
**New Jersey State Legislature
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Office of the State Auditor**



**Department of Transportation
Capital Construction Contracts**

July 1, 2009 to January 10, 2012

**Stephen M. Eells
State Auditor**



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Enclosed is our report on the audit of the Department of Transportation, Capital Construction Contracts for the period of July 1, 2009 to January 10, 2012. If you would like a personal briefing, please call me at (609) 847-3470.

Stephen M. Eells
State Auditor
May 10, 2012

Table of Contents

Scope.....	1
Objectives	1
Methodology.....	1
Conclusions.....	2
Background.....	2
Findings and Recommendations	
Change Orders	3
Subcontractors.....	4
Overtime	5
Auditee Response.....	6

Scope

We have completed an audit of the Department of Transportation, Capital Program Management Contract Expenditures for the period July 1, 2009 to January 10, 2012. Our audit included the review of expenditures from active capital construction contracts funded by the Special Transportation Fund and the American Recovery and Reinvestment Act (ARRA). Total active contract expenditures for the period were \$2.4 billion. Change orders during the audit period totaled \$268 million. The Capital Program Management's mission is to improve safety, integrity and efficiency of the transportation system by continuously improving the delivery of high quality projects that best serve the public.

Objectives

The objectives of our audit were to determine whether capital construction contract expenditures were reasonable, in compliance with the terms and conditions of the contracts, and in compliance with ARRA requirements, where applicable. Another objective of our audit was to determine whether adequate controls are in place over the change order process.

This audit was conducted pursuant to the State Auditor's responsibilities as set forth in Article VII, Section I, Paragraph 6 of the State Constitution and Title 52 of the New Jersey Statutes.

Methodology

Our audit was conducted in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States.

In preparation for our testing, we studied legislation, the administrative code, circular letters promulgated by the Department of the Treasury, and policies of the agency. Provisions that we considered significant were documented and compliance with those requirements was verified by interview, observation, and through our audit tests. We also read the budget messages, reviewed financial trends, and interviewed agency personnel to obtain an understanding of the programs and the internal controls.

Our samples of financial transactions were randomly and judgmentally selected and were designed to provide conclusions about the validity of transactions, as well as internal control and compliance attributes. We tested five projects near completion with a total contracted amount of \$168 million, which includes \$34 million in change orders through April 2011. Our testing included a review of change orders, contract line items, subcontractor costs, overtime, and on-site material testing. Two of these projects were ARRA funded, totaling \$10.1 million in expenditures.

Conclusions

We found that the capital construction contract expenditures were reasonable, in compliance with the terms and conditions of the contract, and in compliance with ARRA requirements, where applicable. We also found adequate controls were in place over the change order process. In making these determinations, we have identified areas where improvements can be made in the design review process, contract line item analysis, renegotiations, subcontractor cost evaluations, and overtime which should be considered by management.

Background

The Department of Transportation (DOT) has implemented a project delivery process for capital construction contracts. This is a five stage process that includes: problem screening, concept development, preliminary engineering, final design, and construction authorization. Within each of these stages key tasks must be performed to get a project from its inception to final completion. When a project is determined to be necessary, the department searches for a designer to plan the scope of the project. The design can be performed in-house or contracted out to a vendor. The trend over recent years has been to contract more design work to vendors.

After the design has been created and approved, the project is advertised for contractors to bid. The department adheres to a low bid procurement process for construction and selects a winning bidder accordingly. The department performs a bid analysis to determine the validity of the winning contractor's bid. An important tool used to perform this analysis is the engineer estimate, which is developed by engineers using historical data and experience to provide line item estimates for a project. Contractors perform the work based on the scope of the project provided by the designer. All projects are monitored by a resident engineer, who is usually a DOT employee. The engineer monitors the progress of the contractor and inspectors on the job site. During the course of field work, the contractor may encounter unforeseeable field conditions that would require a change of plan. When this occurs the contractor in conjunction with the resident engineer will submit a change order detailing the additional work and costs that will be required to achieve the change in plan.

Change Orders

The department should enforce the design review procedures over their capital construction process in order to reduce change orders.

Design Reviews

The department relies heavily on designers to provide accurate line item quantities and appropriate plans before a project goes out to bid. When designers miss key elements of a project that should have been foreseeable it results in an increase to the project's costs due to the need for change orders. Once a contractor is selected, the department is locked in with this vendor for the life of the project. Without a thorough design review, change orders will follow that result in the department losing its ability to competitively bid the new work. We reviewed 61 change orders with 728 associated line items and identified that 105 of the line items potentially had foreseeable field conditions totaling \$11 million in costs. We made our determinations based on reviews of documentation and discussions with engineers, contractors, and department subject matter experts. The cost of these items may have been reduced if included in the original request for proposal to the contractors.

Line Item Analysis

The department performs a bid analysis on the contractor who submits the lowest bid. A proper bid analysis helps ensure that funds are being used in the most effective manner and that the bid is acceptable. The department's analysis focuses on line items that are significantly lower than the engineer's estimate. There was no evidence to indicate any emphasis is placed on line items that are higher. If the contractor performed a good evaluation of the project during the bidding process, they may discover areas where the designer made mistakes. With this information they can bid high on line items they estimate will eventually increase in quantity because of the need for change orders, without hurting their chances of being the lowest bidder. We reviewed 112 line items that were greater than the engineer's estimate and determined that documentation was not maintained to verify that these items were analyzed.

Renegotiations

Compounding the change order issues noted above are the lack of renegotiations. The department's standard specifications allow the resident engineers to evaluate change orders by line item. The department has the authority to renegotiate the price for any increase in quantity greater than 125 percent of the original quantity that might create at least a \$5,000 cost savings. We reviewed 66 line items that met these specifications and found that only one was renegotiated by the department. We noted one project that had seven change orders to increase the original quantity of a material from 11,400 cubic yards to a total of 67,100 cubic yards and there was no renegotiation of the unit price. The contractor's bid for this line item was \$48 per cubic yard while the engineer's estimate was \$20. If the department had been able to renegotiate at \$20 per cubic yard, the state would have saved \$1.6 million. The additional cost for the 65 non-renegotiated line items was \$3.7 million when comparing the contractors' cost to the engineer's estimate.

Recommendation

We recommend the department reinforce the review process of designs before contracts are awarded to reduce the number of change orders and cost increases.

The bid analysis should include a review of significant line items greater than the engineer's estimate and determine if the contractor may have bid high on these items because of an anticipated design oversight. If the bid is accepted, this analysis can be used as a tool for possible renegotiations.

Resident engineers should follow the department's standard specifications and renegotiate eligible line items.

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Subcontractors

The department should analyze subcontractor costs for potential savings.

When a contractor is selected for a project they often have to subcontract certain aspects of the work to specialized vendors. The department requires the contractor to prepare a Request for Approval to Sublet form. Within this form the contractor must supply a breakdown of the line items and actual cost that was agreed upon for the subcontractor to complete the work. The department does not evaluate, monitor, or track subcontractor costs. Without a review of subcontracted costs compared to the contractor's original bid, the department is unable to identify potential areas for cost savings.

We reviewed all subcontracted work for the five projects tested and found that often the subcontractor performed the work for considerably less than what the contractor originally bid on the items. Contractors bid a total of \$32.9 million on line items that were eventually subcontracted out for a total of \$26.6 million. Our review of 62 subcontractors revealed that 26 were paid at least 20 percent less than the original bid. We noted 18 occurrences where the subcontractor earned at least \$100,000 less than what the contractor billed and received from the department.

Recommendation

We recommend the department begin monitoring subcontractor costs. The department should compile data for subcontracted work including the subcontractor's name, what service they provided, the contractor they provided the service for, and the difference between their fee and the original line item bid. Trend analyses can then be made based on this data and used as an additional cost evaluation tool by the department for items eligible for future negotiations within a contract.

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Overtime

The department should document the overtime approval process. Supervisors should monitor employees' time accordingly.

Resident engineers are responsible for approving overtime of employees assigned to their projects. Employees enter overtime earned into the Electronic Cost Accounting and Timesheet System (eCATS). The department's policy on overtime states that supervisors are responsible for reviewing and ensuring the accuracy of the overtime entered onto timesheets. The policy does not document how the supervisor should make this determination. We determined that most projects in the field use a best practice policy to monitor overtime. Employees will keep daily log records of the hours and work performed on a job site. Also, they file various reports at the field office of daily work performed. The resident engineer will track all employees' time by entering their hours into the Automated Construction Estimate System (ACES). When timesheets are prepared the resident engineer will approve them based on the information available on the ACES.

Overtime testing noted that one project was not in compliance with the department's practice. We reviewed nine months of timesheets for six employees and found a total difference of 481 hours between ACES and eCATS. The resident engineer was approving overtime not earned based on ACES reports. We requested daily logs for each employee to verify these exceptions and found that two of the employees could not produce their daily logs. The remaining four employees provided their logs and we determined that often, but not always, the person worked the time reported on eCATS. Although the hours worked appeared reasonable, the approval of the timesheets was not appropriate based on the information the resident engineer had available to review.

Recommendation

We recommend the department clarify its overtime approval process. Supervisors should verify that employee timesheets match work performed.

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May 4, 2012

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Re: Department of Transportation, Capital Construction Contracts, Audit Report

Dear Mr. Eells:

Thank you for the opportunity to respond to the referenced Audit Report. We respectfully provide the following comments:

Design Reviews

The Department does rely heavily on consultant designers to perform most of the design work. These designers are responsible for quality control of their work and are held accountable for errors and omissions in the contract documents. Quality assurance reviews are performed on key risk aspects of each project. The Department does seek recovery for errors and omissions if it can be determined that they result in additional project costs above what it would have been if included in the project at the time of bid. The Department also maintains a database of errors and omissions and will use that information to determine trends and high risk areas for further review.

Line Item Analysis

The Department performs a bid analysis of the apparent low bid prior to award of a contract. This analysis scrutinizes any significant deviation between the bid prices and the Department's Engineer's Estimate to ensure that the bid is not materially imbalanced. Whenever there is a significant difference between the overall bid price and the Engineer's Estimate, the Department determines if the project should be awarded. In the past few years, contractor bid prices have been significantly lower than the Engineer's

Page Two

Estimate (likely due to increased competition resulting from the weak economy), and the Department's justification for award has focused on explaining bid items that are lower than the Engineer's Estimate. While the Department has always analyzed all bid items with significantly higher prices, it recognizes that it should document this analysis and will change its procedures to do so.

Renegotiations

While the contract provides for the ability to renegotiate the price for increases greater than 125% of the original quantity, a determination must be made in each circumstance to determine if a cost savings can be realized from the increase. This is dependent upon the reasonableness of the original bid price, the magnitude of the quantity increase, and if the work staging provides for an economy of scale. It can be expected that in many circumstances the original bid price is reasonable for the additional work. However, the Department recognizes that it has not documented its analysis and will change its procedures to do so.

Subcontractor Costs

The terms and conditions of contractor-subcontractor contracts are often not comparable to the Department's contract with the contractor. Additionally, while a contractor may subcontract an item it is common for the contractor to still have responsibility for certain portions of the work under that item. The Department does not believe there is any utility in maintaining subcontractor price data. The Department does agree that the subcontract information may be useful in potential renegotiations for the project with which the subcontract is a part. This information is readily available and will not require any additional administrative effort. The Department will revise its procedures to identify this as a source of information that should be used during any price renegotiations.

Overtime

The Department will reinforce its existing Policy and Procedure which requires Supervisors to be responsible for reviewing and approving the accuracy of all time charges including overtime.

Sincerely,



Richard T. Hammer
Assistant Commissioner
Capital Program Management