



**Audit Report**  
**Construction – Change Orders**  
**February 11, 2016**

**City Auditor's Office**  
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# **Audit Report**

## **Construction – Change Orders**

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#### **Purpose and Scope**

The purpose of this audit was to determine whether departments have established effective controls for the identification, pricing and approval of change orders and whether the City has established consistent practices City-wide for tracking and managing change orders and contingency balances.

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.

This report is intended for the use of the City Manager's Office, City Council and all City Departments.

#### **Conclusion**

Four City departments' independent approaches to construction have led to inconsistent change order management, exposing the City to potential unnecessary costs. The City could benefit from a policy to establish a best practices framework to guide a consistent construction change order process. Such a framework would reduce the risk of excessive contingencies and out-of-range overhead and profit rates.

#### **Summary Recommendations**

1. A City-wide policy should guide all departments' approach to negotiating and pricing change orders and work change directives.
2. The disclosure of contingency balances should be consistent and transparent.
3. Specific terms should be included within contracts to establish the basis for pricing additional work and to establish the right to examine change order pricing data.
4. Change order pricing review guidance should be established for City-wide consistency.
5. City departments should utilize independent cost estimates and records of negotiations to justify the reasonableness of change order pricing.

### **Action Plan**

The Contracts Officers Community of Practice (COCOP) will address change order policies, procedures and best practices related to disclosure, contractual terms, materiality and documentation. The attached memo (Attachment B) indicates that COCOP has begun addressing the audit recommendations and anticipates completion of its plan in May 2016.

### **Background**

There are usually hundreds (currently over 400) of open construction contracts throughout the City, mostly administered by one of four departments – Aviation, Charlotte Area Transit System (CATS), Engineering and Property Management (E&PM) and Charlotte Water. The City policy that governs construction contracts is EPM 1 “Citywide Policy for Procurement of Design and Construction Services.” EPM 1, issued in July 2014, establishes authority limits for approving change orders but does not provide specific guidance or policy for pricing, documenting and negotiating extra work and change orders. COCOP is a team of contracts and procurement representatives established to guide the City organization in the acquisition of construction and construction related services. The roles and responsibilities of COCOP are outlined in a charter that is included as Attachment A to this report.

Best practices are referenced throughout this document. The source of these best practices include documentation from the American Institute of Architects (AIA); the Federal Transit Administration (FTA); the North Carolina Department of Transportation (NCDOT); industry experts such as Baker Tilly and Moss Adams LLP; and from audit reports and discussions with various colleagues across the nation. While the City is not mandated to follow guidance provided by these sources, the practices referenced form a reasonable basis for establishing policies and procedures for pricing change orders, extra work and contingency spending.

### **Audit Findings and Recommendations**

#### **1. A City-wide policy should guide all departments’ approach to negotiating and pricing change orders and work change directives.**

Auditors reviewed a judgmentally selected sample of 20 construction contracts which required change orders and/or work change directives. The sample included contracts from Aviation, CATS, E&PM and Charlotte Water which were active in FY15. These four departments were selected because they comprise the nucleus of COCOP. While change orders must go through a formal process outlined in City policy and normally result in an increase to contract value, work change directives are less formal requests for extra work normally defined in the contract general conditions. Work change requests are often funded by available contingency balances.

From the sample selected by auditors, it was evident that departments took different approaches to establishing practices for the review of change orders, including the extent to which contractor proposals would be scrutinized for reasonableness during negotiations. The departments also utilized different methods for documenting and reporting the use of contingency balances.

City-wide policies and procedures should provide a uniform change order control process. Consistent management of the change order process is essential to ensure change orders processed in conjunction with construction projects are accurate, complete and in the best interest of the City. Although there is not a formal City-wide policy on change orders, departments have created their own as outlined below:

- Aviation developed a change order policy and created a checklist to document completion of the steps outlined in the change order process. The policy addresses signature authority levels and describes the negotiation process. Aviation incorporates North Carolina Department of Transportation's (NCDOT) "Standard Specifications for Roads and Structures" and the American Institute of Architects' (AIA) document A201 "General Conditions of the Contract for Construction" into their construction contracts. Aviation also references various federal standards and requirements.
- CATS' Change Control Procedure provides a detailed process for review of change orders, cost authority levels for contingencies and change orders, contractors' proposal requirements, record of negotiations, dispute resolution and records retention. The use of project management software (e-Builder) allows CATS to enforce each element of the policy while documenting each process electronically. CATS' internal policy and execution of each element most closely aligns with best practices.
- Charlotte Water is developing a formal change order and work change directive policy. The department does have informal procedures that provide for the authorization of change orders and the order of preference for how change order work should be valued. Many of Charlotte Water's construction contracts incorporate standard general conditions published by the Engineers Joint Contract Documents Committee (EJCDC). According to Charlotte Water staff, EJCDC contract documents will be used more regularly in the future.
- E&PM does not have a department-specific policy for change orders, but is spearheading COCOP, which has discussed developing a City-wide policy for change orders and contingency spending. Like Aviation, most E&PM construction contracts reference standard general conditions published by the AIA or NCDOT.

Certain policy elements considered to be best practice have been included in construction contracts through the incorporation of standard conditions published by

AIA, EJCDC and NCDOT. Audit staff compared existing City policies and procedures to best practices, as described in the Background section above. The most significant elements not addressed by City-wide policy include:

- negotiation guidelines,
- requirement for records of negotiation,
- auditing of change order pricing after the fact,
- reporting/disclosing the amount and use of contingency balances,
- limits on the amount or percentage of contingency to include in contracts,
- time limits for responses to requests for information (RFI) and work change directives, and
- evaluation of the lessons learned after each project.

Auditors noted that departments modify, delete or omit various clauses in the AIA, EJCDC and NCDOT standard conditions referenced in construction contracts. In addition to the standard general conditions, the referenced organizations also have published guides for supplementary conditions. For example, the AIA Document A503 “Guide for Supplementary Conditions” provides model language and guidance related to establishing overhead and profit percentages for changes in work. This language was often not included in City construction contracts (in some cases, federal requirements may supersede standard language). While the referenced documents are intended to be modified for individual entity use, a standardized approach may direct that specific clauses or language included in the standards should not be allowed to be modified, deleted or omitted without explanation, review and/or approval.

**Recommendation:** Establish a City-wide policy for change orders based on best practices and review of the remainder of this report.

**Actions Taken:** COCOP has established a sub-committee to review the audit recommendations and develop recommended policies and procedures for City-wide use.

## **2. The disclosure of contingency balances should be consistent and transparent.**

Construction contingency allowances are added to contracts to provide a predetermined sum of money designated for potential issues which are unknown at the start of construction. The City uses contingency funds to cover overruns and scope changes. (Based upon interviews, auditors noted that the definition and application of a “scope change” is not consistent throughout the City.) Construction contingency amounts typically range 5-10% of anticipated construction costs. Any unused contingency amounts at contract close-out remain with the City and are available for funding other projects. During the construction phase, there are four major change of scope categories:

- Unknown Conditions
- Building Inspector’s Modifications

- Project Owner Requested Changes (including tenant requests at Aviation)
- Design Clarifications or Modifications

City policy (EPM 1 “Citywide Policy for Procurement of Design and Construction Services”) requires that contract modifications (including construction change orders) be approved by City Council if they add more than \$100,000 to the contract. The City Manager must approve a contract modification when, combined with all other modifications, it exceeds the approved contract amount by \$100,000. In this case, the City Manager will decide to approve the modification or refer the modification to City Council for approval.

Departments do not specifically disclose the contingency amount included in contracts when seeking Council approval nor do the departments prepare periodic reports of the contingency used on projects. Auditors reviewed a judgmentally selected sample of 20 contracts City-wide. For the contracts reviewed, contingency percentages ranged from 2.5% to 15% of the contract amount. All but three of the contracts reviewed by auditors included an amount for contingency. The exceptions were three older contracts administered by Aviation, which only recently began including contingency amounts.

Based upon discussions with department representatives, the amount of contingency is determined by professional judgment, taking into consideration such factors as the size of the project, the type of construction, the probability of unknown circumstances and the likelihood of owner requests. Although the ability to use professional judgment is necessary, the lack of a policy indicates that a consistent approach within an established framework may not be utilized in establishing contingency amounts. This could result in contingency amounts outside desired ranges, which have not yet been established in City-wide guidance.

Contingencies are typically included in construction contracts, in recognition that additional costs are likely to be identified during construction, which cannot be known in advance. Based upon current policy and practice, a potential risk exists for a project manager to include a large amount of contingency allowance for a contract and then utilize the contingency balance for a significant contract change order that is not required to be disclosed or approved by City Council or the City Manager. For example, a five percent contingency allowance on a \$20 million contract would be \$1 million, resulting in a contract value of \$21 million. A change order for \$350,000 would therefore not need to be disclosed as the \$350,000 would not result in the contract value increasing above \$21 million. A set of circumstances such as these did occur, as follows:

- At Charlotte Water in 2014, a significant change on the Briar Creek Sewer Relief project resulted in a \$689,000 change directive being processed on the \$17.6 million dollar contract, which Council approved in FY12. Because the amount of the change did not exceed the available contingency balance, department management, City Manager and City Council approval was not

obtained. While this was in line with current City practices, a risk exists that significant scope changes to contracts could be processed using contingency funds without additional review. Executive management and/or City Council may expect that scope changes above a certain threshold should require additional review and approval – regardless of the availability of contingency funding.

Departments were inconsistent in how they handled additional work. CATS processed all changes to construction contracts as change orders in their e-Builder project management system, requiring that each be formally documented and approved. Other departments processed contract changes as change directives unless an increase in contract value occurred, in which case they followed a more formal change order process. E&PM had separate documentation requirements for changes resulting in the spending of contingency balance as opposed to changes requiring an increase in contract value, which were processed as formal change orders.

In reviewing available data in Munis, the City's system of record, auditors were not able to identify those contracts that had large contingency balances. Auditors were able to identify contracts with change orders that had been approved by City Council, but extra work paid with contingency funds does not have the same level of transparency.

Only CATS was able to readily provide a list of change orders and contingency spending by contract. The remaining departments indicated that the information could be produced, but it would require a manual, time-consuming effort to prepare.

It is possible that contingency amounts for contracts could be recorded in Munis through user-defined fields in the contract entry screen. User-defined fields allow users to record specific information in Munis for which a pre-defined field is not available. This may allow procurement staff to record the amount of contingency funds available for each contract. In defining the field, the user is also able to make the selection to have the field input be mandatory. Because some controls over change orders were found to be inadequate, the ability to readily identify contingency amounts and extra work is necessary to ensure that proper oversight is achieved.

Departments tracked contingency spending using software, personal spreadsheets or the payment application. In Aviation, Charlotte Water and E&PM, individual project/construction managers are responsible for tracking contingency usage; making it difficult to create a universe of such spending. There were instances where the contingency was not tracked at all. Rather, it was considered to be a part of the contract like any other line item – an approach which limits the effectiveness of contract management. Without a City policy to provide guidance on reporting of contingency spending, auditors were unable to categorize the scope of the changes or summarize lessons learned at project completion.

Auditors noted that project managers added contingency amounts to five change orders or work change directives. This is not considered best practice as it increases the risk that contractors will receive payment for the contingency amount by including the amount in a change order pay item on payment applications. Auditors noted an example where a \$50,000 contingency was added to a \$2.5 million change order for the Remote Rental Car Facilities contract (approved by City Council in February 2015). No separate authorization was provided to the contractor to spend the contingency amount, which was subsequently allocated among various line items on the resulting pay application. The contractor then received payment for those line items as work was completed.

**Recommendation 2A:** Determine whether the following should be addressed by City-wide change order policy:

- Dollar or percentage limitations on contingency amounts
- Disclosure of contingency amounts at contract approval (by Council or CMO)
- Periodic internal (Department management, City Manager) and/or external (City Council) reporting of contingency funds used and lessons learned
- Requiring change orders (significant scope changes) above an established threshold to go through the established approval process regardless of the availability of contingency funding
- The inclusion of contingency amounts on change orders

**Recommendation 2B:** Work with the ERP Support team to identify a method to record contingency amounts for contracts in Munis.

**Actions Taken:** As noted above, COCOP's sub-committee has been formed to address the recommendations.

3. **Specific terms should be included within contracts to establish the basis for pricing additional work and to establish the right to examine change order pricing data.**

Establishing the basis for pricing change orders within construction contracts would help ensure that the City does not pay more than is necessary for extra work. Contract language can also establish vendor expectations regarding the amount of documentation that will be required to support change order proposals. This can be particularly useful in establishing labor burden rates, overhead rates and profit percentage.

Referenced standards and contract language in the majority of sampled City contracts allow for flexibility in the negotiation and establishment of overhead and profit rates for change orders. For example, Article 11 of the EJCDC standard general conditions details how cost should be calculated for "extra work" – but this only applies if the contractor and owner cannot mutually agree on a lump sum (commonly referred to as "force account"). EJCDC allows a contractor's fee of 15% on work performed by the contractor and 5% for work performed by subcontractors. Only Charlotte Water



referenced EJCDC general conditions in the sampled contracts. While auditors did not note any change orders or change directives for Charlotte Water that exceeded these percentages, the contract language actually allows the Construction Manager to negotiate rates higher than those published in the EJCDC standard general conditions.

In vertical construction, City contracts usually incorporate AIA A201-2007 "General Conditions of the Contract for Construction." While not all vertical City construction contracts include reference to change order pricing, auditors noted the following example (see Exhibit A) where the allowable contractor and subcontractor overhead and profit percentages were detailed in the contract documents. Not only does this contract language establish overhead and profit percentages, it also indicates those items that will be considered as paid from the stated percentages.

### Exhibit A – Contract Excerpt Overhead and Profit

<b>§ 7.2.3 Overhead and Profit:</b> Ten percent (10%) of net increase of labor and material for work performed by the Contractor's own forces and five percent (5%) on net increase of subcontractor's work. Bonuses; sick leave; vacation and holiday pay; bookkeeping, clerical, estimating, superintendence, project management, or other items of indirect costs or overhead; shall be compensated for by payment of the overhead and profit percentages listed herein. Such allowance for the combined overhead and profit included in the total cost to the City shall be based on the following schedule:	
.1	For the Contractor, for Work performed by the Contractor's own forces, ten percent (10%) of the cost;
.2	For the Contractor, for Work performed by the Contractor's Subcontractor, five percent (5%) of the cost;
.3	For each Subcontractor's or Sub-subcontractor's Work performed by the Subcontractors or Sub-subcontractor's own forces, ten percent (10%) of the cost;
.4	For each Subcontractor, for Work performed by the Subcontractor's Sub-subcontractors, five percent (5%) of the amount due the Sub-subcontractor shall be added as the allowance for overhead and profit;
.5	DELETED;
.6	DELETED;
.7	In order to facilitate the review of quotations for extras or credits, all proposals shall be accompanied by a complete itemization of costs, including labor, materials, and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also, submitted in the same form under the Subcontractor's letterhead. Under no circumstance will a change involving more than one hundred dollars (\$100.00) be approved without such itemization;
.8	Payments for overhead and profit as stated above will be limited up to second tier subcontractors. Lower tier subcontractors shall not subcontract work to the Contractor or higher tier subcontractors; and
.9	All change order costs shall be submitted on the Change Order Form provided in the Contract Documents.

Source: BLE Contract 8: Parking Garage

City construction contracts do not generally establish acceptable methodologies for calculating labor burden and overhead rates, except for contracts referenced to federal cost standards. Labor costs for contractor and/or subcontractor work were often presented in total only, without breaking out base wage from fringe benefits and taxes. Guidance on calculating labor burden and other rates was not included in the contract language. Similarly, the basis for calculating contractor-owned equipment rental rates is not included in contracts or policies and procedures.

Change orders and change directives reviewed were not generally supported by detailed documentation. For example, labor costs were not always detailed to show rates for a given number of hours for specific classifications of employees. Without estimated hours and rates, construction managers are not able to verify the reasonableness of labor charges.

The contracts sampled contained language requiring access to the contractor's accounting records for auditing purposes, but it usually pertained to DBE purposes. Adding an audit clause to change orders will protect the City in cases of emergency change orders and will notify the contractor that change orders and work change directives will be subject to a higher level of scrutiny if necessary. Best practices indicate that municipalities should establish contract language giving the Owner's Representative the right to examine the records of the contractor, subcontractors and sub-subcontractors up to three years after final payment is made. Without specific policies and procedures, approval of change order pricing will be inconsistent and departments could negotiate change order pricing that is unfavorable to the City while not subject to audit.

The following Aviation examples highlight the need for consistency and the importance of outlining markup percentages in construction contracts:

- On a \$3.3 million change order (approved by City Council in February 2015) for the Checked Baggage In-Line System (CBIS), the contractor was allowed to add 10% to subcontractor costs for both overhead and profit. On earlier change orders, only a 5% profit was allowed. Limiting the prime contractor to a 5% markup on subcontractor work and 10% overhead and 5% profit on their own work would have resulted in a savings of \$194,040. Because the original contract (\$25.4 million approved by City Council in October 2012) did not specify change order overhead and profit percentages, the contractor was able to propose percentages that could be considered unfavorable to the City.
- On the Elevated Roadway Utilities contract (approved by City Council in January 2015), a \$27,600 change (authorized via email in March 2015 by the construction manager) was approved that included \$2,983 in "Project Management" costs, \$2,640 in labor and sales taxes of \$1,123 on \$960 of material charges. Project management costs are usually considered part of overhead and profit and could have been excluded. This change request did not separately identify subcontractor overhead and profit; however, the prime contractor added 15% to the subcontractor costs. The labor charges were not supported by detail identifying the number of hours, rate or classification of workers and it appears that sales tax was incorrectly extended on the subcontractor quote, resulting in an overpayment of sales tax of more than \$1,000.

**Recommendation 3A:** Determine what standard language should be included in construction contracts regarding the basis for pricing change orders, including maximum labor burden, overhead and profit percentages.

**Recommendation 3B:** Establish minimum documentation standards to be outlined in construction contracts for the various elements of change order costs such as labor, materials, equipment, subcontractor costs, fringe benefits, overhead and profit.

**Recommendation 3C:** Establish standard contract language regarding the right to examine pricing data on change orders and require that such language be included in construction contracts.

**Actions Taken:** As noted above, COCOP's sub-committee has been formed to address the recommendations.

**4. Change order pricing review guidance should be established for City-wide consistency.**

As noted earlier, City-wide change order policies and procedures do not exist, including guidance on the extent to which project and construction managers should scrutinize change order pricing. Without such guidance, the City risks paying more than prevailing wage rates on change orders; paying artificially inflated prices for materials, equipment and subcontract costs; and paying markups for profit and overhead that exceed typical industry rates.

Contract terms or other guidance do not exist that could be used to establish materiality when reviewing change orders or contingency spending. There was a wide variation in the level of detail required by each department to support change order pricing. While construction managers in one department (CATS) appeared to scrutinize supporting documentation for change orders valued at less than \$1,000, other construction managers approved change orders and contingency spending in excess of \$100,000 without much scrutiny. The following describes some of the lack of detailed supporting documentation by each element of cost:

- a. Labor – The City did not always require contractors to detail labor costs by job title, wage rate and hours. Contractors were also not generally required to provide a payroll register for work that was already performed prior to change order negotiation.

As an example, Change Order Contingency Request #36 (\$27,388 approved in May 2013, by an E&PM Project Manager) for the Charlotte Fire Department Headquarters contract (\$10.9 million approved by City Council in December 2011) included a line item for 105 hours of iron worker field wages at a rate of \$65 per hour (\$6,825). The hourly rate was not broken down further into a base wage rate, fringe benefits rate and overhead and profit. E&PM management

noted that the labor rate was reasonable based on comparison to an industry standard published rate that included material and equipment costs. E&PM management further explained that change orders are scrutinized by the Architect, the Project Manager (PM), and the Contracts division but not consistently documented. Because contractor change proposals equate to a non-competitive bid, leading practices require contractors to document and support actual costs as much as feasible. Without a detailed breakdown of proposed labor, equipment and material costs, PMs and auditors will be unable to compare actual costs to proposed costs and determine whether the contractor submitted accurate cost and pricing data. Although pricing for the above extra work was considered reasonable, sufficient itemization was not obtained for auditors to form an objective opinion on the accuracy of pricing data. It is also relevant to note that once more formal policies and procedures are developed, City management will likely establish materiality thresholds for the review of change order pricing data. The example noted above may not meet the eventual materiality thresholds.

- b. Labor burden – City-wide, construction contracts do not generally specify acceptable labor burden rates or provide guidance on how acceptable burden rates should be calculated. Labor burden includes employee benefits, social security tax, workmen’s compensation, unemployment taxes, and fringe benefits. For the sampled contracts, auditors found labor burden rates varied from 38% to 93% but noted that contracts did not specify what should be included in the labor burden calculation. NCDOT requires that contractors submit actual labor burden rates (up to 60%) but allows for a rate of 35% if the contractor is not able to verify its labor burden rate. Departments did not always require contractors and subcontractors to document labor burden calculations. It was often difficult to determine whether proposed wage rates included labor burden or were meant to be base wage rates only.

On the Charlotte Water Utilities Zone 3 Field Operations Center contract (\$5.0 million approved by City Council in May 2014), change order proposal #23 (\$3,971 approved in February 2015 by a Charlotte Water construction manager) included a line item for laborer at \$32.00 per hour. On a previous change order, laborers were proposed at \$22.96 per hour. It was not clear whether these rates intended to include fringe benefit costs and/or markup. The construction manager did not request or require detailed supporting documentation. Without such-detail, it is not possible to determine whether wage rates or fringe benefits amounts were reasonable for the work performed.

- c. Materials – Estimates should be supported by price quotations or invoices from material suppliers that are itemized with unit prices. Costs should reflect reductions available to the contractor due to trade discounts, credits and/or volume rebates. Material costs were not always supported by price quotations or actual invoices.

For example, on a change request for the Eastburn Storm Drain Improvement Project (approved by City Council for \$5.0 million in April 2011), an email quote was obtained for \$40 per linear foot for 8" SS PVC pipe. For 235 linear feet, this resulted in a cost of \$9,400 (approved via email by an E&PM construction manager in June 2013). Documentation provided to auditors did not include vendor invoices or quotes on vendor letterhead – only an email from the prime contractor. Documentation provided did not indicate that the quoted price per foot included installation costs as part of a standard NCDOT specification. According to E&PM management, the bid amount included installation costs and was determined to be reasonable by the construction manager based on comparison to a historical unit price database.

Best practice is to require change orders and extra work to be priced at actual cost plus reasonable overhead and profit margins. Contract language should require contractors to submit change order proposals with cost and pricing data which is accurate, complete and current. Agreeing to a unit price based on historical data may result in a reasonable price for extra work. However, without a breakdown of costs by labor and materials, auditors would be unable to compare proposed costs to actual costs to determine whether contractors submitted accurate, complete and current pricing data. One of the goals of the COCOP sub-committee will be to establish procedures that set materiality thresholds for the more detailed review of pricing data.

- d. Equipment – For force account work, NCDOT allows contractors hourly rental rates of 1/176 of the published monthly rate in the Rental Rate Blue Book for Construction Equipment ("Blue Book"), a comprehensive guide to cost recovery for construction equipment produced by EquipmentWatch. Rates listed in the book are intended as a guide to determine the amount an equipment owner should charge in order to recover equipment-related ownership and operating costs. NCDOT also allows contractors 100% of the operating cost per hour listed in the Blue Book to cover fuel, lubricants, repairs, servicing and other incidentals. For commercially rented equipment, NCDOT allows the contractor payment based on the approved invoice rate for the equipment. Auditors noted that equipment rental rates were generally not supported by invoices and that construction or project managers did not document any review performed to determine that rates agreed to published Blue Book rates.

For EJCDC force account work, contractors and subcontractors are not allowed to add markup percentages to transportation, travel and subsistence expenses; materials, supplies and equipment costs (including rentals); and sales, consumer and use taxes. Although not specifically stated in the guidance, it appears that the rationale for not including markup on these costs is that no additional overhead expenditure is being made by the contractor in supplying the equipment or paying the sales tax. While this requirement applies only to force account work, the rationale could be applied to negotiated prices as well. Similar guidance does not exist for vertical contracts (normally referenced to AIA standards). For the

sampled contracts, most departments accepted change proposals that included equipment costs and sales taxes in markup calculations.

- e. Bonds, warranties, and insurance – Best practices indicate that contracts should establish whether additional bonding, warranties, and insurance costs for change orders should be included as the cost of overhead or require proof the additional bonding was actually paid. In addition, leading practices suggest that markup percentages should not be applied to bond and insurance premiums.

On Change Order #3 for the Aviation Checked Baggage In-Line System contract, the markup on bond and insurance premiums totaled about \$15,000. Other City departments utilize change order forms that add the cost of bond and insurance premiums *after* markup is applied to all other costs.

**Recommendation:** Develop guidelines for contract managers regarding the level of scrutiny expected on change orders, and provide training as necessary to ensure that established guidelines and expectations are consistently followed.

**Actions Taken:** As noted above, COCOP's sub-committee has been formed to address the recommendations.

5. **City departments should utilize independent cost estimates (ICE) and records of negotiations (RON) to justify the reasonableness of change order pricing.**

According to the Federal Transit Administration (FTA), the independent cost estimate is a tool to assist in determining the reasonableness of the bid or proposal and is required for all procurements funded by the FTA regardless of dollar amount. The FTA requires that grantees "perform a cost or price analysis in connection with every procurement action, including contract modifications...the starting point for these cost/price analyses is an independent cost estimate (ICE) which is made before receiving bids or proposals."

Because the CATS Blue Line Extension is funded in part by the FTA, CATS has established policies and procedures related to independent cost estimates. According to CATS Change Control Procedure, the resident engineer will request an ICE if a change request is greater than \$10,000. This ICE is performed by a contracted third party. For change requests less than \$10,000, the resident engineer may complete the cost analysis.

Independent cost estimates do not necessarily have to be performed by third parties. Organizations not funded by the FTA require that a resident engineer or project manager develop an ICE before reviewing a contractor's change proposal. The ICE may be developed by the resident engineer, other in-house resources or by a design consultant. The ICE needs to be completed in sufficient detail to allow for comparison to the anticipated contractor proposal.

While other departments (besides CATS) utilized independent cost estimates at times, no other department has established formal policies or procedures requiring that an ICE be completed before review of contractor proposals. The risk of accepting an unreasonable change order proposal increases if an ICE is not performed.

Although ICE's were not performed for some contracts, department management indicated that engineers and construction managers reviewed change proposals as warranted. Auditors were not always successful in verifying that these reviews occurred, as only CATS has implemented an automated system (e-Builder) that assists in the documentation and retention of cost estimates and other construction procurement actions. Automated construction systems such as e-Builder serve as a repository for all project information and can create audit trails of all events that occur during a project. While the determination for the need of an automated system or the recommendation of any specific system was beyond the scope of this audit, the existence of e-Builder within CATS greatly increased the availability of supporting documentation.

The purpose of a Record of Negotiation (RON) is to clearly demonstrate that the contractor's proposal has been given a detailed review, that proper rates were used in determining the price and that the final price is fair and reasonable. RON's should include a comparison of proposed and negotiated cost with a clear description of the differences broken down by labor, equipment, material and final negotiated price. ICE differences should be discussed in the RON.

Except for CATS, detailed RON's were not prepared. However, construction managers noted that they retain similar information in email format. According to best practices, the RON should include:

- Changer order number and description
- Date and location of meetings
- Final resolution and justification
- Proposed cost and negotiated cost with clear description of differences
- Profit calculation and agreement

**Recommendation 5A:** Determine how independent cost estimates should be incorporated in change order policy, including policy or guidance on when an ICE should be utilized.

**Recommendation 5B:** Establish standards and expectations regarding records of negotiations, including when they should be required, what they should include and how they should be retained.

**Actions Taken:** As noted above, COCOP's sub-committee has been formed to address the recommendations.

November 19, 2008



**City of Charlotte**  
**Contracts Officers Community of Practice Charter**

**General Summary**

The Contracts Officers Community of Practice (COCOP) is a team of contracts and procurement representatives from various Key Business Units (KBU) established to guide the City organization in the acquisition of construction and construction related services; to ensure the City's process is legal, fair, consistent, open, transparent, complies with City policies and identifying city-wide best practices.

**Purpose**

The primary purpose of the COCOP is to provide a strategic linkage and vehicle for collaboration between individual KBU's. The COCOP will communicate regularly about best practices, standard processes and training across the City organization.

**Roles and Responsibilities**

The COCOP's roles and responsibilities will include:

- developing and recommending city-wide policies and strategies for acquisition of construction and construction related services
- develop, recommend and establish city-wide construction and construction related processes and standards; and
- carrying out training activities for their KBU's.

**Governance**

The COCOP will serve under the direction of and report to the Engineering & Property Management Key Business Executive. The Executive will appoint one individual to serve as convener of the COCOP. The convener will call and facilitate meetings and set agendas. The COCOP will establish its own governance rules for its internal operation. These rules will include, but are not limited to:

- Meeting procedures.
- The establishment and management of subcommittees and workgroups.



November 19, 2008

## **Membership**

The Engineering & Property Management Key Business Executive will serve as Executive Sponsor of the Team and report to the Assistant City Manager.

The City Attorney will select one or two representatives to serve as legal advisors.

Each Construction KBE will select one or two representatives to serve on the team for indefinite terms. Representatives should have the following abilities:

- To be strategy leaders for construction procurement issues.
- To readily access and advise their KBU leadership regarding strategies to address issues and challenges;
- To partner with the other KBUs to develop and recommend processes and strategies;
- Developing and considering best practices as related to procurement of construction and construction related services;
- To perform periodic procurement analysis specific to their KBU;
- To identify potential process improvements and innovations for recommendation to the COP, the Executive Sponsor and/or their KBU;
- To recognize contracting skills gaps in their KBU and work with management more strategically to fill the gaps through hiring, training, outsourcing, etc.;
- To provide training for City staff
- To understand the financial, morale, and organizational efficacy impacts of procurement strategies and practices.

Representatives are expected to serve terms of at least one year, and multi-year service is preferred. The Engineering & Property Management Key Business Executive or the KBE's may choose to select different representatives after each one-year term.

## **Leadership**

The individual appointed as convener by the Engineering & Property Management Key Business Executive will have the following responsibilities:

- Schedule and facilitate meetings;
- Plan the agendas for meetings, calling upon members for topics to be addressed.
- Arrange for meeting minutes to be kept and distributed.
- Report discussions, findings, and recommendations to the Engineering & Property Management Key Business Executive.

The Engineering & Property Management Key Business Executive will have the following responsibilities:

- Provide strategic leadership and direction of the COCOP
- Define project priorities for the COCOP
- To give full consideration to any recommendations of the Team as they relate to changes in policies, strategies and practices of the City that affect construction procurement.
- To communicate with the ACM regarding the work and recommendations of the Team.

November 19, 2008

The Assistant City Manager will have the following responsibilities:

- To communicate with the City Manager and Manager's Cabinet regarding the work and recommendations of the Team
- Act as a final authority for decisions that affect multiple KBUs .

## CITY OF CHARLOTTE

## AVIATION, CHARLOTTE AREA TRANSIT, CHARLOTTE WATER, ENGINEERING &amp; PROPERTY MANAGEMENT

January 27, 2016

TO: City of Charlotte Internal Audit

FROM: Brent Cagle, Interim Aviation Director

John Lewis, Charlotte Area Transit Director

Barry Gullet, Charlotte Water Director

Jeb Blackwell, Engineering &amp; Property Management Director

RE: Construction Departments' Response to Construction-Change Orders Audit Report

The four construction departments have reviewed and provided comments to Internal Audit regarding the Construction-Change Orders Audit Report. We acknowledge the need to manage change orders and contingency balances Citywide in a manner that promotes consistent practices. Throughout the development of the report's earliest drafts, the construction departments have worked with Internal Audit to explain our procedures and policies. While we accept the findings of the report and intend to work cooperatively to establish best Citywide practices in accordance with the report's recommendations, we seek to establish those practices keeping in mind the diverse nature of each department's construction activities and the federal, state and local policies and procedures that govern each type of construction activity.

Our primary focus is to work through the Contract Officers Community of Practices (COCOP) and selected construction management staff from each department to develop and implement the report recommendations. We seek to incorporate the recommendations into the Citywide Policy for Procurement of Design and Construction Services (EPM 1). Each department will be responsible for implementing all activities with the understanding that some activities, such as changing language within current and future construction contracts, will take time to complete. Additionally, federal and state regulations require compliance with appropriate granting authority, for example, the Charlotte Area Transit system has established processes mandated by the Federal Transit Administration for construction projects. One of the COCOP team's first priorities is to develop a plan and estimated date for incorporation of the recommendations.

Internal Audit recommended five (5) areas in the Construction- Change Orders Audit Report that need to be addressed by COCOP and its respective members. The proposed schedule below addresses anticipated timeframes for COCOP to develop best practices in the five (5) areas recommended by Internal Audit.

Internal Audit Recommendation	Anticipated Completion
Contingency – establishing and disclosure of balances	February 2016
Change order pricing, negotiations, pricing review, and independent cost estimates	April 2016
Consistent change order terms incorporated into contracts	May 2016