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An Audit Report on

Selected Contracts at the Department of Transportation

July 2013

Report No. 13-044

Selected Contracts at the Department of Transportation

Overall Conclusion

The Department of Transportation (Department) generally planned, procured, formed, and monitored the two contracts and authorizations related to the design and reconstruction of an interchange on State Highway 352 in the Department's Dallas District according to applicable statutes and rules and its policies and procedures. Specifically:

- The Department procured a \$4.00 million engineering design contract and a \$25.56 million construction contract in the Dallas District according to applicable statutes and rules and its policies and procedures.
- The Department planned and formed the construction contract and the \$1.17 million in design services authorized for the interchange reconstruction project under the general \$4.00 million engineering design contract according to applicable statutes and rules and its policies and procedures.
- The Department generally monitored progress and payments related to the design and reconstruction of the interchange project in accordance with applicable statutes and rules and its policies and procedures to ensure that the State's interests were protected.

For the Dallas District construction contract audited, the Department should improve its oversight of contractor compliance. Additionally, the Department should follow its internal directives regarding (1) segregation of duties and identification of the quality assurance materials tester and (2) segregation of duties in the preparation of daily work reports, which contain the supporting documentation for payments to the contractor.

Auditors communicated other, less significant issues to the Department separately in writing.

Contract Management Framework

- **Plan** - Identify contracting objectives and contracting strategies.
- **Procurement** - Fairly and objectively select the most qualified contractors.
- **Contract Formation/Rate/Price Establishment** - Ensure the contract contains provisions that hold the contractor accountable for producing desired results, including all relevant terms and conditions, as well as establish processes that are cost-effective and aligned with the cost of providing the goods and services.
- **Contract Oversight** - Monitor and enforce the terms of the contract.

Source: *State of Texas Contract Management Guide*.

Key Points

The Department planned, procured, and formed the construction contract according to applicable statutes and its policies and procedures.

For the \$25.56 million construction contract audited, the Department followed its processes for identifying the contracting objectives and strategies. The Department has a structure in place through which it identifies contracting objectives and strategies; that structure includes the following:

- Long-range planning to identify future needs.
- Short-range planning to prioritize projects for funding.
- Coordinating with affected municipalities and local and regional planning authorities to plan for future traffic needs and identify specific projects for funding.

As a result of those processes, the Department selected a qualified contractor for the construction contract audited, and it included essential contract provisions to protect the State's interests.

The low bid that the Department received on the project exceeded the design engineer's cost estimate by 28 percent.

Although the low bid that the Department received exceeded the engineer's cost estimate, the award followed the Department's policies, including documenting the reasons for awarding the contract because it exceeded the engineer's estimate by more than 20 percent. The Texas Transportation Commission approved the award in October 2008.

The Department monitored progress and payments related to the construction contract according to its policies and procedures.

The Department reviewed payments to the contractor and performed materials tests to help ensure that the quality of construction met design specifications. In addition, change orders tested included explanations and support in compliance with the Department's internal requirements.

The Department should improve its oversight of contractor compliance with contract requirements.

The Department did not adequately segregate duties for its quality assurance materials testing or adequately identify who the quality assurance materials tester was. In addition, the Department did not adequately segregate duties in the preparation of daily work reports, which contain the supporting documentation for payments made to the contractor.

Significant delays occurred in the time period for construction.

The construction schedule for the interchange was originally set at 28 months. Instead, it took the construction contractor 45 months to complete the project, which was a 61 percent increase. Schedule delays were attributed to both the Department and the contractor.

The Department planned, procured, and formed the contract for design services in compliance with its policies and procedures.

The Department followed its processes related to planning, procuring, and forming the \$1.17 million in design services for the reconstruction of the interchange on State Highway 352. The Department has documented processes through which it identifies the need for design services, selects contractors based on qualifications, and develops the terms of a contract for design services.

The Department performed the required monitoring of the design services vendor.

The Department followed the required monitoring activities for the engineering design contract with minimal exceptions. The Department monitored the payment and progress of the design contractor throughout the project.

Summary of Management's Response

The Department agreed to implement the recommendations in this report.

Summary of Objectives, Scope, and Methodology

The objectives of this audit were:

- To determine whether the Department procured selected contracts for goods and services in accordance with applicable statutes, rules, Office of the Comptroller of Public Accounts requirements, and state entity policies and procedures to help ensure that the State's interests were protected.
- To determine whether the Department managed and monitored selected contracts for goods and services to help ensure that contractors performed according to the terms of the contracts and that contractor billings were valid and supported, in accordance with applicable statutes, rules, Office of the Comptroller of Public Accounts requirements, and state entity policies and procedures.

The scope of this audit included reviewing the Department's procurement and contract management processes for one highway construction project that was active between September 1, 2008, and December 31, 2012. Auditors selected two contracts: a highway construction contract for the reconstruction of an interchange on State Highway 352 in the Department's Dallas District and the

related engineering design contract for that project. The audit concentrated on all phases (planning, procurement, contract formation, and contract oversight) of the contracting process.

The audit methodology included collecting information and documentation from the Department and reviewing procurement and contract management documents for compliance with federal and state requirements, as well as the Department's internal policies and procedures. The selection methodology for the highway construction project was based on contract dollar amount, the number of days over the original contract schedule time allowed, the dollar amount of liquidated damages charged to the contractor, the number and dollar amount of change orders, the complexity of the project, and the dollar amount and number of projects a contractor had with the Department.

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Detailed Results

Chapter 1

The Department Planned, Procured, and Formed the Construction Contract According to Applicable Statutes and Its Policies and Procedures

The Department of Transportation (Department) followed its processes and applicable state requirements in identifying a need, coordinating planning with affected local entities, and selecting the project for funding approval for the construction contract for the reconstruction of an interchange on State Highway 352 in the Department's Dallas District. Although the low bid that the Department received exceeded the engineer's cost estimate by 28 percent, the Department awarded the contract in accordance with its internal processes. The Department awarded an initial contract for \$24.97 million; after change orders, the total contract amount as of April 2013 was \$25.56 million. The construction contract contained all essential terms and provisions to protect the State's interests.

The Department planned the contract according to applicable statutes and its policies and procedures.

The Department has a structure in place through which it identifies contracting objectives and contracting strategies for its competitively bid highway construction projects. That structure includes the following processes (see Chapter 3 for more information):

- Long-range planning to identify future needs.
- Short-range planning to prioritize projects for funding.
- Coordinating with affected municipalities and local and regional planning authorities to plan for future traffic needs and identify specific projects for funding.

The Department works with the regional metropolitan planning organizations and transit operators when it starts planning a transportation project (see Appendix 5 for more information on the Department's transportation planning process). The Department included the interchange reconstruction project audited in the Statewide Transportation Improvement Plan. Next steps include verifying the preliminary design and cost estimate; completing environmental studies; determining rights of way; conducting routing studies (such as proposing routes when right of way has been determined); and conducting public involvement activities. Before a construction contract phase can be started, plans, specifications, and estimate documents must be

developed and approved by the Department's Design, Traffic, or Bridge divisions, depending on the type of project.

The Department followed the required processes to procure the contract.

The Department awarded the contract in compliance with its policies and procedures to a qualified low bidder through a competitive, sealed bid process. The contractor was selected in accordance with applicable statutes, rules, and the Department's internal policies and procedures to help ensure that the State's interests were protected.

Letting

Letting is the (Department's) process of providing notice, issuing proposals, receiving proposals, and awarding contracts.

Source: The Department's *Letting Manual*.

The Department has a documented process for procuring competitively bid construction contracts. Those processes include procurement laws in the Texas Transportation Code, requirements in the Texas Administrative Code, and detailed policies and procedures to guide design and construction procurement. The Department's Construction Division conducts an open reading and awarding of construction and maintenance bid proposals each month, guided by the documented process. The letting process (see text box) includes providing a public notice of the intent to offer work, issuing proposals, receiving electronic or hard-copy proposals, and awarding contracts. Bids are received and read publicly, and contracts are approved for award by the Texas Transportation Commission.

Auditors reviewed documentation from the 2008 meeting at which the Department awarded the contract audited and noted no deficiencies related to the proposal solicitation and contract awarding for the project.

The contract award amount exceeded the Department's cost estimate.

The Department's design engineer's cost estimate for this project was \$19.46 million; however, the low bid of 6 bids the Department received was for \$24.97 million (28 percent higher than the cost estimate). The amounts of the 6 submitted bids ranged from \$24.97 million to \$26.86 million. Because the Department considered the bids to be within a reasonably close price range, it decided to award the contract and begin construction, rather than rebidding the project. A justification for awarding a contract was required because the low bid exceeded the engineer's estimate by more than 20 percent. The award followed the Department's policies, including documenting the reasons for awarding the contract because it exceeded the engineer's estimate by more than 20 percent. The Texas Transportation Commission approved the award in October 2008.

Although the Department's estimate for this project differed by more than 20 percent from the awarded amount, the Department's project cost estimates overall are accurate. For 5,888 projects the Department bid from September 2008 to January 2013, the engineers' estimates were, on average, 7.8 percent higher than the low bid. The Federal Highway Administration provides guidelines for state departments of transportation regarding the accuracy of

engineer estimates. According to the Federal Highway Administration, if the low bids or award amounts are within 10 percent of engineers' estimates for at least 50 percent of projects bid, estimating is considered accurate (see Appendix 4 for more information).

The Department formed the construction contract in compliance with its processes.

Although the Department was exempt from complying with the *State of Texas Contract Management Guide* for the construction contract, the contract contained all essential terms and provisions from the *State of Texas Contract Management Guide*. The terms and provisions in the construction contract held the contractor accountable for producing the required deliverables at the contracted price. Additionally, the construction contract was required to comply with Federal Highway Administration guidance. The Department's contract and the design engineer's project specifications and the Department's special provisions all included the federally required contract terms, provisions, timetables, and milestones to help ensure compliance with those requirements.

While the Department Generally Monitored Progress and Payments Related to the Construction Contract, It Should Improve Its Oversight of Contractor Compliance with Contract Requirements

Construction Contract Information

- Contractor: W. W. Webber, LLC
- Bid date: October 16, 2008
- Original award amount: \$24.97 million
- Engineer's estimate: \$19.46 million
- Number of days originally allowed: 560
- Date on which time charges started: January 21, 2009
- Total dollar amount of change orders approved: \$586,902
- Total dollar amount of change orders pending approval as of April 2013: \$361,720
- Days added to contract by change orders: 35
- Days to be added back to contract in change orders pending approval: 124
- Liquidated damages charged to contractor: \$640,500

Source: Department project records.

The Department monitored the contractor's progress, properly reviewed payments, and performed the required quality assurance material tests for the construction contract audited. Additionally, all change orders tested were justified and adequately supported. However, auditors identified some weaknesses in the Department's Dallas District's monitoring efforts during the construction phase of the project.

The project was completed in 45 months, a 61 percent increase from the originally scheduled 28 months. Schedule delays were attributed to both the Department and the contractor. As a result of the delays, the Department initially assessed the contractor \$640,500 in liquidated damages (based on 305 days at \$2,100 per day). As of April 2013, the Department was in the process of approving a change order to pay the contractor \$361,720, of which \$331,720 was for 124 days of overhead cost due to delays determined not to be the contractor's fault.

Causes of the project delays included the contractor's non-compliance with progress schedule requirements specified in the contract, the fact that the Department completed right-of-way acquisitions and utility relocations later than planned, and unforeseen site conditions encountered during construction.

Auditors identified weaknesses in the Department's processes for recording and documenting results of quality assurance testing and preparing documents required to support payments to the construction contractor. The Department did not adequately segregate duties for its quality assurance materials testing or adequately identify who the tester was. The Department also did not adequately segregate duties in the preparation of daily work reports, which contain the supporting documentation for payments made to the contractor.

Chapter 2-A

The Department Reviewed Payments and Ensured That Reports Included Required Elements

The Department correctly calculated the quantity of work performed to prepare the monthly payments to the contractor for all samples tested. Auditors selected 11 major items of work that covered 6 monthly pay periods and 31 daily work reports. The Department based the quantities on information that inspectors enter into the daily work reports in SiteManager, the Department's automated project management system. Auditors also

determined that the area engineer's office approved all 47 monthly payments to the contractor as required.

In addition, the five daily work reports auditors tested contained all information required by the Department's *Construction Contract Administration Manual*. Department policy requires all work and activities that occur for each working day during which time is charged to the project to be recorded in the daily work reports.

Chapter 2-B

Construction Was Completed 17 Months after the Original Time Line Due to Delays Caused by Both the Department and the Contractor

The construction phase for the contract audited experienced some significant schedule delays. According to the initial contract, construction was supposed to be completed in 28 months. Instead, it took the contractor 45 months to complete construction. Delays were caused by both the Department and the contractor and included the following:

- The contractor did not comply with the contract requirements to submit monthly updated progress schedules as specified in the contract. Although the Department requested that information from the contractor on at least 5 occasions, the contractor provided only 16 (38 percent) of the 42 required schedule updates. For its monthly schedules, the contractor prepared a critical path method (CPM) progress schedule. CPM is a graphical representation of the planned sequence of the work necessary to execute a construction project. A properly prepared CPM schedule can help the Department and the contractor identify and quantify events that will affect a project's scheduled completion date.
- The Department was not able to complete the acquisition of all rights of way prior to the start of construction. In the contract documents, the Department stated that it did not anticipate that the acquisition activities would delay the contractor; however, time extensions could be given to the contractor if delays occurred due to right-of-way acquisitions. The Department determined that the project would not be negatively affected if it cleared the right-of-way issues by April 2009. However, the acquisition of three parcels of land was completed between two and five months later than anticipated due to extended negotiations with property owners.
- Power lines had to be relocated by the utility company that owned the lines, which added 11 working days to the project schedule.
- Unforeseen site conditions caused some delays and extra costs. Those conditions included:

- ♦ Determining the cause and developing a solution for underground water leaking in a traffic detour work area and relocating a buried fiber optic cable in that location, which added 48 working days to the project schedule.
- ♦ Completing additional work caused by 3 buried foundation structures from the previous highway overpass that the contractor was not able to straddle as originally planned during installation of foundation work, which added 26 working days to the project schedule.
- ♦ Repairing damage caused by traffic accidents, drainage work, and other conditions that required work beyond the original scope, which added 9 working days to the project schedule.

For project delays, the Department initially assessed the contractor \$640,500 in liquidated damages (based on 305 days at \$2,100 per day). As of April 2013, the Department was in the process of approving a change order to pay the contractor \$331,720 for 124 days of overhead cost due to delays determined not to be the fault of the contractor. The Department uses a standard formula to calculate a daily rate for a contractor's overhead if it determines that compensation is due. Under that same change order, the Department is also reimbursing the contractor \$30,000 for 5 months of barricade rental cost.

Recommendation

The Department should enforce contract provisions that require the contractor to submit monthly progress schedules and identify specific actions that would help to ensure contractor compliance with requirements to submit those schedules.

Management's Response

The Dallas District will adopt an escalating notification response to contractors who fail to meet the requirements of the specification for CPM schedule, regardless of the version of schedule required (whether bar chart, CPM or other). The first notification of failure to submit a timely update should be verbal, immediately followed by written notification. The next failure to meet schedule update requirements will result in withholding of the monthly estimate until schedule is submitted. Further failure will result in the implementation of Item 8.6, and notification of the surety.

Responsible Party: Director of Construction – Dallas District

Date: December 31, 2013

The Department Should Improve Its Documentation of Quality Assurance Testing Reports and Contractor Payments

Each state transportation department is required to develop a quality assurance program that will help ensure that the materials and workmanship incorporated into each federal aid highway construction project on the National Highway System conforms to the requirements of the approved plans and specifications, including approved changes. Auditors identified weaknesses in the Department's processes for recording and documenting the results of quality assurance testing and preparing documents required to support payments to the construction contractor. Specifically:

- The Department did not adequately segregate duties for its quality assurance materials testing. While the Department performed and recorded all 101 material tests sampled by auditors, not all test forms were complete. Specifically:
 - ♦ For 22 (22 percent) of the 101 quality assurance tests sampled, the tester and authorizer was the same individual.
 - ♦ Of the 101 quality assurance tests sampled, 10 (10 percent) did not contain either the name of the individual who performed the test or the name of the individual who selected the material samples to test. For 2 of the 10 tests, all individuals were identified, but the information had been deleted from the Department's database. As a result, auditors could not verify the accuracy of that information for those two tests.

In a January 11, 2012, memorandum to all district engineers, the Department required that the tester and authorizer be different individuals. A lack of segregation of duties for testing and reviewing responsibilities increases the risk that the Department may not detect project deficiencies that could affect safety and project costs. This issue had been previously identified in *A Report on the State of Texas Compliance with Federal Requirements for Selected Major Programs at the Department of Transportation for the Fiscal Year Ended August 31, 2012* (State Auditor's Report No. 13-022, February 2013).

- Auditors were unable to determine whether the testers were certified to perform the material tests due to the time that had passed since the material tests were performed. Neither the Department's Construction Division nor the District was able to provide historical documentation to support that the tester was certified at the time the test was performed for this project. According to the District, when a tester renews his/her qualifications, the District replaces the previous effective period with the updated period in the tester qualification data in SiteManager.

- The Department completed daily work reports for each day that auditors tested for this project as required by the Department's policies. However, 54 (8 percent) of 648 daily work reports tested were created and authorized by the same individual. A Department policy memorandum dated December 12, 2012, required one individual to create the daily work report and a different individual to verify the accuracy and authorize the report. That segregation of duties is important because the information in the daily work reports is used to calculate and generate monthly pay estimates to the contractor.
- The Department did not consistently retain detailed materials on hand reports (see text box) to support monthly contractor payments. The Department's Dallas District did not retain detailed materials on hand documentation for 4 (33 percent) of 12 monthly estimates reports tested. However, auditors did not identify any errors in the items for which documentation was available. Payments to the contractor for materials on hand totaled \$2,040,818 over 47 payment periods. It is important to maintain records of all items for which the Department pays the contractor and to verify that (1) payments are made for allowable items, (2) payments are accurate, and (3) the materials on hand are not paid for more than once (i.e., in addition to the associated line item on the monthly pay estimate).

Materials on Hand

With proper documentation and approvals, the Department will pay a contractor the actual invoice cost for nonperishable material that has been sampled for quality, is properly stored, and is to be used on the project. Amounts paid for materials on hand are deducted from future pay estimates when the material is installed.

Source: Department policies and procedures.

Recommendations

The Department should:

- Adequately segregate the duties for its quality assurance materials testing to help ensure that the tester is not the same individual who reviews and approves the test.
- Ensure that the tester and the reviewer are identified on the material test results documentation.
- Ensure that the individual who creates the daily work report is not the same individual who reviews or approves the report.
- Complete and retain all required materials on hand documentation.

Management's Response

From the Department's Construction Division:

- *The Department should adequately segregate the duties for its quality assurance materials testing to help ensure that the tester is not the same individual who reviews and approves the test.*

SiteManager currently has no application controls to segregate duties for its material quality assurance testing. Staff will add coding to correct this issue, which will be included in the next release, due September/October 2013.

- *The Department should ensure that the tester and the reviewer are identified on the material test results documentation.*

SiteManager currently has no application controls to segregate duties for its material quality assurance testing. Staff will add coding to correct this issue, which will be included in the next release, due September/October 2013.

- *The Department should ensure that the individual who creates the daily work report is not the same individual who reviews or approves the report.*

SiteManager has been updated, and there is currently an application control to disallow the DWR creator from authorizing his/her own DWR.

- *The Department should complete and retain all required materials on hand documentation.*

This is a district responsibility. No action for CST. This is a district responsibility, and monitoring is performed by Construction Field Engineering staff during their reviews. Communication of the exceptions identified will be communicated to field engineering staff to ensure appropriate diligence in performing the reviews, due October 31, 2013

Responsible Party: Director of Construction Division, TxDOT

Date: October 31, 2013

From the Dallas District Office:

- *The Department should adequately segregate the duties for its quality assurance materials testing to help ensure that the tester is not the same individual who reviews and approves the test.*
- *The Department should ensure that the tester and the reviewer are identified on the material test results documentation.*

The district agrees with recommendations. This problem has been identified and addressed with Area Office personnel and was the subject of a memo sent out by the Construction Division January 11, 2012. This was corrected on test reports completed after that time as well as subsequent projects. This matter is expected to be addressed in future upgrades to the Site Manager program.

Responsible Party: N/A – Action Completed

Date: N/A – Action Completed.

- *The Department should ensure that the individual who creates the daily work report is not the same individual who reviews or approves the report.*

The district agrees with the recommendations. This problem has been addressed with Area Office personnel and included in the District Newsletter. Recent upgrades to the Site Manager program no longer allows for the person who created a DWR to also have authorizing capabilities.

Responsible Party: N/A – Action Completed

Date: N/A – Action Completed.

- *The Department should complete and retain all required materials on hand documentation.*

The district agrees with the recommendation. MOH forms 1914 & 1915 were not required to be submitted to the Area Office by the contractor when there was no change in MOH from the previous month. This practice will not be allowed in the future and a Zero Change report will be required for each month after the initial request for MOH until all quantities are used and removed from the estimate.

Responsible Party: Director of Construction – Dallas District

Date: December 31, 2013

The Department Properly Reviewed and Supported Change Orders to the Contract

The Department had processes in place to help ensure that change orders were executed and approved as required by its *Construction Contract Administration Manual*. All 20 approved change orders associated with the project audited were executed and approved in compliance with Department policy. The 20 approved change orders totaled \$586,902, and one pending change order totaling an additional \$361,720 was awaiting final approval as of April 2013. The \$948,622 in total change orders was 3.8 percent of the total awarded amount, which is within the Department's current goal to limit change orders to no more than 5 percent of the original award amount.

However, the Department did not consistently follow its policy requiring change orders containing original signatures be sent to and maintained at the Department's Construction Division. Three (15 percent) of the 20 approved change orders tested were not sent to the Construction Division to be maintained in the original contract file as required by policy. According to Construction Division employees, the Department no longer enforces that policy because all change orders are stored in the SiteManager database.

Recommendation

The Department should enforce its policy that change orders with original signatures be sent to the Construction Division after approval or update its policies to match its processes.

Management's Response

From the Department's Construction Division:

CST will revise current policy as outlined in the Construction Contract Administration Manual (CCAM) to allow electronic copies of executed change orders.

Responsible Party: Director of Construction Division, TxDOT

Date: May 31, 2014

From the Dallas District Office:

The District agrees with the recommendations.

In the past change orders (CO) containing original signatures were sent to Austin by office mail. The project files typically contained copies of the COs.

Recently, the Construction Division requested the district scan all change orders and send in by email to be stored in the Site Manager electronic database. As a result, the audit revealed that the district inadvertently failed to transmit three original CO's to the Construction Division. The district will be more diligent in sending change orders with original signatures to the division.

The district also recommends that the policy be updated to allow change orders be stored in an electronic database to eliminate the need to transmit originals, allow originals to be kept with the project files and streamline this effort.

Responsible Party: Director of Construction – Dallas District

Date: May 31, 2014

The Department Generally Planned, Procured, Formed, and Monitored the Design Services According to Its Policies and Procedures

The Department generally followed its processes related to planning, procuring, forming, and monitoring the design services for the reconstruction of an interchange on State Highway 352. The design of a highway component is an early piece in the Department's overall transportation project process. The final step in the planning phase of a transportation project is the development of plan specifications and estimate documents. Major components of those documents include plan sheets, standard and special specifications, general notes, special provisions, cost estimate, and project agreements.

The Department has documented processes through which it identifies the need for design services, selects contractors based on qualifications, ensures that it develops the required terms of a contract for design services, and monitors the payment and progress of the design contractor throughout the project.

The Department planned the design phase of the project in compliance with applicable laws and policies.

Auditors verified that the interchange reconstruction project audited was included in the Department's 2008-2011 *Statewide Transportation Improvement Plan*, the North Central Texas Council of Government's 2008-2011 *Transportation Improvement Plan*, and the *2030 Regional Transportation Plan*, as required by the Department's documented processes. Auditors also verified that the preliminary design and cost estimate, as well as the environmental studies, right-of-way determination, route studies, and public involvement activities were completed as required.

The primary deliverable from the design contract audited consisted of a set of plans, specifications, and estimate documents as required.

The Department performs engineering design using either its design staff or a contracted engineering design consultant. The engineering design for the interchange reconstruction project audited was performed by a consultant procured under Texas Government Code, Chapter 2254, and requirements in Title 43, Texas Administrative Code, Chapter 9.

Indefinite Deliverable Contract

An indefinite deliverable contract is a contract containing a general scope of services that identifies the types of work that will later be required under work authorizations, but does not identify deliverables, locations, or timing in sufficient detail to define the provider's responsibilities under the contract.

Source: The Department's *Engineering, Architectural, and Surveying Services Manual*.

The Department followed both the State's requirements and its process for selecting a qualified consultant. The consultant selected for the project audited had been one of multiple vendors awarded a \$4.00 million "indefinite deliverable contract" for various engineering and design services (see text box for a definition of indefinite deliverable contracts). Of that \$4.00 million award, the Department authorized \$1.17 million for design services specifically for the interchange at

State Highway 352. The contracts awarded to the other vendors that went concurrently through the Department’s multiple award selection process resulted in multiple contracts ranging from \$3.00 million to \$5.00 million.

State Letter of Authority

A state letter of authority documents that the following have been addressed:

- Status of right-of-way and utility clearance and necessary permits have been finalized and obtained.
- Project has environmental clearance.
- Design aspects meet project requirements.
- Design/agreement/permit conditions have been placed on project letting and/or award.
- Project has been cleared to proceed for advertisement for letting.

Source: Department *Project Development Process Manual*.

The Department’s Design Division approved the state letter of authority, as required, allowing the construction contracting phase of the project to begin (see text box for more information about a state letter of authority). The state letter of authority issued in October 2008 for the interchange reconstruction project audited noted that several parcels of the right of way still needed to be acquired and utility adjustments still needed to be made. However, the acquisition of three parcels of land was not completed in a timely manner, which resulted in a schedule delay during the construction phase (as discussed in Chapter 2).

The Department included contract terms and provisions in the design contract that held the engineer accountable for producing the required deliverables at the contracted price.

The Department uses a standard “boilerplate” contract for engineering services – lump sum with work authorizations that includes all required elements of a contractual agreement. Auditors compared the executed engineering design contract and attachments to the boilerplate contract and determined that the engineering design contract contained all of the required elements and provisions. In addition, the Department’s engineering design contract was not required to comply with the *State of Texas Contract Management Guide*; however, that contract contained all essential terms and provisions from the *State of Texas Contract Management Guide*.

The Department performed the required monitoring of the contractor.

The Department has extensive requirements through its policies and procedures to monitor and enforce the terms of its contracts. Those requirements include regular communication with the engineer, the submission of monthly progress and sub-provider reports, and reviews of payment requests. The Department followed the required monitoring activities for the engineering design contract.

Appendices

Appendix 1

Objectives, Scope, and Methodology

Objectives

The objectives of this audit were:

- To determine whether the Department of Transportation (Department) procured selected contracts for goods and services in accordance with applicable statutes, rules, Office of the Comptroller of Public Accounts requirements, and state entity policies and procedures to help ensure that the State's interests were protected.
- To determine whether the Department managed and monitored selected contracts for goods and services to help ensure that contractors performed according to the terms of the contracts and that contractor billings were valid and supported, in accordance with applicable statutes, rules, Office of the Comptroller of Public Accounts requirements, and state entity policies and procedures.

Scope

The scope of this audit included reviewing the Department's procurement and contract management processes for one highway construction project that was active between September 1, 2008, and December 31, 2012. Auditors selected two contracts: a highway construction contract for the reconstruction of an interchange on State Highway 352 in the Department's Dallas District and the related engineering design contract for that project. The audit concentrated on all phases (planning, procurement, contract formation, and contract oversight) of the contracting process.

Methodology

The audit methodology included collecting information and documentation from the Department and reviewing procurement and contract management documents for compliance with federal and state requirements, as well as the Department's internal policies and procedures. The selection methodology for the highway construction project was based on contract dollar amount, the number of days over the original contract schedule time allowed, the dollar amount of liquidated damages charged to the contractor, the number and dollar amount of change orders, the complexity of the project, and the dollar amount and number of projects a contractor had with the Department. The Department's contract for engineering design on this project was also selected to review under the same audit objectives. The construction contract had not

been closed out as of April 2013, and construction for the project ended late in 2012.

Auditors also reviewed procurement and contract management documents and interviewed Department employees. Auditors tested the following for compliance with policies and procedures: (1) samples of material testing results from quality assurance tests that the Department's Dallas District performed at the Department's laboratories, (2) payments made to the contractor, and (3) daily work reports that the District's inspectors prepared. Auditors conducted testing at the Department's Construction Division, Design Division, and the Dallas District.

Information collected and reviewed included the following:

- Department policies and procedures.
- Department internal audit reports.
- Contracts, change orders, and work authorizations.
- Observations of the Department's construction bidding process.
- Project bidding data from the Department's mainframe.
- Quality assurance testing results reported by the Dallas District.
- Payments made to the contractors.
- Selected daily inspection reports for the project audited.
- Progress schedules submitted by the construction contractor.
- Correspondence and various files from the Dallas District office and the Dallas District area engineer's office that managed the contracts, the Construction Division, and the Design Division pertaining to the consultant design engineer, right-of-way acquisitions, utility relocations, construction contractors, and other consultants that contributed to the project.

Procedures and tests conducted included the following:

- Interviewed key employees at:
 - ♦ The Department's Construction Division.
 - ♦ The Department's Design Division.
 - ♦ The Department's Transportation Planning and Programming Division.

- ♦ The Department’s General Services Division.
- ♦ The Department’s Project Management Office.
- ♦ The Department’s internal audit office.
- ♦ The Department’s Dallas District office and area engineer’s office.
- ♦ The Federal Highway Administration.
- Analyzed the accuracy of payments made to contactors from the Department’s automated project management system, SiteManager, and its Financial Information Management System and compliance with Department invoice review and approval requirements.
- Tested and analyzed samples that included:
 - ♦ To test compliance with payment monitoring requirements for the design contract, auditors used a random number generator to select 7 of the 21 invoices related to the design services for the contracts audited. In addition, auditors non-statistically selected the invoice with the largest dollar amount from the 21 invoices. Auditors also non-statistically selected the largest invoice of five invoices from a supplemental work authorization. In total, auditors tested 9 of 26 invoices to obtain at least 47 percent coverage of the dollar amount.
 - ♦ To test compliance with materials on hand requirements, auditors used a random number generator to select 12 of 47 contractor payment requests to obtain at least 25 percent coverage. Auditors then selected individual materials on hand line items based on high dollar amounts from each payment request to conduct detailed testing.
 - ♦ To assess compliance with quality assurance requirements, auditors non-statistically selected one of each of the required quality tests for all line items the Department defined as “major items.” That yielded a total of 286 sample items. Auditors tested 101 of the 286 items before determining that documentation was not available to allow testing to be completed. Additionally, to test compliance with quality monitoring requirements for tests not performed at the district level, auditors non-statistically selected one of each of the seven unique quality monitoring tests performed at the Department’s Construction Division’s materials and pavement lab.
 - ♦ To test compliance with payment processing and daily work report segregation of duties requirements, auditors non-statistically selected one month of payments for each major item previously identified. Auditors reviewed specific line items and work reports for each major

item. That yielded samples of 6 estimates, 11 line-items, and 30 daily work reports for testing.

- ♦ Additionally, auditors non-statistically selected five daily work reports to verify that the reports contained all required elements.
- ♦ Auditors used non-statistical sampling methods to select the samples. The test results from the samples selected cannot be projected to the entire population.

Criteria used included the following:

- Code of Federal Regulations, Title 23.
- Texas Administrative Code, Titles 34 and 43.
- Texas Transportation Code, Chapter 223.
- Texas Government Code, Chapter 2254.
- *State of Texas Contract Management Guide (Version 1.9)* (used only for best practices).
- The Department's policies and procedures including:
 - ♦ *Construction Contract Administration Manual.*
 - ♦ *SiteManager Contract Administration User Manual.*
 - ♦ *Letting Manual.*
 - ♦ *Plans, Specifications, and Estimates Preparation Manual.*
 - ♦ *Project Development Process Manual.*
 - ♦ *Consultant Management and Administration Manual.*

Project Information

Audit fieldwork was conducted from February 2013 through April 2013. This performance audit was conducted 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.

The following members of the State Auditor's staff performed the audit:

- Lucien Hughes (Project Manager)
- Adam Wright, CPA, CFE, CGAP, CIA (Assistant Project Manager)
- Michael Gieringer, MS, CFE
- Frances Anne Hoel, CIA, CGAP
- Israel Weingarten
- Michelle Ann Duncan Feller, CPA, CIA (Quality Control Reviewer)
- Cesar Saldivar, CGAP, CICA (Audit Manager)

The Department of Transportation's Organizational Structure

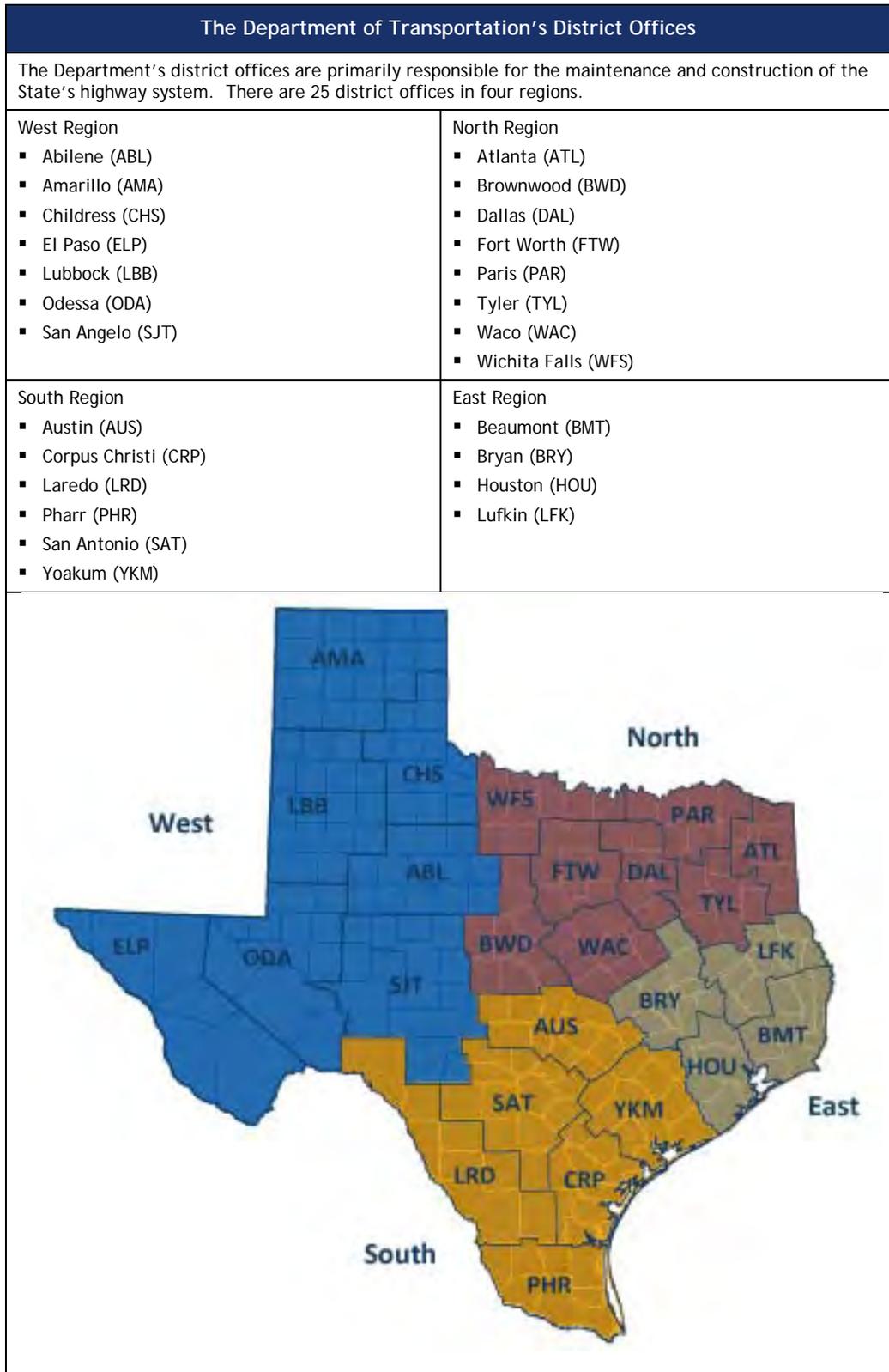
The Department of Transportation (Department) has a highly decentralized organizational structure that consists of:

- A five-member Texas Transportation Commission appointed by the Governor.
- An executive director hired by the Texas Transportation Commission.
- Five “chief” department officials and 20 divisions. Each division is located in Austin.
- Twenty-five district offices across the state (see Figure 1 on the next page) that are under the deputy executive director/chief engineer. Construction decisions are made and carried out at the district level, with certain division-level oversight and support.

Two divisions were primarily responsible for developing the two contracts audited. Those two divisions were:

- **The Construction Division**, which performs inspection and testing and provides administrative oversight for all of the Department’s construction contracts. The Construction Division is responsible for contractor pre-qualification, bid proposal issuance, and awarding (letting) construction and maintenance contracts. It also provides consultation to districts on project management, administration, inspections, and testing throughout the project life cycle.
- **The Design Division**, which guides the development of construction projects from conception to the release of detailed plans for construction bidding. On average, the Design Division prepares 800 construction contracts for bid in most areas of highway design—from roadway geometrics to landscape design. It also develops design policies and roadside safety criteria, provides hydraulic design expertise, oversees selection of professional services consultants, and manages landscape programs.

Figure 1



Source: The Department's Web site.

Statistical Comparison of Department of Transportation Districts

Table 1 lists statistical information by each Department of Transportation (Department) district. The information in Table 1 is taken from the Department's *DISCOS - District and County Statistics*, which, according to the Department, is prepared, published, and electronically distributed annually by the Department's Funds Management Section.

Table 1

Statistical Comparison of Department of Transportation District Offices September 1, 2011, through August 31, 2012						
District Name	Total Square Miles in District	Percent of Total Statewide Square Miles	Total Centerline Miles in District ^a	Percent of Total Statewide Centerline Miles	Total Lane Miles in District ^b	Percent of Total Statewide Lane Miles
Abilene	11,805	4.52%	3,741.352	4.66%	8,438.528	4.33%
Amarillo	17,848	6.83%	4,041.300	5.04%	9,393.267	4.82%
Atlanta	5,341	2.04%	2,678.622	3.34%	6,437.355	3.30%
Austin	9,473	3.63%	3,380.615	4.21%	9,268.253	4.76%
Beaumont	6,653	2.55%	2,384.925	2.97%	5,852.732	3.00%
Brownwood	8,629	3.30%	2,686.098	3.35%	5,862.057	3.01%
Bryan	7,710	2.95%	3,143.520	3.92%	7,136.329	3.66%
Childress	11,193	4.28%	2,507.635	3.13%	5,472.437	2.81%
Corpus Christi	7,820	2.99%	2,902.591	3.62%	7,177.540	3.68%
Dallas	5,444	2.08%	3,684.975	4.59%	10,847.337	5.57%
El Paso	21,700	8.31%	1,928.051	2.40%	4,877.228	2.50%
Fort Worth	6,949	2.66%	3,319.354	4.14%	8,830.746	4.53%
Houston	5,856	2.24%	3,205.955	4.00%	10,361.352	5.32%
Laredo	15,052	5.76%	2,277.501	2.84%	5,109.845	2.62%
Lubbock	15,861	6.07%	5,265.220	6.56%	12,131.840	6.23%
Lufkin	7,113	2.72%	2,882.411	3.59%	6,514.588	3.34%
Odessa	18,343	7.02%	3,410.360	4.25%	8,143.673	4.18%
Paris	6,146	2.35%	3,325.732	4.15%	7,249.702	3.72%
Pharr	8,812	3.37%	2,362.515	2.94%	6,287.555	3.23%
San Angelo	19,061	7.30%	3,256.224	4.06%	7,330.233	3.76%
San Antonio	12,241	4.69%	4,277.231	5.33%	10,974.095	5.63%
Tyler	6,596	2.52%	3,694.618	4.60%	8,834.063	4.53%
Waco	7,589	2.90%	3,433.608	4.28%	7,778.265	3.99%
Wichita Falls	8,091	3.10%	2,856.768	3.56%	6,426.642	3.30%
Yoakum	9,907	3.79%	3,586.116	4.47%	8,151.428	4.18%
Totals	261,230	100.00%	80,233.297	100.00%	194,887.090	100.00%

Statistical Comparison of Department of Transportation District Offices
September 1, 2011, through August 31, 2012

District Name	Total Square Miles in District	Percent of Total Statewide Square Miles	Total Centerline Miles in District ^a	Percent of Total Statewide Centerline Miles	Total Lane Miles in District ^b	Percent of Total Statewide Lane Miles
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^a A centerline mile is a measure of the total length (in miles) of highway and highway infrastructure in place or proposed, as measured along the highway centerline.

^b Lane mile is a measure of the total length of traveled pavement surface. The number of lane miles is equal to the centerline length (in miles) multiplied by the number of lanes.

Source: Department of Transportation's *DISCOS - District and County Statistics*, 2012. According to the Department, some calculations may be carried to eight or more decimal places; therefore, there may be small differences in the column totals due to rounding.

Analysis of Engineer's Estimates and Winning Bids

Texas Transportation Code, Chapter 223, requires the Department of Transportation (Department) to award highway construction contracts to the lowest qualified bidder. Prior to contract bidding, the design engineer for the project develops an estimate for the expected cost of the project. If the lowest bid for a construction contract exceeds the engineer's estimate by 20 percent or higher and the Department still wishes to award the contract, the Department is required by its *Letting Manual* to submit an "over/under justification" outlining why the bid amount was higher than expected and why the contract should be awarded. The Texas Transportation Commission also must approve the award. According to the Department's Construction Division, some reasons for a higher-than-expected lowest bid include fewer contractors in rural districts, material cost variances by district, and other unaccounted for circumstances that may affect a contract's price.

Auditors analyzed all construction and routine maintenance contracts the Department bid from September 1, 2008, through January 9, 2013, and determined that the lowest winning bids were, on average, 7.8 percent lower than the engineers' estimates. For 71.9 percent of the contracts analyzed, the lowest winning bid was less than or equal to the engineer's estimate. Only 6.0 percent of all contracts had a winning bid that exceeded the engineer's estimate by 20 percent or more (see Tables 2 and 3).

Table 2

All Construction Contracts Bid September 1, 2008, through January 9, 2013	
Description	Amount
Total Number of Contracts	5,888
Total Amount of Engineers' Estimates	\$20,229,340,104
Total Amount of Winning Bids	\$18,656,080,106
Total Percentage Difference Between Engineers' Estimates and Winning Bids	7.8%

Source: Auditors' analysis based on unaudited data the Department provided.

Table 3

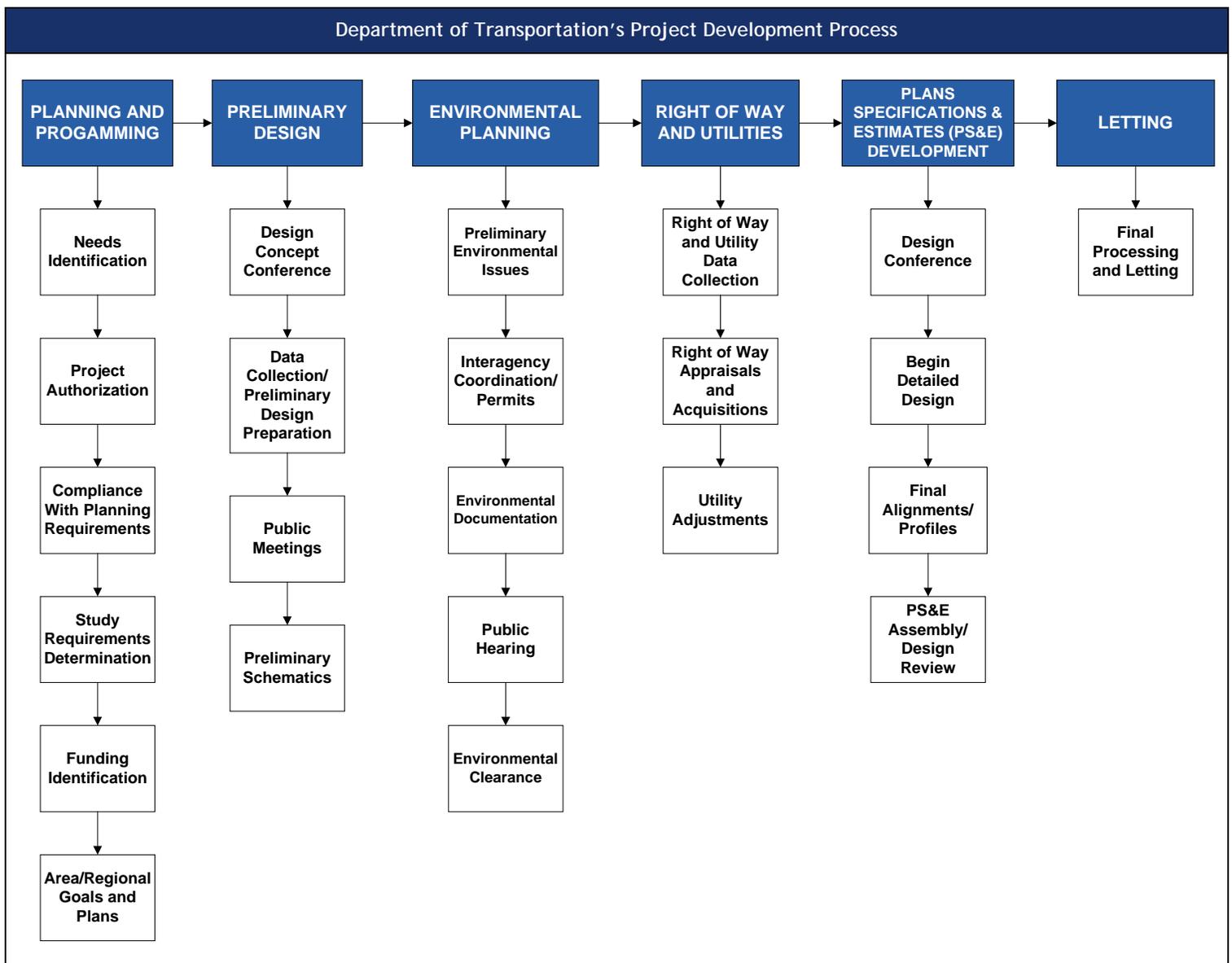
All Construction Contracts Bid September 1, 2008, through January 9, 2013		
Description	Number of Contracts	Percent of Total Contracts
Winning Bid Was Less Than or Equal to the Engineer's Estimate	4,235	71.9%
Winning Bid Exceeded the Engineer's Estimate By Less Than 20 Percent	1,300	22.1%
Winning Bid Exceeded the Engineer's Estimate By 20 Percent or More	353	6.0%
Totals	5,888	100.0%

Source: Auditors' analysis based on unaudited data the Department provided.

The Department of Transportation's Project Development Process

The Department of Transportation (Department) has a comprehensive project development process that begins with preliminary planning and ends with project letting (providing notice, issuing proposals, receiving proposals, and awarding contracts). Figure 2 shows the six overall steps in the Department's project development process. The steps are arranged in chronological order from left to right.

Figure 2

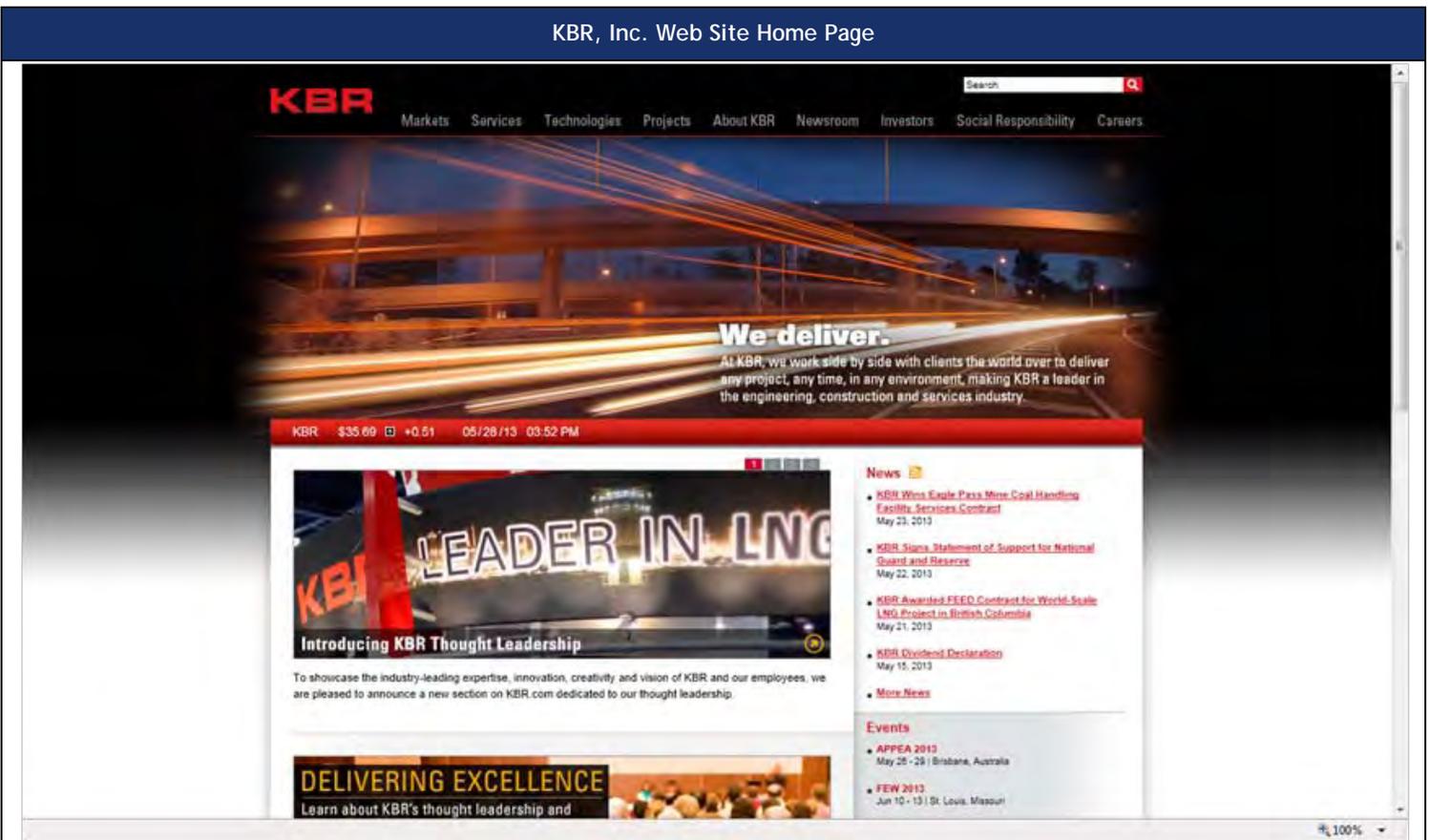


Source: Auditors created the figure based on information from Department's *Project Development Process Manual* and information from Department management.

Contractor Information

The Department contracted with KBR, Inc., formerly Kellogg Brown and Root, to design the reconstructed interchange on State Highway 352. KBR, Inc. is a Houston-based engineering, procurement, and construction company. It has approximately 27,000 employees in more than 70 countries on 5 continents. Figure 3 shows a screenshot of the KBR, Inc. Web site home page.

Figure 3



Source: KBR Inc. Web site at www.kbr.com.

W. W. Webber, LLC is a Houston-based infrastructure company with approximately 2,000 employees. It was awarded the construction contract for the reconstruction of the interchange on State Highway 352. Figure 4 shows a screenshot of W. W. Webber, LLC Web site home page.

Figure 4



Source: W. W. Webber, LLC Web site at <http://wwerber.com/about-us/>.

Related State Auditor's Office Work

Related State Auditor's Office Work		
Number	Product Name	Release Date
13-022	A Report on State of Texas Compliance with Federal Requirements for Selected Major Programs at the Department of Transportation for the Fiscal Year Ended August 31, 2012	February 2013
13-016	A Report on the Audits of the Fiscal Year 2012 Financial Statements of the Department of Transportation, the Central Texas Turnpike System, and the Texas Mobility Fund	January 2013
12-049	An Audit Report on Performance Measures, Implementation of Prior Audit Recommendations, and Trends at the Department of Transportation	August 2012
12-020	A Report on State of Texas Compliance with Federal Requirements for Selected Major Programs at the Department of Transportation for the Fiscal Year Ended August 31, 2011	February 2012
12-555	State of Texas Financial Portion of the Statewide Single Audit Report for the Year Ended August 31, 2011	February 2012
12-014	A Report on the Audit of the Central Texas Turnpike System's Fiscal Year 2011 Financial Statements	January 2012
12-010	A Report on the Audit of the Texas Mobility Fund's Fiscal Year 2011 Financial Statements	December 2011

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The Honorable Jim Pitts, House Appropriations Committee

The Honorable Harvey Hilderbran, House Ways and Means Committee

Office of the Governor

The Honorable Rick Perry, Governor

Department of Transportation

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Mr. Jeff Moseley

Mr. Fred Underwood

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