
SOUTH FLORIDA WATER MANAGEMENT DISTRICT



Audit of Construction Contract Management Practices

Report # 05-10

**Prepared by
Office of Inspector General**

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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September 7, 2005

Audit and Finance Committee Members:

Mr. Lennart Lindahl, Chairman
Mr. Michael Collins, Member
Ms Alice Carlson, Member
Mr. Malcolm Wade, Jr., Member

Re: Audit of Construction
Contracts,
Report No. 05-10

This audit was performed pursuant to the Inspector General's authority set forth in Chapter 20.055, F.S and is part of the approved audit plan. The overall audit objective focused on assessing whether construction contracts were properly administered subsequent to contract award. We concluded that, overall, District construction staff effectively managed contracts to ensure they were properly administered; however, we made several recommendations for improvements that will further strengthen the contract management process.

Sincerely,

John W. Williams, Esq.
Inspector General

Enclosure

c: Carol Wehle
Tom Olliff

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INTRODUCTION

In accordance with the Office of Inspector General's audit plan, we conducted an audit of construction management practices for monitoring contracts subsequent to contract execution.

BACKGROUND

The Engineering and Construction Department provides project planning and development, project management, environmental permitting, and professional engineering support for all District programs. This audit focused on the Construction Division (Construction), which is responsible for ensuring that District construction projects are completed within budgets and on schedule while achieving sufficient quality for long-term operation and maintenance. Construction is also responsible for the following:

- Monitoring construction to ensure that compliance is in accordance with engineering and architectural drawing and specifications
- Clarifying and interpreting contract requirements for contractors
- Negotiating and justifying change orders
- Reviewing and approving progress payments to contractors
- Certifying the substantial completion of projects

Construction can also authorize minor variations of the work required by the contract and reject defective work. In addition, Construction coordinates with the United States Army Corps of Engineers on their construction projects to achieve quality goals.

The Engineering and Construction Department has a total of 60 employees in full-time positions, 21 of which are assigned to Construction. Most of Construction's employees are classified as managers, engineers, and inspectors. During the period October 2003 to May 2005, twenty-seven construction projects valued at approximately \$114.3 million were completed. As of May 2005, there were 54 projects valued at

approximately \$97.7 million in progress. The Engineering and Construction Department operated under Water Resources during the period covered by the audit. In June 2005, this department was moved under Operations and Maintenance.

OBJECTIVE, SCOPE, AND METHODOLOGY

Our overall objective focused on assessing whether construction contracts were properly administered subsequent to awarding the contract. To accomplish our objectives, we judgmentally¹ selected a total of 10 contracts with an original contract price of over \$100 million. (See attached Appendix for a listing of the sampled contracts). Specific objectives were as follows:

- Determining whether construction progress was monitored via regular inspections and whether bi-weekly meetings with contractors were held.
- Assessing whether required supporting documentation was submitted along with Applications for Payment (invoices) and whether the invoices were properly authorized.
- Verifying whether change orders were executed timely and within the contract term.
- Assessing whether change orders were justified, properly authorized, and executed prior to paying contractors.
- Verifying that adequate documentation was maintained to substantiate the cost of the work resulting from the change orders.
- Evaluating whether the cost of work resulting from change orders was determined in accordance with the general conditions set forth in the contract agreements.

The scope of this audit covered contracts that were in progress as of January 2005. To conduct this audit, we reviewed construction contract documents, in particular

¹ A judgmental sample is a selection process based on the auditor's reasoning. We considered several factors before selecting our sample including the contract amounts, number of change orders, and contract status.

the General Conditions section of the contract, to gain an understanding of the contract requirements. Procurement and Construction staff members were interviewed to obtain an understanding of the contract administration process. We also determined whether Construction had written procedures in place. Additionally, we reviewed contract information maintained in Procurement's files and Construction's files. We also reviewed Expedition² to determine whether construction progress was adequately documented via site inspections and bi-weekly meetings with contractors.

For the 10 sampled contracts, we selected a sample of 55 payments and 34 change order items and performed the tests necessary to achieve our objectives. Change orders may be comprised of one or several items. Costs are itemized in those cases where change orders contain several items. We also interviewed project managers and other relevant staff to obtain explanations regarding various documents.

Our audit was conducted in accordance with Generally Accepted Government Auditing Standards.

² Expedition is the software used by Construction to document communication, contract information, logs such as daily reports and submittals, and requests and changes.

AUDIT RESULTS

Executive Summary

Overall, Construction has effectively managed contracts to ensure that they were properly administered in accordance with District policies and procedures as well as good business practices. However, we made several recommendations that will further strengthen the contract management process. We found that Construction generally complied with policies and procedures to ensure that contracts are properly administered in the following areas:

- Contract Payment Authorizations Forms were properly authorized
- Contractor's submitted affidavits and photographs documenting their project status with each monthly application for payment
- Change orders were justified and were properly authorized
- Retainage refunds to contractor were justified
- Final payments were made only after the close out procedures were completed

However, we made some recommendations for improvement in the following areas:

- Although site inspections were conducted on a regular basis there were a few instances where inspections were not performed and the reasons were not documented.
- Bi-weekly meetings were not always held as required.
- Of the 55 pay applications (invoices) sampled only 25 of the 55 applications contained some indication of review (e.g., tick marks and/or initials, by the project managers).
- There were three instances where contractors were paid more than the amount they were due for a specific month; however, these overpayments were identified and corrected in subsequent months.

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- One instance was identified where an \$11,463 early payment discount was not taken.
 - Out of 34 change orders reviewed, payments for two of these change orders were made to contractors before the change orders were approved.

Our review of documentation indicates that Construction diligently negotiates with contractors to obtain the best prices for change order work; however, we noted that a thorough understanding of the allowable fees outlined in the general conditions and a careful review of contractors' cost proposals could have resulted in even lower change order costs. Specifically, our review of selected change order items totaling \$6,490,402 associated with the sampled change orders identified potential savings of \$87,873 had Construction fully understood the general conditions relating to change orders. Applying this savings rate to contracts with change orders, that were either in the monitoring or closing-out status (as of January 2005), we estimated that \$125,494 may have been overpaid to contractors for change order work.

Retroactive change orders were processed for three of the ten contracts in our sample. Retroactive change orders were required because the contract term expired and punch list items and other requirements had not been fully completed. The delays were beyond the contractors' control; however, change orders should have been initiated and executed in a timely manner. Construction had already identified this issue and is actively implementing a solution to this problem.

We also noted that Construction does not have formal written procedures. Developing written procedures may address many of the issues discussed in this report.

Documenting Inspections and Bi-weekly Meetings

Overall, site inspections were conducted on a regular basis; however, there were instances where inspections were not performed and the reasons therefore were not documented. Based on discussions with Construction staff, “daily” site inspections are conducted anywhere from three to five times per week depending on the nature and the phase of the project. For each selected project, we reviewed inspections records for a three month period and concluded that inspections for 7 of 10 projects were conducted anywhere from three to five times per week. For the remaining three projects, there were gaps in the frequency of inspections and the reasons were not documented. These gaps were for periods greater than one week. Documenting the reasons why inspections were not performed could be very helpful in tracking contract delays.

Our review disclosed that bi-weekly meetings were not always held as required. Specifically, all bi-weekly meetings were held for only two of the ten projects reviewed and one to two meetings were not held for three projects. Three or more bi-weekly meetings were not held for the remaining five projects. In some instances, meetings were either scheduled but did not take place or were held every three weeks. Project managers are required to meet on a bi-weekly basis with contractors to discuss project status. To determine whether these meetings were held, we selected up to a one year period of each contract term and reviewed information maintained in contract files and Expedition. In some cases, the projects were in place for less than the one year period; thus, in these cases we examined the contract period.

In some cases there may have been valid reasons why meetings were not held; however, these reasons should have been documented. Construction staff explained that meetings may not have been held due to vacation schedules, scheduling difficulties with contractors, and delays caused by Hurricanes Jeanne and Francis. They also added that in many instances they communicate daily with contractors and bi-weekly meetings may not always be necessary. We believe that there are valid reasons for not holding meetings; however, these reasons should be documented.

Recommendation

- 1. Document the reasons why required site inspections and bi-weekly meeting are not held.**

Management Response: Agree – The documentation requirements for site inspections and biweekly meetings have been reviewed with all construction project managers and inspectors. A process has been implemented to ensure that documentation is complete and, when necessary, explains why some inspections or meetings for future projects are not necessary.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: Complete

Improving Controls over Payments to Contractors

Some payment requests lacked indication of review and, in a few instances, contractors were paid more than the amount they were due for a specific month; however, construction staff identified and corrected these overpayments in subsequent months. We also identified an instance where the District neglected to take an \$11,462 early payment discount. Further, as part of our audit we reviewed 34 change orders and found that payments for two of these change orders were made to contractors before the change orders were approved. The details are discussed below.

Project Manager Review of Payment Request Was Not Evident

Our review of 55 pay applications totaling over \$20 million disclosed that only 25 of the 55 applications contained some indication of review (e.g., tick marks and/or initials by the project managers). For the remaining 30 instances where there were no indications of review, we attempted to compare the invoices upon which payments were based to the “marked-up” copies approved by the site inspectors to verify some level of review, however; only one “marked-up” copy was maintained. Usually, the contractor submits the monthly invoice to the site inspector who reviews it to ensure the request reflects work actually completed. If there are discrepancies the site inspector reviews the request with the contractor’s personnel and submits the “marked-up” copy to the project manager. The project manager then compares the “marked-up” copy of the revised version submitted by the contractor to ensure it reflects all revisions.

The project managers explained that they review the invoices submitted by the contractors and the “marked-up” copies, however, the “marked-up” copies are usually discarded after their review. A Contract Payment Authorization Form is required before payment can be made and it must be approved by the project manager and may require additional authorizations depending on the payment amount. An indication of review on the invoice provides added assurance that the payment has been reviewed and justified.

Oversight Results in Overpayment

Our review of monthly pay requests and other supporting documentation disclosed three instances where contractors were paid more than the amount they were due for a specific month. We concluded that the payment documents were not reviewed very closely. These errors were corrected in subsequent months and therefore did not result in any financial loss to the District. These instances are described below.

- *Contract C-15345*: Although there was some indication that pay request #14 for this contract was reviewed, additional retainage of \$2,696 was not withheld as required.
- *Contract CN040431*: Pay request #7 requested payment of \$91,001; however, the Contract Payment Authorization Form shows that a payment of \$99,100 was made for this pay request. The overpayment appears to be due to improper accounting for stored materials.
- *Contract CE040084*: In accordance with the contract, retainage for pay requests #8 and #9 should have been increased by \$498.

Early Payment Discount Not Taken on Total Amount Paid

During our review of documentation relating to 55 payments, we identified one instance where a contractor agreed to forego 1% of the payment amount in order to receive the payment early. Specifically, in December 2003 a pay request for \$2,699,268, consisting of \$1,551,026 in work completed and \$1,148,242 in retainage refund, was submitted for contract CE-307. Construction approved payment in the amount of \$2,670,296 (current invoice amount of \$1,551,026 plus retainage refund of \$1,146,243 less 1% discount of \$26,973). A review of payment records maintained by Accounts Payable and discussion with Procurement staff revealed that Procurement revised the discount amount to reflect a discount based only on the invoice amount. As a result, the discount was mistakenly reduced by \$11,462 (from \$26,972 to \$15,510). The staff who made the change could not recall exactly why the change was made.

Payments for Change Order Work Paid Prior to Approval

As part of our audit we reviewed 34 change orders; 30 of which affected the original contract price. Our review disclosed that payments for two of the 30 change orders were made to contractors before the change orders were approved. These instances are described below.

- Contract CE040084 - Change Order 1: The contractor approved this change order on November 5, 2004, and Procurement approved it on November 15, 2004. However, a \$19,912 payment was made to the contractor on November 12, 2004.
- Contract CE-304 - Change Order 7: The contractor approved this change order on August 6, 2003, and Procurement approved it on August 21, 2003. However, a \$23,688 payment was made to the contractor on August 15, 2003.

Recommendations

2. **Require staff to initial the pay requests as an indication of their review and retain copies of the original marked-up invoices.**

Management Response: Agree – The requirements for pay request review have been reviewed with all construction project managers and inspectors. Invoice mark ups are being retained and construction project managers’ are initialing each page of the contractors’ pay requests.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: Complete

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- 3. Review pay requests and other relevant documentation to ensure that required retainage is withheld and payments are accurate.**

Management Response: Agree – The requirements for pay request review accompanied by all relevant documentation have been reviewed with all construction project managers and inspectors. A process will be developed to ensure that the required retainage is withheld and that all future payments are accurate.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: October 31, 2005

- 4. Consider recouping the \$11,462 early payment fee that was not deducted, since the contract has not been closed out. Further, ensure that staff is aware of the agreed upon amount to be used in determining an early payment discount.**

Management Response: Agree – We considered recouping the \$11,462, however, the contractor has provided final payment and surety release, thereby closing out their interest in the contract as of June 10, 2005. The District staff have closed out this contract and placed its documentation into storage. Procedures for calculation of early payment discounts will be established and placed on the Procurement website for reference by all District staff.

Responsible Departments: Procurement
Engineering & Construction / Construction Division

Estimated Completion Date: October 31, 2005

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5. **Ensure that payments associated with change order items are made only after the change order has been executed.**

Management Response: Agree – The requirements to ensure that change orders are fully executed prior to the inclusion of change order costs in pay requests will be reviewed with all construction project managers. A process will be implemented to ensure that pay requests do not contain premature payment for change orders.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: October 31, 2005

Better Understanding of Contract General Conditions Could Lower Change Order Costs

Construction file documentation demonstrates that Construction negotiates with contractors to obtain the best prices for change order work; however, lower change order cost could have been achieved if the project managers had thoroughly understood the allowable fees outlined in the contract's general conditions and consistently applied these general conditions when negotiating change orders. Specifically, our review of selected change order items identified potential savings of \$87,873 had Construction fully understood and applied the contract's general conditions relating to change orders. This represents about 1.35% of the \$6,490,402 worth of change orders contained in our sample. Extrapolating this savings to contracts in the monitoring or closing-out stage, as of January 2005, we estimated that the District could have saved approximately \$125,494³ by consistently applying the general conditions in negotiating change orders.

³ We determined that change orders totaled \$9,295,822 and applied our audited rate of overpayment of 1.35% to arrive at this amount. Further, we wanted to expand our projection; however, Construction did not have the required data readily available.

Change orders are executed to authorize additions, deletions, and/or revisions to the scope of work specified in a contract and can result in adjustments to the contract price and/or the contract period. The cost of work resulting from change orders can be determined by unit prices, mutually agreed lump sum, or cost of the work plus a fee for overhead and profit. Most of the change order items in our review were determined using the mutually agreed lump sum method; however, the general conditions criteria for the cost of the work plus a fee method was generally followed in negotiating the mutually agreed upon lump sum amount. The general conditions in each contract describe in detail the allowable and non-allowable costs and fees for cost of the work plus a fee type of change orders.

Based on our analyses and discussions with Construction staff, we concluded that many were not very familiar with the general conditions. As a result, the general conditions were inconsistently applied when negotiating the lump sum change order costs. Specifically, in instances where the contractor hires a subcontractor, the contractor's fee is limited to 5% of the amount paid to the subcontractor before adding profit and overhead. However, Construction staff was not aware of this requirement. As a result, contractors' fees were calculated based on the total amount paid to the subcontractor including profit and overhead.

We also found that fees were paid on the following non-allowable costs: sales tax; equipment and machinery used in the performance of the work; employee expenses, such as travel and meals; temporary facilities at the site; tools not consumed in the work; and special consultants, such as engineers and surveyors. The District will pay for these items; however, it will not pay a fee (mark-up) on these items. Our review disclosed that some staff were aware of some of these requirements and some were not. There were also instances where the incorrect fees were charged resulting in higher contractor fees in those instances where subcontractors were used and the subcontractors' cost included fees on exempt items. Some instances where lower change order cost could have been negotiated by properly applying the general conditions are described below:

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- Contract CE-307 - Change Order 7: The cost of work associated with this change order included \$19,927 for fees on equipment required to complete the work.
 - Contract CN040431 - Change Order 2: The contractor purchased materials costing \$295,692 and paid \$17,742 in sales taxes for the material. Our review disclosed that the District paid a 15% fee of \$2,661 on the sales tax.
 - Contract CE040082 - Change Order 4: Based on the subcontractor charge of \$3,400 for pesticide services, the contractor's cost should have been \$3,570 ($\$3,400 * 1.05\%$). However, the change order reflected a cost of \$4,000 – an overcharge of \$430 for these services.
 - Contract C-12566R1 - Change Order 2F: We noted that sales taxes of \$571.82 were included in an invoice; however, due to an oversight an additional 6% sales tax was assessed on the total invoice amount. Further, a 15% contractor's fee was determined using the new total cost, resulting in an overcharge of about \$800.

It is essential that all project managers thoroughly understand the allowable and non-allowable items upon which the fees may be applied since this could result in lower change order costs. For example, in one instance Construction requested a change order cost proposal for trucking material further away than anticipated. The contractor submitted a cost proposal for \$23,155 which Construction negotiated down to \$19,912. The contractor used a daily rate for the cost of the trucks required to haul the materials and added a 15% fee for the use of the trucks and included labor costs for personnel required for the job. Construction revised the proposal to reflect weekly trucking rates and excluded the cost for the extra personnel. However, it appears that the 15% fee for the trucks was not excluded in Construction's revision (a fee may not be charged on the cost of rental equipment in accordance with the general conditions). Based on our calculations, the total cost of this work should have been about \$15,500 — \$4,412 less than the price negotiated for the change order. Exclusion of the fees on the equipment

would have resulted in a lower price. During our audit, we discussed the above issues with Construction so that prompt action could be taken.

We also noted a few instances where adequate supporting documentation, such as invoices and subcontractor's estimates, were not maintained to support the cost of change order work.

Recommendations

- 6. Ensure that all Construction staff thoroughly understand the general conditions relating to the cost of work associated with change orders. Consider providing the Construction project managers with training regarding the proper application of the general conditions.**

Management Response: Agree – The requirements of the general conditions relating to the cost of work associated with change orders will be reviewed with all construction project managers. A process will be implemented to ensure that change orders meet these requirements. An appropriate training session will be conducted to include this and other recommendations of this report.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: October 31, 2005

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7. **Consider revising the change order worksheet to ensure that only allowable fees are included in contractors' cost proposals. For example,**
- **Separate the Materials and Equipment section into two sections. In the Equipment section, block out the fees column.**
 - **Specify in the Subcontractor Cost section that subcontractor's fees should be excluded when determining the contractor's fee.**

Management Response: Agree – The change order worksheet will be revised to ensure that only allowable fees are included in future cost proposals. The revised worksheet will be reviewed with all construction project managers and a process will be implemented to ensure that change orders are thoroughly documented.

Responsible Departments: Engineering & Construction / Construction Division
Procurement
Office of Counsel

Estimated Completion Date: October 31, 2005

8. **Remind staff to make sure that the cost of change order work is adequately documented.**

Management Response: Agree – The requirements to adequately document the cost of change orders will be reviewed with all construction project managers. A process will be implemented to ensure that change orders are adequately documented.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: October 31, 2005

Retroactive Change Orders

Our review disclosed that retroactive change orders were processed for three of the ten contracts examined in our sample. Retroactive change orders were required because the contract term expired and punch list items and other requirements were not fully completed. (Projects not completed by the contract end date could result in liquidated damages against the contractors.) These delays were beyond the contractors' control; however, change orders were not initiated and executed in a timely manner. As a result, contract extensions, ranging from 115 to 124 days, were approved for three contracts subsequent to the contract end date. Construction had already identified this problem and brought it to the District Leadership Team's attention. The issue was addressed by the District Leadership Team during March and April 2005 and Construction is taking appropriate action. The issue was also brought to the attention of the Audit and Finance Committee. Construction explained that there was a misunderstanding among its staff regarding the urgency of final change orders subsequent to substantial completion of a project. Construction has taken steps to ensure that contracts are actively monitored.

Recommendation

- 9. Continue to actively monitor contracts so that change orders are approved in a timely manner, thus, eliminating the need for retroactive time extensions.**

Management Response: Agree – Contracts are being actively monitored to ensure that change orders are approved in a timely manner. Contract progress is reviewed regularly with all construction project managers. A process has been implemented to update the status of all active contracts and includes: completion dates, costs, performance, pending changes, etc.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: September 30, 2005

Develop Written Procedures

Our review disclosed Construction did not have written procedures for monitoring contracts. Many of the issues cited in this report might have been avoided had there been formal procedures in place. Formal procedures document the steps (internal controls) management has developed to ensure that goals and objectives are achieved. Further, they provide personnel with a clear understanding of their responsibilities.

Recommendation

- 10. Develop written procedures for monitoring contracts to ensure goals and objectives are achieved.**

Management Response: Agree – Written procedures will be prepared to ensure that goals and objectives of construction contracts are achieved in accordance with District policies / procedures and in keeping with sound business practices. The written procedures will be reviewed with all construction project managers. A process will be implemented to ensure that future contracts are managed in accordance with these procedures.

Responsible Department: Engineering & Construction / Construction Division

Estimated Completion Date: January 31, 2006

Appendix

Listing of Sampled Contracts

Contract Number	Contract Title	Contractor
C12566R1	Pump Station S-7 & S-8 Pump and Suction Basin Rehabilitation	Gilbert Southern Corporation, Inc.
C-15345	KRR - Hidden Acres Estates	Coastal Marine Corporation, Inc.
CE 307	STA 3/4 Works	Shaw Environmental and Infrastructure, Inc.
CE040082	STA 3/4 PSTA Demonstration Project	L.J. Clark Construction
CN040431	S7/S8 Pimp Station Trash Rakes	Harry Pepper & Associates, Inc
CE040084	STA 5 Outlet Canal & G-402 D Culvert Replacement	Globetec Construction LLC
CE040783	G-311 Spillway & STA -1 Inflow & Distribution Channel	Murphy Construction Company
CN040105	C-4 Emergency Detention Basin Phase 2 – Pump Station G-422	Murphy Construction Company
C-E304	Inflow Pump Stations G370 & G372	Atlantic Skanska, Inc.
C-13582	Dupuis Shop Replacement	Ocean Gate General Contractors