# LEGISLATIVE ASSEMBLY OF THE NORTHWEST TERRITORIES

# 7TH COUNCIL, 53RD SESSION

# TABLED DOCUMENT NO. 6-53

# TABLED ON JUNE 17, 1974

T.D. 653
Tabled on June 17, 1974

# REPORT ON
# CONTRACTING OF HIGHWAY MAINTENANCE
# MACKENZIE HIGHWAY SYSTEM

BY D. A. WHIFFIN - 14 JANUARY 1974.

OFFICE OF THE COMMISSIONER
NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.
XOE 1H0

13 June 1974.

MEMBERS OF COUNCIL

Information Item on the Highway Maintenance Program

The Executive Committee has approved implementation of a program for highway maintenance after having reviewed a Report on Contracting of Highway Maintenance for the Mackenzie Highway System submitted by the Director of Public Works.

In summary, approval was given to continue the routine and sectional maintenance using Government forces, but with an adequate mileage of new highways to be maintained by Contractors so as to achieve an adequate comparison of cost and quality. This will result in future extensions of the Mackenzie Highway being split up for maintenance by Government forces and interspersed with several sections of comparable length to be maintained by private Contractors. Eventually three sections will be maintained by private Contractors, each for a three year period but staggered so that only one contract section is re-tendered every year. This will enable current cost comparisons as well as annually indicate trends in contract prices.

.... Approval of special maintenance and equipment repair operations was given to the recommendations in the report, pages 15 to 24, and summarized in the letter of 14 January prefacing the report. The result of this approval will be the removal of uncertainties with respect to future planning of resources to cope with ongoing needs for highway maintenance. For example, a decision can now be made to proceed with a

... 2

repair garage at Hay River and a storage garage at Fort Smith since construction of these buildings is compatible with the approved program and a part of the infrastructure. This is not to say each element of the infrastructure will not be assessed to determine if the resources can be obtained more economically through private entrepreneurs. In the examples cited above this has already been done. In this context, investigations will be made as a matter of course to determine to what extent buildings and facilities should be provided by the Government for the use of Contractors for sections of the Mackenzie Highway extension selected for routine maintenance by contract.

The report from the Director of Public Works is attached herewith for reference.

John H. Parker,
Deputy Commissioner.

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

PLEASE QUOTE
FILE

29 January 1974

ASSISTANT COMMISSIONER (ADMINISTRATION)

Report on Contracting of Highway Maintenance
Mackenzie Highway System

Herewith six copies of the referenced report which has been prepared by Mr. Whiffin of the Highways Division. I have included, in each copy of the report, Mr. Bentley's memo to me of 22nd January 1974, and also a copy of his memorandum to the Deputy Commissioner of the same date, which are relevant.

Mr. Whiffin's summary, which is contained in the report in his memorandum to Mr.Bentley dated 14th January, is reasonably concise and lucid, and I am in agreement with his findings and recommendations.

D. L. Matthews,
Director,
Department of Public Works.

Enclosures

PLEASE QUOTE
FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0,
22 January 1974.

DIRECTOR
DEPARTMENT OF PUBLIC WORKS

Report on Contracting Highway Maintenance

Herewith is a report on Contracting Highway Maintenance for the Mackenzie Highway System prepared by D. A. Whiffin.

After studying this report, I find myself in agreement with the recommendations of Mr. Whiffin. The most significant factor is the comparative cost of the maintenance of the Mackenzie Highway under Linton's contract and that of the Fort Smith Highway under our Government forces. The higher cost of contract maintenance is close to my expectation.

The special maintenance operation defined in the report on page 21 as Grading/Landscaping has been explained in terms of only grading work undertaken in past years and what is proposed in future. The recommendations consequently could be misconstrued as encompassing landscaping work. I do not disagree that regrading operations involving earthwork in easily measurable work units should be contracted, and this is presently the practice in reconstruction where significant volumes of excavation are attractive to contractors. However, landscaping operations mainly include the restoration of roadsides and borrow areas. This repair work has been recommended by the Task Force on Northern Roads which was established in 1971 to assess the nature and causes of shortcomings in relation of northern roads to the natural environment. The nature of restoration work is diverse and extremely difficult to quantify in standard units of work measure and quality of final product. It therefore is best undertaken on an equipment rental basis and at present using Government equipment. In future when the volume of work diminishes to the point where full utilization of Government owned equipment is not realized and it becomes more economical to rent contractor's equipment, then leased equipment rather than Government owned equipment should be used on this operation.

. . . 2

Summing the cost of a contractual operation for both routine maintenance and special maintenance on the basis of comparative costs established in the report, one arrives at the figure of approximately $570,000. per year for routine maintenance (including the section already under contract) and $330,000. per year for special maintenance. This could be expected to escalate by the time a change-over was completed due to additional mileage of highway added and increased volumes of special maintenance work. Consequently, we are looking at alternative costs exceeding one million dollars. It is not expected that contractual costs indicated in the report will tend to fall or level off in future years. This is exemplified by examining the costs per mile for contract maintenance on the Alaska Highway shown in the letter of 18 December 1973 from the Pacific Regional Director of the Federal Department of Public Works. Table 1 in the appendix to his letter shows comparative costs in three different sections. In the first and third sections the escalation rate equates to approximately 6½% per year. In section 2, the picture is somewhat distorted in comparing the pricing from the first contract period 1967-70 to the second period 1970-73. Comparison of the second contract to the third contract ($4080/mile/year versus $5300/mile/year) indicates an annual increase of 9%.

It therefore seems reasonable to use a figure of approximately $1,000,000. as the incremental cost to undertake maintenance on a contractual basis for the entire highway system.

The benefits of utilizing contractors must therefore be weighed against this additional cost. One of the advantages contended for contract highway maintenance is the availability of a contractor for private users. This is not usually the case since specifications must call for the availability at all times with the equipment necessary to undertake emergency repairs. Consequently, the contractor is not at liberty to unconditionally commit his equipment to other users. I do not foresee advantages of changing to contract maintenace to such an extent that the additional costs identifiable from this report would be significantly rationalized.

Benefits of utilizing contractors for maintenance must consequently be weighed against alternative benefits accruing from the use of a similar sum of money.

In my opinion greater advantage could be gained by expanding the highway network or improving the existing roads with a paved surface or dust treatment since the benefits are much more readily recognized and appreciated by the public. Alternatively, looking beyond the highway system there may be other government programs which can compete for the use of these additional dollars and show superior benefits. On the

. . . 3

basis of the findings shown in this report, I do not expect the Territorial Government can successfully argue for a change to total contract maintenance and obtain the additional funds needed from the Department of Indian and Northern Affairs.

J. R. Bentley,
Chief, Highways Division,
Department of Public Works

Enclosure

PLEASE QUOTE

FILE

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N. W. T.,
X0E 1H0,
22 January 1974.

DEPUTY COMMISSIONER

Information for Reply to Councillor Sibbeston Regarding Maintenance of Hay River Highway in 1973

The circumstances on this Highway between Enterprise and Hay River in 1973 were extra-ordinary insofar as the maintenance work carried out.

The roadbed was scheduled for resurfacing with gravel, and in advance of regravelling it was necessary to repair uneveness in the longitudinal gradients and eroded cross sections, particularly on curves. This repair work amounted to a considerably larger operation than was first contemplated. After the road was staked out it was realized more volume of earth fill was needed than was apparent from previous inspection. The consequence was a much prolonged operation and a longer period of inconvenience to the public despite the use of water to alleviate dusty conditions.

In 1974 this section of highway is scheduled to be treated again for dust abatement with calcium chloride, involving an initial application on four miles north of Enterprise and a repeat application on the balance of the highway to Hay River. Present plans call for the calcium chloride to be spread by a contractor in two separate applications, firstly in the latter part of May and secondly in the month of August as a reinforcement of the first application.

. . 2

Contracting of maintenance for this section of highway would require additional funds from Department of Indian and Northern Affairs not provided for in the budget for 1974. It would not be desirable to consider a change to contractual maintenance in a "piecemeal" fashion for relatively short stretches of highway such as this but rather in a timely way with sufficient advance planning. The matter of contract maintenance for the existing highway system has been the subject of a separate report to the Assistant Commissioner. The contracting of regrading work on highway roadbeds would be a desirable consideration when the volume of work is sufficiently attractive and the work can be specified in such a way as to be clearly understood and readily measurable. When road regrading reaches this state (more than 25% of the orignal volume) it is usually defineable as construction and capital funds are consequently budgeted. The volume of regrading work undertaken last season on the stretch of highway between Hay River and Enterprise was approaching this state so that it is understandable it would be viewed as construction and future work of this scope be recommended to be undertaken by Contractors.

The principal complaint last season as I recall was the dust hazard particularly in the immediate area of regrading operations. In 1974 there will be no such regrading work along this highway stretch and calcium chloride treatment we believe will be effective in elimin nating dust, judging from the treatment applied last fall.

Other dust control treatment planned in 1974 on highways within Mr. Sibbeston's constituency includes calcium chloride treatment for three passing zones each 2 miles long, areas fronting six reststops, one road junction, ferry approaches and several areas, fronting service stations.

If there is further specific information you require please advise.

J. K. Bentley

J. K. Bentley
Chief, Highways Division
for Director

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

PLEASE QUOTE
FILE 30 710 000

Yellowknife, N. W. T.,
X0E 1H0,
14 January 1974.

J. R. BENTLEY
CHIEF, HIGHWAYS DIVISION

Contracting of Highway Maintenance

My attached report on the Contracting of Highway Maintenance is in response to the Assistant Commissioner's request of 16 October 1973 (Appendix A).

In summary, I have made the following recommendations:

1. A day labour operation for routine and sectional highway maintenance is preferable to a contract operation for the following reasons:

   (a) Less cost and no chance of escalation;

   (b) Better flexibility and control;

   (c) Can demonstrate performance record equal to best maintenance contractor; and

   (d) Hiring record better related to N.W.T. residents, local hires and Indians and Metis.

Based on the above factors, we should not transfer our current routine maintenance work to the private sector, but we could consider contract operations for future extensions to the System. The proper balance of day labour and contract operations would have the following advantages:

   i. Helps to keep contractors "honest" (i.e. realistic) in their bidding as there is a basis of cost comparison;

11. Would not cause major lay-off of indeterminate staff (namely 43) and consequent problems of their finding other jobs in the North.

All highway jurisdictions in North America favour using departmental forces for routine maintenance, primarily for flexibility.

2. We should continue operating our traffic signing function on a routine maintenance basis (either day labour or contract), supplemented by a three-man special signing crew composed of day labour personnel for system-wide signing programmes.

3. We should supplement our day labour or maintenance contractor (i.e. B. G. Linton) forces for dust control (calcium chloride) with a special contract for loading, hauling and spreading calcium chloride.

4. Highway Maintenance Establishment should only undertake limited cold-mix asphalt surfacing work. Major dust control programmes, involving hot-mix asphalt should be tendered to paving contractors.

5. We should continue with a day labour operation in gravel crushing work as we now have an efficient operation. However, once we require additional crushing capacity as the Highway System is extended, (i.e. beyond capabilities of existing equipment or over 300,000 cubic yards per year), we should tender such additional crushing work on basis of minimum 100,000 cubic-yard contracts.

6. We should retain our day labour Surfacing Crew and supplement by contract as size of resurfacing programme increases.

7. We should retain our Grading Crew but be prepared to contract the entire operation as soon as equipment utilization decreases. Conversely, if the workload was to increase then we should supplement our day labour forces with private contractors' grading crews.

8. We should not transfer our equipment repair operation to the private sector. We should simply phase the Repair Depot operation out in step with any reduction in our highway maintenance day labour elements.

9. Finally, if we did phase out our routine maintenance establishment, we should not retain any special maintenance or equipment repair departmental forces.

10. We should adopt a maintenance and equipment management system at an early date in order to develop better cost and performance records.

I evaluated the B. G. Linton Construction Company maintenance contract operation and compared it to our own operation on an equivalent section of highway.

Recommendations are based on the best available cost and performance records.

I have included an implementation plan, approval procedure and resource material appendices.

Please advise whether you require additional information at any stage.

D. A. Whiffin, P. Eng.
Head of Operations
Highways Division
Department of Public Works

Encl.

# CONTRACTING OF HIGHWAY MAINTENANCE

## TABLE OF CONTENTS

# CONTRACTING OF HIGHWAY MAINTENANCE

## A. PURPOSE OF REPORT

Highway Maintenance Establishment commenced the study of contracting highway maintenance 16 November 1973 - i.e. once the intent and implementation schedule of our pronosal were approved by the Assistant Commissioner.

Previous to this date, we had received the *Assistant Commissioner's request of 17 October 1973 to undertake such a study and prepare a paper (i.e. report).

The purpose of the study is to determine if more of the highway maintenance responsibility (i.e. work) can be turned over to private contractors. Also, it will be necessary to indicate the steps that can be taken to transfer (i.e. convert) elements of the existing day labour operation with government owned equipment and facilities, to private contractors.

The study has concentrated on three vital areas; firstly, an evaluation of our existing contract maintenance operation on the °Mackenzie and Fort Liard Highways; secondly, the determination of what maintenance elements we could convert to contract; and thirdly, the development of an implementation plan for transferring maintenance assignments to private contractors, in the event that this is the preferred method in specific operations.

*See Appendix A

°Mileposts 117-297 Mackenzie Highway and Mileposts 0-29 Fort Liard Highway.

## B. SOURCES OF INFORMATION AND FORMAT OF REPORT

We corresponded with all provincial, territorial and federal highways jurisdictions in Canada, the American Association of State Highway Officials and the State of Alaska. We asked these agencies to relate their particular experience in contract maintenance operations. *Copies of these replies are attached to this report for reference purposes.

It is significant to note that all major highways jurisdictions in North America, with the exception of the Federal Department of Public Works (B.C. portion of Alaska Highway), utilize their own departmental forces (includes government owned equipment and facilities) for routine and sectional highway maintenance. The main reasons for their preferring a day labour operation are greater flexibility and control. It should be realized that the Federal Department of Public Works have adopted a contract operation as they are administering a diminishing departmental responsibility on the Alaska Highway - therefore, they cannot consider sizeable capital expenditures, inherent in a typical day labour operation.

Special maintenance and repair operations are not totally undertaken by departmental forces in major highways jurisdictions in North America. In fact, there is an almost even split, between day labour and contract work, for such projects as regrading, landscaping, gravel crushing and surfacing, dust control, asphaltic concrete surfacing, traffic signing and equipment repair. Basically, when more specialized and expensive equipment and extensive operations are required, a highways department tends to favour a contract operation - i.e. contractors are utilized to supplement departmental forces.

*See Appendix B.

*We then requested critical information and statistical data from our own government sources. For example, we asked the Department of Administration to assist us in highway cost data, staff reduction matters and disposal procedures for equipment and facilities. The implications of staff reductions were also discussed with the Senior Personnel Advisor in the Executive Secretariat, as well as with the Chief of Planning and Administration Division in the Department of Public Works.

We referred to the comments and observations reflected in the Report of the Royal Commission on Government Organization (i.e. the Glassco Report). This resulted in the Deputy Minister of the Federal Department of Indian and Northern Affairs in his 8 May 1968 °letter to the Minister unequivocally recommending that routine maintenance, by the day labour method, be continued for the Mackenzie Highway System.

Highway Maintenance Establishment has now conducted an evaulation of the B. G. Linton Construction Company Maintenance Contract on the Mackenzie and Fort Liard Highways. In addition, we compared this operation with our own day labour operation on an equivalent section of highway - based on cost per mile, quality of maintenance, flexibility/control and the hiring record related to local inhabitants.

We also investigated each of our special maintenance and equipment repair day labour operations to determine which could be better handled by contractors. We compared our costs and performance with that of "latter-day" contractors. In each situation we resolved the minimum size of contract in the eyes of both the Contractor and the Government.

*See Appendix C
°See Appendix B

Finally, we developed an implementation plan that could be put into effect in the event that a portion of, or all existing day labour operations was to be assigned to private contractors.

The restrictive time limit of eight (8) weeks, and the lack of reliable statistical data, in both financial and performance - indicator form, have not allowed us to produce as rigorous and as comprehensive report as we would like. For this reason, I have recommended in the report that we consider the adoption of a proper maintenance and equipment management system at an early date. Such a system would ensure that we could compare our various operations on the basis of true costs and actual performance.

. . . 5

## C. EVALUATION OF CONTRACT MAINTENANCE

Our experience with a contract operation on routine and sectional highway maintenance has been good. I refer to the three-year maintenance contract with B. G. Linton Construction Company for *the Mackenzie and Fort Liard Highways, that was awarded in June 1972.

The total cost of this contract could reach, or even exceed the original bid price of $1,286,000 or $428,667.00 per annum, or $2,056.00 permile per annum, for 208.4 Miles. However, our actual contract cost (i.e. based on actual hours worked) are running slightly below these cost figures, (bids based on estimated hours). In 1972/73 the prorated (i.e. extrapolation of 10 month figures) contract costs were $1,670.00 and in 1973/74 these prorated costs will be in the order of $1,870.00 per mile.

These cost figures do not include the cost of our own supervision (i.e. primarily one Contract Inspector), overhead, material or special maintenance work. We now estimate an additional $100.00 per mile per annum for a Contract Inspector, or say $1,770.00 per mile in 1972/73, and $1,970.00 per mile in 1973/74. These latter two (2) cost per mile figures are both less than the original estimated annual cost per mile (including contract inspection) of $2,122.00. Overhead, material and special maintenance costs are not being considered in this cost analysis as these items will be deleted in our representative day labour operation. Winter road, ice crossing and dust control (support function only) operations have been included as these functions are common (although) slightly more extensive in the contract section) to both the contract operation and the representative day labour function.

At this stage, I should mention that we chose the Mileposts 38 to 166 of the Fort Smith Highway to represent the day labour operation. The traffic count is similar to the Mileposts 117 to 297 section of the Mackenzie Highway - or approximately 35 vehicles per day during the 15 May to 15 October period. Also, both sections have similar road corss-sections and gravel surfacing schedules (i.e. 4-year life).

The cost per mile of the Mileposts 38 to 166 section of the Fort Smith Highway in 1972/73 is not reported on a cost data basis and no comparison is available. The 1973/74 cost per mile figure will be in the order of $1,405.00 (not including improvements, material and administrative costs). This figure is prorated for the 1973/74 fiscal year but is quite reliable as it is based on regular costdata reporting for labour and equipment utilization hours. The equipment rental rates were revised in November 1972 to a realistic level - they are more in line with other highways jurisdictions including the Yukon Territory. Labour costs are derived from actual salaries and benefits for each trade, but averaged across the System.

Therefore, our 1973/74 cost per mile figures for contract and day labour operations (sample only ) are as follows:

| | | |
|---|---|---|
| CONTRACT MAINTENANCE | - | $1,970.00 per mile. |
| DAY LABOUR | - | $1,405.00 per mile. |

Therefore, the cost saving on the day labour operation is in the order of $565.00 per mile.

We are quite satisfied with the performance of B. G. Linton Construction Company. B. G. Linton's supervisory staff has been most co-operative in carrying out instructions and work assignments. Our Contract Inspector, and our Assistant Superintendent, have not found it necessary to issue written directions - either to clarify technical requirements or to ensure the work is being carried out in an efficient manner.

. . . 7

There is a good standard of surface blading, particularly with respect to the preservation of road crown, superelevation on curves and side slope configuration. Also, culverts, bridges, traffic signs and roadside facilities (i.e. five rest area stops) are maintained to better than average standards. Road repair operations, such as gravel patching, have been carried out in a competent fashion. The new milepost and culvert marker programme was completed by B. G. Linton forces well before that on other sections of highway. Litter control has also been handled in an effective manner. Snowplowing is to a good standard.

It should be realized that B. G. Linton is generally recognized by government highway officials as a good road maintenance contractor. Both Federal D.P.W., who currently supervise his maintenance operation on the Alaska Highway (Milepost 83.6 to 300), and D.I.N.A., who supervised his contracts on the Mackenzie Highway System in the late 1950's and early 1960's, have been quite pleased with his performance. B. G. Linton makes a special effort to do a commendable job and this naturally makes less work for our monitoring staff.

Our Contract Inspector, William Burrill, and our Assistant Superintent, Stanley McAllister, have had good experience in highway maintenance on the Alaska Highway. In fact, they both worked for B. G. Linton, as well as for D.N.D. and Federal D.P.W. Their relevant experience and good knowledge of maintenance requirements have contributed appreciably to the success to date of the B.G. Linton Contract.

In comparing B. G. Linton's operation with our own between Mileposts 38 and 166 on the Fort Smith Highway it should be noted that this latter section of highway is four (4) years older than Linton's section. Also, B. G. Linton had been fortunate to commence his three-year contract on an eight-month old section of highway. Naturally, B. G. Linton has certain advantages, as he took over a road that was recently built to a good standard and

. . . 8

had not suffered long-term deterioration or been subjected to sub-standard maintenance practices, etc. B. G. Linton also started his contract with new equipment.

Nevertheless, I feel that our own operation out of Fort Smith Maintenance Camp (i.e. Milenosts 85 to 166 Fort Smith Highway) is equal in performance to the B. G. Linton operation. I cannot say the same for our operation out of Big Buffalo Maintenance Camp (i.e. Mileposts 38 to 85 Fort Smith Highway). This latter operation appears to lack good quality grader operators and above average field supervision. The road surface, in particular, is somewhat rougher and not as well crowned, also traffic sign maintenance and litter control along this latter section of road is not of a good standard.

It would seem that we have lost minimal flexibility and control on the B. G. Linton contract operation. I would say that we can get the job done almost as efficiently with B. G. Linton as with our own forces at Big Buffalo and Fort Smith Maintenance Camps. However, it must be understood that our Contract Inspector is the key figure in maintaining flexibility and control - a weak or tactless Contract Inspector could undermine the entire operation. Also, if we did not have a full-time Contract Inspector, I'm convinced that we would not have the same efficiency we now enjoy. If any flexibility and control is lost in our current contract maintenance operation, it is that all instructions from Enterprise must be transmitted through an additional man (i.e. a Contract Inspector). Also, B. G. Linton has tended to co-operate in every way with our Contract Inspector - this would not necessarily be the casewith all contractors. Generally speaking. flexibility and control is lost in any contract maintenance operation - primarily because you cannot reassign contractors' equipment to other geographic areas - as we do with our own operation for emergencies and normal changes in work loads.

B. G. Linton appears to employ a better quality grader operator - this is definitely another major factor in his continuing good performance. However, his current staff of ten (10) Supervisiors, Clerk, Heavy Equipment Operators and Cooks are just 60 per cent Northern residents (i.e. six of the ten have resided for four or more years in the N.W.T. - actually they average 13 years in N.W.T.). All are white and seven (7) were hired in the N.W.T., whilst three (3) were imported from Fort Nelson, B. C.. In summer season, B. G. Linton hires casuals from Fort Simpson and employs them as Manual Workers and Light Equipment Operators. In 1973/74, he hired approximately eighteen (18) casuals in Fort Simpson and a total of three (3) or 17 per cent were Indian and Metis.

Our staff at Fort Smith and Big Buffalo River Maintenance Camp are all Northern residents. These twelve (12) employees were either born in the N.W.T. (3 employees) or lived an average of fifteen (15) years in the N.W.T. (nine employees). Three of the twelve or 25 per cent of the Foremen and Light and Heavy Equipment Operators are Indian or Metis. These two Camps hire three (3) casuals each during the summer season and they are all local hires, and in 1973/74, 45 per cent were Indian or Metis. They are hired as Heavy and Light Equipment Operators and Manual Workers.

In fact, out of a total current permanent staff in Highway Maintenance Establishment of 61 employees, we have the following situation:

a. 36 employees with more than eight (8) years residence in the N.W.T.;
b. 13 employees with more than four (4) years residence in the N.W.T.;
c. 7 employees with less than four (4) years residence in the N.W.T.;
d. Therefore, 49 employees (or 81%) are "Northerners". by definition;

3. 43 employees are White and 18 employees (or 29.5%) are either Indian or Metis.

## D. RECOMMENDATIONS

### 1. Routine and Sectional Maintenance Operation

Our scorecard for contract versus day labour routine and sectional highway maintenance shows the following situation: B. G. Linton Construction Company are equal in performance to our Fort Smith Maintenance Camp operation (possibly our best day labour operation), and better than our Big Buffalo Maintenance Camp operation (average day labour operation). However, costs are running higher on the contract operation by about $565.00 per mile per annum. Federal D.P.W. on the Alaska Highway have had good performance from B. G. Linton also, but other contractors have not performed as well. (In fact, one particular contractor has been less than co-operative on occasion, and written instructions became the order of the day when verbal directions were ignored).

Although flexibility and control have been quite good on the B. G. Linton Contract, this is not the general situation with private contractors. Federal D.P.W. on the Alaska Highway have advised us that a degree of flexibility and control is lost because of the inherent restrictions of a contract. At any rate, they state that; "departmental day labour forces are preferable to a contract operation by reason of flexibility and control." This is quite likely the main reason that all main highways jurisdictions in North America continue to use their own forces for routine and sectional maintenance.

Federal D.P.W. indicate that there have been attempts by Provinces and States to maintain highways by contract, but that none have converted to a contract operation except in an extraordinary situation. Examples are:

a. Saskatchewan's Department of Highways and Transportation contract to a rural municipality for isolated gravel mileages. They do this strictly for conven-

fence, as the isolated road section may be many miles from the headquarters of the crew responsible for the section;

b. The Newfoundland Department of Transportation and Communications contract highway maintenance in the vicinity of Labrador City and Wabush in Western Labrador. This area apparently has no connection to the Provincial highway system and a local contractor carries out the maintenance work;

c. The Departments of Highways in Alberta and British Columbia may supplement their District operations with hired equipment on a day labour basis;

d. The Department of Public Works and Highways in Prince Edward Island undertake snow removal on two thirds of Provincial highway mileage by contract. This arrangement developed gradually from difficulties in meeting demands with existing departmental forces and equipment. They report that a contract operation for snow removal is $610.00 per mile per annum, and the government forces are 20 per cent higher. However, this is primarily due to government forces being "tagged to do many extras for residents that is not in the terms of a contract."

e. The Alaska Highway situation is as follows:

1) Mileposts 0 to 83.6 - B.C. Department of Highways by day labour forces;

2) Mileposts 83.6 to 626.6 (B.C.) - Federal D.P.W. by contract; and

3) Mileposts 626.6 to 1220 (Yukon Territory) - plus 119 miles collector highways - Yukon Department of Public Works and Highways by day labour forces.

Federal D.P.W. chose contract maintenance in the B.C. portion in early 1965, based on the assumption that a reconstruction and paving programme for the Alaska Highway would proceed in an orderly time frame. Their responsibility was thus a diminishing one and there was no sinking fund for a major capital expenditure programme for heavy equipment replacement, camp improvements, accommodations and other facilities.

Federal D.P.W. have provided us with contract award data on the B.C. portion of the Alaska Highway between 1965 and 1973. There is a very sudden escalation in the cost per mile per

year for contract sections. For example, Contract No. 1 Mileposts 83.6 - 300 has risen 48 per cent in just seven (7) years i.e. from $2,850.00 to $4,190.00 per mile per annum. The other two (2) contract sections show just slightly lower cost increases. Federal D. P. W. have advised us that it would not be wise to phase out all our day labour forces as they tend to "keep contractors honest in their bidding." With both day labour and contract operations you naturally have a basis for comparing costs and performance.

One major problem with transferring our existing routine maintenance day labour operation to private contractors, is the disruption caused to indeterminate employees who would be laid off. A total of 43 employees could be effected - this does not include supervisory and office staff, who would likely be absorbed into a contract inspection establishment (but some day labour Foremen may not be suited to contract inspection work).

Although a gradual lay-off schedule (say 3 to 5 years) could be instituted, it is quite difficult to find work for *Heavy and Light Equipment Operators (33) with municipal or territorial works. For example, Hamlet Councils have not hired ex-D.P.W. employees in the past. Engineering services such as road construction and maintenance are carried out by local councils with assistance by the Department of Local Government. Neither of these bodies seem to be in a position to offer jobs to our employees unless they happen to be domiciled in a particular settlement. However, there should be sufficient lead time to allow our operators to compete for job openings that may arise in the various settlements.

The ten (10) mechanical staff members in the Repair Depot °would likely be reduced at the same rate as the operators. However, their chances of finding employment with Regional D.P.W. forces through competitions might be quite good as qualified heavy duty mechanics are usually in demand. At present, there are no vacancies in Regional D.P.W. A two or three year lead time would be required

. . . 13

*The balance of 43 employees effected are Repair Depot Staff of one shop Foreman, 8 Heavy Equipment Mechanics and one Welder.

°Small staff still required for special maintenance operations.

in order that all mechanical staff could find other employment with the government.

A provision could be written into the contract, to the effect that when contract operations commence, the contractor will be required to absorb those employees of the Highway Maintenance Establishment, affected by the lay-off, into his work force. However, contractors cannot be compelled to continue to employ workers whose performance is unsatisfactory.

Surplus equipment could be transferred to Regional D. P. W. or Hamlet Councils, or sold through public tender within the N.W.T. or through C.A.D.C. in southern Canada if there is no response, or retained for future sale if there is still no response, reduced to spare parts, used as trade-in equipment, sold or transferred to a territorial non-profit organization or destroyed on site. Newer equipment could be listed in tenders for inclusion in contractors' bids -- this would reflect savings in maintenance operations in the initial contract awards.

Buildings and other facilities could be disposed of in a similar fashion to above. However, if contract maintenance patrols (i.e. beats) are allocated similar to existing day labour operations then camp facilities could be turned over to a contractor within terms of the contract.

The ideal length of highway to be assigned to a private contractor essentially depends on traffic density and the standard of maintenance to be achieved on a particular section of highway. At present, B. G. Linton Construction Company maintains 209 miles of highway, but traffic density is very low -- generally less than 35 vehicles per day. The balance of the Mackenzie Highway System, or *630 miles of trunk highway, is divided into five (5) beats (or patrols) averaging 126 miles per beat.

. . . 14

*Does not include 38 miles of Mackenzie Highway at Inuvik maintained on equipment rental basis.

Reassignment of maintenance work to private contractors should be based on our existing breakdown of beat responsibilities for the following reasons:

a. The present allocation of beats is realistic;

b. Ease of handover as maintenance camps could be phased out in turn; and

c. Contractors could take over existing maintenance camp facilities within terms of contract - a cost saving to the Government should be realized.

Contracts should be let for three (3) years as this is most suitable time frame for both contractor and government from experience on the Alaska Highway. Our B. G. Linton contract is also for a three-year duration.

Decision: - A day labour operation for routine and sectional highway maintenance is preferable to a contract operation for the following reasons:

(1) Less cost and no chance of escalation;

(2) Better flexibility and control;

(3) Can demonstrate performance record equal to best maintenance contractor; and

(4) Hiring record better related to N.W.T. residents, local hires and Indians and Metis.

Based on the above factors, we should not transfer our current maintenance work to the private sector, but we could consider contract operations for future extensions to the System. The proper balance of day labour and contract operations would have the following advantages.

(1) Helps to keep contractors "honest" (i.e. realistic) in their bidding as there is a basis of cost comparison;

(2) Would not cause major lay-off of indeterminate staff (namely 43) and consequent problems of their finding other jobs in the North.

. . . 15

D. RECOMMENDATIONS (continued)

2. Special Maintenance and Equipment Repair Operations

We have a total of six (6) [seven (7) if we regain the ferry operation] special maintenance (5) and equipment repair operations that I will investigate on a day labour versus contract basis.

(a) Traffic Signing - This activity is traditionally a routine maintenance operation in most highway jurisdictions, which is supplemented by a special signing crew during the summer season. Each maintenance camp, whether day labour or contract, maintains its own traffic signs on a day-to-day basis. The special signing crew is responsible for system-wide signing programmes - e.g. our current programme to install the new symbolic information signs.

The special signing crew includes one (1) Heavy Equipment Operator (indeterminate) and two (2) Manual Workers (casual). The Heavy Equipment Operator is provided with a supervisory differential during the 15 May to 15 October period. The advantage of assigning a regular employee with this task is that he becomes quite familiar with both signing standards and the peculiarities of the Highway System itself. Actually, to ensure that the incumbent is occupied during the winter months, we should investigate establishing a sign shop for the repair and maintenance of damaged and weathered signs, along with the fabrication of special signs (the current write-off of defaced signs in particular is very high). Otherwise, we could consider converting the Sign Foreman's position to seasonal status.

Decision - We should continue operating our traffic signing function on a routine maintenance basis (either day labour or contract), supplemented by a three-man special signing crew composed of day labour personnel for system-wide signing programmes.

(b) Dust Control (Calcium Chloride) - The calcium chloride dust control programme has evolved into a combined contract and day labour operation. This is similar

. . . 16

to the apparently successful programme developed over the past four (4) years in the Yukon Territory. In preparation for the 1974 summer season, we sill be calling tenders (by 31 January 1974) for the loading, hauling (i.e. from railhead) and application of bulk flake calcium chloride by contract.

Our own forces would blade and apply water to the road surface prior to the spreading of calcium chloride. In August 1973 we let a similar contract to the above and realized significant savings over a *straight day labour or maintenance contract (i.e. B.G. Linton) operation. A sample cost analysis on a continuous 23.8 - mile section of the Hay River Highway for a 5 ton per mile calcium chloride application pointed up the following:

(i) Stright day labour or maintenance contract - $885.00 per mile

(ii) Combined day labour and contract - 635.00 per mile

Thus a cost saving of $250.00 per mile is possible. Random highway sections may show an even better saving as bagged calcium chloride in straight day labour (or maintenance contractor) operation must be distributed to each maintenance camp, which entails an extra loading operation.

Decision - We should supplement our day labour or maintenance contractor (i.e. B.G. Linton) forces with a special contract for loading, hauling and spreading calcium chloride.

Note: - We have a Foreman (actually a Heavy Equipment Operator with supervisory differential from 15 May to 15 October) who coordinates the work.

(c) Dust Control (Bituminous) - We purchased a pugmill and pneumatic packer in 1973; this equipment gives us the capacity to undertake cold-mix asphalt concrete surfacing. In 1972/73 we undertook a programme that included 18.5 miles of asphalt surfacing within our dust control budget. Both the cost and final results were encouraging enough to consider future bituminous dust control operations by day labour forces. I can see no reason why we shouldn't continue to undertake a limited bituminous dust control programme to include cold-mix asphalt base stabilization of "dust-free" passing zones, cold-mix asphalt overlays on existing asphaltic concrete surfacing, asphalt surface treating and cold-mix asphalt patching.

. . . 17

*Using bagged calcium chloride as we do not have bulk spreaders.

We have both the equipment (except for certain small pieces that we can rent as required) and the experience necessary to perform this essential work. The scope and magnitude of this work programme would not be attractive to an asphalt paving contractor from the South - and a Northern contractor would not have the equipment or experience to undertake such work.

However, our day labour forces should not attempt to do hot-mix resurfacing or hot-mix patching. The investment in specialized and expensive equipment, and the requirement for experienced personnel, is beyond our present financial resources and our terms of reference under the Engineering Services Agreement.

We assign our Dust Control Foreman and up to ten (10) casual Light and Heavy Equipment Operators and Manual Workers to this operation. The Gravel Surfacing and Gravel Crushing Crews' operations support this operation.

Decision - Highway Maintenance Establishment should only undertake limited cold-mix asphalt surfacing work. Major dust control programmes, involving hot-mix asphalt, should be tendered to paving contractors*.

. . . 18

*This is a normal practice in many highways jurisdictions.

(d) Gravel Crushing - This activity is undertaken by a crew of one (1) Foreman (indeterminate) and eleven (11) seasonal, two (2) Crusher Operators, two (2) Cat Operators, two (2) Maintenance Men, a Welder and camp staff. The new Pioneer 50VE crushing plant is quite capable of producing 300 tons of crushed gravel per hour. We feel that this is a very efficient operation and that our costs are far less than those of a contractor. For example, in Fall 1973 we produced approximately 65,000 cubic yeards of crushed gravel in three gravel pits on the Yellowknife Highway, and our total costs, including equipment utilization, were in the order of $99,450.00 - for a unit cost of $1.53 per cubic yard. It would be difficult on a contract operation North of 60° to realize such economical unit cost figures. In fact, our Highway Design and Construction Section have listed the following bid prices for 1973/74 Crushing Contracts:

(1) Yellowknife Highway Reconstruction - Mileposts 150 to 190 - secondary crushing - 70,000 cubic yards - bid price is $2.05 per cubic yard - this operation has not commenced;

(2) Yellowknife Reconstruction - Mileposts 170 to 190 - secondary crushing in two pits - blasted quarry rock, binder and blend sand added - 30,000 cubic yards - bid price is $3.43 per cubic yard. This is a very inefficient operation, as it will likely finish twelve months past the scheduled completion date, and the contractor is paying all project supervision costs and has been since the expiry of the contract.

(3) Fort Resolution Highway Gravelling - secondary crushing - binder added - 54,000 cubic yards - bid price is $2.25 per cubic yard - the quality of product was satisfactory - the project was almost completed in the specified time (actually exceeded contract time by two weeks).

Note: - I have not added project engineering and supervision costs that are approximately 5 percent in (1) and (2), and 10 percent in (3), as our day labour operation is likewise subject to an approximate 5 percent overhead cost.

. . . 19

We could expect lower bid prices from crushing contractors on large seasonal crushing projects - say between 100,000 to 300,000 cubic yards. Contracts of this magnitude could also attract more contractors from Southern Canada, which would have the effect of sharpening the competitive picture in the North.

The various provincial highways jurisdictions seem to prefer to contract their gravel crushing, primarily, to avoid purchasing expensive crushing plants, but also to take advantage of a very competitive market (e.g. Alberta). However, they do retain their own crushing capacities in isolated areas, where they cannot get competitive bids (eg. Northern Ontario). Our problem in the North is not unlike this latter situation, as we do not have a competitive market in crushing in the N.W.T. However, B. C. Department of Highways can produce 3/4-inch crushed granular material with Departmental forces for .30¢ to .50¢ per ton and by contract .70¢ to $1.00.

Our primary crushing plant with the 50VE provides us with a very efficient four-stage reduction, that was not possible with the 35S secondary crusher (this unit was traded in on the 50VE).

In 1972, we contracted our crushing of 8,000 cubic yards of asphalt aggregate at Yellowknife (bid price $2.10 per cubic yard) to avoid moving our crusher from Enterprise area.

Decision:- We should continue with a day labour operation in gravel crushing work as we now have an efficient operation. However, once we require additional crushing capacity as the Highway System is extended, (i.e. beyond capabilities of existing equipment (or over 300,000 cubic yards per year), we should tender such additional crushing work on basis of minimum 100,000 - cubic-yard contracts.

. . . 20

(e) Gravel Surfacing - It is essential the gravel surfacing operation remain very flexible, as is now possible with our present crew of one Foreman and one Loader Operator (both indeterminate employees) and up to sixteen (16) Light Equipment Operators and support staff. This crew is basically equipped with ten (10) late-model (i.e. 1971 and 1972) tandem 10-yard gravel trucks. We are able to split the Surfacing Crew into functional sub-units to work alongside the Grading Crew, sectional Maintenance Camp crews (on various patching projects) or a Dust Control (bituminous) crew. Such flexibility would be difficult under a contract arrangement - unless, a particular contractor was awarded several contracts in "tandem" on the Highway System. We not only haul crushed gravel, but also common borrow, asphalt aggregates, clay binder for mixing with crushed gravel, and pit run and screened gravel.

Under a contract arrangement, various unit price schedules and project specifications would be required to accommodate constantly changing hauling conditions.

The Yukon Territory also use their own forces for gravel surfacing supplemented by contract. They feel that the costs are comparable. We should therefore consider using contractors for straightforward, overload hauling requirements such as the hauling of asphalt aggregates in a bituminous dust control programme - or as soon as we experience additional gravel surfacing requirements in the expanding Highway System. Actually, in 1972 we hired contractors' trucks and drivers extensively (i.e. equipment rental basis) in our bituminous dust control programme, at Yellowknife and Enterprise (Hay River Contractors) in order to supplement our busy Surfacing Crew.

Our 1973 costs per cubic yard mile for loading, hauling and placing 85,627 cu. yds. of crushed gravel and other material (or 996,710 cubic yard miles) was 21 cents. The total costs for the Gravel Surfacing Crew were in the order of $180.750.00 (this figure includes equipment rental on our equipment). Our Highway Design and Construction Section report that contract unit prices in 1973, on the Yellowknife Highway Mileposts 190 to 210, were 26 cents for 176,000 cubic yard miles. Our day labour unit prices are comparable to contract unit prices - as contract unit prices would be less on larger contracts. Therefore, our situation is similar to that in the Yukon Territory.

.....21

Decision:- Retain our day labour Surfacing Crew and supplement by contract as size of resurfacing programme increases.

(f) Grading/Landscaping - Since we acquired two (2) Terex TS-14 motorized Scrapers in March 1973, we have greatly increased the efficiency of this special maintenance operation. We recently converted the Grade Foreman position to a seasonal status from indeterminate, and also had the two (2) Scraper Operator positions classified as seasonal positions (ex-casual). The balance of the crew includes eight (8) Casual Light and Heavy Equipment Operators and camp staff.

In 1973 we had a continuing programme of utilization of our grading eqipment from 1 May to 1 December. We regraded 36 miles of highway with the Grading *Crew. The TS-14salso carried out extensive early season gravel surfacing preparations and late season ferry causeway extension work (Fort Providence).

In 1974 we plan to regrade 38 miles of the Mackenzie Highway from the N.W.T. border to the start of asphaltic concrete surfacing (i.e. to Milepost 38.0). This section of road will also be resurfaced by our Gravel Surfacing Crew.

We would appear to have sufficient work for the Grading Crew for the next three (3) years within our regrading programme. As long as we can fully utilize our equipment, we will have an economical operation.

I would definitely say, that if at any time our equipment utilization is decreased below the present level that we contract out the entire grading operation.

Our 1973 costs per cubic yard for earthwork undertaken by our Grading Crew were $1.53. This is based on approximately 153,000 cubic yards of earthwork and total crew costs of $233,900.00, including the equipment rental on our equipment. Our Highway Design and Construction Section report contract unit prices on the Yellowknife Highway Reconstruction project are as follows:

....22

Mileposts 170 to 190 - $1.56 per cubic yard
Total - 320,000 cubic yards

Note:- Work progress poor.
(Contract completion date 30 September 1973 but actual completion not expected until late Summer 1974)

Mileposts 190 to 210 - $1.62 per cubic yard
Total - 340,000 cubic yards.

Note:- Work progress good.

A third example is outlined at top of page 23.

* The performance of our Crew was superior to at least two (2) 1973 reconstruction projects undertaken by contract.

+ Federal D.P.W. report that full utilization of Departmental grading equipment leads to economics.

The Fort Smith Highway Reconstruction project has a contract unit price of $2.20 per cubic yard.

Total - 82,500 cubic yards.

Note:- Work progress poor.

Based on the above cost analysis our day labour regrading operation costs less than a contract operation. In addition, our performance is generally better than the contractors.

Decision: We should retain our Grading Crew but be prepared to contract the entire operation as soon as equipment utilization decreases. Conversely, if the workload was to increase then we should supplement our day labour forces with private contractors grading crews.

(g) Equipment Repair:- Our Repair Depot at Enterprise does practically all the equipment repairs. The specially trained mechanical staff is composed of a Shop Foreman, eight (8) Heavy Equipment Mechanics and one (1) Journeyman Welder. We also train five (5) *apprentice Mechanics. Some engine and transmission work and all major crushing plant repairs are undertaken by contract. Certain specialized repairs are also done by contract.

All highways jurisdictions prefer to carry out their own repairs. The type of equipment used in highway maintenance operations, or a great deal of it, is of a highly specialized nature, and facilities for this type of repair are not generally available elsewhere (although there are very limited commercial facilities in Hay River). The use of our Repair Depot allows us to undertake numerous modifications to our equipment, to construct certain specialized pieces of equipment and the convenience afforded by controlling our own operation.

Note:- I wish to state that the present condition of our substandard Repair Depot is deplorable. In addition, our Highway Maintenance Staff are required to commute 54 miles return a day from their homes in Hay River. Until we get our long-awaited new garage (cum stores and offices) in Hay River, we will continue to have a lingering morale problem at Enterprise. We have just learned that D.I.N.A. has postponed this project to at least 1975/76, and our Enterprise staff are quite disturbed by this decision.

*We also train one Heavy Equipment Operator at each Maintenance Camp.

.....24

A reduction of mechanic staff would naturally coincide with a decrease in our day labour highway maintenance operations and thus our inventory of equipment.

Decision:- We should not transfer our equipment repair operation to the private sector. We should simply phase the Repair Depot operation out in step with any reduction in our highway maintenance day labour elements.

## E. IMPLEMENTATION PLAN

I am not recommending the transfer of our existing routine maintenance day labour function to the private sector However, I have developed the following implementation plan in the event that my recommendation is not accepted:

1. Begin a phase out of our five (5) existing Maintenance Camps, by letting individual maintenance contracts, based on each camp's present area of responsibility;

2. If the first contract was let, say 1 July 1974, then successive contracts could possibly be let 1 April 1975, 1 April 1976, 1 April 1977, and 1 April 1978;

3. A four-year period should allow sufficient time for existing equipment operation and maintenance staff to find other positions with the government - although Light and Heavy Equipment Operators will experience some difficulty as mentioned earlier;

4. Vacant positions (from normal attrition) at remaining day labour Maintenance Camps, will be filled by those Light and Heavy Equipment Operators displaced when a section of highway is contracted. In addition, all contracts should state that displaced day labour employees must be offered jobs by the successful contractor of that particular section of highway - for the employee who wishes to remain on his job;

5. The government should actually assist displaced employees to locate jobs elsewhere in the public service;

6. Maintenance Camp facilities should be sold to the first contractor. The first and successive contractor should be permitted to use these camp areas;

7. We should move all our newer equipment into the hands of our remaining day labour forces. As equipment becomes obsolete it should be disposed of through Supply Services;

8. We would require a good deal of prepration and salesmanship to carry off the staff reduction;

9. The final step would require that we dispose of all remaining facilities, equipment, parts, materials and supplies. This would be undertaken through Supply Services;

.....26

10. All contracts should be for three-year terms;

11. Meanwhile Highway Maintenance Establishment would have to develop a contract inspection and administrative capability within its existing supervisory staff; plus additional specialized staff would be hired as required;

12. If we phase out our routine and sectional maintenance day labour operation, then we should also phase out all special maintenance and equipment repair operations simultaneously. Disposal of this equipment and facilities should be handled by Supply Services in the same manner.

## F. APPROVAL PROCEDURE

1. Review by Executive of this report and recommendations - including the recommendations by Chief, Highways Division and Director, Department of Public Works;

2. Cost estimates by Highways Division of contracting certain, or all, existing day labour maintenance operations;

3. Consultation with Services Branch, Engineering and Architectural, Department of Indian and Northern Affairs, Ottawa;

4. Depending on outcome of consultation, we may be encouraged to call tenders to determine the validity of our comparative estimates;

5. A submission of any tenders to Treasury Board on much the same basis as for the B. G. Linton Contract;

6. It appears (i.e. based on the B. G. Linton Contract) that if the extra costs are not greater than say 25 per cent, that Treasury Board would agree with contractual work since this coincides with the politics of the Federal Government.

## G. MAINTENANCE MANAGEMENT SYSTEM

I strongly recommend that Highway Maintenance Establishment adopt a maintenance (including equipment) management system in the near future. Such a system will, along with increasing our efficiency, provide us with a foundation on which we can compare costs and performance in our various day labour and contract operations. Thus, decisions can be made at any stage as to whether we should contract a particular operation.

At present there are four (4) Provinces and at least fifteen (15) States that have adopted formal maintenance maintenance management systems.

The elements of a maintenance management system are:

1. Maintenance work activities and accomplishments redefined in terms that are significant for planning work and measuring performance;

2. Classification of highways is defined for maintenance purposes, grouping those highways for which the levels of service required may be expected to be generally uniform;

3. An inventory is made of the maintenance features of the highways systems that relates to amount of maintenance work required;

4. Standards for each highway classification are developed defining:

   a. levels of service;

   b. average annual quantities of work needed;

   c. standard methods and procedures for work performance; and

   d. expected productivity or rates of accomplishment;

5. A procedure for work performance reporting is established for use by supervisory personnel which permits collection and summary of data on resources used and accomplishments attained;

6. An annual maintenance program and a performance budget are developed from standards and road inventories showing planned work and resource requirements for individual management units;

* With assistance of Roy Jorgensen Associates of Canada, Limited.

.....29

7. Procedures are developed for scheduling maintenance activities at the work level. Comparison of planned to actual work performance provides System and operating level supervisors with effective management control.

In mid-November 1972 Roy Jorgensen Associates of Canada, Limited, management consultants from Toronto who specialize in highway maintenance management systems, made a formal proposal to Mr. C. W. Gilchrist, then acting Director, D.P.W. Their cost for a complete maintenance and equipment management system over an 18-month (360 man days) period was $73,100. Roy Jorgensen Associates would then withdraw completely from our operation at the end of their contract, and allow us to carry on with the maintenance management system. Alternatively, we could attempt to establish our own maintenance management system by hiring a highway maintenance engineer and/or reassigning present management - oriented staff to the task. I prefer to the former method as we would be guaranteed a workable management system.

J.W.

D.A.W.

APPENDIX A

30 710 000

OFFICE OF THE COMMISSIONER
NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.
X0E 1H0

DIRECTOR,
DEPARTMENT OF PUBLIC WORKS:

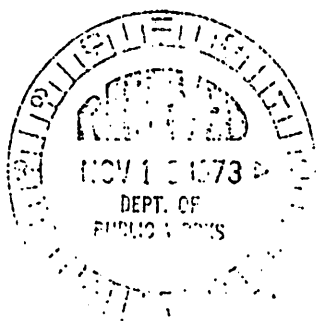
Contracting of Highway Maintenance

I have examined your proposal contemplating a study of the above mentioned subject and concur with its intent and implementation schedule.

I would appreciate being kept informed of the progress of

E. M. R. Cotterill,
Assistant Commissioner.

27 Nov 73



GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

P.A.
PLEASE QUOTE
FILE 30 710 000

Yellowknife, N.W.T.,
X0E 1r0
8 November 1973.

ASSISTANT COMMISSIONER (ADMINISTRATION)

Contracting of Highway Maintenance

Highways Division intends to study and report on all facets of contract maintenance and the ramifications of phasing out the existing day labour operations.

The following outline plan will form the basis for the study:

1. Routine and Sectional Maintenance

Evaluate existing maintenance contract operations performed by B. G. Linton Construction Limited on the Mackenzie and Fort Liard Highways and compare with a similar day labour operation on the Fort Smith Highway - Mileposts 85 to 168 as road top width, traffic density and the gravel resurfacing

will be cost, quality of maintenance and the hiring record related to local inhabitants.

2. Special Maintenance and Repair Operations

There are six (6) special maintenance operations which will be studied separately and compared to contract work on the basis of cost and performance. These operations are:

(a) Dust Control
(b) Traffic Signing
(c) Gravel Crushing
(d) Gravel Surfacing
(e) Grading/Landscaping
(f) Equipment Repair

. . . 2

3. Methods of Phasing Out Day Labour Operations

We will investigate the most effective methods of phasing out our complete day labour operations. This will include an investigation of how we might absorb displaced employees into other Government Positions.

4. How Best To Divide The Work

The most ideal length of highway for individual contractors to maintain will be studied. The best [illegible] contractors' capabilities and best control by contract inspectors. Special maintenance and [illegible].

Under the terms of the Engineering Services Agreement it will be necessary to report to Services Branch, Engineering and Architectural, D. I. N. A. in Ottawa if a change to contractual methods is proposed and additional funding is required.

6. Additional Sources of Information

We also intend to contact the following jurisdictions to provide us with valuable information:

(a) Vancouver and Fort Nelson for their experience in phasing out ex-D.N.D. day labour operations on the Alaska Highway;

(b) Department of Public Works, Government of the Yukon Territory for their experience in day labour operations versus contract work;

(c) Several Provincial Highways Departments for experience in utilizing contractor's forces and Departmental forces for various maintenance operations.

7. Timings

We expect to complete the report in approximately ten (10) weeks or by 15 January 1974.

D. L. Mattnews
Director,
Department of Public Works.

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

PLEASE QUOTE
FILE 30 710 000

PA →

Yellowknife, N.W.T.
X0E 1H0
19 October 1973

(1) CHIEF
HIGHWAYS DIVISION

Contracting of Highway Maintenance

We are attaching a copy of a letter from Mr. E.M.R. [redacted] the Highway Maintenance by contract.

Could you please prepare a paper on the above subject with your comments taking into consideration the remarks made by [redacted].

This report should be commenced immediately.

D.T. Waleski

D.T. Waleski
Acting Director
Department of Public Works

Attachment

(2) HEAD, MAC Operations

PLEASE STUDY THIS AND THEN CONSULT ME ABOUT NECESSARY ACTION REQUIRED.

JRB
19/10

Study underway

OFFICE OF THE COMMISSIONER
NORTHWEST TERRITORIES
CANADA

17 October 1973.

DIRECTOR
DEPARTMENT OF PUBLIC WORKS

Contracting of Highway Maintenance

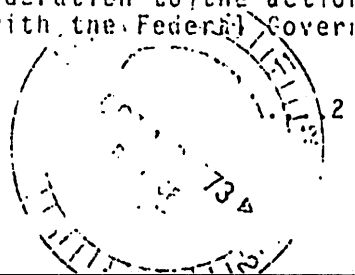
You will recall that at the recent Executive review of your

to see more of the responsibility for highway maintenance turned over to private highway contractors. As you know the only section of the Mackenzie Highway that is presently maintained this way, is the section from Providence to Fort Simpson.

Although the funds for highway maintenance in your 1974-75 estimates were left unchanged, we are committed to providing the Executive with a paper indicating the steps that can be taken to transfer elements of the existing highway to maintenance by a private contractor. I cannot recall that a definite date for Executive consideration of this paper was mentioned but it seems to me that we should have it prepared for the January Session of the Territorial Council, in the event of discussion at that time.

It seems to me that your officers should begin preparation of this paper immediately. I would suggest that they see whether the portion of the Mackenzie Highway system that we are presently maintaining can be divided into individual segments, in which a transfer of responsibility to a private contractor can be implemented independent from each other. The number of segments transferred to private contract, and the timing of any transfer or series of transfers, could then be left for Executive decision based on the recommendations of your Department.

In preparing this paper I would appreciate it if you would ask your officers to give special consideration to the action it would be necessary for us to take with the Federal Government



to ensure their approval of any change in the present procedure for highway maintenance. It would be useful if they would also include an evaluation of the maintenance that has been carried out for us by a private contractor on the Providence - Fort Simpson portion of the Mackenzie Highway. This report should indicate a comparison of the local employment provided by the private contractor as opposed to those areas in which maintenance is carried out by us, as well as an evaluation of the costs we are incurring.

I would appreciate it if you would ask your officers to begin working on this program as soon as possible, and to provide me within the near future with an outline indicating the approach they will be taking and the approximate timing of their work.

F. M. R. Cotterill,
Assistant Commissioner.

# APPENDIX B

# STATE OF ALASKA

WILLIAM A. EGAN, GOVERNOR

**DEPARTMENT OF HIGHWAYS**

OFFICE OF THE COMMISSIONER / P. O. BOX 1467 — JUNEAU 99801

February 1, 1974

Re: 40-1700

J. R. Bentley, Chief
Highways Division
Department of Public Works
Government of the Northwest Territories
CANADA

Dear Mr. Bentley:

I apologize for the delay in answering your recent request for information on our experience in contracting out highway maintenance work.

If we were considering the ramifications of phasing out our existing operations and looking at other alternatives, we would be asking the same questions you have. We don't have specific answers because we have had little experience with routine contract maintenance work.

Our maintenance operations have grown out of response to demand for specialized traffic services and the desirability of gaining greater utilization of our equipment by including physical maintenance and minor improvement work.

We offer the following comments on your questions:

1. We have not provided routine maintenance work by contract with contractors. We have contracts with several of our larger cities for routine maintenance work on the State highways within the city work areas. The primary considerations are efficiency of operations and utilization of city owned equipment which is better suited for street type maintenance than our open highway maintenance equipment. Other considerations include the local governments desires in accepting additional work to provide for a larger basic work load to justify a city maintenance organization.

2. The ideal length of highway or area for assignment to a contractor would probably be very close to our existing maintenance station areas. These vary in size from 20 lane miles for remote disconnected areas to 500 lane miles in developed areas. The local conditions which determine the size of our maintenance stations would probably be the same factors which determine the appropriate size unit for contract work.

3. We do not regularly assign any special maintenance or repair work to contractors. We have accomplished by contract all of the items of work which you have listed. The decisions to contract out any work include all of the considerations listed by you. The prime considerations are cost savings, overload work situations and specialization.

4. Our personnel rules specify procedures for reductions in staff and work force. All of our equipment is provided through a State Equipment Fleet operation funded under a revolving Working Capital Fund. Equipment excess to our needs is first made available to other state departments and if excess to the needs of the State is then sold by competitive bid.

I'm sorry my answer to your letter missed your due date for your report. I hope this information will be of some use to you anyway.

Very truly yours,

B. A. Campbell
Commissioner

Gerald J. Miller, P.E.
Maintenance Engineer

GJM:dm

DEPARTMENT OF HIGHWAYS
PROVINCE OF NEW BRUNSWICK

MINISTERE DE LA VOIRIE
PROVINCE DU NOUVEAU-BRUNSWICK

WHEN REPLYING PLEASE REFER TO OUR FILE NO.
DANS VOTRE REPONSE, INDIQUEZ NOTRE NO DE FICHE

Your File: 30 710 000

February 15, 1974

Mr. J. R. Bentley,
Chief, Highways Division,
Department of Public Works,
Yellowknife, N.W.T.
X0E 1H0

Dear Sir:

Your request for information on roads maintenance in New Brunswick has been forwarded to me by G. D. Reeleder.

Please excuse the delay in replying to your letter, but I have been waiting to finalize our 1974-5 maintenance budgets before replying. In this way the information will, I hope, be up to date.

The New Brunswick Department of Highways does not contract out routine maintenance work. Our own maintenance forces together with a limited amount of hired equipment carry out the roads maintenance functions. The only maintenance activities which are contracted are rock and gravel crushing and screening and a very limited amount of snow plowing.

The Department has recently implemented a Maintenance Management System.

I have taken the liberty of enclosing a System Manual which explains clearly the operation of the system.


... 2

DEPARTMENT OF HIGHWAYS
PROVINCE OF NEW BRUNSWICK

MINISTERE DE LA VOIRIE
PROVINCE DU NOUVEAU-BRUNSWICK

WHEN REPLYING PLEASE REFER TO OUR FILE NO.
DANS VOTRE REPONSE, INDIQUEZ NOTRE NO DE FICHE

Your File: 30 710 000



I am also enclosing a list of the projected costs for the 1974 season.

I trust this information will prove useful.

Yours truly,

George Burtt

George R. Burtt,
Maintenance Management Engineer,
Department of Highways,
3rd Floor Departmental Building,
P. O. Box 6000,
Fredericton, N. B.
E3B 5H1

GRB:ges
Encs.

NEW BRUNSWICK DEPARTMENT OF HIGHWAYS

MAINTENANCE MANAGEMENT

AVERAGE UNIT COSTS BY ACTIVITY

| CODE | ACTIVITY DESCRIPTION | WORK UNIT DESCRIPTION | COST PER WORK UNIT $ | COST PER CREW DAY $ |
|---|---|---|---|---|
| | ROUTINE UNLIMITED | | | |
| 1 | Patch with Premix | Tons of Premix | 28.24 | 282.35 |
| 02 | Spray Patch | Tons of Aggregate | 26.31 | 250.00 |
| 3 | Surface Replacement | Tons of Premix | 20.26 | 800.00 |
| 2 | Replace Culverts | Installations Replaced | 313.11 | 375.64 |
| 17 | Replace Driveway Crossing Culverts | Installations Replaced | 179.02 | 339.99 |
| 12 | Litter Barrels | Man Hours | - | 75.00 |
| | ROUTINE LIMITED | | | |
| | Grade/Reshape Surface | Road Miles | 13.89 | 100.00 |
| 22 | Spot Gravel Unpaved Roads | Ton of Aggregate | 2.19 | 175.02 |
| | Grade/Reshape Shoulders | Shoulder Miles | 18.16 | 181.67 |
| 22 | Spot Gravel Unpaved Shoulders | Tons of Aggregate | 2.22 | 155.35 |
| 01 | Machine Ditches | Ditch Miles | 69.99 | 105.02 |
| | Clean and Repair Drainage Structures | Man Hours | - | 96.00 |
| 0 | Machine Mowing | Swath Miles | 6.06 | 72.73 |
| 04 | Brush and Tree Cutting | Man Hours | - | 105.88 |
| 11 | Litter Pickup | Man Hours | - | 104.35 |
| 2 | Dump Maintenance | Man Hours | - | 35.29 |
| 06 | Sign and Post Maintenance | Man Hours | - | 65.74 |
| 1 | Guard Rail Maintenance | Man Hours | - | 144.00 |

Valid to December 1, 1974

NEW BRUNSWICK DEPARTMENT OF HIGHWAYS

MAINTENANCE MANAGEMENT

AVERAGE UNIT COSTS BY ACTIVITY

| ODE | ACTIVITY DESCRIPTION | WORK UNIT DESCRIPTION | COST PER WORK UNIT $ | COST PER CREW DAY $ |
|---|---|---|---|---|
| | SPECIAL AUTHORITY | | | |
| 04 | Level with Premix | Tons of Premix | 16.40 | 1,066.67 |
| 23 | Re-Gravel Unpaved Roads | Tons of Aggregate | 1.08 | 646.78 |
| 124 | Dust Control with Flake Calcium Chloride | Tons of Calcium Chloride | 88.82 | 533.33 |
| 125 | Dust Control with Liquid Calcium Chloride | Gallons of Solution | 0.31 | 1,846.15 |
| 126 | Dust Control with Asphalt | Gallons of Asphalt | 0.22 | 448.24 |
| 23 | Re-Gravel Unpaved Shoulders | Tons of Aggregate | 1.56 | 464.64 |
| 302 | Clean and Reshape Drainage Ditches | Tons Removed | - | 204.00 |
| 405 | Machine Cutting Brush and Trees | Man Hours | - | 184.62 |

Valid to December 1, 1974

COPY

MINISTER

Ottawa 4

351-1

May 8, 1968.

Road Maintenance - Mackenzie Highway System

I refer to the requirement for more permanent contractors in the Hay River area and your suggestion that if other things are equal we should consider doing our road maintenance by contract.

The present method of maintaining the Mackenzie Highway System; day labour for routine maintenance, supplemented by contract for periodic maintenance susceptable to economic contract operation, such as resurfacing with gravel, was approved by Treasury Board Minute 571321 on November 25, 1960 after reviewing a detailed analysis of the operation.

Criticism, contained in the Glassco Commission Report, induced a further detailed examination which confirmed our original analysis and culminated in a decision to continue routine maintenance by the day labour method.

A subsequent investigation was carried out in the latter part of 1966. This study was based on the actual cost of maintaining the system during 1964/65 and the actual rental costs for equipment contracted by D.P.W. on the southern part of the Alaska Highway. The findings, which indicated that the cost by contract would have been $2,573 per mile compared to the actual cost by day labour of $1,450 per mile, substantiated our prior studies. Recent annual routine maintenance costs by the day labour method and D.P.W. contract costs are indicated on Appendix "A", attached.

The equipment required for our routine maintenance, primarily motor graders supported by a minimum number of dump trucks and front end loaders, is fully committed to the highway maintenance task. This equipment would not be suitable for the majority of construction projects and it is therefore questionable if maintenance by contract would benefit the area.

..../2

An additional factor to be considered is the effect this type of contract would have on our present plan to transfer the responsibility for maintenance of this system, to the Government of the Northwest Territories. The target date for this transfer is July 1, 1963. There are 75 employees involved and a large number of these employees could be adversely affected if this work was done by contract.

None of the provinces or states, as far as we can determine, maintain their roads by contract, preferring to use their own forces supplemented by contract similar to our own method. The one known exception is the Department of Public Works who maintain part of the Alaska Highway by equipment rental contract. It is probable that a desire to limit capital investment in the British Columbia portion of the highway was a prime consideration in their decision to adopt this unusual method.

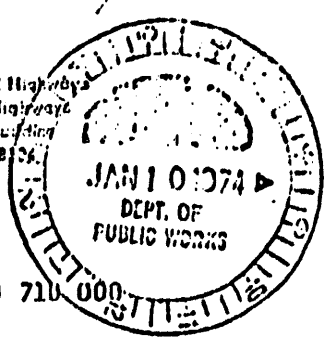
I recommend that we do not change our method of maintaining the Mackenzie Highway System.

J.A. MacDonald,
Deputy Minister.

# AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

PRESIDENT
George H. Andrews, Director of Highways
Washington Department of Highways
Highway Administration Building
Olympia, Washington 98504

EXECUTIVE DIRECTOR
Henrik E. Stafseth
341 National Press Bldg.
Washington, D. C. 20004
Telephone 628-2458




Your Ref: 30 710 000

December 27, 1973

Mr. J. R. Bentley, Chief,
Highways Division
Government of the Northwest Territories
Yellowknife, N.W.T., X0E 1H0
CANADA

Dear Mr. Bentley:

In response to your letter of December 13th, we are sending you, by airmail, a copy of our "Informational Guide for Methods and Procedures in Contract Maintenance, 1963", which was published by this Association.

Generally speaking, the highway organizations of the States do contract certain types of maintenance activities, but these are usually areas which are highly specialized in which the States do not find it expedient to maintain their own forces in sufficient numbers to do it themselves. Examples are, maintenance of traffic control signals in certain areas of the State, roadside mowing and snow removal operations when they exist (a certain minimum snow fall requirement, or in heavily urbanized areas where there is availability of contractor equipment to plow sub-division streets, etc.), and one other area which is probably most often contracted is asphalt resurfacing operations which many States find it expedient to contract for.

Many routine maintenance operations do not lend themselves to contract operations because of their irregularity of occurence, or due to specialized needs in timing and coordination, for example, dragging of an unsurfaced rural highway in the Spring when the weather conditions may only permit the operation to be done for one or two weeks.

It is very difficult to respond to your second question in a generalized way because each specific situation must be addressed as to accessibility; continuity of routing; location of population centers; materials sources; shipping points for receipt of materials. A great many of the individual States have undertaken maintenance management studies to answer exactly that question for their own specific situations.

December 27, 1973

I hope that this very briefly has been of some benefit to you, although I realize that I have not addressed all the questions which you have raised.

The Association will be pleased to work with you at any time to try and provide you with answers to any questions which you may have.

Sincerely yours,

H. J. Rhodes,
Assistant Director for
Technical Activities

HJR:mh
Encl.

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
COMMITTEE ON MAINTENANCE AND EQUIPMENT

REPORT OF
SUBCOMMITTEE ON CONTRACT MAINTENANCE

# METHODS & PROCEDURES USED IN CONTRACT MAINTENANCE

Committee: G. A. Meskal - Chairman (Minnesota)
R. C. Bannerman, Jr. (Florida)
James F. Kelley (Massachusetts)
S. V. Munsey (Virginia)
L. J. Siler (Kansas)
J. L. Stackhouse (Washington)

## INTRODUCTION

In highway maintenance it is necessary to have a basic maintenance organization with necessary equipment and materials to perform the routine maintenance work such as surface patching, spring repair, drainage work, mowing and weed cutting, traffic marking and grade lines, rubbish pickup, and other miscellaneous operations. This is also true of snow removal, ice control, flood and storm damage, road and bridge failures, and other emergency repairs, as the crews must be available at any time of day or night as well as on Sundays and holidays, to do the necessary work of repairing and reopening the road as quickly as possible and maintaining a safe travelable surface at all times.

Much of the maintenance work must be performed by regular crews inasmuch as it would be very difficult to let to contract many of the items in a maintenance program, especially routine maintenance and emergency operations, because of the large number of variables that enter into the work, and because it is practically impossible to define the work and set up pay items so that the work could be let by contract.

However, cost of special equipment and lack of specialized or skilled personnel does not always lend itself for the State to perform all of the work by its own forces and consequently it may be necessary that it call on the contractors and their organizations who have this equipment and trained personnel to help carry on some

of this work. The State maintenance organization should be such as to take care of routine work and immediate emergency repair work. Other specialty jobs can be performed more efficiently and economically by contract, or in case of an emergency by use of rented contractor's equipment. There are seasons of the year when there are peak loads of work, when it would be impractical for the department to build up its own organization sufficiently to handle the work load, and it would be faced with the problem of what to do with the men and equipment during slack periods.

A helpful solution to the personnel and equipment problem seems to be to plan for contract work certain portions of the maintenance program which can be identified under units of operation and which can be reasonably and practically let to contract. Contract maintenance should be considered when unit costs can be predetermined or estimated with reasonable accuracy and also if the scope and type of work is considered attractive to prospective bidders. No project is too small or too large to attract contractors if the work requirements are clearly set forth and the basis of payment is clearly defined.

Reports of the subcommittee on contract maintenance in previous years have shown that most states perform a considerable amount of maintenance work by contract and comprehensive reports were prepared covering listing of types of work performed, extent of contracts, description of work, units of measurement, average or representative costs, and results obtained.

The assignment to the subcommittee for this year is to develop methods for relieving maintenance forces of part of the maintenance burden, and to develop some guides for preparing specifications for contract maintenance items covering instructions to bidders, proposal requirements, award of contracts, bonding requirements, supervision and direction of the work, and traffic control.

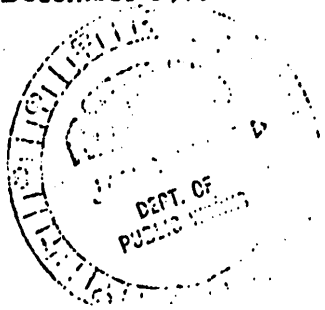
Reports submitted by the various states indicate that some 60 types of work are performed by contract. The 1960 and 1961 reports of this committee cover the summary of typical contract maintenance projects, showing scope of work and unit costs. It would be practically impossible to cover each specific type of work in this report; consequently a general guide only is submitted.

PROVINCE of PRINCE EDWARD ISLAND

DEPARTMENT of PUBLIC WORKS and HIGHWAYS

BOX 2000
CHARLOTTETOWN
C1A 7N8

21 December 1973




Mr. J. R. Bentley
Chief, Highways Division
Department of Public Works
YELLOWKNIFE, N. W. T.
X0E 1H0

Dear Sir:

SUBJECT: CONTRACTING HIGHWAY MAINTENANCE

Your letter re the above subject has just come to me for reply and we regret the delay.

Our experience with Highway Maintenance being done under contract is limited to snow removal, and on this phase of maintenance the following relates generally a review of this operation.

As you are probably aware snow removal in this province had been carried out by our own forces with the rental of contractors equipment on an hourly basis where and when we had difficulties meeting public demands. These demands continued to grow until we were employing contractors on a continuing basis in fixed areas. This beginning in 1960 was hastened by the fact that we purchased the snow removal attachments for various pieces of equipment available and supplied same free of charge. This then led to a contractor doing all the work in a designated area and his purchasing adequate equipment.

The next phase involved a method of arriving at satisfactory payments. We first went through a three year type of contract which had built-in safe guards for both government and the contractor. Each contractor participating had an assigned geographic area varying between one hundred and two hundred miles of road. During this period each contractor was required to keep accurate cost and time records and present an audited statement at the end of each season. The base price was four hundred dollars

per mile per season. If the audited cost was less than the base price less 10%, government and contractor shared the difference 50 - 50. If the audited cost was 10% above the base price, government bore the total excess. This gave us a fair idea over a three season period for a base of a fixed price contract. Since then we have worked on the three year contract base with an escalating clause geared to snowfall, which is now being measured daily by an independent body in some thirty locations in the province.

The personnel situation was rather simple since most of the people employed by government were on a casual basis, so were simply laid off during the Winter season. The better men were picked up by the contractor.

We still retain a fair capability of government forces in that we do about one third of the provincial milage mainly in the east of the province. Our cost records show that a contract operation is somewhat cheaper than government. Current contract price $610.00 per mile and government about 20% higher. The basic reason is that government is regularly tagged to do many extras for residents that is not in the terms of a contract.

I hope this will be of some use to you, and if you require details re our exact contract schedule and ties to snowfall please let us know and you may have same.

Again accept our apology for the delay, and my kindest personal regards at this season.

Yours truly,

M. F. Reeves, P. Eng.
Director of Technical
Services

Public Works Canada / Travaux publics Canada

Pacific Region / Région du Pacifique

Our File: 1275-1-1
Your File: 30-710-000

27 Dec 73

18 December 1973

Mr. J.R. Bentley
Chief, Highways Division
Department of Public Works
Yellowknife, N.W.T.

Dear Sir:

Re: Contracting of Highway Maintenance

Please refer to your letter of 15 November 1973 and your telex of 11 December 1973.

Your request for information on contracting routine maintenance of roads would take some time to provide meaningful cost analyses and we believe that the situation facing your Government may be somewhat different than that which we faced on taking over the N.W.H.S. from D.N.D. Terms of the handover from D.N.D. to D.P.W. in 1964 in effect placed D.P.W. in the role of custodian for an indefinite period of the highway system pending a final disposition. The Yukon portion of the system was to be handed over to Y.T.G. as soon as they had developed the capability to assume the full responsibility. In 1972 the first step was taken through an agreement whereby equipment, accommodations, materials and personnel were transferred to Y.T.G. and the responsibility for the day to day operation, however, control and funding remained with D.P.W. Canada. An understanding between Canada and the Province of British Columbia also existed that B.C. would assume responsibility for those portions of the Highway in B.C. as they were reconstructed and paved.

We were therefore administering a diminishing departmental responsibility whereas your Government would be dealing with a continuing and expanding facility.

On 712 miles of the system the routine maintenance is being carried out by Y.T.G. day labour forces and 543 miles in the Province of B.C. are being maintained by contract.



1444 Alberni Street / 1444, rue Alberni
Vancouver 5, B.C. / Vancouver 5 (C.B.)

Within the foregoing framework, our answers to your specific questions are:

1. Many factors had to be considered by the Department in arriving at the decision to administer a portion by contract and the remainder by day labour forces. The following factors were considered.

   - the establishment of the operation was strongly influenced by army concepts with provision of training for armed services personnel.

   - deployment of continuing employees included in the handover from D.N.D. could create hardships.

   - a major capital expenditure program for equipment replacement, improvements of camps, accommodations and other facilities for which no fund had been built up.

   - a considerable public pressure to improve the maintenance performance although the road had been constructed to a very low standard over twenty years previously.

Based in part on the assumption that a reconstruction and paving program for the Highway would proceed in an orderly time frame, the decision was made to contract the B.C. portion. The first section was let (83.6 - 265) in mid-summer 1965 and by April 1, 1968 the entire 543 miles was under contract (83.6 to 626.6).

2. In the case of routine and sectional maintenance we are of the opinion that departmental day labour forces are preferable to contract operation by reason of flexibility and control. There have been attempts by Provinces and States to maintain highways by contract, however we know of no Canadian Province or State of the United States that carries out these operations by contract.

(a) We anticipated somewhat higher costs per mile for contract services and although we have no meaningful cost comparison available, we feel that there is data available to confirm this position.

(b) Quality of maintenance can be controlled equally well through either system although resultant cost may be higher by contract since there is less flexibility under contractual obligations.

(c) Efficiency of operating becomes involved with (a) and (b) above and it is difficult to make any strong observations, i.e. a day labour project may be very inefficient with high cost but may be of high quality, or a contractual operation may be highly efficient and economical but without acceptable quality.

. . ./3

(d) In the hiring of local inhabitants we have no records to establish a pattern. It seems to us that it would be much easier to control the native or local resident content of the works by departmental day labour force rather than in a competitive tender.

3. Special maintenance operations were treated separately from the routine maintenance operations throughout the highway.

(a) Dust control/asphaltic or other surface treatments have been considered either in-house or contracted based on the specific operation required. Decisions were based on special equipment requirements, availability of competitive bids, etc.

(b) Traffic signing has always been considered by the Department as a routine maintenance function.

(c)&(d) Gravel crushing and surfacing are interdependent as a rule, perhaps more so where a water bound course is used for the surface as in the Alaska Highway. The prime requisite for a crusher operation is production and this is best motivated by a unit price contract than day labour salaries. Major consideration for surfacing is an adequate fleet of trucks and flexibility in fleet size is best obtained by contract in conjunction with the motivation of the crusher output. Isolated areas may lack the desired competition in the public tender process and it may be advantageous to accommodate a basic level of production in shop that should tend to stabilize bid prices on the contract sections.

(e) Grading equipment requires a continuing program of utilization to be economical and the work load is not always available in a maintenance operation. Often grading projects are planned to employ men and machines where they are employed within the Department. Some basic capability would be necessary for emergencies. Contracting enables the utilization of the best machines for any job. Landscaping, and we presume you mean grass seeding in the main, could best be handled separately from other contracts since it requires application in accordance with the growing seasons. In isolated locations this may best be carried out with departmental forces to eliminate payment for mobilization of equipment for each project under contract requirements and also to best utilize available time. Magnitude of contracts would be based on the working area available, productivity of contractors available and seasonal conditions to obtain most economical prices and also on ability to control inspection and evaluation.

4. We have no experience with contract repair services on major equipment items except on special phases or items.

. . ./4

5. First step in the reduction of day labour force was accomplished over a period commencing in mid-summer 1965, when the first contract was let , to April 1, 1968 when the three contracts were all functioning. Contractors tendering on each section were required to offer jobs to employees wishing to remain on their jobs. D.P.W. offered to relocate all those who did not wish to be employed by the contractor or to assist them to locate jobs elsewhere in the public service. The major camp in B.C. at Muskwa was sold through C.A.D.C. with other camp reserves being turned over to the Province. The Province agreed to permit the use of the areas by contractors with the buildings and facilities being sold to the first contractor. All equipment and parts were retained in our own labour force section with obsolete units sold through C.A.D.C.

   The final step was completed April 1, 1972 when all camps, equipment, parts, materials and supplies were handed over to Y.T.G. and all personnel were transferred to the Y.T.G. A few employees chose to retire at this time, some who did not wish to transfer were relocated to other positions in the public service but the majority did accept transfer. A good deal of preparation and salesmanship was required by both D.P.W. and Y.T.G.

6. Contract sections for terms of 3 years each were established as follows:

   - Contract #1 - Ft. St. John to Ft. Nelson Mile 83.6 - 300
   - Contract #2 - Ft. Nelson to Lower Liard Bridge - Mile 300-496
   - Contract #3 - Lower Liard Bridge to Y.T. Boundary - Mile 496 - 626.6

   Contracts are arranged so that one only is renewed each year. Contract lengths were related to a size sufficient to provide appeal to major contractors and for control.

   We were using sections of approximately 100 miles for purposes of camp section on our day labour forces.

7. Current staffing requirement for the B.C. Alaska Highway Contract Mtce. section is all located in Ft. Nelson, B.C., other than our own regional operational, financial and administration establishment in Vancouver and Whitehorse. We have a Project Manager, D.W. Anderson, with a staff of five Contract Inspectors and two clerical positions. There are 543 miles of trunk roads in the area and while we do maintenance on some other short sections of ancillary roads, they constitute only a very minor part of the work.

   I am attaching an appendix in which we have shown some of the data that is readily available and may be of some interest to you.

   Mr. Anderson will be away from Christmas to approximately the middle of January, but if more cost data is desirable, Mr. Coates in Whitehorse should be contacted.

W. Koropatnick
Regional Director

# APPENDIX

## TABLE 1 - CONTRACT AWARD DATA

| | TERM | AMOUNT | COST/MILE/YEAR |
|---|---|---|---|
| Contract #1 | 1965-1969* | 2,150,825 | $2,850.00 |
| Mile 83.6 - 300 | 1969-1972 | 2,250,180 | 3,470.00 |
| | 1972-1975 | 2,714,850 | 4,190.00 |
| | * 3.5 year contract - all others 3 yrs. | | |
| Contract #2 | 1967-1970 | 2,395,950 | 4,070.00 |
| Mile 300-496 | 1970-1973 | 2,399,370 | 4,080.00 |
| | 1973-1976 | 3,106,164 | 5,300.00 |
| Contract #3 | 1968-1971 | 1,214,036 | 3,100.00 |
| Mile 496-626.6 | 1971-1974 | 1,474,430 | 3,750.00 |

Contract costs do not include our administration costs or materials and supplies (including blades).

## TABLE 2 EXTRACT FROM ANNUAL REPORT RURAL ROAD MILEAGE, D.O.T.

| YEAR | N.W.H.S. B.C. | YUKON |
|---|---|---|
| 66/67 | 2,542,000 | 1,839,200 |
| 67/68 | - | - |
| 68/69 | 2,821,800 | 1,840,200 |
| 69/70 | 3,107,498 | 1,888,621 |
| 70/71 | 3,236,899 | 3,760,334 |
| 71/72 | 3,615,600 | 3,602,100 |

Note: Does not include administrative costs, but includes capital acquisition.

## TABLE 3 TOTAL OPERATION & MAINTENANCE BUDGETS

| | YEAR | EXPENDITURES |
|---|---|---|
| Mileage | 67/68 | 6,384,000 |
| 655 | 68/69 | 6,097,000 |
| | 69/70 | 6,290,000 |
| | 70/71 | 6,730,000 |
| | 71/72 | 7,727,000 |
| | 72/73 | 8,369,000 |
| Estimated | 73/74 | 9,044,000 |

30 710 000

Ontario

Ministry of
Transportation
and
Communications

1201 Wilson Avenue,
Downsview, Ontario.
M3M 1J8.
December 10, 1973.

Mr. J.R. Bentley,
Chief, Highways Division,
Department of Public Works,
Government of the Northwest Territories,
Yellowknife, N.W.T.,
X0E 1H0.

Dear Mr. Bentley:

re: Contracting of Highway Maintenance
Your file: 30-710-000

I have your letter of November 16th regarding the above and wish to advise that all routine maintenance work on the provincial highway system in Ontario is done by our own forces. Since we do not contract out routine maintenance, I am not in a position to advise you on how this could be done or what the ideal length would be.

Here in Ontario there are 320 patrols established throughout the province, averaging 4-5 permanent employees per patrol and each patrol is responsible for the routine maintenance of approximately 40 miles of highway.

In addition to the routine maintenance, contracts are called for many of the items you have listed. The following will indicate the approximate percentages which are done by Day Labour (our own forces) and outside contract work.

| | Day Labour % | Contract % |
|---|---|---|
| 1. (a) Dust Control | | |
| (i) Application of liquid Calcium Chloride | - | 100 |
| Application of Flake Calcium Chloride | 100 | - |
| (ii) Prime (Asphalt) | 35 | 65 |



/contd.....

| | Day Labour % | Contract % |
|---|---|---|
| (b) Asphalt Surfacing | | |
| (i) Surface Treating | 35 | 65 |
| (ii) Mulch | 100 | - |
| (iii) Hot Mix Resurfacing & Hot Mix Patching | - | 100 |
| (iv) Cold Mix Patching | 100 | - |
| 2. Traffic Signing | 100 | - |
| 3. Gravel Surfacing | 75 | 25 |
| 4. Gravel Crushing | 10 | 90 |
| 5. (a) Grading | - | 100 |
| (b) Landscaping | 100 | - |
| (c) Grass Seeding | 50 | 50 |
| (d) Grass Mowing | 90 | 10 |
| (e) Tree Planting | 100 | - |
| (f) Weed and Brush Control | 100 | - |
| 6. Equipment Repair | 100 | - |
| 7. Bridge Painting | 15 | 85 |
| 8. Stockpiling Screened Sand for Winter Maintenance | 30 | 70 |

At the present time, equipment for priming and surface treatment owned by the Ministry is located in two areas, (Cochrane and North Bay) and special crews have been trained to operate this equipment. In most other areas of the province, this work is done by contract.

The Ministry owns one primary and one secondary crusher which are located in the Thunder Bay District, but can be moved to Kenora District or Cochrane District if required. (This is often done if proposed contract work is bid too high.

/contd...

Most of the gravel crushed by contract is stockpiled for future maintenance use by our own forces, but where conditions warrant it, the contract may require a contractor to place this gravel directly on the road.

Winter plowing is done entirely by our own forces and the Ministry owns sufficient equipment (plows, snow blowers and graders) for this purpose. The application of sand and salt, however, is contracted for in each of the 18 districts throughout the province. The sanding unit is owned by the Ministry and mounted on the truck of the lowest bidder for any particular location. The trucker bids on an hourly basis with a standby time allowance of $9.00 per day whether the truck is working or not.

Some of the contract work listed above is done 100%, or almost, by contractors because the Ministry does not own equipment to do this type of work. This includes application of Liquid Calcium Chloride, Hot Mix Resurfacing and Hot Mix Patching, Grading (road rebuilding prior to landscaping), and Gravel Crushing (90%). It is felt the above type of work which requires considerable outlay for capital equipment can be done more economically by contract than by Day Labour. For work which is shown on the above list as being done 50% by Day Labour there is not, in our opinion, any appreciable saving one way or the other.

We have not phased out work done by our own forces for the purpose of doing the work by contract. Rather, the maintenance contracts have been called to supplement the work of our own forces and in areas where there may not be sufficient bids by contractors (Northern Ontario) to provide what is considered a reasonable bid, the Ministry has equipment available to do some of the work, i.e. Gravel Crusher and Prime and Surface Treating Equipment.

Yours truly,

H.W. Adcock, P. Eng.,
Assistant Deputy Minister
(Engineering and Operations)

30 710 000

REFER TO FILE
40.00

GOVERNMENT OF THE PROVINCE OF ALBERTA

DEPARTMENT OF HIGHWAYS

Highways Building
97 Ave. & 106 St.
Edmonton, Alberta
December 7, 1973

Mr. J. R. Bentley
Chief, Highways Division
Dept. of Public Works
Yellowknife, N.W.T.

Dear Sir:

Your letter of November 16, 1973 to Mr. R. H. Cronkhite has been directed to this office for reply. You are advised that all routine maintenance work in the Department is performed by our own crews under the direction of the District engineer. At times this is supplemented with hired equipment on a day labor basis.

With regards to special projects the following is an outline of our procedure:

(1) (a) Dust Control
Use of government camps and hired equipment on a day labor basis.

(b) Asphalt surfacing is considered as a construction phase and all work is done by Contract. This includes asphalt overlays.

...

30 710 000

GOVERNMENT OF NEWFOUNDLAND

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

ST. JOHN'S

RG/77

4 December, 1973

Mr. J.R. Bentley,
Chief, Highways Division for Director,
Dept. of Public Works,
Government of the Northwest Territories,
Yellowknife,
X0E 1H0.

Dear Sir:

This is in reply to your letter of November 16th re contracting of highway maintenance.

We contract highway maintenance in the vicinity of Labrador City and Wabush in Western Labrador. That area has no connection to the Provincial highway system and all maintenance work is carried out by a local contractor. Enclosed are form of tender and special provisions included in the contract.

From time to time we contract individual items of work such as highway marking, bridge painting, erection of guard rails, etc. We have no form of tender for those works as each contract is based on the individual requirements.

We have no comparision between contract costs and our own as we contract only where we are not in a position to undertake the work with our own forces.

Yours faithfully,

J.A.C. MacDonald, P. Eng.,
Deputy Minister.

/gv
Encl.

# SPECIAL PROVISIONS

It is the intent of this contract to provide summer and winter maintenance on approximately 12 miles of gravel road and 3 miles of paved road in a manner and to a standard to provide an adequate driving surface for the volume and type of traffic using the roads. This contract commences June 1st, 1973 for the maintenance of the paved roads from the boundary of the Town of Wabush and the Airport to Little Wabush Bridge points A and B to C on the attached plan and the gravelled access road to Duley Lake Park points E to G. The maintenance of the gravelled road from Labrador City to the Provincial Boundary points D and F commences November 1, 1973. This contract terminates May 31st, 1975.

In addition to maintaining the above roads which require regular attention the contractor will be requested from time to time to perform minor works on the Julian Lake Road. In such event equipment used will be paid for at rates tendered and such rates shall cover supervision of the work. The Department will also reimburse the contractor for actual costs of labour and materials plus 15%.

The contract will be subject to the supervision of the District Maintenance Office of the Department of Transportation and Communications at White Hills, St. John's.

In general the work will include grading the surface of gravel roads, undertaking the repair and prevention of minor faults in paved surfaces such as small potholes, the maintenance of ditches and culverts in a condition to accommodate normal run-off, snow clearing and related work. Ice control is not included but will be considered if required. In no event will ice control be undertaken unless prior approval, in writing, is obtained from the Department.

The successful tenderer must be in possession of all the necessary equipment and tools to carry out the work required under the contract. Such equipment will include a motor grader rated at not less than 100 h.p., trucks and loader. The contractor will be required also to provide competent supervision and personnel.

The repair of asphalt surfaced roads other than minor repair of potholes will be undertaken once annually. The contractor, in consultation with supervisory personnel of this Department, will determine the extent of repairs, estimate the cost and submit a written report to the Assistant Deputy Minister (Technical Services) for approval prior to any work being commenced.

Dump trucks and loaders will be included only on an "as required" basis as determined in consultation with District Supervisory personnel at the rate tendered. The rate per hour will include all costs of operation of the units and payment will be made only on the hours actually worked on the job and no payment will be made for transportation of the units to or from the work site.

All costs of service vehicles for transportation of tools, materials - other than road building materials, personnel and supervision will be included in the price tendered.

All culverts required in the work will be supplied by the Department F.O.B. Labrador City.

The tender price will also include all necessary insurances, public liability, property damage, payroll burdens such as U.I.C., vacation pay, workmen's compensation, premiums, health and accident insurances, etc., necessary to carry out the work in such a way that no claims for damage will accrue to the Minister of Transportation and Communications as a result of the work performed by the contractor.

PROVINCE OF NEWFOUNDLAND

DEPARTMENT OF HIGHWAYS

DECLARATION OF EQUIPMENT

In the event of being awarded the contract, the undersigned will make available for the work, the plant and equipment listed below:-

| Quantity | Description | Capacity | Age | Present Location | Owner's Name |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

.....
Contractor

.....
Address

.....
Date

Should this tender be accepted, the undersigned agrees to enter into a written agreement with the Department of Transportation and Communications of the Province of Newfoundland for the faithful performance of the works covered by this tender, in accordance with the specifications, and complete the work on or before As Specified

The undersigned encloses herewith as a deposit an accepted cheque payable to the Department of Transportation and Communications of the Province of Newfoundland for the sum of at least 10% of the amount of the tender or a bid bond acceptable to this Department and the undersigned hereby forfeits all rights and title to the said deposit should the undersigned, when called upon, to do so, fail to sign and execute a written agreement with the Department of Transportation and Communications for the carrying out of the work in accordance with the aforesaid plans and specifications.

The Department of Transportation and Communications reserves the right to reject any or all tenders, to accept any tender, or to accept any offer which it may consider in the best interests of the Province.

_____
(Contractor)

_____
(Address)

_____
(Date)

To the Deputy Minister of Transportation and Communications of the Province of Newfoundland.

I/We _____

the undersigned, hereby tender and agree to execute all the work of every description and supply all the material, implements, tools, etc., and furnish all the labour required for the maintenance of approximately 15 miles of road in the vicinity of Town of Wabush and Labrador City and highway from Labrador City to Provincial Boundary and road to Duley Lake Park in strict accordance with the specifications for the following unit price or prices given in figures and also written in words:

| Item | Description | Unit | Rate |
|---|---|---|---|
| 1 | Maintenance of Roads | $ per month | $ |
| 2 | Truck Hire | $ per hour | $ |
| 3 | Loader Hire | $ per hour | $ |
| 4 | Grader Hire (Julian Lake Rd. Only) | $ per hour | $ |

PROVINCE OF NEWFOUNDLAND

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

# FORM OF TENDER

# FOR

# MAINTENANCE OF ROADS

Location: Vicinity of Town of Wabush and Labrador City and Highway from Labrador City to Provincial Boundary and road to Duley Lake Park.

Length: Approximately 15 miles

Contractors: _____

Date: _____

PA 30 710 000

DEPARTMENT OF HIGHWAYS

NOVA SCOTIA

D. J. HAMM
CHIEF ENGINEER

7 Dec 73

HALIFAX, Nova Scotia
November 29, 1973

Mr. R. Bentley
Chief Highways Division
Department of Public Works
Government of the Northwest Territories
YELLOWKNIFE, X0E 1H0

Re: Your letter of November 16, 1973, concerning the contracting of Highways Maintenance

Dear Mr. Bentley:

Basically, all routine maintenance in Nova Scotia is done exclusively by Department forces and we are not considering any change in this policy, therefore, we can only contribute by giving you information as pertains to our present policy.

Special maintenance and repair operations may involve private contractors, due to restricted time limits involved to carry out the work and a desire not to expand our own forces when it is of an emergency nature, seasonal or of short duration.

1. Dust Control - We apply approximately 5,500 tons of liquid calcium chloride throughout the summer season, and we hire private contractors to apply the initial applications early in June. Following the initial application, we continue the dust prevention operation with our own Department vehicles equipped with small tanks. By using private contractors' equipment with large tanks, we obtain a fast application of calcium chloride and this controls the dust on the majority of the gravel roads in the Province.

2. Asphalt Surfacing - The capital paving and repaving of asphalt surfaces is carried out almost 100% by private contractors. We place approximately one million tons of asphalt per year and of this amount, 150,000 tons are placed by Department forces using two mobile asphalt plants. Maintenance patching is carried out almost 100% by Department forces.

2. Traffic Signing - The Department of Highways has a new central sign shop at Truro and it produces all the normal signs for the Province with erection and maintenance being carried out by Department Personnel. Special overhead signs and structures are purchased privately and erected by private contractors.

3. Gravel Surfacing on county roads - Work of this nature is carried out under the supervision of Department Personnel using rented trucks. The majority of the rented trucks are locally owned, privately operated rather than major trucking contractors.

4. Gravel Crushing - The Department has a number of gravel crushers; however, to meet the overall crushing needs of the Department, it is necessary to use private contractors due to the large volumne of gravel crushed in the Province each year. Crushing by private contractors is cheaper than that carried out by the Department; however, the cost comparisons are influenced by the large quantities being crushed by the private contractor, compared with small quantity and multiple set ups for Department units.

5. Grading - I assume this refers to reconstruction by Department forces of existing secondary roads. We spend approximately 3 to 5 million for the reconstruction of county roads by Department forces and 40 to 50 million by contract for reconstruction of local roads and construction of new highways in the Province.

6. Equipment repair - The Department maintains a system of 14 mechanical repair depots throughout the Province staffed by specially trained mechanical personnel.

I hope this information is of some use to you in preparing your report. If you ever visit Nova Scotia, I could arrange for a member of our staff to show you the highway system and explain how each highway division operates.

Yours very truly,

- B. J. Hamm -
Chief Engineer

Government of the Yukon Territory

BOX 2703, WHITEHORSE, YUKON TELEPHONE 403-667-7811 TELEX 0-98260

OUR FILE 500'
YOUR FILE 30 710 000

3 Dec 73

Mr. J. R. Bentley
Chief, Highways Division
Department of Public Works
Yellowknife, N.W.T.
X0E 1H0

Dear Jim:

Contracting Highway Maintenance

This is to acknowledge your letter of November 16th.

At this time all the routine highway maintenance work is carried out by our own forces. The only government agency in this part of the northwest that has experience with contracts on highway maintenance is the Department of Public Works of Canada. Their contractor, I believe, is responsible for the Alaska Highway from M.P. 83 to M.P. 626. I would suggest, if you have not already done so, that you contact the D.P.W. Vancouver office for further information in this regard.

However, we do undertake certain operations by contract as follows:

1. Dust Control - Since we are using CaCl special equipment is necessary for spreading the flake CaCl, and because we have no desire to own such equipment the work is contracted. We do have an asphalt distribution which is used throughout the territory for dust control in communities. This outfit was purchased many years ago when contractor equipment was not available. All asphalt surfacing is done by contract. We have no figures to compare dust control and asphalt surfacing by government forces against contract because we have chosen the latter method for these programs.

2. Traffic Signing - This work is done by our own forces as part of routine maintenance.

3. Gravel Surfacing - This operation is done by our forces and also by contract. As far as we can ascertain the costs are comparable. The size of our resurfacing program dictates that we use contractors.

4. Gravel Crushing - We have one Y.T.G. crusher in operation but the better part of the season's yardage is done by contract. Costs are comparable. We have found that for various reasons contractors do not always complete their jobs and the crushing product does not always meet specifications. There is a tendency for contractors to avoid material in the 200 mesh range in wet weather in order to keep up their production.

5. Grading/Landscaping - I assume that this means building of the grade and this work is all done by contract.

6. Equipment Repair - We operate a mechanical section which does practically all the repairs. Some engine and transmission work is done by local shops.

We have not phased out portions of our operations so I cannot advise you in this respect. I suggest you contact D.P.W. in this regard because they went through this exercise on the Alaska Highway.

In summary, routine maintenance is done by Y.T.G. forces with special tasks and heavy work loads done by contract.

Merry Xmas!

Very truly yours,

K. J. Baker
Director of Highways
and Public Works

File no. 781/288409

Your file: 30 710 000

DEPARTMENT OF HIGHWAYS
VICTORIA

November 29, 1973.

Mr. J. R. Bentley,
Chief, Highways Division,
Director, Dept. of Public Works,
Government of the Northwest Territories,
Yellowknife, N.W.T.
X0E 1H0

Dear Mr. Bentley:

Re: Contracting of Highway Maintenance.

This is in reply to your letter of November 16th to our Deputy Minister regarding contract maintenance and the ramifications of phasing out existing operations undertaken by your own forces.

Highways maintenance in the Province of British Columbia is carried out by Department of Highways forces and, except for the occasional rental of private equipment, none of it is contracted out.

Some operations, such as gravel crushing and landscaping, are contracted out but this is only when demands are such that they cannot be met within a specific fiscal year by our own forces.

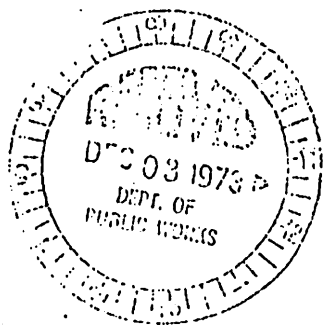
Gravel crushing for our district operations is usually done by Departmental crushers but in this past year we also produced additional material by calling about eight contracts throughout the Province. Average cost per ton for producing 3/4" crushed granular material by Departmental crushers is 30¢ to 50¢, and by contract 70¢ to $1.00.

Landscaping by Department forces is generally quite a bit cheaper than that done by contract.

Yours very truly,

P. B. MacCarthy,
Senior Maintenance Engineer.

PBM/jc



Province of Saskatchewan

DEPARTMENT OF HIGHWAYS AND TRANSPORTATION

REFER TO FILE

56-1

Government Administration Building,
Regina, Saskatchewan.
S4S 0B1

November 28, 1973.

Mr. J. R. Bentley,
Chief, Highways Division,
Government of the Northwest Territories,
YELLOWKNIFE, N.W.T.
X0E 1H0

Dear Sir:

Re: Contracting of Highway Maintenance

At the present time, there is very little routine maintenance work carried out in the Province of Saskatchewan under contract. The very few sections we do have are isolated gravel mileages which are contracted to a rural municipality. This is done strictly for convenience, as the isolated section may be many miles from the headquarters of the crew responsible for the section. In general, we are almost exclusively doing maintenance work with our own forces.

Regarding the special maintenance and repair items listed, I will deal with these in the order in which you had them in your letter.

The application of dust control agents on gravel surfaces is contracted out and includes the actual placement of the material on the gravel surface. This is done because of the specialized equipment needed for spraying calcium chloride, which is our normal dust control agent. As far as asphalt surfacing is concerned, all surfaces involving the use of bituminous concrete and gravel base courses are applied under contract. The department does, however, utilize their own forces for the oil surfacing of gravel highways. This oil surfacing is basically a one inch cold mix mat placed on the subgrade. We have also contracted this oil treatment, but generally this occurs only when our forces are not able to handle the overload. It is my experience that the calibre of the job appears to be better with our own forces than

with contractors, although I believe that lack of experience and the profit motive are the main causes of this. It is also probable that if a contractor was given sufficient of this type of work, they would soon become relatively efficient, and their end product more in line with that provided by our own forces.

As far as traffic signing is concerned, this is handled strictly by department forces. I might add that our traffic signs are purchased under contract, as we do not operate a sign shop of our own which is common to most provincial and state agencies. We did, for one winter, operate our own sign shop and found substantial savings in the manufacture of our own traffic signs. This was only for the winter period and utilized staff from the pavement marking crews who would otherwise have been laid off during the winter. The full-time operation of a sign shop would, however, be questionable as to its efficiency and economy. We dealt strictly with the production of our major sign purchases and did not get involved in the specialized signs, one of a kind type, and directional signs. We confined ourselves solely to the standard signs under the R.T.A.C. Manual.

The gravel surfacing of highways is normally carried out under contract as the Department of Highways does not own any gravel crushers. We do, however, have several screening plants which are used for small jobs or the placement of winter material for sanding. These may also be used on our northern areas where a minimum of gravel would be required on certain sections to delay the complete gravel resurfacing of a highway section.

Normally in the gravel surfacing of highways, the contract is let with haul to the road, plus gravel stockpiling. During the period between the regravelling and stockpiling, the addition of material from stockpile is normally handled by maintenance crews. Should a gravel treatment be required generally on the complete section, and material is available in stockpile, this operation may or may not be carried out by our own forces, depending upon the availability of equipment.

As mentioned in the previous paragraph, all gravel crushing is carried out under contract.

With regard to the grading associated with landscaping, this is carried out primarily by our own forces, based mostly on convenience. We do, however, strive to have any landscape grading requirements included in the original grading contract with the highway itself. Where this has not been done, we normally would undertake this work ourselves, possibly based on a day labour rental of grading equipment. The maintenance activity itself does not have grading equipment beyond motor graders and front end loaders. The landscaping itself will vary, again depending on the availability of our own forces or the contractor's. Much of the work that has been done has been contracted out to nurseries for the actual planting operations. The maintenance of these sites is carried out as a routine maintenance function. I might add that it is often quite difficult to get someone prepared to do this type of work. In the area of hydro-seeding or specialized applications in erosion areas we would go to contract or equipment .

rental rather than attempting to do it with our own forces, as we do not have the specialized equipment.

Almost all repair of our equipment fleet is carried out under the jurisdiction of our own equipment repair shops. The type of equipment used in road maintenance, or much of it, is of a highly specialized nature and facilities for this type of repair are not generally available elsewhere. There are areas where this may be available, but these are generally very limited. The use of our own equipment shops allows us to do many modifications, actual construction of certain specialized pieces of equipment and the convenience afforded by having control of your own repair operation. In the province, we now have eight repair depots, only two of which are located in the major centres. The rest of them are in the smaller cities where facilities are definitely not available.

I hope this is the information you require. If not, or if further information is required, please feel free to contact me.

Yours truly,

R. O. Houston,
Maintenance Engineer.

ROH/dh

PLEASE QUOTE

FILE 30 719 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
13 December 1973.

The American Association of State
Highway Officials,
341 National Press Building,
Washington, D.C. 20004,
United States of America.

Dear Sir:

Contracting of Highway Maintenance

Highways Division is currently investigating all facets of contract maintenance, and determining the ramifications of phasing out the existing operations undertaken with our own forces.

We would appreciate your enlightening us regarding the experiences of the fifty States in utilizing contractors' forces versus Departmental forces in various highway maintenance operations. Hopefully, you may have in hand a committee report, or a brief on the subject, that relates to specific State practices and/or the general situation.

Some of the specific questions we must answer in our investigation and report are:

1. What criteria do State highway officials consider when they decide to convert (or not to convert) to contract work for routine maintenance - i.e. cost saving, quality of maintenance, efficiency of operation, hiring record related to local inhabitants, isolation of a specific operation, etc? Then which of these factors favour contract maintenance?

. . . 2

2. What is the ideal length of highway to assign to a contractor from the point of view of economy, class of highway, contractor's capabilities and best control by contract inspectors? In comparison, what were the respective lengths of highway maintained by departmental forces charged with routine maintenance responsibilities?

3. With regard to special maintenance and repair work, which of the following operations do State highway officials tend to assign to contractors:

   a. Dust Control;
   b. Asphalt Surfacing;
   c. Gravel Surfacing;
   d. Gravel Crushing;
   e. Grading;
   f. Traffic Signing;
   g. Equipment Repair; and
   h. Landscaping?

   Please comment on whether such assignments are based on cost savings, overload situations, better performance, specialization, political considerations and/or other reasons.

4. How do State highway officials handle and stage the phase-out of their own forces and dispose of equipment and facilities when converting to contract work?

We would greatly appreciate your cooperation in replying to our questions on contract maintenance at your earliest convenience to assist us in preparing a report due 7 January 1974 to the Assistant Commissioner of the Northwest Territories.

Yours sincerely

F. E. Bentley
Chief, Highways Division
for Director,
Department of Public Works.

WHEFEH/hr

PLEASE QUOTE

FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES

CANADA

Yellowknife,
Northwest Territories
X0E 1H0
Canada
14 December 1973

Director
Department of Highways
State of Alaska
Juneau, Alaska
U.S.A.

Dear Sir:

Contracting of Highway Maintenance

Highways Division is currently investigating all facets of contract maintenance, and determining the ramifications of phasing out the existing operations undertaken with our own forces.

We would appreciate your enlightening us regarding the experiences of the Alaska Department of Highways in utilizing contractors' forces versus Departmental forces in various highway maintenance operations.

Some of the specific questions we must answer in our investigation and report are:

1. What criteria does your Department consider when it decides to convert (or not to convert) to contract work for routine maintenance, i.e. cost saving, quality of maintenance, efficiency of operation, hiring record related to local inhabitants, isolation of a specific operation, etc? Then which of these factors favour contract maintenance?

2. What is the ideal length of highway to assign to a contractor from the point of view of economy, class of highway, contractor's capabilities, and best control by contract inspection? In comparison, what were the respective lengths of highway maintained by Departmental forces charged with routine maintenance responsibilities?

. . . . . 2

3. With regard to special maintenance and repair work, which of the following operations does your Department assign to contractors?

a. Dust Control;
b. Asphalt Surfacing;
c. Gravel Surfacing;
d. Gravel Crushing;
e. Grading;
f. Traffic Signing;
g. Equipment Repair and
h. Landscaping?

Please comment on whether such assignments are based on cost savings, overload situations, better performance, specializaiton, political considerations, and/or other reasons.

4. How does your Department handle and stage staff reductions and dispose of equipment and facilities when coverting to contract work?

We would greatly appreciate your co-operation in replying to our questions on contract maintenance at your earlies convenience to assist us in preparing a report due 7 January 1974 to the Assistant Commissioner of the Northwest Territories.

Yours sincerely,

J. R. Bentley
Chief
Highways Division
for
Director
Department of Public Works

WHITFXH/lc

PLEASE QUOTE
FILE 30 7 10 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
16 November 1973.

Dear Sir:

Contracting of Highway Maintenance

Highways Division is currently investigating all facets of contract maintenance, and determining the ramifications of phasing out the existing operations undertaken with its own forces.

We would appreciate your cooperation in relating your experience in utilizing contractors' forces versus Departmental forces in various highway maintenance operations.

Could you please enlighten us regarding your current situation. For example do you have any maintenance contractors performing routine maintenance work? If so, what criteria do you use for converting to (and from) contract maintenance - i.e. cost saving, quality of maintenance, efficiency of operation, hiring record related to local inhabitants, etc? What is the ideal length of highway to assign to a contractor from the point of view of economy, class of highway, contractors' capabilities and best control by contract inspectors?

Concerning special maintenance and repair operations, could you please indicate (complete with reasons) which of your operations are currently contracted, and comment on the relative cost and performance compared to operations by your own forces. I would like to relate your experience to the following operations undertaken by our Division:

1. Dust Control/Asphalt Surfacing;

2. Traffic Signing;

3. Gravel Surfacing;

. . .2

4. Gravel Crushing;

5. Grading/Landscaping; and

6. Equipment Repair.

In cases where you have phased out your own forces, could you please advise on your method of staging and handling staff reductions and disposing of equipment.

We would appreciate your cooperation in replying to the above questions at your earliest convenience to assist us in preparing a report due 1 January 1974 to the Assistant Commissioner of the Northwest Territories.

Yours sincerely

J. R. Bentley
Chief, Highways Division
for Director,
Department of Public Works

Mr. B. J. Hamm
Chief Engineer
Nova Scotia Department of Highways
Parliament Buildings
Halifax, Nova Scotia.

Mr. H. W. Adcock
Assistant Deputy Minister
Engineering and Operations
Ontario Ministry of Transportation
and Communications
Highway 401 and Keel Avenue
Downsview, Toronto
Ontario.

Mr. J. Gilmore
Deputy Minister
Department of Public Works and Highways
Province of Prince Edward Island
Charlottetown, P. E. I.

Mr. Claude Rouleau
Deputy Minister
Quebec Department of Transport
880 Ch St Foy
Quebec City, P. Q.

Mr. T. B. Gentles
Acting Deputy Minister
Saskatchewan Department of Highways
and Transportation
Administration Building
Regina, Saskatchewan.

8
11

Mr. J. A. C. MacDonald
Chief Highways Engineer
Newfoundland Department of Transportation
and Communications
Parliament Buildings
St. Johns, Newfoundland.

Mr. G. D. Roeleder
Chief Highways Engineer
New Brunswick Department of Highways
Fredericton, Brunswick.

Mr. J. Peacock
Chief Engineer
Manitoba Department of Highways
Highways Building
1075 Portage Avenue
Winnipeg, Manitoba.

Mr. H. T. Miard
Deputy Minister
British Columbia Department of Highways
617 Government Street
Victoria, British Columbia.

Mr. R. H. Cronkhite
Chief Highways Engineer
Alberta Department of Highways
and Transport
Highways Building
106 Street & 97 Avenue
Edmonton, Alberta.

Mr. K. J. Baker
Director
Department of Highways & Public Works
Government of the Yukon Territory
P. O. Box 2703
Whitehorse, Yukon Territory.

PLEASE QUOTE
FILE 730 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
15 November 1973.

Mr. W. Koropatnick,
Director,
Pacific Region,
Department of Public Works,
1444 Alberni Street,
Vancouver, British Columbia.

Dear Sir:

Contracting of Highway Maintenance

Highways Division is currently studying, and will be reporting on, all facets of contract maintenance and investigating the ramifications of phasing out the existing day labour operations.

Based on your experience in converting the ex-D.N.D. Alaska Highway day labour operation to contract maintenance, we would appreciate receiving your comments on the following points:

1. What were the main reasons for your decision to convert to contract maintenance?

2. In the case of routine and sectional maintenance, are you convinced that the present contract maintenance operations are preferable to day labour operations with respect to:

   a. Cost*

   b. Quality of maintenance;

   c. Efficiency of operation; and

   d. Hiring record related to local inhabitants?

*Please specify realized cost savings/non-savings and actual cost per mile.

. . . 2

3. Were special maintenance operations treated separately when the decision was made to convert to contract maintenance? If so, could you please advise whether you realized cost savings and improved service in the following operations:

   a. Dust control/asphalt surfacing;

   b. Traffic signing;

   c. Gravel crushing;

   d. Gravel surfacing; and

   e. Grading/landscaping.

   In addition, what criteria is applied to determine magnitude of contracts? In fact, do you have examples of tenders?

4. Prior to converting to a total contract maintenance operation, had you experimented with day labour and contract equipment repair services? If so, which system proved to be more economical, and which system was more satisfactory with respect to the quality of repair work and service?

5. How did you stage the reduction of day labour staff - i.e. what time frame and criteria did you apply? Were ex-employees absorbed into the Yukon Territorial Government Highways operation or other Federal Department of Public Works positions? Did maintenance contractors hire some of those laid off? Basically, how did you dispose of equipment?

6. How did you determine the most ideal length of highway for individual contractors to maintain? What were the respective lengths of highway maintained by day labour forces charged with routine maintenance responsibilities?

7. What is the current staffing requirement in Vancouver and the field for the B.C. portion of the Alaska Highway? What is the total length of trunk and secondary highways that you are maintaining?

. . . 3

PLEASE QUOTE
FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
28 December 1973.

D. A. Whiffin
Head of Operations
Highways Division
Department of Public Works

Re: Contracting of Highway Maintenance

The approach I visualize in regard to Department of Indian and Northern Affairs will involve consultation immediately after the Executive review our report and we are in a position to estimate what the consequences are in dollars. Depending on the outcome of that consultation we may be encouraged to call tenders to determine the validity of our comparative estimate. Subsequent to tender call a submission would then be presented to Treasury Board on much the same basis as for Linton's Contract.

If the extra dollars are not significant (more than 25%) I believe Treasury Board will agree with contractual work since this fits in with the politics of the present Federal Government.

J. R. Bentley
Chief, Highways Division
Department of Public Works

T30 710 000

PLEASE QUOTE

FILE

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.
January 4, 1974

CHIEF, HIGHWAYS DIVISION
DEPARTMENT OF PUBLIC WORKS

In reply to your memorandum of 17 Dec. 1973 reference T30 710 000 we attach copy of the procedure relating to the disposal of Government assets.

A number of the sections refer to stock taking deficiencies, etc. and would not apply, however, the procedure does spell out the steps to follow when disposing of equipment and should provide the information required for your report.

R.E. Loftus
Chief, Supply Services
Department of Administration

Attach.

30 210

FILE

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.
January 2, 1974.

DIRECTOR
DEPARTMENT OF PUBLIC WORKS

Contracting of Highway Maintenance

This is in response to your memo of December 17, 1973, on the above subject.

If and when it is decided to contract highway maintenance, this department should be notified of the effective date of this action in sufficient time to enable us to notify each of the thirty-nine employees involved that they will be laid off within a period of three months.

The fact that maintenance will be contracted out will probably be known well in advance, and this should enable those employees who are interested in staying with this government to apply on competitions for which they qualify and, hopefully, be placed before the lay-off occurs.

Article 34 of the Collective Agreement details those lay-off provisions which apply to the employees in question.

Some provision should be written into the contract to the effect that when operations commence on a contractual basis he will be required to absorb those employees of the Highways Division affected by the lay-off into his work force.

I trust that this information will be of some assistance.

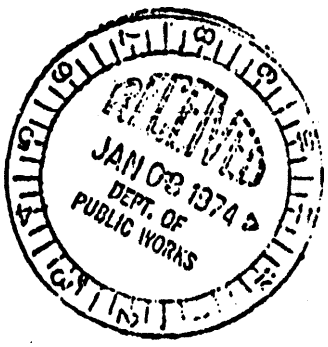
D. Holden,
Director,
Department of Administration.

PLEASE QUOTE

FILE.....

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

2 January 1974




DIRECTOR
DEPT. OF PUBLIC WORKS

D. Whiffen (2)

ATTN: Chief of Highways Division

Contracting of Highway Maintenance

As I understand the possible program, you would endeavour to phase out your maintenance responsibility over a period of up to five years with a certain section of the road being let to contractors each year. This would therefore allow you ample time to plan for the best disposition of your indeterminate staff. With the present termination rate of over 25% per year, it is very possible that you would not be required to lay any employees off in this change over. You would, however, have to plan and execute the transfers of some employees from a phased out operation to the remaining operations.

Providing that careful planning is carried out and the employees are kept pretty much in the picture throughout the phase-out operation, I would not see any trouble for the Northwest Territories Public Service Association. Should we be faced with a lay-off situation, the N.W.T.P.S.A. can only ensure that we follow the proper procedures as specified in the collective agreement.

The seasonal employees will pose no problem providing again an implementation plan is devised. My suggestion would be that the maintenance contracts be let in the spring prior to the usual date of commencing seasonal employment. If this

.../2/

is done, the seasonal employees would be advised that there are no jobs available for this season.

I would appreciate hearing from you after you have finalized your approach, just to ensure that we are not violating any part of the agreement.

R.A. Crossley
Senior Personnel Advisor
Personnel Policy & Planning
Executive Secretariat

PLEASE QUOTE
FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
XOE 1HO,
31 December 1973.

MR. D. WHIFFIN,
HEAD OF OPERATIONS,
HIGHWAYS DIVISION,
DEPARTMENT OF PUBLIC WORKS

Contracting of Highway Maintenance

1. In answer to your first query, I wish to state that from past experience Mechanics and staff let go by the Department of Public Works when Hamlets have taken over the responsibility of the function we carried out were not hired on by the Hamlet Council.

   Engineering services like road building and maintenance are carried out by local Councils and the Department of Local Government, who are not in a position of offering jobs to all of the employees as listed in your letter. If any of the Road Maintenance staff are domiciled in any of the various settlements, there would be a good chance of employment for this individual. Those employees who have lived for more than four years in the Northwest Territories are considered to be Northerners and would be given preference for vacant positions as they arise. It would be difficult to find employment for the displaced Highway employees within the Department of Public Works as at the present time no vacancies exist.

2. There would be no problem in disposing of equipment which would become surplus to your requirement for road maintenance.

   This equipment could be shipped to the various settlements, who are in great need of such equipment.

....2

3. Garages and warehouses which become surplus to the road maintenance operation could be dismantled and shipped to the settlements. There is a great need for insulated metal buildings in the settlements.

I recommend that a comparison of costs for the various items of work done on road maintenance be made between the current contract for road maintenance and current road maintenance with departmental staff and equipment.

I suggest that you contact the Province of Alberta and Saskatchewan and obtain their comments on road maintenance by contract as compared with road maintenance done by departmental staff. They would also be able to supply you with the detailed comparative costs.

I would be interested in receiving a copy of your report.

D. T. Waleski

D. T. Waleski,
Chief, Administration and
Program Planning Division,
Department of Public Works

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

PLEASE QUOTE
FILE 30 710 000

Yellowknife, N.W.T.,
X0E 1H0
13 December 1973.

D. A. Whiffin
Head of Operations
Highways Division
Department of Public Works.

Reply to letter Re Constructing of Highway Maintenance

Reply to your memo dated December 7, 1973. For your information:

CRUSHING OPERATIONS - FORMAL CONTRACTS.

1. Fort Resolution Gravelling - Secondary Crushing - Binder added.

Contractor - Freeway Construction Northern
Edmonton, Alberta.

Bid Price - $1.61 per ton approximate equivalent cost per c.y. $2.25

Approximately 80,000 tons were produced in 4 pits located along highway #6 between Pine Point and Fort Resolution. Approximately 15,000 c.y. per pit.

Project Engineering and Supervision costs were approximately 10%. The quality fof product produced was satisfactory. The project was almost completed in the specified time (exceeded contract time by 2 weeks)

2. Yellowknife Highway Reconstruction - Mile 210 - 190 Secondary Crushing.

Crushing - blasted quarry rock - ~~boulders~~ binder & blend sand added.

Contractor - Frenchy's Transport
Yellowknife, N.W.T.

Bid Price - $3.48 per cubic yard
The quality of product being produced is satisfactory.

Total quantity to be produced at 2 sites (Mile 195 & 205) is approximately 30,000 cubic yards (15,000 per site)

Work at site Mile 205 was scheduled to be completed by June 15, 1973. Actual completion date was October 19, 1973.

Work is presently underway at Site Mile 195. This work was scheduled to be completed by July 6, 1973. It would be fair to say that this is not an efficient operation.

3. Project Engineering and Supervision costs are approximately 5%.

The contractor is now paying all supervision costs and has been since expiry of contract completion date.

3. Yellowknife Highway Reconstruction - Mile 190 - 150
Secondary Crushing Operation - Nothing Added.

Contractor - Robinson Trucking
Yellowknife, N.W.T.

Contract has just been awarded - no progress as yet.

Approximate Quantity - 70,000 cubic yards

Bid Price - $2.05 per cubic yard.

Project Engineering and Supervision estimated 5%.

PRIMARY CRUSHING - HIGHWAY MAINTENANCE

Cost per cubic yard - Initially estimated at $1.50 per cubic yard
Total price in range of $2.50.

Maintenance records would show just how much more than initial estimate it cost per cubic yard.

Approximate Quantity (2 set ups) - 30,000 cubic yards

Specification 4" Crush

Supervision Costs Minimal

Blasting Cost $2.70 per cubic yard.

. . .3

Only problem was blasting caps that misfired.

Unable to comment on efficiency.

Cost savings may have resulted had secondary crushing been undertaken in conjunction with the Primary as double handling of material may have been avoided.

Many factors would have to be looked into in determining cost savings (a matching of machine production rates - handling of crews etc.)

GRAVEL SURFACING - COSTS

1. Freeway Construction Northern
Fort Resolution Highway

Approximate quantity per mile 1,500 tons

Haul - .18¢ per ton mile
(This price includes loading of material & shaping of roadway prior to placing of material)

2. Yellowknife Mile 210 - 190

Approximate Quantity per mile 2,400 tons

Loading - .30¢ per ton

Hauling & placing .12¢ per ton mile

3. Fort Smith Mile 0-11

Approximate quantity per mile 1,800 tons

Hauling & placing - .12¢ per ton mile
(Loading cost included in screening price)

COMPACTION COSTS

Approximate 10 hours compaction per mile.

Bid prices Vibratory Drum 84"

| | |
|---|---|
| Freeway Construction Northern | $14.00 per hour |
| Goodzeck Construction, Hay River | $20.00 per hour |

COMMON EXCAVATION COSTS

1. Yellowknife Mile 210-190

   Eastbrook Construction - .99¢ per cubic yard

   Overhaul (&4,000 ft.) - .60¢ per yard mile

2. Yellowknife Mile 190-170

   Keen Industries 1.00 per cubic yard

   Unlimited free haul.

3. Fort Smith Goodzeck Construction, 1.10 per cubic yard

   Overhaul (approximately 2 mile haul) 2.00 per yard.

APPROXIMATE COST PER MILE

1. Yellowknife Mile 210-190 (20 Mile contract) Eastbrook Construction

   Approximately 16,000 cubic yard per mile average

   Approximate const reconstruction only (gravel not included) $25,000. per mile average

   Work progress - poor- Contract completion date September 30, 1973.

   Contract approximately 70% complete.

2. Yellowknife 190-170 (20 Mile contract) Keen Industries

   Approximately 17,000 cubic yard per mile average.

   Approximate cost reconstruction only (gravel not included) - $27,500. per mile average.

   Work progress - good - Contract completion date August 31, 1974.

3. Fort Smith 0-11 (11 Mile contract) Goodzeck Construction

   Approximately 7,500 cubic yard per mile average.

   Approximate cost reconstruction only (gravel not included) $16,500. per mile average.

   Work progress - poor.

T. G. Pyper
P. Engineer
Design & Construction
Highways Division
Department of Public Works

PLEASE QUOTE

FILE E-0097
107-005-001

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Department of Public Works
Highways Division
P.O. Box 1450
Hay River, N.W.T.
December 7, 1973

Government of the N.W.T.
Department of Public Works
Highways Division
Yellowknife, N.W.T.

Attention: Mr. D. Whiffin
Head of Operations

Dear Sir:

Referring to file 30-710-000

B.G. Linton Contract

The standard of maintenance on this contract has been good. The traffic count on the section of raod under contract - Highway No. 1, Mile 117-298, would be comparable to Mile 38-165 on Highway No. 5, which is maintained by day labour with government owned equipment.

Highway No. 5, Mile 38-160 is three to four years older than Highway No. 1, Mile 117-298, and the cost figure on No. 5 includes approximately 5000 cu.yds of crushed gravel applied on road surface in 1972-73 fiscal year; it also includes all material - supplies and supervision.

The total cost per mile on 127 miles

91.66% of our employees are residents of the N.W.T.

The total cost per mile as per B.G. Linton Contract $2041 per mile, per year - this includes only maintenance. All material and supplies - Gravel crushing - Gravel Surfacing - Re-surfacing - Dust control and Supervision will be over and above this figure. We estimated this would cost $72,000 per year for the first three years, or a total per year of $2,366 per mile per year.

B.G. Linton contract has been an efficient operation.

Approximately 30% of B.G. Lintons staff including cooks, are N.W.T. residents.

## Dust Control

If there were 15 miles of asphalt surfacing, it could be done by private contractor. It would not be economically feasable to have private contractors to do small jobs due to the distance from experienced contractors.

Calcium Chloride dust control - again if you have many miles to do (50-75 miles) it is possible to use a private contractor to spread the calcium. Preparation of the raod surface is day labour operation.

## Traffic Signing

This area of work has come to a point where it should be classed as a profession. You must constantly read up on the new signs and methods of placing signs. The ideal situation is to have the same supervisor on this work every year.

## Gravel Crushing

Our experience with private contractors crushing gravel has been very unsatisfactory for many reasons. The main reason is the product. Private contractors' main concern is tonnage or yardage, the more sand they can push through the less it cost's them per yd., this resultsin a very poor product. This has been proven on the Simpson road. The contract on the Yellowknife Highways, Eastbrook Contract, costs approximately $4.00 per yard. With the crusher we have now, it would have been crushed at a maximum of $1.50 per yard.

Time - This contractor started, I believe in June, he is approximately half finished about 15,000 cu.yd done. If we had not had a reserve in this area the public would have been traveling on a clay surface road.

I understand a private contractor has a contract to crush 70,000 cu.yd. in the Mosquito Creek pit. He is intending to do this with a Pioneer 35S crusher, with this crusher he will have to scalp at least twenty per cent of the larger rocks. - With the heavy amount of binder in this pit every bit of rock should be crushed, to obtain a good product and this would be done if we were crushing it with Dept. Equipment.

## Gravel Surfacing

The gravel surfacing unit must be very flexible as they perform many and varied services and often have to be split in different groups. For a contractor to perform the duties of this unit efficiently he would have to have several contracts. This unit hauls crushed gravel spread on road surface. - Pit run gravel for patching road where haul in one day may vary from 1 mile to 20 miles.

Clay Capping

Hauling clay to mix with crushed gravel. The type of work could conceivably change three times in one week and each different type of work would be a different rate. If this was by contract we would have to have checkers on at all times plus a supervisor.

Grading and Landscaping

If this was done by contract it would have to be on an hourly rate the cost of this would be terrific, also a lot of this work is done in periods when other work slacks off.

Equipment - Repair

There are no facilities in the N.W.T. capable of doing our repair and maintenance on equipment.

Phasing out Equipment and Labour - This coud be done one section of road at a time. As our equipment become worn out and obsolete - the equipment of one section of road be moved to other sections instead of purchasing new equipment. This could continue till each section had gone to contract the balance of equipment could be sold at auction.

You are looking at laying off approximately, eighty employyes, some could be absorbed by contractor. Most would be looking for new employment. - All would lose their accumulated benefits.

If contract maintenance were to be used, a contractor should maintain each section as the maintenaince camps handle at this time.

Crushing Gravel

This should be done as and when required. Some pits may only have ten thousand cu.yd. We would crush this if it substantially cut down the haul.

Supervisory Staff

One supervisor with each contractor. Two assistant Superintendents, one Superintendent, Admin. Staff would have to be increased as necessary to hancle the work load.

Yours truly,

N. Skogstad

N. Skogstad
Hwy. Mntnce Superintendent
Enterprise

PLEASE QUOTE
FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
17 December 1973.

DIRECTOR
DEPARTMENT OF ADMINISTRATION

ATTENTION: G. D. Dewhirst

Contracting of Highway Maintenance

For the purpose of our report to the Assistant Commissioner on contracting highway maintenance operations, we must include a section on the alternative methods of phasing out our maintenance forces with minimum disruption in mind.

Could you please assist us by commenting on this particular problem and realizing the following premises:

1. We have 30 Heavy Equipment Operators (less 5 either vacant or imminent retirement situations), 3 Light Equipment Operators, 9 Heavy Equipment Mechanics (less one that is vacant), one (1) Welder, one (1) Custodial Worker and one (1) Shop Foreman or total 39 employees;

2. Only the Shop Foreman as supervisor, is included above as we expect to absorb all other Foremen and Superintendents into a contract maintenance operation;

3. Also office staff is not included for the reason given in 2;

30 3 3/3

. . . 2

Director
Department of Administration
17 December 1973.

4. In addition, we will be filling 26 seasonal field positions in March and April 1974.

We would appreciate receiving your written reply by 31 December 1973 in order to phase into our report-writing schedule.

J. R. Bentley
Chief, Highways Division
for Director
Department of Public Works

WHIFFIN:hr

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

PLEASE QUOTE
FILE 30 710 000

Yellowknife, N.W.T.,
X0E 1H0
17 December 1973.

DIRECTOR
DEPARTMENT OF ADMINISTRATION

Contracting of Highway Maintenance

For the purpose of our report to the Assistant Commissioner on contracting highway maintenance operations, we must include a section on the alternative methods of disposing of Highways' maintenance equipment and Camp facilities.

Could you please assist us by commenting on this particular situation, keeping in mind that the Government will naturally require the best return on it's investment.

We would appreciate receiving your written reply by 31 December 1973 in order to phase into our report-writing schedule.

J. R. Bentley
Chief, Highways Division
for Director,
Department of Public Works

WHIFFIN:hr

PLEASE QUOTE
FILE 30 710 009

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
11 December 1973.

D. T. Waleski
Chief
Administration & Program Planning Division
Department of Public Works

Contracting of Highway Maintenance

Reference is made to our current investigation and report on contracting the highway maintenance operations. This report is to be submitted to the Assistant Commissioner 15 January 1974.

I would greatly appreciate your assistance in providing us with relevant information regarding:

1. How "readily" could Department of Public Works and/or other Government departments absorb displaced Highways' employees? Please be advised that we have 30 Heavy Equipment Operators;
   3 Light Equipment Operators;
   9 Heavy Equipment Mechanics;
   1 Custodial Worker;
   1 Welder; and one (1) Shop Foreman-
   Total 45 Employees.

Notes:

(a) Deduct 5 Heavy Equipment Operators and one (1) Heavy Equipment Mechanic as we have either vacancies or imminent retirement situations in these cases.

(b) Only the Shop Foreman is included as we expect to absorb all other Foreman and Superintendents into a contract maintenance operation.

(c) I have not included office staff for the reason as given in (b) above.

(d) Also, we will be filling 26 seasonal field positions in March and April 1974.

2. How best could we dispose of our heavy/light and miscellaneous equipments? Can Department of Public Works and other Government departments be expected to utilize some of our older equipments?

3. How best could we dispose of our garages and other facilities?

Could you please reply by 21 December 1973 in order to phase into my report - writing schedule.

D. A. Wulffin
Head of Operations
Highways Division
Department of Public Works

WULFFIN;hr

PLEASE QUOTE
FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.,
X0E 1H0
6 December 1973.

DIRECTOR
DEPARTMENT OF ADMINISTRATION

ATTENTION: R. A. Pilling

Contracting of Highway Maintenance

Highway Maintenance Establishment is currently investigating, and will be reporting on, the implications of phasing out our day labour operations and assigning the maintenance work to contractors.

In order to assist us in our investigation could you please supply the following cost per mile figures by 15 December 1973:

1. Fort Smith Highway No. 5, Mileposts 38 to 165, by sections as per account codes for 1972/73 and 1973/74 fiscal years.

2. Mackenzie Highway No. 1 Highway, Mileposts 117 to 296, and Fort Liard No. 7 Highway, Mileposts 0 to 29, by sections as per account codes for contract actually awarded about 10 June 1972. Therefore, 1 April 1972 to 9 June 1972 period should be deleted in your cost per mile calculation.

We are particularly interested in routine maintenance costs only. However, special improvement projects, such as gravel crushing, gravel surfacing, regrading and dust control, should be reported separately and on unit cost basis in your reply.

J. R. Bentley
Chief, Highways Division
for Director
Department of Public Works

PLEASE QUOTE

FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.
X0E 1H0
16 November 1973

N. Skogstad,
Highway Maintenance Superintendant,
Highway Maintenance Establishment,
Department of Public Works,
Enterprise, N.W.T.

Contracting for Highway Maintenance

I intend to report on the results of my investigation into contract maintenance and the implications of phasing out the existing day labour operations.

Please refer to the relevant attachments and note that I am requesting information from other jurisdictions on their experiences.

In order to assist me, I will require your evaluation, of the D. G. Linton Construction Limited Contract maintenance operation. Comparison with the day labour operation on the Fort Smith No. 5 Highway between Mileposts 85 and 168 (i.e. H. Stead's section of road) should be included. The evaluation should be based on the following factors:

1. Cost (which I can assist you with);
2. Quality of maintenance;
3. Efficiency of operation; and
4. Hiring record related to local inhabitants as well as Native/Metis.

In addition, I would appreciate receiving your comments as to whether our special maintenance and repair needs would be better served by a contractor. Please comment briefly under the following headings:

1. Dust Control/Asphalt Surfacing;
2. Traffic Signing;
3. Gravel Crushing;
4. Gravel Surfacing;

. . . 2

5. Grading/Landscaping; and

6. Equipment Repair.

Note: Please make an accurate appraisal of our performance in these areas and reflect on the quality of service that we might expect from a contractor (preferably based on our experience).

I also require your thoughts on the following items:

1. What would be the best method of phasing out our day labour forces and disposing of equipment for both the routine and special maintenance/repair operations?

2. What do you feel would be the most ideal length of highway to assign to a single contractor? In addition, what magnitude of work load would you assign to a contractor in special maintenance repair operations (i.e. in the case of gravel crushing - would you recommend minimum 25,000, 50,000 or 100,000 cubic yards contracts? - Give reasons for your choice).

3. What would be the minimum supervisory and technical staffing requirements if all ofour operations were to be contracted? Don't overlook the additional requirement in preparing tender and contract documents.

I expect that you will discuss all these points with Messrs McAllister and McBryan, and key Foremen (such as H. Steed) in our Establishment, in order to develop a complete and fair assessment.

I would appreciate receiving your reply by 15 December, 1973 in order to provide me with sufficient lead time in the preparation of my more comprehensive report due mid-January, 1974.

D. A. Griffin
Head of Operations
Highways Division
Department of Public Works

PLEASE QUOTE

FILE 30 710 000

GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

Yellowknife, N.W.T.
X0E 1H0
11 December 1973

J. R. Bentley
Chief,
Highways Division

Contracting of Highway Maintenance

For the purpose of my report on contracting highway maintenance operations, I must include a section on the best procedure for, and chances of, gaining the approval of the Federal Government.

Could you please assist me by commenting on the following:

1. At what stage would we report to Services Branch, Engineering and Architectural, D.I.N.A., to gain their approval of contract maintenance - i.e. once the Executive make their decision, or immediately after tenders are called (but not awarded) on individual contracts?

2. As extra funding will more than likely be required for contract maintenance, how do you feel the Federal Government will respond to a wholesale turnover of our maintenance work to contractors?

Could you please reply by 31 December, 1973 to phase in with my report writing schedule.

D. A. Whittle
Head of Operations
Highways Division