



AUDIT OF CAPITAL PROJECTS ADMINISTRATION

Construction

ABSTRACT

Controls over construction contract procurement compliance and invoice verification procedures should be improved. In addition, formalization of some project monitoring processes would provide greater quality assurance and potentially increase efficiency.

City Auditor's Office



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Executive Summary

Honorable Mayor and members of the City Council,

The City Auditor's Office has completed a performance audit of the Capital Projects Administration Planning & Design processes. The objective of this audit is to provide assurance that the City's resources are being used economically and efficiently by evaluating the existence and adequacy of controls over the capital project construction processes.

Salient Findings

- The City has adopted the Public Works Construction Standards promulgated by the North Central Texas Council of Governments (NCTCOG) for the construction of general government construction projects. The City's Public Works Inspections (PWI) staff is currently responsible for ensuring that construction activities are being performed in accordance with these standards as well as the project-specific plans and specifications. Currently, the City is working on developing its own standards based in NCTCOG standards.
- Six of the seven reviewed construction projects' original contracts were appropriately solicited in accordance with Texas Local Government Code 252 or Texas Government Code 2269. Procurement discrepancies of the remaining project – McKinney Phase I – were investigated by the City Auditor's Office and disclosed to the City Council in a separate communication on February 21, 2020.
- Texas Local Government Code §252.048 requires that the governing body of a municipality approve any contract change orders that cumulatively decrease or increase the contract value by more than \$50,000. Change orders that cumulatively valued less than \$50,000 may be approved by the City Manager, whose authority effectively resets after Council approves the change orders. Three of the thirteen executed change orders were approved inappropriately by staff.
- More than \$1 million work was performed prior to receiving the City Council's required approval of the corresponding change orders. Allowing contractors to perform work before approval of relevant change orders may create an inappropriate obligation to pay. If this obligation is not ratified, the City may be in violation of state procurement regulations or could be at risk of legal action.
- In general, contracts provide duties and obligations of the parties as well as remedies for failure to abide by contract terms. We found three instances in records pertaining to the Bonnie Brae Phase I and Mayhill Phase I contracts where contract terms were not adhered to as follows:
 - Calculation error in a pay estimate resulted in underpayment of about \$18,000 to the Bonnie Brae Phase I contractor.
 - The Mayhill Phase I construction contract stated that only complete and in place items will be paid for and no payment will be made for materials on hand. Despite this clause, multiple pay estimates included materials on hand statements resulting in the City pre-paying the contractor almost \$267,000. The Mayhill I materials on hand payments appear to have been credited back to the City as part of the pay estimate process.

However, specific attention should be paid to the reconciliation of these payments to avoid paying the contractor for materials that were not used during the project.

- In construction contracts, retainage is generally held to ensure proper performance. The contract stated that 5% retainage shall be held by the City. However, the City released about \$1 million of the Mayhill Phase I retained amount prematurely leaving only 1.8% retainage. According to the City Engineer, this practice is not uncommon in the construction industry; however, the City should comply with the terms of its contracts.
- The assigned PWI Inspector physically inspects the construction site daily and records site conditions, general details of construction activities, and any unusual occurrences in their Daily Work Report. The Daily Work Reports provide the basis for the City's construction quality acceptance function; however, the inspection tests performed, and the results recorded are largely at the discretion of the assigned Inspector. Without a documented, formal inspection process or well-defined inspection activity requirements, it is difficult to ensure that all construction activities were performed appropriately. Similarly, there is no system to track and resolve any recorded unusual occurrences or non-conforming inspection results. Without a tracking system, it may be difficult to ensure that these issues were appropriately resolved.

Without formally established procedures for conducting daily inspection activities, there is a risk that non-conforming inspection results will not be observed. Similarly, implementing a tracking system for inspection tests and unusual occurrences would provide further assurance that all construction activities were appropriately inspected. This would not only facilitate supervisory review but may also help Inspectors prevent potential project delays.

- For capital improvement projects, independent assurance of quality control includes testing of construction materials, compaction reports, density tests, water tests, etc. Materials and compaction tests are generally performed in compliance with NCTCOG standards and project specifications. Tests are overseen by Public Works Inspectors when performed. Based on our review, construction testing may be performed by firms hired by the City, the design consultant, or the construction contractor without consistency.

The City has the ability to retest any construction tests to verify their accuracy. However, currently there is no set process to determine when a retest should occur. Allowing the construction contractor to hire a construction testing firm increases the chance that test results may be skewed or falsified. Developing a random retesting program would provide increased assurance that this risk has not manifested.

We appreciate Engineering Services staff for their co-operation. We made eleven recommendations in this report. Engineering Services has concurred or partially concurred with all eleven recommendations.

Sincerely,

Umesh Dalal, City Auditor

Introduction

The City Auditor is responsible for providing: (a) an independent appraisal¹ of City operations to ensure policies and procedures are in place and complied with, inclusive of purchasing and contracting; (b) information that is accurate and reliable; (c) assurance that assets are properly recorded and safeguarded; (d) assurance that risks are identified and minimized; and (e) assurance that resources are used economically and efficiently and that the City's objectives are being achieved.

The City Auditor's Office has completed a performance audit of the Capital Projects Administration Construction processes. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Management Responsibility

City management is responsible for ensuring that resources are managed properly and used in compliance with laws and regulations; programs are achieving their objectives; and services are being provided efficiently, effectively, and economically.

Audit Objectives, Scope, and Methodology

This report is intended to provide assurance that the City's resources are being used economically and efficiently by evaluating the existence and adequacy of controls over capital project construction processes.

Audit fieldwork was conducted during November and December of 2019 and January of 2020. The scope of review varied depending on the procedure being performed. The following list summarizes major procedures performed during this time:

- Reviewed documentation to develop criteria including industry standards, best practices, policies, and procedures;
- Developed a process narrative to identify current control activities that was certified by the City Engineer, Deputy City Engineer, Public Works Inspections Manager, the Assistant Controller, and Engineering Service's Contract Control Specialist;
- Verified procurement law compliance for a selection of construction contracts and associated change orders executed as part of the general government capital projects delivery process;
- Compared submitted construction invoices to contract terms; and
- Reviewed Daily Work Reports and Requests for Information for under-construction projects.

¹ The City of Denton Internal Auditor's Office is considered structurally independent as defined by generally accepted government auditing standard 3.56.

Background

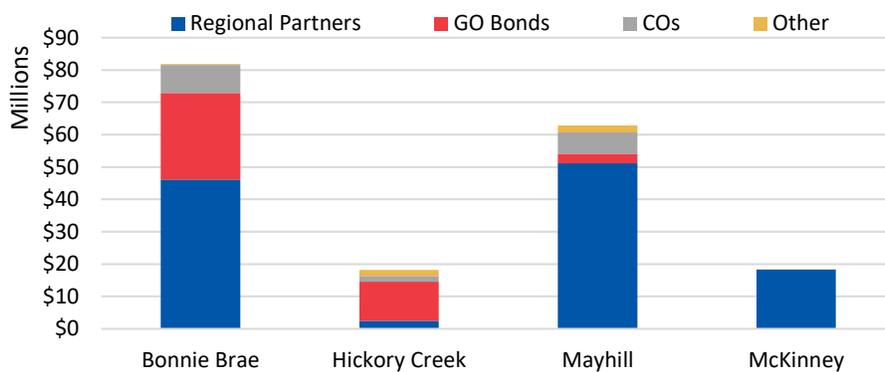
As of December 2017, The City of Denton’s Engineering Services had established and formalized general project management and delivery procedures in the Project Management Manual, which is based on the Project Management Institute’s Project Management Body of Knowledge (PMBOK). This Manual generally divides the capital improvement project (CIP) management process into six phases as shown below.

1. Initiation	4. Bid
2. Planning	5. Construction
3. Design	6. Close out

This audit report generally covers Engineering Services’ processes and controls in the Bid and Construction phases, as no projects in our scope had gone through the close out process as of January 2020.² The Initiation, Planning, and Design phases were covered in our separate audit reports on Planning & Design and Property Acquisition. In this context, the report focuses on the administration of four major general government CIP programs as outlined in Appendix B.

At the City of Denton, major capital improvement projects are generally funded through the issuance of debt such as general obligation (GO) bonds and certificates of obligation (CO), which are backed by the full faith and credit of the issuing jurisdiction,³ or revenue bonds, which are secured by a specific revenue stream. In addition, the City may receive additional monies from regional partners such as Denton County, Denton Independent School District, the Texas Department of Transportation, and the North Central Texas Council of Governments (NCTCOG) for certain transportation projects. The budgeted funds for each of the four selected capital improvement programs in our scope as of March 2020 are broken out by source in Figure 1:

Figure 1: Select CIP Budgeted Funding Source as of March 2020 (In Millions)



The four major CIP programs under review in our audit are typically broken into multiple phases resulting in 16 unique projects. Table 1 shows the status of each of these projects and expected completion date as of March 2020:

² The Initiation, Planning, and Design phases were covered in a separate audit report.

³ While both types are backed by the full faith and credit of the issuing jurisdiction, GO Bonds require voter approval before issuance whereas COs do not.

Table 1: Select CIP Schedule Summary

Project	Phase	Construction Start	Exp. Completion
Bonnie Brae I	Construction	Jul. 2017	Jun. 2020
Bonnie Brae II	Construction	Jan. 2020	May 2021
Bonnie Brae III	90% Design	Aug. 2020	Sep. 2022
Bonnie Brae IVA	Construction	Jun. 2019	Mar. 2020
Bonnie Brae IVB	100% Design	Jul. 2020	Oct. 2022
Bonnie Brae V	60% Design	May. 2021	Aug. 2022
Bonnie Brae VI	30% Design	Jan. 2021	Aug. 2022
Bonnie Brae VII	Initiation	TBD	TBD
Hickory Creek I	Bid	May 2020	May 2021
Hickory Creek II	Construction	Jan. 2020	Apr. 2021
Hickory Creek III	60% Design	Aug. 2020	Apr. 2022
Hickory Creek IV	On Hold	NA	NA
Mayhill Road I	Construction	Sep. 2017	Apr. 2020
Mayhill Road II (DCTA Bridge)	30% Design	Dec. 2020	Dec. 2022
McKinney I	Close Out	Jul. 2019	Mar. 2020
McKinney II	Construction	Dec. 2019	Mar. 2022

What Works Well

The City Has Adopted Appropriate Construction Standards

Standard construction specifications provide minimum standards for materials, methods of construction, and repair or alteration of improvements located within public right of way. These improvements include but are not limited to, streets, sanitary sewer facilities, storm drainage facilities, water distribution facilities, landscape, and other improvements. The auditors found the following:

- The City has adopted the Public Works Construction Standards promulgated by the North Central Texas Council of Governments (NCTCOG) for the construction of general government construction projects. The City's Public Works Inspections (PWI) staff is currently responsible for ensuring that construction activities are being performed in accordance with these standards as well as the project-specific plans and specifications.
- In addition, the City is currently in the process of preparing and implementing City of Denton-specific construction standards based on NCTCOG's standards. Tailoring the NCTCOG standards to fit the City should allow for increased consistency between construction projects, potentially improving both City staff efficiency and overall construction quality.

All Reviewed Pay Estimates were Adequately Approved

When processing invoices, it is important to substantiate the City's obligation to pay the invoiced amount by verifying that the stated quantities were received and that the prices are accurate based on the agreement. While this responsibility typically falls on the City's Accounts Payable Division, the nature of construction contract pay estimates (i.e. construction invoices) requires that Engineering Services staff be more directly involved. The auditors found the following:

- The project's Inspector – typically from the City's Public Works Inspections Division – certify on the pay estimate that all invoiced quantities were constructed. This responsibility is codified in the Project Management Manual.

According to the Project Management Manual, the project's Project Manager then approves the pay estimate. Engineering Services' Management stated that this approval should include a review of the invoiced prices to ensure that they match the contract terms. This responsibility is not codified in the Project Management Manual.

Engineering Services administrative staff is responsible for verifying that the appropriate signatures are in place before forwarding the certified invoice to the Accounts Payable Division. According to the information received from the Deputy City Engineer, these responsibilities are illustrated in Table 2.

Table 2: Pay Estimate Verification Responsibilities

Role	Responsibility
Inspector	Verify Quantities
Project Manager	Verify Prices
Administrative Staff	Verify Certifications

- A total of 56 pay estimates had been processed for the four projects within our scope as summarized in Table 3. All 56 pay estimates had adequate approval.

Table 3: Project Pay Estimates Summary (As of November 2019)

Project	No. of Pay Estimates	Retained Value	Total Paid
Bonnie Brae I	21	\$509,792	\$9,684,969
Bonnie Brae IVA	6	\$164,076	\$3,117,445
Mayhill I	26	\$563,087	\$30,686,485
McKinney I	3	\$64,406	\$1,223,713
All:	56	\$1,301,361	\$44,712,612

Opportunities for Improvement

Construction Contract Procurement Did Not Always Comply with State Law

Of the sixteen projects under review, seven had executed construction contracts with thirteen associated change orders at the end of March 2020 (see Table 4).

Table 4: Construction Contract Summary (March 2020)

Project	Total Construction Value	Construction Change Orders	Project Estimate at Completion
Bonnie Brae I	\$12,436,200	\$625,980	\$19,147,000
Bonnie Brae II	\$11,638,323	\$0	\$19,592,000
Bonnie Brae IVA	\$3,490,847	\$585,310	\$6,600,000
Hickory Creek II	\$5,320,870	\$0	\$6,600,000
Mayhill I	\$35,603,590	-\$273,824	\$57,294,999
McKinney I	\$2,021,041	\$49,980	\$3,000,000
McKinney II	\$10,471,822	\$0	\$13,683,000
Total Construction Contract Value:	\$80,982,693	\$987,446	\$125,916,999

While the procurement function significantly impacts and is initiated by Engineering Services, compliance with procurement laws and regulations is the primary responsibility of the Purchasing Division. This being said, Engineering Services is also responsible for in ensuring that their construction projects are procured according to law – this includes the procurement of the original contract as well as the processing of any change orders.

What We Found?

- Six of the seven construction projects original contracts were appropriately solicited in accordance with Texas Local Government Code 252 or Texas Government Code 2269.
 - Procurement discrepancies of the remaining project – McKinney Phase I – were investigated by the City Auditor’s Office and disclosed to the City Council in a separate communication.
- Texas Local Government Code §252.048 requires that the governing body of a municipality approve any contract change orders that cumulatively decrease or increase the contract value by more than \$50,000. Change orders that cumulatively value less than \$50,000 may be approved by the City Manager,⁴ whose authority effectively resets after Council approves the change orders. Three of the thirteen executed change orders were approved inappropriately as illustrated in Table 5.

⁴ Ordinance 2009-034 (executed on 2/3/2009) granted the City Manager authority to approve change orders up to \$50,000 as specified in Texas Local Government Code 252.048 and the Materials Management and Payment Procedures Manual delegates this authority to Purchasing.

Table 5: Construction Change Order Analysis

Project	Value	Cumulative CMO Value	Approval	Appropriate?
Bonnie Brae I	\$11,810,220	\$0	Council	Yes
CO #1	\$564,500	\$0	Council	Yes
CO #2	\$47,559	\$47,559	Purch.	Yes
CO #3	\$13,920	\$61,479	Purch.	No
Bonnie Brae II	\$11,638,323	\$0	Council	Yes
Bonnie Brae IVA	\$2,905,537	\$0	Council	Yes
CO #1	\$585,310	\$0	Council	Yes
Hickory Creek II	\$5,320,870	\$0	Council	Yes
Mayhill I	\$35,877,415	\$0	Council	Yes
CO #1	\$13,291	\$13,291	Purch.	Yes
CO #2	\$18,695	\$31,986	Purch.	Yes
CO #3	\$35,104	\$67,090	CMO	No
CO #4	-\$667,848	\$0	Council	Yes
CO #5	\$76,185	\$76,185	CMO	No
CO #6	\$137,836	\$0	Council	Yes
CO #7	\$112,912	\$0	Council	Yes
McKinney I	NA	NA	NA	NA ⁵
McKinney II	\$10,471,822	\$0	Council	Yes

- In addition, some construction work was performed before the change order was approved.⁶ This situation is summarized in Table 6.

Table 6: Summary of Construction Work Performed Before Authorization

Project	CO No.	Change Order Approval Date	Work Performed Before	Value Performed Before Approval	Total Project Construction Cost
Bonnie Brae I	#1	2/06/2018	1/31/2018	\$137,908	\$12,436,200
Bonnie Brae IVA ⁷	#1	9/10/2019	9/11/2019	\$864,130	\$3,490,847

- Allowing contractors to perform work before approval of relevant change orders may create an inappropriate obligation to pay. If this obligation is not ratified, the City may be in violation of state procurement regulations or could be at risk of legal action.

Why Does It Matter?

The City must comply with state procurement laws and regulations as non-compliance may subject the City to judicial challenge. Section 252.061 of the Texas Local Government Code states that “if [a] contract is made without compliance with [Chapter 252], it is void and the performance of the contract, including the payment of any money under the contract, may be enjoined ...” In addition, Section 252.062 of the Texas Local Government Code states that “a municipal officer or employee commits an offense if the officer or employee intentionally or knowingly violates [Chapter 252];” such an offense could result in a Class B or Class C misdemeanor.

⁵ The McKinney I project was not performed under a project-specific contract; potential issues with this procurement method were investigated by the City Auditor’s Office and disclosed to the City Council in a separate communication.

⁶ This determination was based on work conducted in the construction invoice period as submitted by the contractor.

⁷ Unauthorized Bonnie Brae IVA construction work was investigated by the City Auditor’s Office which is further detailed in a separate report. The results of this investigation were presented to the City Council on February 25th, 2020.

Recommendations:

1. Review construction contracts to ensure that procurement regulations are followed and consult with the City Attorney's Office if compliance with the regulations is in question.

Engineering Services Comments:

Procurement & Compliance Comments: Procurement will continue to follow Local Government Code 252 and Texas Government Code 2269 for public works construction procurements in consultation with the City Attorney's Office. These procedures will be formally documented in the updated Purchasing Manual.

2. Clarify procurement change order authorization practices with guidance from the City Attorney's Office to ensure compliance with state procurement regulations.

Procurement & Compliance Comments: Procurement is working with the City Attorney's Office to clarify the change order authorization procedures and ensure compliance with procurement statutes. These procedures will be formally documented in the updated Purchasing Manual. Moving forward, change orders over \$50,000 will require City Council approval.

3. Consult with City Administration to identify methods to expedite the authorization of change orders when delays might significantly impact a construction project's schedule.

Engineering Services Comments: Capital Projects staff is working with the City Attorney's office to develop and implement methods for expediting the authorization of change orders, especially when the delays may significantly impact construction projects schedule. The proposed changes will be included in the new construction contract documents that staff is currently working on updating.

Construction Contract Terms Were Not Always Followed

A construction contract provides important protections for the parties to the contract. In general, contracts provide duties and obligations of the parties as well as remedies for failure to abide by contract terms. Construction contracts typically include details of the project scope, work to be accomplished and payment procedures. In case of a breach of contract terms by one of the parties, the other party may have a right to legal remedies.

What We Found?

- In general, payments made to the contractor as part of the Bonnie Brae Phase I project were made in accordance with the contract terms; however, some invoices contained errors that resulted in the contractor being under paid as follows:
 - Pay estimate #16 of this project contained a calculation error that seemingly resulted in the City underpaying the contractor by \$17,864.53.
- All payments made to the construction contractor as part of the Bonnie Brae Phase IVA project appear to have been made in accordance with the contract terms.
- The Mayhill Phase I construction contract contains the following provisions:

- “Only complete and in place items will be paid for and no payment will be made for materials on hand.”

Despite this clause, multiple pay estimates included materials on hand statements resulting in the City pre-paying the contractor \$266,557.98. According to the City Engineer, this practice is not uncommon in the construction industry; however, the City should comply with the terms of its contracts.

The Mayhill I materials on hand payments appear to be credited back to the City as part of the pay estimate process; however, specific attention should be paid to the reconciliation of these payments to avoid paying the contractor for materials that were not used during the project.

- Another provision contained in the contract is, “A five percent (5%) retainage will be held by the City, calculated using the total work complete to date of the partial payment. No partial release of retainage will be permitted before Final Payment.”

Despite this clause, \$1,032,559.72 was paid to the contractor in August of 2019 as a partial retainage payment leaving a balance of \$563,087 (1.8% retainage). According to the City Engineer, this practice is not uncommon in the construction industry; however, the City should comply with the terms of its contracts. Retainage payments are intended to provide an incentive for contractors to complete construction as agreed in the contract; partial retainage payments reduce this incentive.

- Due to the unique procurement method for the McKinney Phase I project, 21 of the project’s 40 line items are not covered under a contract. Still, Engineering Services and the contractor appear to have come to an agreement on the price of these line items using a project pricing proposal.
 - All three pay estimates incorrectly listed the prices of these non-contracted line items, seemingly resulting in an overpayment of \$9,058.25. This being said, the City may have little recourse when attempting to recover these costs since these prices were not contractually established.

Why Does It Matter?

This audit report makes no conclusions about the materiality of the contractual infringements described previously. A material breach of contract may result in the City undergoing litigation.

Recommendations:

4. Consult with the City Attorney’s Office to determine if the City has breached the concerned construction contracts.

Engineering Services Comments: *Capital Projects staff has been working with the City Attorney’s office to determine if any of the construction contracts were materially breached. Based on the response received from the City Attorney’s office, the City has not materially breached any construction contracts.*

5. Review pay estimates for the concerned projects to ensure payments have been made according to the contract terms.

Engineering Services Comments: Capital Projects staff has reviewed all pay estimates for the concerned projects and have provided a detailed response. In the past six months staff has implemented a new invoice approval process along with new invoicing form which addresses the issues that were identified during this Audit.

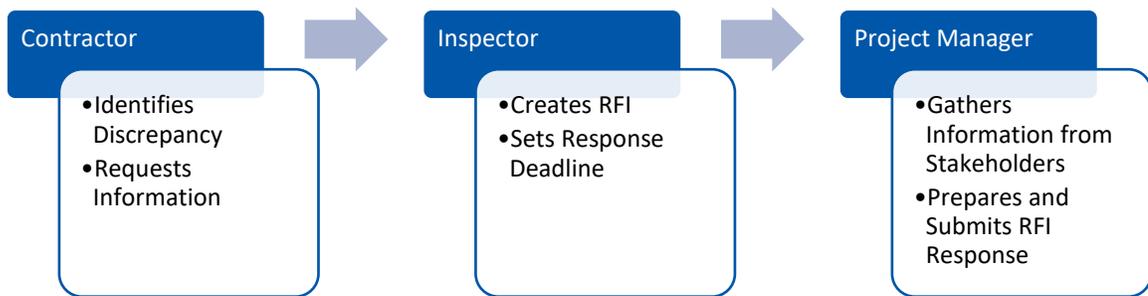
6. Develop procedures to ensure that materials on hand payments and partial retainage payments are handled consistently in future projects to provide assurance that all payments have been processed correctly.

Engineering Services Comments: Capital Projects staff will work with Procurement and Legal to develop a process/procedure for handling retainage payments which will be included in the new construction contract that staff is currently working on updating.

Construction Discrepancies' Resolution Process Needs To Be Improved

During construction projects, the standards, contract, plans, and specifications do not always adequately address every issue that may arise on site. The purpose of a Request for Information (RFI) is to resolve conflicts, or discrepancies, early in the construction process to eliminate the need for costly measures subsequently. According to a study conducted by the Navigant Construction Forum,⁸ "Average reply times for RFIs can range from 6.4 days to 10 days based on region, project size, and duration." In order to address these discrepancies, the City – like many organizations – has developed a standardized, automated (RFI) process. This process is illustrated in Figure 2.

Figure 2: Request for Information Process



The Project Manager is responsible for responding to the RFI based on communication with the involved stakeholders, such as the design consultant, other City departments, franchise utilities, etc. Once the response is prepared it is forwarded back to the Inspector and Contractor via the work management software.

What We Found?

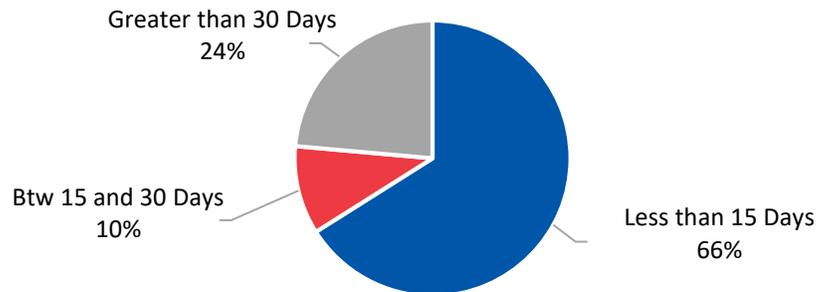
- Request for Information documentation was reviewed for four under-construction projects including:

⁸ Navigant is the leading provider of expert services in the construction and engineering industries. It aims to provide best practices on the avoidance and resolution of construction project disputes globally.

- Bonnie Brae I
- Mayhill I
- Bonnie Brae IVA
- McKinney I

- The Bonnie Brae I project was managed by City staff but inspected by the design consultant. For this reason, the City’s standard RFI process was not used; however, there was evidence that Engineering Services staff, the design contractor, and the construction contractor communicated via e-mail to resolve discrepancies.
- The Bonnie Brae IVA project was managed and inspected by City staff. All RFIs were properly recorded and resolved using the process illustrated in Figure 1. The majority of RFIs were responded to within three days.
- The McKinney I project was managed and inspected by City staff. No RFIs were created during construction. There is evidence that PWI staff were on site during construction.
- The Mayhill I project was managed and inspected by the design consultant. One hundred and six RFIs were issued and resolved by the consultant with a response rate that varied from 1 to 378 days (see Figure 3 for further detail). The reasonableness and impacts of RFI response delays could not be examined based on the available RFI documentation.

Figure 3: Mayhill Phase I RFI Response Rate



Despite outsourcing the project management of Mayhill I, the City should still monitor construction activity to ensure the project is progressing appropriately. There was little evidence of City involvement in the resolution of RFI’s for a substantial period of the project. Engineering Services staff stated that a City Project Manager could not be involved in the monitoring of this project due to understaffing at the time.

- The “Project Management Methodology Guidelines” adopted by the Engineering Services Department in December 2017, provides some examples on when an RFI should be used, however, it does not:
 - Specifically outline the process to create and respond to RFIs; or
 - Establish responsibility and timelines for resolving RFIs.

Why Does It Matter?

Discrepancies were not resolved using a consistent method in all of the reviewed projects. This being said, Engineering Services appears to have developed an automated request for information system. Codification of this process would facilitate consistency and help retain institutional knowledge. Similarly, developing standard response timelines for different types of RFIs may aid both Public Works Inspectors and Project Managers in prioritizing RFIs – further improving response timeliness and minimizing construction project delays.

Recommendations:

7. Formalize the process for RFI creation in a policy or standard operating procedure.

Engineering Services Comments: *Staff has developed a Standard Operating Procedure (SOP) for the Request For Information (RFI) which is currently used by the Capital Projects department. The SOP specifically outlines how to create the RFI through Smartsheet and provides a timeline for responding and automatic reminders. These RFI's are tracked every week and a report is submitted to the leadership team.*

8. Develop criteria or guidelines to ensure the timely resolutions of discrepancies observed by contractors during construction projects.

Engineering Services Comments: *See previous response.*

Inspection Activities Should Be Further Detailed

In general, the quality assurance process includes three key components as shown below:

1. Quality Control performed by the contractor to ensure their processes are performed effectively;
2. Quality Acceptance performed by the owning agency to verify that the construction complies with the applicable standards, specifications, and plans; and
3. Independent Assurance performed by a third party to provide an independent assessment of the construction quality.

The City's Public Works Inspections (PWI) Division performs the quality acceptance function and is responsible for inspecting construction projects to ensure that they meet the specified standards, plans, and specifications. PWI's construction project documentation was reviewed for four under-construction projects including:

- Bonnie Brae I
- Mayhill I
- Bonnie Brae IVA
- McKinney I

What We Found?

- PWI Inspectors do not provide the “means or methods” for performing construction work. Essentially, this means that they do not instruct the contractor on how to perform a construction activity, allowing PWI staff to remain independent and provide quality acceptance activities.

- The assigned PWI Inspector physically inspects the construction site daily and records site conditions, general details of construction activities, and any unusual occurrences in their Daily Work Report.
 - The Daily Work Reports provide the basis for the City’s construction quality acceptance function; however, the inspection tests performed, and the results recorded are largely at the discretion of the assigned Inspector. Without a documented, formal inspection process or well-defined inspection activity requirements, it is difficult to ensure that all construction activities were performed appropriately.
 - Similarly, there is no system to track and resolve any recorded unusual occurrences or non-conforming inspection results. Without a tracking system, it may be difficult to ensure that these issues were appropriately resolved.

Why Does It Matter?

Without formally established procedures for conducting daily inspection activities, there is a risk that non-conforming inspection results will not be observed. This is specifically a risk for new or less experience PWI Inspectors who may or may not take a significant time to understand the Division’s inspection methods.

Similarly, implementing a tracking system for inspection tests and unusual occurrences would provide further assurance that all construction activities were appropriately inspected. This would not only facilitate supervisory review but may also help Inspectors prevent potential project delays.

Recommendations:

9. Create standard inspection guidance for Public Works Inspections staff to provide greater assurance that construction activities are properly inspected.

***Public Works Inspections Comments:** Public Works Inspections has created and implemented a Standard Operating Procedure for the information that will be recorded on Daily Work Reports. The SOP outlines a more standardized approach to recording and observing construction activities on a daily basis.*

10. Develop a system to track non-conforming inspection results to ensure they are corrected appropriately.

***Public Works Inspections Comments:** Public Works Inspections has created an Excel spreadsheet that will be used for recording and tracking the status of issues and non-conforming inspections.*

Additional Construction Testing Would Increase Assurance

As discussed previously, independent assurance is a key component of the quality assurance process that is typically performed by an independent, third party. For capital improvement projects, these activities generally include the testing of construction materials, compaction reports, density tests, water tests, etc.

What We Found?

- Materials and compaction tests are generally performed in compliance with NCTCOG standards and project specifications. Tests are overseen by Public Works Inspectors when performed. Based on our review, construction testing may be performed by firms hired by the City, the design consultant, or the construction contractor without consistency.
- The City has contracted with a construction testing firm and has the ability to retest any construction tests to verify their accuracy. Based on our discussions with Public Works Inspections staff, there is currently no set process to determine when a retest should occur.

Why Does It Matter?

Allowing the construction contractor to hire a construction testing firm increases the chance that test results may be skewed or falsified. Developing a random retesting program would provide increased assurance that this risk has not manifested.

Recommendation:

11. Develop a process to randomly retest materials and compaction tests ordered by the construction contractor.

Public Works Inspections Comments: Public Works Inspections has created a Standard Operating Procedure for material testing that includes testing and retesting of materials and compaction tests conducted/submitted by the contractor. Public Works Inspections has developed a log that tracks testing and retesting for each Capital Improvement Project.

Appendix A: Management Response Summary

The following summarizes the recommendations issued throughout this report. The auditors found that staff and the Department were receptive and willing to make improvements to controls where needed. Management has provided their response to each recommendation.

1	<p><i>Review construction contracts for the concerned projects to ensure procurement regulations were followed and consult with the City Attorney's Office on potential remedies if compliance with the regulations is in question.</i></p>	Concur	Expected Completion: June 2020
Engineering Services Comments: Procurement & Compliance Comments: Procurement will continue to follow Local Government Code 252 and Texas Government Code 2269 for public works construction procurements in consultation with the City Attorney's Office. These procedures will be formally documented in the updated Purchasing Manual.		Responsibility:	
2	<p><i>Clarify procurement change order authorization practices with guidance from the City Attorney's Office to ensure compliance with state procurement regulations.</i></p>	Concur	Expected Completion: June 2020
Procurement & Compliance Comments: Procurement is working with the City Attorney's Office to clarify the change order authorization procedures and ensure compliance with procurement statutes. These procedures will be formally documented in the updated Purchasing Manual. Moving forward, change orders over \$50,000 will require City Council approval.		Responsibility:	
3	<p><i>Consult with the City Attorney's Office to identify methods to expedite the authorization of change orders when delays might significantly impact a construction project's schedule.</i></p>	Concur	Expected Completion: Six months
Engineering Services Comments: Capital Projects staff is working with the City Attorney's office to develop and implement methods for expediting the authorization of change orders, especially when the delays may significantly impact a construction projects schedule. The proposed changes will be included in the new construction contract documents that staff is currently working on updating.		Responsibility: Capital Projects	
4	<p><i>Consult with the City Attorney's Office to determine if the City has materially breached the concerned construction contracts.</i></p>	Concur	Expected Completion: Completed
Engineering Services Comments: Capital Projects staff has been working with the City Attorney's office to determine if any of the construction contracts were materially breached. Based on the response received from the City Attorney's office, the City has not materially breached any construction contracts.		Responsibility:	
5	<p><i>Review pay estimates for the concerned project to ensure payments have been made according to the contract terms.</i></p>	Concur	Expected Completion: Completed
Engineering Services Comments: Capital Projects staff has reviewed all pay estimates for the concerned projects and have provided a detailed response. In the past six months staff has implemented a new invoice approval process along with new invoicing form which addresses the issues that were identified during this Audit.		Responsibility:	

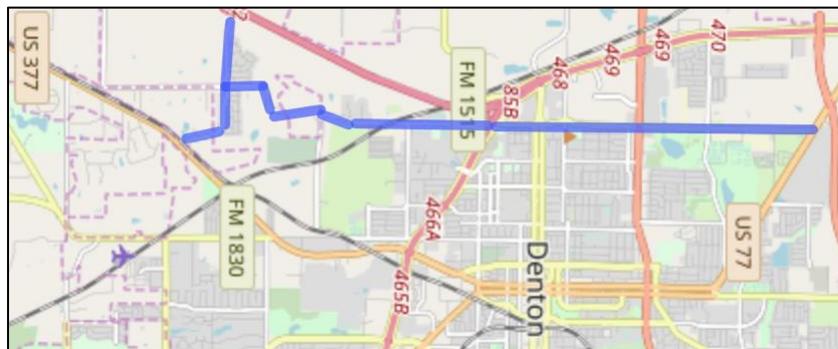
6	<i>Develop procedures to ensure that materials on hand payments and partial retainage payments are handled consistently in future projects to provide assurance that all payments have been processed correctly.</i>	Concur	Expected Completion: Six months
Engineering Services Comments: Capital Projects staff will work with Procurement and Legal to develop a process/procedure for handling retainage payments which will be included in the new construction contract that staff is currently working on updating.			Responsibility:
7	<i>Formalize the process for RFI creation in a policy or standard operating procedure.</i>	Concur	Expected Completion: Completed
Engineering Services Comments: Staff has developed a Standard Operating Procedure (SOP) for the Request For Information (RFI) which is currently used by the Capital Projects department. The SOP specifically outlines how to create the RFI through Smartsheet and provides a timeline for responding and automatic reminders. These RFI's are tracked every week and a report is submitted to the leadership team.			Responsibility:
8	<i>Develop criteria or guidelines to ensure the timely resolutions of discrepancies observed by contractors during construction projects.</i>	Concur	Expected Completion: Completed
Engineering Services Comments: See previous response.			Responsibility: Capital Projects
9	<i>Create standard inspection guidance for Public Works Inspections staff to provide greater assurance that construction activities are properly inspected.</i>	Concur	Expected Completion: Completed
Public Works Inspections Comments: Public Works Inspections has created and implemented a Standard Operating Procedure for the information that will be recorded on Daily Work Reports. The SOP outlines a more standardized approach to recording and observing construction activities on a daily basis.			Responsibility:
10	<i>Develop a system to track non-conforming inspection results to ensure they are corrected appropriately.</i>	Concur	Expected Completion: Completed
Public Works Inspections Comments: Public Works Inspections has created an Excel spreadsheet that will be used for recording and tracking the status of issues and non-conforming inspections.			Responsibility:
11	<i>Develop a process to randomly retest materials and compaction tests ordered by the construction contractor.</i>	Concur	Expected Completion: Completed
Public Works Inspections Comments: Public Works Inspections has created a Standard Operating Procedure for material testing that includes testing and retesting of materials and compaction tests conducted/submitted by the contractor. Public Works Inspections has developed a log that tracks testing and retesting for each Capital Improvement Project.			Responsibility:

Appendix B: Reviewed Projects

The following list details the project reviewed as part of this audit:

- Bonnie Brae Street roadway improvements;
 - Phases I, II, and III comprises improvements to Bonnie Brae from Vintage Boulevard to Interstate 35E, including improvements on Vintage from Fort Worth Drive (US 377) to Interstate 35W;
 - Phases IV and V comprises improvements from I-35E to University Drive (US 380); and
 - Phases VI and VII comprises improvements from University Drive to Loop 288.

Picture 1: Bonnie Brae Blvd CIP



- Hickory Creek Road roadway improvements and realignment;
 - Phases I comprises improvements from Barrel Strap to Teasley Lane;
 - Phase II comprises improvements from Teasley Lane to Riverpass Drive;
 - Phase III comprises the improvement and realignment of Hickory Creek from Riverpass straight to Country Club Road (FM 1830); and
 - Phase IV comprised of improvements from Country Club to Fort Worth Drive.⁹

Picture 2: Hickory Creek Rd. CIP



- Mayhill Road roadway improvements from University Drive to Colorado Boulevard; and

⁹ As of December 2019, Hickory Creek Road Phase IV appears to have been put on hold.

Picture 3: Mayhill Rd. CIP



- McKinney Street roadway improvements from Loop 288 to Grissom Road.

Picture 4: McKinney Street CIP

