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FORENSIC CONSULTING SERVICES REPORT

Town of Trumbull, Connecticut
Water Pollution Control Authority
WPCA Sanitary Sewer Project
(Phase IV, Part B, Contract No. 3)

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I. Assignment

The Town of Trumbull (the "Town") engaged CCR LLP ("CCR") to perform the following services:

- Perform forensic accounting procedures as necessary to identify and quantify any and all abnormal contractual or financial activity, past or present, relating to the execution of the Water Pollution Control Authority (WPCA) Sanitary Sewer Project (Phase IV, Part B, Contract No. 3) which took place from May 2007 through December 2009.

- Following the completion of the audit, CCR shall issue a written report communicating all discovered abnormal activity, past or present, its quantification, cause and consequence. The report will be in sufficient detail to enable the Town to collect any potentially recoverable losses. In addition to the written report, CCR will orally report its findings to the First Selectman and WPCA and advise and recommend to the WPCA appropriate actions to prevent future abnormal activities relating to forthcoming contracts of similar nature.

CCR LLP has subcontracted the Beta Group, Inc. ("Beta") for the technical engineering and construction expertise required for this engagement. References made in this report to CCR/Beta are referring to the collaborative work done in this assignment by both CCR and Beta.

The scope of the engagement was expanded to include one day of time to perform site inspections on the work being performed on the current sewer construction contract (Contract 4) to better understand the procedures that might have been employed during the construction of Contract 3 and to assist in making recommendations regarding future sewer construction contracts.

II. Background

Sewer Program Overview

In 1964, an engineering and architectural firm, was hired by the newly established Sewer Commission to design a complete sewer system for the Town of Trumbull. The design study was necessary, as sanitary sewers did not exist within the town at that time. All sewage was disposed by individual means such as septic tanks and leaching fields. Due to growing population densities in some areas and poor soil conditions in areas the town was experiencing many difficulties with failing individual sewage systems.

It was also decided that Trumbull would discharge their sewage to Bridgeport because Trumbull does not have a sewage treatment plant. Bridgeport had an extensive sewage system with available capacity to accept sewage from Trumbull. This "regional" hook-up between Trumbull and Bridgeport was thought to be advantageous to both communities. Trumbull's first sewer construction was completed in 1973 and provided sanitary sewer service to neighborhoods in the Main Street, Church Hill Road/White Plains Road sections with extensions that enabled sewers to service all of the commercial and industrial zones.

Topography is a prime consideration with the system's design. It is to the advantage of the Town to have gravity flow within the system wherever possible. Gravity flow is much less costly and troublesome. However, complete gravity flow is not possible or economically feasible. For this reason 12 pump stations are used in Town.

The name of the Sewer Commission was officially changed to the Water Pollution Control Authority (WPCA). The Authority is self-funded and employs an Assistant WPCA Administrator and maintenance personnel.

In 1992, the town set out to develop a long term plan for the design and construction of sanitary sewers in the un-sewered sections of the Town. Public Information sessions were held to discuss the issues concerning the cost to design sanitary sewers for the balance of the town. The design cost was approximated at nearly $2 million. The construction costs were estimated to be approximately $40 million. In developing this plan, the following factors were considered at that time:

- Cost of construction
- Cost of bonding
- Cost of the engineering work
- Demographics
- Environmental quality
- Cost of septic repair
- Availability of Bridgeport's treatment plant
- Ability of the taxpayers to pay
- Federal grants
- Alternatives

The Town of Trumbull's Board of Finance and Town Council approved bond appropriations in the 1990's, funding the design of sanitary sewers expansion in five contract areas. More detail on this to follow in this report. This sewer expansion project has been labeled Phase IV-Part B. It was considered a near certainty that sanitary sewers would be installed in all five areas, as public investment and demand was high.

The Town of Trumbull's Water Pollution Control Authority approved an agenda with each project scheduled for construction in a specific order. Contract 1, also known as the "Canoe Brook Lake Project," was completed in 2005 and provided sewer service for 375 residents. Construction of

Contract 2, also labeled the "Half Acre Zone" was started in November 2005 and was complete by the end of 2006 and provided sewer service for 298 residents.

Contract 3 or the "Jog Hill Project" was to incorporate 556 houses. Construction was estimated to take two years and was scheduled to begin after the completion of the Half Acre Zone, in early 2007. Contract 4, or the "North Nichols Project" was to incorporate 837 houses. Construction under Contract 4 was estimated to take three years and would be scheduled after completion of the Jog Hill Project, originally estimated to be in 2009. Contract 5 or the "South Nichols Project" was to incorporate 376 houses. Construction was estimated to take one year. Final contact construction was scheduled for after completion of North Nichols.

As you will note, Contract No. 3 is the subject of the Forensic audit that was performed. It is the background listed above that lead to the Town seeking design engineering services (which were ultimately provided to the town by Spath-Bjorklund Associates, Inc. ("Spath")) and lead to the town seeking construction services (which were ultimately provided by Mark IV Construction Company, Inc. ("Mark IV" or "Contractor")) related to the sewer expansion contract. The process of procurement of each these services will be discussed in greater detail later in this report.

Town Officials and Employees

The following is a list of individuals who served in some capacity with either the Town or the WPCA at various points in time during the long-term planning phase, design phase or construction phase of the sewer expansion project.

1. Raymond G. Baldwin, Jr. - First Selectman *(December 2001-December 2009)*
2. Timothy M. Herbst - First Selectman *(December 2009-present)*
3. Lynn Heim - Director of Finance *(2004-2009)*
4. John Ponzio - Town Treasurer *(2009-present)*
5. Robert Chimini - Town Purchasing Agent *(August 1999 to present)*
6. James Henderson - Financial/Accounting Controls Analyst *(March 2010 to present)*
7. John DelVecchio - Director of Public Works *(2005-2010)*
8. John Marsillio - Director of Public Works *(2010-present)*
9. Paul Kallmeyer - Assistant Town Engineer (*July 1970 to June 1982*)
   Director of Public Works *(July 1982 to March 1988 (resigned))*
   WPCA Sewer Administrator (*1981 – 1984)*
   Director of Public Works Director (*December 1989 to July 2005 (retired))*
   Appointed to the WPCA commission (Vice Chairman) *(April 23, 2009 – present)*
10. Leonard Provenzano - Deputy Director of Public Works *(June 1992 to October 2005)*
11. Stephen Savarese -Town Engineer *(June 2007 to present)*
12. Claire Jon Garard - Sewer Inspector *(May 2002 to present)*
13. John MacKenzie - Sewer Inspector *(October 2009 to present)*
14. Joseph Solemene - Pump Station Mechanic *(1989 to March 1994)*;
    Assistant WPCA Administrator *(March 1994 to present)*
15. George Biagoni - WPCA Chairman *(December 2006 to January 2010 (resigned))*

16. Jeanine Lynch - WPCA Chairman *(2010-present)*
17. Donald Aiello - WPCA Member *(December 2003 to December 2008)*
18. Jack Goncalves - WPCA Member *(December 2005 to December 2010)*
19. Laura Pulie - WPCA Commissioner *(2010 to present)*
20. Ennio DeVita - WPCA Commissioner *(2010 to present)*
21. Neil Lieberthal - Former Town Attorney assigned to the WPCA

Town Charter and Code of Ethics

The Town of Trumbull has a Town Charter which was effective November 3, 1981 and an updated one effective November 4, 2003. The Charter contains various items relating to the various branches of the Town, budgeting and bonding as well as other items. The Charter also contains policies relating to purchasing, contracts and expenditures.

The Town of Trumbull also has a Code of Ethics which was approved on November 22, 1989. It contains, among other things, policies related to Conflicts of Interest, Employment Incompatible with Town Duties and Gifts, Gratuities and Favors.

III. Procedures Performed

The following is a list of the most significant procedures performed in conducting this forensic audit. Section IV outlines procedures that were not performed, but could be performed at the request of the Town or the WPCA.

Interviews

Interviews were conducted with the following individuals to obtain an understanding of the history of the Town, the WPCA, the sewer expansion project, the Town's purchasing policies, the level of oversight and supervision of the design engineers and of the construction contractor, including a determination of what controls were in place during Contract 3 and the effectiveness of those controls:

1. Laura Pulie
2. Ennio DeVita
3. George Biagoni
4. John Poizio
5. Robert Chimini
6. Timothy Herbst
7. John Marsillio
8. Clair Jon Garard
9. Joseph Solomene
10. Stephen Savarese
11. Paul Kallmeyer
12. Raymond Baldwin, Jr.
13. James Henderson

It should be noted that we requested an interview with John DelVecchio since he was the Director of Public Works from 2005-2010, during which Contract No. 3 was bid, awarded and the work

performed. Although we offered several dates and times, including weekends and an option for a telephone interview, he was still not available to be interviewed.

Documents reviewed

We reviewed a number of documents and drawings provided by the Town. The following is a partial list of what was reviewed:

1. Minutes of WPCA board meetings
2. Sanitary Sewer Project - Phase IV, Part B, Contract 3 Original Bids, RFP, and Award of Bid
3. Application and Certificate for Payments (through Pay App 27) and additional billings from Mark IV (Contract 3)
4. Spath-Bjorklund Associates Reports, correspondence and documentation
5. Various correspondence and email correspondence related to Contract 3
6. Various Design drawings related to Contract 3
7. Invoices and Purchase Orders related to Spath billing for engineering services from October 2001 through October 2009.
8. Selected documents and drawings were reviewed relative to Contract 4.

Site Visit

A site inspection of the streets included in Contract 3 was driven to determine traffic flow, geography and topography to assist in understanding issues relative to the design and construction of Contract 3.

Scope Expansion

A day was spent with the town inspectors, Clair Jon Garard and John MacKenzie, performing a site inspection of two main line crews and two service connection crews that were working on Contract 4 in order to determine construction methods being employed on Contract 4.

IV. Procedures Not Performed

The procedures performed were not intended to be all encompassing and were limited to the procedures outlined in Section I above. We have not performed any of the following procedures with respect to Contract No. 3:

1. On-site inspections such as manhole inspections, internal inspections or pipe inspections.
2. Review any internal CCTV (Closed Circuit TV) documentation.
3. Confirm quantities by taking measurements of completed facilities.
4. Perform quantity “take-offs” using design documents to verify quantities as outlined in the drawings or as outlined in “As-builts.”

5. Interview any individuals from Spath-Bjorklund Associates, Inc., the project design engineering firm.
6. Interview any individuals from Mark IV Construction Company, Inc., the construction company for Contract No. 3 and Contract No. 4.

Also, we have not performed any procedures related to Contract No. 4 other than the one day of on-site field inspections and review of selected contract documents as noted above.

V. Findings

Our major categories of findings can be summarized as follows with additional details outlined in the remainder of this report.

- Town Purchasing Policies were not always adhered to with respect to both the Engineering Design Contract extensions and the construction contract extension.
- The Town policies and procedures for reviewing construction contracts did not analyze bids in a sufficient level of detail to adequately compare the various bid alternatives.
- Generalized engineering design lacked specificity in a number of areas due to various factors.
- Modifications to a number of items of the actual construction which were inconsistent with the design documents as originally bid in a number of areas which resulted in substantial additional cost.
- The number of Town field inspectors being deployed to oversee and inspect the construction field crews was inadequate.
- There was a lack of controls in place by the Town field inspectors to capture daily information relative to each field crew, including quantities of pipe laid each day and other pertinent contemporaneous data – such as the maintenance and preservation of Daily Field Logs.
- There was a lack of controls to verify the payments requested by the contractor via the Payment Applications both as to quantities and unit prices and overall accuracy.
- There was a lack of follow up relative to design engineering plans and drawings for the remainder of the project resulting in payments being made to the engineering firm significantly in advance of the services being provided to the Town.
- There was a lack of guidance and controls provided by the Town officials to the Town's field inspector(s) as to the decisions made in the field regarding design changes, including the significant financial impact of these changes.
- There was undue reliance by the WPCA board on Town officials and Town employees especially as it relates to their duty of care.
- The lack of qualifications (education and experience) of various Town employees for the positions they held and the level of responsibility they were being given in those positions, including positions not filled or replaced.
- There were multiple positions held by individuals which created inherent conflicts and mitigated the controls and oversight that should be present amongst those various positions.

The details of the above findings are outlined in the following sections.

Town Purchasing Policies

There were two situations, one relating to the Engineering Design Contract and its ongoing extensions and the other relating to the extensions to the construction contract (Contract 3), which both appear to violate the Town purchasing policies. In both situations, there was an existing original proposal/bid process and an initial contract – one in 1994/1996 and the other was in 2007. In both situations, additional locations were added to the "projects" and the existing vendors (Spath for the engineering work and Mark IV for the construction work) were allowed to "extend" their original agreements either under the same pricing or under pricing with CPI increases instead of following the Town purchasing policies for using a bid process for the additional work.

Engineering Design Contract – Town Purchasing Policies

An excerpt relating to the Town's purchasing policies from the Charter of the Town of Trumbull is included as Exhibit A. The policy states that if any purchase or any such contract involves the expenditure of five thousand dollars ($5,000) [$10,000 as of November 4, 2003], or more, the Purchasing Authority shall invite sealed bids or proposals, by causing to be published and advertised thereafter in a newspaper having a substantial circulation in the Town, at least ten (10) days prior to the opening of said bids. Although there is an exception for professional services under paragraph (b), it appears to CCR/Beta that the intent of the "professional services" exception under paragraph (b) is to allow for acceptance of a bid other than the low bidder if other factors (i.e., qualifications, experience, etc.) warrant such selection. However, it is unclear to CCR/Beta if all professional services no matter what dollar threshold are totally exempt from advertising and solicitation of bids. It is apparent to CCR/Beta that Spath provided services to the Town of Trumbull in excess of $1,573,000 (See Exhibit B) from October 2001 through October 2009. CCR/Beta also could not locate any invoices from Spath prior to October 2001 (if any exist). It appears that the only bidding process that was undertaken for these engineering services goes back to 1994 and was only for approximately $564,000. CCR/Beta could not locate any other evidence of any other proposal process for sanitary sewer engineering services other than the 1994 bids. Although the Sewer Commission voted in August 1994 to award the work to Spath, the contract with Spath did not get signed until February 1996 almost a year and a half later. It was delayed due to denial of the request for funding from the Board of Finance. When the contract was ultimately signed in 1996, the contract amount was reduced to $149,923 due to a revision (i.e., reduction) in the limits of design.

In summary, approximately $1,000,000 of engineering services was performed by Spath for the Town of Trumbull in a five year period without the use of a formal advertised bidding process ($1,573,000 of services performed from 2001 through 2009 with only $564,000 of work having been bid on).

It is important to note that although this additional work did not follow any formal advertised bid process, there was unanimous approval by the WPCA Board ($1,184,076 on December 18, 2002).

This was then brought to the Board of Finance as a request for bonding of the design fees which was approved on May 6, 1996. The Town Council also subsequently approved this item.

Engineering Design Contract - Bid Process

As to the Engineering Design Contract, in June 1994, the Town solicited bids from "pre-qualified" engineering firms for design engineering services for Phase IV of the Sanitary Sewer project. It was represented to CCR/Beta that the Town also advertised for these services as well. It appears that at least six firms were invited to bid for this work. It appears that two other non-prequalifed firms (C.E. Maguire and C.D.M.) were also allowed to bid. The proposals received were reviewed at the Sewer Commission's August 1994 meeting and five firms were subsequently interviewed by the Sewer Commission on August 23, 1994. It should be noted that the original bid specifications required performing soil borings and engaging a soil consultant, although it did not specify the spacing of the borings. After the interviews of the bidding firms, the Sewer Commission requested that all bidders update their bids to be able to choose between 1,000 feet spaced borings and 300 feet spaced borings. Based on Mr. Kallmeyer's notes in the bid files, it appears that Mr. Kallmeyer attempted to adjust the bids for abnormalities or what he referred to as "unbalanced bidding". For example, all bidders did not use the same number of miles. They ranged from 40 miles to 52 miles. Mr. Kallmeyer attempted to make an "apples to apples" comparison of the bids. In addition, since it was unclear whether or not soil borings would actually be done, Mr. Kallmeyer also compared the bids with and without the soil borings study. A copy of Mr. Kallmeyer's notes dated September 19, 1994 are attached as Exhibit C. You will note that on Page 2 of those notes Mr. Kallmeyer adjusts each bid to 42 miles for the "apples to apples" comparison and then analyzes each bid with and without soil borings and study. The adjusted bid results of that analysis as per Mr. Kallmeyer's September 19, 1994 notes are as follows (numbers in parentheses represent (1) being the lowest and (5) being the highest):

Firm	**Fee with borings all adjusted to 42 miles**	**Adjusted Fee less borings**	**Adjusted Fee less borings and study**	**Adjusted Fee less study**
Kasper Associates	$545,000 (1)	$489,000 (1)	$471,000 (1)	$527,000 (1)
FGA Services	$653,500 (2)	$508,500 (2)	$485,000 (2)	$630,000 (3T)
LKB (Lockwood Kessler & Bartlett)	$775,000 (5)	$669,000 (5)	$519,000 (3)	$625,000 (2)
SBA (Spath-Bjorklund)	$667,000 (4)	$564,000 (4)	$532,000 (5)	$635,000 (4)
STV (Seelye Stevenson Value)	$660,000 (3)	$553,000 (3)	$523,000 (4)	$630,000 (3T)

Mr. Kallmeyer then drafted a document dated October 12, 1994 to the Sewer Commission in his capacity as the Sewer Administrator with his consultant recommendation to the Commission. That document is attached as Exhibit D. Mr. Kallmeyer makes the recommendation to hire Spath. That

document states on page 2 that "Kasper is very low at $545,000 and all of the others are higher by approximately $100,000. SBA (Spath) actual fee is $667,000. Based on a reconsideration of the need for a boring program, I am recommending that SBA be awarded that contract at a reduced fee of $564,000 (their $667K minus their boring fee of $103K)." On page 3 of this document, Mr. Kallmeyer goes on to state that "When there is clearly another choice, capable and qualified, there is poor economic benefits in playing the low-bid-is-best game. Note that my recommendation is not for the highest fee proposer, but for the second lowest one." It is unclear to CCR/Beta as to how Mr. Kallmeyer concluded and represented to the Sewer Commission that Spath was the second lowest bidder based on Mr. Kallmeyer's own notes and analysis as summarized above and as outlined in Exhibit C.

Mr. Kallmeyer also makes a comment in his October 12, 1994 document which states "This project will cost $20 million to $24 million. Quality of design can easily cost or save the difference in the lower proposal and the recommended proposal." As elaborated in another section of this report, the engineering design lacked specificity in a number of areas due to various factors. This lack of specificity lead to modifications to a number of items of the actual construction which were inconsistent with the design documents as originally bid. These design deficiencies and construction modifications and change orders resulted in substantial additional cost of construction.

Engineering Design Contract - Delivery Date of Design Drawings

As outlined in Exhibit B, Spath had billed the Town over $1,573,000 for their work from October 2001 through October 2009. It was learned during our interviews that as of June 10, 2010, the date of our last interview, the Town had not yet received some of the drawings (specifically related to Phase V). Thus, it appears that services were paid for by the Town as of 2004, yet the products (i.e., drawings) were not yet received by the Town as of June 2010 – almost six years later. The Town requested these drawings from Spath as a result of our questions related to this item.

Construction Contract

In addition to the ongoing extensions of the Engineering Design Contract, there were also extensions made to the construction contract (Contract 3) which did not go through the formal advertising and bidding process. Again, this appears to violate the Town purchasing policies. Since construction work is not a professional service, this instance is much clearer than the engineering design services mentioned above.

In April 2007, the Town went out to bid for construction of the Sanitary Sewer Project Phase 4, Part B, Contract 3. At that time there were four bidders. The bids were as follows:

Bidder	**Total of Bid**
Mark IV	$15,385,644
Guerrera Construction	$17,976,680
M. Rotondo Inc.	$20,091,040
Baltazar	$20,788,474

The work was awarded to Mark IV and the contract was signed in May 2007. There were 21 change orders to the contract totaling $1,674,005 (11%). In addition, there were extensions of this contract totaling $3,500,000.

The $3,500,000 extension (also know as the Jog Hill extension) did not go through a formal advertised bid process. The Town and WPCA had great difficulty in finding any documentation related to the $3,500,000 extension. The purchasing department stated that those estimates were provided by the Sewer Department and indicated that there were formal approvals by the WPCA board (February 27, 2008), the Board of Finance (May 15, 2008) and the Town Council (June 2, 2008). The Sewer Administrator did not have any formal calculation for the $3,500,000 other than stating to CCR/Beta in an e-mail correspondence *"The method for determining the $3.5 million was nowhere to be found in the correspondence file. I remember that it was simply stated that the original 15 mile total and completed sum at the time the extension was proposed was approximately $17.4 million. It was estimated that the length of the 1st extension including easements was approximately 3 miles. Thus, $17.4 million per mile divided by 15 miles equals $1.16 million per mile times 3 miles equals $3.48 million dollars. It may sound simplistic, but that is the way it was done."*

It should be noted that the Town Charter does allow a waiver of some of the purchasing policies related to bids (see Exhibit A). The Charter states "bids may be waived after the purchasing authority has obtained written approval of the First Selectman in any case in which compliance with this subsection shall be deemed to be impractical or not in the best interest of the Town. The record of any purchase made pursuant to such a waiver shall include a copy of the waiver, which shall contain a statement of the reasons therefore, and shall be kept on file in the office of the purchasing authority where it shall be open to public inspection." The Town Purchasing office was not able to produce a bid waiver for the $3,500,000 Jog Hill extension.

Construction Related Bid / Award Process

In late March of 2007 the Purchasing Agent for the Town of Trumbull, acting for and on behalf of the WPCA publicly advertised for construction bids for the proposed project entitled "Constructing Sanitary Sewers, Trumbull Connecticut, Phase 4, Part B, Contract 3" (hereinafter referred to as "Contract 3"). The established bid date was set for April 10, 2007 at 3:00 PM local time in the offices of the Town's Purchasing Agent. At that time four sealed bids were received and publically opened by the Town. The bidding contractors, respective bid totals and ranking were as follows:

Name/Address of Bidder	Total Amount of Bid
Mark IV Construction Co., Inc. 1137 Seaview Avenue Bridgeport, CT 06607	$15,385,644.85
Guerrera Construction Company 154 Christian Street Oxford, CT 06478	$17,976,680.41
M. Rondano, Inc. 49 East Avenue Norwalk, CT 06851	$20,091,040.48
Baltazar Contractors, Inc. 83 Carmelina's Circle Ludlow, MA	$20,788,474.73

As indicated, the lowest construction bid received was submitted by Mark IV Construction Co., Inc. in the amount of $15,385,644.85.

At the April 25, 2007 meeting of the Town's WPCA, a motion was made by the WPCA's Chairman, George Biagioni, seconded by Commissioner Janine Salvey to accept the low bid of $15,385,644.85 as submitted by Mark IV Construction. Based on the recorded meeting minutes there was no discussion and all members that were present were in favor. The motion carried unanimously.

On May 1st, 2007 correspondence was issued to the attention of Mr. Manual Moutinho, President of Mark IV Construction by Mr. Robert J. Chimini serving as the Town's Purchasing Agent informing Mark IV of the Town's intent to award the project and authorizing the Contractor "*to proceed with the project in accordance with the requirements, specifications, terms and conditions of the referenced bid and consistent with the conditions specified in its response to the referenced bid as submitted and dated April 10, 2007*". Mark IV acknowledged this correspondence and the notice to proceed by returning a signed copy, dated May 3rd, 2007, to the Town and indicating an intended commencement date of construction on or about May 14th, 2007.

As part of this assignment, CCR/Beta performed a review of the overall bidding and award process. This included a review of the sequence of events that occurred from advertisement to award, a review of all four bid packages that were received by the Town, and the preparation of a bid tabulation table to assist in the evaluation. By all accounts there were no unreasonable abnormalities found. It should be noted however that the Town's policies and procedures for reviewing construction contracts does not provide for a formal method to analyze bids in a sufficient level of detail to adequately compare the various bid alternatives.

It appears construction bids were advertised, received and opened in accordance with the policies and procedures of the Town's Purchasing Department, and in the proper sequence, timeframe and format typically found within the utility construction industry. Although there appears to be a wide variation of some unit prices between bidders, as well as the total cumulative amounts, no mathematical errors were found that would have altered either the dollar amounts bid or the overall ranking of the contractors bidding the project. Mark IV Contraction's total bid amount was indeed the lowest bid received. Reference is made to the attached "Bid Tabulation/Evaluation" attached to this Report as Exhibit E.

There are however four primary items contained within Mark IV Construction's bid that seems to have been the source for most (95%) of the $2.59 million difference between their low bid and that of the next lowest bid submitted by Guerrera Construction. These items include the following:

Item No.	Item Description	Mark IV Unit Price	Guerrera Unit Price	Tabulated Bid Difference
27	15-inch CPP Storm Drainage (0 to 10 foot depth)	$1.00/LF	$36/LF	$ 802,935
33	Trench Dam	$0.01/EA	$2,500/EA	$ 50,000
47	Trench Excavation – Rock (Assumed 7-ft Plus)	$0.01/CY	$34/CY	$1,528,326
51	Gutter-Milling of Existing Pavement	$0.01/SY	$2.25/SY	$ 78,848
	Total Tabulated Bid Difference (of the above four items):			$2,460,109

It is difficult, if not impossible to ascertain a contractor's overall bidding strategy, the manner in which he may prepare his bid, or the risks that he may or may not be willing to take in setting certain unit prices lower than expected. However, based on Mark IV's prior history and experience of completing sewer related work within the Town, it is certainly a possibility that the company gained a bidding advantage knowing that certain items of work are not typically required or used in much lesser amounts, and thus lowering the his unit prices accordingly. Specific reference is made to Item Nos. 27, 33 and 51.

In addition, there familiarity with the type of Contract Documents (both Design Drawings and Specifications) typically used by the Town and the manner and level of which they were interpreted and enforced by Town representatives, as well as a thorough examination of the actual documents being bid may have potentially opened the door of opportunity for gaining substantial increases to

the original contract price through fully justifiable and legitimate change orders once the Contract was awarded.

In regards to Item No. 47, Trench Excavation – Rock mentioned above, which attributed to the largest cost difference, it is reasonable to assume that Mark IV either moved a certain percentage of this cost to other more guaranteed items and/or took the risk that the quantity and type of rock estimated for the project would not be encountered. Again, Mark IV's familiarity with conducting sewer related installations within the Town of Trumbull may have ultimately been a bidding asset.

Whether or not there were advantages gained by having familiarity, the fact remains that the bid as submitted by Mark IV at that time appears true and accurate. In addition, Mark IV as a company was known to have a fairly lengthy history of successfully completing utility type contracts within other local communities as well as the Town of Trumbull, thereby documenting their technical expertise, capabilities and resources to complete the contract as bid. Therefore, the Town had little choice than to award the project accordingly.

Design Drawings

Plan and Profile Views

A review of the design drawings for Contract 3 as prepared by the design engineer of record, Spath indicate a fairly generalized design effort. In comparison to the scope of services outlined under the original June 14, 1996 Engineering Agreement, which CCR/Beta were continually told served as the basic "*scope*" for all design contracts, Spath's generalized design falls short of adequately delineating numerous topographic and planimetric features throughout the project area. This is most likely due to the fact that it appears that a fully comprehensive and updated aerial survey and base mapping was not actually done by the design engineer as originally specified and described under the 1996 Agreement.

In lieu of the updated aerial survey and base mapping, it was reported that an older, possibly higher altitude "*Ortho-photographic*" type of mapping supplemented by conventional onsite field survey served as the basis of the overall design and was utilized as a cost saving measure. During the forensic audit, we were not able to determine the specific parameters of this mapping (i.e. date, source, flight altitude, horizontal/vertical controls, scale, conversion software, present-day updates, etc.). Also, due to the limited availability of filed documentation, we were not able to confirm whether or not this modification in design scope was indeed requested and/or approved by the Town, nor were we able to determine whether or not the actual design fees reflect such a reduction in the scope of work. It is clear however, that the accuracy, attention to detail and overall quality of the base mapping used for the design of Contract 3, as well as other sewer related contracts in Trumbull (i.e. Contract 4), continue to generate questions and concerns relative to the Town's overall sewer program, and ultimately was and continues to be a significant source for construction related change orders.

It is important to note that "*Ortho-photographic*" type mapping is generated by utilizing aerial photography taken at various flight altitudes based on the desired needs and scale of the mapping applications being produced. These photos are then planimetrically corrected (or "*orthorectified*") to produce a more accurate representation of the earths' surface, having been adjusted for topographic relief, lens distortion, and camera tilt. A digitization process then transforms the corrected data into a usable electronic format for actual design, such as AutoCAD.

One of the more important factors controlling the mapping accuracy of the end product is the flight altitude at which the original aerial photos are taken. Typically, aerial photos taken at higher altitudes produce less than desirable results, especially in relation to accurately defining topographic and physical features. Due to its limitations for accuracy and attention to detail, the higher altitude "*Ortho-photographic*" type of mapping is generally used and deemed more appropriate for planning purposes (100-scale and greater) and is not typically used for detailed design applications where the need for accuracy and attention to detail is more of a controlling element of the ultimate design. Also, the age of the aerial photos and the specific production techniques used to produce the digitized mapping become a factor mostly due to the overall advancements in the technology in more recent years. Simply put, securing and utilizing current aerial photography complied with the most current and advanced technology of today's industry produces a much better and more accurate end product than that which may have existed ten to twenty years ago.

In the case of Contract 3, we believe the generalized sewer design effort noted above appears to be a direct result of less than adequate and possibly outdated base mapping which was produced and used by the design engineer during the design process. As stated in the original 1996 Agreement, whether currently considered lacking or not, "*these plans*" were "*the basis of design*". Although the design mapping used is in the specified 1-inch equal 40-foot horizontal scale, which is relatively common for utility based designs, the accuracy and attention to planimetric details is somewhat lacking (i.e. physical features, structures, drainage facilities, watercourses, utilities, vegetation, limits of pavement, etc.).

To this extent, although the original 1996 Engineering Agreement clearly states items such as 2-foot contours, drainage facilities with invert elevations (i.e. manholes, catch basins, culverts, etc.), random spot elevations, existing utilities, limits of significant vegetation were to be provided as a supplement of the overall design, these attributes are limited, and in some cases nonexistent on the design drawings.

Specifics of our investigations reveal the following:

- Contours, which appear to have been required for all areas of the design contract, roadways and cross country routings alike, were only provided for cross country routings. Where contours are shown, they are not labeled in regards to any specific elevation of reference thereby leaving one to cross reference approximate elevations with the graphical elevations delineated on the design profiles.

- Although certain drainage facilities were graphically shown in plan and/or profile, many were not adding to the lack of consistency of the documents. Of those drainage facilities shown, in most cases the extent of coverage is limited to those facilities located within the right-of-way despite contrary references of extended coverage in the Agreement. In addition, none of the drainage facilities that are shown identified any pipe sizes, material type and/or direction of flow, nor is there any invert elevations provided.

- There are no spot elevations provided throughout the drawings.

- Although the general locations of underground water and gas utilities are shown apparently based on surveyed field markings, there are no references to pipe size and/or material type related to either.

- Delineations for "*significant vegetation within the right-of-way*" are either very limited in certain areas or not shown as referenced to be so in the Agreement.

- The overall Drawings, including the general "*NOTES*" provided on Design Sheet D-4 are extremely vague as to clearly identifying the overall age, data date and source, elevation datum and nature of the base mapping used during the design. The "*NOTES*" merely state, "*These plans were prepared from record research, other maps, limited field measurements and other sources*", "*Topographic data and property lines shown hereon are only approximate and are subject to the revision which a field survey may indicate*" and "*Topographic data is based on a field survey, USGS datum*".

As a result of the above it is fair to state that during the construction phase of the project there were numerous instances where the lack of accuracy and/or detail shown on the drawings generated a legitimate cause for extended quantities of work and the costs associated therewith, as well as items of extra work by the contractor resulting in change orders seeking the applicable compensation above and beyond the original contract price.

It was also noted that the Agreement states that "*A copy of the digital files shall become the property of the Town. Files shall be in an Autocad 12.0 format of equivalent.*" Based on the research performed and inquiries with the Town, no such files are known to have been provided.

Design Specifications

A general review of the Design Specifications, which includes the General Conditions, the Supplement General Conditions and the Technical Specifications, found the documents to be fairly general in nature and, to a certain extent, contradictory, confusing, and somewhat lacking in regards to covering all elements and requirements of the proposed contract work. In some instances these deficiencies lead to additional change order costs for the Town.

Some of the primary issues are as follows:

- Although the original amount awarded for Contract 3 in May 2007 related to Drainage (items 24 through 32) was $428,671, the contract work for Drainage ultimately completed totaled $1,592,361. Contract 3 related to the installation of various drainage facilities (i.e. surface drainage pipe, trench drainage pipe, manholes, catch basins, etc.), for which there are no technical specification sections addressing these components. Therefore there is nothing within the contract documents that specifically outline in detail the general elements of the drainage work, nor the specific requirements for each item. Typically the Specification would address standard categories such as a detailed "*Description*" of the item, "*Material"* specifications for what is and what is not acceptable, the requirements for *"Construction Methods*" and the methods for *"Measurement and Payment*". Examples of what would be expected and should have been included may be found in Specification Sections 9.1 (Sanitary Sewers) and 9.2 (Sanitary Sewer Manholes). Failure to include specifications has the tendency to allow the contractor to interpret for themselves what is and is not included in any particular item, choose and utilize materials that may not meet the Town's desired and/or established standards, conduct their construction operations as they see fit without observing any type of requirements and/or restrictions for "*Construction Methods*", and interpret for themselves what is and is not included for payment under any particular item question.

- Contract 3 as bid, contained twenty individual payment items for various types and elements of work under the heading "*Supplementary Unit Prices*". Although these "*Unit Prices*" were a required part of Contract 3, thus requiring each of the bidding contractors to submit prices, no estimated quantities or extended contract values were required or attached. Therefore, these items were not part of the cumulative Base Bids during the bidding, evaluation or award process. The apparent purpose of these items as stated in the contract "*The Contractor agrees that should the amount of work required be increased, the following supplementary Unit Prices will be the basic price for computing extra work*".

  Unfortunately, very few technical specification sections specifically address these items or the components associated therewith. Therefore, there is little within the contract documents that outline in detail the general elements of each item, the requirements for each, or more significantly, the measurement and payment parameters and methods to be employed. Failure to include specifications such as this has the tendency to allow the contractor to interpret for themselves what is and is not included in any particular item, choose and utilize materials that may not meet the Town's desired and/or established standards, conduct their construction operations as they see fit without observing any type of requirements and/or restrictions for "*Construction Methods*", and interpret for themselves what is and is not included for payment under any particular item question.

  It also appears these items were used and charged at the discretion of the Town's field and/or office staff without any documentation or accountability in the form of a formal change order process. To add to the situation, there are only limited field records and/or related

documentation to quantify where these items were actually used. A detailed review would need to be undertaken by the Town to properly quantify and confirm this work.

As a matter of reference, within the completed Contract 3, the "*Supplementary Unit Prices*" represent $1,215,014 worth of charges.

- Under Specification Section 2.12 (Stream, River and Culvert Crossings):

  - Under Subsection A (Description) it states, "*The Work under this section shall consist of all construction required to install the proposed sewer/pipe under culverts, streams and rivers at the locations as shown on the Contract Drawings*". The key language of this statement is "*at the locations as shown on the Contract Drawings*". Not all of the culvert, stream or river crossings are specifically shown on the Contract Drawings, thereby leading to the additional costs paid for by the Town under Change Orders 9 and 10 amounting to $275,000.

  - Under Subsection C (Construction Methods) it states, "*Stream, river and culvert crossings shall be made in conformity with the Contract Drawings, or as ordered*". The key language of this statement is "*shall be made in conformity with the Contract Drawings, or as ordered*". The Contract Drawings fail to provide any type of design guidance, provisions and/or requirements for such crossings leaving each to the discretion of the Town's onsite representative "*as ordered*" and/or the contractor in determining what is and what is not included under the specified elements of work and the payment associated therewith.

  - Under Subsection D (Measurement and Payment) it states, "*Stream, river and culvert crossings will be measured and paid for at the Unit Price (Lump Sum) under the item "Stream Crossing", "River Crossing" or "Culvert Crossing" at the location as stated in the Bid Schedule*". The key language of this statement is "*at the location as stated in the Bid Schedule*". Pay Item No. 45 entitled "*Stream, River & Culvert Crossing*" as indicated in the "*Bid Schedule*" is very generic with no specific "*location*" or locations noted. As a result, it is difficult to determine and/or debate with the contractor as to whether this lump sum item (Item No. 45 - $45,000) was meant to be for only one location or several locations encountered throughout Contract 3.

  - Under the second paragraph of Subsection D (Measurement and Payment) it states the unit price (lump sum) includes all work which may be necessary to complete the "*Crossings,*" would be paid for under item no. 45, "*except that it shall not include the cost of the sewer/pipe and the concrete encasement, which will be paid for separately under their respective items*". The Contract Documents failed to provide a Pay Item for "*concrete encasement*" as so referenced resulting in the need for the Town initiating Change Order No.1 with the contractor at an agreed unit price of $250 per cubic yard of concrete and a cumulative project cost of $36,500.

- A site inspection of the project area indicates there were multiple "*Crossings*" throughout the Contract. Naturally these "*Crossings*" varied in size and complexity especially in regards to their particular locations, and the amount of work actually necessary to complete each. Since the Contract Specifications fail to address this issue or provide any basic requirements for the work, the actual amount and type of work required by the contractor, and paid for by the Town to complete the crossings, is a matter of interpretation and therefore must be considered questionable. Based on the contractors most recent Application for Payment, a total of eighteen crossing completed at a total cost of $320,000 of which $45,000 was in the base bid and $275,000 represented change orders.

➢ Under Specification Section 4.4 (Bituminous Concrete Surface Overlay):

- The last sentence of Subsection A (Description) states, "*If necessary, the Engineer may direct that prior to the surface overlay the road shall be scarified and brought to Town Standards*". Although this provision is specified, and as such considered part of the unit price (pay item No. 53 set at a unit price of $9.00 per S.Y.), there is no indication any of the roadways involved under Contract 3 were "*scarified*" prior to receiving the bituminous concrete overlay despite the fact that it was indeed part of the Unit Price. Also, despite the fact that a separate pay item for gutter milling was being carried under Pay Item No. 51, Specification Section 4.3, Subsection E (Measurement and Payment) specifically referring to the bituminous concrete overlay (Pay Item No. 53) states, "*The Unit Price*" for the overlay "*shall include gutter milling, as directed*". Such a discrepancy only adds uncertainty to the elements of work being required and the unit prices associated therewith.

- The first sentence of Subsection D (Measurement and Payment), indicates that the unit price method of payment would be by the square yard, which is consistent with Pay Item No. 53. However the remainder of this paragraph clearly describes procedures and parameters typically used and related to a tonnage type of measurement process.

➢ The "*BID*" Section of the contract documents did not list several items of work ultimately found necessary to complete the overall contract resulting in the need for change orders with the contractor. Although some of these items may have been added specifically as a result of the "*Jog Hill Extension*" and/or "*Extra Work*" unrelated to the design documents as originally bid in April 2007, these items include the following:

- Furnish and Install Concrete for Encasements (Change Order No. 1)
- Remove & Dispose of Existing Catch Basins (Change Order No. 2)
- Tie into Existing Catch Basins (Change Order No. 3)
- Removal and Disposal of Existing Drainage Pipe (Change Order No. 5)
- Gravel Access Drive for Easement Areas (Change Order No. 7)
- Grass Access Drives for Easement Areas (Change Order No. 8)
- Abandon Septic Tank (Change Order No. 11)

- 36-inch CPP Storm Drainage (Change Order No. 12)
- Temporary Line Stripe (Change Order No. 14)
- 10-inch PVC Sanitary Sewers 20 to 25-foot depth (Change Order No. 16)
- 10-inch DIP Sanitary Sewers 15 to 20-foot depth (Change Order No. 17)
- 8-inch PVC Sanitary Sewers 25 to 30-foot depth (Change Order No. 19)
- 48-inch Sanitary Manholes 25 to 30-foot depth (Change Order No. 20)
- Double Catch Basin (Change Order No. 21)

Design Details (Design Sheets D-1 thru D-4)

Based on the procedures performed, the following items were noted as modifications in actual construction from the design documents.

"Sewer Trench" Details

The standard detail for sewer trenches delineated on Design Sheet D-2 indicates a minimum 6-inch thick (12-inch in rock) "*Foundation Stone*" pipe bedding below and a minimum of 6-inches above the installed sewer pipe, extending horizontally the full width of the contained trench. The defined pipe trench, or pipe zone as typically referred, for bedding the pipe is specified as being equal to the pipe diameter plus 2-feet. For examples, for an 8-inch diameter sewer installation the pipe trench would equal 2.67-feet in width, for a 10-inch diameter sewer installation the pipe trench would equal 2.83-feet, etc. Per the detail, the pipe bedding is also specified as being fully encased within a "*filter fabric envelope*". Directly above the stone bedding a minimum of 12-inches of gravel fill is placed, followed by the installation of a "*continuous labeled warning tape*" centered directly over the pipe, prior to a continuance of suitable backfill up to the surface grade.

Based on our inquiries regarding Contract 3, as well as subsequent site visits to observe the ongoing construction practices currently being employed on the Trumbull Contract No. 4, it appears that the actual construction elements of the typical "*Sewer Trench*" were modified and therefore not consistent with the design documents as originally bid.

It appears that the modified means and methods for constructing the sewer trench centered mostly around a significant expansion of the excavated trench width as it relates directly to the defined pipe zone and the absence of a fully encased "*filter fabric envelope*" surrounding the "*foundation stone*" pipe bedding as required.

In regards to the excavation of the trench, it appears a fully defined and contained pipe zone was not typically established per specifications most likely due to the difficulties in establishing and maintaining such narrow widths for actually installing the pipe. This was especially more common in the deeper areas of the excavations where trench support systems are typically necessary and where encountering and removing rock/ledge is more prevalent. As such the actual installation of the pipe bedding appears to have been more spread out and most likely flattened during backfill operations than typically preferred for maintaining a well-defined, sound bedding of the pipe after installation. Although there is little if any cost implications related to this issue at this time, one

must recognize in the practically sense the technical concerns that could develop as a result of less than adequate bedding of the pipe.

In regards to the "*filter fabric envelope*", in lieu of fully encasing the pipe bedding material (all sides with an overlap typically on the top), it appears only a single carpet-type layer of fabric was placed above the bedding material just prior to the installation of the gravel fill and backfilling. Unfortunately, although this may produce a filtering effect for fines descending from above, the migration of fines entering the voided areas of the stone bedding from the exposed sides and bottom may still potentially promote post-construction settlement of the trenches. This may be especially true in areas of high groundwater where either the migration of groundwater within the trench is constant and/or a seasonal variation in elevation expedites a transfer or flushing of fines.

Unfortunately, we were unable to acquire any supporting documentation and/or acknowledgement as to why or when this "*filter fabric*" modification was actually made, as well as who initiated and approved the modification for the Town. The response to our inquiries from Town representatives indicated that this modification was initiated "*early on in the field*" during prior sewer contracts thus being carried over to Contract 3 as a Town accepted practice. It is clear however that the original design elements for this particular item of work was indeed part of the Contract No. 3 Design Documents as originally bid and that despite a substantial reduction of work and material costs based on the volume of pipe installed there were no subsequent credits requested and/or received by the Town for allowing such a substitution by the contractor.

"Trench Drain" Details

A standard detail entitled "*Trench Drain*" is delineated on Design Sheet D-3. The composition of this element of work as detailed appears to resemble what is commonly referred to as a "*trench dam*" or "*cut-off wall*". This type of installation typically is constructed as a means of controlling groundwater by preventing or otherwise inhibiting large volumes of groundwater from migrating downstream along a newly constructed trench. Although the existing detail is somewhat vague, the installation requires a concrete trench dam to be constructed, keying it into both sides and bottom of the excavated trench a minimum of 6-inches. It is important to note the intended design thickness of the concrete dam and the frequency of installation along a trench is not provided.

The detail also specifies the installation of a perforated PVC pipe (4 linear feet in length) to be installed "*with holes down*" parallel, but below the sewer main along with a solid PVC pipe extending perpendicular from the outside limits of the trench "*to outlet*". It appears the intended use of this PVC pipe is to serve as a sub-drain, redirecting any collected groundwater within the upstream side of the trench dam towards some type of unspecified "*outlet*". It is important to note, there is no pipe diameters specified for this installation nor are there any specifics to better describe the intended destination and/or method of the "*outlet*" discharge.

In regards to payment, although there is no specific reference to the method of measurement and payment for this particular item of work, it appears to be all inclusive (concrete dam and PVC sub-drain combined). As such, Pay Item No. 33 entitled "*Trench Dam*" with an established Unit Price of

$0.01 per installation appears to reflect the manner of compensation to Mark IV. Based on Mark IV's Application for Payments, although twenty dam installations were estimated under the original bid documents, no such installations were actually completed under the contract.

In lieu thereof it appears a "*Trench Drain*" design modification was made to the design documents by Town representatives during the initial phases of the contract. Although no documented approval process was found and/or made available for this change, it appears the method was agreed upon in theory and a hand-sketched detail by a consensus of several of the Town representatives involved in the administration of the contract. It was also agreed that payment to the contractor would be made under Pay Item 32 at a Unit Price of $20 per linear foot. It is important to note that due to a lack of specifics and details for this particular Item in the contract documents, it is unclear as to what the overall design intentions and/or requirements were for Pay Item No. 32. Although it could be assumed to be a sewer related sub-drain, to be used as needed to be installed as directed by the Town's onsite representative, there are no specifics to confirm this application. As such the latitude of use is a matter of interpretation.

Under the modified hand-sketched detail, the typical "*Trench Drain*" no longer resembled a sub-drain type of application for the installed sewer main. As reported by Town representatives the primary purpose for installing this drain was to redirect elevated groundwater within specific areas either to an existing drainage system or depending on the surrounding topography directly to day-lighted outlets along the roadway. It consisted of installing an unwrapped 8-inch diameter perforated PVC pipe parallel with, but significantly higher than the completed sewer trench at various depths along the roadway. The specific locations, amounts, depths and outlet configuration of these drains were installed at the discretion and direction of the Town's onsite representative. This "*trench drain*" pipe was apparently bedded in the same configuration and "*foundation stone*" material used for installing the sewer mains. Although filter fabric was apparently used, the manner of use only reflected a carpeted-type of layer placed directly over the foundation stone prior to completing backfill operations.

The method for payment for this "*Trench Drain*" was initially made under Pay Item No. 32 at the Unit Price of $20.00 per linear foot, and continued to be paid for at the same Unit Price under Change Order No. 15. The resulting quantities and costs were found to be significant. Item No. 32, which had originally been estimated at 14,422 linear feet (calculated to be $288,440 at $20 /LF), expanded to a total of 18,596 linear feet (calculated to be $371,920 at $20 /LF). Change Order No. 15 documents an added quantity of 27,752 linear feet (calculated to be $555,040 at $20 /LF). Combined, the total "*Trench Drain*" quantity for this contract is stated to be 46,348 linear feet, which resulted in a total cost of $926,960. This reflects a $638,520 or 321% overrun on the overall Item.

Based on inquiries, there appears to have been little, if any, administrative guidance and/or control provided by Town officials, including the WPCA, to the Town's field representative as to where and how much "*Trench Drain*" actually needed to be installed, as well as the financial consequences of its installation. In addition, there appears to be little if any reliable field records, reports and/or as-built type of documentation available at the Town to clearly document where and to what extent this

type of "*trench drain*" was actually installed. Therefore, as a means of re-examining and confirming the actual quantity of drain installed, there is little supporting documentation available beyond conducting a comprehensive field investigation. Also, it is unclear as to why this particular Item of work was separated between Item No. 32 and Change Order 15. It was represented to CCR/Beta that the change order was initiated by the Towns' WPCA merely due to the significance of the Item and the "*poor perception*" of having such a significant cost overrun on a project.

Sewer Service "Chimney" Details

The standard detail for sewer service vertical chimneys delineated on Design Sheet D-2 indicates a fully reinforced concrete vertical encasement of the 6–inch diameter sewer service lateral. The encasement being a minimum 6-inch envelope of Class "A" concrete reinforced with 2 - #4 steel bars @ 6-inch spacing and 3-inch minimum clearance to the vertical pipe. The overall height of the chimney structure, whether for an individual service or multi-unit service, being based on the required service parameters and related elevations. The service pipe, including the connecting wye-branch fittings extended vertically from the sewer main via a tee-branch fitting with a pipe material type consistent with that of the mainline. The means and methods for constructing and supporting such a structure whether being round or square is not detailed or otherwise specified.

An added provision and/or possible material substitution for chimneys appear in a general note indicated on Design Sheet D-4 which states "*All chimneys shall be either cast in place or precast concrete units. Variation shall be approved by the Engineer*."

The methods for measurement and payment for "*chimneys*" appear under Specification Division 9, Section 9.1, paragraph 3, stating the completed work item shall be measured and paid for by the linear foot with the actual length being measured vertically "*from the crown of the sewer to the end of the vertical pipe*". As a matter of reference "*Chimneys*" for Contract 3 are paid for under Bid Item No. 44 at a contractual Unit Price of $100 per vertical foot.

Based on our inquiries regarding Contract 3, as well as subsequent site visits to observe the ongoing construction practices currently being employed on Contract No. 4, it appears that the actual construction elements of the "*chimney*" structures were modified and therefore not consistent with the design documents as originally bid.

The modified means and methods for constructing "*chimney*" structures as allowed during Contract 3, and currently being employed on Contract 4, consists simply of vertically encasing the installed 6-inch diameter service chimney in a 6-inch envelope of ¾-inch crushed stone supported by a larger typically 18-inch diameter ribbed polyethylene casing pipe prior to backfilling the trench. The actual method for supporting and bedding the casing pipe at the mainline interface is uncertain. In addition, there does not appear to be any provisions and/or means of filtering out or stopping fines contained within the above surrounding soils from entering the column of stone thus potentially creating a source for post-construction settlement of the roadway.

Unfortunately, we were unable to acquire any supporting documentation and/or acknowledgement as to why or when these modifications were actually made, as well as who initiated and approved the modifications for the Town. The response to our inquiries from Town representatives indicated that these modifications were initiated "*early on in the field*" during prior sewer contracts thus being carried over to Contract No. 3 as a Town accepted practice. It is clear however that the original design elements for this particular Item of work was indeed part of the Contract 3 Design Documents as originally bid and that despite a substantial reduction of work with cheaper material costs there were no subsequent credits requested and/or received by the Town for allowing such a substitution by the contractor.

"Sanitary Manhole" Details

Based on the details provided on Design Sheet D-2 all sanitary manholes were to have benches and inverts constructed utilizing either solid "*masonry*" (typically mortar and brick) or "*Class A concrete*" or a combination of both (Class A concrete topped with a layer of brick masonry). Having such a requirement is fairly standard in the industry based on the desire and need to produce durable manhole structures that will resist the scouring velocities of the flows being transported within.

Based on our inquiries regarding Contract 3, it appears that the actual construction elements of the "*Sanitary Manhole*" benches/inverts may have been modified and therefore were not consistent with the design documents as originally bid. In this regard, inquires revealed that at least some of the manhole benches/inverts, if not all, are not constructed of solid brick masonry or Class "A" concrete. In lieu thereof, filler materials of crushed stone, gravel materials, brick pieces, or a combination of all were installed beneath the finished liner of the brick masonry. If indeed this is the case there is not only a durability issue with the quality of the manhole work, but also a cost implication to which the Town may be due a credit.

Unfortunately, we were unable to acquire any supporting documentation and/or acknowledgement as to when and why this modification was allowed, as well as who may have initiated and approved the modification for the Town. The response to our inquiries from Town representatives indicated that this modification was initiated "*early on in the field*" during prior sewer contracts thus being carried over to Contract 3 as a Town accepted practice. It is clear however that the original design elements for this particular Item of work was indeed part of the Contract 3 Design Documents as originally bid and that despite a reduction of work with cheaper material costs there were no subsequent credits requested and/or received by the Town for allowing such a substitution by the contractor.

"Temporary Pavement" Details

The standard detail for "*Temporary Pavement*" delineated on Design Sheet D-1 for application on Town roads indicates a trench patch type of restoration. Upon completing the pipeline systems (sanitary sewer mains, lateral services, drainage facilities, etc.), a minimum 12-inch thick gravel base course followed by a minimum 4-inch thick processed aggregate base were to be installed prior to and just beneath the anticipated pavement course. The trench limits for pavement were to be vertically "*saw-cut*" back a minimum of 1-foot either side of the previously disturbed trench, cleaned

and painted "*with liquid bitumim before paving*" most likely as a means of promoting a bond between the new and existing pavements. The detail clearly states the pavement thickness to "*match depth of existing pavement (3-inch minimum, Class 2)*". The maximum measurement and pay width of the temporary pavement (Bid Item 52 – Temporary Bituminous Repair at a Unit Price of $24.00 per square yard) is delineated as being "*D + 6-feet*", being assumed equal to the diameter of the pipe installed ("D") plus 6-feet.

It is important to note that there are other various paragraphs of Specification Division 4, Section 4.3, which as underlined also specifically address the parameters of the "*Temporary Pavement*" and the provisions related thereto by stating the following:

> "*The Contractor shall provide the necessary labor, materials, tools, and equipment to provide repair to pavements which have been damaged or removed during the course of construction. The work under this Section shall also include the placement and subsequent removal of such temporary bituminous pavement, base and any other materials as may be required for installation of the permanent pavement repairs in accordance with the Contract Drawings and these Specifications.*"
>
> "*Upon completion of the backfill, the Contractor shall construct the pavement as shown on the Contract Drawings. If the surface settles additional bituminous material shall be added by the Contractor as ordered by the Engineer at no additional cost to the Owner. The surface shall be maintained smooth and even.*
>
> *Temporary bituminous pavement will be measured and paid for at the Unit Price per Square Yard for the Item "Temporary Bituminous Pavement" as listed in the Bid Schedule. The Unit price shall include the placement of the base material, and any excavation and/or backfill and regarding of the base material required to construct the permanent pavement.*"
>
> "*Class 2 Temporary Pavement that meets these installation specifications, and remains properly in-place, will become the base under the permanent pavement overlay, this "temporary" pavement will become "permanent".*"
>
> "*The maximum pay width shall be as indicated on the Contract Drawings or as specifically ordered by the Engineer. The price shall include all materials, equipment, tools and labor incidental thereto. This price shall also include any additional materials or labor required for corrective work necessitated by trench settlement through the guarantee period of this Contract.*"

Based on both the above referenced detail as well as Specification Section 4.3 and relevant inquires with Town representatives, the following observations are noted:

- Although specified as a component of the Unit Price for "*Temporary Pavement*", it was reported that the 12-inches of gravel base and 4-inches of processed aggregate were not

always installed as specified in all of the trenches prior to pavement being applied. Where suitable backfill material was found within the existing trench as determined by the Towns' onsite representative, it was substituted as an acceptable material for either the specified gravel base or the processed aggregate or both. Based on the lack of field records the number of times, the locations and the quantity of materials associated with this substitution is undocumented. Despite a clear reduction of work and material costs for the contractor there were no subsequent credits requested and/or received by the Town for allowing such a reduction by the contractor.

- Although specified as a component of the Unit Price for "*Temporary Pavement*", it was reported that although roadways were normally saw-cut prior to the excavation process, the limits of the trench were not typically re-cut and/or straightened back to the specified 1-foot minimum on either side of the trench or as typically desired, undisturbed and/or undamaged existing pavement. In addition the edges of existing pavement apparently were not vertically straightened, cleaned and painted with the specified liquid bitumen before paving as specified. As such the bonding between new and existing pavement is questionable. Despite a clear reduction of work and material costs for the contractor there were no subsequent credits requested and/or received by the Town for allowing such a reduction by the contractor.

  It should also be recognized that there are many conditions that impact the size/width of the overall trench receiving pavement restoration. These include items such as the following: the type, structural composition and condition of the roadways disturbed; the overall depth of the excavation along with the additional impacts resulting from any rock removal; any groundwater conditions encountered; the frequency and disturbances for perpendicular service connection cross trenches; and the mere magnitude of the construction operations on narrow residential streets. That being said it is fair to note many of Contract No. 3 roadways were most likely impacted far beyond the simplicity of being adequately repaired by applying a fairly narrow trench patch consistent with the designated pay width limits indicated under the contract (pipe diameter plus 6-feet). Consideration in terms of practicality, preserving a consistent pavement structure and the cost-effectiveness of having more reasonable pay limits based on various depths, should have been considered within the contract documents to provide the contractors more latitude during the bidding process thereby insuring adequate pavement restorations would be achieved.

- Although the detail implies various pavement thicknesses would be encountered and, as a result restored by matching the actual depth of the existing pavement and paid for as a component of the Unit Price for "*Temporary Pavement*", it was reported that the typical pavement thicknesses applied throughout the project area were limited to the specified 3-inch minimum. As such, in areas having thicker pavement depths the trench patches applied did not match or produce a uniformed pavement structure. Despite a clear reduction of work and material costs for the contractor on certain roadways, there were no subsequent credits requested and/or received by the Town for allowing such a reduction by the contractor.

It should also be recognized that since there were no geotechnical investigations (i.e. borings, pavement cores, etc.) preformed and/or available for review during the bidding process for Contract 3, the contractors bidding the project had little or no documented assistance for anticipating pavement thicknesses. As a result it would be fair to say that the bidders most likely adjusted their prices accordingly to insure adequate compensation would be received should greater than minimum thicknesses were required. This along with the rather narrow pay limits for completing the trench restorations may account for the higher unit prices for Item No. 52.

- In most cases, despite the lack of consistency with the above referenced detail, and therefore the contract requirements, it was reported that the "*temporary pavement*" placed during the initial trench paving operations was routinely accepted by the Town as the "*permanent*" pavement base as provided for and allowed under the provisions of Specification Section 4.3 prior to application of the overlay surface course. As such, the Towns' acceptance of a less than adequate "*temporary*" pavement as "*permanent*" may ultimately have been a major contributing factor to the significant amounts of "*cracking*" experienced in the overlay course on many project streets as reported and observed during site visits.

"Permanent Pavement Overlay" Details

The standard detail for "*Permanent Pavement Overlay*" delineated on Design Sheet D-1 indicates a 6-foot wide gutter mill along the existing pavement edge ("*as required by Town Engineer*") prior to the application of a full-width 1 ½-inch Class 2 wearing course. No gutter depths are indicated. Typically the purpose of a gutter mill is to reduce the thickness of the existing pavement thereby maintaining acceptable curb reveals and/or driveway matching once the overlay pavement course is applied. Gutter mills are also used as a means for establishing a cross-sectional crown to an existing roadway thereby shedding surface drainage towards the gutter.

Based on our review, this element of the roadway restoration process was not used despite having such a specified provision, as well as a fairly attractive and established contractor unit price of $0.01 per square yard. During interviews of Town representatives it was reported that the need for implementing the gutter milling process was not found necessary due to the existing condition of the roadways. In addition, it was stated that in many cases the gutter milling process was not used simply because of limited thicknesses of the existing pavement structure, thus any significant removal would have essentially removed most, if not all of the pavement base. It was also reported that the decision not to implement the gutter milling process was a general consensus between Town officials and the contractor based on the character of the existing roadways.

"Gravel Access Drive" and "Grass Access Drive" Details

Although both "Gravel Access Drive" and "Grass Access Drive" details were delineated on Design Sheet D-1 and were required as elements of the contract work for cross country applications, there were no pay items established within the original contract documents at the time of bid for the contractor to receive the appropriate compensation. The apparent lack of a designated Unit Price

justified a need for a negotiated change order for the work. Reference is made to Change Order Nos. 7 and 8, and the respective unit prices of $16.00 and $18.00 per square yard. The total change order amount for both of these items was considerable (per Application for Payment No. 27, there was 19,813 square yards which totaled $327,160.

In addition to the above, it is important to note that under Specification Section 5.1 (Restoration), Subsection C, Paragraph 3, there is a requirement pertaining to the installation of the "*Grass Access Drive*" within "*Easement areas*". The components of this specified "*Grass Access Drive*" are consistent with the above referenced detail. Further reference, specifically Subsection D pertaining to the measurement and payment for "*Restoration*", which is covered as a lump sum under Pay Item No. 55, seems to indicate that the installation of the required "*Grass Access Drive*" is an element of cost included under this particular Item. If this is the case, the justification for Change Order No. 7 would be considered questionable.

"Concrete Encasement" Details

Although a "*Concrete Encasement*" detail was delineated on Design Sheet D-3 and required as elements of the contract work (per Application for Payment No. 27, 146 cubic yards), there was no pay item established within the original contract documents at the time of bid for the contractor to receive the appropriate compensation. The lack of a designated Unit Price justified a need for a negotiated change order for the work. Reference is made to Change Order No. 1, and the respective unit price of $250 cubic yard. The total change order amount for this item was totaled $36,500.

Town Related Construction Administration and Inspection Services

All construction related management and field inspections for Contract 3 were performed and supervised by designated Town employees attached to the Trumbull Department of Public Works. For the most part, only one full-time onsite inspector was assigned to the project, Mr. Clair Jon Garard. Overall contract administration tasks and supervision of field personnel was performed by Mr. Joseph Solemene, acting as the Town's Sewer Administrator, who reported directly to the Town's WPCA and Mr. John DelVecchio as the Director of Public Works for the Town of Trumbull.

Overall experience and documented qualifications of the above personnel for inspecting, administering and overseeing this type of major utility project at a technical level of expertise common in the industry, appears to have been limited. Despite the level of design and construction related decisions being routinely made on the project, none of the above individuals are registered professional engineers, nor were they found to be specifically educated or experienced in the field of utility/pipeline engineering or construction management. This was confirmed during the interview process. In addition, despite experience on prior Town contracts that were similar in nature as well as the current Contracts, none of the individuals seemed to be fully informed or very familiar with the provisions of the Contract Documents, specifically the General Conditions, Supplemental General Conditions and Technical Specifications. Naturally, a failure to fully comprehend,

understand and implement the provisions of the Contract Documents opens the door for leniency with such provisions and the quality assurances necessary to maintain administrative control of the project.

Trumbull's Town Engineer, Mr. Stephen Savarese, who reported directly to the Director of Public Works and could certainly have filled this void of professional expertise at least occasionally, was not assigned nor did he apparently have any involvement in Contract No. 3 until fairly recently, well after construction was complete. The reasoning behind not getting Mr. Savarese involved in Contract 3 sooner by Town officials (i.e. DPW Director, WPCA, First Selectman, etc.) was not determined.

Interviews with Town officials in office during Contract 3 (i.e. First Selectman, WPCA Board members, etc.) appear to indicate that the issue of having additional, more experience staff was not brought to their attention nor recognized as a need during the Contract, and that this need and the overall quality concerns related to the Contract only came to light more recently due to the ongoing inquiries and investigations. Whether requested, recognized or not, it is clear that the administrative structure of the Town officials in office during the Contract lacked the necessary attention and oversight demanded by this sizable project, and that the overall structure relied far too heavily on one or two members of an already limited staff. To complicate the situation further it became clear that the staff themselves, both field and office, did not fully understand or comprehend the limitations of their positions and capabilities, nor the fact that a need for additional manpower and resources should have been recognized and requested. A matter of further concern seemed to center upon the fact that a clear structure of command, responsibilities, communications and accountability for the Contract was not fully established by the Town. As a result, in many instances there were significant discrepancies, or matters of opinionated views between interviewed parties as to who was responsible for what, how and at what levels individuals were expected and not expected to perform, and who did or did not have the authority to approve or implement changes in the scope and cost of the contractor's work.

Mr. Solemene had not only construction related responsibilities to oversee Contract 3 at a level beyond his self admitted capabilities, which based on the magnitude of the project was significant, he also carried the dual responsibilities for operating and maintaining the Town's sanitary sewer system on a daily basis. This shared responsibility appears to have been detrimental to the overall needs of the Town, as well as Mr. Solemene as a Town employee trying to cover the bases on both accounts. This staffing situation and the need for a more experienced, dedicated, full-time construction administrator for Contract 3 should have been recognized and resolved by Mr. Solemene's supervisors well in advance or at least during the early stages of construction.

Mr. Garard, who had the role of field inspections and oversight, had inadequate experience in projects of this type and complexity. Mr. Gerard also had limited knowledge and experience as it related to contract administration, especially as it relates to record keeping and documentation.

Communication between Mr. Garard and his various supervisors did not reveal these shortcomings, as they had the opportunity on multiple occasions to review and comment on his work product. As a

consequence, Mr. Gerard's vital role as it related to inspection of construction related sewer activities was conducted without adequate oversight and with inadequate review, evaluation and execution.

Mr. Garard was given far too much latitude and discretion in the field for making interpretations of the plans and specifications as to design content or intent, routinely making field related decisions resulting in significant financial consequences. He allowed the modification of design related elements of the project without documented concurrence from the design engineer of record. This allowed change order types of work to proceed and be completed by the contractor without first obtaining authorization from the WPCA. Mr. Garard was certifying quantities related to contractor payments without providing adequate field notes and quantity documentation to support the certification process.

Based on the interviews conducted, the Contractor committed significant amounts of construction related resources throughout the Contract. At any one time there were several main line and service connection crews working on the project at various locations and rates of production. In addition there were paving and restoration crews brought in as a follow-up of the pipe crews. It was reported that at several points during the project the contractor had as little as one to as many as seven to eight crews working on any particular day, which is typical for a project of this size, complexity and duration. Despite Mr. Garard's capabilities, or the capabilities of any other more experienced personnel providing full-time inspection services, the sheer magnitude and locations of operations promotes a lack of visual inspection, as well as quality and quantity controls throughout the duration of the work being performed under the Contract. In addition, it was reported that Mr. Garard also shared the responsibilities and duties of providing inspection services for independent sewer service connections unrelated to the Contract 3. These activities were being completed at various other locations within the Town.

An assessment of the working conditions and resources available at the time makes it clear that the Town failed to adequately staff the project based on the required experience and expertise necessary, and the sheer magnitude of ongoing construction activities. Based on the number of crews working and the amount of ongoing activities, a minimum of three if not four onsite inspectors, one for general oversight and direction, should have been employed. Considering Mr. Garard's assigned duties and responsibilities, as well as the resulting time constraints generated by the pure number of active construction sites needing to be inspected, it is fair to say the Town's intended full-time inspection approach was severely diminished to a mere periodic, "part-time" inspection. With the contractor working an average 8 to 9-hour workday with an average of four pipe laying crews working at any one time, at best there would have only been about two hours of actual inspection per site. When one considers other distractions (i.e. travel time, meetings, public relations, etc.), or the addition of any other crews (i.e. service connections, paving, site restoration, etc.) the actual amounts of inspection time per crew diminished even further.

The Town also failed to routinely require, adequately monitor and manage the contractor's schedule for construction activities, and by doing so control the number of contractor work crews being active onsite in comparison to the availability of Town inspectors. References are made to Section 3,

Paragraph 2 of the General Conditions which states, "*Prior to the first partial payment estimate the Contractor shall submit construction progress schedules showing the order in which he proposes to carry on the Work, including dates at which he will start the various parts of the Work, estimated date of completion of each part…*" and Section 12 of the Supplemental General Conditions, which states "*Prior to commencement of construction and within 10 days after the award of the Contract the Contractor will be required to submit a detailed Sequence of Operations to the Engineer. This Sequence shall outline his exact construction schedule for the completion of the work embraced in this Contract".*

Although it remains unclear as to whether or not these initial construction schedules were actually submitted (no records were provided), it is clear based on our interviews with the Town's staff that updated schedules were not routinely requested by the Town nor provided by the contractor, and that any increases or decreases of the contractor's onsite activities were made and accepted by the Town with little if any notice. Typically these notices were limited to the contractor's verbal communications with the Town's inspector a day or two before implementation.

Reference is also made to the Division 9, Section 9.1 the fifth paragraph on Page 9.1-7/17 of the Contract Specifications, which specifically states "*only one pipe-laying crew will be permitted to operate at any one time under one inspector*" and further specifies that should the contractor wish to mobilized any additional crews "*he must notify the Engineer at least two days in advance so that an adequate number of inspectors may be assigned to the job*". Certainly, this Contract provision fully expressed the Town's intent to staff additional inspectors should the need arise. Unfortunately this did not occur and the level of inspection and the quality assurance monitoring of construction activities suffered as well as the ability to monitor quantities actually installed and maintain adequate field records.

As stated above, despite their experience on prior Town contracts as well as this and current Contracts, when interviewed, the Town's staff seemed to be uninformed and/or unfamiliar with the provisions of the Contract Documents at the time of actual construction, specifically the General Conditions, Supplemental General Conditions and Technical Specifications. Again, this failure to fully comprehend, understand and implement, or for that matter appreciate the provisions of the Contract Documents on all accounts appeared to open the door for leniency with such provisions and the quality assurances necessary to maintain administrative control of the project. In addition, in some cases, there may have been justifications for monetary credits due the Town if indeed elements of the Contract were not fully provided and/or performed by the Contractor.

It is important to note, although it is the contractual responsibility of the contractor to fulfill his responsibilities of the Contract, it is also the responsibility of the Town, acting as the "*Engineer*", to monitor the contractor's compliance or noncompliance accordingly. Should items of noncompliance be found, it is the responsibility and obligation of the Town representatives to bring these issues to the attention of the Contractor, in written form if necessary, for immediate corrective actions. In the case of onsite field representatives providing inspection, any items of noncompliance should be duly noted in record form and reported to appropriate superiors along with a full description of the

corrective actions either taken or not taken by the Contractor. With that being said, all parties should be fully informed and understand the compliance provisions of the Contract.

A clear and fairly significant example of this type of leniency falls under the permitting elements of the Contract. Reference is made to Section 28 of the Supplemental General Conditions entitled "*Construction Permitting*". This Section clearly states the following:

> "*The Contractor is responsible for satisfying the requirements and securing a General Permit for Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities by the State of Connecticut Department of Environmental Protection*".

This is a rather routine type of regulatory requirement especially for a Contract of this type, size and complexity, disrupting literally miles of existing roadways and cross country routings for the proposed pipelines, as well as environmentally sensitive areas. At this time it appears, based on recent inquires by the Town at the State of Connecticut's Department of Environmental Protection (CTDEP) that this permit may not have been applied for nor obtained by the Contractor in accordance the Contract. During our interview process the Town's staff indicated that they could not recall this provision, nor could they confirm whether or not it was ever secured and submitted to the Town as evidence thereof, by the contractor prior to initiating construction. The regulatory consequences and possible penalties related to an unsecured permit of this type can be significant should the CTDEP decide to pursue any enforcement actions with the Town and/or the contractor. It is our understanding that a recommendation to the Town to follow-up on this issue with CTDEP and the contractor is currently underway.

Also, it is important to note that this "*General Permit*" requirement is referenced again under Specification Section 2.20 (Water Pollution Control – Soil Erosion), specifically the second paragraph of Subsection A. This reference states the following:

> "*This Work applies to, but not limited to, satisfying the requirements and securing a General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities by the State of Connecticut Department of Environmental Protection and any construction within or near any watercourse or water body resulting in water pollution by soil erosion."*

Further reference is made to Specification Section 2.20 (Water Pollution Control – Soil Erosion), Subsection A, which pertains to the measurement and payment provisions for Specification Section 2.20 and covers the lump sum cost paid for by the Town under Pay Item No. 4 (Total lump sum value under Pay Item No. 4 equals $135,000). This Subsection clearly indicates "*satisfying the requirements and securing a General Permit*" was an element of work under Pay Item No.4. If indeed a "*General Permit*" was not secured by the contractor in compliance with the Contract provisions, the justification for the Town approving and making full payment to the contractor is questionable.

Another example of leniency relates to the provisions or requirements set forth for "*Blasting*" under the Section 8 of the Supplemental General Conditions, which states:

> "*If blasting is required, the Contractor shall supply the services of a "Seismic Consultant" who will perform pre and post blasting building conditions surveys and conduct seismic and over pressure measurements during blasting.*"

Based on available records and the interview process, it appears there is little if any documentation available to confirm as to whether or not an independent and qualified "*Seismic Consultant*" was employed by the contractor, whether monitoring of the blasting operations were indeed performed, or whether or not the data requirements of this Section (i.e. Pre and Post surveys, blast monitoring reports, etc.) were ever submitted by the contractor to the Town. The recollection of the field operations appear to indicate that this requirement of the Contract was not performed.

Other examples of leniency, or items that may not have been performed, provided and/or levels of compliance were found to be lacking in performance or documentation whether the responsibilities of the Town or contractor, or both in accordance with the Contract, include the following:

Section 5 of the General Conditions entitled "*Shop Drawings*"
Section 14 of the General Conditions entitled "*Negotiation of Contract Amendments*"
Section 2 of the Supplemental General Conditions entitled "*Project Photographs*"
Section 5 of the Supplemental General Conditions entitled "*Job Offices*"
Section 6 of the Supplemental General Conditions entitled "*As-Built Records*"
Section 12 of the Supplemental General Conditions entitled "*Sequence of Operations*"
Section 27 of the Supplemental General Conditions entitled "*Sediment Control Measures*"
Specification Division 2, Section 2.5 entitled "*Trench Excavation and Backfill*"

Field Records and Related Documentation

A review of the Town's field records and related documentation for Contract 3, or lack thereof, was found to be a major concern and proved to be a significant detriment in reviewing, reconstructing and, to any reliable sense, confirming the construction activities and the quantities for payment related to Contract 3. Typically one of the most important responsibilities given to a field representative inspecting a project of this type, or for any construction related activity, is to visually observe and fully document any and all onsite activities, conditions, events and other relevant matters in a detailed manner for accountability and future reference. This type of recordkeeping is typically done in writing utilizing standardized formats that are setup and established prior to construction. Primarily this recordkeeping should consist of a combination of daily/weekly field reports, diaries, quantity logs with material slips as applicable, field survey books, material shop drawings, test reports, as-built drawing markups, correspondence and memorandums of record, as well as being supplemented by photographic documents as deemed necessary. This is especially true when such inspection is being provided on a full-time basis. Upon completion all reporting documents should be maintained in a properly organized, centralized filing system that may be used by the Town for future reference.

In the case of Contract 3, little documentation was available within the project file and when asked of Town officials, no additional or new information has been presented to date by the Town's field representative, Mr. Clair Jon Garard. During his interview Mr. Garard indicated that although he typically recorded relevant field data and miscellaneous reminders in notebooks, similar to the only one on file (physically described for reference as being a "*Mead*" type, 9 ¾ x 7 ½ inch size, with 200 unnumbered pages, bound with a black & white soft cover, handwritten entries), upon completion of certain project areas and/or payment periods, they were typically thrown out as not being necessary. It should be noted that a review of the one notebook currently on file was merely a limited and somewhat sporadic array of general information for locations throughout the contract area, and serves little value for recreating any organized documentation for the project, especially in regards to confirming quantities.

The entire contract lacks any resemblance of adequate or reliable documents such as the following: daily, weekly or monthly reports of the construction operations; general data relating to weather, working conditions, safety precautions or management of traffic; recorded information relative the number of contractor crews working or their various onsite locations during the contract period; recorded information as to subsurface conditions encountered or groundwater constraints that may have impacted the operations; listings of the labor force and/or equipment utilized by the contractor on the project; detailed or quantified listings of the quantities or items of work completed by the contractor to confirm the inspector's certification of the contractor's monthly Application for Payments; detailed locations, quantified listings and justification for those items of work completed by the contractor and charged to the "*Supplementary Unit Prices*"; recorded survey data for the facilities installed to check or confirm line and grade; nor any detailed or supporting as-built information to compare with or confirm the limited information previously submitted by the contractor.

It should be clearly noted and recognized that despite the typical need for such documentation it does not appear that any type of standardized recordkeeping formats or general approaches were ever established by the Town in advance or during the construction to aide Mr. Garard with his duties. As such, Mr. Garard was given little if any guidance by his superiors as to any expectations for recordkeeping. This appears true for not only Contract 3, but also any prior contracts to which he was assigned. During the interview process, parties stated that they were either not aware of any type of procedures typically utilized for construction monitoring and therefore no such guidance was given, felt that Mr. Garard should have known or at least recognized a need and complied accordingly based on his position, were under the impression that an adequate level of recordkeeping was indeed being kept and could not explain why it wasn't, or simply did not think such documentation was that important or necessary and therefore did not pursue the matter. In all cases it was clear that Mr. Garard's supervisors, including members of the WPCA, failed to take any active role in monitoring the needs and oversight of the project in regards to any type of recordkeeping and extended far too much confidence and reliance on Town staff at this grade and level. This brings into question the judgment of upper level management and elevates the need to have more well qualified and more experienced personnel serving the Town at all levels. It also brings into question whether the "duty of care" responsibility was discharged by those in positions of

authority. The Town must recognize that if indeed the required expertise and dedication of adequate staff is not present or available within current Town employees, a solicitation of outside assistance should be an order of priority prior to moving forward with any future contracts of this type and magnitude.

As a source of future reference, the Town may wish to explore the construction procedures and recordkeeping policies set forth by the State of Connecticut Department of Transportation (CTDOT) "*Construction Manual*", "*Municipal Manual*", "*Construction Contract Bidding and Award Manual*" and the "*Construction Engineering and Inspection, Information Pamphlet for Consulting Engineers*". All four publications are available online through the CTDOT website. The Town should keep in mind however that these manuals are fairly detailed and were formulated for a full range of projects, both in size and type. As such the Town may wish formulate their own set of policies and procedures using these and other manuals merely as a guide thereby producing a more concise and simplified approach for construction management that may better suit their overall needs.

Also to establish a sense of accountability for Contract 3 it may be beneficial for the Town to conduct a thorough and detailed accounting of the entire contract both in regards to quantities and cost prior to making any final payments to the Contractor and completing a project close-out. As part of this accounting procedure, quantity takeoffs and dollar values should be produced and analyzed for all design related drawings, supplemented by any as-built records available thereby confirming not only the basis of Contract 3, but also any additional work related to the "*Jog Hill Extension*" and/or other elements of "*Extra Work*" paid for under individual change orders as well as the "*Supplementary Unit Prices*" of the contract. Once this is complete, a comparison of quantities and cost may then be performed analyzing and confirming a consistency with the expenditures indicated under the most recent Application for Payment. Any significant deviations in recorded quantities or their related costs should be examined further either by extending record research, performing additional interviews with the Town's field representative(s), the contractor and/or the design engineer of record seeking explanations, onsite field investigations, inspections and/or measurement surveys, or a combination of all to insure and document an accurate accounting of Contract 3.

One of the primary and significant examples of substandard recordkeeping and a lack of field documentation relates to the installation of the "*8-inch PVC Sewer Trench Drain*". Although a total of 46,348 linear feet of trench drain was apparently installed throughout the project area and paid for under Pay Item No. 32 and Change Order 15, there does not appear to be any reliable field documentation and/or as-built information to confirm the exact extent and locations of the pipelines installed. The total cost expended for this item of work equals $926,960.

Another example relates to those items of work that were apparently completed by the Contractor and paid for by the Town under the "*Supplementary Unit Prices*" of Contract 3. As stated elsewhere in this report, utilization of the "*Supplementary Unit Prices*", which were established for contractual convenience and contained under the original contract for elements of "*extra work*" when so duly authorized, were allowed to be used and charged to Contract 3 in an undocumented, open-ended and

possibly unauthorized fashion. Based on the most recent application for payment submitted by the Contractor (Application for Payment No. 27) the total expenditure charged to these "*Supplementary*" items totals $1,215,014 of work.

In some cases there appears to be some questions as to why such "*Supplementary*" items were used and charged in comparison to others, possibly of lesser cost, that were contained and available for use under the basic contract. There are also questions as to where and to what extent certain items of work were actually performed. Due to the lack of field related data, many of these questions have been left unanswered. A primary example of this situation relates to Supplementary Item No. S-4 entitled "*15-inch CPP Drain*".

Based on the Contractor's most recent Application for Payment, approximately 3,989 linear feet of 15-inch CPP drain pipe was installed at a Unit Price of $65 per linear foot resulting in a total cost of $259,285. Based on the lack of documented field records and the questionable accuracy of the as-built drawings being submitted by the contractor, it has not been determined and/or confirmed exactly where this amount of pipe was installed within the project area. A general review of the as-built drawings submitted by the contractor fail show adequate references to this amount of pipe, the locations of installation, or at what depths the installations were installed. Naturally this has been a matter of continuing concern, especially due to the amount of dollars expended.

In addition, due to the lack of documentation there are unresolved questions relating to why this amount of pipe, if installed at depths ranging from zero to 10-feet, was not charged to the similar Pay Item No. 27 entitled "*15-inch CPP Storm Drainage, 0-10 feet*" at a greatly reduced Unit Price of $1.00 per linear foot and an overall cost savings of $255,296. There are also outstanding questions as to why a total estimated quantity of 22,941 linear feet was set within the original bidding documents for Item No. 27, while only 101 linear feet is shown to have been actually installed at the $1.00 per linear foot price.

At a minimum, we recommend that the Town consider seeking answers or at least suitable explanations for the above issues as well as a confirmation of overall pipe amounts installed to insure an accurate and justifiable accounting of the monies spent.

Accounting Controls for Construction Contract Applications for Payment

There were 27 Applications and Certificates for Payment ("pay apps") submitted by the contractor, Mark IV. These pay apps were approved by the WPCA at their monthly meetings. These pay apps are cumulative documents with the numbers from each application carrying forward to the next application. Pay App No 27 was the final application made by the contractor for Contract 3 (see Exhibit F). The submitted application contains quantities installed during that period, multiplied by the unit prices as specified in the contract. As noted in the previous sections of this report, it was determined that there was not adequate documentation maintained in the field by field inspection crews to accurately validate quantities installed. It was also determined that during most of the duration of Contract 3, no one at either the WPCA or the Town was verifying the individual line items as to unit prices. However, each month, the WPCA routinely approved the pay apps along

with any change orders. Many changes orders were approved without much, if any, questioning. Certain change orders were questioned by the WPCA. There is additional discussion related to specific change orders elsewhere in this report. In total, pay apps were approved and paid in excess of approvals by the WPCA, Finance Committee and Town Council in the amount of approximately $120,000 (see Exhibit G).

In addition, while testing the mathematical accuracy of the pay apps, we found a number of errors. Some of the errors were corrected in subsequent pay apps and other errors did not result in overpayments to the vendor, they just involved incorrect percentage completion figures.

Construction Related Change Orders

A review of the change orders processed and approved by the WPCA indicates a general lacking of documentation and accountability to track and support the changes that were made, an overwhelming reliance on lower level and inexperienced employees of the Town with little, if any, guidance and/or oversight regarding such matters, little if any negotiation of scope and cost with the contractor, a poorly administered protocol for approving the changes, limited considerations for the financial burdens being accepted, and a total lack of formal contract documents being properly prepared and executed by the appropriate parties amending the original Contract.

One must recognize that the change order process is indeed a contractual, legal amendment to the Contract as originally executed. Change orders are typically required to modify the original Contract in any way shape of form. This includes increasing, decreasing and/or modifying the basic scope or elements of the work, adding elements of work covered by the "*Supplementary Unit Prices*", adding "*extra work*" outside the parameters of the original scope, time adjustments for completing the contract work, and any modifications to the overall project cost. As such it is important to administer each and every change order as a complete, well documented, properly approved, stand alone supplement to that original Contract. Based on the available records and interviews with Town employees, this was not the case for Contract 3. Although there are general provisions for administering Change Orders, and the content thereof, set forth under the Contract (Reference is made to Section 14 of the Contract "*General Conditions*"), it appears they were not followed.

Documents pertaining to the Change Orders of record on Contract 3 primarily consist of one page, almost form-type letters from the contractor to the Town's "*Sewer Department*", "*Attention: J. Solemene*" simply stating an abbreviated description of the item of work at issue and a unit price. Typically no estimated quantities, cost projections and/or other supporting documentation were attached or provided by the contractor, nor as it appears were formulated by the Town to establish financial controls (i.e. "*not-to-exceed*" ceiling, etc.) to the Contract price. Essentially, implemented change orders establishing additional line items for payment (i.e. per linear foot, per cubic yard, per square yard, etc.) were open-ended in regards to any projected quantities and resulting costs. Therefore the consequences of having these open-ended items left little if any financial controls to monitor the overall Contract.

Also it is difficult to determine who actually requested the changes being proposed or, once these letters were received, who actually authorized such work prior to implementation in the field. Based on our interviews with Town personnel, the latitude of requesting and approving changes to the Contract were left to and made by either the Town's field representative(s) and/or its Sewer Administrator with little, if any, oversight by the WPCA or other Town officials. It is clear however, that in most cases the approval process with the Town's WPCA occurred well after the changes were actually implemented in the field resulting in what is typically considered the expenditure of unauthorized funds. The only means of cost monitoring and/or approval were pushed more to the payment process, after the work was complete and payment to the contractor was due. The contractor would merely add these change order line items to his "*Application for Payment*" and submit the same to the Town for payment. The "*Application for Payment*" would then be presented by the Town's Sewer Administrator to the WPCA at monthly meetings and approved for payment with little if any discussion, recognition and/or consideration towards the financial consequences of the added costs being accepted.

Based on the records of correspondence and related documentation made available by the Town, there have been twenty-one (21) Change Orders processed and approved for payment by the Town's WPCA as of the Contractor's Application for Payment No. 27 dated 11/11/2009. In addition, a more recent Change Order (Change Order No. 22) in the amount of $1,385.33 has apparently been approved by the Town's WPCA however the actual status of payment is pending.

In summary these Change Orders reflect the following:

Change Order No.	Description	Unit Price	Quantity	Cost
01**	Furnish and Install Concrete Encasements, per cubic yards	$250/CY	146 CY	$ 36,500.00
02**	Remove & Dispose Existing Catch Basins, per unit	$750/EA	9 EA	6,750.00
03**	Tie into Existing Catch Basins, per unit	$250/EA	73 EA	18,250.00
04	Core Drilling Existing Sanitary Manholes, per unit	$1,200/EA	13 EA	15,600.00
05**	Removal & Disposal of Existing Drainage Pipe, per linear foot	$10/LF	1,605 LF	16,050.00
06	# 21 Wareham Place, per lump sum	$16,355/LS	1 LS	16,355.00
07**	Gravel Access Road, per square yard	$16/SY	14,737 SY	235,792.00
08**	Grass Access Road, per square yard	$18/SY	5,076 SY	91,368.00
09	Stream Crossing, per unit	$25,000/EA	2 EA	50,000.00
10	Stream Crossing, per unit	$15,000/EA	15 EA	225,000.00
11**	Abandon Existing Septic Tank, per unit	$1,500/EA	2 EA	3,000.00
12**	36-inch CPP Storm Drainage, per linear foot	$125/LF	520 LF	65,000.00

13	Hedge Hog Road Stabilization, per lump sum	$29,500/LS	1 LS	29,500.00
14	Temporary Line Stripe, per lump sum	$18,883.35/LS	1 LS	18,883.35
15	8-inch PVC Trench Drain, per linear foot	$20/LF	27,752 LF	555,040.00
16**	10-inch PVC Sanitary Sewers (20-25 foot depth), per linear foot	$250/LF	567 LF	141,750.00
17**	10-inch DIP Sanitary Sewers (15-20 foot depth), per linear foot	$185/LF	50 LF	9,250.00
18	Remove Trees – Grey Rock Road, per lump sum	$5,262/	LS 1 LS	5,262.00
19**	8-inch PVC Sanitary Sewers (25-30 foot depth), per linear foot	$245/LF	399 LF	97,755.00
20**	48-inch Dia. Sanitary Manholes (25-30 foot depth), per unit	$6,500/EA	5 EA	32,500.00
21**	Furnish & Install Double Catch Basin, per Unit	$4,400	1 EA	4,400.00
22	# 21 Wordins Lane Water Line	$1,385.33/LS	1 EA	1,385.33
				$1,675,390.68

In reviewing the above change orders there are a number issued and approved by the Town's WPCA simply based on the fact that there were no pay items and/or unit prices established within the original contract documents. These specific change orders are designated above with a double asterisk (**) and total $758,365 or 45.3% of the total change order increases to Contract 3.

Further review appears to indicate that many of the above items may have been specifically related to the "*Jog Hill Extension*", which by comparison and the fact that the "*Extension*" was indeed "*added*" to Contract 3 by the Town as "*Extra Work*", would explain why these items of work did not appear in the original documents. Unfortunately, due to the lack of a detailed takeoff of quantities and/or items of work specifically related to the "*Jog Hill Extension*", confirmation of this conclusion is difficult. The fact remains however that the items were not elements of the original Contract 3 documents and therefore appear to have been justified and necessary for completion of Contract 3.

Other change order items appear, based on location and/or the item of work described, to be clearly elements of "*Extra Work*" specifically requested by the Town (the specific individual who made the request is unknown at this time) and approved by the WPCA for various unconfirmed and undocumented reasons. Reference is made to Change Order Nos. 6, 13, 14, 18 and 22.

Change Order No. 6 totaling $16,355 appears to be related to drainage replacement and/or improvements requested by the Town at or in the vicinity of #21 Wareham Place. Change Order No. 13 totaling $29,500 appears to be related to some form of river bank stabilization and/or improvements (i.e. trees/stump removal, channel clearing and lining, site restoration, and guard rail

installation) in the vicinity of Hedgehog Road, which based on the parameters of Contract 3, was outside the limits of Contract 3. Change Order No. 18 totaling $5,262 appears to be work related to removing eight pine trees at or in the vicinity of # 90 and # 100 Grey Lock Road. Based on the above, and the fact that little if any field and/or record documents were made available as a means of justification, it is questionable as to how each change order has relevance to the "*Sewer*" construction aspects of Contract 3.

Change Order No. 14 totaling $18,883.35 appears to be related to the installation and maintenance of temporary roadway markings during construction along Daniel Farm Road. Based on the type of roadway and the volume of daily traffic, this particular change order appears to have been instituted for safety reasons, above and beyond the general standards and payment parameters related to Pay Item No. 1 (Maintenance and Protection of Traffic). As such, based on the subcontractor invoices as submitted, compensation appears to have been justifiably due in the requested amount.

Change Order No. 22 totaling $1,385.33 relates to the exploratory construction performed by the contractor for a water line at or in the general vicinity of # 11 Wordins Lane. Based on the change order documentation dated March 5th, 2010, the exploratory activities performed by the contractor confirmed that the water line issue was outside the easement limits of Contract 3 and therefore not related to the contractor's activities during the performance on Contract 3. As such, based on the recommendation of the Town Engineer, compensation was justifiably due in the requested amount.

The combined total for these "*Extra Work*" change orders equals $71,385.68 or 4.2% of the total change order increases to Contract 3.

There are two change orders, one of which is significant in relation to cost, that appears questionable in regards to why the two change orders were indeed included, processed and approved by the Town's WPCA. Reference is made to Change Order No. 4 (Core Drilling Existing Sanitary Manholes) and Change Order No. 15 (8-inch PVC Trench Drain). Change Order No. 4 appears to be the same elements of work (Core Drilling Existing Sanitary Manholes) and unit price ($1,200 per unit) required under Pay Item No. 46. Change Order No. 15 appears to be the same elements of work (8-inch PVC Trench Drain) and unit price ($20 per linear foot) required under Pay Item No. 32.

It was reported by Town representatives that certain change orders were requested and initiated by the Towns' WPCA merely due to the significance of the item and the "*poor perception*" of having such a significant cost overrun on a project. Whether this was or was not the case on either of these two items remains unclear at this time. However, reference is made to an undated, handwritten and unsigned document with no company letterhead, which was made available by the Town as justification for Change Order No. 15. Although the author and the point of origin of this document have not been confirmed, it has been reported by Town representatives that it was submitted by the contractor (Mark IV) to substantiate and/or otherwise explain the basis for Change Order No. 15. The document appears to confirm the above suspicion by specifically stating: "*CO #15 – 8-inch PVC under-drain price same as Item #32, you asked that we create this line item (C.O.) so as to not have such an overrun*". (See Exhibit H.)

In regards to the specifics of Change Order No. 4 and combined with Pay Item No. 46, as of the Contract's Application for Payment No. 27, thirteen manhole cores were performed and charged under the change order, while fourteen manhole cores were performed and charged under Pay Item No. 46. At a unit price of $1,200 per core, the total amount paid for under Change Order No. 4 reflects $15,600 and the total amount paid for under Pay Item No. 32 reflects $16,800. Combined, the total number of manhole cores performed equals twenty-seven for a total expenditure of $32,400 or 270% over the original amount in Contract 3.

In regards to the specifics of Change Order No. 15 and combined with Pay Item No. 32, as of Contract 3's most recent Application for Payment number 27 (Exhibit F),752 linear feet of Trench Drain were installed and charged under the change order, while 18,596 linear feet of Trench Drain were installed and charged under Pay Item No. 32. At a Unit Price of $20 per linear foot, the total amount paid for with the change order reflects $555,040 and the total amount paid for with Pay Item No. 32 reflects $371,920. Combined, the total amount of Trench Drain actually installed equals 46,348 linear feet for a total expenditure of $926,960 or 321% over the original amount in Contract 3.

Combined, these change orders (Nos. 4 and 15) reflect a total value of $570,640 or 34.1% of the total change order increases to Contract 3.

There are two change orders specific to "*Stream Crossings*" that in total change order value is considered significant. Reference is made to Change Order No. 9 and Change Order No. 10. Based on documentation made available by the Town, both of these change orders are a direct result of a contractual dispute and the subsequent negotiations between the Town and Contractor to resolve the issue. The dispute was apparently a result of discrepancies within the original contract documents in regards to the payment limits for Pay Item No. 45 entitled "*Stream, River & Culvert Crossings*", and the actual number of "*Crossings*" required under the Contract in comparison to the number actually shown on the Drawings at the time of Bid. It appears the original intent of Contract 3 may have been to have one designated "*lump sum*" amount to cover the contract costs related to all crossings encountered, whether a stream, river or culvert. However, due to fairly vague "*Measurement and Payment*" language within the original contract specifications, combined with limited designations for such crossings on the contract drawings as well as the magnitude of work specific to each crossing, a question of interpretation arose indicating that the lump sum amount indicated in the original Contract 3 documents of $45,000 was for each crossing not a combination of several.

After deliberations on both sides it appears an "*economy of scale*" type of agreement was mutually agreed upon by the Town's WPCA and the Contractor. Whereas the first crossing would be paid for under the unit price for Pay Item No. 45 ($45,000), the second two crossings would be paid for under Change Order No. 9 ($25,000 per crossing), and all subsequent crossings would be paid for under Change Order No. 10 ($15,000 per crossing). This change order agreement resulted in a total of two crossings totaling $50,000 (2 crossings at $25,000 per crossing) paid for under Change Order No. 9 and fifteen crossings totaling $225,000 (15 crossings at $15,000 per crossing) paid for under

Change Order No. 10. Combined these Change Orders reflect $275,000 or 16.4% of the total Change Order increase to the Contract.

It should be noted, it is difficult to determine based on the lack of design and record information currently available for each crossing, whether or not the basis of the change orders are sound and justified, and/or whether or not the amounts ultimately agreed to by the Town are indeed a fair and reasonable representation of the work actually necessary for each crossing. As stated above, due to the limited language of the Contract Specifications and lack of Contract Drawing details, a more accurate field assessment of the work actually completed would need to be performed to render comment on the overall cost.

In summary of the above the following table represents an allocation of costs based on reason and significance:

Change Order Description	**Allocated Change Order Amount**	**Percentage of Total Change Orders**
Change Orders related to Unspecified Items of Work as indicated under Original Contract	$758,365	45.3%
Change Orders related to "*Extra Work*" specifically requested by Town	$ 71,385	4.2%
Change Orders specific to a separation of cost from Contract Pay Items (C.O. # 4 and C.O. # 15)	$570,640	34.1%
Change Order Specific to Stream, River & Culvert Crossings (C.O. # 9 and # 10)	$275,000	16.4 %
Total Amount of Approved Change Orders	$1,675,391	100%

Utilization of the "*Supplementary Unit Prices*", which were established for contractual convenience and contained in the original Contract 3 documents for elements of "*extra work*" when so duly authorized, were also allowed to be used and charged to Contract 3 under the sole discretion of lower level field representative(s) and/or the Sewer Administrator in the same undocumented, open-ended and possibly unauthorized fashion as the above change orders. This appears to be in direct violation to the provisions set forth under Section 14 of the Contract "*General Conditions*" where it specifically states "*The contract price or time may be changed only by a change order*".

Also, in some cases there appears to be some questions as to why such "*Supplementary*" items were charged to in comparison to others, possibly of lesser cost, that were contained and available for use under the basic contract. It is clear however that although $1,215,014 of work was charged by the contractor (as of Application for Payment No. 27, dated 11/11/2009 as seen in Exhibit F) and approved for payment by the WPCA under the "*Supplementary Unit Price*" items, there are no executed change orders of record that adequately quantifies the work, the specific locations of

application, nor the prior approval and/or authorized expenditures of such funds by the Town's WPCA.

Similar concerns and lack of documentation are found in regards to the additional work related to the "*Jog Hill Extension*", which has been reported to have added approximately $3.0 to $3.5 million of utility work to Contract 3. Although there is some documentation relating to general discussions, public hearings and an approval process performed within the Town (i.e. WPCA, Finance Committee, Town Council, etc.), there are no executed change orders or supplemental agreements to Contract 3 quantifying the amount of work added, the specific locations of application, nor any contractual adjustment (increase) to the overall contract quantities, dollar amount and/or time for completion. Again this appears to be in direct violation to the provisions set forth under Section 14 of Contract 3 "*General Conditions*" where it specifically states "*The contract price or time may be changed only by a change order*".

Based on the contractor's "*Application for Payments*" it appears that once the "*Extension*" was apparently approved for implementation, the contractor simply extended the unit items within the original base Contract 3, as well as possibly the "*Supplementary Unit Prices*", creating what is now shown to be significant overruns in quantities and costs on numerous line items. Again financially, this is viewed as an open-ended approach to the construction management of Contract 3. The addition of such work without the proper change order documentation executed between both parties of Contract 3 (the Contractor and the Town) presents significant concerns of overall accountability and oversight on the part of the Town, specifically the WPCA.

The above discrepancies and lack of change order protocols may account for the variation of contract values as indicated on the Contractor's most recent Application for Payment No. 27, dated 11/11/2009. In comparing the "*Total Completed & Stored to Date*" dollars ($20,680,582.06) to the "*Contract Sum to Date*" dollars ($17,059,650.20), the "*Total Completed*" exceeds the "*Contract Sum*" by $3,620,931.86 without any documented explanation as to why. By rights, the total "*Contract Sum*", inclusive of all previously approved and executed change orders should reflect and be equal to the total expenditures approved and authorized by the Town under Contract 3. As such the "*Contract Sum*" serves as the "*not-to-exceed*" ceiling for the overall contract. Establishing and maintaining this "*not-to-exceed*" limit is critical to the Town as the funding entity, as well as the contractor looking to be paid, since it reflects the total amount of available funds committed and/or otherwise appropriated for the project. Failure to maintain such controls exposes the Town to over spending the budgetary constraints of the appropriation, thus creating the need to seek additional funds to meet the payment commitments of the contract.

Naturally as individual change orders are processed and approved based on available funding, the "*Contract Sum*" is adjusted based on the net increase or decrease of the change order being processed. Unfortunately, this type of contract administration, which is accepted practices under construction and general accounting management, was not used for Contract 3.

Since the issuance of the Contractor's Application for Payment No. 27 (11/11/2009) and the more recent approval of Change Order No. 22 (03/05/2010), there appears to have been only one prior change order request submitted by the contractor.

This change order request was in the amount of $69,768 and submitted by the contractor to the Town in correspondence dated December 7, 2007. To the best of our knowledge and available sources, this change order has not been specifically approved by the WPCA. The change order request appears to relate to pavement repairs performed by the contractor along Daniels Farm Road as requested by the "*First Selectman*", specifically to "*furnish and reinstalled temporary pavement on Daniels Farm Road*" in the quantity amount of 2,907 square yards at the Unit Price of $24.00 per square yard. It is important to note that under Pay Item No. 52 (Temporary Bituminous Repair) the unit price is the same as requested by Contract 3 under this change order request ($24 per square yard). As such, there is a question as to why, if eligible for payment, would a separate change order request be made by the contractor. Also, if the "*furnish and reinstalled temporary pavement"* work was indeed requested by the "*First Selectman*" due to poor roadway conditions, the basis for the contractor's reimbursement would most likely not be justified due to the repair provisions of the contract documents.

Although the above questions may have been the Town's justification for possibly denying the original request, no documentation has been found to support and/or otherwise confirm an actual denial. On the other hand, it should also be recognized that since the contractor's request resembled the same unit price established for Pay Item No. 52 ($24 per square yard), payment whether justified or not, may have been forthcoming under that line item without actually completing the change order process. Due to the lack of field and quantity records, as well as a lack of quantity takeoffs for Contract 3, it is also difficult to determine if this course of payment was implemented.

Lastly, as stated elsewhere in this report, to establish a sense of accountability for Contract 3 it may be beneficial for the Town to conduct a thorough and detailed accounting of the entire contract both in regards to quantities and cost prior to making any final payments to the Contractor and completing a project close-out. As part of this accounting procedure, quantity takeoffs and dollar values should be produced and analyzed for all design related drawings, supplemented by any as-built records available thereby confirming not only the basis of the original contract, but also any additional work related to the "*Jog Hill Extension*" and other items of "*Extra Work*", including the "*Supplementary Unit Prices*" paid for under Contract 3. Once this is complete, a comparison of quantities and cost may then be performed analyzing and confirming a consistency with the expenditures indicated under the most recent Application for Payment. Any significant deviations in recorded quantities or their related costs should then be examined further either by extending record research, performing additional interviews with the Town's field representative(s), the contractor and/or the design engineer of record seeking explanations, onsite field investigations, inspections and/or measurement surveys, or a combination of all to insure and document an accurate accounting of Contract 3.

Conflicts of Interest

It was noted during the procedures performed that one individual, Mr. Kallmeyer, held various positions with in the Town simultaneously. He was the Assistant Town Engineer from July 1970 to June 1982, the Director of Public Works from July 1982 to March 1988 and the WPCA Sewer Administrator from 1981 to 1984. While the construction of Contract 3 was not during this time frame, much of the long term planning and design work was accomplished during these time periods. By having different individuals in these three different positions creates checks and balances in that each individual would represent a different interest and a different perspective on issues. Had different individuals been in these positions, there may have been more challenging of the approaches taken and recommendations and the ultimate decisions made along the way.

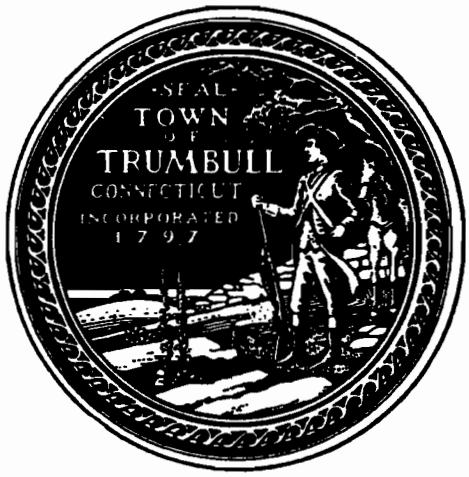
The work on this assignment was primarily performed by Catherine M. Parente, CPA/ABV/CFF, CVA, CFE, CFFA and William Skerpan, Jr. Significant professional assistance was provided by Julie Steffes, CPA/CFF, CFE, CVA and Joseph D'Alesio, P.E. Our fieldwork including interviews, document review, site visit and scope expansion were completed by June 10, 2010. We would be glad to further expand the scope of our work at your request or answer any questions you may have regarding the work we have performed.

CCR LLP

CCR LLP

Dated: August 24, 2010

CHARTER
of the
TOWN of TRUMBULL



APPROVED NOVEMBER 3, 1981

Effective November 3, 1981

of Finance shall make an audit and investigation of the accounts of such officer and report to the First Selectman and Council. Upon the death, resignation, or removal of the Director of Finance, an audit shall be made of the accounts of the Department of Finance by a Certified Public Accountant, selected by the Council.

G. PURCHASING CONTRACTS AND EXPENDITURES

(a) The Director of Finance shall be the Purchasing Authority of the Town. All supplies, materials, equipment and other commodities required by any department, office, agency, board or commission of the Town, including the Board of Education, shall be purchased by the Purchasing Authority on requisitions in such form as the Director of Finance, with the approval of the First Selectman, may prescribe, signed by the head of the department, office or agency, or Chairman of the Board or Commission.

(b) Before any purchase is made or any contract for insurance, public work or services, other than professional services, involving an expenditure of more than five hundred dollars ($500.00), is let, said Purchasing Authority shall procure bids from at least three (3) sources, whenever practicable, and such bidding shall be open to any bidder who shall conform to the regulations which may be imposed by said Purchasing Authority when the bids are requested.

(c) If any purchase or any such contract involves the expenditure of five thousand dollars ($5,000.00), or more, the Purchasing Authority shall invite sealed bids or proposals, by causing to be published and advertised therefor in a newspaper having a substantial circulation in the Town, at least ten (10) days prior to the opening of said bids. Purchases shall be made from and contracts let to the lowest, responsible, qualified bidder thereon, or if there be two or more responsible bidders who submit bids which are equal and lowest, to one of the lowest responsible bidders, provided however that the right to reject and to waive any informalities in all bids or proposals shall be reserved, which reservations shall be set forth in such advertisement. This Sub-section shall apply to the construction of any public buildings and to other public improvements.

The foregoing requirements as to bids may be waived after the Purchasing Authority has obtained the written approval of the First Selectman in any case in which compliance with this Sub-section shall be deemed to be impractical or not in the best interest of the Town. The record of any purchase made pursuant to such a

waiver shall include a copy of the waiver, which shall contain a statement of the reasons therefor, and shall be kept on file in the office of the Purchasing Authority where it shall be open to public inspection.

(d) No purchase shall be made from nor shall services (other than services as an officer, agent, or employee of the Town) be secured from any officer or employee of the Town, or from any partnership or corporation in which such officer or employee is a partner or officer, or holds a substantial interest, unless such relationship and the fact that such purchase is contemplated shall be made known in writing to the agency making such purchase, and notice thereof posted, for at least five (5) days before such purchase be made, in the office of the agency making such purchase and in a public place in the Town Hall.

(e) Purchase requisitions and contracts for public work or other services covered by this section shall not be valid without the endorsement of the Purchasing Authority. The Purchasing Authority shall endorse a requisition or contract only after he has examined the same and found that it comforms to the requirements of this section and that there is a sufficient unencumbered balance of an applicable appropriation to pay the same. The Purchasing Authority shall record the amount of the requisition or contract as an encumbrance against the appropriation from which it is to be paid. If, by making any contract or purchase, the budget allowance of the department, commission or board requesting same shall be exceeded, the purchase shall not be made. The Purchasing Authority shall promptly notify the Board of Finance and such contract or purchase may thereafter be authorized in accordance with and subject to the limitations of this Charter.

Section 7. TOWN CLERK

The Town Clerk shall be elected at the Town election for a term of two (2) years and until his successor shall be elected and qualified. The Town Clerk shall have all powers and duties conferred or imposed by law on Town Clerk and shall serve as Registrar of Vital Statistics. The Town Clerk shall appoint and remove, subject to the provisions of Chapter VII, Section 20 of this Charter, all full time deputies, assistants or employees in his office.

Section 8. TOWN ATTORNEY

The First Selectman shall appoint a Town Attorney or Associate Town Attorneys for a term co-extensive with that of the First Selectman or for such portion thereof as the

CHARTER
of the
TOWN OF TRUMBULL

APPROVED NOVEMBER 4, 2003
Effective November 4, 2003

resignation, or removal of the Director of Finance, an audit shall be made of the accounts of the Department of Finance by a certified public accountant, selected by the Council.

G. *Purchasing contracts and expenditures.*

(a) The Director of Finance shall be the purchasing authority of the Town. All supplies, materials, equipment and other commodities required by any department, office, agency, board or commission of the Town, including the Board of Education, shall be purchased by the purchasing authority on requisitions in such form as the Director of Finance, with the approval of the First Selectman, may prescribe, signed by the head of the department, office or agency, or chairman of the board or commission.

(b) Before any purchase is made or any contract for insurance, public work or services, other than professional services, involving an expenditure of more than one thousand dollars ($1,000.00), is let, said purchasing authority shall procure bids from at least three (3) sources, whenever practicable, and such bidding shall be open to any bidder who shall conform to the regulations which may be imposed by said purchasing authority when the bids are requested.

(c) If any purchase or any such contract involves the expenditure of ten thousand dollars ($10,000.00), or more, the purchasing authority shall invite sealed bids or proposals, by causing to be published and advertised therefor in a newspaper having a substantial circulation in the Town, at least ten (10) days prior to the opening of said bids. Purchases shall be made from and contracts let to the lowest, responsible, qualified bidder thereon, or if there be two (2) or more responsible bidders who submit bids which are equal and lowest, to one (1) of the lowest responsible bidders, provided however that the right to reject and to waive any informalities in all bids or proposals shall be reserved, which reservations shall beset forth in such advertisement. This subsection shall apply to the construction of any public buildings and to other public improvements.

The foregoing requirements as to bids may be waived after the purchasing authority has obtained the written approval of the First Selectman in any case in which compliance with this subsection shall be deemed to be impractical or not in the best interest of the Town. The record of any purchase made pursuant to such a waiver shall include a copy of the waiver, which shall contain a statement of the reasons therefor, and shall

be kept on file in the office of the purchasing authority where it shall be open to public inspection.

(d) No purchase shall be made from nor shall services (other than services as an officer, agent, or employee of the Town) be secured from any officer or employee of the Town, or from any partnership or corporation in which such officer or employee is a partner or officer, or holds a substantial interest, unless such relationship and the fact that such purchase is contemplated shall be made known in writing to the agency making such purchase, and notice thereof posted, for at least five (5) days before such purchase be made, in the office of the agency making such purchase and in a public place in the Town hall.

(e) Purchase requisitions and contracts for public work or other services covered by this section shall not be valid without the endorsement of the purchasing authority. The purchasing authority shall endorse a requisition or contract only after he/she has examined the same and found that it conforms to the requirements of this section and that there is a sufficient unencumbered balance of an applicable appropriation to pay the same. The purchasing authority shall record the amount of the requisition or contract as an encumbrance against the appropriation from which it is to be paid. If, by making any contract or purchase, the budget allowance of the department, commission or board requesting same shall be exceeded, the purchase shall not be made. The purchasing authority shall promptly notify the Board of Finance and such contract or purchase may thereafter be authorized in accordance with and subject to the limitations of this Charter.

Section 7. Town Clerk.

The Town Clerk shall be elected at the Town Election for a term of two (2) years and until his/her successor shall be elected and qualified. The Town Clerk shall have all powers and duties conferred or imposed by law on Town Clerk and shall serve as Registrar of Vital Statistics. The Town Clerk shall appoint and remove, subject to the provisions of chapter VII, section 20 of this Charter, all full time deputies, assistants or employees in his/her office.

Section 8. Town Attorney.

The First Selectman shall appoint a Town Attorney or Associate Town Attorneys for a term coextensive with that of the First Selectman or for such portion thereof as the First Selectman shall determine.

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit B - Payments to Spath-Bjorklund Associates, Inc.

Invoice No.	Invoice Date	Invoice Amount	Services Performed	Trumbull Check No.	Trumbull Check Date	Amount Paid
FY 2002						
8536	7/24/2002	32,331.60	Invoice #8 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	11997	8/1/2002	32,331.60
8492	6/28/2002	32,331.60	Invoice #7 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	11532	7/3/2002	32,331.60
8394	5/22/2002	32,331.60	Invoice #6 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	11420	6/26/2002	32,331.60
8350	4/24/2002	32,331.60	Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	11420	6/26/2002	32,331.60
8249	3/27/2002	32,331.60	Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	11420	6/26/2002	32,331.60
8364	4/25/2002	850.00	Prepare Quality Estimates; Engineers Cost Estimates, and specifications for site drainage and soil Erosion control. Assist Town of Trumbull in preparing bid for subject property			850.00
7915R	11/2/2001	3,948.30	Trumbull Sewers, 4A Contract 1-8: Redesign Pinewood Pump Station, revise individual pump stations as requested by Ray Lupkas	11480	6/28/2002	3,948.30
7916	10/18/2001	2,000.00	Provide structural design details for the proposed weir at Island Brook Park detention pond	11318	6/20/2002	2,000.00
8152	1/31/2002	8,059.00	Update wetlands mapping, review current application prepare ACE/DEP application; Meeting on 12/28/00 and revisions for ACE	11318	6/20/2002	8,059.00
8000	12/14/2001	32,331.60	Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	9673	3/14/2002	32,331.60
8151	1/31/2002	32,331.60	Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	9673	3/14/2002	32,331.60
8203	2/26/2003	32,331.60	Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	9673	3/14/2002	32,331.60
8094	1/9/2002	3,071.84	Design of golf course parking lot; revise parking lot layout per Commission's request; printing and mileage	8773	1/17/2002	3,071.84
8095	1/9/2002	5,713.00	Contract 4: Attend meetings as required with Town of Trumbull, golf officials, attorneys, municipal officials, etc. and public hearing for the purpose of providing expert testimony. Contract 5: Prepare quantity estimates; engineers cost estimates and specifications for site drainage and soil erosion control. Assist Town of Trumbull in preparing bid for subject project.	8773	1/17/2002	5,713.00
7849	10/3/2001	987.25	Prepare AutoCAD files of our Plan & Profile for the town to use as asbuilts	7137	10/18/2001	987.25
		283,282.19				283,282.19
FY 2003						
8595	8/28/2002	32,331.60	Invoice #9 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	12669	9/5/2002	32,331.60

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit B - Payments to Spath-Bjorklund Associates, Inc.

Invoice No.	Invoice Date	Invoice Amount	Services Performed	Trumbull Check No.	Trumbull Check Date	Amount Paid
8633	9/5/2002	2,632.00	Statement provided - not invoice	15162	1/16/2003	2,632.00
8801	11/15/2002	32,331.60	Invoice #12 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	14376	11/21/2002	32,331.60
8757	10/25/2002	32,331.60	Invoice #11 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	14012	11/7/2002	32,331.60
8663	9/19/2002	32,331.60	Invoice #10 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4B	13072	9/26/2002	32,331.60
		131,958.40				131,958.40
FY 2004						
9957	6/2/2004	79,613.25	Invoice #12 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	24381	6/17/2004	79,613.25
9892	5/3/2004	79,613.25	Invoice #11 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	23687	5/13/2004	79,613.25
9750	3/12/2004	5,195.00	Stake out for clearing - refer to letter dated 12/24/03 to date, attend meeting and phone correspondence	23122	4/8/2004	5,195.00
9829	4/1/2004	79,613.25	Invoice #10 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	23122	4/8/2004	79,613.25
9757	3/1/2004	79,613.25	Invoice #9 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	22623	3/11/2004	79,613.25
9714	2/1/2004	79,613.25	Invoice #8 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	22623	3/11/2004	79,613.25
9666	1/7/2004	79,613.25	Invoice #7 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	21981	2/5/2004	79,613.25
9566	12/2/2003	79,613.25	Invoice #6 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	21333	12/24/2003	79,613.25
9551	11/4/2003	79,613.25	Invoice #5 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	20711	11/20/2003	79,613.25
9502	10/3/2003	79,613.25	Invoice #4 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	20007	10/16/2003	79,613.25
9450	9/8/2003	79,613.25	Invoice #3 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	19469	9/18/2003	79,613.25
9390	8/8/2003	870.50	Prepare a map with test hole locations for bidders; meeting and phone correspondence; copies/prints	19243	9/11/2003	870.50
9413	8/14/2003	79,613.25	Invoice #2 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	19003	8/28/2003	79,613.25

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit B - Payments to Spath-Bjorklund Associates, Inc.

Invoice No.	Invoice Date	Invoice Amount	Services Performed	Trumbull Check No.	Trumbull Check Date	Amount Paid
9315	7/18/2003	79,613.25	Invoice #1 of 12: Sewer design & survey per contract: Trumbull Sewer Project, Phase 4 Section B Jog Hill Road, No & So Nichols	19003	8/28/2003	79,613.25
		961,424.50				961,424.50
FY 2005						
10787	6/10/2005	5,556.14	Design and draft landscape plan; prepare alternate site design in location of demolished cart barn; investigate the need for a department of Environmental Protection Septic System; obtain a waiver from the DEP to eliminate the grit chamber and holding tank	31571	6/23/2005	5,556.14
10788	6/10/2005	7,050.00	Site design and preparation of plans and specifications for the site work associated with the new Cart Barn through the distribution of the Addendum One in the bid documents	31571	6/23/2005	7,050.00
10384	12/10/2004	6,146.25	Hydraulic computations, plan and profile preparation and field inspection; All work was with regards to obtaining/or avoiding DEP Diversion Permit; Meet with staff and DEP personnel	31323	6/9/2005	6,146.25
10703	5/13/2005	820.00	Stake driveway radius points and locate new cart barn	31183	6/2/2005	820.00
10525	2/18/2005	568.60	Various meetings between 11/10/04 and 2/17/05	29813	3/24/2005	568.60
10305	11/17/2004	1,403.75	Stake parking lot; emailing of files to Robinson Arch; site visit; meetings and phone correspondence; mileage	27794	12/9/2004	1,403.75
10154	9/10/2004	3,526.80	Prepare parking lot layout; revise parking lot layout re: waterline and different drainage layouts; stake out parking lot; meetings and correspondence; re-flag wetland limits	26276	9/23/2004	3,526.80
		25,071.54				25,071.54
FY 2006						
11521	5/11/2006	1,850.00	Prepare consultants report and mapping on soil suitability	37848	6/1/2006	1,850.00
11522	5/11/2006	2,860.00	Investigate possible alternate Pump Station locations in Inverness, Deepdene and Post Gate Lane Areas	37848	6/1/2006	2,860.00
11402	3/17/2006	22,922.50	Prepare Jog Hill easement maps; Fees paid to the Town of Trumbull for map copies	37155	4/20/2006	22,922.50
11397	3/10/2006	2,838.25	Extra design and survey work not originally in contract	37155	4/20/2006	2,838.25
10875	7/22/2005	8,655.50	Prepare plans, reports and hydraulic computations to support TOT application to DEP for flood certification; attend meetings at DEP; prints, copies, deliveries and mileage	33797	10/13/2005	1,853.75
10850	7/8/2005	7,532.25	Easement maps - Canoe Brook Lake; Easement maps - 1/2 acre zone	32720	8/18/2005	7,532.25

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit B - Payments to Spath-Bjorklund Associates, Inc.

Invoice No.	Invoice Date	Invoice Amount	Services Performed	Trumbull Check No.	Trumbull Check Date	Amount Paid
10891	7/22/2005	4,117.00	Items not originally included in contract for Canoe Brook and Half Acre. Additional sewer design work; prints and deliveries of plans for W/L submittal	32720	8/18/2005	4,117.00
		50,775.50				43,973.75
FY 2007						
11656	7/17/2006	16,093.50	Re-design Vixon Road, Post Gate and Deepdene area for a pump station after easement across Aquarion land was rejected by Aquarion and the state of CT. Includes analysis of different routes, pump station locations and to develop a plan and profile drawings.; meetings and correspondence; computer time	39124	8/3/2006	16,093.50
11227	12/9/2005	220.00	Phone correspondence and meeting with Theo re: revisions for DEP submittal	40023	9/14/2006	220.00
11438	4/6/2006	1,419.00	Revise plans - Cross Section and Profile; meeting with Theo re: Revisions for DEP submittal; application preparation	40023	9/14/2006	1,419.00
11790	8/25/2006	1,750.00	Prepare easement map	40023	9/14/2006	1,750.00
11901	10/19/2005	1,067.25	Locate tree which fell on car and prepare map	41104	11/9/2006	1,067.25
10875B	7/22/2005	8,655.50	Prepare plans, reports and hydraulic computations to support TOT application to DEP for flood certification; attend meetings at DEP	40172	9/21/2006	6,801.75
11821	9/8/2006	3,515.00	Prepare easement maps; prints, copies and mileage	40379	10/5/2006	3,515.00
11860	10/12/2006	1,750.00	Prepare sewer easement maps	40826	10/26/2006	1,750.00
12054	1/12/2007	1,850.00	Easement map for NE corner of Hedgehog & Daniels Farm Rd	42968	2/22/2007	3,093.30
12105	1/26/2007	1,750.00	Prepare easement map - Plasko parcel	42968	2/22/2007	1,750.00
12106	1/26/2007	5,220.00	Additional items added to ass easement maps for Jog Hill area as requested by P. Kallmeyer IE: legend, col/pg, location map and map/block/lot identifiers. Items requested are not required on an A-2 Survey	42968	2/22/2007	5,220.00
12108	1/26/2007	1,035.00	Misc revisions/changes requested by P. Kallmeyer on 41 Cobblers and 14 Blackhawk	42968	2/22/2007	1,035.00
12109	1/26/2007	1,750.00	Easement map through Bridgeport Diocese property	42968	2/22/2007	1,750.00
12110	1/26/2007	1,750.00	Prepare easement map - 15 Oxen Hill	42968	2/22/2007	1,750.00
12111	1/26/2007	459.00	Modify proposed easement map - Blackhawk Rd. (requested by P. Kallmeyer)	42968	2/22/2007	459.00
12054CM	2/7/2007	(100.00)	Credit for overcharge on invoice 12054	42968	2/22/2007	(100.00)
12023	1/12/2007	5,550.00	Sewer easement maps for 472, 474 and 480 Daniels Farm Road	43196	3/8/2007	5,250.00
12023CM	2/12/2007	(300.00)	Credit for overcharge on invoice 12023	43196	3/8/2007	(300.00)

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit B - Payments to Spath-Bjorklund Associates, Inc.

Invoice No.	Invoice Date	Invoice Amount	Services Performed	Trumbull Check No.	Trumbull Check Date	Amount Paid
12055	1/12/2007	617.50	Mt w/ Town officials re: Plaski Esmt Lewis & Fairlane	43196	3/8/2007	617.50
12204	3/16/2007	172.50	Prepare CAD files for Trumbull Engineering	43963	4/19/2007	172.50
12247	4/20/2007	4,350.58	21 Mistywood Lade - map revisions based on field located sewer after installation and balance due on prior invoice 11907; 78 Wood Haven Rd - prepare plot plan	44423	5/17/2007	4,350.58
	5/10/2007	28,905.69	Design distance surveyed of 7,963 L.F. @ 3.63(design fee) = 28,905.69	44875	6/7/2007	28,905.69
		87,480.52				86,570.07
FY 2008						
Retainage	3/3/2008	7,500.00	Retainer requested for contract dated June 14, 1996 - 5% of contract amount ($150,000) Phase 4 Part A	50935	4/24/2008	7,500.00
12621	10/5/2007	10,767.50	Professional personnel - 97.9 hours	48917	1/3/2008	10,767.50
12622	10/5/2007	353.00	South Nichols area - explore connection with Stratford; Mtg with John Casey	48917	1/3/2008	353.00
12621CM	11/20/2007	(6,972.50)	Credit for invoice #12621 dated 10/5/07	48917	1/3/2008	(6,972.50)
12620	10/5/2007	3,227.90	Revise plans per field walks and comments	NA	NA	3,227.90
12620CM	11/20/2007	(3,227.90)	Credit for invoice #12620	NA	NA	(3,227.90)
12508	8/3/2007	400.00	Revise sewer easement map	46832	9/6/2007	400.00
12525	8/10/2007	4,875.00	Estimate future flow required to evaluate if modification of the Bridgeport Agreement is required	46832	9/6/2007	4,875.00
12391	6/8/2007	550.00	Review and modify specs and bid after advertisement	45771	7/26/2007	550.00
		17,473.00				17,473.00
FY 2009						
13715	5/24/2009	1,750.00	Trumbull Sewers North Nichols Section: Prepare Easement Map for 261 Unity Hill Rd.	58188	6/30/2009	1,750.00
13697	5/24/2009	270.05	Trumbull Sewers North Nichols Section: Mileage, Printing and Delivery of 20 sets of Modified Specs and Bid	58188	6/30/2009	270.05
		2,020.05				2,020.05
FY 2010						
13917	10/11/2009	5,100.00	Trumbull Sewers Jog Hill Section (Contract #3): preparing easement maps for 50 Country Club Lane, 14 Fairway Lane Lot 15, and 20 Fairway Lane Lot 15	64030	6/30/2010	5,100.00

Forensic Consulting Services Report
Town of Trumbull, Connecticut
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Invoice No.	Invoice Date	Invoice Amount	Services Performed	Trumbull Check No.	Trumbull Check Date	Amount Paid
13919-01	10/11/2009	4,662.50	Trumbull Sewers Jog Hill Section (Contract #3): preparing topographic map (Cross Country Design for Marathon to Greenbriar) and easement maps for 6 Wildfire Lane and Firehouse Parcel	64030	6/30/2010	4,662.50
13920 - original	10/11/2009	200.00	Trumbull Sewers - Contract # 4 - revisions to 449 Shelton Road per Joe Solomene	64030	6/30/2010	200.00
13920 - additional	10/11/2009	2,000.00	Trumbull Sewers - Contract # 4 (North Nichols Section): reallign sewer to avoid the Berkwitz Parcel	64030	6/30/2010	2,000.00
13918	10/11/2009	5,987.50	Trumbull Sewers No & So Nichols (Contract No. 4): Relocate proposed pump station per owners request three times, Hilltop Circle - revisions for parcel of land to be acquired from the State of CT at state request, Locate House and Large tree for Easement Map re: 37 Dogwood Lane	64030	6/30/2010	5,987.50
13770	6/28/2009	843.75	Contract No. 4 - North Nichols: Revise Specifications and BID as requested by the Town. 5/12/09-5/15/09	59053	8/27/2009	843.75
13867	8/10/2009	2,906.25	Contract No. 4 - North Nichols: Revise Specifications and BID as requested by the Town. 4/06/09-4/16/09	59053	8/27/2009	2,906.25
		21,700.00				21,700.00
			Spath-Bjorklund Associates Total			**1,573,473.50**

Sewer RFP'S - Ph 4
Analysis of L.F. - only

9/19/94

Note: 25% of past contract LF was in rock.
(see 9/15/94 report by Joe S)

Kasper [illegible]	FGA [illegible]	LKB	SBA (581-4190 MOBILE)	STV	
Design Fee $466,000	500,000	450,000	N/A	520,000	
TOTAL Fee $545,000	803,500 **	775,000*	635	750,000	
# MILES "42-43" (not in RFP)	52 (@ hearing)	40	43	48	
study 18000	study 23,500; borings @ 300'	study 150,000 orig; 30000 after interview	STUDY $32,000	STUDY $30,000	
EFFECTIVE DESIGN FEE 466,000	$ 404,000	450,000	not available	520K ÷ 48 x 42; 455,000	
EFFECTIVE GROSS Fee 545,000 - [illegible] [illegible] LOW	(803,500 - 23,500) ÷ 52 x 42; 630,000 + 23,500 (study); 653,500 [illegible] 4th	775,000 [illegible] high [illegible]	667,000 [illegible] low	[(750K - 30K) ÷ 48 x 42 + 30000]; 660,000 3rd low	INCL. study

** 630000 prorated to 42 miles

* plus 100,000 for borings

Sewer RFPls

Analysis --- gross fees minus study (& their alternatives) & borings (")

9/19/94

2a / 2

	Kasper	FGA	LKB	SBA	STV
GROSS	545,000	780,000	775,000	687,000	750,000
ADJ to "42 mile"	545,000 "Low"	653,500 2ND Low (630 + 23.5) 780 ÷ 52 x 42	775,000 last (-120,000 = 655,000 "3rd Low")	687,000 4th Low	660,000 3rd Low
BORINGS	@1000' 56,000	@300' 180,000 ÷ 52 x 42 145000	@300' # 106,000 (verbal estimate)	@300' # 103,000 (verbal estimate)	@350' 105,000 adj to 42 miles (calc. on fee prop page) 107,000
Fee less borings	489,000 ✓ "Low"	508,500 ✓ 2ND Low	669,000 last ✓	564,000 ✓ 4th Low	553,000 ✓ 3rd Low
STUDY	18,000	23,500	150,000	32,000	30000
Fee less borings & study	471,000 "Low"	485,000 2ND Low	519,000 3rd Low	532,000 high	523,000 4th
Fee less study	527,000 "Low"	630,000 3rd (tie)	625,000 2ND	635,000 4th	630,000 3rd (tie)

Note: they propose a "$30,000" study at the interview: - 120,000 = 549,000

Kasper	FAA	LKB	SBA	STV
545K	803.5	775	667	750
+35 added, but a bullshit number.				
610	630	761	667	660
MILES	MILES	BORINGS	RADAR	MILES
BORINGS	485	654	564	553
489		STUDY		
				75

TOPS FORM 7525

Litho in U.S.A.

Kasper → 590

77

SBA → 667
103

489
28

75

564

5,1
564
489
75

72 - 53 → billed twice

72 w/o prior approval

189 - 326 - ? 398 mos 545 → $1 mos

no low bidder before

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit D

Town of Trumbull

CONNECTICUT

TOWN HALL
452-5048

5866 MAIN STREET
TRUMBULL, CONN. 06611

October 12, 1994

Phase IV Sanitary Sewers

Consultant Recommendation to Sewer Commission

First Priority - Quality:

The terms **Quality Based Engineering** or **Quality Based Design** have evolved to a process now generically referred to as **QBS** (Quality Based Selection). It is not really a new concept, as the **quality** of professional services have long been held **as more important than** the fee proposed for these services

As rigid as governments from the Federal to the municipal are concerning low bid for **hard** items, they are virtually consistent in professional selection based upon qualifications. In fact, many agencies select design firms on qualifications only, and then negotiate a fee for the work.

After review of the proposals, my recommendation on the bases of quality is: Spath-Bjorklund Associates (SBA)

Below is a summary of why I reached that conclusion:

1. Intimately familiar with the town; having worked for various developers through the past twenty years. They have the most short term and long term experience. The principals also worked for the other consultants (who are proposing) and **actually did** the work on past sanitary sewer projects. Said another way, other firms can say they did the work (and of course "the firm" did); the fact is that, except for one person each in two of the firms, not one has this firm's actual experience.

2. The **principals** of the firm will be some of the actual workers on the project. Not delegated to a large staff, there is vested interest in the success of the project.

3. The discussion in their proposal for the study is the most succinct of all of the proposals. The quality of the studies, literally at any price, is the key to the overall success of the project. Were LKB's study not so expensive, I would have been compelled to rely on it. Conversely, Kasper's study time allocation (as directly related to cost) seems too low. The more comprehensive the design data base, the more efficient the design, and the less actual construction problems.

The conclusion is not to say that the other proposers are unqualified or that they have no quality. Rather, it is my conclusion that SBA possesses the most appropriate quality. On a declining scale I would rate SSVK next best, followed by FGA, Kasper, and LKB in relatively equal measure. Finally, while FGA and SSVK made a good marketing pitch at their interviews to adjust their fee because they may have guessed too high in estimating the mileage, I feel compelled to discount this rational. The other three firms were in the forty-two mile range; why did these two firms "error"? What does that say for their quality?

Second Priority - Fee

What is this job **"worth"?** I believe this to be an essential threshold conclusion that needs to be drawn. It has long been proven that you generally get what you pay for. In reviewing all of the proposals, and adjusting for too high, or too low abnormalities ("unbalanced bidding") the following seems to be the case:

Study	$ 30,000
Survey	90,000
Borings	104,000
Design	450,000
	$674,000

SBA is literally right on that figure; Kasper is very low at $545,000, and all of the others are higher by approximately $100,000.
SBA's actual fee is $667,000.
Based on a reconsideration of the need for a boring program, I am recommending that SBA be awarded the contract at the **reduced fee** of $564,000 (their $667K minus their boring fee of $103K).

1. Fee consideration first responds to quality. This project will cost $20 million to $24 million. Quality of design can easily cost or save the difference in the lower proposal and the recommended proposal.

2. Fee proposals are subject to revisions, usually called "change orders". The lower priced fee proposer has personal experience with the town (as yet unresolved) where fees have increased over 100% from original estimates. And aside from the town's experience, references that were checked on the lower proposer indicate similar circumstances occurring on one of their current jobs.

3. The "yet unresolved" fee problems with the town (in another area) need to be resolved; they hang as a cloud over working relationships.

It has been suggested to approach the low proposer to have them "forgive" those other unresolved fee questions, and while that may sound lucrative, financially, in the short run, I believe that any further fee reduction can only lead to as little as possible spent by the consultant on the job as he has "bought" the job too cheaply.

4. If litigation becomes the only avenue to resolve old (or new) fee differences-of-opinion, the working relationship will suffer.

When there is clearly another choice, capable and qualified, there is poor economic benefits in playing the low-bid-is-best game. Note that my recommendation is <u>not</u> for the highest fee proposer, but the second lowest one.

Finally, the esoteric consideration of what kind of client of any of these firms will we be, or, how will we be treated, looms as a considerable point for this administrator. After the decision is made on which consultant is best for the money, I will have to deal with the firm for the life of the contract on a day-to-day basis, likely three or four years.

The lowest fee proposer extolled the extensive list of current clients and enormous construction cost projects that they are preparing for. We will be a very small fish in a large sea. Conversely, at SBA we will be their biggest client for a few years. Making us happy will be their goal; they have demonstrated that for many years when they were simply seeking local approval for their clients. Their tract record is clean of any defects, actual or potential.

This author's conclusions are unfortunately not so overwhelmingly obvious as to make this choice "simple" or "easy". Since the methods we are allowed open up professional judgment to enter the evaluation process, then I must conclude that there are long existing reasons for that fact to occur. It is my judgment, based on the written proposals, the interpretation of the proposals by the proposers (the interviews), my assessment of the responses by references I contacted, and my own collective professional opinion that the Town of Trumbull will be best served by selecting Spath-Bjorklund Associates to design the Phase IV Sanitary Sewer project.

This conclusion in no way is intended to denigrate any of the other proposers, as they are all respected members of the consultant community.

Paul A. Kallmeyer, PE/LS
Sewer Administrator

PAK/mt

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit E - Bid Tabulation / Evaluation

Project: **Trumbull, CT - Sanitary Sewers Phase 4, Part B, Contract 3**

Engineer: **Spath Bjorklund Associates, Inc. 593 Main Street, Monroe, CT 06468**

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	(1) Mark IV Construction Co. 1137 Seaview Avenue Bridgeport, CT 06607		(2) Guerrera Construction Company, Inc. 154 Christian Street Oxford, CT 06478		(3) M. Rondano, Inc. 49 East Avenue Norwalk, CT 06851		(4) Baltazar Constractors, Inc. 83 Carmelina''s Circle Ludlow, MA		Unit Price Comparisons: Average Unit Price (All Bidders)	Unit Price Comparisons: Average Unit Price (2 - 4 Bidders)
				UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	UNIT PRICE
SUPPLEMENTAL UNIT PRICES													
S-1	Frame Adjustment - Minor	EA	N/A	$ 500.00	N/A	$ 600.00	N/A	$ 300.00	N/A	$ 250.00	N/A	$ 412.50	$383.33
S-2	Frame Adjustment - Major	EA	N/A	$ 1,000.00	N/A	$ 1,000.00	N/A	$ 650.00	N/A	$ 1,200.00	N/A	$ 962.50	$950.00
S-3	CB Hood - Complete	EA	N/A	$ 1,000.00	N/A	$ 1,000.00	N/A	$ 650.00	N/A	$ 400.00	N/A	$ 762.50	$683.33
S-4	12- inch RCP - Complete	LF	N/A	$ 55.00	N/A	$ 70.00	N/A	$ 54.00	N/A	$ 44.00	N/A	$ 55.75	$56.00
	15- inch RCP - Complete	LF	N/A	$ 65.00	N/A	$ 75.00	N/A	$ 65.00	N/A	$ 48.00	N/A	$ 63.25	$62.67
	18- inch RCP - Complete	LF	N/A	$ 75.00	N/A	$ 80.00	N/A	$ 72.00	N/A	$ 55.00	N/A	$ 70.50	$69.00
	24- inch RCP - Complete	LF	N/A	$ 85.00	N/A	$ 85.00	N/A	$ 86.00	N/A	$ 61.00	N/A	$ 79.25	$77.33
	12- inch CPP - Complete	LF	N/A	$ 55.00	N/A	$ 70.00	N/A	$ 50.00	N/A	$ 42.00	N/A	$ 54.25	$54.00
	15- inch CPP - Complete	LF	N/A	$ 65.00	N/A	$ 75.00	N/A	$ 56.00	N/A	$ 46.00	N/A	$ 60.50	$59.00
	18- inch CPP - Complete	LF	N/A	$ 75.00	N/A	$ 80.00	N/A	$ 68.00	N/A	$ 53.00	N/A	$ 69.00	$67.00
	24- inch CPP - Complete	LF	N/A	$ 110.00	N/A	$ 85.00	N/A	$ 90.00	N/A	$ 60.00	N/A	$ 86.25	$78.33
S-5	Catch Basins	EA	N/A	$ 2,200.00	N/A	$ 3,000.00	N/A	$ 2,100.00	N/A	$ 2,200.00	N/A	$ 2,375.00	$2,433.33
	Storm Drainage Manholes	EA	N/A	$ 2,500.00	N/A	$ 3,000.00	N/A	$ 2,000.00	N/A	$ 2,500.00	N/A	$ 2,500.00	$2,500.00
S-6	Stream Bank Stabilization, as directed by Town	SY	N/A	$ 45.00	N/A	$ 40.00	N/A	$ 20.00	N/A	$ 45.00	N/A	$ 37.50	$35.00
S-7	Bituminour Curb A (No backup grading)	LF	N/A	$ 4.50	N/A	$ 6.00	N/A	$ 3.75	N/A	$ 3.50	N/A	$ 4.44	$4.42
S-8	Bituminour Curb A (With backup grading)	LF	N/A	$ 6.00	N/A	$ 8.00	N/A	$ 8.50	N/A	$ 8.00	N/A	$ 7.63	$8.17
S-9	Loam and Seed	SY	N/A	$ 6.00	N/A	$ 8.00	N/A	$ 6.00	N/A	$ 7.00	N/A	$ 6.75	$7.00
S-10	2-inch Bituminous Sidewalk	SY	N/A	$ 55.00	N/A	$ 54.00	N/A	$ 46.00	N/A	$ 40.00	N/A	$ 48.75	$46.67
S-11	2-inch Bituminous Driveway Apron	SY	N/A	$ 45.00	N/A	$ 45.00	N/A	$ 37.00	N/A	$ 40.00	N/A	$ 41.75	$40.67
S-12	Relocate Mailboxes	EA	N/A	$ 150.00	N/A	$ 250.00	N/A	$ 150.00	N/A	$ 100.00	N/A	$ 162.50	$166.67
BID SCHEDULE													
1	Maintenance and Protection of Traffic	LS	1	$ 500,000.00	$ 500,000.00	$ 60,000.00	$ 60,000.00	$ 538,000.00	$ 538,000.00	$ 200,000.00	$ 200,000.00	$ 324,500.00	$266,000.00
2	Traffic Men **(SET COST)**	Est.	1	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$500,000.00
3	Clearing and Grubbing	LS	1	$ 250,000.00	$ 250,000.00	$ 193,000.00	$ 193,000.00	$ 160,000.00	$ 160,000.00	$ 1,100,000.00	$ 1,100,000.00	$ 425,750.00	$484,333.33
4	Water Pollution Control (Soil Erosion)	LS	1	$ 135,000.00	$ 135,000.00	$ 24,000.00	$ 24,000.00	$ 140,000.00	$ 140,000.00	$ 50,000.00	$ 50,000.00	$ 87,250.00	$71,333.33
5	Temporary Sediment Control Measures	LS	1	$ 125,000.00	$ 125,000.00	$ 37,000.00	$ 37,000.00	$ 84,000.00	$ 84,000.00	$ 400,000.00	$ 400,000.00	$ 161,500.00	$173,666.67
6	6-inch PVC Sanitary Laterals (ALL DEPTHS)	LF	18,060	$ 60.00	$ 1,083,600.00	$ 49.00	$ 884,940.00	$ 44.00	$ 794,640.00	$ 47.00	$ 848,820.00	$ 50.00	$46.67
7	8-inch PVC Sanitary Sewer (0 - 10 FT DEPTH)	LF	27,156	$ 76.00	$ 2,063,856.00	$ 114.50	$ 3,109,362.00	$ 72.50	$ 1,968,810.00	$ 70.00	$ 1,900,920.00	$ 83.25	$85.67
8	8-inch DIP Sanitary Sewer (0 - 10 FT DEPTH)	LF	370	$ 80.00	$ 29,600.00	$ 128.50	$ 47,545.00	$ 82.00	$ 30,340.00	$ 82.00	$ 30,340.00	$ 93.13	$97.50
9	8-inch PVC Sanitary Sewer (10 - 15 FT DEPTH)	LF	28,357	$ 101.00	$ 2,864,057.00	$ 114.50	$ 3,246,876.50	$ 95.00	$ 2,693,915.00	$ 82.00	$ 2,325,274.00	$ 98.13	$97.17
10	8-inch DIP Sanitary Sewer (10 - 15 FT DEPTH)	LF	120	$ 86.00	$ 10,320.00	$ 128.50	$ 15,420.00	$ 100.00	$ 12,000.00	$ 95.00	$ 11,400.00	$ 102.38	$107.83

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit E - Bid Tabulation / Evaluation

Project: **Trumbull, CT - Sanitary Sewers Phase 4, Part B, Contract 3**

Engineer: **Spath Bjorklund Associates, Inc. 593 Main Street, Monroe, CT 06468**

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY		(1) Mark IV Construction Co. 1137 Seaview Avenue Bridgeport, CT 06607		(2) Guerrera Construction Company, Inc. 154 Christian Street Oxford, CT 06478		(3) M. Rondano, Inc. 49 East Avenue Norwalk, CT 06851		(4) Baltazar Constractors, Inc. 83 Carmelina''s Circle Ludlow, MA		Unit Price Comparisons: Average Unit Price (All Bidders)	Unit Price Comparisons: Average Unit Price (2 - 4 Bidders)
					UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	UNIT PRICE
11	8-inch PVC Sanitary Sewer (15 - 20 FT DEPTH)	LF	6562		$ 140.00	$ 918,680.00	$ 114.50	$ 751,349.00	$ 187.00	$ 1,227,094.00	$ 140.00	$ 918,680.00	$ 145.38	$147.17
12	8-inch PVC Sanitary Sewer (20 - 25 FT DEPTH)	LF	524		$ 140.00	$ 73,360.00	$ 114.50	$ 59,998.00	$ 350.00	$ 183,400.00	$ 285.00	$ 149,340.00	$ 222.38	$249.83
13	10-inch PVC Sanitary Sewer (0 - 10 FT DEPTH)	LF	1530		$ 80.00	$ 122,400.00	$ 116.25	$ 177,862.50	$ 74.00	$ 113,220.00	$ 73.00	$ 111,690.00	$ 85.81	$87.75
14	10-inch DIP Sanitary Sewer (0 - 10 FT DEPTH)	LF	485		$ 110.00	$ 53,350.00	$ 133.50	$ 64,747.50	$ 86.00	$ 41,710.00	$ 92.00	$ 44,620.00	$ 105.38	$103.83
15	10-inch PVC Sanitary Sewer (10 - 15 FT DEPTH)	LF	1732		$ 100.00	$ 173,200.00	$ 116.25	$ 201,345.00	$ 96.00	$ 166,272.00	$ 88.00	$ 152,416.00	$ 100.06	$100.08
16	10-inch DIP Sanitary Sewer (10 - 15 FT DEPTH)	LF	198		$ 110.00	$ 21,780.00	$ 133.50	$ 26,433.00	$ 108.00	$ 21,384.00	$ 99.00	$ 19,602.00	$ 112.63	$113.50
17	10-inch PVC Sanitary Sewer (15 - 20 FT DEPTH)	LF	1057		$ 150.00	$ 158,550.00	$ 116.25	$ 122,876.25	$ 188.00	$ 198,716.00	$ 148.00	$ 156,436.00	$ 150.56	$150.75
18	12-inch PVC Sanitary Sewer (0 - 10 FT DEPTH)	LF	793		$ 100.00	$ 79,300.00	$ 118.25	$ 93,772.25	$ 78.00	$ 61,854.00	$ 80.00	$ 63,440.00	$ 94.06	$92.08
19	12-inch DIP Sanitary Sewer (0 - 10 FT DEPTH)	LF	233		$ 110.00	$ 25,630.00	$ 139.25	$ 32,445.25	$ 90.00	$ 20,970.00	$ 100.00	$ 23,300.00	$ 109.81	$109.75
20	12-inch PVC Sanitary Sewer (10 - 15 FT DEPTH)	LF	1318		$ 160.00	$ 210,880.00	$ 118.25	$ 155,853.50	$ 101.00	$ 133,118.00	$ 95.00	$ 125,210.00	$ 118.56	$104.75
21	12-inch DIP Sanitary Sewer (10 - 15 FT DEPTH)	LF	26		$ 170.00	$ 4,420.00	$ 139.25	$ 3,620.50	$ 115.00	$ 2,990.00	$ 150.00	$ 3,900.00	$ 143.56	$134.75
22	12-inch PVC Sanitary Sewer (15 - 20 FT DEPTH)	LF	637		$ 160.00	$ 101,920.00	$ 118.25	$ 75,325.25	$ 190.00	$ 121,030.00	$ 155.00	$ 98,735.00	$ 155.81	$154.42
23	12-inch PVC Sanitary Sewer (20 - 25 FT DEPTH)	LF	348		$ 160.00	$ 55,680.00	$ 118.25	$ 41,151.00	$ 355.00	$ 123,540.00	$ 290.00	$ 100,920.00	$ 230.81	$254.42
24	Catch Basin (0 - 10 FT Depth)	EA	85	*	$ 500.00	$ 42,500.00	$ 1,400.00	$ 119,000.00	$ 1,600.00	$ 136,000.00	$ 2,200.00	$ 187,000.00	$ 1,425.00	$1,733.33
25	Catch Basin (10 - 15 FT Depth)	EA	7		$ 4,000.00	$ 28,000.00	$ 2,000.00	$ 14,000.00	$ 3,000.00	$ 21,000.00	$ 2,800.00	$ 19,600.00	$ 2,950.00	$2,600.00
26	Catch Basin Outlet Hood	EA	15		$ 500.00	$ 7,500.00	$ 500.00	$ 7,500.00	$ 500.00	$ 7,500.00	$ 400.00	$ 6,000.00	$ 475.00	$466.67
27	15-inch CPP Storm Drainage (0 - 10 FT Depth)	LF	22,941	*	$ 1.00	$ 22,941.00	$ 36.00	$ 825,876.00	$ 46.00	$ 1,055,286.00	$ 46.00	$ 1,055,286.00	$ 32.25	$42.67
28	15-inch CPP Storm Drainage (10 - 15 FT Depth)	LF	64		$ 100.00	$ 6,400.00	$ 45.00	$ 2,880.00	$ 70.00	$ 4,480.00	$ 70.00	$ 4,480.00	$ 71.25	$61.67
29	18-inch CPP Storm Drainage (0 - 10 FT Depth)	LF	206		$ 100.00	$ 20,600.00	$ 46.00	$ 9,476.00	$ 60.00	$ 12,360.00	$ 53.00	$ 10,918.00	$ 64.75	$53.00
30	24-inch CPP Storm Drainage (0 - 10 FT Depth)	LF	89		$ 110.00	$ 9,790.00	$ 52.00	$ 4,628.00	$ 80.00	$ 7,120.00	$ 60.00	$ 5,340.00	$ 75.50	$64.00
31	24-inch CPP Flared End	EA	1		$ 2,500.00	$ 2,500.00	$ 1,000.00	$ 1,000.00	$ 500.00	$ 500.00	$ 600.00	$ 600.00	$ 1,150.00	$700.00
32	8-inch PVC Trench Drain	LF	14,422	**	$ 20.00	$ 288,440.00	$ 3.00	$ 43,266.00	$ 30.00	$ 432,660.00	$ 22.00	$ 317,284.00	$ 18.75	$18.33
33	Trench Dam	EA	20	**	$ 0.01	$ 0.20	$ 2,500.00	$ 50,000.00	$ 250.00	$ 5,000.00	$ 400.00	$ 8,000.00	$ 787.50	$1,050.00
34	48-inch Sanitary Manhole (0 - 10 FT Depth)	EA	155	*	$ 1,900.00	$ 294,500.00	$ 2,300.00	$ 356,500.00	$ 2,000.00	$ 310,000.00	$ 2,600.00	$ 403,000.00	$ 2,200.00	$2,300.00
35	48-inch Sanitary Manhole (10 - 15 FT Depth)	EA	116	*	$ 2,600.00	$ 301,600.00	$ 3,000.00	$ 348,000.00	$ 2,500.00	$ 290,000.00	$ 3,000.00	$ 348,000.00	$ 2,775.00	$2,833.33
36	48-inch Sanitary Manhole (15 - 20 FT Depth)	EA	36	*	$ 4,000.00	$ 144,000.00	$ 3,700.00	$ 133,200.00	$ 3,800.00	$ 136,800.00	$ 3,700.00	$ 133,200.00	$ 3,800.00	$3,733.33
37	48-inch Sanitary Manhole (20 - 25 FT Depth)	EA	3	*	$ 4,400.00	$ 13,200.00	$ 5,000.00	$ 15,000.00	$ 8,000.00	$ 24,000.00	$ 6,000.00	$ 18,000.00	$ 5,850.00	$6,333.33
38	48-inch Sanitary Drop Manhole (0 - 10 FT Depth)	EA	3	*	$ 2,600.00	$ 7,800.00	$ 4,000.00	$ 12,000.00	$ 3,000.00	$ 9,000.00	$ 3,000.00	$ 9,000.00	$ 3,150.00	$3,333.33
39	48-inch Sanitary Drop Manhole (10 - 15 FT Depth)	EA	29	*	$ 2,700.00	$ 78,300.00	$ 4,000.00	$ 116,000.00	$ 3,500.00	$ 101,500.00	$ 3,500.00	$ 101,500.00	$ 3,425.00	$3,666.67
40	48-inch Sanitary Drop Manhole (15 - 20 FT Depth)	EA	17	*	$ 4,200.00	$ 71,400.00	$ 4,700.00	$ 79,900.00	$ 4,800.00	$ 81,600.00	$ 4,000.00	$ 68,000.00	$ 4,425.00	$4,500.00
41	48-inch Sanitary Doghouse Manhole (10 - 15 FT Depth)	EA	1		$ 15,000.00	$ 15,000.00	$ 6,000.00	$ 6,000.00	$ 4,000.00	$ 4,000.00	$ 4,200.00	$ 4,200.00	$ 7,300.00	$4,733.33
42	48-inch Sanitary Doghouse Manhole (15 - 20 FT Depth)	EA	1		$ 15,000.00	$ 15,000.00	$ 6,000.00	$ 6,000.00	$ 8,000.00	$ 8,000.00	$ 5,000.00	$ 5,000.00	$ 8,500.00	$6,333.33

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit E - Bid Tabulation / Evaluation

Project: **Trumbull, CT - Sanitary Sewers Phase 4, Part B, Contract 3**

Engineer: **Spath Bjorklund Associates, Inc. 593 Main Street, Monroe, CT 06468**

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY		(1) Mark IV Construction Co. 1137 Seaview Avenue Bridgeport, CT 06607		(2) Guerrera Construction Company, Inc. 154 Christian Street Oxford, CT 06478		(3) M. Rondano, Inc. 49 East Avenue Norwalk, CT 06851		(4) Baltazar Constractors, Inc. 83 Carmelina''s Circle Ludlow, MA		Unit Price Comparisons: Average Unit Price (All Bidders)	Unit Price Comparisons: Average Unit Price (2 - 4 Bidders)
					UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	UNIT PRICE
43	60-inch Sanitary Drop Manhole (10 - 15 FT Depth)	EA	1		$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 4,500.00	$ 4,500.00	$ 6,000.00	$ 6,000.00	$ 5,625.00	$5,500.00
44	6-inch Concrete Chimneys	VF	900	*	$ 100.00	$ 90,000.00	$ 145.00	$ 130,500.00	$ 150.00	$ 135,000.00	$ 120.00	$ 108,000.00	$ 128.75	$138.33
45	Stream , River & Culvert Crossing	LS	1		$ 45,000.00	$ 45,000.00	$ 24,000.00	$ 24,000.00	$ 12,000.00	$ 12,000.00	$ 400,000.00	$ 400,000.00	$ 120,250.00	$145,333.33
46	Core Drilling Existing Sanitary Manholes	EA	10		$ 1,200.00	$ 12,000.00	$ 1,500.00	$ 15,000.00	$ 1,000.00	$ 10,000.00	$ 1,500.00	$ 15,000.00	$ 1,300.00	$1,333.33
47	Trench Excavation - ROCK **(Assumed 7-FT Plus)**	CY	44,964		$ 0.01	$ 449.64	$ 34.00	$ 1,528,776.00	$ 60.00	$ 2,697,840.00	$ 60.00	$ 2,697,840.00	$ 38.50	$51.33
48	Borrow	CY	6,221		$ 0.01	$ 62.21	$ 0.01	$ 62.21	$ 0.01	$ 62.21	$ 0.01	$ 62.21	$ 0.01	$0.01
49	Gravel Fill	CY	13,277		$ 0.01	$ 132.77	$ 0.01	$ 132.77	$ 0.01	$ 132.77	$ 0.01	$ 132.77	$ 0.01	$0.01
50	Foundation Stone	CY	23,903		$ 0.01	$ 239.03	$ 0.01	$ 239.03	$ 18.00	$ 430,254.00	$ 30.00	$ 717,090.00	$ 12.01	$16.00
51	Gutter-Milling of Existing Pavement	SY	35,200	**	$ 0.01	$ 352.00	$ 2.25	$ 79,200.00	$ 2.50	$ 88,000.00	$ 2.00	$ 70,400.00	$ 1.69	$2.25
52	Temporary Bituminous Repair	SY	63,586		$ 24.00	$ 1,526,064.00	$ 25.00	$ 1,589,650.00	$ 33.00	$ 2,098,338.00	$ 31.00	$ 1,971,166.00	$ 28.25	$29.67
53	Permanent Pavement Repair, (Includes permanent bituminous concrete overlay)	SY	241,333		$ 9.00	$ 2,171,997.00	$ 6.80	$ 1,641,064.40	$ 9.00	$ 2,171,997.00	$ 8.75	$ 2,111,663.75	$ 8.39	$8.18
54	Bituminous Curb (with Back-up grading)	LF	18,400	**	$ 6.00	$ 110,400.00	$ 4.00	$ 73,600.00	$ 3.25	$ 59,800.00	$ 7.50	$ 138,000.00	$ 5.19	$4.92
55	Restoration	LS	1		$ 350,000.00	$ 350,000.00	$ 721,000.00	$ 721,000.00	$ 308,000.00	$ 308,000.00	$ 400,000.00	$ 400,000.00	$ 444,750.00	$476,333.33
56	Project Sign	EA	2		$ 1.00	$ 2.00	$ 1,500.00	$ 3,000.00	$ 1,000.00	$ 2,000.00	$ 3,250.00	$ 6,500.00	$ 1,437.75	$1,916.67
57	Television Pipeline Inspection	LF	71,446		$ 2.00	$ 142,892.00	$ 1.25	$ 89,307.50	$ 1.25	$ 89,307.50	$ 1.50	$ 107,169.00	$ 1.50	$1.33
	BIDDER'S TOTAL:					**$ 15,385,644.85**		**$ 17,976,680.41**		**$ 20,091,040.48**		**$ 20,788,474.73**		
	CALCULATION CHECK TOTAL:					$ 15,385,644.85		$ 17,976,680.41		$ 20,091,040.48		$ 20,788,474.73		

Item No.	Item Desciption	Amount
27	15-inch CPP Storm Drainage (0 - 10 FT Depth)	$802,935.00
33	Trench Dam	$49,999.80
47	Trench Excavation - ROCK (Assumed 7-FT Plus)	$1,528,326.36
51	Gutter-Milling of Existing Pavement	$78,848.00
	Primary Items of Difference:	**$2,460,109.16**

(1) Mark IV Construction Co. 1137 Seaview Avenue Bridgeport, CT 06607	(2) Guerrera Construction Company, Inc. 154 Christian Street Oxford, CT 06478	(3) M. Rondano, Inc. 49 East Avenue Norwalk, CT 06851	(4) Baltazar Constractors, Inc. 83 Carmelina''s Circle Ludlow, MA
$2,591,035.56		**$4,705,395.63**	**$5,402,829.88**
		$2,114,360.07	**$2,811,794.32**

NOTES:

* This quantity was modified by the Town based on previous experiences of new sanitary sewer installations in existing roads. The location and placement of these extra items not indicated on the drawings, if required, will be at the discretion of the Town Road Inspector in the field.

** This quantity was computed by the Town and is based on recent insp[ections and the opinions of the Town Road Inspector. The location and placement of these extra items not indicated on the drawings, if required, will be at the discretion of the Town Road Inspector in the field.

BETA

APPLICATION AND CERTIFICATE FOR PAYMENT *AIA DOCUMENT G702*

TO (OWNER): TOWN OF TRUMBULL WPCA
5866 MAIN STREET
TRUMBULL, CT 06611

PROJECT: PHASE IV, PART B
CONTRACT NO. 3
SANITARY SEWER PROJECT
TRUMBULL, CT

APPLICATION NO. 27
PERIOD TO: 11/11/09
ARCHITECT'S PROJECT NO:

Distribution to
[ ] OWNER
[ ] ARCHITECT
[ ] CONTRACTOR
[ ]
[ ]

FROM (CONTRACTOR): MARK IV CONSTRUCTION COMPANY, INC.
1137 SEAVIEW AVENUE
BRIDGEPORT, CT 06607

VIA (ARCHITECT):

CONTRACT FOR: TOWN OF TRUMBULL WPCA

CONTRACT DATE:

CONTRACTOR'S APPLICATION FOR PAYMENT

CHANGE ORDER SUMMARY			
Change Orders approved in previous months by Owner		ADDITIONS	DEDUCTIONS
TOTAL		1,674,005.35	
Approved this Month			
Number	Date Approved		
TOTALS			
Net change by Change Orders		1,674,005.35	

Application is made for Payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM	$ 15,385,644.85
2. Net change by Change Orders	$ 1,674,005.35
3. CONTRACT SUM TO DATE (Line 1 ± 2)	$ 17,059,650.20
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	$ 20,680,582.06
5. RETAINAGE:	
a. ____% of Completed Work (Column D + E on G703)	$ 100,000.00
b. ____ % of Stored Material (Column F on G703)	$
Total Retainage (Line 5a + 5b or Total in Column I of G703)	$ 100,000.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 less Line 5 Total)	$ 20,580,582.06
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	$ 20,163,567.51
8. CURRENT PAYMENT DUE	$ 417,014.55
9. BALANCE TO FINISH, PLUS RETAINAGE (Line 3 less Line 6)	$

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: 11/20/09

State of: Connecticut County of: Fairfield
Subscribed and sworn to before me this 23 rd day of November
Notary Public: Gerald W. Frisbie
My Commission expires:

GERALD W. FRISBIE
NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 30, 2013

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... $

(Attach explanation if amount certified differs from the amount applied for.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit F

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 2 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
1	MAINTENANCE & PROTECTION	LS		$ 500,000.00	$ 500,000.00				$ 500,000.00	100%
2	TRAFFIC MEN	EST.		$ 500,000.00	$ 500,000.00				$ 470,199.87	
3	CLEARING & GRUBBING	LS		$ 250,000.00	$ 250,000.00				$ 250,000.00	100%
4	WATER POLLUTION CONTROL (SOIL EROSION)	LS		$ 135,000.00	$ 135,000.00				$ 135,000.00	100%
5	TEMP. SEDIMENT CONTROL MEASURERS	LS		$ 125,000.00	$ 125,000.00				$ 125,000.00	100%
6	6" PVC SANITARY LATERALS	LF	18,060	$ 60.00	$ 1,083,600.00			22,601	$ 1,356,060.00	125%
7	8" PVC SAN. SEWERS 0'-10'	LF	27,156	$ 76.00	$ 2,063,856.00			38,709	$ 2,941,884.00	143%
8	8" DIP SAN. SEWERS 0'-10'	LF	370	$ 80.00	$ 29,600.00			997	$ 79,760.00	269%
9	8" PVC SAN. SEWERS 10'-15'	LF	28,357	$ 101.00	$ 2,864,057.00			26,584	$ 2,684,984.00	94%
10	8" DIP SAN. SEWERS 10'-15'	LF	120	$ 86.00	$ 10,320.00			407	$ 35,002.00	339%
11	8" PVC SAN. SEWERS 15'-20'	LF	6,562	$ 140.00	$ 918,680.00			6,773	$ 948,220.00	103%
12	8" PVC SAN. SEWERS 20'-25'	LF	524	$ 140.00	$ 73,360.00			1,252	$ 175,280.00	239%
13	10" PVC SAN. SEWERS 0'-10'	LF	1,530	$ 80.00	$ 122,400.00			1,669	$ 133,520.00	109%
14	10" DIP SAN. SEWERS 0'-10'	LF	485	$ 110.00	$ 53,350.00			644	$ 70,840.00	133%
15	10" PVC SAN. SEWERS 10'-15'	LF	1732	$ 100.00	$ 173,200.00			1,075	$ 107,500.00	62%
16	10" DIP SAN. SEWERS 10'-15'	LF	198	$ 110.00	$ 21,780.00			329	$ 36,190.00	166%

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit F

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 3 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
17	10" PVC SAN. SEWERS 15'-20'	LF	1,057	$ 150.00	$ 158,550.00			645	$ 96,750.00	61%
18	12" PVC SAN. SEWERS 0'-10'	LF	793	$ 100.00	$ 79,300.00			1,361	$ 136,100.00	172%
19	12" DIP SAN. SEWERS 0'-10'	LF	233	$ 110.00	$ 25,630.00			259	$ 28,490.00	111%
20	12" PVC SAN. SEWER 10'-15'	LF	1318	$ 160.00	$ 210,880.00			1,456	$ 232,960.00	110%
21	12" DIP SAN. SEWERS 10'-15'	LF	26	$ 170.00	$ 4,420.00			3	$ 510.00	12%
22	12" PVC SAN. SEWERS 15'-20'	LF	637	$ 160.00	$ 101,920.00			732	$ 117,120.00	115%
23	12" PVC SAN. SEWER 20'-25'	LF	348	$ 160.00	$ 55,680.00			130	$ 20,800.00	37%
24	CATCH BASINS 0-10'	EA	85	$ 500.00	$ 42,500.00			8	$ 4,000.00	9%
25	CATCH BASINS 10-15'	EA	7	$ 4,000.00	$ 28,000.00					
26	CATCH BASIN OUTLET HOOD	EA	15	$ 500.00	$ 7,500.00					
27	15" CPP STORM DRAINAGE 0-10'	LF	22,941	$ 1.00	$ 22,941.00			101	$ 101.00	0%
28	15" CPP STORM DRAINAGE 10-15	LF	64	$ 100.00	$ 6,400.00					
29	18" CPP STORM DRAINAGE 0-10'	LF	206	$ 100.00	$ 20,600.00			306	$ 30,600.00	149%
30	24" CPP STORM DRAINAGE 0-10'	LF	89	$ 110.00	$ 9,790.00			129	$ 14,190.00	145%
31	24" CPP FLARED END	EA	1	$ 2,500.00	$ 2,500.00					
32	8" PVC TRENCH DRAIN	LF	14422	$ 20.00	$ 288,440.00			18,596	$ 371,920.00	129%

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 4 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
33	TRENCH DAM	EA	20	$ 0.01	$ 0.20					
34	48" SAN. MANHOLE 0'-10'	EA	155	$ 1,900.00	$ 294,500.00			198	$ 376,200.00	128%
35	48" SAN. MANHOLE 10'-15'	EA	116	$ 2,600.00	$ 301,600.00			105	$ 273,000.00	91%
36	48" SAN. MANHOLE 15'-20'	EA	36	$ 4,000.00	$ 144,000.00			37	$ 148,000.00	103%
37	48" SAN. MANHOLE 20'-25'	EA	3	$ 4,400.00	$ 13,200.00			7	$ 30,800.00	233%
38	48" SAN. DROP MANHOLE 0'-10'	EA	3	$ 2,600.00	$ 7,800.00			4	$ 10,400.00	133%
39	48" SAN. DROP MANHOLE 10'-15'	EA	29	$ 2,700.00	$ 78,300.00			30	$ 81,000.00	103%
40	48" SAN. DROP MANHOLE 15'-20'	EA	17	$ 4,200.00	$ 71,400.00			12	$ 50,400.00	71%
41	48" SAN. DOGHOUSE M. H. 10'-15	EA	1	$ 15,000.00	$ 15,000.00			3	$ 45,000.00	100%
42	48" SAN. DOGHOUSE M. H. 15'-20	EA	1	$ 15,000.00	$ 15,000.00			1	$ 15,000.00	100%
43	60" SAN. DROP MANHOLE 10'-15'	EA	1	$ 6,000.00	$ 6,000.00			5	$ 30,000.00	500%
44	6" CONCRETE CHIMNEYS	VF	900	$ 100.00	$ 90,000.00			1,387	$ 138,700.00	154%
45	STREAM, RIVER & CULVERT CROSSING	LS	1	$ 45,000.00	$ 45,000.00			1	$ 45,000.00	100%
46	CORE DRILLING EXISTING SANITARY MANHOLES	EA	10	$ 1,200.00	$ 12,000.00			14	$ 16,800.00	140%
47	TRENCH EXCAVATION-ROCK	CY	44964	$ 0.01	$ 449.64			44,964	$ 449.64	100%
48	BORROW	CY	6,221	$ 0.01	$ 62.21					

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit F

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 5 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
49	GRAVEL FILL	CY	13,277	$ 0.01	$ 132.77					
50	FOUNDATION STONE	CY	23,903	$ 0.01	$ 239.03					
51	GUTTER MILLING ON EXISTING PVMT.	SY	35,200	$ 0.01	$ 352.00					
52	TEMP BIT. REPAIR	SY	63,586	$ 24.00	$ 1,526,064.00			81,272	$ 1,950,528.00	128%
53	PERM PAVEMENT REPAIR	SY	241,333	$ 9.00	$ 2,171,997.00			323,961	$ 2,915,649.00	134%
54	BITUMINIOUS CURB	LF	18,400	$ 6.00	$ 110,400.00			5,026	$ 30,156.00	27%
55	RESTORATION	LS	1	$ 350,000.00	$ 350,000.00				$ 350,000.00	100%
56	PROJECT SIGN	EA	2	$ 1.00	$ 2.00					
57	TELEVISION PIPELINE INSPECTION	LF	71,446	$ 2.00	$ 142,892.00			90,749.6	$ 181,499.20	127%
C01	FURNISH/INSTALL CONCRETE FOR ENCASEMENTS	CY		$ 250.00				146	$ 36,500.00	
C02	REMOVE & DISPOSE OF EXISTING CATCH BASINS	EA		$ 750.00				9	$ 6,750.00	
C03	TIE INTO EXISTING CATCH BASINS	EA		$ 250.00				73	$ 18,250.00	
C04	CORE DRILLING EXISTING SANITARY MANHOLES	EA		$ 1,200.00				13	$ 15,600.00	
C05	REMOVAL/DISPOSAL OF EXISTING DRAINAGE PIPE	LF		$ 10.00				1,605	$ 16,050.00	
C06	#21 WAREHAM PLACE	LS			$ 16,355.00				$ 16,355.00	100%
C07	GRAVEL ACCESS DRIVE	SY		$ 16.00				14,737	$ 235,792.00	
C08	GRASS ACCESS DRIVE	SY		$ 18.00				5,076	$ 91,368.00	

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit F

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 6 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
	CHANGE ORDERS (CONT'D)									
C09	STREAM CROSSING	EA		$ 25,000.00				2	$ 50,000.00	
C10	STREAM CROSSING	EA		$ 15,000.00				15	$ 225,000.00	
C11	ABANDON SEPTIC TANK	EA		$ 1,500.00				2	$ 3,000.00	
C12	36" CPP STORM DRAINAGE	LF		$ 125.00				520	$ 65,000.00	
C13	HEDGE HOG RD. STABILIZATION	LS		$ 29,500.00	$ 29,500.00				$ 29,500.00	100%
C14	TEMPORARY LINE STRIPE	LS		$ 18,883.35	$ 18,883.35				$ 18,883.35	100%
C15	8" PVC TRENCH DRAIN	LF		$ 20.00				27,752	$ 555,040.00	
C16	10" PVC SAN. SEWERS 20'-25'	LF		$ 250.00				567	$ 141,750.00	
C17	10" DIP SAN. SEWERS 15'-20'	LF		$ 185.00				50	$ 9,250.00	
C18	REMOVE TREES-GREY ROCK RD	LS		$ 5,262.00					$ 5,262.00	100%
C19	8" PVC 25'-30'	LF		$ 245.00				399	$ 97,755.00	
C20	48" SAN M.H. 25'-30'	EA		$ 6,500.00				5	$ 32,500.00	
C21	DOUBLE CATCH BASIN	EA		$ 4,400.00				1	$ 4,400.00	

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit F

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 7 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
	SUPPLEMENTARY UNIT PRICES									
S1	FRAME ADJUSTMENT-MINOR	EA		$ 500.00	$ -			34	$ 17,000.00	
S2	FRAME ADJUSTMENT MAJOR	EA		$ 1,000.00	$ -			0	$ 1,000.00	
S3	CB HOOD-COMPLETE	EA		$ 1,000.00	$ -					
S4	12" RCP COMPLETE	LF		$ 55.00	$ -			27	$ 1,485.00	
	15" RCP COMPLETE	LF		$ 65.00	$ -					
	18" RCP COMPLETE	LF		$ 75.00	$ -					
	24" RCP COMPLETE	LF		$ 85.00	$ -					
	12" CPP COMPLETE	LF		$ 55.00	$ -			1,215	$ 66,825.00	
	15" CPP COMPLETE	LF		$ 65.00	$ -			3,989	$ 259,285.00	
	18" CPP COMPLETE	LF		$ 75.00	$ -			1,175	$ 88,125.00	
	24" CPP COMPLETE	LF		$ 110.00	$ -			154	$ 16,940.00	
S5	CATCH BASINS	EA		$ 2,200.00	$ -			22	$ 48,400.00	
	STORM DRAINAGE MANHOLES	EA		$ 2,500.00	$ -			10	$ 25,000.00	
S6	STREAM BANK STABILIZATION	SY		$ 45.00	$ -			1,053	$ 47,385.00	
S7	BITUMINOUS CURB A	LF		$ 4.50	$ -			905	$ 4,072.50	

Town of Trumbull, Connecticut
Exhibit F

PROJECT: PHASE IV, PART B SANITARY SEWERS
CONTRACT NO. 3
LOCATION: TRUMBULL, CT

SHEET 8 OF 8
DATE: 11/12/09
PERIOD: 7/21/09-11/11/09
ESTIMATE NO. 27

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	CONTRACT AMOUNT	WORK DONE THIS PERIOD		TOTAL WORK COMPLETED TO DATE		
						ESTIMATED QUANTITY	AMOUNT	ESTIMATED QUANTITY	AMOUNT	PERCENTAGE
	SUPPLEMENTARY UNIT PRICES (CONT'D)									
S8	BITUMINOUS CURB A WITH BACK UP GRADE	LF		$ 6.00	$ -			24,382	$ 146,292.00	
S9	LOAM & SEED	SY		$ 6.00	$ -			3,239	$ 19,434.00	
S10	2" BIT. SIDEWALK	SY		$ 55.00	$ -			1,372	$ 75,460.00	
S11	2" BIT. DRIVEWAY APRON	SY		$ 45.00	$ -			5,836	$ 262,620.00	
S12	RELOCATE MAILBOXES	EA		$ 150.00	$ -			11	$ 1,650.00	
S13	SAW CUT ROADWAY	LF		$ 3.00	$ -			1,418	$ 4,254.00	
S14	REMOVE CURB & WALK	LF		$ 3.50	$ -			10,339	$ 36,186.50	
S15	SHIM COAT	TON		$ 130.00	$ -			720	$ 93,600.00	
							$ -		$ 20,680,582.06	

Forensic Consulting Services Report
Town of Trumbull, Connecticut
Exhibit G - Analysis of Contract Billings

Payment Number		**27**
Date		**11/11/2009**
Mark IV Pay Application		
Original Contract Sum	$	15,385,645
Change Orders		1,674,005.35
Approved contract amount to date		17,059,650.20
Costs incurred and billed to date		20,680,582.06
Approved payments by the WPCA, Finance Committee and Town Council		
Approved contract amount to date		
Original Contract and change orders		17,059,650.20
Jog Hill Extension		3,500,000.00
Total		20,559,650.20
Costs incurred and billed to date		20,680,582.06
Billings in Excess of WPCA/Town approval	**$**	**120,932**

CO # 15 - 8" PVC UNDERDRAIN

PRICE SAME AS ITEM #32

YOU ASKED THAT WE CREATE THIS LINE ITEM (C.O) SO AS TO NOT HAVE SUCH AN OVERRUN