation, in order for the Government to maintain some resources in case of disaster situations.

It was found possible to draw on the private industry in case of natural calamities, however, the action was slower than mobilizing the Government's own resources. Considering the above, the maximum degree of privatization was drawn back to 70%; this enabled the Government to maintain some basic work crews and equipment, to continue maintenance by forced account, and to be drawn upon for the initial response to Natural calamities. The revised and final implementation plans are as follows:

Year	1990	1991	1992	1993	1994
By Contract	40%	51%	61%	65%	70%
By Force Account	60%	49%	39%	35%	30%

(Percent of maintenance allocation)

1990-1994 Implementation

Several questions were asked prior to the start of the Nationwide implementation in 1989-1990;

- How to achieve reduction of the workforce,
- Was the contracting industry ready,
- Was DPWH able to handle the contracting of the maintenance activities

Work Force

In terms of DPWH workforce, a nationwide survey was conducted in 1989 confirming the findings made on a smaller scale during the Pilot study. The 1989 workforce consisted of 12,300 laborers, operators and drivers, while according to the program only 8,500 were required. Of the 12,300, 2/3 was daily (casual) workforce, while 1/3 was permanent employees of the Government. However, further surveyed was the age distribution, of the permanent employees, 80% was at the age of 45 years or more, of which there was annual rate of retirement of about 3%, while the "Daily" workforce, majority of the workforce were between 30-40 years of age.

Late 1989, the projection of the needed workforce was prepared, projection for the standard composition of maintenance activities, as follows:

Year	1990	1991	1992	1993	1994
Needed Workforce	8,500	7,500	5,500	5,200	4,900

To reduce the workforce, the Government introduced the "no new hiring" policy where vacant permanent positions would not be filled, and further to address the overstaffing, directives were issued, requesting the implementing offices to adhere strictly to the number of workforce, as per their force account maintenance program, laying-off a considerable number of Daily workforce.

To absorb the staff laid-off, the Contracting Industry was encourage to hire them, during prebid and preconstruction conferences.

The social aspect of the very drastic reduction, especially during 1989, maybe limited, as those laid-off belonged to the younger (and more industrious) age groups of the Daily workforce and a considerable number was actually absorbed by the Contracting industry.

The long term goal was to reduce the workforce to about 5,000; said target has been met, as the actual workforce has been reduced as follows:

Year	1989	1990	1991	1992	1993	1994
Planned	8,500	7,500	6,400	5,500	5,200	4,900
Actual	12,300	7,600	5,900	4,700	5,000	-

The Contracting Industry

The maintenance projects, being fairly small projects with a size of Pesos 1,000,000 - 1,500,000 (US\$ 40,000 - 55,000) are meant to be for locally based medium to small size Contractors, for various reasons;

- The Contractors are based near the worksite, thus mobilization time and cost are minimal
- The Contractors are well known by the implementors (District and City Engineers), ensuring that only capable qualified Contractors are pre qualified.
- That the local Contractors' effort can be seen for the good of the community.

During the initial years (1990-1991), meetings were held with the Construction Industry to draw attention toward the maintenance projects and

to inform on the nature of the projects; especially highlighting the fact that the Contractor's work is a continuously effort over the contract period (normally one year), than the usual perception that projects should be completed as soon as possible; this applies only to construction projects, but not for maintenance projects, where the Contractor has to "wait" for the needed work. Further, for the Contractors to work under 3-monthly schedule, provided by the Department, instead of the Contractors own work program, took some time and effort to understand.

In the early stages, only few Contractors were interested in the Maintenance projects and few had sufficient experience and equipment, however, the Contracting Industry "grow" with the maintenance projects; they invested in new equipment, some specialized in maintenance only and during the later years, a true competitive environment has evolved.

The handling of Maintenance Projects

For the Department, maintenance contracting was new also, usually for construction projects the Contractors are given relatively free "hands" to implement their projects, while for the maintenance projects, a considerable interaction is required, further the supervision needs to be tighter, say when a pothole has been patched, quantities can not be assessed any longer, it has to be done during the process of the work.

A considerable information and training effort was undertaken prior to the start of the Nationwide implementation. A manual was prepared covering all step from project identification to the implementation.

Primarily, In order that the "idea" be "sold" to the managerial level of the Department, Conferences were held for Regional Directors, District and City Engineers. Simultaneously, training courses were held for the "Implementors" mainly Maintenance and Area Engineers and their assistants, where every step of the process, covering the planning, preparation, bid and award and the implementation were covered through lessons and workshop exercises. The first year was mainly presentation, while in the succeeding years, the meetings were more on dialogues, where experience gained was discussed, and subsequently, became basis for improving the system.

The Department's Engineers have developed with the challenge, and at present, DPWH has a staff of full pledged Contract Maintenance Managers.

By and large, the 1990 to 1994 implementation of Contract Maintenance can be considered to be successful. The implementation has increased basically following the targets established in 1989 and revised 1992 and so far, no major draw-backs have been experienced; in figures the 1990 to 1994 have been as follows:

Year	1990	1991	1992	1993	1994
No. of Projects	247	351	412	626	approx. 700
Amount	16M	310M	518M	605M	1,002M
Total Percentage	16.5%	33.3%	39.4%	49%	56%
Target *	15%	32%	47%	56%	57%

* (combined Periodic and Routine projects)

The approximately 7% lacking in 1992 and 1993 are mainly due to that majority of one Region has been excepted, as the result of the 1991 Mt. Pinatubo eruption, in order to free up resources to deal with mud flows (lahar) during the rainy seasons.

Maintenance by Contract vs. Force Account

Comparing Maintenance by Force Account against Maintenance by Contract, is not only a matter of comparing the cost of accomplishment, but also as much as a matter of balancing advantages and disadvantages of the two systems.

The biggest advantage of Contract Maintenance is the ability to control cost; at the time the project is bid, the "Implementor" know his/her budget in terms of quantities to be completed throughout the year period, and can "budget" and plan the maintenance activities well ahead while by force account, the "Implementor" deals with a number of unknown factor such as, unproductive time, breakdown, adverse climatic condition and logistic problems, all factor which cost time and subsequent funds, for which no accomplishment is achieved.

Comparing Contract Maintenance to Force Account, is much a matter of how efficient the force account organization are/were; a review of the performance was made covering 1990, where 60% of the budget was utilized by force account, showing fairly poor results; comparing the assumed performance (as per the force account maintenance manual) with the actual performance of each work crew, it showed that in 2/3 of the country's 15 regions, the work crews could not meet the performance standards; workforce being paid by the time, cost per accomplishment unit is higher. By Contract operating with unit rate contracts, the cost of accomplishment is fixed after the project has been bid.

The force account guidelines (Philippine Highway Maintenance Management System, PHMMS) are very flexible, especially in terms for materials; it is often seen that sub-standard materials are being used, in the absence of good but more costly materials, producing result of only a very short service life; in contract maintenance, it is a contractual obligation to provide and place materials in accordance with specifications, in consequence ensuring that the level of quality is maintained.

In Contract Maintenance, where execution and supervision are separated, the right working environment is present, to ensure that good quality work is accomplished. Further the bidding process ensures that work is done to the most advantageous price for the Government.

A price comparison was done in 1991, covering the 1990 implementation; however, such comparison is very complex, as funding of the force account is done not only through the regular maintenance funding, but also through subsidy to the equipment operation, hence, charging unrealistic low rental rates on equipment used for force account maintenance. Further taxation of the Contractors are much higher than the force account, where tax is only paid on materials acquired.

However, considering the above, and the previously mentioned fairly poor performance of the force account organization, and using the average rates of a number of Maintenance contracts Nationwide, Contract Maintenance came out to be the least costly to undertake, than maintenance by force account, as follows for the most common maintenance activities:

Activity	Force Account	By Contract
Manual Patching of gravel roads	100	88
Regravelling	100	64
Grading of gravel roads	100	81
Patching Bituminous roads	100	78
Crack Sealing	100	91
Ditch Cleaning	100	32
Culvert Cleaning	100	55
Venation Control	100	51

(express in relative figures)

Overhead cost assumed to be similar for both modes of implementation.

Where to from here.....

So far, it appears that privatization of the maintenance activities have been successful and smooth, and that is basically correct, however, there are still a number of fields which need to be addressed to make a "successful story" even better;

- The workforce for force account

- The Government's holding of equipment
- The Contracting Industry

Workforces

Despite the fairly smooth reduction of workforce, the remaining workforce, mainly Permanent workforce belongs to the higher age groups, from which it can hardly be expected that a "top" performance can be achieved, considering the working environment exposed to the climate undertaking hard physical manual work; an early retirement program should be initiated, in order to replenish with younger workforce to undertake the remaining 30% of the maintenance work by force account and to act on calamities. By offering attractive retirement possibilities, the average age can be lowered for the force account organization and subsequently a more efficient operation can be expected.

Equipment

Introducing the Contract maintenance, it was feared that a considerable number of the Government's equipment would be idle, however, knowing that only about 42% of the equipments were operational in 1989, idle equipment should not cause much concern (at least with respect to maintenance contracting); however, what should be of concern is the equipment organization, holding and maintaining the equipment, said organization needs to be reviewed and scaled down to a suitable size to keep only the operational equipment going, privatization may not be the answer for the equipment operation, but changing the equipment centers into a cost-centers where rental income should carry maintenance costs of the equipment, and giving the equipment users free hands in terms of where to rent as well as relaxing requirement on Government equipment to be rented out to private contractors.

The Construction Industry

Despite of efforts to improve the performance of the Construction Industry through seminars and information meetings, there are still room for more improvements. The maintenance of the road network is not always been executed fast enough, due to poor site management. In visiting the worksites of the contractors, equipment is often seen idle and workforce are not properly instructed, and especially for maintenance, the safety aspects, for both the road user and the Contractor's workforce, is given a very low priority.

Training courses addressing the above is much needed, preferably to be arranged through the Contractor's own organizations, with the assistance of the Department; however, if improvements can not be seen, this subject could as well be made a pre qualification requirement.

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Director OIC, Bureau of Maintenance Victor T. Tisbe, has been a major part of the privatization since the very beginning in 1987, first as Head of the Bureau's Planning Division, later as Assistant Director and now as Director of the Bureau.

Torben Mikkelsen, Consultant of the Kampsax International A/S, was the Consultant who established the Pilot Contract Maintenance Areas, formulated the systems for contracting of the maintenance activities. Later he assisted in formulating the Nationwide implementation plan and took part in the comprehensive series of training programs conducted in 1989 to 1992. During the same period, he assisted the Department in establishing the project monitoring unit and systems for same. Today, he is Coordinating Consultant for the Periodic Maintenance Project under the 5th ADB Road Implementation Project.

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Year	1988	1989	1990	1991
By Contract	10%	15%	21%	27%
By Privatization	0%	10%	25%	35%
By Periodic Maintenance	0%	0%	0%	0%
By Road Auction	0%	0%	0%	0%