

Chapter 8

Department of Transportation Engineering Consulting and Road Construction Materials

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Department of Transportation Engineering Consulting and Road Construction Materials

Background

8.1 In the late 1980s our Office reviewed the inventory and associated purchasing systems of the Department of Transportation (DOT). In 1993 and 1994 our Office reviewed the process used by DOT to purchase engineering consulting services.

8.2 In these audits, we found significant opportunities for the Department to improve operations. We made recommendations to the Department at that time. The Department accepted many of these recommendations and made changes. However, for various reasons some recommendations were not acted upon. In light of this, we decided to examine how the Department had improved its present-day operations in inventory and purchasing.

8.3 In 1993, we received a copy of the EBA Engineering Consultants Ltd. (EBA) report prepared for DOT that year. Their mandate was to conduct “a review of practices and procedures which are currently utilized in design and construction of paved roads within the Province’s highway infrastructure”. Many of the findings and recommendations in that report related to areas we are interested in. Because of this, we decided to review DOT’s progress in implementing some EBA findings and recommendations relating to our work.

8.4 The size of the expenditures surrounding these activities was a factor in our decision to review them. The 31 March 1998 inventories for DOT and the Vehicle Management Agency totalled approximately \$17 million. Associated purchases for the year were close to \$107 million. For the year ended 31 March 1999 engineering consulting fees were nearly \$10 million.

8.5 In late 1998, we completed a preliminary review of inventory and purchasing practices. We believed that many of the findings from this review warranted further examination.

Scope

8.6 Consequently, we planned a value-for-money audit in the Department of Transportation. We decided to focus on the purchasing of engineering consulting services and on the purchasing and inventory management of road construction materials.

8.7 Our two main objectives for this value-for-money audit were as follows:

- 1) *For purchasing engineering consulting services*
 - *To determine if the Department can reduce costs while maintaining quality by adopting a more competitive process for the contracting of engineering services.*
- 2) *For road construction materials*
 - *To determine if the purchasing/inventory system covering construction materials operates in an economic and efficient manner.*

8.8 To obtain a better understanding of policies and systems we reviewed departmental and governmental policies and systems. We compared these to departmental activities to see if practice matched policy.

8.9 We interviewed senior DOT staff in Fredericton, Internal Audit staff and other head office staff involved with purchasing and inventory. We reviewed Internal Audit testing and its results. We visited three of eight district DOT offices and spoke with personnel, including the district engineers, to obtain a district perspective.

8.10 We performed a number of audit procedures including: calculating inventory turnover, reviewing controls over inventory, verifying prices paid to contracted pricing and various calculations and comparisons as we thought necessary.

8.11 To gain knowledge of how others were handling the selection of engineering consultants, we contacted several provinces and interviewed staff involved in this function. We discussed the process(es) each used, and any problems encountered, in their selection of consultants. We also reviewed their policies and practices. These provinces were British Columbia, Alberta, Ontario and Nova Scotia.

8.12 We prepared audit criteria as a means of focussing audit attention on areas where we believed there was a likelihood of productive and valuable audit comments. The criteria are an extension of the audit objective and are designed to facilitate an overall conclusion on whether an audit objective has been achieved. The criteria were shared with the Department prior to the commencement of the audit with the intention of reaching agreement on the importance of the areas chosen for audit. In this chapter we comment only on those issues that we found

to be significant, either from a positive or negative perspective. Our original audit plan did not include an examination of “end result specifications” (ERS), and as a result no audit criteria had been prepared for this area. Work was conducted in ERS as a result of decisions we made following preliminary findings in the audit of road materials.

Results in brief

Purchasing engineering consulting services

8.13 The Department recently developed a rating form and rating system for measuring the past performance of engineering consultants. Information on past performance, together with information on the qualifications of the consultants, will improve the Department’s ability to select the best-qualified consultant.

8.14 The Department does not notify all consulting firms when there is an opportunity to compete for government contracts.

8.15 The Department does not ask for competitive proposals when purchasing engineering services.

Road construction materials

8.16 We found that controls were operating effectively to ensure that supplier pricing agrees to contracted amounts. We also found that controls were in place to ensure materials are only purchased from appropriate suppliers. We concluded that DOT has a process in place which should ensure that materials meet the required product specifications.

8.17 Road construction materials that the Department used to purchase direct from suppliers are now purchased from contractors. It would be appropriate to review if this change is saving money.

8.18 The DOT inventory system is not integrated with the Maintenance Management System.

Assuring road construction quality

8.19 End Results Specifications (ERS) offers the Department the opportunity for guaranteed road construction quality and the benefit of having ongoing responsibility reside with the contractor.

8.20 The Department has only implemented ERS for asphalt paving and only 35% of such contracts are covered.

8.21 The Department should extend ERS to all asphalt paving contracts and other aspects of road construction, when it is beneficial to do so.

Purchasing engineering consulting services

8.22 Our objective for this component of the audit was:

To determine if the Department can reduce costs while maintaining quality by adopting a more competitive process for the contracting of engineering services.

The importance of qualifications

8.23 Our first criterion was:

The Department should determine which suppliers have the necessary qualifications, including technical, financial and managerial competence, to discharge a contract.

8.24 Departmental branches that extensively use consultants keep current information on consultants on file. This information includes a company profile, and key personnel resumes. This information describes the experience, background, specialty and capability of the individuals and the firm. The information is updated on an on-going basis.

8.25 The Department has recently developed a rating form and a rating process for measuring the performance of consultants. Development started about three years ago with the first usage of the new process and forms beginning in 1998-99. The impact of the new process is just beginning to be felt. The Department noted that changes to the process are still envisaged. Information gathered on the rating forms, together with the existing qualifications of the consultant, will give the Department the ability to hire the best-qualified consultants. We strongly support the moves of DOT to include past performance as a factor in its consultant-selection process.

8.26 The information is de-centralized and stored manually. Several branches of the Department are responsible for establishing their own engineering consultant performance measurement process and for determining what information is required to measure performance. De-centralization of the process and of the information being gathered, may increase the risk of the system becoming inconsistent between branches. The result might be that the same consulting firm is rated differently by each branch. Other Canadian jurisdictions we contacted use computerized systems to record and track this information.

Assessment of the criterion based upon the audit

8.27 Because a performance based system has been developed and because a common consultant evaluation document has been developed we conclude that this criterion has been met.

Recommendations

8.28 We recommended the Department continue to develop the performance measurement system and formally use its results in making the decision as to which engineering consultants to hire.

8.29 We recommended that the Department ensure the performance measurement system remains consistent between branches.

8.30 We recommended the Department consider the use of a computer-based system for recording, saving and comparing the qualifications, including past performance, of engineering consultants.

Departmental response

8.31 *The Department indicated that a common evaluation document has been developed. They also indicated that although measurement*

results could differ between branches, the performance measurement system is similar in the branches. Following a business case analysis, the department will consider a computer-based system, although they conceded that it is not a priority at present.

Competition by all firms

8.32 Our second audit criterion was:

Where it is cost effective to do so, all qualified firms should have an opportunity to compete for government contracts.

8.33 When consulting work becomes available, departmental staff choose a consultant using the following considerations:

- the skills required for the job;
- consultants available;
- departmental staff's knowledge of a consultant's staff qualifications;
- availability of the consultant's staff required for the project (only considering DOT projects the consultant might be involved in); and
- past work performance of the consultant.

8.34 A letter is then sent to the consultant chosen describing the nature of the work, the date the work has to be completed and other general instructions. DOT asks for a proposal from the consultant by a specific date confirming their interest in the work and naming staff who will work on the project and stating their qualifications. A cost estimate for the project and agreement with the timing requirements is required.

8.35 When the Department receives an appropriately prepared response from the consultant it compares the consultant's cost estimate with the Department's own cost estimate. The Department's estimate is calculated by reviewing its past cost experiences with similar work contracts. If the Department believes the firm's estimate is reasonable and other arrangements are satisfactory, the consultant is hired and work begins. If there is a significant difference in cost estimates, the two parties negotiate to find a mutually acceptable price. If no solution is found, the Department will look for another consultant to do the work and the process starts over again.

8.36 To review the process we obtained four consulting contract files. We reviewed files in the Structures Branch and the Design Branch, both major users of consultants in the Department. Our findings were as follows:

- Overall we believe the hiring process operates as described above.
- Files did not document whether the Department determined the availability of all consultants qualified to do project work (staff had noted that determining the availability of all qualified consultants was not normally done).

- Only one consultant was asked to submit a proposal for each project – the files do not document why only that particular consultant was chosen. No information on file indicated that this was the only qualified consultant or that it was the best qualified of those available at the time.
- Information on past performance of the consultants was present and considered for contracts given by the Structures Branch.
- Information on past performance was not part of the process in 1999-2000 for the Design Branch and therefore not on file (the Department indicates this information will be in place in the near future).
- Letters requesting the proposals, replying to the requests and accepting the consultant's proposal were on file.
- There was no competitive bidding on these projects, but the Department did require from the consultant a cost estimate of the work to be done.
- Two cost estimates were accepted as is.
- One cost estimate was initially too high and the consultant was required to reduce its bid.
- The review of one cost estimate by DOT indicated that the cost seemed high but the eventual price for the work remained unchanged.
- Proposals had cost estimates ranging from \$40,000 to \$110,000 plus HST.

8.37 In reviewing our findings, we have a number of concerns with the current hiring process. For instance, how can departmental staff be aware of the availability of the various consulting firms who are capable of performing the work? Would it not be more effective to let the consulting firms decide themselves whether or not they are available? How can the department ensure that all consultants are being treated fairly?

8.38 We believe the process should be opened up to permit all interested and qualified firms to express an interest in the work being contracted.

8.39 The Department does not notify all consulting firms when there is an opportunity to compete for government contracts so this criterion is not met.

***Assessment of the criterion
based upon the audit***

Recommendation

8.40 We recommended the Department publicly advertise each engineering consulting project so that all consulting firms have the opportunity to express their interest in the available work.

Departmental response

8.41 *Given the Province's size and the dominance of the Department's requirements for engineering consulting services, information is readily available to the Department on the availability and expertise of the various consulting firms. Potential benefits of publicly advertising should be balanced against the costs of the preparation of formal proposals by the consulting firms and the additional costs to the Department of assessing these proposals. The Department will consider piloting projects in order to evaluate the recommendation.*

Process should be cost effective

8.42 Our third audit criterion was:

The method of selecting consulting engineers for projects should be cost effective.

8.43 In the current DOT consultant hiring process, we found that there is no competition between consultants for work, as only one consultant is asked to submit a proposal for each project. No other proposals are obtained.

8.44 We believe the Department should choose from all interested applicants and require proposals from several of the best-qualified candidates in order to allow competition. Documentation of the decision-making process used to determine which firms would be asked to submit a proposal should be complete and clearly defend any decisions made.

8.45 Under DOT's current methodology, the Department carries out a reasonableness test on the consultant's cost estimate to ensure that the estimate is not excessive. However this is not the same as requesting competitive quotes from several firms. Normally governments request bids from several suppliers when buying goods or services. This is done to encourage competition and to ensure there is transparency in the process.

8.46 We have concerns with the current process. If the Department only asks one firm to do the work how can the Department benefit from and support innovation? Is the Province getting the best cost when the comparison is only between the consultant's cost estimate and the Department's? Could there be another firm that could do the job for a lesser amount if given an opportunity to quote? Could another firm do a better job for the same cost? And how can the Department demonstrate transparency when there is so much discretion in the current decision-making process?

8.47 Some departmental staff expressed concerns regarding price competition for design contracts. They were concerned that design

work, if left to the lowest bid, may suffer from a lack of innovation. That is, if cost becomes too much of an issue then the Department will only get the basic design that will work for the particular job in question.

8.48 However, we believe that, since cost is only one of the factors in the hiring decision, the Department can still have a process that encourages innovation while allowing cost competition. For example in Ontario's selection process, cost is included in each proposal. Detailed proposals are rated against each other technically and then a ratio of technical rating to cost is done with the winner having the best ratio.

8.49 Another option would be for the Department to do as Nova Scotia does. Nova Scotia uses the two-envelope system. In this process the bids come in from consultants in two envelopes, one containing the qualitative aspects of the bid and the other the cost quote. The Department evaluates the qualitative aspects of the bids and then opens the cost envelope and assigns a rating to the price. The decision is heavily weighted on the first envelope contents. Usually 90 points are awarded for it and 10 for the price. However, Nova Scotia does reserve the right to reject any proposal where the price is deemed unreasonable.

8.50 As shown, both Nova Scotia and Ontario have selection processes where both qualitative and cost factors impact the final decision as to who will be hired. Staff in these provinces noted that significant cost-savings were achieved by including cost as an important factor in the selection process.

8.51 We believe that New Brunswick should adopt a selection process that includes both qualitative and cost factors. Undoubtedly, there would be some additional costs to the Department if a more competitive process were implemented. For example, the evaluation process for qualified firms would be more involved as comparisons would have to be made to rate the different proposals against each other. While the situations in Nova Scotia, Ontario and New Brunswick may not be identical, we do feel that there is the potential for savings to far exceed any incremental costs. In 1998-99 the Department spent nearly \$10 million in engineering consulting fees.

***Assessment of the criterion
based upon the audit***

8.52 Because the Department does not ask for competitive proposals when purchasing engineering consulting services, we conclude that this criterion has not been met.

Recommendations

8.53 We recommended the Department ask for proposals from several qualified consultants for each engineering contract.

8.54 We recommended the process by which the Department chooses consultants to request proposals from be formalized and documented.

The process, associated evaluation criteria and results of the process should be transparent to all consultants.

8.55 We recommended that the Department require the cost of the project to be included in the proposals received from the competing consultants.

8.56 We recommended the process by which the Department chooses which consultant to hire be formalized and documented. Cost should be an important component of this. The methodology, associated evaluation criteria and results of the process should be available to all consultants.

Departmental response

8.57 Further to the response to the first recommendation, the Department is prepared to consider piloting the requesting of proposals for engineering contracts. The cost of the project would be required to be included in the proposals. It is agreed that the process used to request proposals and to choose consultants would be documented and available to all consultants.

Road construction materials

8.58 Our objective for this component of the audit was:

To determine if the purchasing/inventory system covering construction materials operates in an economic and efficient manner.

8.59 We are pleased to report that as a result of our audit we were able to conclude positively on four of our criteria. These four criteria were:

- *Controls exist to ensure that supplier pricing agrees to contracted amounts.*
- *These controls are operating effectively.*
- *Controls exist to ensure materials are only purchased from appropriate suppliers (preventing overpriced purchases).*
- *There is a process to ensure materials meet product specifications (as required by DOT).*

8.60 For four other criteria, we noted shortcomings.

Importance of a cost benefit analysis

8.61 Our criterion in this area was:

A cost benefit analysis should be performed before a decision is made to change significant departmental policies.

8.62 As the Department recently extended its policy of outsourcing road construction materials, we decided to review this decision. We also reviewed the decision-making process supporting this change in policy to see if a cost benefit analysis was included.

8.63 Outsourcing means some items DOT used to purchase through tender for contractors to use on work for DOT are now purchased directly by the contractors and included in the contract cost.

8.64 A DOT steering committee reviewed the extension of outsourcing and determined the initiative would be beneficial to DOT. The committee considered many relevant factors in arriving at its decision. However, we did not find any analysis that laid out the overall financial implications of the change. Nor did we find consideration of an option such as the Department tendering items but allowing contractors to access the Province's lower costs for their bids on provincial work.

8.65 Departmental staff noted that other jurisdictions also outsource some items.

8.66 We believe that where a change in policy may have significant financial impact, a cost-benefit analysis should be used to determine if the decision is expected to be beneficial to the Department. The financial implications of changes together with logical alternatives should be set out and compared to ensure a department chooses the best alternative.

Recommendations

8.67 When a department decides a significant change may be needed it should ensure the change is supported by a decision-making process that includes a cost benefit analysis.

8.68 Expected benefits should be identified so a department can later determine if they were achieved.

8.69 We recommended that management explore the alternative of tendering goods and allowing contractors to use the tendered pricing for provincial work.

Departmental response

8.70 *As stated in your findings, the Department made this decision to outsource specific construction materials after significant external and internal review. Although this was not a formalized cost benefit analysis, the benefits and costs both tangible and intangible were considered in arriving at this decision.*

8.71 *The Department will strive towards utilizing a more formalized cost benefit analysis approach to document the future decision making process for those of a significant financial nature.*

8.72 *The Department agrees to explore this alternative with Supply and Services since it would involve issues concerning the public purchasing process (e.g. allowing the private sector to purchase off government-tendered prices and possible issues with suppliers).*

Evaluating the impact of the outsourcing initiative

8.73 Our criterion in this area was:

The purchasing/inventory system should be monitored periodically to ensure it is economical and efficient and meets the needs of managers and users.

8.74 There has been little monitoring of results from the road materials outsourcing initiative. We determined that DOT districts carried fewer inventories than before the new policy was put in place. We also found that district DOT staff generally like the new policy.

8.75 However, there has been no formal evaluation to determine if the expected benefits from the change in policy have been achieved. A comparison of road material prices the Department is now paying to contractors against the tendered prices which the Department has for its own purchases should be part of the evaluation.

Recommendation

8.76 We recommended the Department determine if the policy of purchasing goods indirectly through contractors rather than directly through suppliers is saving money.

Departmental response

8.77 *Departmental staff informally evaluate material cost options on a routine basis, as part of their day to day operations. If substantive evidence of material cost discrepancies arose, the Department would perform a more formal review.*

Importance of standards

8.78 Our criterion in this area was:

Management should establish a policy setting minimum standards for the proper management and control of inventories. Inventory levels should be cost justified and related to needs (adequate inventory turnover and minimized carrying costs).

8.79 The Department's policy manual for inventory management is titled *Purchase/Inventory Control/Issuing Procedures*. The policy outlines departmental staff responsibilities. Some standards for responsibility and control of road construction and maintenance materials (materials) inventory are documented. However the manual was last updated in 1992 and does not reflect the Department's current practices.

8.80 The manual does not cover all aspects of inventory management for all inventories. For example, there are no standards for management of materials inventory. Nor is the process DOT uses for determining how much materials inventory to order documented. The rule of thumb used for ordering of materials is to order what was used last year adjusted to take account of the superintendent's knowledge of upcoming jobs.

8.81 We believe the policy manual should be completed and brought up to date. This will ensure it reflects current practices and current

philosophies in inventory management. It should include all significant facets of inventory management. These should, at a minimum, include policies addressing purchasing, economic order quantities, minimum/maximum inventory levels, price break purchasing, expected turnover, and minimizing carrying and other costs.

8.82 The policy manual states that the inventory co-ordinator is responsible to ensure vehicle parts stock levels are adequate, reasonable and in compliance with policy. However, the inventory co-ordinator has no responsibility for materials inventory and has no authority to make recommendations relating to that inventory.

8.83 We found that while vehicle parts inventory is reviewed for compliance with policy, this was not true of materials inventory. While Internal Audit performs some test counts on materials inventory, it does not review factors relating to inventory management. The policy manual should indicate who is responsible for reviewing materials inventory to ensure policies are followed.

Recommendations

8.84 We recommended management review, update and communicate its *Purchase/Inventory Control/Issuing Procedures* to ensure that standards exist for the proper management and control of all inventories.

8.85 We recommended management ensure compliance with the DOT inventory policy.

Departmental response

8.86 *The Department will ensure its Purchase/Inventory Control/Issuing Procedures is updated as required. It should be noted that this policy manual or compilation of procedures was based on the current automated Inventory Systems' functionality and since this system is still being utilized, especially for vehicle repair part transactions, it is still relevant.*

8.87 *The Department is doing this as part of our Internal Audit activity on a prioritized basis, according to risk and materiality and will continue with an enhanced focus on construction materials.*

Information systems for inventories

8.88 Our criterion in this area was:

Senior management should monitor results and ensure that information provided by the information system is complete and accurate.

8.89 The computerized inventory system cannot produce reports that include all inventories. While the districts can produce inventory reports for their district, no one can produce a comprehensive report of total DOT inventory. To better manage departmental inventory an inventory system is needed that allows management, or others, to have information on total inventory.

8.90 Additionally the DOT inventory system is not integrated with the Maintenance Management System (MMS) which collects cost information on maintenance projects. Neither of these systems is integrated with the government accounting system (FIS). As a result:

- inventory releases must be entered separately for each of the DOT inventory system, the MMS system and the FIS system;
- additions to inventory must be entered separately for FIS and for the DOT inventory system; and
- obtaining timely information for job costing maintenance projects was noted as a weakness by some engineers we talked to.

8.91 Therefore:

- there is a duplication of entries;
- there is an additional risk of errors occurring; and
- more work is done than necessary.

Recommendations

8.92 We recommended that the computerized inventory system be fully integrated with the departmental maintenance management system and the accounting system of the Province.

8.93 We recommended DOT develop an inventory system that allows senior management and others responsible for inventory review to better manage and monitor both district and departmental inventory. The system should allow head office staff to produce timely and comprehensive inventory reports.

Departmental response

8.94 *The Department agrees that complete integration should be considered but implementation should be based on a business case analysis. Due to the technical limitation and incompatibility of the current system and the fact that the majority of the inventory system transactions involve non-construction material items, this is not a priority issue at this time.*

8.95 *A preliminary review towards replacement was completed in addressing the Y2K compliance issue. The Department intends to carry out a business case analysis to determine the costs and benefits of materials inventory system improvements. Monthly, year-end and ad-hoc comprehensive inventory reports can and are produced by Head Office staff.*

Assuring road construction quality

8.96 In our initial audit plan, we had not intended to investigate whether the Department had adopted “end result specifications” (ERS) in assuring road construction quality. However departmental staff cited an instance where contractors were required to repave a road because their work did not meet the end result specifications set out in the contract signed with DOT. While we were familiar with ERS through

our audit work in 1993, we were unsure of the Department's progress in adopting ERS into its everyday operations.

8.97 Since we believe ERS offers the Department the opportunity for guaranteed road construction quality and the benefit of assigning responsibility for this quality to the contractors, we decided to review the adoption of ERS by the Department.

8.98 In 1993, EBA Engineering Consultants Ltd. was hired by DOT to review various departmental operations. One of the major topic areas covered in their report was ERS. The consultants recommended DOT "implement end result specifications at the earliest opportunity." They stated that adoption of ERS was necessary to "send a clear signal to the construction industry that a new way of doing business prevails, one which rewards quality but no longer condones mediocrity". They also noted the traditional method of doing business had been abused.

8.99 The report stated that some contractors doing work for DOT had successfully abandoned most, if not all, of their responsibilities. For instance, DOT staff was required to provide direction on jobs that should have been the responsibility of the contractors. Also, contractors had abdicated responsibility for the quality of work to DOT. Consequently, the consultants recommended total implementation of ERS by 1996.

8.100 As explained in the EBA consultant's study, ERS is a form of specification in which the purchaser (DOT) identifies a number of criteria that the product being supplied is required to meet. An ERS contract would normally also require the contractor to guarantee the product for a period of time. If the work does not meet the contracted terms, penalties can be applied.

8.101 ERS differs substantially from the traditional approach. The traditional methodology contains considerable detail as to all operational aspects, which essentially spell out how the contractor is to do the work. It requires DOT to continuously monitor or inspect the process to ensure its consistency and uniformity. In end results specification DOT only has to assure itself that the product is acceptable by conducting a limited quality assurance testing program. As seen in the repaving example cited by staff, if anything is wrong with the product the contractor is responsible to correct it.

8.102 There are two significant benefits coming from the adoption of ERS. First, responsibility for the quality of the product shifts from DOT to the contractor and is enforced through a contractor guarantee. This should improve the quality of road construction. The second benefit is that the Department no longer has to continually monitor and inspect the process but now can reduce its workload by only having to do quality assurance testing.

8.103 We examined progress the Department has made in implementing ERS. In 1993, DOT did not use ERS. In 1998-99 DOT used ERS on six asphalt-paving contracts with the quality of the work guaranteed for one year by the contractor. This represented 27% of the total tonnage of 1998-99 asphalt-paving contracts. In 1999-2000, DOT awarded seven contracts or 35% of total tonnage, using ERS. Because of the drop in large paving contracts issued in 2000-01 the percentage is expected to fall this year.

8.104 Departmental staff noted that 50% to 65% coverage of all asphalt paving was the expected goal for ERS. Staff noted that smaller operators would be unable or unwilling to adopt ERS and, consequently, competition would be reduced on smaller contracts. However, while DOT staff believes total (100%) implementation of ERS on asphalt-paving contracts is not practical or cost-efficient, no formal analysis has been done by the Department to support this belief.

8.105 We support the Department's use of ERS. We believe the Department should increase the speed of implementation of ERS to better ensure the quality of contractors' work. Finally, while many problems with road construction work may show up in one year, a longer guarantee period might better protect the Department from poor road construction quality that only shows up after the first twelve months.

Recommendations

8.106 The Department should do a formal cost-benefit study to determine the smallest contract size at which the adoption of ERS represents good value for money to the taxpayers of New Brunswick.

8.107 We recommended that the Department implement ERS on all asphalt paving contracts where it is cost beneficial to do so.

8.108 We recommended the Department implement ERS in aspects of road construction in addition to paving, where it is cost beneficial to do so.

8.109 We recommended the Department perform a formal cost-benefit study to determine if lengthening the product guarantee term in ERS contracts would be beneficial to the Province. If the results of the study indicate a longer guarantee term is beneficial then it should be adopted.

Departmental response

8.110 *The Department concurs with these recommendations and will pursue the cost-benefit analyses to determine contract size at which ERS should be adopted, applicability of ERS in other aspects of road construction and the most beneficial length of product guarantee. In the interim, the Department believes that valuable information can be gained from the experiences with a staged implementation of ERS on its contracts.*

Conclusion

8.111 Our audit plan involved two distinct areas within the Department, engineering consulting services and road construction materials. The audit resulted in recommendations for improvement in some cases and conclusions that existing processes were adequate in others.

8.112 In our opinion, a number of significant changes should be made to the process for hiring engineering consulting services. We believe these changes can reduce costs while maintaining quality. In the Department's response it indicated that it will employ a piloting process to evaluate the potential benefits of our recommendations. We will be monitoring the results of this work.

8.113 The results of our audit of the purchasing/inventory system were mixed and we recommended some changes to the Department. These were generally well received. There are a number of areas where subsequent action is referred to in the Department's response. Here too we will be assigning resources to examine the follow-up conducted by the Department.

8.114 Although not originally defined as part of the audit, several important recommendations were made to the Department in the area of assuring quality of road construction. The Department responded positively.