



## Report of the Vermont State Auditor

September 17, 2013

---

# AGENCY OF TRANSPORTATION CONSTRUCTION CONTRACT

Bennington Bypass Project: On  
Schedule, On Budget, but  
Opportunities to Improve Contract  
Oversight Exist

On March 11, 2014, SAO reissued the New Haven report to correct the amount reported as additional costs associated with a delay caused by the contractor and revised the description of the additional costs. The revised amount may be found in this report's cover letter.

---

**Douglas R. Hoffer**  
Vermont State Auditor  
Rpt. No. 13-03

### **Mission Statement**

The mission of the Auditor's Office is to hold state government accountable. This means ensuring that taxpayer funds are used effectively and efficiently, and that we foster the prevention of waste, fraud, and abuse.

This report is a work of the Office of the State Auditor, State of Vermont, and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from the State of Vermont or the Office of the State Auditor. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately. Please contact the Office of the State Auditor if you have questions about reproducing this report.



**STATE OF VERMONT**  
**OFFICE OF THE STATE AUDITOR**  
September 17, 2013

Addressees (see last page of letter)

Dear Colleagues,

The following report is one of two audits of Agency of Transportation roadway construction contracts. The other report (New Haven Paving Project) can be found at <http://auditor.vermont.gov>. Our audit objectives were to determine if the contracts were completed on schedule, were completed within budget, and met State insurance requirements and federally required wage provisions. We found that one project was on schedule and within budget (Bennington Bypass) and one was not (New Haven paving).

If a delay is caused by the contractor, the Agency can charge liquidated damages to help recover costs associated with the delay. The New Haven project was expected to be completed in 117 days but was 35 days over schedule. The Agency determined that the contractor was responsible for 24 of those days, a 21 percent overrun. The Agency charged the contractor \$45,600, which was 1.2 percent of the original \$3.8 million contract amount and only covered the additional costs of Agency oversight. The amount charged did not include \$33,000 for flaggers and uniformed traffic officers that were needed during the delay. The Federal Highway Administration allows states to include these additional costs in the calculation of liquidated damages but the Agency does not currently do so. As a result, the added costs were paid by the Agency and ultimately the taxpayers of Vermont.

Limiting liquidated damages to the cost of Agency oversight captures only a fraction of the costs associated with delays. In addition to actual costs associated with delays, the Federal Highway Administration allows states to include additional amounts as liquidated damages to cover the costs of inconveniences to the state transportation department or the public.<sup>1</sup> Vermont does not include such costs in liquidated damages. Not considering and charging all eligible liquidated damages may increase the risk that contractors will not finish projects on schedule.

The Bennington Bypass project came in slightly under budget, but the New Haven paving project was 33 percent over budget due primarily to allowable asphalt and fuel price adjustments.<sup>2</sup> Our audits found that change orders were approved by authorized Agency personnel but approvals were based on limited documentation, and price adjustments were not calculated in a consistent manner. These weaknesses increase the risk that the Agency could make improper payments.

---

<sup>1</sup> The FHWA provides specific guidance on how to calculate the loss of the use of roadway by the public.

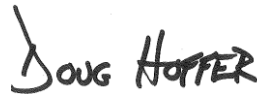
<sup>2</sup> Due to the price volatility of asphalt, gasoline and diesel fuel, the Agency has contract provisions to adjust the cost of these commodities based on market prices.

Our analysis of insurance coverage for the contracts found multiple deficiencies in the contractors' insurance coverage and that the Agency failed to perform insurance verification procedures prior to executing the contracts, which was contrary to Agency policy. In particular, our review of the contractors' insurance certificates indicated that certain types of required insurance coverage were excluded and coverage limits did not meet contract requirements. In addition, we found that review of insurance coverage did not occur in a timely manner, the State was not listed as an insured party on one of four insurance certificates applicable to the contract, and Agency personnel could not provide evidence that the contractors' insurance company was contacted to validate insurance coverage. These deficiencies put the State at risk of financial loss.

We found that the wage rates paid to contractor employees were in compliance with the contract's wage rate provisions as required by the Davis-Bacon Act. However, we noted that Construction Section practices are unnecessarily burdensome and could be streamlined without sacrificing accuracy.

Our audit identified numerous opportunities for the Agency to shorten project timelines, reduce financial risk to the State, and deliver increased value for every construction project.

Sincerely,

A handwritten signature in black ink that reads "DOUG HOFFER". The letters are in all caps and have a slightly cursive, informal style.

Douglas R. Hoffer

State Auditor

ADDRESSEES

The Honorable Shap Smith  
Speaker of the House of Representatives

The Honorable John Campbell  
President Pro Tempore of the Senate

The Honorable Peter Shumlin  
Governor

Mr. Jeb Spaulding  
Secretary  
Agency of Administration

Mr. Brian Searles  
Secretary  
Agency of Transportation

Mr. James Reardon  
Commissioner  
Department of Finance & Management

---

# Contents

---

---

## Report

Introduction	1
Highlights	2
Background	4
Construction Phase of the Project Was Completed on Schedule, but Agency is Subject to Losses in Event of Project Delays	7
Total Project Costs were On Budget, but Deficiencies Identified in the Change Order Process	7
Contractor Did Not Meet Insurance Requirements but Complied with Federal Wage Rates	14
Conclusion	17
Recommendations	17
Management Comments and Our Evaluation	18
Appendix I: Scope and Methodology	19
Appendix II: Abbreviations	21
Appendix III: Renegotiation of Highway Construction Contracts: An Economic Analysis of Change Orders issued by the Vermont Agency of Transportation, 2004-2009	22
Appendix IV: Reprint of the Secretary of Transportation's Management Response and Our Evaluation	27

---

---

## Introduction

According to the U.S. Department of Transportation inspector general, the highway transportation community faces significant pressures to handle more challenges with fewer resources due to stretched budgets, reduced staff, the cumulative demands of maintaining an ever-growing infrastructure, and a host of other factors. To accomplish their missions, most state transportation agencies rely on contracted services for which they have oversight accountability. Each year, the Vermont Agency of Transportation (AOT) enters into approximately 60-70 roadway construction and paving contracts. The fiscal impact of each AOT construction contract, in addition to the everyday impact of transportation projects on the lives of Vermonters, demands that projects are managed to ensure that funds are used efficiently and that roadway disruptions are as brief as possible.

AOT receives a majority of its funding from the Federal Highway Administration (FHWA) for construction and repair of the State's roadways. During the construction phase, contracts are primarily supervised by AOT engineers or sub-contracted site engineers and inspectors on retainer with the Agency. Proper oversight and management of AOT's construction process is imperative to access and maximize federal transportation funds, which help to support the goals of the Agency - to optimize the movement of people and goods and to protect the State's investment in its transportation system.

Given this level of oversight responsibility and the amounts spent on these projects, we decided to audit Agency construction contracts. Our audit objectives for this report were to assess the extent to which a construction contract was: 1) completed on schedule; 2) completed within budget; and 3) met contract insurance requirements and federally required wage provisions.

This report addresses our audit of the processes and internal controls related to a construction contract completed in 2010. The Bennington Bypass is new construction intended to detour truck traffic around Bennington on the way from U.S. Route 7 to Vermont Route 9. The contract audited was for one section of the Bennington Bypass. The work on this section of the Bypass included ledge removal, grading, installation of drainage and pavement for U.S. Route 7, in addition to construction of the Furnace Brook and East Road bridges. The contract was awarded at a contract price of \$21,982,620. The project was funded by a combination of federal and state dollars at a ratio of 80/20.

The complete Scope and Methodology for this audit appears in appendix I. Abbreviations used in this report appear in appendix II.

# Highlights: Report of the Vermont State Auditor

## Agency of Transportation Construction Contract: Bennington Bypass Project: On Schedule, On Budget, but Opportunities to Improve Contract Oversight Exist

(September 2013, Rpt. No. 13-03)

<p><b>Why We Did This Audit</b></p>	<p>Each year the Agency of Transportation enters into approximately 60-70 roadway construction contracts funded by about \$175 million in state and federal dollars that the Agency is responsible for overseeing. Given this level of oversight responsibility and the amounts spent on these projects, we decided to audit Agency construction contracts. Our audit objectives for this report were to assess the extent to which a construction contract: 1) was completed on schedule; 2) was completed within budget; and 3) met contract insurance requirements and federally required wage provisions.</p>
<p><b>Objective 1 Findings</b></p>	<p><b>The contract was completed on schedule.</b> The contractor began construction in August 2007 and the work was substantially completed in October 2010. <b>Although the project was completed on schedule, the mechanism for recovering Agency costs in the event of a project delay caused by the contractor is designed only to recoup a portion of these costs.</b> This exposes the Agency to losses in the event of project delays and may increase the likelihood that projects are not completed on time.</p>
<p><b>Objective 2 Findings</b></p>	<p><b>The total projects costs were on budget, but deficiencies were identified in the change order process.</b> We found the final project cost (\$21.7M) was slightly less than the original contract amount (\$22.0M). Although all change orders were approved by appropriate authorized personnel, the change order requests provided to approvers generally did not contain enough detailed documentation to support the request. Major change order requests were approved verbally allowing work to commence prior to formal approval, and the Agency lacks robust policies and procedures to ensure the accuracy and completeness of price adjustment change order calculations. Without well-defined policies and procedures, the Agency is exposed to the risk of making improper payments.</p> <p>Our review of the Agency's electronic change order approval controls revealed that 25 employees have the ability to override the electronic change order approval process within the software, effectively allowing them to initiate and approve change orders themselves on any project without requiring appropriate approvals. <b>We noted the Agency has not adopted policies and procedures addressing the periodic assessment of the appropriateness of the SiteManager™ user privileges.</b> Allowing a single person the opportunity to initiate and approve change orders without oversight may increase the risk that an unauthorized transaction will occur.</p>



---

## Highlights (continued)

---

<b>Objective 3 Findings</b>	<p>We reviewed contract provisions related to contractor insurance coverage requirements and wage rates for the contractor’s employees. <b>Our review of the contractor’s insurance certificates indicated that certain types of required insurance coverage were excluded and coverage limits shown on the contractor’s certificates did not meet contract requirements.</b> If there is a claim against the contractor’s insurance for the project and the contractor does not have the required types and levels of insurance coverage for the required periods, the State could be liable for losses, expenses, or damages connected with the cContractor’s work.</p> <p>Agency procedures require the resident engineers to review all entries on the project payrolls and fill out an Agency form to certify the wage rates are correct with respect to Davis-Bacon regulations. We found wage rates paid by the contractor to its employees were in compliance with Davis-Bacon regulations; however, the Agency’s practice of verifying wage rates is unnecessarily burdensome as it requires a review of 100 percent of wages paid.</p>
<b>What We Recommend</b>	<p>We recommend the Agency revise liquidated damages assessments to include other costs of project-related delays, such as additional expenses related to traffic control and inconvenience to the public.</p> <p>We also recommend, the Agency should provide detailed documentation to enable adequate review for change orders, require change order requests to be executed before the start of work, and eliminate the practice of allowing verbal approval for major project change orders. In addition, the Agency should develop policies and procedures that provide a comprehensive, consistent framework for the calculation of price adjustments.</p> <p>We also recommend the Agency evaluate SiteManager™ user privileges to ensure access rights are commensurate with employee and consultant responsibilities.</p> <p>The Agency should implement procedures in Contract Administration for comparing the adequacy of a contractor’s insurance coverage to the requirements of the Standard Specifications prior to the execution of the contract. The Agency should also revise construction section insurance monitoring procedures to verify that proof of insurance was provided for all coverage types, limits, and terms.</p> <p>In addition, we recommend the Agency allow sampling of wage rates as opposed to 100 percent review.</p>

---

---

## Background

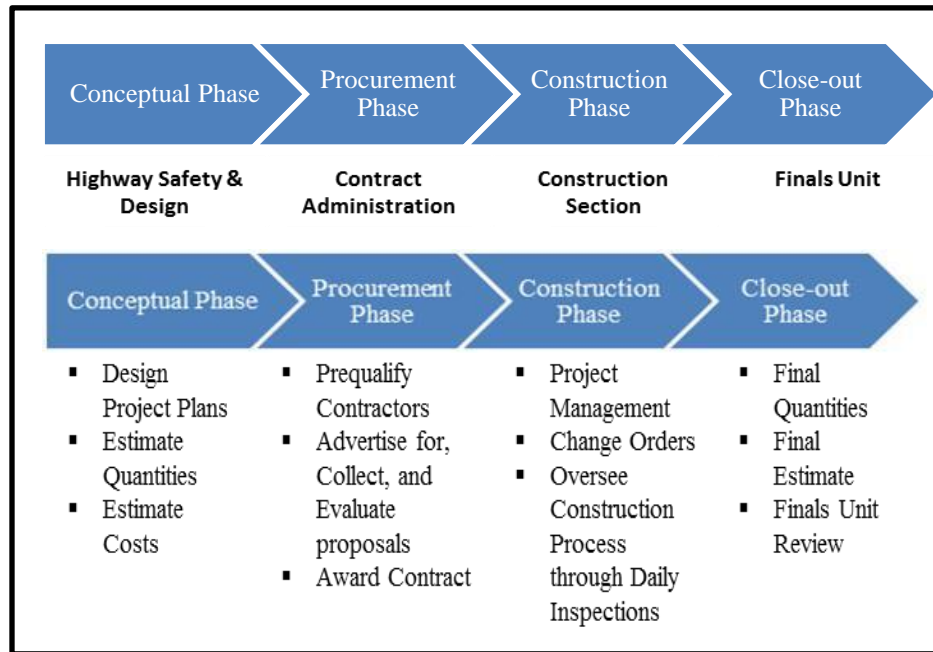
The Vermont Agency of Transportation manages 14,135 miles of roadway, 40,000 culverts, and 71,730 signs in addition to bridges, airports, railroads, park-n-rides, sidewalks, and other state transportation infrastructure.

Funding for Agency activities comes from two primary sources, federal funds and the State Transportation Fund. Federal funds generally contribute 85 percent of overall contract funding. The remaining monies are provided from Transportation Fund revenue which includes motor vehicle fees, purchase and use tax, gasoline and diesel fuel taxes, and other sources such as the Transportation Infrastructure Bond Fund.

The Construction Section within the Program Development Division of the Agency supervises the construction phase for roadway construction projects. In FY 2012, this Division expended over \$227 million in state and federal funds.

Each construction project proceeds in phases and is handled by a different section of the Agency, as illustrated in figure 1 and discussed below. The conceptual phase, which includes project design and estimation of budget and quantities, is handled by the Highway Safety and Design Section. Contract Administration handles prequalifying potential bidders, reviewing the project plans and handling all aspects of procurement, including bidding and awarding of the contract. Construction Section personnel supervise the chosen contractor during the project and determine the amounts to be paid to the contractor for work performed. The Finals Unit (within the Construction Section) handles the close-out procedures, mainly to verify that the amounts paid to the contractor are correct.

**Figure 1: Construction Process**



A single highway construction contract can easily generate 10,000 pages of documents—contract descriptions, site plans, daily field reports, estimates and other project related documents. To help manage this voluminous amount of paperwork, AOT uses project management software called SiteManager™. This software automates and streamlines the management of highway construction projects by eliminating time-consuming repetitive tasks and duplicate information. The software includes functionality to monitor daily work progress, track equipment, generate bi-weekly estimates to enable contractor payments, process change orders, and track and report project quantities and costs. It can also automate the authorization of contracts and other documents, routing an authorization request to each person who needs to review a document. Upon receiving approval on a document, the program can then send it to the next person in line if additional authorizations are required.

The Standard Specification for Construction (Standard Specifications) is a compilation of provisions and requirements established by the Agency for the performance of prescribed work under construction contracts. In essence, it is the rule book all roadway construction contractors must adhere to. The contract for this project applied provisions of the 2006 Standard Specifications. These specifications

---

---

include requirements such as the scope of work, control of the work and materials, legal and regulatory requirements, insurance coverage, and the contractor's responsibilities to the public.

---

---

## Objective 1: Construction Phase of Project Was Completed on Schedule, but Agency is at Risk of Losses in Event of Project Delays

The contract was completed on schedule. The contractor began construction in August 2007 and the work was substantially completed in October 2010. The various types of roadway construction required by the contract, such as ledge removal, grading, drainage and paving as well as bridge construction, required the contract to have three separate interim milestone dates which the State included in the contract. One interim date and the final completion date were exceeded by one day each; however, the contractor met two of three interim completion dates and the State granted an extension of time for the third. The final completion date was exceeded by only one day, for which the State granted another extension, which allowed the contract to be considered completed on schedule. This was a noteworthy accomplishment as the project schedule was planned over four annual construction seasons.

In the event of delays to the schedule caused by the contractor, the Agency can charge liquidated damages.<sup>1</sup> Although the project was completed on schedule, the Agency's mechanism for recovering Agency costs in the event of a project delay caused by the contractor is designed only to recoup a portion of these costs. This exposes the Agency to losses in the event of project delays and may increase the likelihood that projects are not completed on time. The current potential liquidated damages, which are pre-established by the Agency and based on a range of contract amounts, are calculated to cover only the costs of additional Agency oversight (i.e., additional unexpected use of Agency personnel). However, project delays may lead to other additional costs, such as project safety-related costs and the loss of the use of the roadway.<sup>2</sup>

The Agency's mechanism for assessing liquidated damages is designed only to recover a fraction of the costs permitted to be recovered under federal regulations and Agency policies. According to the Federal Highway Administration and the Code of Federal Regulations (CFR) the Agency "may, with FHWA concurrence, include additional amounts as liquidated damages in each contract to cover the anticipated costs of project-related delays or inconveniences to the state

---

<sup>1</sup> Liquidated damages contract provisions provides a mechanism for AOT to recover costs associated with contract time overruns. The Agency is required by FHWA to incorporate these provisions into federal-aid contracts as a condition of project agreements.

<sup>2</sup> FHWA provides specific guidance to state transportation departments on how to calculate the loss of the use of roadway by the public.

---

transportation department or the public.”<sup>3</sup> According to the Agency’s Standard Specifications Manual, liquidated damages are not a penalty but are assessed to defray the cost to the Agency to administer the contract. However, the manual allows for damages that can include (but are not limited to) the cost of engineering, inspection, supervision, inconvenience to the public, obstruction to traffic, and interference with business which are not costs that are recovered by the Agency.

*Limiting liquidated damages to the cost of Agency oversight for the period of delayed completion captures only a fraction of the costs associated with delays.* Not considering and charging all eligible liquidated damages costs decreases the impact to the contractor of missing contracted completion dates and may increase the risk that contractors will not finish projects on schedule.

---

## Objective 2: Total Project Costs on Budget, but Deficiencies Identified in the Change Order Process

We found the final project cost (\$21.7M) was slightly less than the original contract amount (\$22.0M). We also found that all contract change orders were properly approved, but the documentation accompanying and supporting the justification for the changes was limited. In addition, there were major change order requests approved verbally, and formal approval for these changes orders was not granted until after the work had commenced. Moreover, we found that review and validation of the calculations supporting some change order requests occurred subsequent to the formal approval of the change orders, and the Agency lacks robust policies and procedures to ensure the accuracy and completeness of price adjustment change order calculations. Our review of SiteManager™ approval controls revealed that 25 employees have the ability to override the electronic change order approval process within the software, effectively allowing them to initiate and approve change orders themselves on any project without requiring appropriate approvals. Each of these deficiencies increased the risk to the Agency for errors and improper payments.

---

### Total Project Costs on Budget

The final project cost (\$21.7M) was slightly less than the original contract amount (\$22.0M), as illustrated in Table 2. There were several change orders issued during the project which increased and decreased the project’s final cost. Although additional excavation was needed for some project sections due to underestimating the project’s requirements (estimated quantities), project savings were achieved by

---

<sup>3</sup> 23 CFR 635.127 (c)

reducing the excavation needed in other sections through a “value engineering” proposal<sup>4</sup> submitted by the contractor and accepted by the Agency. The final gross savings for this proposal were \$583,862 of which the contractor received a 50 percent share. These savings were offset by asphalt and fuel price adjustments, which increased project costs due to sharp market price increases in the cost of oil during the project.

**Table 2: Reconciliation of Bennington Project Costs**

Description	Amount
Awarded Contract	\$ 21,982,620
Change Orders:	
Excavation	343,128
Fuel and Asphalt Price Adjustments	300,391
Value Engineering Agreement	(291,931)
Asphalt and Pavement	121,590
Structural Steel	112,315
Other	49,230
Total Change Orders	<u>634,723</u>
Amended Contract	\$ 22,617,343
Total Overages	52,483
Underages:	
Traffic Control	(322,146)
Excavation	(169,875)
Erosion Control	(128,518)
Safety Barriers	(81,005)
Asphalt and Pavement	(68,558)
Other	(178,997)
Total Underages	<u>(949,099)</u>
Final Contract Cost	<u><u>\$ 21,720,727</u></u>

There were also some budgeted cost items that came in under budget on this project. There was a significant reduction in the expected cost for traffic control (flagger and uniformed traffic officers) and erosion control costs came in under budget, mostly the result of underestimating the amount of top soil and erosion matting needed during the project.

<sup>4</sup> Value engineering provides an incentive to the contractor to initiate, develop, and present to the engineer cost reduction proposals involving changes in the drawings, designs, specifications, or other requirements.

---

Change orders occur on most construction projects and may represent a sizeable portion of a project's overall cost. According to a recent economic analysis<sup>5</sup> performed on behalf of the Agency by researchers from the University of Vermont and the University of Oklahoma, on average over 80 percent of Vermont highway and bridge projects have change orders, which increase the overall costs of a project by 8 percent on average. Not surprisingly, they found that change orders are more likely to occur on large complex projects. Given the scope and duration of this project, it was not unusual for some cost components to vary from the original design.

---

### Authorized Agency Personnel Approved Change Orders, but Deficiencies Identified in Change Order Process

Overall, we found that all change orders were approved by appropriate authorized personnel. However, we identified weaknesses in the Agency's procedures related to lack of supporting documentation accompanying change orders submitted for approval. We also found several instances where the Agency allowed major extra work proposed by change orders to commence based only on verbal approvals. In addition, we found the Agency had not established adequate policies and procedures to ensure that allowable contract price adjustment calculations were accurate and complete. Moreover, our review of SiteManager™ approval controls revealed that 25 employees have the ability to override the electronic change order approval process within the software, effectively allowing them to initiate and approve change orders themselves on any project without requiring appropriate approvals. Allowing a single person the opportunity to initiate and approve change orders without oversight could increase the risk that an unauthorized transaction will occur.

#### ***Change Order Approval and Review***

We found that all change orders for the contract were approved by the appropriate Agency staff. The Agency requires approval for change orders from specific assigned Agency management personnel. The level and extent of approval required is dependent on the dollar amount and type of proposed change order. For high dollar change orders or change orders that involve additions to scheduled time, as many as five approvers were required.

However, the change order approvers reviewed only the summary information provided in the change order request and did not review the supporting quantity and price calculations. According to Agency personnel, the change order request should

---

<sup>5</sup> Richard Sicotte, Ph.D. et al., *Renegotiation of Highway Construction Contracts: An Economic Analysis of Change Orders issued by the Vermont Agency of Transportation, 2004-2009*, State of Vermont Agency of Transportation – Materials & Research Section, May 2013.



---

be a stand-alone document, which provides summary answers to the questions of who, what, where, why, when, and how much, but it was not intended to include the support for calculation of quantities and prices. According to current practice, it is the responsibility of the resident engineer for each project to ensure that supporting documentation exists on file and that the change order request has adequate support. A review of the contract's change order calculations did occur, but it was during the project's close-out process, after the project was substantially complete.

We found that the change orders provided to approvers generally did not contain sufficient detailed documentation to support the calculation of revised quantities. For example, change order #17 for \$112,315 included only a general explanation stating the contracted quantity was underestimated. No calculations or references were provided supporting the revised quantities. Another example was change order #19, totaling \$121,590 mostly for additional asphalt. This change order included only a general explanation that the resident engineer allowed the contractor to install asphalt in two areas instead of one. No calculations or references were provided. We found that in practice, project management personnel approving change orders are not provided supporting information with the request.

Without a detailed review of the calculations underlying the change order request before the time of approval, the Agency is at risk of authorizing changes to the project design that may contain errors. This could result in unnecessary project costs that cannot be recouped once the work has been completed.

In several instances the Agency allowed major extra work proposed by change orders to commence based only on verbal approvals from the project manager and the FHWA division administrator. According to the Agency, "major extra" is defined as work that increases or decreases the project cost by more than 25 percent or \$250,000, whichever is less. This criterion does not apply to price adjustments. According to federal regulations (23 CFR 635.120(a), all major extra work on federally-funded projects shall have formal approval by the division administration in advance of their effective dates, and verbal approvals for major extra work should only be allowed when emergency or unusual conditions justify the work. For these instances, we noted the work did not appear to be performed under emergency or unusual conditions. In addition, the Agency's "construction manual" states that change orders should be executed before the start of work which was also not the case for these instances.

The resident engineer allowed the contractor to commence additional work based on only verbal approvals, which we attribute to an effort to avoid delays that can affect the project's schedule and potentially increase costs. Obtaining verbal approvals generally takes much less time than the formal change order approval process, which may take several months. However, a change order does not take legal effect until after the Agency has formally approved it and it's been signed by the contractor.

---

This timing can be problematic because the formal approval occurs after the work has begun, leaving the Agency few options for recourse in the event problems are detected. Failing to comply with federal regulations increases the risk that some project costs may be disallowed by the FHWA, which may require the Agency to pay any disallowed costs with state funds.

### ***Price Adjustment Change Orders***

The Agency includes provisions for price adjustments in its contracts and has made available a spreadsheet to assist employees with the calculations. However, the Agency has not established formal policies and procedures that could provide employees a comprehensive, consistent framework for ensuring that price adjustments calculations are accurate and complete.

Price adjustments provide for either additional compensation to the contractor or payment to the Agency depending on the movement of market prices for fuel and asphalt during the construction of the project. The “Special Provisions” section in the contract provides details about the conditions that must be met for a price adjustment and sets the index (base) price for fuel and asphalt. For gas and diesel fuel, throughout the project, whenever the prices of these items change by 5 percent or more, an adjustment is calculated and applied to the project’s costs. There is no such threshold trigger for asphalt price adjustments. These price adjustments are reviewed at the end of the project during the close-out process

The Agency’s process for calculating price adjustments did not have any mechanism for ensuring completeness, i.e., that all appropriate quantities were included in the calculations. For instance, the Agency uses SiteManager™, project management software developed by the American Association of State Highway and Transportation Officials (AASHTO), to track project information. Data, including material quantities used, are entered by on-site engineers, which could be used to verify that the quantities in the price adjustment calculations are complete and accurate. However, the Agency did not reconcile the quantities used in each separate calculation to the totals from the report of final quantities generated by SiteManager™.

According to the standards provided by the State over internal controls,<sup>6</sup> reconciliation (or verification) is the determination of the completeness, accuracy, authenticity, and/or validity of transactions. Reconciliation is a control activity which enables management to ensure activities are being performed in accordance with requirements. The absence of a reconciliation process that ensures the accuracy

---

<sup>6</sup> Vermont Department of Finance and Management, “Internal Control Standards: A Guide for Managers”.

---

of quantities in price adjustments can place the Agency at risk of making improper payments.<sup>7</sup>

The effects of not having adequate policies and procedures were apparent in our review. We found the Agency calculations contained a number of errors, such as excluding quantities from the calculations, reporting quantities in incorrect months, using an incorrect market price, and using a spreadsheet that contained a formula error. This resulted in the Agency underpaying the contractor by approximately \$10,000.

We also found the Agency's methods for calculating price adjustments were inefficient. For example, the resident engineer calculated the fuel price adjustment on a monthly basis, which consisted of more than 25 individual calculations, many of which were for less than \$500. In addition, separate calculations were made for the same month but for different work sites. Moreover, some of calculations were performed twice because the original calculations were based on estimated quantities and were later finalized when actual quantities were available. Without well-designed and implemented policies and procedures for price adjustments, the Agency is exposed to the risk of making improper payments to its contractors.

#### ***SiteManager™ Change Order Approval System***

All change orders are processed and approved in SiteManager™. Our review of SiteManager™ approval controls revealed that 25 employees have the ability to override the electronic change order approval process within the software, effectively allowing them to initiate and approve change orders themselves on any project without requiring appropriate approvals. While we identified this potential risk, our review and reconciliation of all change orders for this contract indicated that the change orders were approved by the appropriate individuals and were properly accounted for.

We also noted the Agency has not adopted policies and procedures addressing the periodic assessment of SiteManager™ user privileges. Allowing a single person the opportunity to initiate and approve change orders without oversight could increase the risk that an unauthorized transaction will occur. Lack of segregation of duties over initiating and approving change orders exposes the Agency to a higher risk of inappropriate behavior.

---

<sup>7</sup> An improper payment is any payment that should not have been made or that was made in an incorrect amount under statutory, contractual, administrative, or other legally applicable requirements.

---

---

## Objective 3: Contractor Did Not Meet Insurance Requirements but Complied with Federal Wage Rates

We found that the contractor's insurance coverage did not meet all of the Agency's construction contract insurance requirements, placing the State at risk for financial loss. We also found that Agency insurance monitoring practices were deficient. We did find that the wage rates paid to contractor employees were in compliance with the contract's wage rate provisions. This is important because if the Davis-Bacon Act requirements are not followed, the impact could include termination of the contract and contractor suspension or debarment<sup>8</sup> for three years. This could cause unnecessary delays in completing the project, exposing the State to the potential of increased costs and the risk of losing federal funding.

---

### Insurance Requirements Not Met

According to State of Vermont Agency of Administration Bulletin 3.5,<sup>9</sup> before commencing work on contracts the contractor must provide certificates of insurance to demonstrate compliance with the State's minimum insurance requirements. The Agency's "Standard Specifications for Construction" manual echoes the provisions of Bulletin 3.5 and provides more specific guidance regarding additional insurance coverage requirements, including types of insurance required for construction projects, dollar amounts of coverage and periods that insurance must be in effect. Further, the Agency's manual specifies that contractors must have insurance in place before the contract is signed and the State and Agency are to be listed as additional insured parties on all policies except workers' compensation.

Our analysis of insurance coverage for the contract found multiple deficiencies in the contractor's insurance coverage and that AOT failed to perform insurance verification procedures prior to executing the contract, contrary to Agency policy.

***In particular, our review of the contractor's insurance certificates indicated that certain types of required insurance coverage were excluded or not maintained, and coverage limits shown on the contractor's certificates did not meet contract requirements.*** For example, the certificates:

---

<sup>8</sup> Debarment or suspension is one means that agencies use to ensure that they deal only with contractors who are responsible in fulfilling their legal and contractual obligations. Debarment removes a contractor's eligibility for government contracts for a fixed period of time, while suspension temporarily debars a contractor for the duration of an agency investigation or litigation.

<sup>9</sup> Bulletin 3.5 sets forth the State's administrative requirements for contracting procedures.

- 
- Listed general liability coverage and automobile coverage, but certain other required types of coverage, such as independent contractor's protective, fire damage legal liability, and explosion coverage were missing.
  - Were not available for one year and the Agency also could not provide evidence that the contractor maintained Workers' Compensation insurance for the entirety of the project.
  - Showed general liability coverage of \$1.0 million per occurrence, but the required coverage is \$1.5 million.

In addition, we found that review of insurance coverage by the Construction Section of AOT did not occur in a timely manner, the State was not listed as an insured party on one of four insurance certificates applicable to the contract, and agency personnel could not provide evidence that the contractor's insurance company was contacted to validate insurance coverage.

These failures stem from multiple causes.

First, the database maintained by the Construction Section to record and monitor insurance coverage did not contain complete or accurate insurance coverage requirements. For example, the database lists types of insurance and a checkbox is utilized to record the types of insurance held by a contractor. However, the list of insurance was incomplete. In addition, a work aid within the database specifies required coverage levels, but the amounts did not always correspond to requirements per AOT's Standard Specifications manual.

Second, although staff was required to verify insurance coverage with the insurance company, the Construction Section's procedures did not contain an explicit requirement to maintain a record of the verification.

Third, AOT's written procedures regarding the insurance verifications were lacking in detail and scope. For example, no procedures address the requirement to ensure that Products and Completed Operations coverage continues past the project acceptance date. We also noted that there was no supervisory review or monitoring of the contractor data being entered into the database. According to the State's internal control standards, those individuals with the responsibility for supervision should approve work at critical points to ensure quality and accuracy and provide documentation of the review. Effective monitoring gives management the opportunity to identify and correct any deficiencies or problems and minimize the impact of unfavorable events.

Finally, the timing of the Agency's process for verifying insurance coverage is flawed because the Construction Section is responsible for verifying that the contractor holds the correct types, levels, and terms of coverage subsequent to contract execution, despite policy requiring that this verification occur prior to

---

contract signing. Further, prior to the Construction Section's involvement, the contractor submits an insurance certificate with the contractor-signed copy of the contract to Contract Administration. Contract Administration performs a review of the certificate, looking for blanks or apparent omissions, but does not check the insurance limits nor confirm with the insurance company that coverage is in effect.

If there is a claim against the contractor's insurance for the project and the contractor does not have the required types and levels of insurance coverage for the required periods, the State could be liable for losses, expenses, or damages connected with the Contractor's work on the project. Without adequate verification of insurance coverage, the Agency cannot be certain that insurance policies are valid and still in effect, increasing the risk exposure to the State.

---

## Federal Wage Rates Correct, but Verification of Contractor Payrolls Exceeds Requirements

The federal Davis-Bacon Act provides laborers and mechanics working on covered federally financed contracts over \$2,000 the right to receive at least the locally prevailing wage rate and fringe benefits, as determined by the U.S. Department of Labor, for the type of work performed. To assure that prevailing wage rates are being paid, the federal government requires that contractors/sub-contractors submit payrolls to the Agency reporting the name and classification (type of work being performed) for each employee and the wage rate being paid, among other information.

Agency procedures require the resident engineers to review all entries on the projects payrolls and fill out an Agency form to certify the wage rates were in general compliant with Davis Bacon regulations. We found that the wage rates paid to contractor employees met the contract wage rate provisions and that all payroll amounts tested were compliant with Davis Bacon regulations. Compliance with Davis-Bacon is important because contractors or subcontractors found to have disregarded their obligations to employees, or to have committed aggravated or willful violations while performing work on Davis-Bacon covered projects, may be subject to contract termination and debarment from future federally funded contracts for up to three years. The federal government may have the work completed, by contract or otherwise, and the contractor and the contractor's sureties shall be liable to the government for any excess costs the government incurs.

During our examination of the wage certification process, we noted that Construction Section practices, contrary to the Agency's construction manual, required the resident engineer to review 100 percent of all payroll distribution line items to verify that wage rates were compliant with regulations. The Construction Section manual requires that the first two payrolls submitted by each contractor on each project should be fully checked, but it allows for subsequent sampling if full

---

compliance is shown on the initial two payrolls. Given the number of payroll line items on each project (approximately 6,700 for this contract) it is unnecessarily burdensome to review all entries.

---

## Conclusion

Our audit identified numerous opportunities for the Agency to reduce financial risk to the State, and deliver increased value for every construction project.

The Agency's policy for assessing liquidated damages against the contractor should be strengthened to include additional costs now borne by the State in the case of project delays, which may serve as an incentive for contractors to complete projects on time and reduce costs. The Agency should develop price adjustment policies and procedures to ensure the accuracy and completeness of these calculations, thereby minimizing the risk of improper payments. Strengthening the controls over the change order approval process by requiring that underlying documentation be provided prior to approval can safeguard against unnecessary project costs. Also, segregation of duties within the software used to process change order approvals will ensure that one individual cannot initiate and approve change order requests.

The Agency could benefit from more thorough insurance review and verification procedures. Requiring that contractors provide adequate proof and levels of coverage combined with proper monitoring of contractor insurance coverage insurance would minimize problems and reduce financial risk to the State.

The savings associated with simplifying wage rate verification policy will ease the administrative burden of resident engineers in the field, increasing the efficiency and effectiveness of construction administration.

---

## Recommendations:

SAO recommends that Secretary of the Agency of Transportation direct Agency staff to:

- Revise liquidated damages policies to include other costs of project-related delays such as inconvenience to the public and traffic control, in addition to the Agency's oversight costs.
- Provide detailed documentation to enable adequate review for change orders such that approvers can verify the accuracy and completeness of the revised quantities and prices prior to change order approval.
- Eliminate the practice of allowing verbal approval for major project change orders.
- Require change order requests to be executed before the start of work.

- 
- 
- Evaluate SiteManager™ user privileges to ensure access rights are commensurate with employee and consultant responsibilities and to ensure segregation of duties.
  - Develop policies and procedures that provide a comprehensive, consistent framework for the calculation of price adjustment change orders to ensure that they are calculated accurately and that all quantities subject to adjustments are reconciled.
  - Implement procedures in Contract Administration for comparing the adequacy of a contractor's insurance coverage to the requirements of the Standard Specifications prior to the execution of the contract, including validating with the insurance company that contractor policies are in force and documenting that the validation occurred.
  - Revise Construction Section insurance monitoring procedures to require that policies match the coverage types and limits of the Standard Specifications; to document verification of the insurance coverage directly with the insurance company; and to implement supervisory review to ensure systematic performance of those verifications.
  - Develop a monitoring procedure to ensure that Products and Completed Operations coverage extends past project acceptance.
  - Align Construction Section wage rate practices with the construction manual to allow sampling of wage rates as opposed to 100 percent review.

---

## Management Comments and Our Evaluation

On August 27, 2013, the Secretary of Transportation provided written comments on a draft of this report. The secretary addressed each of our recommendations and committed to resolve the issues which were raised in the report. In the response, the Secretary indicated that the Agency planned to implement or consider our recommendations. We have included the complete response and our evaluation of the comments in appendix IV.

- - - - -

In accordance with 32 VSA §163, we are also providing copies of this report to the secretary of the Agency of Administration, commissioner of the Department of Finance and Management, and the Department of Libraries. In addition, the report will be made available at no charge on the state auditor's website, <http://auditor.vermont.gov/>



---

## Appendix I

### Scope and Methodology

---

The scope of our audit was Agency contracts that were closed-out during calendar years 2010-2012. We selected this contract for audit because of its high cost and large number of change orders.

To address our objectives, we reviewed state statutes and Agency rules, policies and procedures. We also reviewed the Agency's Standard Specifications for construction projects manual, construction manuals, and the regional process manual, as well as a research paper on the economic analysis of change orders prepared by the University of Vermont Transportation Research Center related to highway construction projects in Vermont (see appendix III). We also reviewed Federal Highway Administration guidance on construction audits and reports issued by other auditors in different states.

In planning and executing our work we conducted multiple interviews with Agency personnel to obtain information about contract administration, project accounting, construction operations, and information technology relevant to SiteManager™, and employee wages and benefits oversight.

In determining if the project was on schedule, we examined two phases of the project-the construction phase and the project close-out phase. Our examination of the construction phase compared the contract completion date to the date the project was substantially completed by the contractor.

To determine if the project was within budget, we compared the awarded contract amount to the final project cost. We also examined the cost discrepancies for individual pay items. To facilitate our review, we compiled a schedule reconciling the awarded and amended contract amounts to the change orders for all pay items and compared them to the contract costs. To validate the contract costs, we reconciled the total cost as shown on the final quantities report to reports generated by STARS, (the Agency's internal accounting system) and VISION (the State-wide accounting system). In addition, we compared the quantities for pay items whose final cost was greater than \$200,000 to the resident engineer's calculations. We reviewed change orders and cost analysis reports for pay items whose actual cost differed from the awarded contract cost by more than \$200,000 to ascertain the reason for the differences. We also summarized the total dollar value of the individual pay items that were over and under budget.

We also reviewed the change orders for this project to verify they were approved by the appropriate Agency personnel. We gained an understanding of the approval process by reviewing the construction manual and performing walk-throughs with Agency personnel. From this review we identified the appropriate approver(s) for this project and confirmed this information with the construction engineer. We reviewed the change order application controls with the SiteManager™ system administrator. We compared appropriate approvers we identified to the actual individuals listed on the signed change orders.

---

## Appendix I

### Scope and Methodology

---

As part of our validation of high cost pay items, we reviewed the calculation of fuel and asphalt price adjustments. We examined the price adjustment calculation records including placement reports, calculation worksheets, and pay item quantities detail. Since the Agency's calculations contained errors, we independently recalculated the price adjustments and compared our calculated amount to the amount they recorded. To recalculate the price adjustments, we used formula information from the contract; posted prices from the Agency's website; and quantity information from field books, placement reports, and engineer's documented calculations.

To determine if insurance requirements were met, we reviewed available insurance certificates kept on file by the Agency. We compared the certificates to the requirements in the Standard Specifications and noted what time periods were covered by the certificates. We interviewed staff tasked with tracking insurance and viewed the insurance database.

Our review of wage rates started with a request to the Agency for all contractor and sub-contractor payrolls for the selected contract. From these documents, we determined the total number of payroll distribution line items for the project and calculated the number of items to be tested that would be statistically representative. We tested these items to determine if the federally required wage rate was used, if the mathematical calculation of the payroll was correct, and if the resident engineer had signed the certification of wage rates.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

---

## Appendix II

### Abbreviations

---

AASHTO	American Association of State Highway and Transportation Officials
AOT	Agency of Transportation
CFR	Code of Federal Regulations
FHWA	Federal Highway Administration
SAO	State Auditor's Office

---

## Appendix III

# Renegotiation of Highway Construction Contracts: An Economic Analysis of Change Orders Issued by the Vermont Agency of Transportation, 2004-2009

---

For purposes of brevity, we have included only the executive summary of this report. The report in its entirety can be located on the Vermont Agency of Transportation web-site at:

[http://vtransengineering.vermont.gov/sections/materials\\_and\\_research/research/projects/completed](http://vtransengineering.vermont.gov/sections/materials_and_research/research/projects/completed)

### EXECUTIVE SUMMARY

We provide a complete report of our research on change orders and strategic bidding in Vermont over the period 2004-2009. Our investigation provides the Vermont Agency of Transportation with a quantitative view of the scope of change orders, and their statistical determinants during this period.

Over eighty percent of highway and bridge projects have change orders. On average, change orders increase the costs of a project by eight percent, but in many cases the cost increase can be significantly higher. Change orders are not distributed evenly either across firms or items. In particular, we estimate that the probability that Vermont's top construction firms will submit change orders on a project that they win is 20 percentage points higher than that of other firms. In terms of items, change orders appear most frequently for asphalt and fuel price adjustments, pavement, steel and flaggers/traffic control. In addition, we estimate that change orders are more likely to occur in more large, complex projects than in smaller, simpler ones.

The evidence strongly suggests that contractors correctly anticipate items that will later be subject to change orders, and adjust their bids accordingly. In particular, firms often use strategic bidding practices, bidding more aggressively in an auction to increase the probability of winning, and later recovering their foregone profits by frequently claiming change orders. The strategic bidding most often takes the form high bid prices on items later subject to a positive quantity adjustment, and lower prices on items that will be subject to negative quantity adjustments. Items that are the most frequently renegotiated have bids 7.5% higher, on average, than those that are not subject to change orders.

In accordance with these findings, we recommend that the Agency consider implementation of a reserve-price rule, either for the bid or on particular items we identified in the study. In addition, we recommend adopting smaller, simpler projects when feasible and examining the possibility of expanding usage of the design-build approach to contracting.

- 3 -

---

## Appendix III

# Renegotiation of Highway Construction Contracts: An Economic Analysis of Change Orders Issued by the Vermont Agency of Transportation, 2004-2009

---

Additional important findings are that increasing competition could yield substantial financial savings. We estimate that for every additional bidder, project bids of all firms decline on average by nearly two percent. We recommend a number of possible initiatives for increasing competition. Also, there are potentially large rewards available from adjusting the timing of the Agency's construction program in response to overall business activity. We found that a one percentage point increase in the unemployment rate is associated with four percent lower bids.

While there is no magic bullet that will address the problem of change orders, the evidence we found suggests that the combined effect of our recommendations could have a major impact on cost-savings and improved contractual performance.

Finally, we specify several possible directions for future research that could yield substantial cost-savings. In particular, further investigation would yield more precise understanding of how the fuel and asphalt price adjustment mechanisms could be altered in a manner to maximize cost-savings. Additionally, study of firm performance during the recovery from Tropical Storm Irene would yield recommendations about how the Agency might pursue new strategies to foster greater competition in project bids.

## Appendix IV

# Reprint of the Secretary of Transportation's Management Response and Our Evaluation



**State of Vermont**  
**Office of the Secretary**  
One National Life Drive  
Montpelier, VT 05633-5001  
[www.aot.state.vt.us](http://www.aot.state.vt.us)

[phone] 802-828-2657  
[fax] 802-828-3522  
[ttd] 802-253-0191

*Agency of Transportation*

August 27, 2013

Mr. Douglas R. Hoffer  
Vermont State Auditor  
132 State Street  
Montpelier, VT 05633-5101

Dear Mr. Hoffer:

Thank you for the opportunity to review the draft report entitled "Bennington Bypass Project: On Schedule, On Budget, But Opportunities to Improve Contract Oversight Exist." The Agency of Transportation (VTrans) offers the following commentary and response to the findings, conclusions and recommendations provided by the Office of the State Auditor in the report (the "Report").

Recommendation: Revise liquidated damages policies to include other costs of project-related delays such as inconvenience to the public and traffic control, in addition to the Agency's oversight costs.

Agency Response: The Agency will need time to reflect on this policy change and develop an action plan if the Agency accepts the recommendation. Liquidated damages should be reasonable and provide sufficient incentive for the contractor to complete work on time. Liquidated damages that are excessive can discourage bidders and thus reduce competition, and may result in higher bids as contractors increase prices to mitigate risk. Moreover, litigation costs associated with assessing liquidated damages on complex factors like "inconvenience to the public" (included as a recommendation) may far outweigh any potential benefit derived. Both in the findings and the body of the report, the statement appears that current [liquidated damages] practice may "increase the likelihood that projects are not completed on time." In fact, the Bennington Bypass Project was completed on time and nothing in the Report substantiates such a statement. Absent circumstances specific to the Report which would make this statement appropriate, and mention of the risks associated with excessive liquidated damages, we consider it conjecture and ask that it be removed.

Recommendation: Provide detailed documentation to enable adequate review for change orders that approvers can verify the accuracy and completeness of the revised quantities and prices prior to the change order.

Agency Response: The change order process is a defined process well understood by staff, amply documented in the VTrans Construction Manual, and includes redundancy throughout the process. The Resident Engineer consults with the Regional Construction Engineer and other support staff in negotiating the terms of a Change of Design (COD). This requirement provides management with oversight of the process. In addition, the project manager and the Federal Highway Administration (FHWA) (if necessary) are consulted prior to providing direction to the contractor, as is the Construction Engineer for more complex agreements. The extensive oversight alleviates the need to provide the review team with support documentation during the COD review process. Instead, the COD should continue to reference the supporting documentation, with the added note that the supporting documentation is available on request. This approach makes the material available without burdening the process.



See comment 1  
in the table after  
AOT's response.

See comment 2  
in the table after  
AOT's response.

---

## Appendix IV

# Reprint of the Secretary of Transportation's Management Response and Our Evaluation

---

See comment 3  
in the table after  
AOT's response.

See comment 4  
in the table after  
AOT's response.

Mr. Douglas R. Hoffer  
August 27, 2013  
Page 2

Recommendation: Eliminate the practice of allowing verbal approval for major project change orders.

Agency Response: It appears that this comment pertains to "major extra" work as spelled out in footnote 6, which is taken from the Field Memo addressing independent cost analysis procedures. It would facilitate the reader's understanding if this information were moved to the body of the report. It is not the practice or policy of VTrans to allow work to proceed solely on verbal approval. Any verbal approval should be followed by a written order or change order. The procedure on change orders addresses the use of verbal approvals and, in light of the incorporated redundancy and management oversight, appears to be an acceptable practice.

Recommendation: Require change order requests to be executed before the start of work.

Agency Response: This is not currently possible without significant negative repercussions. We believe that our procedures are adequate to mitigate the risk of proceeding without an executed work order. The Report notes that the change order process can take months to complete. Given the current process coupled with the objective of timely delivery, we believe the current practice is a reasonable and prudent compromise.

Recommendation: Evaluate SiteManager™ user privileges to ensure access rights are commensurate with employee and consultant responsibilities and to ensure segregation of duties.

Agency Response: Agreed. This should be done on an annual basis. We recognize that some risk exists but believe that we monitor this activity to effectively manage any risk. We emphasize that the Report found no exceptions in this area.

Recommendation: Develop policies and procedures that provide a comprehensive, consistent framework for the calculation of price adjustment change orders to ensure that they are calculated accurately and that all quantities subject to adjustments are reconciled.

Agency Response: Agreed. We will provide staff guidance on the APA/FPA calculations and provide the tools to comply. This task will be completed as part of the 2014 changes to the Construction Manual.

Recommendation: Implement procedures in Contract Administration for comparing the adequacy of a contractor's insurance coverage to the requirements of the Standard Specifications prior to the execution of the contract, including validating with the insurance company that contractor policies are in force and documenting that the validation occurred.

Agency Response: Agreed. Contract administration will immediately implement measures to provide a thorough initial insurance verification with appropriate supervisory support.

Recommendation: Revise Construction Section insurance monitoring procedures to require that policies match the coverage types and limits of the Standard Specifications; to document verification of the insurance coverage directly with the insurance company; and to implement supervisory review to ensure systematic performance of those verifications.

---

## Appendix IV

# Reprint of the Secretary of Transportation's Management Response and Our Evaluation

---

See comment 5  
in the table after  
AOT's response.

Mr. Douglas R. Hoffer  
August 27, 2013  
Page 3

Agency Response: Agreed. Construction will conduct a process review of its insurance monitoring procedures. Contract Administration will collaborate with the Construction Section for transition to an effective monitoring process to ensure that continues and sufficient coverage and protection to the state. This should be completed within six months.

Recommendation: Develop a monitoring procedure to ensure that Products and Completed Operations coverage extends past project acceptance.

Agency Response: Agreed. To be implemented within six months in conjunction with actions mentioned above.

Recommendation: Align Construction Section wage rate practices with the construction manual to allow sampling of wage rates as opposed to 100 percent review.

Agency Response: We believe there may have been a miscommunication between audit staff and construction personnel on this item. The wage review is currently done utilizing sampling of the payroll distribution line items.

VTrans appreciates the efforts and recommendations of the Office of the State Auditor. We look forward to working with your staff to successfully resolve the issues raised in this report to our mutual benefit, consistent with our shared goal of effective, efficient delivery of our services to the State of Vermont.

Sincerely,



Brian R. Searles  
Secretary of Transportation



---

## Appendix IV

# Reprint of the Secretary of Transportation’s Management Response and Our Evaluation

---

The following presents our evaluation of select comments made by the Secretary of Transportation.

Comment 1.	<p>We agree with the Agency that liquidated damages should be reasonable and provide incentive for contractors to meet scheduled contract completion dates. We believe our recommendation to include the additional cost of flaggers and other traffic control expenditures in liquidated damages is reasonable. Furthermore, it is difficult to discern why the Agency supports a policy that results in taxpayers bearing some of the costs of delays caused by contractors.</p> <p>In addition, we believe including in liquidated damages the costs of indirect impacts experienced by the state and its citizens as a result of contractor delays is reasonable and would <u>increase</u> the incentive for contractors to meet the contract completion dates. The FHWA allows for certain other costs to be charged and provides comprehensive guidance to state transportation agencies on how to quantify items such as road usage costs. States such as New Jersey and Texas include other costs associated with contractor delay in their liquidated damages contract provisions. Furthermore, as to the risk of increased litigation due to charging higher liquidated damages, in general, the purpose of liquidated damages is to avoid the need for litigation to establish the appropriate damages payable by specifying them in advance. These amounts are included in the State’s standard construction contracts and accordingly, are an enforceable contract provision.</p> <p>Finally, the Agency objects to our statement that the failure to include all allowable costs in liquidated damages may “increase the likelihood that projects are not completed on time.” The Agency stated that “Nothing in the Report substantiates such a statement.” However, the Agency itself acknowledged that liquidated damages should “provide sufficient incentive for the contractor to complete work on time.” If liquidated damages are an incentive to complete work on time, then it is not unreasonable to suggest that de minimis liquidated damages are not likely to be an effective deterrent to delays. Including the full costs of delays would clearly provide greater incentive to contractors to complete work promptly.</p>
Comment 2.	<p>According to the Agency, ongoing communications between the involved parties negotiating the change order provides management with oversight prior to change orders being formally approved. However, without sufficient documentation accompanying the request for approval of the change order, members of the review team that have not been involved in negotiating the change order may not have information sufficient to give the change order careful consideration.</p>
Comment 3.	<p>The Agency indicated that it is not the practice or policy of the agency to allow work to proceed solely on verbal approval and that any verbal approval should be followed by a written order or change order. However, this did not appear to be the case. In two instances, major extra work commenced based on only verbal approvals and without written orders. This occurred well in advance of obtaining written approval of the change orders. In one of these instances, the work appears to have been completed prior to verbal approval being granted. Allowing major work to commence based on only verbal approvals is not a good practice because the formal approval occurs after the work has begun; leaving the Agency few options for recourse in the event that the changes are miscommunicated or problems are</p>

---

## Appendix IV

### Reprint of the Secretary of Transportation’s Management Response and Our Evaluation

---

	detected after work is performed. The Agency requested that the SAO incorporate information which was footnoted in the Agency draft into the body of the report. We agree this would facilitate the reader’s understanding of the finding and have made this change.
Comment 4.	The SAO recognizes the Agency’s objective of timely delivery of construction projects, and that not all change orders can be executed prior to the work being started, however these situations should be the exception. The Agency’s construction manual gives direction for its construction managers for extra work change orders by stating that “the extent of work and the price is established by a Change Order executed before the start of work.”
Comment 5.	To clarify our recommendation that the wage rate review process use sampling of wage rates, the wage rate review by the resident engineer for Davis–Bacon compliance is a two-step process. The first step is a review of all payroll wages that are submitted by contractors each week. The second step is spot checking through contractor employee interviews, confirming that the job classification and the actual wages received by the employee are as indicated on the weekly payroll submissions. We acknowledge that the resident engineer is using sampling to select those employees to be interviewed; however, our recommendation is directed at the first step, which is the weekly review of all wages paid by the contractor. According to the construction manual, if full compliance is shown with the first two payrolls submitted by the contractor, then sampling is allowed on subsequent payrolls. We found that the subsequent payroll submissions made each week by contractors were not being sampled.