

Management Review

of

Arrow Directional Boring, Inc. –
Contract 10171-A - Force Main
Replacement SW 4th Avenue
Directionally Drilled River Crossing

Report of Audit 05/06-XX-08

July 7, 2006



Office of Management and Budget

Internal Audit

MEMORANDUM NO. 06-48

DATE: July 7, 2006

TO: Director of Public Works/Albert Carbon

SUBJECT: *Management Review of Arrow Directional Boring, Inc.-
Contract 10171-A - Force Main Replacement SW 4th Avenue
Directionally Drilled River Crossing*

Enclosed is the “subject” Final Report of Audit.

Allyson C. Love
Director, Office of Management and Budget

Attachment - Final Report of Audit 05/06-XX-08

c: City Commission
City Manager/George Gretsas
Assistant City Manager/David Hebert
Assistant City Manager/Kathleen Gunn
Assistant City Manager/Stephen Scott
Director of Finance/Betty Burrell

ACL/vf

REPORT OF AUDIT NO. 05/06-XX-08

DATE: March 17, 2006

TO: Public Works Director/Albert Carbon

FROM: Assistant Internal Audit Director/Renee Foley/5851

BY: Financial Management Analyst/James Hamill

SUBJECT: *Review of Arrow Directional Boring, Inc. – Contract 10171-A - Force Main Replacement SW 4th Avenue Directionally Drilled River Crossing*

BACKGROUND

The City of Fort Lauderdale (City) contracted with CH2M Hill, Inc. to provide professional engineering services as Program Manager for the WaterWorks 2011 (WW2011) Capital Improvement Plan (CIP). CH2M Hill, Inc. coordinates engineering design and construction services for the WW2011 CIP Program, including assisting the City in the procurement process, establishing a master construction schedule, preparing monthly cash projections, monitoring monthly construction-related activities/expenditures, and performing community outreach in neighborhood areas affected by the construction projects.

On September 4, 2002, the City Commission authorized the City to enter into a contract with Arrow Directional Boring, Inc. (Arrow) (herein “Contractor”) for the construction of a sewer force main by means of horizontal directional drilling at three river crossings. The original contract value of \$1,603,404 was amended by Change Orders 1, 2 and 3, which increased the total project costs to \$1,870,224.

The City designated an Assistant City Engineer to act as the City’s Program Manager responsible for oversight of WW2011 construction projects and the consultant, CH2M Hill, Inc.

SCOPE

The overall objective of our review was to determine if the Contractor, Arrow, complied in all material respects with the terms and conditions of Contract 10171-A and if CH2M Hill, in their role as Program Manager, provided effective oversight. The audit included a review to determine: 1) accuracy and appropriateness of payments made to the Contractor and whether proper

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procedures/internal controls were in place to protect the City's assets 2) authorizations/approvals of payment requests/progress draws were dated and signed by the proper officials; 3) the adequacy of the Contractor's Surety Bond; and 4) whether the project was completed timely. If not, were liquidated damages assessed and objective support maintained. We reviewed documents and transactions from October 2002 through November 2005. The review was performed during the months of February and March 2006 and was performed according to generally accepted government auditing standards.

OVERALL EVALUATION

Our review revealed CH2M Hill's management oversight and internal controls over the administration of this contract were inadequate and need to be strengthened. We found the Contractor was not held accountable to contractual terms and conditions and Program staff were not sufficiently aware of the payment provisions of the contract and Blue Book. Contractor progress draws were paid without complete approvals and all payment criteria satisfied. Liquidated damages were not assessed even though the project was completed well beyond the scheduled completion date. Furthermore, surety bond coverage was not increased to reflect the escalating value of the contract.

FINDING 1

The City did not assess Arrow liquidated damages totaling \$851,000 for not completing the project timely.

Contract 10171-A Special Conditions 5-15/5-16 Liquidated Damages states, "Revise 5-15 and 5-16 to increase liquidated damages to \$500.00 for each and every day of the first 30-day period and \$1,000.00 for each and every day thereafter which may exceed the stipulated time for project completion."

The project was substantially completed on October 22, 2005, which was 866 calendar days after the scheduled final completion date of June 9, 2003. Liquidated damages were not pursued for non-completion of work within the stipulated timeframe.

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Period	Period beyond Completion Deadline	Days	Daily Rate	Amount
1 st 30 days	6/10/03- 7/09/03	30	\$ 500	\$ 15,000
Each day thereafter	7/10/03-10/22/05	836	\$1,000	836,000
Total		866		\$851,000

CH2M Hill's PMT did not enforce the provision to assess liquidated damages once the project was known to be delayed. Furthermore, the Manager of Finance and Controls does not have a detailed cost analysis to support the liquidated damages amounts indicated in the contract.

Assessment of liquidated damages is a preventive tool to minimize project delays or otherwise provide compensatory relief to the City when projects are not completed timely; on-time completion of individual projects will assist the PMT in completing all CIPs in time for the 100th Anniversary of the City, a key program objective of the WW 2011 CIP initiative.

RECOMMENDATIONS AND MANAGEMENT COMMENTS

The *City's Program Manager* should:

Recommendation 1. *In conjunction with CH2M Hill's Program Construction Manager, require contractors to comply with agreed contractual terms and conditions and proactively pursue liquidated damages when contractors fail to meet scheduled project completion dates.*

Management Comment. *Management concurred with the recommendation and stated:* "Management agrees that in the normal course of business, the PMT needs to be diligent in its enforcement of the contractual liquidated damages clause. To that end, we are adopting a policy of officially notifying the Contractor in writing at the point the contract completion date has passed that he may be liable for liquidated damages." **Estimated Completion date October 1, 2006.**

Recommendation 2. *Require the CH2M Hill Manager of Finance and Controls to follow-through on their stated intention to add the revised liquidated damage calculation to the standard contract language to ascertain the amount charged for liquidated damages would be defensible in the event of a court challenge. Review/update annually the cost analysis supporting the contractual liquidated*

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damages amounts to assure it continues to reflect expected losses from contractor delays.

Management Comment. *Management concurred with the finding and recommendation and stated:* “Standard Condition 5-15/16 Liquidated Damages was revised to increase liquidated damages to \$1,000 for each and every day of the first 30-day period and \$1,500 for each and every day thereafter based on the methodology developed by the PMT. The methodology will be reviewed on an as needed basis.” **This item is closed.**

FINDING 2

Contractual requirements regarding payment of Contractor progress draws were not complied with resulting in \$1,039,674 or 83% of line items paid before all contractual conditions necessary for payment were completely satisfied.

According to Contract 10171A, Section 010225 “Measurement and Payment” terms, the following requirements must be satisfied before a line item on a progress draw can be approved.

<i>Line Item</i>	<i>Description</i>	<i>Payment Requirement</i>
<i>1</i>	<i>Mobilization Demobilization</i>	<i>60% following initiation of construction and 40% following substantial completion of the project.</i>
<i>3, 7 & 11</i>	<i>Directionally Drilled Pipe Installations</i>	<i>Payment for this item will be made on a lump sum basis at the substantial completion of the pipe installation following successful testing.</i>
<i>14</i>	<i>Trench Safety</i>	<i>Payment under this item will be made monthly in a manner corresponding to the total number of feet of pipe installed during that period.</i>

Our analysis revealed line items were paid before the condition(s) for payment were satisfied, such as substantial completion of the work and/or before required testing was completed and documented in the project files as follows.

Line Item	Amounts Paid Out of Compliance	%	Condition Found
1	\$ 38,000	3.0%	Paid before the project was substantially completed
3	355,566	28.3%	Paid before testing was completed
7	307,458	24.5%	“
11	335,950	26.8%	“
14	2,700	0.2%	Paid in full before all the pipe was installed
Totals	\$1,039,674	82.8%	

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The approvers in the Contractor payment process are not sufficiently knowledgeable of the actual payment requirements in the contract that vary by line item since progress draws were consistently approved before all conditions were met.

Verification that payment requirements have been fully satisfied will prevent the premature issuance of payments before substantial completion of the work and before positive test results are properly documented in the project files. This is acutely relevant for sewer pipe installations because the dollars required to remediate subsurface work can be cost prohibitive.

RECOMMENDATION 3

The City's Program Manager should require CH2M Hill's Program Construction Manager to direct the Project Construction Managers to reject all Payment Requests for line items billed prematurely by performing a thorough verification to ensure all contractual requirements have been completely satisfied.

MANAGEMENT COMMENT

Management concurred with the finding and recommendation and stated: "We concur with Finding 2, that payment was made under certain items before all of the contractual requirements were realized, namely testing of the pipe. The PMT has taken steps to structure our current contracts (contracts after the initial Immediate Action Plan [IAP] projects) in such a manner as to both fairly compensate the Contractor for partial completion of contractual obligations as well as to assure the PMT that testing and restoration have been completed prior to full payment. The change in structure to these contracts was based in part on prior City of Fort Lauderdale Internal Audit findings during Audit 02/03-XX-12 for the Miami Road Project." **This item is closed.**

FINDING 3

Internal controls were inadequate to detect whether required approvals were obtained prior to the issuance of payments to the Contractor.

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According to CH2M Hill's Contractor Payment Process, the following approvers are required to date and sign the Contractor Payment Request Receipt & Approval/Rejection Form:

- *Project Inspector*
- *Design Engineer*
- *Construction Project Manager*
- *Program Construction Manager*
- *Internal Control Analyst*
- *City Program Manager*

19 of 60 (31.7%) required approvals were not evidenced or incomplete for 10 progress draws paid during February 2003 through November 2005 as follows.

Condition	Number of Observations	Percentage
In Compliance (dated and signed)	41	68.3%
Not in Compliance (not dated or signed)	10	16.7%
Partial Compliance (signed, but not dated)	3	5.0%
Partial Compliance (dated, but not signed)	6	10.0%
Not Fully in Compliance Subtotal	19	31.7%
Grand Totals	60	100.0%

The Internal Control Analyst's review of final approvals was not adequate to detect the errant conditions noted above.

Properly documented authorizations reduce the risk of paying the Contractor for substandard work that may have to be corrected before the system can be placed into service.

RECOMMENDATION 4

The City's Program Manager should require CH2M Hill's Manager of Finance and Controls to require the Internal Control Analyst to perform a final comprehensive review of the Contractor Payment Request Receipt & Approval/Rejection form to verify all required approvals are evidenced before payment request is forwarded to Accounts Payable to process for payment (Sample Attached).

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MANAGEMENT COMMENT

Management nonconcurred with the finding and recommendation and stated: “The City’s Program Manager will require CH2M Hill to perform a comprehensive review of all contractor payment requests for complete signature and approval requirements. The Program does recognize the importance of the Contractor Payment Request Receipt & Approval / Rejection form. To the best of our knowledge, our records (from PMT Document Control) indicate that of the 10 Pay Applications for the Project, 3 of 60 (5%) of the required signatures (not dated or signed) were missing from the Contractor Payment Request Receipt & Approval/Rejection form. There were no instances (0) where signature lines were dated and not signed. As described in our response to Finding #3, Audit 0304-XX-01 (Progresso “A” Audit), the Contractor Payment Request Receipt & Approval / Rejection form is not the document on which official approval signatures are located. The official Progress Draw is the document that is officially approved for payment via authorized signature. The Approval/Rejection form is an internal document and is not forwarded to the City with the Official Pay Application. Implementation: Immediately.” **This item is closed.**

FINDING 4

The Contractor’s Surety Bond was not increased to include Change Orders 1 through 3 totaling \$266,820 above the original contract value.

According to Contract 10171-A, Section IB-3 Surety Bond states, “The successful bidder shall furnish bond written by a Corporate Surety company,in an amount equal to the total amount payable by the terms of the contract.”

According to CH2M Hill’s Manager of Finance and Controls, “Typically, the Surety Bond gets increased with the change order to the new value of the contract and we pay for that as part of the change order.”

The Surety Bond was for the original contract amount totaling \$1,603,404. The Surety Bond was not amended/increased for this project to \$1,870,224, the total contract amount including change orders.

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Project 10171-A	
Original Contract Amount	\$ 1,603,404.00
Change Order 1	101,830.19
Change Order 2	77,900.00
Change Order 3	87,090.00
Total Change Orders 1-3	266,820.19
Total	\$ 1,870,224.19

The WW2011 PMT does not have proper monitoring systems and controls in place to assure Surety Bonds are increased as a result of change orders, which add to the total project costs/contract value.

If the Surety Bond is not adjusted to reflect the total contract value inclusive of change orders, the City may have unnecessary exposure and incur underinsured losses.

RECOMMENDATION 5

The City’s Program Manager should require CH2M Hill’s Manager of Finance and Controls to establish and develop a system of controls to monitor the adequacy of Surety Bond insurance relative to contractual Change Orders, which increase the contract value.

MANAGEMENT COMMENT

Management concurred in principle with the recommendation and stated: “The City’s Program Manager will require CH2M Hill to review the adequacy of Surety bond insurance relative to contractual Change Orders. In addition City’s Program Manager will consult with the City’s Risk Management Division and City Attorney in order to determine a Contractor’s obligation with respect to maintenance of surety over the life of a Contract. The City’s Program Manager will also determine possible consequences of a contract default after a portion of the work has been completed.

Example:

Orig. Contract	\$2,000,000
Change Order 1	250,000
Amended Contract Amount	\$2,250,000
Work completed prior to default	500,000
Balance to complete at default	\$1,750,000
Original Bond Amount	\$2,000,000

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As noted in the above reference, the amount of project completion normally exceeds the change order amount. Except on an exception basis, monitoring surety amounts would far exceed the benefit. Confirmation this position will be part of CH2M Hill's review and discussions with the City Risk Management Division and City Attorney." **Estimated completion date January 31, 2007.**

FINDING 5

The PMT inappropriately processed Change Order 1 of the contract to authorize payment for a \$20,000 material restocking fee for a supplier to the main Contractor on the project.

According to Contract 10171-A, Article 1.6A, paragraph 5 of the Measurement and Payment Section: Payment will not be made for "Material not unloaded from transporting vehicle."

According to the City's Blue Book, Article 5-34: "...Nothing in Contract Documents shall create any contractual relationship between Owner or City Engineer and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner or City Engineer to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law."

The Contractor placed an order with Ferguson Waterworks for pipe, valves, and fittings with American Iron and Pipe Company (AIPC). The scope of the work was changed at the request of Arrow; consequently, the material requirements for the project also changed. According to a letter from AIPC to Ferguson Waterworks dated June 23, 2003, "...all of the materials on your purchase order have been manufactured and are waiting shipment to the job site. All of these materials are made to order and are not considered stockable items. American's standard policy for cancellation of non-stockable materials is 100% of the product value." Initially, \$27,974.05 was requested as a restocking fee, which was later reduced to \$20,000 even and paid as a round dollar amount without detailed support.

The PMT authorized the payment of the restocking fee without verifying whether it was a reimbursable amount according to the terms and conditions of the original contract and authorized by the Blue Book. The PMT thought the restocking fee became an allowable cost because the City Engineer amended it into the contract

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through Change Order 1. However, the former City Engineer who approved the Change Order may not have been aware of pertinent language in the Blue Book and the contract to make an informed decision consistent with the payment provisions of these controlling documents.

Verification of the eligibility and accuracy of invoices prior to payment are in accordance with the contract and provisions of the Blue Book will prevent payment of inappropriate expenditures thereby reducing total project costs for the WW2011 program and increasing City savings.

RECOMMENDATIONS AND MANAGEMENT COMMENTS

Recommendation 6. *The City's Program Manager and CH2M Hill's Manager of Finance and Controls should thoroughly review the general provisions of the Blue Book pertaining to contract administration and provide training to the Program and Project Construction Managers. The training should focus on significant administrative provisions of the Blue Book and each Project Construction Manager should have a contract specific list of ineligible items/amounts, which should be referred to when change orders and progress draws are being reviewed for approval. Amounts billed or requests for change orders not authorized in the contract should be immediately rejected.*

Recommendation 7. *If restocking fees are permitted in a future contract, they should be limited to a specified lower percentage (10-20%) and included with the standard language in the contract. Restocking fees should only be authorized for payment if the City has a direct relationship with the vendor/supplier.*

Management Comment. *Management nonconcurred with the finding and recommendations 6 and 7 and stated: "The duration of the project was for 6 months and typical material fabrication and delivery takes about 12 weeks (3 months). In this case, the materials were scheduled to be used near the end of the project. During construction, there was a City requested (not initiated by Arrow) design change at the intersection of 2nd Street, causing changes with the purchased materials. The materials purchased by Arrow could not be used in the redesign. The City had the option of either to take the materials or have them sent back for restocking. The PMT negotiated with Arrow to have the materials returned to the supplier for re-stocking and a restocking fee was negotiated and added to the Contract via Change Order #1. This restocking fee was a real cost to the Contractor as a result of the aforementioned City requested design change. With respect to the*

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Contract and Blue Book language referenced in Finding 5, Contract 10171A, Article 106 A (5) relates to payment for delivered materials and does not relate to the restocking issue. Similarly, the Blue Book Article 5-34 reference also does not relate to the issue of restocking - restocking costs were negotiated and paid to Arrow as the prime contractor that incurred the cost. With specific reference to Finding #5 that the PMT inappropriately processed Change Order #1. As described in the documentation given to the Auditor, the restocking fee was one of the negotiated amounts between Arrow Directional Boring, Inc. and the City of Fort Lauderdale included in Change Order #1, and as such, constituted a change to the Contract itself. This is industry standard construction administrative action approved by both parties to the contract (i.e., the City Commission and the Contractor).” **This item is closed.**

ADDITIONAL MANAGEMENT COMMENTS

FINDING 1

“We do not concur with the implication of Finding 1. The Auditor states that: “liquidated damages were not pursued for non-completion of work within the stipulated timeframe.” The issues surrounding this contract were complicated and contentious. The contract was subsequently litigated and while some issues were settled, a partial claim is still pending. Therefore, PMT Management did not believe that it would serve a beneficial purpose to send a formal notice on liquidated damages. However, liquidated damages were under consideration in the settlement of the first two elements of the claim (Pipe length and restoration). As a specific intent of the negotiation strategy with the contractor concerning differing site conditions, the PMT did not pursue the assessment of liquidated damages against the contractor. The contractor filed a lawsuit against the City for differing site conditions. Payment #10 on the Contract was issued on the basis of a settlement agreement (included as part of Change Order #3) between the City and Arrow, which included the roadway restoration and the extra pipe length, but to date, the differing site conditions claim has not been resolved. Arrow refused to incorporate a time extension as part of Change Order #3. Final settlement of the lawsuit/claim will establish the final completion date for the Project. We expect that Arrow will resubmit their claim for differing site conditions.”

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EVALUATION OF MANAGEMENT COMMENTS

Management comments provided and actions taken and/or planned are considered responsive with the exception of recommendations 4 and 6. Internal Audit firmly believes the following could be accomplished for these recommendations:

Recommendation 4. A properly completed approval/rejection form should also be required before a contractor's draw is approved for payment. The project inspector, internal control analyst, design engineer and program construction manager all bring unique perspectives to the approval process; and collectively, result in a higher quality review/approval process.

Recommendation 6. The PMT's argument does not represent sound logic because the restocking fee would not have been eligible for reimbursement if the City Engineer who approved the Change Order was aware of the pertinent blue book and specific contract language regarding authorized payments.

Contract Name:

Project:
Invoice Number:

10171A

Date Received	Date Returned / Rejected	Date Approved	Comments (if returned /rejected state reason)	
			Approved:	
			Print Name:	
			Approved:	
			Print Name:	
			Approved:	
			Print Name:	
			Approved:	
			Print Name:	
Internal Control Analyst Use Only:			<u>Comments</u>	
<u>Date Received</u>	<u>Date returned to Project Inspector</u>	<u>Date Sent to City Program Manager</u>		
			Approved:	
Document Control Unit Use Only:				
<u>Date Received</u>	<u>Date Sent to City</u>	<u>Date sent to PCS</u>	<u>Date Returned by PCS</u>	

SAMPLE

SAMPLE