

Secretary of State Audit Summary

Dennis Richardson, Secretary of State

Mary Wenger, Interim Director, Audits Division



ODOT should better scrutinize construction costs and project changes by tracking line item bids with abnormally high or low prices

AUDIT PURPOSE

The Oregon Department of Transportation **spends about \$400 million a year** on highway, bridge, and other construction projects. The purpose of this audit was to determine if ODOT is effectively monitoring project changes to prevent unwarranted costs. Because **unbalanced bidding can lead to increased project costs**, we examined the agency's efforts to monitor project changes related to those bids.

FINDINGS IMPACT

These bids **could impact ODOT project costs** for state contracts. If agency leadership decides to implement enhanced tracking and scrutinize unbalanced bidding, **the state could potentially realize significant savings by avoiding project cost increases**. Inaction will continue the status quo of incomplete data that prevents ODOT from evaluating unbalanced bidding that can lead to project cost increases.

KEY FINDINGS

- ODOT has processes in place to manage changes to its construction projects, but the agency **does not track which bid items are unbalanced** or project changes related to unbalanced bid items.
- State and federal laws generally require ODOT to award construction contracts to the lowest bidder, so contractors sometimes submit abnormally high or low prices on certain line items, known as "unbalanced bidding." Contractors may bid high on line items for which they think ODOT might have underestimated the quantity, with the goal of maximizing profits while keeping the overall bid low.
- **ODOT is unable to look across all projects for patterns of unbalanced bid items related to project changes.** These bid items can lead to increased costs if projects are later changed, but not all project changes are problematic or avoidable.
- We reviewed data for all 413 ODOT-run construction projects completed from 2011 to 2015 and found that over **90% of these projects had at least one unbalanced bid item**, and 61% had one or more unbalanced bids that were at least double their estimated cost.
- Total cost for the 413 projects was \$1.8 billion, slightly below the total estimated costs of \$1.9 billion, but 69% of projects exceeded their bid amounts. However, total project costs contain other expenditures not included in the contractor's original bid amount, such as performance pay factors for meeting specific quality standards.

RECOMMENDATIONS

- ODOT should track unbalanced bid items, either within existing systems or separately.
- ODOT should include bid item numbers in project changes and track them.
- ODOT should conduct regular analyses of project changes related to unbalanced bid items and evaluate whether unbalanced bidding is negatively affecting project costs or bid competition.
- ODOT should provide Project Managers with more guidance on how to manage unbalanced bid items.

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Introduction

Audit Purpose

The Oregon Department of Transportation (ODOT) spends about \$400 million a year on construction costs for highway, bridge, and other infrastructure projects. The purpose of this audit was to determine if ODOT is effectively monitoring project changes to prevent unwarranted costs. Because unbalanced bidding can lead to increased project costs, we examined the agency's efforts to monitor project changes related to those bids.

Agency Response

The agency generally agrees with our recommendations, but they disagreed with some of the analyses we conducted. The full agency response can be found at the end of the report.

Background

The Oregon Department of Transportation (ODOT) manages roughly 8,000 miles of state highways, roads, and bridges. ODOT also oversees railways, public transportation services, transportation safety programs, motor carrier regulations, and driver and vehicle licensing. The agency's mission is to provide a safe, efficient transportation system that supports economic opportunity and livable communities.

Approximately \$2.0 billion of ODOT's total \$3.6 billion budget for the 2015-17 biennium was allocated to its Highway Division, which designs, builds, and maintains Oregon's highway system. The Division's activities are guided by long-range transportation plans and policies developed and managed by the Oregon Transportation Commission.

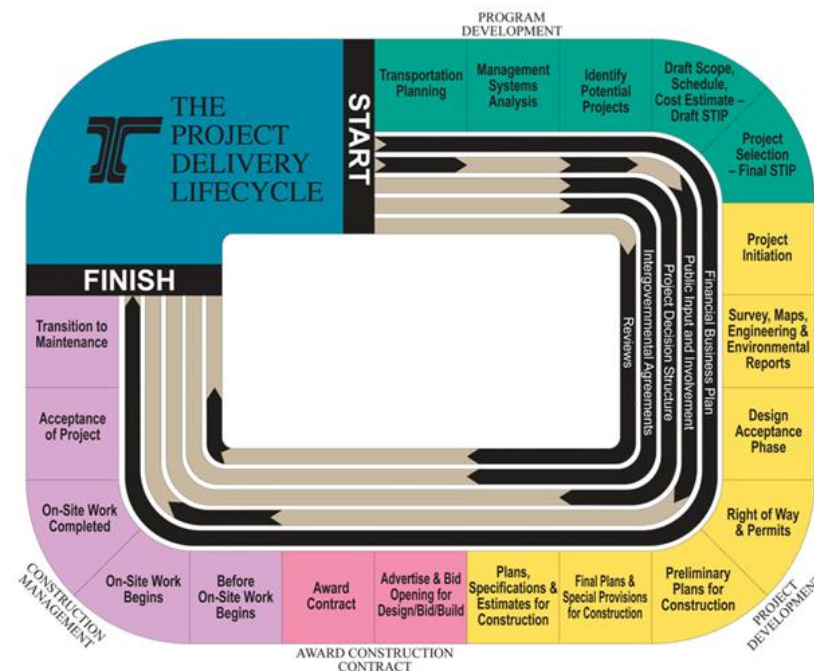
The Highway Division has about 2,500 full-time equivalent positions (FTEs) located in the Salem headquarters and across ODOT's five regions.

Each region includes engineers, project managers, and other licensed professionals who design and oversee construction projects. Regions also include other positions, such as planners and maintenance staff.

ODOT construction projects go through a four-phase process

ODOT's process for selecting, designing, and building construction projects includes four distinct phases: Program Development, Project Development, Award Construction Contract, and Construction Management. Figure 1 shows the project delivery lifecycle at ODOT.

Figure 1: ODOT's process for selecting, designing, and constructing projects



Statewide Transportation Improvement Program (STIP)

The STIP is Oregon's plan for all major federally-funded transportation projects, as well as state-funded projects related to the state highway system. The STIP also includes locally-funded projects in metropolitan areas that affect the state transportation system.

Projects included in the STIP come from long-range transportation plans, such as a Regional Transportation Plan; Asset management systems like ODOT's Pavement Management System; and competitive application processes like the federal Scenic Byways program.

Groups involved in the STIP process include:

- Area Commissions on Transportation (ACTs)
- Cities and counties
- Federal agencies
- Oregon Freight Advisory Committee
- Tribal governments
- Metropolitan Planning Organizations (MPOs)
- ODOT program advisory groups

In the **Program Development** phase, construction projects are identified and funding is allocated through the Statewide Transportation Improvement Program (STIP) process. Local and regional governments, transportation agencies, and other stakeholders participate in selecting the projects that make up the STIP, which is then approved by the Oregon Transportation Commission. Federal law requires states to create a new STIP every four years.

Projects enter the **Project Development** phase after they are approved and scheduled on the STIP. This phase includes designing the project, obtaining rights of way and permits, and developing the final plans, specifications, and estimates (PS&E) for construction.

In the **Award Construction Contract** phase, the project's PS&E first go to the Office of Project Letting, which conducts a detailed review. Estimators at the office review the project's cost estimates, which are broken down into specific line items, or bid items, for each task the contractor will perform. From this review the Estimators develop the Engineer's Estimate,

which serves as ODOT's official estimate of the project's cost. The ODOT Procurement Office then oversees the bidding process, including reviewing bids received from contractors and identifying the lowest bid that meets all the contract's requirements. Estimators evaluate the winning bid and make a recommendation to award or not award the contract.

Construction Management is the final phase. The contractor begins work on the project with oversight by an ODOT team led by a Project Manager. Once work is completed and any cleanup and repair work has been accomplished, the Project Manager's team performs a final inspection. If all work has been satisfactorily completed, ODOT accepts the project and makes final payment to the contractor.

Contractors often submit bids with line item prices that are far above or below estimated costs

State and federal laws generally require ODOT to award contracts to the lowest bidder. As a result, contractors often submit abnormally low or high prices on certain line items in a contract, or bid items, causing their entire bid to be "unbalanced."

The contractor's overall goal in submitting an **unbalanced bid** is to maximize profits while still keeping the overall bid low. An unbalanced bid can also come about because a contractor believes they have better methods for addressing an element of a construction project that could reduce construction costs.

However, unbalanced bids can end up increasing costs for ODOT if projects are later changed. Unbalanced bidding can also undermine fair competition for contracts if the apparent lowest bidder is not the actual lowest bidder after the project is changed.

As an example, a contractor might submit a high price on a specific line item, like asphalt, in which it has a high profit margin. To keep the overall bid low, the contractor would then try to balance that out with a low price on another line item, such as traffic flaggers. If the contractor submits the lowest total bid that meets the contract requirements, it wins the bid.

At this point, the unbalancing of individual line items is not necessarily problematic, as the contractor submitted the lowest bid. However, if the estimated quantity of asphalt or traffic flagging the project will need is not correct or changes during construction, ODOT's costs could increase. As a hypothetical example, the contractor might bid \$50 per ton for 1,000 tons of rock used in asphalt, also called aggregate, that ODOT estimates should cost only \$25 per ton. If the quantity of aggregate needed during construction actually turns out to be 2,000 tons, the contractor would end up getting paid twice the amount on that line item. Figure 2 shows the effect of this quantity change.

Figure 2: Hypothetical example of how unbalanced bidding can lead to increased costs

		Quantity	Unit Cost	Total Cost
Original Quantity	ODOT Estimate	1,000	\$25	\$25,000
	Contractor's Bid Price	1,000	\$50	\$50,000
Changed Quantity	ODOT Estimate	2,000	\$25	\$50,000
	Contractor's Bid Price	2,000	\$50	\$100,000

Legal rulings allow ODOT to reject an unbalanced bid only if the agency determines the bid is materially unbalanced and could result in harm to the state.

The Federal Highway Administration (FHWA) notes that contractors can unbalance bids in two ways: mathematically or materially. Mathematically unbalanced bids contain line item prices that do not realistically reflect the contractors' actual costs to do the work plus a reasonable amount of profit or loss, overhead, and other costs. ODOT considers any bid item at least 20% and \$25,000 above or below the estimated cost to be mathematically unbalanced. An extreme example of this is when a contractor bids a single penny on a line item of work, known as a penny bid. For example, the contractor might bid a penny for providing temporary signs or concrete barriers.

A contractor's bid becomes materially unbalanced when the mathematically unbalanced bid items create a reasonable doubt that awarding the contract to the winning bidder will ultimately result in the lowest actual cost to the State. Legal rulings allow ODOT to reject an unbalanced bid only if the agency determines that it is materially unbalanced and could result in harm to the state. However, materially unbalanced bids are usually difficult to prove. In most cases, ODOT must accept the mathematically unbalanced bid.

Changes during the construction process are normal, but can also be the result of errors

ODOT engineers and technical staff who design construction projects cannot foresee every possible development that could take place during construction. If a project needs to be modified, ODOT may also need to update its contract.

Construction project changes often have legitimate reasons, but can also stem from errors or mistakes. Some typical causes for a project modification are a change in conditions on the ground, adding work, cost-savings proposals, and errors.

Sometimes changes occur because **conditions on the ground** are different when construction begins than when the project design was completed. For example, excessive rain can cause the ground to be more unstable than initially observed, requiring additional excavation and shoring before the contractor can begin other work.

Another typical reason for changing a project is **adding work** to take advantage of economies of scale, reduce delays, or address stakeholder concerns. As an example, ODOT had two projects on U.S. 26 in Portland. The first project included repaving a section of the roadway, while a later

Examples of added work are ensuring sidewalks are compliant with the Americans with Disabilities Act (ADA) and reducing dust from paving in response to concerns from nearby farmers.

project would have replaced the system that manages stormwater runoff for the same section. Instead of tearing up the new pavement just a few years later, which would have created additional delays, ODOT combined the projects, allowing the stormwater project to be completed in conjunction with paving.

A contractor may make a **cost-savings proposal** to lower project costs. This involves changing some contract work, such as reducing costs by using a temporary traffic signal in place of traffic flaggers when construction crews are not on-site. The expected savings from any cost savings proposals are split equally between the contractor and ODOT.

Construction project changes can also be the result of **errors** during the design phase. For example, a paving project could mistakenly be designed to have asphalt that is 2 inches deep when it should actually be 3 inches deep to withstand the expected traffic load. After consulting with the project design staff, the Project Manager may need to modify the contract to allow the contractor to add the additional inch of asphalt.

ODOT uses three different processes to modify construction contracts and change project funding authorizations:

- **Contract Change Orders (CCOs)** are legal documents used to change construction contracts. ODOT requires Project Managers to explain the reason for the change, justify any change in costs, and provide other supporting documentation. CCOs that total \$100,000 or more, change the scope of work, or make other significant changes are considered “major” CCOs.
- **Overruns** refer to larger changes, up to \$500,000, that require funding beyond a project’s original funding authorization. ODOT requires documentation similar to CCOs, but including an explanation of how the overrun will be funded.
- **Increases** refer to changes that exceed \$500,000. Project Managers submit the same documentation as for an overrun, but must include a cover letter explaining the main reasons or events that contributed to the increase, as well as a map of the area. Increases require approval by the Highway Division Administrator or the Oregon Transportation Commission.

Though contracts can only be changed through a CCO, not every change to a construction project requires a change to the contract. Project Managers can make minor changes to the quantity of a bid item without using a CCO.

Audit Results

Our audit objective was to determine whether ODOT is effectively monitoring construction project changes to prevent unwarranted costs. We focused on the agency's efforts to monitor project changes related to unbalanced bid items.

ODOT has processes in place to help ensure project changes are reasonable, yet some construction projects still exceed their estimated costs or bid amounts. We found the agency can better monitor and analyze project changes tied to unbalanced bids, which can contribute to higher project costs, by tracking unbalanced bid items and including bid item numbers in required documentation for CCOs, overruns, and increases.

The agency can also provide Project Managers with more guidance on how to manage work related to unbalanced bid items.

These steps would help ODOT better evaluate whether unbalanced bidding is negatively affecting project costs or bid competition.

ODOT has established processes for managing construction project changes, but some projects still exceeded estimated costs

ODOT has a defined review process for project changes and construction projects we reviewed generally had appropriate approvals and explanations. However, about a quarter of projects still end up costing more than ODOT estimates.

Authorizations for project changes help ensure appropriate oversight and scrutiny.

The Oregon Transportation Commission has overall authority for contract change orders, overruns, and increases. But the Commission delegates specific authority to various positions in ODOT. For example, ODOT Project Managers can approve up to \$50,000 for major CCOs and up to \$100,000 for minor CCOs. Above these amounts, ODOT requires additional approvals. Figure 3 shows the level of authority delegated to various ODOT managers.

In addition, all contract changes are required to be reviewed by an Area Manager or Regional Manager. And significant changes, such as those that alter the scope of a project or certain materials specifications, also require the approval of a licensed engineer or other licensed professional known as the Professional of Record. Major changes to projects that receive federal funds also need approval from the Federal Highway Administration.

Figure 3: Delegation of authority for ODOT construction projects

Item	Region PM/CPM	Bridge Delivery Unit CPM *(1)	Bridge Delivery Unit Manager *(1)	Area Manager	Region Project Delivery Manager	Region Manager	Statewide Project Delivery Manager *(1)	Contract Admin. Engineer	State Const. Materials Engineer	Tech Serv. Manager Chief Engineer	Highway Division Adm.	Oregon Trans. Comm.
Increases (\$500K or over)	None	None	None	None	None	None	None	None	None	None	ALL*(3)	ALL
Overruns (Less than \$500K)	None	None	\$250K	\$250K	\$250K	\$500K	\$500K	\$500K *(2)	\$500K	\$500K	\$500K	ALL
CCOs for Authorized Work and Minor CCOs	\$100K	\$100K	\$250K	\$250K	\$250K	\$250K	\$250K	ALL	ALL	ALL	ALL	ALL
Major CCOs	\$50K	\$50K	\$125K	\$125K	\$125K	\$125K	\$250K	ALL	ALL	ALL	ALL	ALL

*(1) OTIA III Bridge Projects Only

*(2) Overruns on Claim Settlements Only

*(3) Highway Division Administrator establishes the original construction authorization and can change the authorization as needed to deliver the STIP.

Some contract changes require additional review by the Oregon Department of Justice (DOJ). For this reason, all CCOs are routed through ODOT's Contract Administration Engineer, who can request Oregon DOJ review when needed. The Contract Administration Engineer also acts as an additional layer of scrutiny to spot potential problems.

ODOT requires overruns and increases to be reviewed by the ODOT Construction Section. The State Construction and Materials Engineer has authority to approve overruns, but makes a recommendation to the Highway Division Administrator about whether increases should be approved. Increases must be approved by the Highway Division Administrator or Oregon Transportation Commission.

Projects we reviewed generally had appropriate approvals and explanations

We obtained ODOT data on 651 construction projects completed over a five-year period from 2011 to 2015. While the data included both ODOT-managed projects and projects jointly administered by ODOT and local governments, we focused our work on the 413 projects managed by ODOT.

We conducted detailed reviews of 11 construction projects to better understand ODOT's processes and to determine whether project changes appeared to be adequately documented and reasonable. These projects included 185 CCOs (with 479 line items), 8 overruns, and 8 increases. In general, we found that the CCOs, overruns, and increases contained the required approvals, had adequate supporting documentation, and included reasonable explanations for why the changes were needed.

Though changes paid for by federal stimulus funds did not always include complete explanations, they were approved by FHWA, which provided the additional funding.

Two-thirds of ODOT construction projects still exceeded their bid amounts

We reviewed data for the 413 ODOT construction projects, including comparing total project costs to bid amounts and estimated costs. In addition to CCOs and other project changes, total project costs can include a number of expenditures not included in the contractor's original bid amount. Some examples are performance pay factors for meeting specific quality standards and price increases for certain materials, like diesel fuel or steel.

The total cost of all projects came to approximately \$1.8 billion, slightly below the total estimated costs of \$1.9 billion. Roughly 26% of projects were below both their estimated costs and bid amounts. However, another 27% exceeded their estimated costs and bid amounts, while 42% came in under their estimated costs, but still exceeded their bid amounts. In total, these projects cost 6.6% more than their bid amounts. These figures suggest that ODOT has room to improve in its management of some project costs. Figure 4 shows a breakdown of all projects we reviewed by whether they were above or below their estimated cost or bid amount.

Figure 4: Many ODOT projects completed from 2011-2015 exceeded the estimated cost or bid amount

Projects Costs:	Number of Projects	Percentage of Projects	Total Cost*	Total Over or (Under) Estimates*	Total Over or (Under) Bids*
Above Estimate and Bid Amount	111	27%	\$652.3	\$92.8	\$75.6
Above Estimate, but Below Bid Amount	21	5%	\$39.5	\$3.5	\$(1.4)
Below Estimate, but Above Bid Amount	172	42%	\$911.0	\$(120.0)	\$58.8
Below Estimate and Bid Amount	109	26%	\$218.9	\$(49.5)	\$(12.9)
Totals	413	100%	\$1,821.7	\$(73.2)	\$120.1

*Millions of dollars

ODOT can better track unbalanced bid items to determine whether they result in higher project costs

A substantial majority of construction projects contain unbalanced bid items, which have the potential to drive project costs higher when combined with contract or project changes like CCOs. But ODOT does not have a systematic way of evaluating whether unbalanced bidding is leading to increased project costs because it does not track unbalanced bids or capture when CCOs, overruns, or increases are related to unbalanced bid items.

Most ODOT construction projects have unbalanced bid items

Over 90% (375) of the 413 construction projects we analyzed had at least one unbalanced bid item. Some bid items were substantially over or under ODOT's estimated cost. For example, over half of the projects we reviewed had one or more bid items that were at least double their estimated costs. For the 11 projects we reviewed, we found that 4 projects had at least one CCO, Overrun, or Increase that resulted in higher construction costs and was related to a significantly unbalanced bid item. Total costs associated

with these unbalanced bid items equaled roughly \$2.8 million. These projects also ended up exceeding their bids by anywhere from \$268,000 to \$1.4 million.

The fact that these projects had unbalanced bid items related to at least one project change, and that they exceeded their bids, does not automatically indicate that the changes were problematic or avoidable. It also does not mean that the cost increases were necessarily questionable.

But these four projects do illustrate that at least some of ODOT's construction projects have significantly unbalanced bids that were related to a project change, with potential effects on project costs.

Unbalanced bidding by contractors can lead to higher project costs

As mentioned above, one way unbalanced bidding can lead to increases in project costs is if the quantity of an unbalanced bid item is changed. For example, if a contractor's winning bid has an inflated price for a particular bid item and the quantity of that bid item is later increased, the contractor will be paid even more for that line item.

In the hypothetical example used previously, a bidder might bid \$50 per unit for 1,000 units of material when ODOT's estimated cost is \$25 per unit. If the quantity of material is later changed to 2,000 units, the contractor will be paid an additional \$50,000, twice as much as if the contractor had submitted a bid at the estimated cost and quantity.

ODOT's Estimating Manual notes that contractors may bid high prices on bid items for which they think ODOT may have underestimated the quantity that will be needed.

ODOT Estimators review winning bids for unbalanced bid items

FHWA requires states to review contractor bids for unbalanced bidding strategies and to determine whether the lowest bid received is likely to result in harm to the State, in which case it should be rejected.

Estimates are developed for every potential bid item a project might include. ODOT Estimators compare the winning contractor's prices to the estimated prices for each bid item included in the contract. Estimators perform these evaluations on every construction project ODOT builds.

Estimators also review estimated bid item quantities for potential inaccuracies. A list of the significantly unbalanced bid items from the winning contractor's bids are provided to Project Managers to help them monitor these bid items once the contractor begins construction. For example, if the winning contractor submitted a low price for traffic flagging and is likely losing money on that bid item, they may try to save money by doing less flagging. If the Project Manager knows this, he or she can make sure the contractor still provides the amount of flagging the project needs.

ODOT does not track costs tied to unbalanced bid items

Bid item data are contained in ODOT's cost estimation system, but that system does not track which bids are flagged as unbalanced, and the agency does not keep a separate list or database of unbalanced bids. CCOs, overruns, and increases are tracked in ODOT's construction project database, but it does not capture which bid items a CCO, overrun, or increase is related to. The agency's payment system tracks which bid items are tied to CCOs, but it does not capture which bid items are unbalanced.

Because these systems are not linked together and unbalanced bids related to construction project changes are not tracked separately, ODOT is unable to look across all projects for patterns of unbalanced bid items related to project changes. The only way to compare CCOs, overruns, and increases to unbalanced bid items across all projects is through a manual review of each project's documentation, which is time-consuming and not practical on a systemwide level.

Without tracking the data, ODOT does not have a clear idea how many unbalanced bid items are tied to construction project changes. If ODOT tracked these costs, it could determine whether project changes related to unbalanced bids are directly leading to increased costs and could begin evaluating the factors that contribute to those project changes. The agency could also analyze whether cost or quantity estimates for certain unbalanced bid items may need to be modified for future projects.

Project Managers could use better guidance on unbalanced bid items

As a part of their review of winning bids, ODOT's Estimators provide Project Managers with a list of the significant unbalanced bid items for every project. However, ODOT managers and staff we spoke with noted that the agency does not provide clear direction to Project Managers about how they should oversee construction work related to unbalanced bid items.

ODOT's Construction Manual notes that Project Managers should "consider redesigning or deleting portions of work containing unbalanced bid items so as not to do the overpriced work." However, it does not provide any additional direction or advice on the factors Project Managers should weigh when addressing unbalanced bids.

Recommendations

We recommend ODOT:

- Track unbalanced bid items, either within existing systems or separately.
- Include related bid item numbers in contract change orders, overruns, and increases and track them.
- Conduct regular analyses of contract change orders, overruns, and increases related to unbalanced bid items and evaluate whether unbalanced bidding is negatively affecting project costs or bid competition.
- Provide Project Managers with more guidance on how to manage unbalanced bid items.

Objectives, Scope and Methodology

Our audit objective was to determine whether the Oregon Department of Transportation (ODOT) is effectively monitoring project changes to prevent unwarranted costs. We focused on the agency's efforts to monitor project changes, particularly those related to unbalanced bid items.

To address the audit objective, we interviewed ODOT staff and management to understand ODOT's current process for selecting, designing, and building construction projects. We also interviewed the current Oregon Transportation Commission (OTC) chairperson, representatives from the Federal Highway Administration (FHWA), and multiple stakeholders.

We reviewed the agency's internal audit reports and progress reports related to our audit objective, as well as agency budget documents prepared by the Legislative Fiscal Office.

We analyzed data provided by ODOT to identify information the agency could use to evaluate and report on the effect project changes were having on project costs. Specifically, we analyzed 413 ODOT construction contracts that were completed between January 1, 2011 and December 31, 2015, excluding projects ODOT jointly administers with local governments or projects managed by consultants. We performed tests to assess data reliability and concluded that the data were sufficiently reliable to answer our audit objective.

We also reviewed supporting documentation for contract change orders, overruns, and increases from 11 judgmentally-selected ODOT construction projects, to determine whether documentation was generally complete and explanations were reasonable. We selected projects from all five ODOT regions that differed by Project Manager, contractor, cost, number of CCOs, number of overruns or increases, and whether the projects ended up costing more or less than their bid and estimate amounts.

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 objective. We believe that the evidence obtained and reported provides a reasonable basis to achieve our audit objective.

Auditors from our office, who were not involved with the audit, reviewed our report for accuracy, checking facts and conclusions against our supporting evidence.



Oregon

Kate Brown, Governor

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Secretary of State Office
Mary Wenger, Interim Audits Director

March 2, 2017

Subject: Agency Response to Secretary of State Audit Report "ODOT Construction Project Changes" 2017-02

The purpose of the audit was to determine if ODOT is effectively monitoring project changes to prevent unwarranted costs. The Secretary of State Audits Division focused their efforts on the potential impacts of unbalanced bids, and the Agency's efforts to monitor project changes related to those bids.

The audit suggests that ODOT should better scrutinize construction costs and project changes by tracking line-item bids with abnormally high or low prices (unbalanced bids). The data analyzed by the audit did not show that unbalanced bids have caused significant price increases. However, ODOT supports the recommendations of the audit because we agree it would be useful to better understand whether unbalanced bids have impacted prices. Initial steps have been underway over the last year to implement information technology upgrades that will allow for integrated data analysis. This new technology should provide a means for efficiently tracking unbalanced bid items.

The Audits Division used data derived from ODOT's contract payment system to reach their findings. However, their analysis of the data did not make the appropriate comparison between contractor bids and the final cost of the project. As a result, the findings could lead a reader to make inaccurate assumptions about ODOT's management of contractor payments.

Contractors bid amounts are based on estimated quantities identified in the project advertisement. Contractors may make a token bid (i.e. penny bids), front load bids, or price unit bids with large variations from the final engineers estimate in an attempt to minimize risk and maximize profits while keeping the overall bid low. While the theoretical example provided by the Secretary of State Audits Division (Figure 2 SOS audit report) showed how an unbalanced bid item could increase project costs, the same principle operates in reverse: an unbalanced low bid item can actually reduce costs for the public. An unbalanced bid can come about because a contractor believes they have better means and methods for addressing an element of a construction project (such as traffic control) that could reduce construction costs.

The Secretary of State Audits Division compared contractor bid amounts against total project costs (contractor final payment). However, contractor bid amounts and contractor final payment are not directly related. Contractor final payments include several pay items that are **not included** in the contractor's bid amounts such as contract change orders, extra work orders, force account work¹, added scope, anticipated items², and asphalt oil

¹ Items of extra work ordered by the engineer.

² Budget dollars included in the construction authorization to cover contractor payments for items such as smoothness bonus, and steel escalation costs.

price changes. As a result, for ten of the eleven projects reviewed in detail by the Secretary of State Audits Division, the final contractor payment amounts exceeded the contractors' bids.

As the audit explains, unbalanced bidding could impact prices, either up or down, when the final quantities differ from the initial estimated quantities. As a result, the audit should have compared the bid amount based on estimated quantities at bid time and the cost based on final total bid item quantities that were measured and paid for. Of the eleven projects, seven were paid below the contractor bid amounts, and four above based on actual bid quantities measured. For these eleven projects ODOT made payments totaling 94% of the contractor bid amounts. While a number of these projects had a construction change order, overrun, or increase, the analysis does not indicate that unbalanced bidding caused significant price increases. This clearly demonstrates that ODOT's procedures for monitoring unbalanced bid items through the contract administration process ensures efficient use of limited project dollars.

Of the 413 projects evaluated by the Secretary of State Audit Division, 291 projects (70.5%) had final contractor payments less than the construction budget, and 122 projects (29.5%) had final contractor payments greater than the construction budget (see figure 4). Unforeseen circumstances encountered during construction can lead to quantities above or below the engineer's estimated quantity. As part of the Project Manager's responsibility after completion of a construction project all bid items with significant overruns or underruns are reviewed and documented.

Figure 4: Many ODOT 2011-2015 completed projects were under the Construction Budget					
Projects Costs:	Number of Projects	Percentage of Projects	Total Cost*	Total Over or (Under) Estimates*	Percentage Over or -(Under) Total
Contractor Paid Greater Than Construction Budget	122	29.5%	\$791.96	\$59.05	3.24%
Contractor Paid Less Than Construction Budget	291	70.5%	\$1,029.75	(\$61.80)	-(3.39%)
Totals	413	100%	\$1,821.71	(\$2.75)	-(0.15%)
*Millions of dollar					
Construction Budget = Bid + FEE Anticipated Items + 3.5% contingency of Bid					
Bid - A competitive offer, binding on the Bidder and submitted in response to an invitation to bid on the FEE estimated quantities					
FEE Anticipated Items - are the Final Engineer's Estimate for quality pay factors, such as smoothness					
Contingencies - this amount is 3.5% of the Contract Amount (Contractor's original bid) funds cover normal fluctuation of Project quantities, see Construction Manual, Chapter 5					
Contractor Paid = Adjusted Quantities + Actual Adjustments + Actual CCOs					
Adjusted Quantities - these consist of the actual measured quantities installed or completed on the project					
Actual Adjustments - these consist of liquidated damages, pay factors i.e. pavement quality & escalation/descalation. Adjustments are not bid by the Contractor					
Actual CCO - is a Contract Change Order that may add, delete or modify work.					

Following is a detailed response to the recommendations:

- 1. Track unbalanced bid items, either within existing systems or separately;**
- 2. Include related bid item numbers in contract change orders, overruns, and increases and track them;**
- 3. Conduct regular analyses of contract change orders, overruns, and increases related to unbalanced bid items and evaluate whether unbalanced bidding is negatively affecting project costs or bid competition.**

We concur with these recommendations. ODOT has been working over the last year on contracting for the installation of AASHTOWare Project software. AASHTOWare Project uses a common unified database, and is designed and built as an integrated solution for transportation agencies. With a unified database, conducting regular analyses becomes much more efficient. The new system will allow ODOT to become proactive in identifying unbalanced bid items or any other bid anomaly so that when a project arrives in ODOT's Construction Section those anomalous bid items are already highlighted. Pre-identification of anomalous items will enable the ODOT Construction Section to require contractors to follow additional business rules before change orders on

those items are considered. The unified database will also allow the ability to highlight items where quantities are chronically over or under estimate by design teams and estimators, thus improving quantity accuracies for future projects. Experience elsewhere shows that improved quantity accuracy reduces unbalanced bidding. It is anticipated that AASHTOWare Project will be operational by the spring of 2018.

4. Provide Project Managers with more guidance on how to manage unbalanced bid items.

The Contract Administration Unit will work with the cost estimators to develop formal guidance for project managers to follow when they identify unbalanced pricing. This guidance will provide direction on managing those specific items as well as providing feedback for cost estimators to use in analyzing the impact of those unbalanced bidding practices.

Thank you,

A handwritten signature in blue ink, appearing to read 'Paul Mather', with a long horizontal flourish extending to the right.

Paul Mather, ODOT Highway Administrator

About the Secretary of State Audits Division

The Oregon Constitution provides that the Secretary of State shall be, by virtue of the office, Auditor of Public Accounts. The Audits Division exists to carry out this duty. The division reports to the elected Secretary of State and is independent of other agencies within the Executive, Legislative, and Judicial branches of Oregon government. The division is authorized to audit all state officers, agencies, boards, and commissions and oversees audits and financial reporting for local governments.

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The courtesies and cooperation extended by officials and employees of the Oregon Department of Transportation during the course of this audit were commendable and sincerely appreciated.