

**Marshall Street WRF Digester
Demolition**
(09-0024-UT)

**CONTRACT DOCUMENTS &
SPECIFICATIONS**

Prepared for



March 2021

City of Clearwater, Florida

Marshall Street WRF Digester

Demolition

(09-0024-UT)

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Prepared in the Office of the City Engineer

SECTION 1

INVITATION TO BID NOTICE TO CONTRACTORS

Marshall Street WRF Digester Demolition

Documents and plans for Marshall Street WRF Digester Demolition (09-0024-UT) are available at <https://www.myclearwater.com/business/engineering-construction-bids>. The work includes: the demolition and disposal of an existing anaerobic digester, adjacent, attached heat exchanger building, hazardous materials, related mechanical and electrical equipment and associated liquids and solids in the digester. Contact Duy.Nguyen@myclearwater.com with project questions.

ALL Virtual Meeting Information:

<https://www.myclearwater.com/business/engineering-construction-bids>

Pre-Bid Meeting: Virtual

Thursday, March 24, 2021 at 11:00 AM (EST)

Site Visit:

Thursday, March 24, 2021 at 1:00 PM (EST)

Pre-qualification Application Submittal

Due: Wednesday, March 31, 2021

Categories: Wastewater Treatment Facilities

Pre-qualification Amount: \$2,000,000 (Two Million)

Bid Opening: Virtual

Friday, April 16, 2021 at 2:00 PM (EST)

FedEx or Drop off bids to:

City of Clearwater, Attn: Lori Vogel

Project # 09-0024-UT

Procurement Office, 3rd Floor

100 S. Myrtle Ave, Clearwater, FL 33756-5520

Issued by Lori Vogel, CPPB, Procurement Manager

For additional information contact Engineering Dept.:
727-562-4750

SECTION II

INSTRUCTIONS TO BIDDERS

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1. COPIES OF BIDDING DOCUMENTS

- 1.1. Complete sets of the Bidding Documents are accessible through the City of Clearwater website at address: www.myclearwater.com/bid. Bidding Documents may include, but are not limited to, plans, specifications, bond forms, contract form, affidavits, bid/proposal form, and addendums.
- 1.2. Complete sets of Bidding Documents must be used in preparing bids. Neither the City nor the Engineer shall be liable for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, by Bidders, sub-bidders, or others.

2. QUALIFICATION OF BIDDERS

- 2.1. Each prospective Bidder must pre-qualify to demonstrate, to the complete satisfaction of the City of Clearwater, that the Bidder has the necessary facilities, equipment, ability, financial resources and experience to perform the work in a satisfactory manner. An application package for pre-qualification may be obtained by contacting the City of Clearwater, Engineering Department, P.O. Box 4748, Clearwater, Florida 33758-4748 (mailing address); 100 South Myrtle Avenue, Clearwater, Florida 33756-5520 (street address) or by phone at (727) 562-4750. Pre-qualification requirement information is also available on the City of Clearwater Website at address:

www.myclearwater.com/government/city-departments/engineering/construction-management.

Contractors wanting to pre-qualify to bid on a project as a General Contractor must do so two weeks (ten workdays) prior to the bid opening date. Bidders currently pre-qualified by the City do not have to make reapplication. It is the Contractor's responsibility to confirm pre-qualification status before a Bid Opening.

The Contractor shall provide copies of the current Contractor License/Registration with the State of Florida and Pinellas County in the bid response.

3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 3.1. It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Contract Documents thoroughly; (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress, performance or furnishing of the work; (c) consider and abide by all applicable federal, state and local laws, ordinances, rules and regulations; and (d) study and carefully correlate Bidder's observations with the Contract Documents, and notify Engineer in writing of all conflicts, errors or discrepancies in the Contract Documents.
- 3.2. For the purposes of bidding or construction, bidder may rely upon the accuracy of the technical data contained in reports of explorations and tests of subsurface conditions at the site which have been utilized by the Engineer in the preparation of the Contract Documents, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof. Drawings relating to physical conditions of existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site and which have been utilized by the Engineer in preparation of the Contract Documents, may be relied upon by Bidder for accuracy of the technical data contained in such drawings but not upon the completeness thereof for the purposes of bidding or construction.

- 3.3. Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site are based upon information and data furnished to the City and Engineer by owners of such Underground Facilities or others, and the City does not assume responsibility for the accuracy or completeness thereof unless expressly provided in the Contract Documents.
- 3.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities, other physical conditions, possible conditions, and possible changes in the Contract Documents due to differing conditions appear in the General Conditions.
- 3.5. Before submitting a Bid, each Bidder shall, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing the work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 3.6. On request in advance, City will provide each Bidder access to the site to conduct such explorations and tests at Bidder's own expense as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the site to its former condition upon completion of such explorations and tests.
- 3.7. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by the Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the City unless otherwise provided in the Contract Documents.
- 3.8. The submission of a Bid will constitute an unequivocal representation by the Bidder that the Bidder has complied with every requirement of these Instructions to Bidders and that, without exception, the Bid is premised upon performing and furnishing the Work required by the Contract Documents by such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the work.

4. INTERPRETATIONS AND ADDENDA

- 4.1. All questions as to the meaning or intent of the Contract Documents are to be directed in writing to the Engineer. Interpretations or clarifications considered necessary by the Engineer in response to such questions will be issued by Addenda, via the Jiffy Reprographics Plan Room to all parties recorded by the Plan Room as plan holders having received the Bidding Documents. Questions received after the time frame specified on the pre-bid meeting agenda, prior to the date for opening of Bids, may not be answered. Only information provided by formal written Addenda will be binding. Oral and other interpretations of clarifications will be without legal effect.
- 4.2. Addenda may also be issued to modify the Bidding Documents as deemed advisable by the City or Engineer.

5. BID SECURITY OR BID BOND

- 5.1. Each Bid must be accompanied by Bid Security made payable to the City of Clearwater in an amount equal to ten percent (10%) of the Bidder's maximum Bid price and in the form of a certified or cashier's check or a Proposal/Bid Bond (on form provided in Section V) issued by a surety meeting the requirements of the General Conditions.
- 5.2. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Payment and Performance bonds, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute, deliver the Agreement and furnish the required Bonds within ten (10) days after the award of contract by the City Council, the City may annul the bid and the Bid Security of the Bidder will be forfeited. The Bid Security of any Bidder whom the City believes to have a reasonable chance of receiving the award may be retained by the City until the successful execution of the agreement with the successful Bidder or for a period up to ninety (90) days following bid opening. Security of other Bidders will be returned approximately fourteen (14) days after the Bid Opening.
- 5.3. The Bid Bond shall be issued in the favor of the City of Clearwater by a surety company qualified to do business in, and having a registered agent in, the State of Florida.

6. CONTRACT TIME

- 6.1. The number of consecutive calendar days within which the work is to be completed is set forth in the Technical Specifications.

7. LIQUIDATED DAMAGES

- 7.1. Provisions for liquidated damages are set forth in the Contract Agreement, Section V.

8. SUBSTITUTE MATERIAL AND EQUIPMENT

- 8.1. The contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item may be furnished or used, application for its acceptance will not be considered by the Engineer until after the effective date of the Contract Agreement. The procedure for submittal of any such application is described in the General Conditions and as supplemented in the Technical Specifications.

9. SUBCONTRACTORS

- 9.1. If requested by the City or Engineer, the Successful Bidder, and any other Bidder so requested, shall, within seven (7) days after the date of the request, submit to the Engineer an experience statement with pertinent information as to similar projects and other evidence of qualification for each Subcontractor, supplier, person and organization to be used by the Contractor in the completion of the Work. The amount of subcontract work shall not exceed fifty percent (50%) of the Work except as may be specifically approved by the Engineer. If the Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, supplier, other person or organization, he may, before recommending award of the Contract to the City Council, request the Successful Bidder to submit an acceptable substitute without an increase in Contract Price or Contract Time. If the Successful Bidder declines to make any such substitution, the City may award the contract to the next lowest and most responsive Bidder

that proposes to use acceptable Subcontractors, Suppliers, and other persons and organizations. Declining to make requested substitutions will not constitute grounds for sacrificing the Bid Security to the City of any Bidder. Any Subcontractor, supplier, other person or organization listed by the Contractor and to whom the Engineer does not make written objection prior to the recommendation of award to the City Council will be deemed acceptable to the City subject to revocation of such acceptance after the Effective Date of the Contract Agreement as provided in the General Conditions.

- 9.2. No Contractor shall be required to employ any Subcontractor, supplier, person, or organization against whom he has reasonable objection.

10. BID/PROPOSAL FORM

- 10.1. The Bid/Proposal Form is included with the Contract Documents and shall be printed in ink or typewritten. All blanks on the Bid/Proposal Forms must be completed. Unit Prices shall be to no more than two decimal points in dollars and cents. The Bidder must state in the Bid/Proposal Form in words and numerals without delineation's, alterations or erasures, the price for which they will perform the work as required by the Contract Documents. Bidders are required to bid on all items in the Bid/Proposal form. The lump sum for each section or item shall be for furnishing all equipment, materials, and labor for completing the section or item as per the plans and contract specifications. Should it be found that quantities or amounts shown on the plans or in the proposal, for any part of the work, are exceeded or should they be found to be less after the actual construction of the work, the amount bid for each section or item will be increased or decreased in direct proportion to the unit prices bid for the listed individual items.
- 10.2. Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed. The corporate address and state of incorporation shall be shown below the Signature. If requested, the person signing a Bid for a corporation or partnership shall produce evidence satisfactory to the City of the person's authority to bind the corporation or partnership.
- 10.3. Bids by partnerships shall be executed in the partnership name and signed by a general partner, whose title shall appear under the signature and the official address of the partnership shall be shown below the signature.
- 10.4. All names shall be typed or printed below the signature.

11. SUBMISSION OF BIDS

- 11.1. Sealed Bids shall be submitted at or before the time and at the place indicated in the Advertisement for Bids and shall be submitted in a sealed envelope with the project name and number on the bottom left hand corner. If forwarded by mail, the Bid shall be enclosed in another envelope with the notation "Bid Enclosed" on the face thereof and addressed to the City of Clearwater, attention Purchasing Manager. Bids will be received at the office indicated in the Advertisement until the time and date specified. Bids in any other form will not be accepted.
- 11.2. The sealed bid envelope shall contain, but not be limited to, the Proposal/Bid Bond and corresponding Power of Attorney, Affidavit, Non Collusion Affidavit, Proposal (pages one

and two), Addendum Sheet, Bidder's Proposal, and Scrutinized Companies and Business Operations with Cuba and Syria Certification Form.

12. MODIFICATION AND WITHDRAWAL OF BIDS

- 12.1. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered as described in the Advertisement of Bids. A request for withdrawal or a modification shall be in writing and signed by a person duly authorized to do so. Withdrawal of a Bid will not prejudice the rights of a Bidder to submit a new Bid prior to the Bid Date and Time. After expiration of the period for receiving Bids, no Bid may be withdrawn or modified.
- 12.2. After a bid is received by the City, the bidder may request to modify the bid for typographical or scrivener's errors only. The bidder must state in writing to the City that a typographical or scrivener's error has been made by the bidder, the nature of the error, the requested correction of the error, and what the adjusted bid amount will be if the correction is accepted by the City. The City reserves the right at its sole discretion to accept, reject, or modify any bid.

13. REJECTION OF BIDS

- 13.1. To the extent permitted by applicable State and Federal laws and regulations, the City reserves the right to reject any, and all Bids, and to waive any, and all informalities. Grounds for the rejection of a bid include but are not limited to a material omission, unauthorized alteration of form, unauthorized alternate bids, incomplete or unbalanced unit prices, or irregularities of any kind. Also, the City reserves the right to reject any Bid if the City believes that it would not be in the best interest of the public to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the City. The City reserves the right to decide which bid is deemed to be the lowest and best in the interest of the public.

14. DISQUALIFICATION OF BIDDER

- 14.1. Any or all bids will be rejected if there is any reason for believing that collusion exists among the bidders, the participants in such collusion will not be considered in future proposals for the same work. Each bidder shall execute the Non-Collusion Affidavit contained in the Contract Documents.

15. OPENING OF BIDS

- 15.1. Bids will be opened and read publicly at the location and time stated in the Advertisement for Bids. Bidders are invited to be present at the opening of bids.

16. LICENSES, PERMITS, ROYALTY FEES AND TAXES

- 16.1. The Contractor shall secure all licenses and permits (and shall pay all permit fees) except as specifically stated otherwise in the Technical Specifications. The Contractor shall comply with all Federal and State Laws, County and Municipal Ordinances and regulations, which in any manner effect the prosecution of the work. City of Clearwater building permit fees and impact fees will be waived except as specifically stated otherwise in the Technical Specifications.

- 16.2. The Contractor shall assume all liability for the payment of royalty fees due to the use of any construction or operation process, which is protected by patent rights except as specifically stated otherwise in the Technical Specifications. The amount of royalty fee, if any, shall be stated by the Contractor.
- 16.3. The Contractor shall pay all applicable sales, consumer, use, and other taxes required by law. The Contractor is responsible for reviewing the pertinent State Statutes involving the sales tax and sales tax exemptions and complying with all requirements.
- 16.4. The City of Clearwater is exempt from state sales tax on materials purchased by the City and incorporated into the WORK. The City of Clearwater reserves the right to implement the Owner Direct Purchase (ODP) Option, as may be indicated in the Scope of Work Description in Section IV – Technical Specifications and as defined in Section III – General Conditions.

17. IDENTICAL TIE BIDS/VENDOR DRUG FREE WORKPLACE

- 17.1. In accordance with the requirements of Section 287.087 Florida Statutes regarding a Vendor Drug Free Workplace, in the event of identical tie bids, preference shall be given to bidders with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the City for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none or all of the tied bidders have a drug-free workplace program. In order to have a drug-free workplace program, a contractor shall supply the City with a certificate containing the following six statements and the accompanying certification statement:
 - (1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
 - (2) Inform employees as to the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
 - (3) Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
 - (4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893, or of any controlled substance law, of the United States, or of any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
 - (5) Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
 - (6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

I certify that this firm does/does not (select only one) fully comply with the above requirements.

18. AWARD OF CONTRACT

- 18.1. Discrepancies between words and figures will be resolved in favor of words. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 18.2. In evaluating the Bids, the City will consider the qualifications of the Bidders, whether the Bids comply or not with the prescribed requirements, unit prices, and other data as may be requested in the Bid/Proposal form. The City may consider the qualifications and experience of Subcontractors, suppliers and other persons and organizations proposed by the Contractor for the Work. The City may conduct such investigations as the City deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons, and organizations to perform and furnish the Work in accordance with the Contract Documents to the City's satisfaction within the prescribed time.
- 18.3. If the Contract is to be awarded, it will be awarded to the lowest responsible, responsive Bidder whose evaluation by the City indicates to the City that the award will be in the best interest of the City.
- 18.4. Award of contract will be made for that combination of base bid and alternate bid items in the best interest of the City, however, unless otherwise specified all work awarded will be awarded to only one Contractor.
- 18.5. The successful bidder/contractor will be required to comply with Section 119.0701, Florida Statutes (2014), specifically to:
 - (a) Keep and maintain public records that ordinarily and necessarily would be required by the City of Clearwater in order to perform the service;
 - (b) Provide the public with access to public records on the same terms and conditions that the City of Clearwater would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law;
 - (c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and
 - (d) Meet all requirements for retaining public records and transfer, at no cost, to the City of Clearwater all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the City of Clearwater.

19. BID PROTEST

19.1. RIGHT TO PROTEST:

Any actual bidder who is aggrieved in connection with the solicitation or award of a contract may seek resolution of his/her complaints initially with the Purchasing Manager, and if not satisfied, with the City Manager, in accordance with protest procedures set forth in this section.

19.2. PROTEST PROCEDURE:

SECTION II – Instructions to Bidders

- A. A protest with respect to the specifications of an invitation for bid or request for proposal shall be submitted in writing a minimum of five (5) work days prior to the opening of the bid or due date of the request for proposals, unless the aggrieved person could not have been reasonably expected to have knowledge of the facts giving rise to such protest prior to the bid opening or the closing date for proposals. Opening dates for bids or due dates for requests for proposal will be printed on the bid/request document itself.
- B. Protests in respect to award of contract shall be submitted in writing a maximum of five (5) workdays after notice of intent to award is posted, or is mailed to each bidder, whichever is earlier. Notice of intent to award will be forwarded to bidders upon telephonic or written request. Protests of recommended award should cite specific portions of the City of Clearwater Code of Ordinances that have allegedly been violated.
- C. Exceptions to the five (5) day requirements noted in both A and B above may be granted if the aggrieved person could have not been reasonably expected to have knowledge of the facts giving rise to such protest prior to the bid opening, posting of intent to award, or due date for requests for proposals. Request for exceptions should be made in writing, stating reasons for the exception.
- D. The Purchasing Manager shall respond to the formal written protest within five (5) workdays of receipt. The Purchasing Manager's response will be fully coordinated with the appropriate Department Director and the Assistant City Manager.
- E. If the protestor is not satisfied with the response from the Purchasing Manager, he/she may then submit in writing within five (5) work days of receipt of that response his/her reason for dissatisfaction, along with copies of his/her original formal protest letter and the response from the Purchasing Manager, to the City Manager.
- F. The City Manager as Purchasing Agent for the City has the final authority in the matter of protests. The City Manager will respond to the protestor within ten (10) workdays of receipt of the appeal.

19.3. PROTEST FEE:

When filing a formal protest, the protesting vendor must include a fee in the amount of 5% of the selected vendor's total bid to offset the City's additional expenses related to the protest. This fee shall not exceed \$2,500 nor be less than \$50. If either the Purchasing Manager or the City Manager upholds the protest, the City will refund 100% of the fee paid.

19.4. STAY OF PROCUREMENT DURING PROTEST:

In the event of a timely protest, the Purchasing Manager shall not proceed with the solicitation or award of contract until all administrative remedies have been exhausted or until the City Manager makes written determination that the award of contract without delay is necessary to protect the best interest of the City.

20. TRENCH SAFETY ACT

- 20.1. The Bidder shall comply with the provisions of the City of Clearwater's Ordinance related to trench digging (Ordinance No. 7918-08) along with the Florida Trench Safety Act (Sections 553.60-553.64, Florida Statutes) and the provisions of the Occupational Safety and Health Administration's (OSHA) excavation safety standards, 29 C.F.R.s 1926.650 Subparagraph P, or current revisions of these laws.

21. CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL MANAGEMENT MEASURES

- 21.1. The Bidder shall comply with the provisions of the Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) stormwater permit and implement stormwater pollution prevention plans (SWPPP's) or stormwater management programs (both using best management practices (BMPs) that effectively reduce or prevent the discharge of pollutants into receiving waters.
- A. The control of construction-related sediment loadings is critical to maintaining water quality. The implementation of proper erosion and sediment control practices during the construction stage can significantly reduce sediment loadings to surface waters.
 - B. Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

NPDES Management Measures available at City of Clearwater Engineering Environmental Division and EPA websites to help address construction-related Best Management Practices.

SECTION III

GENERAL CONDITIONS

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1. DEFINITIONS

Addenda

Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the contract documents.

Agent

Architect, engineer or other outside agency, consultant or person acting on behalf of the City.

Agreement

The written contract between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment

The form accepted by Engineer which is to be used by Contractor in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

Approve

The word approve is defined to mean satisfactory review of the material, equipment or methods for general compliance with the design concepts and with the information given in the Contract Documents. It does not imply a responsibility on the part of the Engineer to verify in every detail conformance with the Drawings and Specifications.

Bid

The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.

Bidding Documents

The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

Bonds

Performance and payment bonds and other instruments of security.

Change Order

A written order to Contractor signed by Owner and Contractor authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued on or after the effective date of the Agreement.

City

The City of Clearwater, Pinellas County, Florida.

Construction Inspector

A person who is the authorized representative of the Construction Manager and inspects City construction projects in order to ensure the Contractor's work complies with the intent of the Contract Documents.

Construction Manager

The person who is typically in responsible charge of City construction projects. The Construction Manager assumes responsibility for the management of construction contracts at the Preconstruction Conference. The Construction Manager chairs the

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Preconstruction Conference and is the authority on any disputes or decisions regarding contract administration and performance. The Construction Manager typically acts as the Owner's Representative during construction.

Contract Documents

The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the bid and any post-Bid documentation submitted prior to the execution of the Agreement) when attached as an exhibit to the Agreement, the Bonds, Instructions to Bidders, these General Conditions, any Supplementary Conditions, the Specifications and the Drawings, any other exhibits identified in the Agreement, together with all Modifications issued after the execution of the Agreement.

Contract Price

The Contract price constitutes the total compensation (subject to authorized adjustments) payable by Owner to Contractor for performing the Work.

Contract Time

The number of days or the date stated in the Agreement for the completion of the Work.

Contractor

The Person with whom the Owner has entered into the Agreement. For the purposes of this contract, the person, firm or corporation with whom this contract or agreement has been made by the City of Clearwater or its duly authorized representative.

Critical Path Method Construction Schedule—CPM

A graphic format construction schedule that displays construction activities as they relate to one another for the purpose of identifying the most efficient way to perform the work in a timely manner. The critical path identifies which activity is critical to the execution of the schedule.

Day

A calendar day of twenty-four (24) hours measured from midnight to the next midnight.

Defective

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to Engineers recommendation of final payment.

Drawings

The drawings, which will be identified in Technical Specifications or the Agreement, which show the character and scope of the Work to be performed and which have been prepared or approved by Engineer and are referred to in the contract documents. Shop drawings are not Drawings as so defined.

Engineer

The duly appointed representative of the City Manager of the City of Clearwater. For the purposes of this contract, the City Engineer of the City of Clearwater, Pinellas County, Florida, or his authorized representative. For certain projects, the Engineer may serve as the Owner's Representative during construction.

Engineer's Consultant

A Person having a contract with Engineer to furnish services as Engineer's independent

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professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

F.D.O.T Specifications

The Standard Specifications for Road and Bridge Construction as issued by the Florida Department of Transportation (latest English edition).

Furnish

The words "furnish", "furnish and install", "install", and "provide" or words of similar meaning shall be interpreted, unless otherwise specifically stated, to mean "furnish and install complete in place and ready for service".

Inspection

The term "inspection" and the act of inspecting means examination of construction to ensure that it conforms to the design concept expressed in the Drawings and Specifications. These terms shall not be construed to mean supervision, superintending or overseeing.

Laws and Regulations

Any and all applicable laws, rules, regulations, ordinances, codes and orders of any kind of governmental bodies, agencies, authorities and courts having jurisdiction.

Liens

Liens, charges, security interests or encumbrances upon real property or personal property.

Milestone

A principal event specified in the contract Documents relating to an intermediate completion date or time prior to the final completion date.

Notice to Proceed (NTP)

A written notice given by the Owner to the Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform his obligations under the Contract Documents.

Owner

The City of Clearwater, Florida. For the purposes of this contract, the person who is the City's authorized representative from the City's Department with whom will be responsible for the maintenance and operation of the Work once the Work is completed. For certain projects, a designee of the Owner may serve as the Owner's Representative during construction.

Owner's Representative

Designee of the Owner with authority to act on behalf of the Owner during construction.

Person

A natural person, or a corporation, partnership, firm, organization, or other artificial entity.

Project

The total construction of which the Work to be provided under the Contract Documents may be the whole or a part as indicated elsewhere in the Contract Documents.

Partial Utilization

Use by Owner of a substantially completed part of the Work for the purpose for which is intended (or a related purpose) prior to Final Completion of all the Work.

Representative of Contractor

The Contractor shall assign a responsible person or persons, one of whom shall be at the construction site at all times, that work is progressing. The names and positions of these

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persons shall be submitted to the City Engineer at the time of the pre-construction conference. This person or persons shall not be changed without written approval of City Engineer.

Request for Information (RFI)

An official written request for clarification of the intent of the contract documents from the Contractor to the Engineer.

Shop Drawing

All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.

Specifications

Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor

A person having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion

The Work (or a specified part thereof) which has progressed to the point where, in the opinion of Engineer, as evidenced by Engineer's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by the Engineer's recommendation of final payment. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

Supplementary Conditions

The part of the Contract which amends or supplements these General Conditions.

Supplier

A manufacturer, fabricator, supplier, distributor, material man or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by the Contractor.

Surety

Any person, firm or corporation which is bound with Contractor and which engages to be responsible for Contractor and his acceptable performance of the Work by a Bid, Performance or Payment Bond.

Underground Facilities

All pipelines, conduits, ducts, cables, wires manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal or treatment, traffic or other control systems or water.

Unit Price Work

Work to be paid for on the basis of unit prices.

Work

The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

Work Change Directive

A written directive to Contractor, issued on or after the Effective Date of the Agreement and signed by the Engineer, ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed or emergencies. Work Change Directive will not change the Contract Price or Contract Time but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

2. PRELIMINARY MATTERS

2.1. DELIVERY OF BONDS AND CERTIFICATES OF INSURANCE

When Contractor delivers the executed Agreements to the Owner, Contractor shall also deliver to the Owner such Bonds and Certificates of Insurance as Contractor may be required to furnish by this contract.

2.2. COPIES OF DOCUMENTS

Engineer shall furnish to Contractor one (1) copy of Contract Documents for execution. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3. COMMENCEMENT OF CONTRACT TIME/NOTICE TO PROCEED, STARTING THE PROJECT

The Contract Time will commence on the day indicated in the Notice to Proceed. Contractor shall start to perform the work on the date the Contract Time commences to run. No work shall be done at the site prior to the date that the Contract Time commences to run. Pursuant to Section 255.05(1)(b), Florida Statutes, the Notice to Proceed cannot be issued until Contractor provides City with a certified copy of the recorded bond issued by the Pinellas County Clerk of Court.

2.4. BEFORE STARTING CONSTRUCTION

Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error or discrepancy which Contractor may discover; and shall obtain a written interpretation or

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clarification from Engineer before proceeding with any work effected thereby; however, Contractor shall not be liable to the Owner for failure to report any conflict, error or discrepancy in the Drawings or Specifications, unless Contractor had actual knowledge thereof or should reasonably have known thereof.

No verbal agreement or conversation with any officer, Agent or employee of the Owner or Engineer's Consultant, either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained. Contractor shall not commence any work at any time without approved insurance required by these General Conditions. Failure to obtain this insurance will be the sole responsibility of the Contractor.

2.5. PRECONSTRUCTION CONFERENCE

After Contract has been fully executed and before the start of the Work, the Owner's Representative shall schedule a preconstruction conference to be attended by Contractor, Engineer, Owner and others as appropriate to establish a working understanding among the parties as to the Work and to discuss the schedule of the Work and general Contract procedures.

The Contractor shall submit to the Owner's Representative prior to the Notice to Proceed, a color Critical Path Method (CPM) Construction Schedule. This is to be a sequence of events including submittal review and procurement. Notice to Proceed is usually established at the preconstruction conference and such date can be inserted into the schedule at that time. The Contractor shall also submit a Submittal Schedule for review by the Engineer. This is to make sure that the list is complete, and this schedule shall be the basis of a Submittal Log.

The Contractor shall submit to the Owner's Representative prior to the Notice to Proceed, a completed Emergency Call List, a completed Authorized Signature List, and Verification of Illegal Discharge Construction Site Training.

2.6. PROGRESS MEETINGS

The Contractor is required to attend Progress Meetings. These meetings will be scheduled on a weekly, bi-weekly, or monthly basis depending on the needs of the project. The Contractor shall bring to each meeting an updated submittal log, an updated request for information (RFI) log, a look-ahead schedule to cover the project activity from the current meeting to the next meeting, and all material test reports generated in the same time period.

3. CONTRACT DOCUMENTS, INTENT

3.1. INTENT

The Contract Documents comprise the entire Agreement between Owner and the Contractor concerning the Work. They may be altered only by written agreement. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment which may reasonably be inferred from the Contract Documents or from prevailing custom or from trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases, which have a well-known technical or construction industry or trade meaning, are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and

interpretations of the Contract Documents shall be issued by the Owner's Representative. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the code, Laws or Regulation of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code, or Laws or Regulations in effect at the time of opening of Bids except as may be otherwise specifically stated in the Contract Documents. However, no provision of any referenced standard specification, manual or code, whether or not specially incorporated by reference in the responsibilities of Owner or Contractor as set forth in the Contract Documents, shall change the duties and responsibilities of Owner, Contractor, Engineer or Owner's Representative, or any of their Agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract shall be issued by the Owner's Representative. Each and every provision of law and clause required by law to be inserted in these Contract documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

3.2. REPORTING AND RESOLVING DISCREPANCIES

If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier, Contractor shall report it to the Owner's Representative in writing at once, and Contractor shall not proceed with the Work affected thereby (except in an emergency) until an amendment or supplement to Contract Documents has been issued by one of the methods provided in these General Specifications, provided however, that Contractor shall not be liable to Owner, or Owner's Representative for failure to report any such conflict, error, ambiguity or discrepancy unless Contractor knew or reasonably should have known thereof.

4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.1. AVAILABILITY OF LANDS

The Owner shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be Performed, rights-of-way, easements, rights of entry for access thereto, and such other lands which are designated for the use of contractor. The Owner shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which contractor will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the Owner, unless otherwise provided in the Contract Documents.

4.2. INVESTIGATIONS AND REPORTS

Reference is made to the Supplementary Conditions and Technical Specifications for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by

Engineer in preparation of the Drawings and Specifications. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents. Contractor shall promptly notify the Owner's Representative in writing of any subsurface or latent physical conditions at the site, or in an existing structure, differing materially from those indicated or referred to in the Contract Documents. Engineer will promptly review those conditions and advise if further investigation or tests are necessary. Owner or Engineer shall obtain the necessary additional investigations and tests and furnish copies to the Engineer and Contractor. If Engineer finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions, which differ materially from those, indicated in the contract Documents, and which could not reasonably have been anticipated by Contractor, a work change, or Change Order will be issued incorporating the necessary revisions.

4.3. PHYSICAL CONDITIONS, UNDERGROUND FACILITIES

The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities or by others. Unless otherwise expressly provided in the Contract Documents, Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and the cost of all the following will be included in the Contract Price and contractor shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work. The Contractor is required to call the Sunshine State One Call of Florida prior to any excavation per State regulations and to notify any utility owners who are not a member of the Sunshine State One Call of Florida prior to any excavation. The Sunshine State One Call of Florida is an agency for the protection and location of utilities prior to any excavation and contact number is available in local telephone directory.

4.4. REFERENCE POINTS

Engineer shall provide engineering surveys to establish reference points for construction, which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, unless otherwise noted in the Contract, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Owner and Engineer. Contractor shall report to Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for the accurate replacement or relocation of such reference points by a surveyor licensed in the State of Florida. The Contractor is referred to the Technical Specifications for more specific information regarding the provision of construction surveys. If a City survey crew is assigned to the project and there is excessive stake replacement caused by negligence of Contractor's forces after initial line and grade have been set, as determined by the Engineer, the Contractor will be charged at the rate of \$100.00 per hour. Time shall be computed for actual time on the project. All time shall be computed in one-hour increments with a minimum charge of one hour.

5. BONDS AND INSURANCE

5.1. PERFORMANCE AND PAYMENT BOND/CONTRACT BOND

Contractor shall furnish a Performance and Payment Bond pursuant to Section 255.05, Florida Statutes in an amount equal to the Contract Price as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. This bond shall remain in effect at least one year after the date when final payment becomes due, unless a longer period of time is prescribed by laws and regulations or by the Contract Documents. Contractor shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents in Section V and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of such agents' authority to act. All bonds shall be deemed to contain all of the Conditions of Section 255.05, Florida Statutes, even if such language is not directly contained within the bond and the Surety shall be licensed and qualified to do business in the State of Florida. Owner reserves the right to reject any surety. If the Surety on any Bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of these Contract Documents, the Contractor shall within five days after notice thereof substitute another Bond and surety, both of which must be acceptable to Owner.

5.2. INSURANCE REQUIREMENTS

The Contractor shall, at its own cost and expense, acquire and maintain (and cause any subcontractors, representatives or agents to acquire and maintain) during the term with the City, sufficient insurance to adequately protect the respective interest of the parties. Coverage shall be obtained with a carrier having an AM Best Rating of A-VII or better. In addition, the City has the right to review the Contractor's deductible or self-insured retention and to require that it be reduced or eliminated.

Specifically, the Contractor must carry the following minimum types and amounts of insurance on an occurrence basis or in the case of coverage that cannot be obtained on an occurrence basis, then coverage can be obtained on a claims-made basis with a minimum four (4) year tail following the termination or expiration of this Agreement:

The following insurance limits may be achieved by a combination of primary and umbrella/excess liability policies.

5.2.1. COMMERCIAL GENERAL LIABILITY INSURANCE

Commercial General Liability Insurance coverage, including but not limited to, premises operations, products/completed operations, products liability, contractual liability, advertising injury, personal injury, death, and property damage in the minimum amount of \$1,000,000 (one million dollars) per occurrence and \$2,000,000 (two million dollars) general aggregate.

5.2.2. COMMERCIAL AUTOMOBILE LIABILITY INSURANCE

Commercial Automobile Liability Insurance coverage for any owned, non-owned, hired or borrowed automobile is required in the minimum amount of \$1,000,000 (one million dollars) combined single limit.

5.2.3. WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE

Statutory Workers' Compensation Insurance coverage in accordance with the laws of the State of Florida, and Employer's Liability Insurance in the minimum amount of \$100,000 (one hundred thousand dollars) each employee each accident, \$100,000 (one hundred thousand dollars) each employee by disease and \$500,000 (five hundred thousand dollars) aggregate by disease with benefits afforded under the laws of the State of Florida. Coverage should include Voluntary Compensation, Jones Act, and U.S. Longshoremen's and Harbor Worker's Act coverage where applicable. Coverage must be applicable to employees, contractors, subcontractors, and volunteers, if any.

5.2.4. PROFESSIONAL LIABILITY/MALPRACTICE/ERRORS OR OMISSIONS INSURANCE

Professional Liability/Malpractice/Errors or Omissions Insurance coverage appropriate for the type of business engaged in by the Contractor with minimum limits of \$1,000,000 (one million dollars) per occurrence. If a claims-made form of coverage is provided, the retroactive date of coverage shall be no later than the inception date of claims-made coverage, unless prior policy was extended indefinitely to cover prior acts. Coverage shall be extended beyond the policy year either by a supplemental extended reporting period (ERP) of as great a duration as available, and with no less coverage and with reinstated aggregate limits, or by requiring that any new policy provide a retroactive date no later than the inception date of claims-made coverage.

5.2.5. CONTRACTOR'S EQUIPMENT/INLAND MARINE/PROPERTY INSURANCE

If Contractor is using its own property in connection with the performance of its obligations under this Agreement, then Contractor's Equipment–Inland Marine Insurance and/or Property Insurance on an “All Risks” basis with replacement cost coverage for property and equipment in the care, custody and control of others is recommended. City is not responsible for Contractor's (or any sub-contractors, representatives, or agents) equipment or property.

5.2.6. BUILDER'S RISK INSURANCE

The City will provide at its expense, Builder's Risk Insurance for the project to cover all risks of loss in the complete and full value of the project. Contractor agrees to cooperate in a timely manner with providing any information or documentation required for the application and by the carrier as the project proceeds.

5.3. OTHER INSURANCE PROVISIONS

Upon approval of this Agreement by City Council, and then annually upon the anniversary date(s) of the insurance policy's renewal date(s) for as long as this Agreement remains in effect, the Contractor will furnish the City with a Certificate of Insurance(s) (using appropriate ACORD

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certificate, SIGNED by the Issuer, and with applicable endorsements) evidencing all of the coverage set forth above and naming the City as an “Additional Insured.” In addition when requested in writing from the City, Contractor will provide the City with certified copies of all applicable policies. The address where such certificates and certified policies shall be sent or delivered is as follows:

City of Clearwater
Engineering Department
Attn: Construction Office Specialist
P.O. Box 4748
Clearwater, FL 33758-4748

1. The **Description** (of Operations/Locations/Vehicles) should specify Project Name and Project Number.
2. Contractor shall provide thirty (30) days written notice of any cancellation, non-renewal, termination, material change or reduction in coverage.
3. Contractor’s insurance as outlined above shall be primary and non-contributory coverage for Contractor’s negligence.
4. Contractor reserves the right to appoint legal counsel to provide for the Contractor’s defense, for any and all claims that may arise related to Agreement, work performed under this Agreement, or to Contractor’s design, equipment, or service. Contractor agrees that the City shall not be liable to reimburse Contractor for any legal fees or costs as a result of Contractor providing its defense as contemplated herein.

The stipulated limits of coverage above shall not be construed as a limitation of any potential liability to the City, and the City’s failure to request evidence of this insurance shall not be construed as a waiver of Contractor’s (or sub-contractors, representatives, or agents) obligation to provide the insurance coverage specified.

5.4. WAIVER OF RIGHTS

The Owner and Contractor intend that all policies purchased in accordance with Article on Insurance will protect the Owner, Contractor, Subcontractors, Engineer, Engineer's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insured or additional insured in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insured or additional insured thereunder, the Owner and Contractor waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the work; and, in addition, waive all such rights against Sub-contractors, Engineer, Engineer's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insured or additional insured under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance otherwise payable under any policy so issued. In addition, the Owner waives all rights against Contractor, Subcontractors, Engineer, Engineer's Consultant and the officers, directors, employees and agents of any of them for: (i) loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to the Owner property or the Work caused by, arising out of or resulting from fire or other peril, whether or not insured by the Owner and; (ii) loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured

peril covered by any property insurance maintained on the completed Project or part thereof by the Owner during partial utilization, after substantial completion or after final payment.

6. CONTRACTOR'S RESPONSIBILITIES

6.1. SUPERVISION AND SUPERINTENDENCE

Contractor shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. Contractor shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

Contractor shall be responsible to see that the completed work complies accurately with the Contract Documents. Contractor shall keep on the work at all times during its progress a competent resident superintendent, who shall not be replaced without notice to the Owner's Representative except under extraordinary circumstances. The superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications to the superintendent shall be as binding as if given to Contractor. The Contractor's superintendent shall keep a mobile cell phone on his person, so he can be contacted whenever necessary.

Contractor shall employ only competent persons to do the work and whenever the Owner's Representative shall notify Contractor, in writing, that any person on the work appears to be incompetent, unfaithful, disorderly, disrespectful or otherwise unsatisfactory, such person shall be removed from the project and shall not again be employed on it except with the written consent of the Owner's Representative. Contractor represents the City of Clearwater and shall conduct themselves in a professional manner to the public at all times.

Contractor shall reimburse Owner for additional engineering and inspection costs incurred as a result of overtime work in excess of the regular working hours or on the Owner normally approved holidays. At such times when Inspector overtime is required, the Contractor shall sign an overtime slip documenting such hours and the Contractor shall be provided a copy for his records. At the end of the project and prior to payment of withheld retainage funds, the Contractor shall deliver to the Owner a check made out to the Owner of Clearwater for full reimbursement of all Inspector overtime hours. Withheld retainage shall not be released until the Owner has received this check. Minimum number of chargeable hours for inspection costs on weekends or holidays shall be four hours. The cost of overtime inspection per hour shall be \$80.00 per hour.

Contractor shall provide and maintain in a neat and sanitary condition, such sanitary accommodations for the use of Contractor's employees as may be necessary to comply with the requirements of Laws and Regulations and the Engineer.

6.2. LABOR, MATERIALS AND EQUIPMENT

Contractor shall provide competent, suitably qualified personnel to survey, lay out and construct the work as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all work at the site shall be performed during regular working hours.

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Contractor shall adhere to the Community Development Code, Section 3-1508 regarding noise restrictions from 6:00 p.m. to 7:00 a.m. any day and all day Sunday. Contractor will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without Owner consent given after prior notice to Engineer.

Unless otherwise specified in the General Requirements, Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

All materials and equipment installed in the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Engineer, Contractors shall furnish satisfactory evidence (including reports of required tests) as to the quality of materials and equipment. The Contractor shall provide suitable and secure storage for all materials to be used in the Work so that their quality shall not be impaired or injured. Materials that are improperly stored, may be rejected by the Engineer without testing.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier, or distributor, except as otherwise provided in the Contract Documents.

The City of Clearwater, at its sole discretion, reserves the right to purchase major equipment or materials to be incorporated into the Work under the Owner Direct Purchase (ODP) Option, per Section III, Article 21. In such event, the Contractor shall cooperate and assist the Owner of Clearwater, at no additional cost, to implement the ODP documents and procedures.

6.3. SUBSTITUTES AND "OR EQUAL" ITEMS

Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by Engineer. If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer for approval. If in the Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or equal" item, it may be considered as a proposed substitute item. Contractor shall submit sufficient information as required by the Engineer to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and is an acceptable substitute therefore. Request for review of proposed substitute and "or equal" will be not be accepted by Engineer from anyone other than Contractor.

Request for substitute and "or equal" items by Contractor must be submitted in writing to Owner's Representative and will contain all information as Engineer deems necessary to make a determination. Request for substitute shall identify why a substitute is submitted and include advantages to the Owner. All data provided by Contractor in support of any proposed substitute or "or equal" item will be at Contractor's expense. Engineer will be allowed a reasonable time to evaluate each proposal or submittal made per this paragraph. Engineer will be sole judge of acceptability.

6.4. SUBCONTRACTORS, SUPPLIERS AND OTHERS

The Contractor shall deliver to the Owner's Representative before or at the preconstruction conference a list of all Subcontractors, suppliers and other persons and organizations proposed by the Contractor for Work to be performed on the Project. The Contractor shall include with this list the qualifications and references for each Subcontractor, supplier or other person and organization for review and approval. Any changes to this list must be submitted to the Owner's Representative for approval prior to the substitution of any Subcontractors, suppliers or other persons and organizations before performing any Work on the Project for the Contractor.

Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers and other persons performing or furnishing any of the work under a direct or indirect contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person any contractual relationship between Owner or Engineer and any Subcontractor, Supplier or other person, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers and other persons performing or furnishing any of the work under a direct or indirect contract with Contractor. Contractor shall require all Subcontractors, Suppliers and such other persons performing or furnishing any of the work to communicate with the Engineer through Contractor.

The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the work among Subcontractors or Suppliers or delineating the work to be performed by any specific trade.

All work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

Contractor shall not pay or employ any Subcontractor, Supplier or other person or organization whether initially or as a substitute, against whom Owner or Engineer may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the work against whom Contractor has reasonable objection.

Owner or Engineer will not undertake to settle any differences between Contractor and his Subcontractors or between Subcontractors.

6.5. USE OF PREMISES

Contractor shall confine construction equipment, the storage of materials and equipment and the operations of works to the site and land areas identified in and permitted by the Contract Documents on other land areas permitted by Laws and Regulations, right-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceed in or

at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, Engineer's Consultant and their officials, directors, employees and agents from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

During the progress of the Work, Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work or at intervals established by the Engineer, Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. Contractor shall restore to original condition all property not designated for alteration by the Contract Documents.

6.5.1. STAGING AREAS

The Contactor shall obtain and deliver to the City written permission for the use of all staging and storage areas outside of the Limits of Construction. Use of right of way within the limits of construction must be approved by the City. All applicable erosion control, tree barricade and restoration, including time limits, specifications, etc., must be followed.

6.5.2. RESTORATION TIME LIMITS

The timely restoration of all impacted areas, especially in the right-of-way, is very important to the Citizens of Clearwater therefore, these time limits are imposed:

- Debris piles shall be removed within five (5) consecutive calendar days.
- Concrete driveways and sidewalks shall be replaced within ten (10) consecutive calendar days of removal. Resident access shall be maintained at all times.
- All arterial and collector roadways shall be restored ASAP.
- Local streets and asphalt driveways shall be restored as soon as a sufficient quantity is generated, however, this is never to exceed fifteen (15) consecutive calendar days. Local and resident access shall be maintained at all times.
- Any irrigation systems or components damaged or impacted by construction activities shall be repaired or replaced "in-kind" within forty-eight (48) hours to minimize the loss of turfgrass or landscape plantings, particularly during periods of drought.
- Sod must be restored "in-kind" within fourteen (14) consecutive calendar days of a successful pipe pressure test, removal of concrete forms, backfill of excavations, replacement of driveways or sidewalks or another project specific milestone. It must be watered for a period of thirty (30) days after it is placed. Erosion control and dust control of denuded areas must be maintained at all times.

If the project or a portion of it does not involve right-of ways, then a different schedule of sod restoration may be considered.

6.6. LICENSE AND PATENT FEES, ROYALTIES AND TAXES

Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the work and if to the actual knowledge of Owner or Engineer its use is subject to

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patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner or Engineer in the Contract Documents.

To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Contractor shall pay all sales, consumer, use and other taxes required to be paid by Contractor in accordance with the Laws and Regulations of the State of Florida and other governmental agencies, which are applicable during the performance of the work.

6.7. LAWS AND REGULATIONS

Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Owner's Representative shall be responsible for monitoring Contractor's compliance with any Laws or Regulations. If Contractor performs any work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses and damages caused by or arising out of such work; however, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations to the Owner to report and resolve discrepancies as described above.

6.7.1. E-VERIFY

Contractor and its Subcontractors shall register with and use the E-Verify system to verify the work authorization status of all newly hired employees. Contractor will not enter into a contract with any Subcontractor unless each party to the contract registers with and uses the E-Verify system. Subcontractor must provide Contractor with an affidavit stating that Subcontractor does not employ, contract with, or subcontract with an unauthorized alien. Contractor shall maintain a copy of such affidavit.

The City may terminate this Contract on the good faith belief that Contractor or its Subcontractors knowingly violated Florida Statutes 448.09(1) or 448.095(2)(c). If this Contract is terminated pursuant to Florida Statute 448.095(2)(c), Contractor may not be awarded a public contract for at least 1 year after the date of which this Contract was terminated. Contractor is liable for any additional costs incurred by the City as a result of the termination of this Contract.

See Section 448.095, Florida Statutes (2020).

See "VERIFICATION OF EMPLOYMENT ELIGIBILITY FORM" in Appendix.

6.8. PERMITS

Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. The Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids. Contractor shall pay all charges of utility owners for connections to the work, and the Owner

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shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Unless otherwise stated in the Contract Documents, Clearwater Building Permit Fees will be waived.

6.9. SAFETY AND PROTECTION

Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to: (i) all persons on the work site or who may be affected by the work, (ii) all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and (iii) other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction. In the event of temporary suspension of the work, or during inclement weather, or whenever Owner's Representative may direct; Contractor shall, and shall cause Subcontractors, to carefully protect the Work and materials against damage or injury from the weather. If, in the opinion of the Owner's Representative, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any Subcontractors to so protect the Work, such Work and materials shall be removed and replaced at the expense of Contractor. The Contractor shall initiate and maintain an accident prevention program which shall include but shall not be limited to the establishment and supervision of programs for the education and training of employees in the recognition, avoidance and prevention of unsafe conditions and acts. Contractor shall provide first aid services and medical care to his employees. The Contractor shall develop and maintain an effective fire protection and prevention program and good housekeeping practices at the site of contract performance throughout all phases of construction, repair, alteration, or demolition. Contractor shall require appropriate personal protective equipment in all operations where there is exposure to hazardous conditions. The Engineer may order that the work stop if a condition of immediate danger to the Owner's employees, equipment or if property damage exists. This provision shall not shift responsibility or risk of loss for injuries or damage sustained from the Contractor to Owner, and the Contractor shall remain solely responsible for compliance with all safety requirements and for the safety of all persons and property at the site of Contract performance. The Contractor shall instruct his employees required to handle or use toxic materials or other harmful substances regarding their safe handling and use. The Contractor shall take the necessary precautions to protect pedestrians and motorists from harm, and to prevent disruptions of such traffic due to construction activity.

Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property and to protect them from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when execution of the work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor that the Work is acceptable.

6.10. EMERGENCIES

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, with or without special instruction or authorization from Owner or the Owner's Representative, is obligated to act to prevent damage, injury or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Owner's Representative determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

6.11. DRAWINGS

6.11.1. SHOP DRAWINGS, SAMPLES, RFIs, AND SUBMITTAL REVIEW

Contractor shall submit Shop Drawings to Engineer for review and approval as called for in the Technical Specifications or required by the Engineer. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show Engineer the materials and equipment Contractor proposes to provide and to enable Engineer to review the information. Contractor shall also submit Samples to Engineer for review and approval. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified: (i) all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto, (ii) all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and (iii) all information relative to Contractor's sole responsibilities in respect to means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto. Contractor shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples with the requirements of the Work and the Contract Documents. Each submittal will have a transmittal cover sheet identifying the shop drawing name, number, and technical specification reference; will bear a stamp or specific written indication that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal. At the time of submission, Contractor shall give Engineer specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to Engineer for review and approval of each such variation.

The Contractor shall maintain a submittal log as mentioned in Article 2.5. The Engineer shall receive updated copies at each progress meeting, and the Engineer shall respond to each submittal within fourteen (14) consecutive calendar days. The Contractor shall maintain a request for information (RFI) log as mentioned in Article 2.5. The Engineer shall receive updated copies at each progress meeting, and the Engineer shall respond to each RFI within fourteen (14) consecutive calendar days. The untimely submission of Submittal or RFIs shall not be grounds for a delay claim from the Contractor.

Engineer's review and approval of Shop Drawings and Samples will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of

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the completed Project as a functioning whole as indicated the Contract Documents. Engineer's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

Engineer's review and approval of Shop Drawings or Samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to each such variation at the time of submission and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by the Engineer relieve the Contractor from responsibility for complying with the requirements of paragraph above discussing field measurements by the Contractor.

Contractor shall furnish required submittals with complete information and accuracy in order to achieve required approval of an item within two (2) submittals. Owner's Representative reserves the right to back charge Contractor, for Engineer's costs for resubmittals that account for a number greater than twenty percent (20%) of the total number of first-time submittals, per the approved initial submittal log. Owner's Representative reserves the right to back charge Contractor for all third submittals. The number of first-time submittals shall be equal to the number of submittals agreed to by Engineer and Contractor. All costs to Engineer involved with subsequent submittal of Shop Drawings, Samples or other items requiring approval will be back charged to Contractor at the rate of 3.0 times direct technical labor cost by deducting such costs from payments due Contractor for Work completed. In the event, that Contractor requests a substitution for a previously approved item, all of Engineer's costs in the reviewing and approval of the substitution will be back charged to Contractor, unless the need for such substitution is beyond the control of Contractor.

6.11.2. AS-BUILT DRAWINGS

The Contractor shall keep and maintain one set of blueprints, As-Built Drawings, in good order and legible condition to be continuously marked-up at the job site. The Contractor shall mark and annotate neatly and clearly all project conditions, locations, configurations and any other changes or deviations which may vary from the details represented on the original Contract Plans, including revisions made necessary by Addenda, Shop Drawings, and Change Orders during the construction process. The Contractor shall record the horizontal and vertical locations, in the plan and profile, of all buried utilities that differ from the locations indicated or which were not indicated on the Contract Plans and buried (or concealed), construction and utility features which are revealed during the construction period.

The As-Built Drawings shall be available for inspection by the Engineer, Engineer's Consultant, and the Owner's Representative at all times during the progress of the Project.

The As-Built Drawings shall be reviewed by the Owner's Representative, or his designee, for accuracy and compliance with the requirements of "As-Built Drawings" prior to submittal of the monthly pay requests. The pay requests shall be rejected if the marked-up redline prints do not conform to the "As-Built Drawings" requirements. As-Built Drawings shall be submitted to the

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Owner Inspector for approval upon completion of the project and prior to acceptance of final pay request. Final pay request shall not be processed until As-Built Drawings have been reviewed by the Engineer or the Engineer's Consultant for accuracy and completeness.

Prior to placing new potable water mains in service, the Contractor shall provide the Engineer intersection drawings, as specified for the water mains.

The Owner's acceptance of the "As-Built Drawings" does not relieve the Contractor of the sole responsibility for the accuracy and completeness of the As-Built Drawings.

6.11.2.1. General

The Contractor shall prepare an "AS-BUILT SURVEY" per chapter 5J-17.052, Florida Administrative Code (see definition below), signed and sealed by a Florida registered land surveyor. The contractor will deliver to the Owner two hard copies of signed and sealed As-Built Drawings and an AutoCAD file.

5J-17.050 Definition: (10)(a) *As-Built Survey: a survey performed to obtain horizontal and/or vertical dimensional data so that constructed improvements may be located and delineated: also known as Record Survey.*

This survey shall be clearly titled "As-Built Survey" and shall be signed and sealed by a Florida registered land surveyor. The survey must be delivered to the Owner of Clearwater Construction Division upon substantial completion of the project. If this condition is not met, the Owner will procure the services of a Professional Surveyor and Mapper registered in the State of Florida and will back charge the contractor a fee of \$1,800 per day or any portion thereof to provide the Owner with the required As-Built Survey.

6.11.2.2. Sanitary and Storm Sewer Piping Systems

1. Manholes and inlets shall be located by survey coordinates (northing, easting and elevation) based on the approved horizontal and vertical datum or utilize the stationing supplied on the construction plans. New and replaced service connections shall be dimensioned to the nearest downstream manhole. All manholes, cleanouts and catch basin invert and rim elevations, manhole and catch basin dimensions, pipe sizes, and pipe material shall also be noted on the plan view and also on the profile if one exists. The terminal ends of all subdrains, inverts of all pipe in structures, and the flow line of inlets shall also be noted on the plan view and also on the profile if one exists.
2. Pipe materials and areas of special construction shall be noted.

6.11.2.3. Pressure Pipe construction (Water, Reclaimed Water, Force Main)

All pipes shall be located by survey coordinates (northing, easting and elevation) based on the approved horizontal and vertical datum or utilize the stationing supplied on the construction plans. Coordinates shall be at all pipe bends, tees, valves, reducers, and deflections. Also, all new and replaced service connections for potable and reclaimed water will be located as described above. Additionally, there must be survey coordinates no further than 100 feet apart on linear type construction and shall denote top of pipe elevation at those points.

6.11.2.4. Electrical and Control Wiring

The as-built drawings shall include all changes to the original Contract Plans. The as-built drawings shall also include the size, color, and number of wires and conduit. For projects where this information is too voluminous to be contained on the blueline prints, the Contractor shall prepare supplemental drawings, on same size sheets as the blueline prints, showing the additional conduit runs, 1-line diagrams, ladder diagrams, and other information. The wiring schematic diagrams shall show termination location and wiring identification at each point on the ladder diagram.

6.11.2.5. Horizontal and Vertical Control

The As-Built survey shall be based on the original datum used for the construction design plans or if required by the Owner the datum shall be referenced to the North American Datum of 1983/90 (horizontal) and the North American Vertical Datum of 1988. The unit of measurement shall be the United States Foot. Any deviation or use of any other datum, (horizontal and or vertical), must be approved by the Owner of Clearwater Engineering Department.

6.11.2.6. Standards

The As-Built survey shall meet the Minimum Technical Standards per Chapter 5J-17 and the Clearwater CAD STANDARDS set forth below. In addition to locating all improvements that pertain to the as-built survey it is the requirement of the Owner to have minimum location points at every change in direction and no more than 100 feet apart on all pressure pipes.

6.11.2.7. Other

The As-Built drawings shall reflect any differences from the original Contract Plans, in the same level of detail and units of dimensions as the Plans.

6.11.3. CAD STANDARDS

6.11.3.1. Layer Naming

6.11.3.1.1. Prefixes and Suffixes

AB-...	prefix denotes As-Built information
DI-...	prefix denotes digitized or scanned entities
DEMO-...	prefix denotes demolition
P-...	prefix denotes proposed entities – line work and symbols
F-...	prefix denotes future entities (proposed but not part of this contract) - line work and symbols
X-...	prefix denotes existing entities – line work and symbols
... -CANOPY	Suffix denotes tree canopies
...-CL	suffix denotes centerline of road, ditch, swale etc.
...-LN	suffix denotes all linework
...-PT	suffix denotes points from survey data or from design stakeout

...-TX	suffix denotes text – use for all text, no matter the prefix
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6.11.3.1.2. Layer Naming Definitions:

BENCH	benchmark, temporary benchmarks
BLDG	buildings, sheds, finished floor elevation
BOC	curbs
BOLLARD	bollards
BRUSH	brush lines
CABLE	cable TV lines and appurtenances
CONCSLAB	concrete slabs
DRIVE	driveways
EASEMENT	easements
EOP	edge of pavement without curbs
FENCE	all fences
FLOW	flow lines
GRADE	grade slopes, grade breaks
GROUND	soft ground (unpaved, unimproved)
HANDRAIL	handrails
HEDGE	hedges
LANDSCAPE	landscape areas
LOT	platted lot lines information
MISC	miscellaneous linework
MONU	property corners, monumentation
PHONE	telephone lines and appurtenances
PROPERTY	property lines information
ROAD	roads
ROW	Right-of-Way information
SEAWALL	seawalls
SHORE	shoreline, water elevation
SWALE	swales
TOB	top of bank
TOE	toe of slope
TRAFFIC	signal poles, control boxes
TREE	trees, bushes, planters

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UT-ELEC	power lines and appurtenances
UT-GAS	gas lines and appurtenances
UT-RCW	reclaimed water
UT-SAN	sanitary lines and appurtenances
UT-STM	storm lines and appurtenances
UT-TCOM	telecommunication systems
UT-WAT	potable water lines and appurtenances, sprinklers
WALK	sidewalk
WALL	walls, except seawall

Other layers may be created as required or needed, using above format or easy to understand logic.

6.11.3.2. Layer Properties

All AutoCAD entities shall be drawn with their properties to be “ByLayer”, pertaining to Color, Linetype, and Lineweight. All text will use standard AutoCAD fonts.

6.11.3.3. Text Styles

Text style for X-... (existing) layers shall use the Simplex font, oblique angle of 0°, and a text height of 0.06 times the plot scale.

Text style for P-... (proposed) and F-... (future) layers shall use the Simplex font, oblique angle of 22.5°, and a text height of 0.1 times the plot scale.

6.11.4. DELIVERABLES

The as-built survey shall be produced on bond material, 24" x 36" at a scale of 1"=20' unless approved otherwise. The consultant shall deliver two hard copies and one digital copy of all drawings. Requested file formats are Autodesk DWG and Adobe PDF files.

Please address any questions regarding format to Mr. Tom Mahony, at (727) 562-4762 or e-mail address Thomas.Mahony@myClearwater.com.

6.12. CONTRACTOR'S GENERAL WARRANTY AND GUARANTEE

Contractor warrants and guarantees to Owner, Engineer and Engineer's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. Contractor's warranty and guarantee hereunder includes defects or damage caused by abuse, vandalism, modification or operation by persons other than Contractor, Subcontractors or Suppliers. Until the acceptance of the Work by the Owner, the Work shall be under the charge and care of the Contractor, and he shall take every necessary precaution against injury or damage to any part thereof by action of the elements, or from any other cause whatsoever, arising from the execution or non-execution of the Work. The Contractor shall rebuild, repair and make good, at his own expense, all injuries or damages to any portion of the Work occasioned by any cause before its completion and final acceptance by the Owner. In addition, “the Contractor shall remedy any defects in the work at his

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own expense and pay for any damage to other work resulting therefrom which appear within a period of one year from the date of final acceptance”.

Contractor's warranty and guarantee hereunder excludes improper maintenance and operation by Owner's employees and normal wear and tear under normal usage for any portion of the Work, which has been partially accepted by the Owner for operation prior to final acceptance by the Owner. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents: (i) observations by Owner's Representative, (ii) recommendation of any progress or final payment by Owner's Representative, (iii) the issuance of a certificate of Substantial Completion or any payment by the Owner to contractor under the Contract Documents, (iv) use or occupancy of the Work or any part thereof by Owner, (v) any acceptance by Owner or any failure to do so, (vi) any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of Acceptance by the Engineer.

6.13. CONTINUING THE WORK

Contractor shall carry on the work and adhere to the progress schedule during all disputes or disagreements with the Owner. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Owner or Contractor may otherwise agree in writing.

6.14. INDEMNIFICATION

To the fullest extent permitted by law, Contractor agrees to defend, indemnify, and hold the City, its officers, agents, and employees, harmless from and against any and all liabilities, demands, claims, suits, losses, damages, causes of action, fines or judgments, including costs, attorneys', witnesses', and expert witnesses' fees, and expenses incident thereto, relating to, arising out of, or resulting from: (i) the services provided by Contractor personnel under this Agreement; (ii) any negligent acts, errors, mistakes or omissions by Contractor or Contractor personnel; and (iii) Contractor or Contractor personnel's failure to comply with or fulfill the obligations established by this Agreement.

Contractor will update the City during the course of the litigation to timely notify the City of any issues that may involve the independent negligence of the City that is not covered by this indemnification.

The City assumes no liability for actions of Contractor and will not indemnify or hold Contractor or any third party harmless for claims based on this Agreement or use of Contractor-provided supplies or services.

Notwithstanding anything contained herein to the contrary, this indemnification provision shall not be construed as a waiver of any immunity to which Owner is entitled or the extent of any limitation of liability pursuant to § 768.28, Florida Statutes. Furthermore, this provision is not intended to nor shall be interpreted as limiting or in any way affecting any defense Owner may have under § 768.28, Florida Statutes or as consent to be sued by third parties.

6.15. CHANGES IN COMPANY CONTACT INFORMATION

Contractor shall notify Owner by US mail addressed to the City Engineer of any changes in company contact information. This includes contact phone, address, project manager, email addresses, etc.

6.16. PUBLIC RECORDS

The CONTRACTOR will be required to comply with Section 119.0701, Florida Statutes.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS, Rosemarie Call, phone: 727-562-4092 or Rosemarie.Call@mclearwater.com. 600 Cleveland Street, Suite 600, Clearwater, FL 33755.

The Contractor's duty to comply with public records law applies specifically to:

- a) Keep and maintain public records required by the City of Clearwater (hereinafter "public agency") to perform the service being provided by the contractor hereunder.
- b) Upon request from the public agency's custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided for in Chapter 119, Florida Statutes, as may be amended from time to time, or as otherwise provided by law.
- c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the records to the public agency.
- d) Upon completion of the contract, transfer, at no cost, to the public agency all public records in possession of the contractor or keep and maintain public records required by the public agency to perform the service. If the contractor transfers all public records to the public agency upon completion of the contract, the contractor shall destroy any public records that are exempt or confidential and exempt from public records disclosure requirements. If the contractor keeps and maintains public records upon completion of the contract, the contractor shall meet all applicable requirements for the retaining public records. All records stored electronically must be provided to the public agency, upon request from the public agency's custodian of public records in a format that is compatible with the information technology systems of the public agency.
- e) A request to inspect or copy public records relating to a public agency's contract for services must be made directly to the public agency. If the public agency does not possess the requested records, the public agency shall immediately notify the contractor of the request and the contractor must provide the records to the public agency or allow the records to be inspected or copied within a reasonable time.
- f) The Contractor hereby acknowledges and agrees that if the Contractor does not comply with the public agency's request for records, the public agency shall enforce the contract provisions in accordance with the contract.
- g) A contractor who fails to provide the public records to the public agency within a reasonable time may be subject to penalties under Section 119.10, Florida Statutes.
- h) If a civil action is filed against a contractor to compel production of public records relating to a public agency's contract for services, the court shall assess and award against the contractor the reasonable costs of enforcement, including reasonable attorney fees, if:
 1. The court determines that the contractor unlawfully refused to comply with the public records request within a reasonable time; and

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2. At least 8 business days before filing the action, the plaintiff provided written notice of the public request, including a statement that the contractor has not complied with the request, to the public agency and to the contractor.
 - i) A notice complies with subparagraph (h)2. if it is sent to the public agency's custodian of public records and to the contractor at the contractor's address listed on its contract with the public agency or to the contractor's registered agent. Global Express Guaranteed, or certified mail, with postage or shipping paid by the sender and with evidence of delivery, which may be in an electronic format.
 - j) A contractor who complies with a public records request within 8 business days after the notice is sent is not liable for the reasonable costs of enforcement.

7. OTHER WORK

7.1. RELATED WORK AT SITE

The City reserves the right to have its own forces enter the construction site at any time and perform work as necessary in order to perform infrastructure repair or maintenance, whether related to the project or not. The Contractor will allow complete access to all utility owners for these purposes.

The City may have its own forces perform new work related to the project, however, this work will be identified in the Contract Scope of Work and coordination will be such that this activity is denoted in the Contractor's CPM Schedule so as not to cause any delays or interference with the Contractor's work or schedule.

7.2. COORDINATION

If the Owner contracts with others for the performance of other work on the Project at the site, the following will be set forth in the Scope of Work: (i) the person who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified; (ii) the specific matters to be covered by such authority and responsibility will be itemized; and (iii) the extent of such authority and responsibilities will be provided. Unless otherwise provided in the Supplementary Conditions, the Owner shall have sole authority and responsibility in respect of such coordination.

8. OWNER'S RESPONSIBILITY

Except as otherwise provided in these General Conditions, the Owner shall issue all communications from the Owner to the Contractor through Owner's Representative.

The Owner shall furnish the data required of the Owner under the Contract Documents promptly and shall make payments to Contractor promptly when they are due as provided in these General Conditions.

The Owner is obligated to execute Change Orders as indicated in the Article on Changes In The Work.

The Owner's responsibility in respect of certain inspections, tests, and approvals is set forth in the Article on Tests and Inspections.

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In connection with the Owner's right to stop work or suspend work, see the Article on Engineer may Stop the Work. The Article on Suspension of Work and Termination deals with the Owner's right to terminate services of Contractor under certain circumstances.

Owner shall not supervise, direct or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the furnishing or performance of the Work. The Owner will not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

9. OWNER REPRESENTATIVE'S STATUS DURING CONSTRUCTION

9.1. OWNER'S REPRESENTATIVE

Dependent of the project type, the Owner's Representative during the construction period will either be the Construction Manager, the Engineer, or a designee of the Project's Owner. The duties, responsibilities, and the limitations of authority of Owner's Representative during construction are set forth in the Contract Documents and shall not be extended without written consent of Owner and Engineer.

9.2. CLARIFICATIONS AND INTERPRETATIONS

Engineer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents regarding design issues only, in the form of Submittal responses, RFI responses, Drawings or otherwise, as Engineer may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. All other clarifications and interpretations of the Contract Documents shall be issued form the Owner's Representative. Such written clarifications and interpretations will be binding on the Owner and Contractor. If Contractor believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Time and the parties are unable to agree to the amount or extent thereof, if any, Contractor may make a written claim therefore as provided in the Articles for Change of Work and Change of Contract Time.

9.3. REJECTING OF DEFECTIVE WORK

The Owner's Representative or the Engineer will have authority to disapprove or reject Work which Owner's Representative or the Engineer believes to be defective, or that Owner's Representative or the Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. The Owner's Representative or the Engineer will also have authority to require special inspection or testing of the Work whether or not the Work is fabricated, installed or completed.

9.4. SHOP DRAWINGS, CHANGE ORDERS, AND PAYMENTS

In connection with Engineer's authority as to Shop Drawings and Samples, see articles on Shop Drawings and Samples. In connection with Owner's Representative authority as to Change Orders, see the articles on Changes of Work, Contract Price and Contract Time. In connection with Owner's Representative authority as to Applications for Payment, see the articles on Payments to Contractor and Completion.

9.5. DECISIONS ON DISPUTES

The Owner's Representative will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the work thereunder. Claims, disputes and other matters relating to the acceptability of the work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the work and Claims under the Articles for Changes of Work, Changes of Contract Time and Changes of Contract Price will be referred initially to Owner's Representative in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to Owner's Representative and the other party to the Agreement promptly, but in no event later than thirty (30) days, after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to Owner's Representative and the other party within sixty (60) days after the start of such occurrence or event unless Owner's Representative allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to Owner's Representative and the claimant within thirty (30) days after receipt of the claimant's last submittal unless Owner's Representative allows additional time. Owner's Representative will render a formal decision in writing within thirty (30) days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. Owner Representative's written decision on such claim, dispute or other matter will be final and binding upon the Owner and Contractor unless (i) an appeal from Owner Representative's decision is taken within thirty (30) days of the Owner Representative's decision, or the appeal time which may be stated in a Dispute Resolution Agreement between Owner and Contractor for the settlement of disputes or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from Owner Representative's written decision is delivered by the Owner or Contractor to the other and to Owner's Representative within thirty (30) days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty (60) days of the date of such decision, unless otherwise agreed in writing by the Owner and Contractor.

When functioning as interpreter and judge, Owner's Representative will not show partiality to the Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Owner's Representative with respect to any such claim, dispute or other matter will be a condition precedent to any exercise by the Owner or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant the Article on Dispute Resolution.

9.6. LIMITATIONS ON OWNER REPRESENTATIVE'S RESPONSIBILITIES

Neither Owner Representative's authority or responsibility under this paragraph or under any other provision of the Contract Documents nor any decision made by Owner's Representative in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by Owner's Representative shall create, impose or give rise to any duty owed by Owner's Representative to Contractor, any Subcontractor, any Supplier, any other person or organization or to any surety for or employee or agent of any of them.

Owner's Representative will not supervise, direct, control or have authority over or be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the furnishing or performance of the work. Owner's Representative will not be responsible for Contractor's failure to perform or furnish the work in accordance with the Contract Documents.

Owner's Representative will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the work.

Owner Representative's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and other documentation required to be delivered by the Contractor will only be to determine generally that their content complies with the requirements of the Contract Documents and, in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with the Contract Documents.

The limitations upon authority and responsibility set forth in this paragraph shall also apply to Owner Representative's CEI, the Engineer's Consultants, and assistants.

10. CHANGES IN THE WORK

Without invalidating the Agreement and without notice to any surety, the Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such additions, deletions, or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as may otherwise be specifically provided).

If the Owner and Contractor are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Time that should be allowed as a result of a Work Change Directive, a claim may be made therefore as provided in these General Conditions.

Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in these General Conditions except in the case of an emergency as provided or in the case of uncovering work as provided in article for Uncovering Work.

The Owner and Contractor shall execute appropriate Change Orders or Written Amendments recommended by Owner's Representative covering:

- changes in the work which are (i) ordered by the Owner (ii) required because of acceptance of defective work under the article for Acceptance of Defective Work or correcting defective Work under the article for Owner May Correct Defective Work or (iii) agreed to by the parties;
- changes in the Contract Price or Contract Time which are agreed to by the parties; and
- changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by Owner's Representative pursuant to the article for Decisions on Disputes;
- provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the progress schedule as provided in the article for Continuing the Work.

If notice of any change affecting the general scope of the work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be Contractor's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

11. CHANGES IN THE CONTRACT PRICE

11.1. CHANGES IN THE CONTRACT PRICE

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract Price. The Contract Price may only be adjusted by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on a written notice of claim stating the general nature of the claim, to be delivered by the party making the claim to the other party and to Owner's Representative or promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty (60) days after the start of such occurrence or event, unless Owner's Representative allows additional time for claimant to submit additional or more accurate data in support of the claim, and shall be accompanied by claimant's written statement that the claimed adjustment covers all known amounts to which the claimant is entitled as a result of said occurrence or event. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows: (i) where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (ii) where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit), (iii) where the Work is not covered by unit prices contained in the Contract Documents and agreement is reached to establish unit prices for the Work.

Where the work involved is not covered by unit prices contained in the Contract Documents and where the Owner's Representative, the Owner, the Engineer, the Engineer's Consultant, and Contractor cannot mutually agree on a lump sum price, the City of Clearwater shall pay for directed changes in the Work, on "COST REIMBURSEMENT" basis. The Contractor shall apply for

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compensation, detailing Contractors forces, materials, equipment, subcontractors, and other items of direct costs required for the directed work.

The application for Cost Reimbursement shall be limited to the following items:

1. Labor, including foremen, for those hours associated with the direct work (actual payroll cost, including wages, fringe benefits, labor insurance and labor taxes established by law). Expressly excluded from this item are all costs associated with negotiating the subject change.
2. Materials associated with the change, including sales tax. The costs of materials shall be substantiated through vendors' invoices.
3. Rental or equivalent rental costs of equipment, including necessary transportation costs if specifically used for the Work. The rental rates shall not exceed the current rental rates prevailing in the locality or as defined in the rental Rate Blue Book for Construction Equipment (a.k.a. DataQuest Blue Book). The rental rate is defined as the full-unadjusted base rental rate for the appropriate item of construction equipment and shall cover the costs of all fuel, supplies, repairs, insurance, and other costs associated with supplying the equipment for work ordered. Contractor-owned equipment will be paid for the duration of time required to complete the work. Utilize lowest cost combination of hourly, daily, weekly, or monthly rates. Do not exceed estimated operating costs given in Blue Book. Operating costs will not be allowed for equipment on stand-by.
4. Additional costs for Bonds, Insurance if required by the City of Clearwater.

The following fixed fees shall be added to the costs of the directed work performed by the Contractor or Subcontractor.

- A. A fixed fee of fifteen percent (15%) shall be added to the costs of Item 1 above. If work is performed by a subcontractor, the Contractor's fee shall not exceed five percent (5%), and the subcontractor's fee shall not exceed ten percent (10%).
- B. A fixed fee of ten percent (10%) shall be added to the costs of Item 2 above.
- C. No markup shall be added to the costs of Items 3 and 4.

The fixed fees shall be considered the full compensation for all cost of general supervision, overhead, profit, and other general expense.

11.2. ALLOWANCES AND FINAL CONTRACT PRICE ADJUSTMENT

It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to Owner and Engineer. Contractor agrees that: (i) the allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and (ii) Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by Owner's Representative to reflect actual amounts due Contractor on account of Work covered by

allowances and all the Work actually performed by the Contractor, and the Contract Price shall be correspondingly adjusted.

11.3. UNIT PRICE WORK

Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of unit price work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Owner's Representative. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item. The Owner or Contractor may make a claim for an adjustment in the Contract Price if: (i) the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Contract Documents; and (ii) there is no corresponding adjustment with respect to any other item of Work; and (iii) if Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or the Owner believes that the Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease. On unit price contracts, Owner endeavors to provide adequate unit quantities to satisfactorily complete the construction of the project. It is expected that in the normal course of project construction and completion that not all unit quantities will be used in their entirety and that a finalizing change order which adjusts contract unit quantities to those unit quantities actually used in the construction of the project will result in a net decrease from the original Contract Price. Such reasonable deduction of final Contract Price should be anticipated by the Contractor in his original bid.

12. CHANGES IN THE CONTRACT TIME

The Contract Time (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Time (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to Owner's Representative promptly, but in no event later than thirty (30) days, after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty (60) days after such occurrence, unless Owner's Representative allows an additional period of time to ascertain more accurate data in support of the claim, and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time (or Milestones) shall be determined by Owner's Representative. No claim for an adjustment in the Contract Time (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph.

All time limits stated in the Contract Documents are of the essence of the Agreement.

Where Contractor is prevented from completing any part of the work within the Contract Time (or Milestones) due to delay beyond the control of Contractor, the Contract Time (or Milestones) may be extended in an amount equal to the time lost due to such delay if a claim is made therefore as provided in the article for Changes in the

Work. Delays beyond the control of Contractor shall include, but not be limited to, acts by the Owner, acts of utility owners or other contractors performing other work as contemplated by the article for Other Work, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

Where Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both the Owner and Contractor, an extension of the Contract Time (or Milestones) in an amount equal to the time lost due to such delay shall be Contractor's sole and exclusive remedy for such delay. In no event shall the Owner be liable to Contractor, any Subcontractor, any Supplier, any other person, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of Contractor, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts by utility owners or other contractors performing other work as contemplated by paragraph for Other Work.

13. TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.1. TESTS AND INSPECTION

Contractor shall give Owner's Representative and Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

Contractor shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents. The costs for these inspections, tests or approvals shall be borne by the Contractor except as otherwise provided in the Contract Documents.

If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body including all Owner Building Departments and Owner Utility Departments, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish Owner's Representative the required certificates of inspection or approval. Unless otherwise stated in the Contract Documents, Owner permit and impact fees will be waived. Contractor shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation of the Work.

If any Work (or the work of others) that is to be inspected tested or approved is covered by Contractor without written concurrence of Owner's Representative, it must, if requested by Owner's Representative, be uncovered for observation. Uncovering Work as provided in this paragraph shall be at Contractor's expense unless Contractor has given Owner's Representative and Engineer timely notice of Contractor's intention to cover the same and Owner's Representative has not acted with reasonable promptness in response to such notice.

13.2. UNCOVERING THE WORK

If any Work is covered contrary to the written request of Owner's Representative, it must, if requested by Owner's Representative, be uncovered for Owner Representative's observation and replaced at Contractor's expense.

If Owner's Representative considers it necessary or advisable that covered Work be observed by Owner's Representative or inspected or tested by others, Contractor, at Owner Representative's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer or Owner's Representative may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and the Owner shall be entitled to an appropriate decrease in the Contract Price for the costs of the investigation, and, if the parties are unable to agree as to the amount thereof, may make a claim therefore as provided in the article for Change in Contract Price. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefore as provided in the article for Change in Contract Price and Change of Contract Time.

13.3. OWNER'S REPRESENTATIVE MAY STOP THE WORK

If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Engineer or Owner's Representative may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner's Representative to stop the Work shall not give rise to any duty on the part of Owner's Representative or Owner to exercise this right for the benefit of Contractor or any surety or other party. If the Owner's Representative stops Work under this paragraph, Contractor shall be entitled to no extension of Contract Time or increase in Contract Price.

13.4. CORRECTION OR REMOVAL OF DEFECTIVE WORK

If required by Engineer or Owner's Representative, Contractor shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer or Owner's Representative, remove it from the site and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.5. WARRANTY/CORRECTION PERIOD

If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to the Owner and in accordance with

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the Owner's written instructions; (i) correct such defective Work, or, if it has been rejected by the Owner, remove it from the site and replace it with Work that is not defective and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the Owner may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

In special circumstances where a particular item of equipment is placed in continuous service before Final Completion of all the Work, the correction period for that item may start to run from an earlier date if specifically, and expressly so provided in the Specifications or by Written Amendment.

Where defective Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

13.6. ACCEPTANCE OF DEFECTIVE WORK

If, instead of requiring correction or removal and replacement of defective Work, the Owner prefers to accept it, the Owner may do so.

Contractor shall pay all claims, costs, losses, and damages attributable to the Owner's evaluation of and determination to accept such defective Work such costs to be approved by Owner's Representative as to reasonableness. If any such acceptance occurs prior to Owner Representative's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the Owner may make a claim therefore as provided in article for Change of Contract Price. If the acceptance occurs after the Owner Representative's recommendation for final payment an appropriate amount will be paid by Contractor to the Owner.

13.7. OWNER MAY CORRECT DEFECTIVE WORK

If Contractor fails within a reasonable time after written notice from Owner's Representative to correct defective Work or to remove and replace rejected Work as required by Owner's Representative in accordance with the article for Correction and Removal of Defective Work or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, the Owner may, after seven days' written notice to Contractor, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph the Owner shall proceed expeditiously. In connection with such corrective and remedial action, the Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work, and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the site or for which the Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's Representatives, Agents and employees, the Owner's other contractors, and Owner's Representative, Engineer, and Engineer's Consultants access to the site to enable the Owner to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by the Owner in exercising such rights and remedies will be charged against

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Contractor and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the Owner may make a claim therefore as provided in the article for Change of Contract Price. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time (or Milestones) because of any delay in the performance of the Work attributable to the exercise by the Owner of the Owner's rights and remedies hereunder.

14. PAYMENTS TO CONTRACTOR AND COMPLETION

Requests for payment shall be processed in accordance with F.S. 218.735 and as described herein. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.1. APPLICATION FOR PROGRESS PAYMENT

Contractor shall submit (not more often than once a month) to Owner's Representative for review an Application for Payment filled out and signed by Contractor covering the Work completed once each month and accompanied by such supporting documentation as is required by the Owner's Representative and the Contract Documents. Unless otherwise stated in the Contract Documents, payment will not be made for materials and equipment not incorporated in the Work. Payment will only be made for that portion of the Work, which is fully installed including all materials, labor, and equipment. A retainage of not less than five (5%) of the amount of each Application for Payment for the total of all Work, including as-built survey and Inspector overtime reimbursement, completed to date will be held until final completion and acceptance of the Work covered in the Contract Documents. No progress payment shall be construed to be acceptance of any portion of the Work under contract.

The Contractor shall review with the Engineer or the Construction Inspector all quantities and work for which payment is being applied for and reach agreement prior to submittal of an Official Pay Request. The Engineer or the Construction Inspector will verify that the on-site marked up As-Built drawings are up to date with the work and are in compliance with the Contract Documents.

In addition to all other payment provisions set out in this contract, the Owner's Representative may require the Contractor to produce for Owner, within fifteen (15) days of the approval of any progress payment, evidence and/or payment affidavit that all subcontractors and suppliers have been paid any sum or sums then due. A failure on the part of the contractor to provide the report as required herein shall result in further progress or partial payments being withheld until the report is provided.

14.2. CONTRACTOR'S WARRANTY OF TITLE

Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to the Owner no later than the time of payment, free and clear of liens. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contact or other agreement by which an interest is retained by the seller. Contractor warrants that he has good title to all materials and supplies used by him in the Work, free from all liens,

SECTION III – General Conditions

claims or encumbrances. Contractor shall indemnify and save the Owner harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies incurred in the furtherance of the performance of this Contract. Contractor shall at the Owner's request, furnish satisfactory evidence that all obligations of nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then the Owner may, after having served written notice on said Contractor either pay unpaid bills, of which the Owner has written notice, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to Contractor shall be resumed in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to the Contractor or the Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of Contractor and any payment so made by the Owner shall be considered as payment made under the Contract by the Owner to Contractor, and the Owner shall not be liable to Contractor for any such payment made in good faith.

14.3. REVIEW OF APPLICATIONS FOR PROGRESS PAYMENTS

The Owner's Representative will within twenty (20) business days after receipt authorize and process payment by the Owner a properly submitted and documented Application for payment, unless the application requires review by an Agent. If the Application for payment requires review and approval by an Agent, properly submitted and documented Applications for payment will be paid by the Owner within twenty-five (25) business days. If an Application for payment is rejected, notice shall be given within twenty (20) business days of receipt indicating the reasons for refusing payment. The reasons for rejecting an Application will be submitted in writing, specifying deficiencies, and identifying actions that would make the Application proper. In the latter case, Contractor may make the necessary corrections and resubmit the Application. The Owner's Representative or Agent may refuse to recommend the whole or any part of any payment to Owner. Owner's Representative or Agent may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or test, nullify any such payment previously recommended, to such extent as may be necessary in Owner Representative's or Agent's opinion to protect the Owner from loss because: (i) the Work is defective, or completed Work has been damaged requiring correction or replacement, (ii) the Contract Price has been reduced by amendment or Change Order, (iii) the Owner has been required to correct defective Work or complete Work, or (iv) Owner's Representative or Agent has actual knowledge of the occurrence of any of the events enumerated in the article on Suspension of Work and Termination.

The Owner may refuse to make payment of the full amount recommended by the Owner's Representative or Agent because: (i) claims have been made against the Owner on account of Contractor's performance or furnishing of the Work, (ii) Liens have been filed in connection with the Work, except where Contractor has delivered a specific Bond satisfactory to the Owner to secure the satisfaction and discharge of such Liens, (iii) there are other items entitling the Owner to a set-off against the amount recommended, or (iv) the Owner has actual knowledge of any of the events described in this paragraph. The Owner shall give Contractor notice of refusal to pay in accordance with the time constraints of this section with a copy to the Owner's Representative or Agent, stating the reasons for such actions, and Owner shall promptly pay Contractor the amount

so withheld, or any adjustment thereto agreed to by the Owner and Contractor, when Contractor corrects to the Owner's satisfaction the reasons for such action.

14.4. PARTIAL UTILIZATION

Use by the Owner at the Owner's option of any substantially completed part of the Work which (i) has specifically been identified in the Contract Documents, or (ii) Owner, Engineer, Owner's Representative, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by the Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, may be accomplished prior to Final Completion of all the Work subject to the following:

The Owner at any time may request Contractor in writing to permit the Owner to use any such part of the Work which the Owner believes to be ready for its intended use and substantially complete. If Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner, Owner's Representative, and Engineer that such part of the Work is substantially complete and request Owner's Representative to issue a certificate of Substantial Completion for that part of the Work. Contractor at any time may notify Owner, Owner's Representative, and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Owner's Representative to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, Owner, Contractor, Owner's Representative, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner, Owner's Representative, and Contractor in writing giving the reasons, therefore. If Engineer considers that part of the Work to be substantially complete, the provisions of the articles for Substantial Completion and Partial Utilization will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.5. FINAL INSPECTION

Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Owner's Representative will make a final inspection with Engineer, Owner and Contractor and will within thirty (30) days notify Contractor in writing of particulars in which this inspection reveals that the Work is incomplete or defective. The Owner's Representative will produce a final punch list, deliver it to the Contractor within five (5) days of completion and assign a date for this work to be completed not less than thirty (30) days from delivery of the list. Failure to include any corrective work or pending items does not alter the responsibility of the contractor to complete all the construction services purchased pursuant to the contract. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.6. FINAL APPLICATION FOR PAYMENT

After Contractor has completed all such corrections to the satisfaction of Owner's Representative and has delivered in accordance with the Contract Documents all maintenance and operating instructions, As-built/Record Drawings, schedules, guarantees, Bonds, certificates or other evidence of insurance required by the paragraph for Bonds and Insurance, certificates of inspection, Inspector overtime reimbursement as required in the Contract Documents and other documents, Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously

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delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by paragraph for Bonds and Insurance, and (ii) executed consent of the surety to final payment using the form contained in Section V of the Contract Documents.

Prior to application for final payment, Contractor shall clean and remove from the premises all surplus and discarded materials, rubbish, and temporary structures, and shall restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the Work and shall leave the Work in a neat and presentable condition.

14.7. FINAL PAYMENT AND ACCEPTANCE

If through no fault of Contractor, final completion of the Work is significantly delayed and if Owner's Representative so confirms, the Owner shall, upon receipt of Contractor's final Application for payment and recommendation of Owner's Representative, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by the Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph for Bonds and Insurance, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Owner's Representative with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that such payment shall not constitute a waiver of claims.

If on the basis of Owner Representative's observation of the Work during construction and final inspection, and Owner Representative's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, Owner's Representative is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Owner's Representative will indicate in writing his recommendation of payment and present the Application to Owner for payment. Thereupon, Owner's Representative will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of this article. Otherwise, Owner's Representative will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, the Owner shall, within twenty (20) days after receipt thereof pay contractor the amount recommended by Owner's Representative.

14.8. WAIVER OF CLAIMS

The making and acceptance of final payment will constitute: a waiver of all claims by the Owner against Contractor, except claims arising from unsettled Liens, from defective Work appearing after final inspection, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and a waiver of all claims by Contractor against the Owner other than those previously made in writing and still unsettled.

15. SUSPENSION OF WORK AND TERMINATION

15.1. OWNER MAY SUSPEND THE WORK

At any time and without cause, Owner's Representative may suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to Contractor, which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes an approved claim therefore as provided in the articles for Change of Contract Price and Change of Contract Time.

15.2. OWNER MAY TERMINATE

Upon the occurrence of any one or more of the following events:

- Contractor persistently fails to perform the work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule as adjusted from time to time);
- Contractor disregards Laws and Regulations of any public body having jurisdiction;
- Contractor violates Article 6.7.1 of this Section III;
- Contractor disregards the authority of Owner's Representative;
- Contractor otherwise violates in any substantial way any provisions of the Contract Documents; or if the Work to be done under this Contract is abandoned, or if this Contract or any part thereof is sublet, without the previous written consent of the Owner, or if the Contract or any claim thereunder is assigned by Contractor otherwise than as herein specified, or at any time Owner's Representative certifies in writing to the Owner that the rate of progress of the Work or any part thereof is unsatisfactory or that the work or any part thereof is unnecessarily or unreasonably delayed;
- Lack of funding. The City's performance and obligation to pay under this Contract is contingent upon an annual appropriation by the Clearwater City Council.

The Owner may, after giving Contractor (and the surety, if any), seven days' written notice and, to the extent permitted by Laws and Regulations, terminate the services of Contractor, exclude Contractor from the site and take possession of the Work and of all Contractor's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which the Owner has paid Contractor but which are stored elsewhere, and finish the Work as the Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by the Owner arising out of or resulting from completing the Work such excess will be paid to Contractor.

If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to the Owner. Such claims, costs, losses and damages incurred by the Owner will be reviewed by Owner's Representative as to their reasonableness and when so approved by Owner's Representative incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph the Owner shall not be required to obtain the lowest price for the Work performed.

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Where Contractor's services have been so terminated by the Owner, the termination will not affect any rights or remedies of the Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by the Owner will not release Contractor from liability.

Upon seven (7) days' written notice to Contractor and Owner's Representative, the Owner may, without cause and without prejudice to any other right or remedy of the Owner, elect to terminate the Agreement. In such case, Contractor shall be paid (without duplication of any items):

- for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
- for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
- for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others;
- and for reasonable expenses directly attributable to termination.

Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.3. CONTRACTOR MAY STOP WORK OR TERMINATE

If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Owner's Representative fails to act on any Application for Payment within thirty (30) days after it is submitted or the Owner fails for thirty (30) days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) days' written notice to the Owner and Owner's Representative, and provided the Owner or Owner's Representative does not remedy such suspension or failure within that time, terminate the Agreement and recover from the Owner payment on the same terms as provided in the article for the Owner May Terminate. However, if the Work is suspended under an order of court through no fault of Owner, the Contractor shall not be entitled to payment except as the Court may direct. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if Owner's Representative has failed to act on an Application for Payment within thirty (30) days after it is submitted, or the Owner has failed for thirty (30) days to pay Contractor any sum finally determined to be due, Contractor may upon seven (7) days' written notice to the Owner and Owner's Representative stop the Work until payment of all such amounts due Contractor. The provisions of this article are not intended to preclude Contractor from making claim under paragraphs for Change of Contract Price or Change of Contract Time or otherwise for expenses or damage directly attributable to Contractor's stopping Work as permitted by this article.

16. DISPUTE RESOLUTION

If and to the extent that the Owner and Contractor have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure will proceed. If no such agreement on the method and procedure for resolving such disputes has been reached, subject to the provisions of the article for Decisions on Disputes, the Owner and Contractor may exercise such rights or remedies as either may otherwise

have under the Contract Documents or by Laws or Regulations in respect of any dispute provided, however, that nothing herein shall require a dispute to be submitted to binding arbitration.

17. MISCELLANEOUS

17.1. SUBMITTAL AND DOCUMENT FORMS

The form of all submittals, notices, change orders, pay applications, logs, schedules and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Owner's Representative subject to the approval of Owner.

17.2. GIVING NOTICE

Whenever any provision of the Contract Documents requires the giving of written notice, notice will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.3. NOTICE OF CLAIM

Should the Owner or Contractor suffer injury or damage to person or property because of any error, omission or any act of the other party or of any of the other party's officers, employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. PROFESSIONAL FEES AND COURT COSTS INCLUDED

Whenever reference is made to "claims, costs, losses and damages," the phrase shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or other dispute resolution costs.

17.5. ASSIGNMENT OF CONTRACT

The Contractor shall not assign this contract or any part thereof or any rights thereunder without the approval of Owner, nor without the consent of surety unless the surety has waived its rights to notice of assignment.

17.6. RENEWAL OPTION

Annual Contracts issued through the Engineering Department may be renewed for up to three (3) years, upon mutual consent of both the Owner and the Contractor/Vendor. All terms, conditions and unit prices shall remain constant unless otherwise specified in the contract specifications or in the Invitation to bid. Renewals shall be made at the sole discretion of the Owner and must be agreed to in writing by both parties. All renewals are contingent upon the availability of funds, and the satisfactory performance of the Contractor as determined by the Construction Department.

17.7. ROLL-OFF CONTAINERS AND/OR DUMPSTERS

All City construction projects shall utilize City of Clearwater Solid Waste roll-off containers and/or dumpsters for their disposal and hauling needs. For availability or pricing contact William Buzzell, at the City of Clearwater, Solid Waste Department, by phone: (727) 562-4929 or email: William.Buzzell@myClearwater.com.

18. ORDER AND LOCATION OF THE WORK

The City reserves the right to accept and use any portion of the work whenever it is considered to the public interest to do so. The Engineer shall have the power to direct on what line or street the Contractor shall work and order thereof.

19. MATERIAL USED

All material incorporated into the final work shall be new material unless otherwise approved by the Engineer. If requested by the Engineer, the Contractor shall furnish purchase receipts of all materials.

20. CONFLICT BETWEEN PLANS AND SPECIFICATIONS

The various Contract Documents shall be given precedence, in case of conflict, error or discrepancy, as follows: Modifications, Contract Agreement, Addenda, Supplementary General Conditions, General Conditions, Supplementary Technical Specifications and Technical Specifications. In a series of Modifications or Addenda the latest will govern. In the case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, the better quality, more stringent or greater quantity of Work shall be provided in accordance with the Engineer/Architect's interpretation.

21. OWNER DIRECT PURCHASE (ODP)

21.1. SALES TAX SAVINGS

The Owner reserves the right to purchase certain portions of the materials or equipment for the Project directly in order to save applicable sales tax in compliance with Florida Law since owner is exempt from the payment of sales tax. The contract price includes Florida sales and other applicable taxes for materials, supplies, and equipment which will be a part of the Contractor's Work. Owner-purchasing of construction materials or equipment, if selected, will be administered on a deductive Change Order basis. The contract price shall be reduced by the actual cost of the materials or equipment purchased by owner plus the normally applicable sales tax, even if the actual cost is in excess of the cost for the materials or equipment as-bid by the Contractor. For purposes of calculating engineering fees, contractor fees, architects' fees, and any other amounts that are based on the contract amount, however, the original, as-bid contract amount shall be used.

Direct purchase shall be considered for single items or materials that exceed \$10,000 in value and/or items identified in Section V, Bidders Proposal. The Contractor shall provide the Owner an

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ODP Summary of all intended suppliers, vendors, equipment, and materials for consideration as ODP materials or equipment (refer to ODP Instructions in Contract Appendix).

21.2. TITLE AND OWNER RISK

Owner will issue Purchase Orders and provide a copy of Owner's Florida Consumer Certification of Tax Exemption and Certificate of Entitlement directly to the Vendor for ODP materials or equipment. Invoices for ODP materials or equipment shall be issued to the Owner, and a copy sent to the Contractor.

Notwithstanding the transfer of ODP materials or equipment by the Owner to the Contractor's possession, the Owner shall retain legal and equitable title to any and all ODP materials or equipment; therefore, the owner assumes the risk of damage or loss at the time of purchase or delivery of items, unless material is damaged as the result of negligence by the Contractor.

21.3. CONTRACTOR'S RECEIPT OF MATERIALS

The Contractor shall be fully responsible for all matters relating to the receipt of materials or equipment furnished to the Owner including, but not limited to, verifying correct quantities, verifying documents of orders in a timely manner, coordinating purchases, providing and obtaining all warranties and guarantees required by the Contract Documents, and inspection and acceptance of the goods at the time of delivery. The Owner shall coordinate with Contractor and Vendor delivery schedules, sequence of delivery, loading orientation, and other arrangements normally required by the Contractor for the particular materials or equipment furnished. The Contractor shall provide all services required for the unloading and handling of materials or equipment. The Contractor agrees to indemnify and hold harmless the Owner from any and all claims of whatever nature resulting from non-payment of goods to suppliers arising from the action of the Contractor.

As ODP materials or equipment are delivered to the job site, the Contractor shall visually inspect all shipments from the suppliers and approve the vendor's invoice for items delivered. The Contractor shall assure that each delivery of ODP materials or equipment is accompanied by documentation adequate to identify the Purchase Order against which the purchase is made. This documentation may consist of a delivery ticket and/or an invoice from the supplier conforming to the Purchase Order together with such additional information as the Owner may require. The Contractor will then forward an electronic copy of the invoice and supporting documentation to the Owner for payment within fourteen (14) calendar days of receipt of said goods or materials. Such payment shall be directly from public funds, from Owner to Vendor.

The Contractor shall insure that ODP materials or equipment conform to the Specifications and determine prior to acceptance of goods at time of delivery if such materials or equipment are patently defective, and whether such materials or equipment are identical to the materials or equipment ordered and match the description on the bill of lading. If the Contractor discovers defective or non-conformities in ODP materials or equipment upon such visual inspection, the Contractor shall not utilize such nonconforming or defective materials or equipment in the Contractor's Work and instead shall properly notify the Owner of the defective or nonconforming condition so that repair or replacement of those materials or equipment can occur without undue delay or interruption to the Project. If the Contractor fails to perform such inspection and otherwise incorporates into the Contractor's Work such defective or nonconforming ODP materials or equipment, the condition of which it either knew or should have known by performance of an inspection, Contractor shall be responsible for all damages to the Owner, resulting from

Contractor's incorporation of such materials or equipment into the Project, including liquidated damages.

21.4. ODP RECORDS, WARRANTIES, AND INDEMNIFICATION

The Contractor shall maintain records of all ODP materials or equipment it incorporates into Contractor's Work from the stock of ODP materials or equipment in its possession. The Contractor shall account monthly to the Owner for any ODP materials or equipment delivered into the Contractor's possession, indicating portions of all such materials or equipment which have been incorporated in the Contractor's Work.

The Contractor shall be responsible for obtaining and managing all warranties and guarantees for all materials, equipment and products as required by the Contract Documents. All repair, maintenance, or damage-repair calls shall be forwarded to the Contractor for resolution with the appropriate supplier, vendor, or subcontractor.

The Owner shall indemnify and hold Contractor harmless from any sales tax (and interest and penalties incurred in connection therewith) in the event there is a final determination that purchases made by Owner, which Owner treats as being exempt from sales tax, are subject to sales tax. "Final determination" shall mean an assessment by the Department of Revenue that is no longer subject to protest, or a determination of a court having jurisdiction over such matters that is final and not subject to appeal. Contractor agrees to promptly notify owner of any audit, assessment, proposed assessment or notice of deficiency issued with regard to the Project and relating to ODP materials or equipment. ODP Purchase Orders must be closed out prior to closing out the contract/Contractor Purchase Order. If material costs needed for project exceed the ODP Purchase Order amount, the ODP Purchase Order will not be increased. Amounts in excess of the ODP Purchase Order will be paid for by the Contractor.

22. RESIDENT NOTIFICATION OF START OF CONSTRUCTION

22.1. GENERAL

The Contractor shall notify all residents along the construction route or within a 500-foot radius, unless stated otherwise in the Contract Documents, with a printed door hanger notice indicating the following information about the proposed construction work and the Contractor performing the work: City seal or logo; the scheduled date for the start of construction; the type of construction; general sequence and scheduling of construction events; possibility of water service disruption and/or colored water due to construction efforts; Contractor's name, the Superintendent's name, Contractor address and telephone number; Contractor's company logo (optional); requirement for residents to remove landscaping and/or other private appurtenances which are in conflict with the proposed construction; and other language as appropriate to the scope of Contract work. Sample door hanger including proposed language shall be approved by the City prior to the start of construction. Notification shall be printed on brightly colored and durable card stock and shall be a minimum of 4-1/4 by 11 inches in size. Notification (door hanger) shall be posted to residences and businesses directly affected by the Contractor's activities no later than seven (7) days prior to the start of construction activity. Directly affected by the Contractor's activities shall mean all Contractor operations including staging areas, equipment and material storage, principal access

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routes across private property, etc. Contractor cannot start without proper seven (7) day notice period to residents. Contractor is required to maintain sufficient staff to answer citizen inquiries during normal business hours and to maintain appropriate message recording equipment to receive citizen inquires after business hours.

Resident notification by the Contractor is a non-specific pay item to be included in the bid items provided in the contract proposal.

22.2. EXAMPLE



NOTICE OF CONSTRUCTION

TODAY'S DATE: ____/____/____

PLEASE EXCUSE US FOR ANY INCONVENIENCE

We are the construction contractor performing the (*state project name*) for the City of Clearwater in your area. The work will be performed in the public right-of-way adjacent to your property. This notice is placed a minimum of seven (7) days in advance of construction to notify property owners of the pending start of construction.

(*Brief description of the construction process to be expected by the property owners*)

The construction process may necessitate the removal of certain items from the right-of-way. Typical items such as sprinklers, grass, and postal approved mailboxes will be replaced by the contractor within a reasonably short period of time. The replacement of driveways and sidewalks will be made using standard asphalt or concrete materials. The property owner is responsible for the expense and coordination to replace driveways and sidewalks which have customized colors, textures and/or materials. Small trees, shrubs, landscaping materials, unauthorized mailboxes or structures within the right-of-way which must be removed due to the construction process will not be replaced. The property owner is responsible to relocate any such items which the property owner wishes to save prior to the start of construction. Vehicles parked on the streets or within the right-of-way may be required to be placed elsewhere.

We are available to answer any questions you may have regarding the construction process or any particular item that must be relocated. Please contact our Construction Manager _____ at (727) _____. We will be more than happy to assist you.

Construction is anticipated to begin on: _____.

Company Name

Company Address

Contractor Phone Number

23. PROJECT INFORMATION SIGNS

23.1. SCOPE AND PURPOSE

The Owner desires to inform the general public on the Owner's use and expenditure of public funding for general capital improvement and maintenance projects. To help accomplish this purpose, the Contractor is required to prepare and display public project information signs during the full course of the contract period. These signs will be displayed at all location(s) of active work. Payment to Contractor for the preparation, installation and management of project sign(s) shall be included in the cost of the work. The number of and type of signs will be stated in SECTION IV, SCOPE OF WORK.

23.2. PROJECT SIGN, FIXED OR PORTABLE

Sign type shall be "fixed" on stationary projects and "portable" on projects which have extended locations or various locations. The particular wording to be used on the signs will be determined after contract award has been approved. Contractor will be provided the wording to be used on sign at the preconstruction conference.

23.3. FIXED SIGN

Fixed sign shall be 4-foot by 6-foot (4'x6') in size and painted on a sheet of exterior grade plywood of the same size and a minimum thickness of 1/2-inches. Sign shall be attached to a minimum of two (2) 4-inch by 4-inch (4"x4") below grade pressure treated (P.T.) wooden posts and braced as necessary for high winds. Posts shall be long enough to provide secure anchoring in the ground. Bottom of sign must be a minimum of 24-inches above the ground. Alternate mounting system or attachment to fencing or other fixed structure can be considered for approval. Sign shall be painted white on both sides with exterior rated paint.

23.4. PORTABLE SIGNS

Portable sign shall be a minimum of 24-inches by 30-inches (24"x30") in size and will be attached to a standard sized portable traffic barricade. Sign material shall be aluminum, 0.080-inches or thicker, background of white reflective sheeting, and shall be silkscreen or vinyl lettering. Portable sign shall be two signs located and attached to each side of the traffic barricade.

23.5. SIGN COLORING

Background shall be white. Project Descriptive Name shall be in blue lettering. All other lettering shall be black. Basic lettering on sign shall be in all capital letters, of size proportional to the sign itself. Each sign shall depict the City's logo. The Project Manager/City Representative shall provide the appropriate electronic logo file(s) to the Contractor.

23.6. SIGN PLACEMENT

Signs shall be placed where they are readily visible by the general public which pass by the project site. Signs are not to be placed where they may become a hazard or impediment to either pedestrian or vehicular traffic. For construction projects outside of the Owner's right-of-way, the signs will be placed on the project site. For projects constructed inside of the Owner's right-of-way, the signs will be placed in the right-of-way. Portable signs are to be moved to the locations of active work

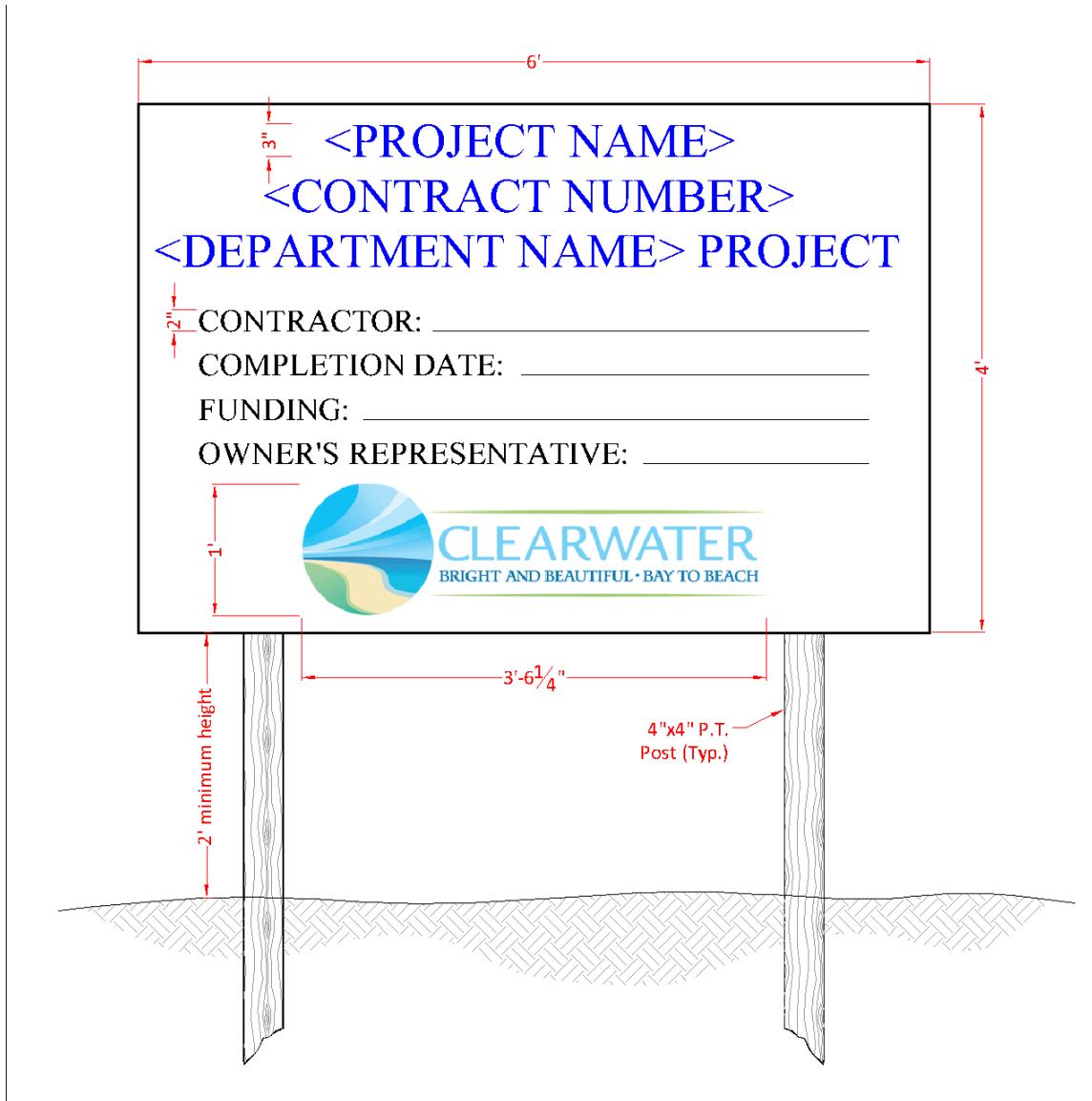
SECTION III – General Conditions

on the project. Multiple portable signs will be necessary where work is ongoing in several locations at the same time. Fixed signs are to be placed at the start of construction and will remain in place until the request for final payment.

23.7. SIGN MAINTENANCE

The Contractor is responsible for preparation, installation, movement, maintenance, replacement, removal, and disposal of all project signs during the full course of the contract period. The Contractor will place and secure portable signs from dislocation by wind or other actions. Signs are to be cleaned as necessary to maintain legibility and immediately replaced if defaced.

23.8. TYPICAL PROJECT SIGN



24. AWARD OF CONTRACT, WORK SCHEDULE AND GUARANTEE

It will be required that the work will commence not later than five (5) calendar days after the Engineer gives written Notice to Proceed (NTP), which notice shall be given as outlined in Article 2 of these General Conditions.

It is further required that all work within this contract be completed within the indicated number of consecutive calendar days as determined in Section IV, Scope of Work. Contract Time to commence at start date noted on the Notice to Proceed. If the Contractor fails to complete the work within the stipulated time, the City will retain the amount stated in the Contract, per calendar day, for each day that the contract remains incomplete. The work shall be discontinued on Saturdays, Sundays, and approved Holidays. If it becomes necessary for the Contractor to perform work on Saturdays, Sundays, and approved City of Clearwater Employee Holidays, that in the opinion of the Engineer, will require the presence of Inspectors, the Contractor shall pay the City of Clearwater, Florida, the amount of Four Hundred Eighty Dollars (\$480.00) per each eight-hour (8) day for each Inspector given such assignment.

The Contractor shall remedy any defects in the work at his own expense and pay for any damage to other work resulting therefrom which appear within a period of one (1) year from the date of final acceptance.

25. SCRUTINIZED COMPANIES AND BUSINESS OPERATIONS WITH CUBA AND SYRIA CERTIFICATION FORM AND ISRAEL CERTIFICATION FORM

Pursuant to Section 287.135, Florida Statutes, any vendor, company, individual, principal, subsidiary, affiliate, or owner on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or is engaged in business operations in Cuba or Syria, is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with the City of Clearwater for goods or services for an amount equal to or greater than one million (\$1,000,000.00) dollars. Any vendor, company, individual, principal, subsidiary, affiliate, or owner on the Scrutinized Companies that Boycott Israel List, or is engaged in a boycott of Israel, is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with the City of Clearwater for goods or services for ANY amount.

Each entity submitting a bid, proposal, or response to a solicitation must certify to the City of Clearwater that it is not on the aforementioned lists, or engaged in business operations in Cuba or Syria, or engaged in a boycott of Israel at the time of submitting a bid, proposal or response, in accordance with Section 287.135, Florida Statutes. Business Operations means, for purposes specifically related to Cuba or Syria, engaging in commerce in any form in Cuba or Syria, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing or operating equipment, facilities, personnel, products, services, personal property, real property, military equipment, or any other apparatus of business or commerce. Boycott Israel or boycott of Israel means refusing to deal, terminating business activities, or taking other actions to limit commercial relations with Israel, or persons or entities doing business in Israel or in Israeli-controlled territories, in a discriminatory manner. A statement by a company that it is participating in a boycott of Israel, or that it has initiated a boycott in response to a request for a boycott of Israel

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or in compliance with, or in furtherance of, calls for a boycott of Israel, may be considered as evidence that a company is participating in a boycott of Israel.

The certification forms (the Certification) are attached hereto, and must be submitted, along with all other relevant contract documents, at the time of submitting a bid, proposal, or response. Failure to provide the Certification may deem the entity's submittal non-responsive. If the City of Clearwater determines that an entity has submitted a false certification form, been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List, or engaged in business operations in Cuba or Syria, or engaged in a boycott of Israel, then the contract may be terminated at the option of the City of Clearwater. Other than the submission of a false certification, the City of Clearwater, on a case-by-case basis and in its sole discretion, may allow a company to bid on, submit a proposal for, or enter into or renew a contract for goods or services, if the conditions set forth in Section 287.135, Florida Statutes, apply.

The City retains the right to pursue civil penalties and any other applicable rights and remedies as provided by law for the false submission of the attached certification forms.

See Section V of the Contract for Certification Forms to be executed and submitted with the Bid/Proposal Form.

SECTION IV

TECHNICAL SPECIFICATIONS

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100 SERIES: GENERAL

101. SCOPE OF WORK

Project Name: Marshall Street WRF Digester Demolition

Project Number: 09-0024-UT

Scope of Work:

The scope of work includes demolition and disposal of an existing anaerobic digester, adjacent, attached heat exchanger building, hazardous materials, related mechanical and electrical equipment and associated liquids and solids in the digester.

The Contractor shall provide copies of a current Contractor License/Registration with the state of Florida and Pinellas County in the bid response.

The Contractor shall provide one (1) fixed project sign as described in SECTION III, ARTICLE 23 of the Contract Documents. The final number of project signs will be determined at the beginning of the project based on the Contractor's schedule of work submitted for approval. Additional project signs may be required at no additional cost to the Owner due to the Contractor's schedule of work.

Contract Period: 150 Consecutive Calendar Days

102. FIELD ENGINEERING

102-1. LINE AND GRADE PERFORMED BY THE CONTRACTOR

Unless otherwise specified, the Contractor shall provide and pay for field engineering service required for the project. Such work shall include survey work to establish lines and levels and to locate and lay out site improvements, structures, and controlling lines and levels required for the construction of the work. Also included are such Engineering services as are specified or required to execute the Contractor's construction methods. Engineers and Surveyors shall be licensed professionals under the laws of the State of Florida. The Contractor shall provide three (3) complete sets of As-built Surveys to the Engineer prior to final payment being made as outlined in Section III (General Conditions), Article 6.11.2 of these Contract Documents.

102-1.1. GRADES, LINES AND LEVELS

Existing basic horizontal and vertical control points for the project are those designated on the Drawings or provided by the City. Control points (for alignment only) shall be established by the Engineer. The Contractor shall locate and protect control points prior to starting site work and shall preserve all permanent reference points during construction. In working near any permanent property corners or reference markers, the Contractor shall use care not to remove or disturb any such markers. In the event that markers must be removed or are disturbed due to the proximity of construction work, the Contractor shall have them referenced and reset by a Professional Land Surveyor licensed in the State of Florida.

102-1.2. LAYOUT DATA

The Contractor shall layout the work at the location and to the lines and grades shown on the Drawings. Survey notes indicating the information and measurements used in establishing locations and grades shall be kept in notebooks and furnished to the Engineer with the record drawings for the project.

102-2. LINE AND GRADE PERFORMED BY THE CITY

If line and grade is supplied by the City, at the completion of all work the Contractor shall be responsible to have furnished to the project inspector a replacement of the wooden lath and stakes used in the construction of this project. Excessive stake replacement caused by negligence of Contractor's forces, after initial line and grade have been set, as determined by the City Engineer, will be charged to the Contractor at the rate of \$100.00 per hour. Time shall be computed for actual time on the project. All time shall be computed in one-hour increments. Minimum charge is \$100.00. The Contractor shall provide three (3) complete sets of As-built Surveys to the Engineer prior to final payment being made as outlined in Section III (General Conditions), Article 6.11.2 of these Contract Documents.

103. DEFINITION OF TERMS

For the Purpose of these Technical Specifications, the Definition of Terms from Section III, Article 1 - Definitions of these Contract Documents shall apply.

For the purpose of the Estimated Quantities, the Contractor's attention is called to the fact that the estimate of quantities as shown on the Proposal is approximate and is given only as a basis of calculation upon which the award of the contract is to be made. The City does not assume any responsibility that the final quantities will remain in strict accordance with estimated quantities nor shall the Contractor plead misunderstandings or deception because of such estimate of quantities or of the character or location of the work or of other conditions or situations pertaining thereto.

103-1. REFERENCE STANDARDS

Reference to the standards of any technical society, organization, or associate, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

The most stringent specification prevails in the case where more than one specification is referenced for the same task.

Contractor shall utilize applicable FDOT Standards and Specifications for tasks that are not covered by City's Standards and Specifications.

104. STREET CROSSINGS, ETC.

At such crossings, and other points as may be directed by the Engineer, trenches shall be bridged in an open and secure manner, so as to prevent any serious interruption of travel upon the roadway or sidewalk, and also to afford necessary access to public or private premises. The material used, and the mode of constructing said bridges, and the approaches, thereto, must be satisfactory to the Engineer.

The cost of all such work must be included in the cost of the trench excavation.

105. AUDIO/VIDEO RECORDING OF WORK AREAS

105-1. CONTRACTOR TO PREPARE AUDIO/VIDEO RECORDING

Prior to commencing work, the Contractor shall have a continuous color audio/video recording taken along the entire length of the Project including all affected project areas. Streets, easements, rights-of-way, lots or construction sites within the Project must be recorded to serve as a record of pre-construction conditions.

105-2. SCHEDULING OF AUDIO/VIDEO RECORDING

The video recordings shall not be made more than twenty-one (21) days prior to construction in any area.

105-3. PROFESSIONAL VIDEOGRAPHERS

The Contractor shall engage the services of a professional videographer. The color audio/video recording shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business of pre-construction color audio/video recording documentation.

105-4. EQUIPMENT

All equipment, accessories, materials and labor to perform this service shall be furnished by the Contractor. The total audio/video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion and interruptions. In some instances, audio/video coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking.

105-5. RECORDED AUDIO INFORMATION

Each recording shall begin with the current date, project name and be followed by the general location, i.e., viewing side and direction of progress. Accompanying the video recording of each video shall be a corresponding and simultaneously recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator or aide, shall assist in viewer orientation and in any needed identification, differentiation, clarification, or objective description of the features being shown in the video portion of the recording. The audio recording shall also be free from any conversations.

105-6. RECORDED VIDEO INFORMATION

All video recordings must continuously display transparent digital information to include the date and time of recording. The date information shall contain the month, day and year. The time information shall contain the hour, minutes and seconds. Additional information shall be displayed periodically. Such information shall include, but not be limited to, project name, contract number, direction of travel and the viewing side. This transparent information shall appear on the extreme upper left hand third of the screen. Camera pan, tilt, zoom-in and zoom out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during video playback. In addition, all other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chrome, white balance, and electrical focus shall be properly controlled or adjusted to maximize picture quality.

105-7. VIEWER ORIENTATION

The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views of all visible house and business addresses shall be utilized. In areas where the proposed construction location will not be readily apparent to the video viewer, highly visible yellow flags shall be placed by the Contractor in such a fashion as to clearly indicate the proposed centerline of construction. When conventional wheeled vehicles are used as conveyances for the recording system, the vertical distance between the camera lens and the ground shall not exceed ten feet (10'). The camera shall be firmly mounted such that transport of the camera during the recording process will not cause an unsteady picture.

105-8. LIGHTING

All recording shall be done during time of good visibility. No videoing shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to

properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.

105-9. SPEED OF TRAVEL

The average rate of travel during a particular segment of coverage shall be directly proportional to the number, size and value of the surface features within the construction area's zone of influence. The rate of speed in the general direction of travel of the vehicle used during videoing shall not exceed forty-four (44) feet per minute.

105-10. VIDEO LOG/INDEX

All videos shall be permanently labeled and shall be properly identified by video number and project title. Each video shall have a log of that video's contents. The log shall describe the various segments of coverage contained on the video in terms of the names of the streets or location of easements, coverage beginning and end, directions of coverage, video unit counter numbers, engineering survey or coordinate values (if reasonably available) and the date.

105-11. AREA OF COVERAGE

Video coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, drainage system features, mailboxes, landscaping, culverts, fences, signs, Contractor staging areas, adjacent structures, etc., within the area covered by the project. Of particular concern shall be the existence of any faults, fractures, or defects. Taped coverage shall be limited to one side of the Site, street, easement or right of way at any one time.

105-12. COSTS OF VIDEO SERVICES

The cost to complete the requirements under this section shall be included in the contract items provided in the proposal sheet. There is no separate pay item for this work.

106. STREET SIGNS

The removal, covering or relocation of street signs by the Contractor is prohibited.

All street signs shall be removed, covered or relocated by the City's Traffic Engineering Division in accordance with Sections 700, 994, 995, and 996 of FDOT's Standard Specifications.

The Contractor shall notify the City's Traffic Engineering Division a minimum of twenty-four (24) hours in advance of the proposed sign relocation, covering or removal.

107. WORK ZONE TRAFFIC CONTROL

107-1. CONTRACTOR RESPONSIBLE FOR WORK ZONE TRAFFIC CONTROL

The Contractor shall be responsible to furnish, operate, maintain and remove all work zone traffic control associated with the Project, including detours, advance warnings, channelization, hazard

warnings and any other necessary features, both at the immediate work site and as may be necessary at outlying points.

107-2. WORK ZONE TRAFFIC CONTROL PLAN

The Contractor shall prepare a detailed traffic control plan designed to accomplish the level of performance outlined in the Scope of the Work and/or as may be required by construction permits issued by Pinellas County and/or the Florida Department of Transportation for the Project, incorporating the methods and criteria contained in Part VI, Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility and Incident Management Operations in the Manual on Uniform Traffic Control Devices published by the U.S. Department of Transportation and adopted as amended by the Florida Department of Transportation, or most recent addition. This plan shall be reviewed and approved by City Traffic Operations personnel regardless if MOT plan details are included in the contract plans.

107-2.1. WORK ZONE SAFETY

The general objectives of a program of work zone safety are to protect workers, pedestrians, bicyclists and motorists during construction and maintenance operations. This general objective may be achieved by meeting the following specific objectives:

- Provide adequate advance warning and information regarding upcoming work zones.
- Provide the driver clear directions to understanding the situation they will be facing as the driver proceeds through or around the work zone.
- Reduce the consequences of an out of control vehicle.
- Provide safe access and storage for equipment and material.
- Promote speedy completion of projects (including thorough cleanup of the site).
- Promote use of the appropriate traffic control and protection devices.
- Provide safe passageways for pedestrians through, in, and/or around construction or maintenance work zones.

Per the 2014 Design Standards (DS), Index 600 or latest revision:

“When an existing pedestrian way or bicycle way is located within a traffic control work zone, accommodation must be maintained and provision for the disabled must be provided. Only approved pedestrian longitudinal channelizing devices may be used to delineate a temporary traffic control zone pedestrian walkway. Advanced notification of sidewalk closures and marked detours shall be provided by appropriate signs.”

Per the 2014 Standard Specifications for Road and Bridge Construction or latest revision

FDOT Design Standards (DS): 102-5 Traffic Control, 102-5.1 Standards, are the minimum standards for the use in the development of all traffic control plans.

107-3. ROADWAY CLOSURE GUIDELINES

Roadway types: Major Arterials, Minor Arterials, Local Collectors, and Local

Following are typical requirements to be accomplished prior to closure. The number of requirements increases with traffic volume and the importance of access. Road closures affecting business or sole access routes will increase in process requirements as appropriate. For all but local

streets, no road or lane closures are allowed during the Christmas holiday season and the designated “Spring Break” season without prior approval by the City Engineer.

107-3.1. ALL ROADWAYS

Obtain permits for Pinellas County or Florida Department of Transportation roadways.

Traffic control devices conform to national and state standards.

107-3.1.1. PUBLIC NOTIFICATION

Standard property owner notification prior to start of construction for properties directly affected by the construction process.

107-3.2. MAJOR ARTERIALS, MINOR ARTERIALS, LOCAL COLLECTORS

Consult with City Traffic Division staff for preliminary traffic control options.

Develop Formal Traffic Control Plan for Permit Submittal to Regulatory Agency as necessary.

107-3.2.1. PUBLIC NOTIFICATION

Message Board Display, Minimum of seven (7) day notice period prior to road closure and potentially longer for larger highway. The message board is to be provided by the Contractor.

107-3.3. MAJOR ARTERIALS, MINOR ARTERIALS

107-3.3.1. PUBLIC NOTIFICATION

C-View Release

107-3.4. MAJOR ARTERIALS

107-3.4.1. PUBLIC NOTIFICATION

News Release

The Message Board may need to be displayed for a period longer than seven (7) days.

107-4. APPROVAL OF WORK ZONE TRAFFIC CONTROL PLAN

The Contractor is invited and encouraged to confer in advance of bidding, and is required, as a specification of the work, to confer in advance of beginning any work on the Project, with the Traffic Operations Division, Municipal Services Building, 100 South Myrtle Avenue, telephone (727) 562-4747, for the purpose of approval of the Contractor's proposed detailed traffic control plan. All maintenance of traffic (MOT) plans shall be signed and sealed by a Professional Engineer or an individual who is certified in the preparation of MOT plans in the State of Florida.

107-5. INSPECTION OF WORK ZONE TRAFFIC CONTROL OPERATION

The Traffic Operations Division may inspect and monitor the traffic control plan and traffic control devices of the Contractor. The City's Construction Inspector assigned to the project, may make known requirements for any alterations or adjustments to the traffic control devices. The Contractor shall take direction from the Project Engineer or Project Inspector.

107-6. PAYMENT FOR WORK ZONE TRAFFIC CONTROL

Payment for work zone traffic control is a non-specific pay item to be included in the construction costs associated with other specific pay items unless specifically stated otherwise.

107-7. CERTIFICATION OF WORK ZONE TRAFFIC CONTROL SUPERVISOR

The City may require that the Supervisor or Foreman controlling the work for the Contractor on the Project have a current International Municipal Signal Association, Work Zone Traffic Control Safety Certification or Worksite Traffic Supervisor Certification from the American Traffic Safety Association with additional current Certification from the Florida Department of Transportation. This requirement for Certification will be noted in the Scope of Work and/or sections of these Technical Specifications. When the certified supervisor is required for the Project, the supervisor will be on the Project site at all times while work is being conducted.

The Worksite Traffic Supervisor shall be available on a twenty-four (24) hour per day basis and shall review the project on a day-to-day basis as well as being involved in all changes to traffic control. The Worksite Traffic Supervisor shall have access to all equipment and materials needed to maintain traffic control and handle traffic related situations. The Worksite Traffic Supervisor shall ensure that routine deficiencies are corrected within a twenty-four (24) hour period.

The Worksite Traffic Supervisor shall be available on the site within 45 minutes after notification of an emergency situation, prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.

Failure of the Worksite Traffic Supervisor to comply with the provisions of this Subarticle may be grounds for decertification or removal from the project or both. Failure to maintain a designated Worksite Traffic Supervisor or failure to comply with these provisions will result in temporary suspension of all activities except traffic and erosion control and such other activities deemed to be necessary for project maintenance and safety.

108. OVERHEAD ELECTRIC LINE CLEARANCE

108-1. CLEARANCE OPTIONS

When working in the vicinity of overhead power lines, the Contractor shall utilize one of the following options:

Option 1 - Having the power lines de-energized and visibly grounded.

Option 2 - Maintaining a minimum distance of twenty feet (20') of clearance for voltages up to 350 kV and fifty feet (50') of clearance for voltages more than 350 kV.

Option 3 - Determine the line voltage and provide clearance in accordance with the following table.

108-2. REQUIRED MINIMUM CLEARANCE DISTANCES

VOLTAGE (nominal, kV, alternating current)	MINIMUM CLEARANCE DISTANCE (feet)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1,000	45
Over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electric power transmission and distribution)

Note: The value that follows “to” is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

109. PROJECT WEB PAGES

109-1. WEB PAGES DESIGN

If requested by the City, Engineer shall design the Project Web Site in accordance with the current City Web Site standards and styles. Project Web Site should include general project information as: Project Name & Number, Scope description, Location, Schedule, and Project Contacts.

Note: Occasionally City modifies the general design of the City’s Web Site, and the Engineer shall consult the City Webmaster for the current requirements, before designing or updating the Project Web Pages.

109-2. WEB ACCESSIBILITY GUIDELINES

Project Web Pages should conform to the W3C Web Accessibility Guidelines and US Section 508 guidelines whenever possible:

<http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>

<http://www.section508.gov/>

In particular, use of variable-width tables, user-adjustable/relative font sizes, ALT text for images, CSS whenever possible, etc. Accessibility should be a priority over design/aesthetics.

109-3. THE “BRIGHT & BEAUTIFUL” LOGO AND ITS USE

The City’s “Bright & Beautiful” logo should be used for everyday business, on all print and electronic material. It should be used on all internal correspondence, brochures, advertising, vehicles, apparel and signage. It should be used only in the manner presented here, in the proportion shown here, with no alterations. It should not be condensed, lengthened, or otherwise distorted to fit a space. The logo is approved for use by City departments and is not to be used by outside vendors without the permission of the City Manager, Assistant City Manager or Public Communications office. Electronic versions of the logo should be obtained from Public Communications.

109-4. MAPS AND GRAPHICS

Use of maps and graphics is recommended to illustrate the project; only approved graphics should be posted to the Project Web Pages.

109-5. INTERACTIVE FORMS

The site should also include an interactive form or other options to allow the Public’s input sent back to the City regarding the Project.

109-6. POSTING

The site should be presented to the City’s Webmaster for review and posting to the City’s Web Server. Posting of the Project Web Pages to a different server than City’s Web server, if approved, should be coordinated with the City’s Webmaster for resolving all accessibility and conformity issues.

109-7. WEB PAGES UPDATES

Unless otherwise specified and agreed, Engineer is responsible for keeping the posted Web Pages up-to-date, by sending revisions and updates through the City Project Manager to the City’s Webmaster for posting.

200 SERIES: SITEWORK

201. EXCAVATION FOR UNDERGROUND WORK

The Contractor is responsible to take all necessary steps to conduct all excavation in a manner which provides for the successful completion of the proposed work while at all times maintaining the safety of the workmen, the general public and both public and private property. The Contractor's methods of work will be consistent with the standard practices and requirements of all appropriate Safety Regulatory Agencies, particularly the Occupational Safety and Health Administration (OSHA) requirements for excavation. Unless otherwise specifically stated in these plans and specifications, the methods of safety control and compliance with regulatory agency safety requirements are the full and complete responsibility of the Contractor.

For the purposes of the Contractor's safety planning in the bidding process, the contractor is to consider all excavation to be done in the performance of this contract to be in soil classified as OSHA "Type C". The Contractor's attention is called to specific requirements of OSHA for excavation shoring, employee entry, location of excavated material adjacent to excavation, the removal of water from the excavation, surface encumbrances and in particular the requirement of a "Competent Person" to control safety operations. The Contractor will identify their Competent Person to City staff at the start of construction.

City staff is required from time to time to perform inspections, tests, survey location work, or other similar activity in an excavation prepared by the Contractor. City staff, in conformance with the OSHA Excavation Safety Requirements, is to only enter an excavation in compliance with these OSHA standards. The City's staff reserve the option to refuse entry into the Contractor's excavation if, in the opinion of the City's staff, the entry into the Contractor's excavation is unsafe or does not conform to OSHA requirements. If this circumstance occurs, the Contractor must either provide the necessary safety requirements or provide alternate means for the accomplishment of the City's work at the Contractor's expense.

The construction quantities, if any, contained in the bid proposal for this contract do not contain sufficient quantities to allow the Contractor to perform excavation work using strictly the "open cut" method whereby no shoring systems are used and trench side slopes are cut to conform to OSHA safety requirements without a shoring system. In addition to safety reasons, the Contractor is required to use excavation and trench-shoring methods in compliance with all safety requirements which allow the Contractor to control the amount of restoration work necessary to complete the project.

Not more than four hundred feet (400') of trench shall be opened at one time in advance of the completed work unless written permission is received from the Engineer for the distance specified. For pipe installation projects, the trench shall be a minimum of six inches (6") wider on each side than the greatest external horizontal width of the pipe or conduit, including hubs, intended to be laid in them. The bottom of the trench under each pipe joint shall be slightly hollowed, to allow the body of the pipe to rest throughout its length. In case a trench is excavated at any place, excepting at joints, below the grade of its bottom as given, or directed by the Engineer, the filling and compaction to grade shall be done in such manner as the Engineer shall direct, without compensation.

202. OBSTRUCTIONS

Any pipes, conduits, wires, mains, footings, driveways, or other structures encountered shall be carefully protected from injury or displacement. Any damage thereto shall be fully, promptly, and properly repaired by the Contractor to the satisfaction of the Engineer and the owner thereof. Any survey monument or benchmark which must be disturbed shall be carefully referenced before removal, and unless otherwise provided for, shall be replaced upon completion of the work by a registered land surveyor. Any concrete removed due to construction requirements shall be removed to the nearest expansion joint or by saw cut. Contractor shall consult Inspector for the approved means.

203. DEWATERING

203-1. GENERAL

Unless specifically authorized by the Engineer, all pipe, except subdrains, shall be laid "in the dry". The Contractor shall dewater trench excavation as required for the proper execution of the work, using one or more of the following approved methods: well point system, trenched gravity underdrain system, or sumps with pumps.

Well point systems must be efficient enough to lower the water level in advance of the excavation and maintain it continuously in order that the trench bottom and sides shall remain firm and reasonably dry. The well points shall be designed especially for this type of service, and the pumping unit used shall be capable of maintaining a high vacuum, and at the same time, of handling large volumes of air as well as of water.

The Contractor shall be responsible for disposing of all water resulting from trench dewatering operations and shall dispose of the water without damage or undue inconvenience to the work, the surrounding area, or the general public. Contractor shall not dam, divert, or cause water to flow in excess in existing gutters, pavements or other structures: and to do this Contractor may be required to divert the water to a suitable place of discharge as may be determined by the Engineer. Where possible, Contractor may contain produced groundwater on the project site, a dewatering plan must be submitted to the City for approval if a discharge permit is not obtained or required.

The cost of dewatering shall be included in the unit price bid per linear foot of pipe, or, in the case of other underground structures, in the cost of such structures.

203-2. PERMIT REQUIREMENTS

203-2.1. DEWATERING DISCHARGE

The Contractor shall be responsible for submitting the Notice of Intent to use the Generic Permit for the Discharge of Groundwater from Dewatering Operations and associated fee in accordance with Florida DEP Requirements, F.A.C. 62-621.300(2)(b) prior to discharging of produced groundwater into the City's streets, storm sewers or waterways.

Prior to construction, a dewatering plan must be prepared and submitted to the City for review. It shall include site-specific notes and details presenting the Contractor's proposed dewatering and disposal methods. The City will field-inspect the dewatering operation throughout construction.

204. UNSUITABLE MATERIAL REMOVAL

All unsuitable material, such as muck, clay, rock, etc., shall be excavated from under pipes, structures and roadways and removed from the site. All material removed is property of the Contractor, who shall dispose of said material off-site at their expense. The limits and depths of the excavation shall be determined in the field by the Engineer.

204-1. BASIS OF MEASUREMENT

The basis of measurement shall be the number of cubic yards of clean fill placed as determined by either cross sections of the excavation, truck measure, or lump sum as specified in the Scope of Work and Contract Proposal. Included in the cost of cubic yards of suitable material placed is the removal, hauling and disposal of unsuitable material.

204-2. BASIS OF PAYMENT

The unit price for the removal of unsuitable material shall include: all materials, equipment, tools, labor, disposal, hauling, excavating, dredging, placing, compaction, dressing surface and incidentals necessary to complete the work. If no pay item is given, the removal of unsuitable material shall be included in the most appropriate bid item.

205. UTILITY TIE IN LOCATION MARKING

The tie in locations for utility laterals of water, sanitary sewer, and gas shall be plainly marked on the back of the curb. Marking placed on the curb shall be perpendicular with respect to the curb of the tie in location on the utility lateral. Marks shall not be placed on the curb where laterals cross diagonally under the curb. The tie in location shall be the end of the utility lateral prior to service connection.

Markings shall be uniform in size and shape and colors in conformance with the code adopted by the American Public Works Association as follows:

SAFETY RED	Electric power, distribution & transmission Municipal Electric Systems
HIGH VISIBILITY SAFETY YELLOW	Gas Distribution and Transmission Oil Distribution and Transmission Dangerous Materials, Produce Lines, Steam Lines
SAFETY ALERT ORANGE	Telephone and Telegraph Systems Police and Fire Communications Cable Television
SAFETY PRECAUTION BLUE	Water Systems, Slurry Pipe Lines and Potable Water
SAFETY GREEN	Sewer Systems
LAVENDER	Reclaimed Water, Irrigation and Slurry Lines

WHITE	Proposed Excavation
PINK	Temporary Survey Markings

Marks placed on curbs shall be rectangular in shape and placed with the long dimension perpendicular to the flow line of the curb. Marks placed on valley gutter and modified curb shall be six inch (6") x three inch (3") and placed at the back of the curb. Marks placed on State Road and vertical curb shall be four inch (4") x two inch (2") and be placed on the curb face.

206. CLEARING AND GRUBBING

The work included in this specification includes the removal and disposal of all structures, appurtenances, asphalt, concrete, curbs, walls, trees, roots, vegetation, boulders, conduits, poles, posts, pipes, inlets, brush, stumps, debris and other obstructions resting on or protruding through the ground surface necessary to prepare the area for construction.

Clearing and grubbing shall be performed in accordance with Section 110 of FDOT's Standard Specifications. Unless otherwise specified in the contract documents, the Contractor shall take ownership of all removed material and dispose of them off-site in accordance with all Local, State and Federal Requirements.

206-1. BASIS OF MEASUREMENT

The basis of measurement shall be either a lump sum quantity or the number of acres cleared and grubbed as specified on the plans or directed by the Engineer.

206-2. BASIS OF PAYMENT

The pay item for clearing and grubbing shall include: all removal and disposal of materials and structures as well as all materials, hauling, equipment, tools, labor, leveling of terrain, landscape trimming and all incidentals necessary to complete the work.

207. EROSION AND SEDIMENT CONTROL

207-1. GENERAL

Erosion and sediment control shall conform to the requirements of the FDOT Standard Specifications for Prevention, Control, and Abatement of Erosion and Water Pollution. Contractor shall use temporary erosion and sediment control features found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) or the City of Clearwater Standard Indices.

207-2. TRAINING OF PERSONNEL

The City may require that the Supervisor or Foreman controlling the work for the Contractor on the Project have a current Florida Department of Environmental Protection (FDEP) Florida Stormwater, Erosion, and Sedimentation Control Inspector Training & Certification. All personnel working on the Project shall complete illicit discharge training once per calendar year. Contractor shall provide documentation to the City prior to Notice To Proceed. Example of training and

training sign-in sheet will be provided by the City to the Contractor at the Pre-Construction Meeting.

207-3. STABILIZATION OF DENUDED AREAS

No disturbed area may be denuded for more than thirty (30) calendar days unless otherwise authorized by the City Engineer. During construction, denuded areas shall be covered by mulches such as straw, hay, filter fabric, seed and mulch, sod, or some other temporary vegetation. Within sixty (60) calendar days after final grade is established on any portion of a project site, that portion of the site shall be provided with established permanent soil stabilization measures per the original site plan, whether by impervious surface or landscaping.

207-4. PROTECTION AND STABILIZATION OF SOIL STOCKPILES

Fill material stockpiles shall be protected at all times by on-site drainage controls which prevent erosion of the stockpiled material. Control of dust from such stockpiles may be required, depending upon their location and the expected length of time the stockpiles will be present. In no case shall an unstabilized stockpile remain after thirty (30) calendar days.

207-5. PROTECTION OF EXISTING STORM SEWER SYSTEMS

During construction, all storm sewer inlets in the vicinity of the project shall be protected by temporary erosion and sediment control features found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) or the City of Clearwater Standard Indices, or equals approved by the City Engineer before installation.

207-6. SWALES, DITCHES AND CHANNELS

All swales, ditches and channels leading from the site shall be sodded within three (3) days of excavation. All other interior swales, etc., including detention areas will be sodded prior to issuance of a Certificate of Occupancy.

207-7. UNDERGROUND UTILITY CONSTRUCTION

The construction of underground utility lines and other structures shall be done in accordance with the following standards: no more than 400 linear feet of trench shall be open at any one time; and, wherever consistent with safety and space consideration, excavated material shall be cast to the uphill side of trenches. Trench material shall not be cast into or onto the slope of any stream, channel, road ditch or waterway.

207-8. MAINTENANCE

All erosion and siltation control devices shall be checked regularly, especially after each rainfall and will be cleaned out and/or repaired as required.

207-9. COMPLIANCE

Failure to comply with the aforementioned requirements may result in a fine and/or more stringent enforcement procedures such as (but not limited to) issuance of a "Stop Work Order".

208. CONSTRUCTION AND REPAIR OF SEAWALLS AND OTHER BEACH EROSION CONTROL STRUCTURES.

Other beach erosion control structures, accompanied by a certified survey showing the location of the groin or other beach erosion control structure and adjoining groins or other beach erosion control structures, shall be presented to the city council for final approval. Where steps are necessary to provide access along the beach to the public, then such steps shall be shown as part of the plan for groin construction prior to issuance of the permit, and such steps shall be constructed and maintained in a safe condition at all times.

208-1. EXISTING SEAWALLS AND REVETMENTS

Existing seawalls and revetments on natural waterbodies may be replaced with a revetment or with a vertical seawall with the provision of rip rap placed at the base of the wall up to the mean high water line for the entire length of the seawall. Revetments and seawalls may be replaced with a vertical seawall in manmade waterbodies, provided that the seawall is within the property line and maintains the established shoreline.

208-2. TOP OF CAP ELEVATION

The top of cap elevation for all replacement and new seawalls and seawall caps shall not exceed 4.8 feet N.A.V.D. If the top of a seawall cap is constructed at an elevation differing from the adjacent property owner top of cap elevation by greater than one foot, then a return wall is required to sufficiently provide for the break in grade at the property line. Seawalls exceeding 4.8 feet N.A.V.D. in height prior to the effective date of this article may be maintained, repaired and replaced to their current height.

208-3. SEAWALLS AND REVETMENTS LOCATED SEAWARD OF THE CCL

Seawalls and revetments located seaward of the coastal construction setback line are controlled by regulations of the Division of Beaches and Shores of the Florida Department of Environmental Protection. Replacement of a seawall or revetment that is located seaward of the coastal construction setback line necessitates submission of a permit application to the state department of environmental protection.

208-4. PLACEMENT OF NEW SEAWALL

The placement of a new seawall waterward of an existing seawall is permitted, subject to the following conditions:

- (a) A Florida registered professional engineer must certify the new seawall design.
- (b) The new seawall shall not extend more than 18 inches from the waterward face of the original alignment of the existing vertical seawall location.

- (c) The new seawall shall be placed vertically plumb.
- (d) Placing a seawall in front of an existing seawall shall only be permitted once unless the seawall behind the new seawall is removed.
- (e) Existing seawall sections that interfere with new seawall location shall be removed.
- (f) The new seawall shall include an adequate closure of gaps at each property line.
- (g) For zoning purposes, the setbacks for the property will be measured from either the property line or the waterside of the original seawall slab, whichever is more restrictive, and will not be adjusted to accommodate the new seawall addition. For purposes of pier construction, the shore normal dimensions will be measured from the waterside of the original seawall slab.

208-5. POST CONSTRUCTION SURVEY

Prior to final inspection and approval of a new or replacement seawall or seawall cap, a post-construction survey shall be required. Repairs of existing seawalls and seawall caps which do not alter the height or location shall not be subject to this requirement.

208-6. RIP-RAP

On all-natural waterways, an apron of rip-rap shall be placed at the base of all new and repaired seawalls up to the mean high water line for the entire length of the seawall to absorb the wave energy and protect the underlying soft earth or sand from being carried away, as well as to provide habitat for desirable marine species. This rip-rap shall be required at the base of all new seawalls and at the time that an existing seawall is repaired where the replacement constitutes greater than 50 percent of the entire length of the seawall or includes the replacement of a panel.

208-7. RETAINING WALL IN LIEU OF VERTICAL SEAWALL

A retaining wall may be built as an alternative to a vertical seawall, provided that all activities, including dredging, filling, slope grading, or equipment access and similar activities and all portions of the wall are located landward of the mean high water line.

300 SERIES: MATERIALS

301. CONCRETE

The Contractor shall notify the Construction Inspector or City a minimum of twenty-four (24) hours in advance of all concrete placement.

Unless otherwise noted elsewhere or directed, the following requirements shall be adhered to:

All concrete work shall be performed in accordance with the latest editions of the Design and Control of Concrete Mixtures by the Portland Cement Association, the American Concrete Institute, and FDOT's Standard Specifications. Unless otherwise specified, all concrete shall have fiber mesh reinforcing and have a minimum compressive strength of 3000 psi at twenty-eight (28) days. The cement type shall be Type I and shall conform to AASHTO M-85. The aggregate shall conform to ASTM C-33. All ready-mix concrete shall conform to ASTM C-94. The slump for all concrete shall be in the range of three inches (3") to five inches (5"), except when admixtures or special placement considerations are required.

All concrete shall be tested in the following manner:

Placement of less than five cubic yards (5 cy) shall be tested at the Engineer's discretion. Otherwise, for each class, for each day, for every 50 cy or part thereof exceeding five cubic yards (5 cy), one set of three (3) compressive strength cylinders will be required (1 at 7 days and 2 at 28 days). At the discretion of the Engineer, unacceptable test results may require the Contractor to provide further tests, as determined by the Engineer, to determine product acceptability, or need for removal, and compensation or denial thereof.

302. EXCAVATION AND FORMS FOR CONCRETE WORK

302-1. EXCAVATION

Excavating for concrete work shall be made to the required depth of the subgrade or base upon which the concrete is to be placed. The base or subgrade shall be thoroughly compacted to a point six inches (6") outside said concrete work before the forms are placed.

302-2. FORMS

Forms for concrete work shall be either wood or metal, except curbs. Curb forms shall be metal only, unless at radius, intermittent sections less than ten (10) linear feet or by written permission from Engineer. They shall be free from warps or bends, shall have a depth equal to the dimensions required for the depth of the concrete deposited against them and shall be of sufficient strength when staked to resist the pressure of concrete without moving or springing.

303. REINFORCEMENT

When required, reinforcement shall be placed in the concrete work. Bar reinforcement shall be deformed: ASTMA-A 615, steel shall be billet Intermediate or Hard Grade: Rail Steel A.A.S.H.T.O. M42. Twisted Bars shall not be used, Fabric Reinforcement shall conform to the requirements of AASHTO M55 (ASTM A185). Welded deformed steel wire fabric for Concrete reinforcement shall meet the requirements of AASHTO M 221 (ASTM A497). Welded wires shall

be elevated by the use of chairs. Epoxy coated reinforcing Steel Bars shall meet ASTM A775/A77 requirements.

303-1. BASIS OF PAYMENT

Reinforcement shall not be paid for separately. The cost of such work shall be included in the contract unit price for the item of work specified.

304. BACKFILL

304-1. MATERIALS AND GENERAL

Material for backfill other than under Gabion mattress shall be carefully selected from the excavated material or from other sources as may be required by the Engineer. Such material shall be granular, free from clay, muck, organic matter or debris, contain no rocks or other hard fragments greater than three inches (3") in the largest dimension and all fill shall be similar material.

Material for backfill under Gabion mattress shall be an A-1 soil meeting AASHTO M145.

Backfill shall be carried up evenly in layer not exceeding eight inches (8") in thickness and shall be compacted into place by mechanical tamping before the next layer is applied. A hydro-hammer shall not be used for compaction. Backfill placed around pipes shall be carefully placed around the sides and top of pipe by hand shovels and thoroughly compacted to twelve inches (12") above the pipe by tamping or other suitable means.

For backfill in small areas that do not permit any type of tamping, Contractor may use flowable fill to achieve required density. Flowable fill shall adhere to Section 121 of FDOT specifications.

Where wet conditions are such that dewatering by normal pumping methods would not be effective, as determined by the Engineer, Contractor may use #57 stone (meeting FDOT's specifications) and hand tamping until backfill has reached an elevation and condition such as to make the use of the mechanical tampers practical. Fully wrap the stones with a layer of Type D filter fabric of FDOT Index 199. Do not place stones within four feet (4') of the ends of trench or ditch; use normally accepted backfill material at the ends.

Where new cast-in-place concrete work is performed, do not place backfill until the specified twenty-eight (28) days compressive strength occurs.

Do not allow heavy construction equipment to cross over pipes or culverts until placing and compacting backfill material to the finished earthwork grade or to an elevation of at least four feet (4') above the top of the pipe or culvert.

The cost of backfill, flowable fill, alternative approved material for wet conditions, and extra dewatering effort to achieve required density, etc., shall be included in the contract unit price or lump sum price for the item of the work specified.

304-2. TESTING AND INSPECTION

Contractor shall employ and pay for the services of an independent testing laboratory, approved by the Owner, to perform density testing on backfilled material. All testing shall be witnessed by

the Owner's Representative. The test shall be repeated until satisfactory results are obtained. The Contractor shall be charged for all retests and re-inspection services.

Backfill under all type of impervious areas and around structures: Backfill in these areas shall be compacted to a minimum of 98% Modified Proctor Test in accordance with ASTM D 1557 or ASSHTO T 180. Tests shall be performed up to the proposed bottom of pavement elevation.

Backfill outside of impervious areas: Backfill in these areas shall be compacted to a minimum of 95% Standard Proctor Test in accordance with ASTM D-698 or AASHTO T-99. Tests shall be performed up to the proposed finished grade.

Backfill Testing: The Contractor shall demonstrate the adequacy of backfill compaction by performing density testing. For each test location, density testing shall be performed at eight inch (8") lifts. The character of the backfill material will be observed during the excavation for density testing to determine conformance with the specifications. Density testing shall be performed using nuclear field density equipment or conventional weight-volume methods. If the weight-volume method is used, volume shall be determined by using the sand replacement test (ASTM D 1556) or liquid displacement methods (ASTM D 2167). If nuclear methods are used, the trench correction effect shall be accounted for by recalibrating the nuclear gauge on its calibration block at the location of each test prior to taking the density measurement. The Contractor shall furnish all equipment, tools, and labor to prepare the test site for testing.

Normal Testing Frequency: One test shall be performed for each one hundred feet (100') of backfill or fraction thereof or for each single run of pipe/culvert connecting two (2) successive structures whichever is less. The location of the test within each section shall be selected by the Owner's Representative. Testing shall progress as each one hundred foot (100') section is completed. Four (4) tests equally spaced around each structure shall be performed on each eight inch (8") lift. Testing which indicates that unacceptable material has been incorporated into the backfill, or that insufficient compaction is being obtained shall be followed by expanded testing to determine the limits of the unacceptable backfill.

Expanded Testing Requirements: If normal testing within a testing section indicates unacceptable backfill, the Owner's Representative may require additional testing within the same test section to determine the limits of unacceptable backfill. Additional testing required by the Owner's Representative shall be paid for by the Contractor and shall not exceed testing of four (4) additional locations within the test section. Unacceptable backfill within the limits established by the testing shall be removed and replaced by the Contractor at no additional cost to the Owner. Additional testing beyond that required may be performed by the Contractor at his expense to further delineate limits of unacceptable backfill.

305. RIPRAP

The work included in this specification includes the construction of riprap as shown on the plans. The riprap shall be constructed per Section 530 of FDOT's Standard Specifications.

305-1. BASIS OF MEASUREMENT

The basis of measurement for riprap shall be the dry weight in tons.

305-2. BASIS OF PAYMENT

The pay item for sand-cement riprap shall include: all materials, testing, labor, grout, hauling, equipment, excavation, backfill, dressing and shaping for placement of sand-cement and all incidentals necessary to complete the work.

The pay item for rubble riprap shall include: all materials, required bedding stone, dressing and shaping for placement of bedding stone, filter fabric, testing, hauling, excavating, backfill, dressing and shaping for placement of rubble, and all incidentals necessary to complete the work. No payment will be granted if concrete or stone that exists on-site is used as rubble riprap.

400 SERIES: SANITARY SEWER

401. SANITARY MANHOLES

401-1. BUILT UP TYPE

Manholes shall be constructed of brick with cast iron frames and covers as shown on the drawings. Invert channels shall be constructed smooth and semicircular in shape conforming to inside of adjacent sewer section. Changes in direction of flow shall be made in a smooth curve of as large a radius as possible. Changes in size and grade of channels shall be made gradually and evenly. Invert channels shall be formed by one of the following methods: form directly into concrete manhole base, build up with brick and mortar, lay half tile in concrete, or lay full section of sewer pipe through manhole and break out top half of pipe.

The manhole floor outside of channels shall be made smooth and sloped toward channels.

Free drop in manholes from inlet pipe invert to top of floor outside the channels shall not exceed twenty four inches (24").

Standard Drop Manholes shall be constructed wherever free drop exceeds twenty four inches (24").

Manhole steps shall not be provided. Joints shall be completely filled, and the mortar shall be smoothed from inside of manholes.

The entire interior and exterior of brick manholes shall be plastered with one half inch (1/2") of mortar.

Brick used may be solid only. Brick shall be laid radially with every sixth course being a stretcher course.

401-2. PRECAST TYPE

Precast Sanitary Manholes shall conform to this specification unless otherwise approved by the City Engineer.

AASHTO M 85 Type II cement shall be used throughout with a minimum wall thickness of five inches (5"). The precast sections shall conform to ASTM C 478 latest revision. Section joints shall be a tongue and groove with "ram neck" gasket or "O" ring to provide a watertight joint. Minimum concrete strength shall be 4000 psi at 28 days.

Three sets of shop drawings and location inventory shall be submitted to the City Engineer for approval. Approval of shop drawings does not relieve Contractor of responsibility for compliance to these specifications unless letter from Contractor requesting specific variance is approved by the City Engineer.

Location inventory submitted with shop drawing shall detail parts of manhole per manhole as numbered on the construction plans. All manhole parts shall be numbered or lettered before being sent to the job site to permit proper construction placement. A plan or list of the numbering system shall be present on the job site when manhole components are delivered.

Precast manhole dimensions, drop entry, grout flow of channel, etc., shall be as shown on City of Clearwater Engineering Index #302 Sheets 1 and 2 of 2.

Manhole sections shall be rejected if abused during shipping or placement and if pipe openings are not properly aligned. The "break in" to precast manholes for pipe entry will not be allowed.

The manhole base shall be set on a pad of A 1 or A 2 Classification soil approximately five inches (5") thick to secure proper seating and bearing.

401-2.1. MANHOLE ADJUSTMENT RINGS (GRADE RINGS)

Between the top of the manhole cone and the manhole cover frame, a manhole adjustment ring shall be installed. The intent of the manhole adjustment ring is to accommodate future grade changes without disturbing the manhole. See Section IV, Article 703-7, Asphaltic Concrete – Adjustment of Manholes.

401-3. DROP MANHOLES

Standard drop inlets to manholes shall be constructed of commercial pipe, fittings and specials as detailed on the drawings.

401-4. FRAMES AND COVERS

Manhole frames and covers shall be set in a full bed of mortar with the top of the cover flush with or higher than finished grade as directed. Refer to Index 301.

401-5. MANHOLE COATINGS

The exterior and interior of all built up manholes shall be coated with two (2) coats of Type II Asphalt emulsion, moisture and damp proof (Specification ASTM D 1227 Type II Class I) as manufactured by W.R. Meadows Sealtite or approved equal.

The exterior of all precast manholes shall have a 15 mil dry thickness of Sherwin Williams Targard® Coal Tar Epoxy or approved equal. The interior shall be AGRU SUREGRIP HDPE or PP-R Liner with a minimum thickness of two millimeters (2 mm).

401-6. CONNECTIONS TO MANHOLES

Connections to existing sanitary manholes using approved PVC sewer main shall be made with a manhole adapter coupling by NPC Kor-N-Seal® or approved water stop coupling.

402. RAISING OR LOWERING OF SANITARY SEWER STRUCTURES

Sanitary Sewer Structures shall be raised or lowered as indicated on the plans or as indicated by the Engineer.

402-1. BASIS OF PAYMENT

Payment, unless covered by a bid item, shall be included in the cost of the work.

403. SANITARY SEWERS AND FORCE MAINS

403-1. MATERIALS

403-1.1. GRAVITY SEWER PIPE

GRAVITY SEWER PIPE SHALL BE POLYVINYL CHLORIDE OR DUCTILE IRON.

Polyvinyl chloride pipe and fittings shall conform to ASTM specification D 3034 for S.D.R. 35. Sewer pipe with more than ten feet (10') of cover shall be SDR 26. The pipe shall be plainly marked with the above ASTM designation. The bell end of joints and fittings shall have a rubber sealing ring to provide a tight flexible seal in conformance with ASTM D 3212. The laying length of pipe joints shall be a maximum of twenty feet (20').

Unless otherwise noted in these specifications or construction plans, Ductile Iron pipe and fittings for gravity sewer shall conform to Article 501 of these Technical Specifications for DIP water main except pipe shall be interior Protecto 401 ceramic epoxy lined in accordance with manufacturer's recommendations. Where sanitary sewer main is to be placed between building lots in a sideline easement, the sewer main shall, insofar as possible, be constructed without manholes or lateral connections within the side easement. The pipe material in the side easement between streets shall be C 900, SDR 18 polyvinyl chloride water main pipe as described in these Technical Specifications Article 501. A two-way cleanout shall be installed on each lateral at the property line.

403-1.2. FORCE MAIN PIPE

FORCE MAIN PIPE SHALL BE POLYVINYL CHLORIDE OR DUCTILE IRON. Unless otherwise noted in the specifications or construction plans, both polyvinyl chloride and ductile iron force main pipe and fittings shall conform to Article 501 of these Technical Specifications for water main pipe except that DIP shall be Protecto 401 ceramic epoxy lined in accordance with manufacturer's recommendations.

All polyvinyl chloride pipe which has become deteriorated due to exposure to ultra violet radiation shall be rejected.

403-2. INSTALLATION

403-2.1. GRAVITY SEWER PIPE

Installation of Thermoplastic gravity sewer pipe shall be in conformance with recommended practices contained in ASTM D 2321.

The bottom trench width in an unsupported trench shall be limited to the minimum practicable width (typically pipe OD plus eight inches (8") to twelve inches (12") on each side) allowing working space to place and compact the haunching material. The use of trench boxes and movable sheeting shall be performed in such a manner that removal, backfill and compaction will not disturb compacted haunching material or pipe alignment.

Dewatering of the trench bottom shall be accomplished using adequate means to allow preparation of bedding, placement of the haunching material and pipe in the trench without standing water.

Dewatering shall continue until sufficient backfill is placed above the pipe to prevent flotation or misalignment.

Where pipe bedding is insufficient to adequately support pipe, the Contractor will be required to remove unsuitable material and bed pipe in Class I material (one half inch (1/2") diameter aggregate) to provide firm support of pipe.

Connections to manholes with sanitary pipe shall use a joint two (2) feet in length and shall use an approved water stop around pipe joint entry.

The laterals shown on the plans do not necessarily reflect exact locations. The Contractor is required to locate all existing laterals for reconnection and to coordinate with the construction inspector the location of all new laterals.

403-2.2. FORCE MAIN PIPE

Installation of force main pipe shall be in conformance with Article 501 of these Technical Specifications for water main pipe.

403-3. TESTING

403-3.1. TESTING OF GRAVITY SEWERS

The Contractor shall take all precautions to secure a perfectly water tight sewer under all conditions. The water tightness of a sewer which has a crown lying below groundwater level may be tested by measuring infiltration. The water tightness of sewers having crowns lying above groundwater level may be tested by filling the pipe with water so as to produce a hydrostatic head of two feet or more above the crown of the sewer at the upper end of the test section or the water table outside of the sewer, whichever is higher, and then measuring the exfiltration. In no case shall the infiltration or exfiltration exceed fifty (50) gallons per inch of diameter per mile per day. The Contractor shall furnish all labor, materials and equipment to test the amount of infiltration or exfiltration under the Engineer's direction. Where the infiltration or exfiltration is excessive, the Contractor at their own expense shall take the necessary steps to remedy such conditions by uncovering the sewer, remaking the joints or by replacing the entire length of sewer as required by the Engineer. No such repaired joints may be backfilled until after they have been tested and found to be acceptable. Care shall be taken to avoid flotation. The Contractor shall TV inspect all mains to verify the true and uniform grade and the absence of bellies or dropped joints prior to acceptance. Any dips or sags of more than five percent (5%) of the inside pipe diameter dimension shall be cause for rejection. The above tests shall be performed at the discretion of the Engineer on any or all sections of the line.

403-3.2. TESTING OF FORCE MAINS

Force mains shall be tested under a hydrostatic pressure of 150 psi for two (2) hours, as described in Article 501 of these Technical Specifications for the testing of water mains.

403-4. BASIS OF PAYMENT

403-4.1. GRAVITY SEWER PIPE

Payment for in place sanitary sewer gravity main pipe shall be the unit price per linear foot per appropriate range of depth of cut as contained in the contract proposal. Measurement for payment shall be along the centerline of the sewer main from center to center of manholes.

Payment for laterals shall be the unit price per linear foot of pipe as measured from the centerline of the sewer main pipe to the terminal end of the lateral pipe including a two-way cleanout at the property line.

Payment for sewer pipe shall include all labor, equipment and materials necessary to complete the installation. This shall include clearing and grubbing, excavation, shoring and dewatering, backfill and grading.

403-4.2. FORCE MAIN PIPE

Payment and measurement of force main pipe shall be the same as described in Article 501 of these Technical Specifications for water main pipe.

404. HDPE DEFORMED - REFORMED PIPE LINING

404-1. INTENT

It is the intention of this specification to provide for the trenchless restoration of eight inch (8") to twelve inch (12") sanitary sewers by the installation of a high density polyethylene, jointless, continuous, fold and form pipe liner which is watertight and chemically resistant to withstand exposure to domestic sewage including all labor, materials and equipment to provide for a complete, fully restored and functioning installation.

404-2. PRODUCT AND CONTRACTOR/INSTALLER ACCEPTABILITY

The City requires that all contractors be prequalified. See General Conditions regarding contractor prequalification. In addition, the City requires a proven extensive track record for the fold and form liner system to be used in this project. All contractors submitting for prequalification approval for this project must exhibit extensive satisfactory experience in the installation of the proposed liner system and satisfactory evidence that the proposed liner system has been extensively and successfully installed in the United States and the State of Florida. The installer must be certified by the liner system manufacturer for installation of the liner system. The City reserves full and complete authority to approve the satisfactory nature of both the liner system and the installer.

404-3. MATERIALS

Pipe shall be made from P. E. 3408 polyethylene resins complying with ASTM D 3350, cell classification: P.E. 345434 D for High Density. It shall be Type 3, Grade 4, Class D, according to ASTM D 1248. The Contractor shall provide certified test results for review by the Engineer, from the manufacturer, that the material conforms with the applicable requirements. Material shall have

a minimum thickness of SDR 32.5. Pipe specimens shall comply with the minimum property values shown below with the applicable ASTM requirements:

<u>Material</u>	<u>Property</u>	<u>ASTM Method</u>	<u>Value</u>
HDPE	Tensile Strength	D 638	3,300 psi
	Elasticity Modulus		E=113,000 psi
	Impact Strength	D 256 A	3.0 ft-lb/in
	Flexure Modulus		E=136,000 psi
	Expansion Coeff.		c=0.009 in/in/deg F

At the time of manufacture, each lot of liner shall be reviewed for defects and tested in accordance with ASTM D 2837 and D 1693. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, or deleterious faults. The Contractor shall provide, as requested, certified test results for review by the Engineer, from the manufacturer, that the material conforms with the applicable requirements. The Engineer may at any time request the Contractor provide test results from field samples to the above requirements.

Liner shall be marked at five (5) foot intervals or less with a coded number, which identifies the manufacturer, SDR, size, material, date, and shift on which the liner was extruded.

Lining manufacturer shall submit to the Engineer for approval as requested, complete design calculations for the liner thickness. The criteria for liner design shall be HS-20 traffic loading, water table to the ground surface, minimum expected lifetime of fifty (50) years, and no structural strength retained from the existing pipe. Any liner system must be approved by the Engineer prior to receiving bids. Request for contractor prequalification and/or liner system approval must be received by the Engineer no later than fourteen (14) days prior to the date for receiving bids.

404-4. CLEANING/SURFACE PREPARATION

It shall be the responsibility of the Contractor to clean and prepare the existing pipes for rehabilitation. The Contractor will thoroughly clean the interior of the sewers to produce a clean interior surface free of all coatings, sand, rock, roots, sludge, or other deleterious materials prior to liner insertion. Bypass pumping will be provided by the Contractor as part of the unit cost of restoration. Bypass operations are to be so arranged as to cause minimum disruptions to local traffic, residents and particularly to commercial facilities. During the cleaning and preparation operations all necessary precautions shall be taken to protect the public, all property and the sewer from damage.

All material removed from the sewers shall be the Contractor's responsibility for prompt disposal in accordance with all regulatory agency requirements. The Contractor may be required to control the rate of sewer cleaning in the sanitary system to avoid heavy pollution loads at the City's treatment plants.

404-5. TELEVISION INSPECTION

After cleaning, and again after the rehabilitation work on each section of the project is completed, all pipe sections shall be visually inspected with a digital camera and recorded in DVD format as specified below.

404-5.1. VIDEO, PHOTO CAPTURE AND DATA COLLECTION REQUIREMENTS FOR MANHOLE AND PIPELINE INSPECTION

This section describes the requirements of the Contractor in providing the following minimum requirements for Video, Photo Capture and Database structure to the City. The City is currently using CUES Granite XP video and data collection software. The Contractor shall provide the TV Inspections in the same Granite XP database, photo and video capture format. The Contractor-provided TV Inspections, Database, DVDs, Photos and related files shall have the ability to direct synchronize to the City's existing Granite XP database.

404-5.2. IMAGE (PHOTOS) CAPTURE FORMAT AND REQUIREMENTS

The Inspection image files (pictures) shall have the ability to export to Industry Standard Formats to include JPEG, BMP, and TIFF formats and be transferable by disk, DVD and/or external hard drive to an external personal computer utilizing standard viewers and printers.

404-5.3. DIGITAL VIDEO FORMAT AND REQUIREMENTS

Digital video files (Inspection Videos) shall be captured and/or recorded in the MPEG 1, 2 or 4 format or as specified by the City. The Video capture files shall be in MPEG format with data linking (Inspection Observations) to the database file(s). The “Link” of the video capture file to the database observation file is required. The inspection observation(s) shall link to the video record in real-time.

The accompanying database shall support the following code systems: WRc, PACP, CUES standard, or current code system being utilized by the City. The Database and Software program (Granite XP V2.X) shall be able to import asset data from an ArcGIS (City current version) geo-database file utilizing the network features to associate Sewer Mains with corresponding Sewer Nodes.

The database structure shall retain information on the various structures found within a sewer or storm system. It is important that the structures, nodes, manholes and pipe identifiers and related attribute information be retained as separate tables from the Inspection allowing import of existing data from multiple sources. The data structure allows different projects to reside within a single database. Information gathered in projects shall be available to view by project or by system. Data gathered during project inspection shall be available to view by the selected structure. Therefore, all inspections can be viewed on a structure even if gathered in different projects.

404-5.4. SYNCHRONIZATION

The database shall have the ability to synch assets and inspections from replicated databases. The sync process should have built-in error checking for duplicates, updates and any modifications to

the data being synched. This allows for multiple sources of data to be effectively consolidated into a single unitary database for analysis and evaluation.

404-6. LINER INSTALLATION

Liner shall be sized to field measurements obtained by the Contractor to provide a tight fit to the full interior circumference of the existing sanitary sewer and shall be a continuous, jointless liner product from inside of manhole to inside of manhole. Contractor shall use installation methods approved by the liner manufacturer including liner placement, reforming to fit existing pipe, pressure and heat requirements and reconnection of laterals. The Contractor shall immediately notify the Engineer of any construction delays taking place during the insertion operation. Contractor shall maintain a reasonable backup system for bypass pumping should delays or problems with pumping systems develop. Liner entries at manholes shall be smooth, free of irregularities, and watertight. No pinholes, tears, cracks, thin spots, or other defects in the liner shall be permitted. Such defects shall be removed and replaced by the Contractor at their expense. OSHA requirements for installation procedures, in particular, confined spaces are to be met.

404-7. LATERAL RECONNECTION

Sanitary laterals shall be reconnected as soon as possible to renew service. Laterals are to be reconnected by means of robotics, by internally cutting out the liner to 100% of the area of the original opening. All lateral reconnections are to be grouted to prevent leakage. Grouting method and material is to be approved by the Engineer.

Any reconnections to laterals and connections to manholes which are observed to leak shall be resealed by the Contractor. All laterals discovered during the lining process are to be reconnected unless specifically directed otherwise by the City. Contractor shall notify all local system users when the sanitary system will not be available for normal usage by the delivery of door hangers with appropriate information regarding the construction project.

404-8. TIME OF CONSTRUCTION

Construction schedules will be submitted by the Contractor and approved by the Engineer. At no time will any sanitary sewer service connection remain inoperative for more than an eight (8) hour period without a service bypass being operated by the Contractor. In the event that sewage backup occurs and enters buildings, the Contractor shall be responsible for cleanup, repair and property damage costs and claims.

404-9. PAYMENT

Payment for sanitary sewer restoration shall be made per linear foot including all preparation, bypass pumping, equipment, labor, materials, operations, restoration, etc., to provide a fully completed and operational sewer. Payment shall be measured from center of manhole to center of manhole for the sanitary systems and from end of pipe to end of pipe for storm systems.

405. SANITARY MANHOLE LINER RESTORATION

405-1. SCOPE AND INTENT

It is the intent of this portion of the specification to provide for the structural rehabilitation of manhole walls and bases with solid preformed liners and made-in-place liner systems used in accordance with the manufacturer's recommendations and these specifications. In addition to these specifications, the Contractor shall comply with manufacturer's instructions and recommendations for work. Purpose of work is to eliminate infiltration, provide corrosion protection, repair voids and to restore the structural integrity of the manhole. For any particular system the Contractor will submit manufacturer's technical data and application instructions. All OSHA regulations shall be met.

405-2. PAYMENT

Payment for liners shall be per vertical foot of liner installed from the base to the top of the installed liner. Liners will generally be installed to the top of existing or new corbels. No separate payment will be made for the following items: Bypass pumping; Traffic Control; Debris Disposal; Excavation, including necessary pavement removal; Shoring and/or dewatering; Structural fill; Backfill and compaction; Grout and mortar; Brick; Resetting of the manhole ring and cover; Pipe extensions and connectors necessary to the installation; Replacement of unpaved roadway and grass or shrubbery plot; Replacement of roadway base and asphalt surface; and Appurtenant work as required for a complete and operable system. The cost of such work shall be included in the pay item, per linear foot of liner.

405-3. FIBERGLASS LINER PRODUCTS

405-3.1. MATERIALS

405-3.1.1. LINERS

Liners shall be fiberglass engineered to meet or exceed AASHTO H 20 loading of 16,000 pound vertical wheel load. Manhole liners are to be of the integral corbel design unless otherwise stipulated. Manhole liners are to be as large in diameter as will fit into the existing manhole. The Contractor shall measure the existing manhole immediately prior to ordering materials and is solely responsible for the fitting of the liner. Contractor will be required to submit factory certification for fiberglass liners. The manhole liner shall meet all requirements of ASTM D 3753.

405-3.1.2. MORTAR

Mortar shall be composed of one part Portland Cement Type I and between two (2) and three (3) parts clean, well graded sand, 100% of which shall pass a No. 8 sieve.

405-3.1.3. GROUTING

Grouting shall be a concrete slurry of four (4) bags of Portland Cement Type II per cubic yard of clean, well graded sand.

405-3.2. INSTALLATION AND EXECUTION

Excavate an area around the top of the existing manhole sufficiently wide and deep for the removal of the manhole ring and corbel section.

Remove the frame and cover and corbel section without damaging the existing manhole walls. Care is to be taken not to allow brick or soil to fall into the existing manhole.

Remove or reinsert loose brick which protrude more than one inch from the interior wall of the manhole and which could interfere with the insertion of the fiberglass liner.

If the shelf of the manhole invert is not level around the perimeter, form a flat shelf with mortar.

Cut the liner to the proper length. Cutouts in the manhole shall be made to accommodate existing inlet and outlet pipes, drops and cleanouts.

Lower the liner into the existing manhole and set the bottom of the liner into quick setting grout. Obtain a good bottom seal to prevent the loss of grout from the annular space between the outside of the liner and the inside wall of the existing manhole. Set the liner as nearly vertical as possible. Pour six inches (6") of quick setting grout above the initial bottom seal in the annular void to insure an adequate bottom seal.

Bridge the gap from drops, laterals, force mains, cleanouts and all existing piping between the existing manhole wall and the new manhole liner with P.V.C. pipe. Use quick setting mortar to seal the area around the manhole liner and piping.

Fill the annular space between the manhole liner and the existing manhole interior walls with grout. Care must be taken not to deflect the manhole liner due to head pressure.

Set the existing manhole ring and cover using brick to make elevation adjustments as needed.

Observe water tightness and repair any visible leakage.

Backfill around the new liner and compact the backfill. Sod the disturbed area. Match existing sod.

Where manholes fall in paved areas, refer to Standard Detail Index 104, "Street and Driveway Replacement for Concrete and Asphaltic Concrete Surfaces".

405-4. STRONG SEAL MS-2 LINER PRODUCT SYSTEM

This specification shall govern all work to spray apply a monolithic fiber reinforced cementitious liner to the wall and bench surfaces of brick, concrete or any other construction material; Strong Seal MS 2 product.

Described are procedures for manhole preparation, cleaning, application and testing. The applicator must be approved, trained and certified as having successfully completed factory training. The applicator/contractor shall furnish all labor, equipment and materials for applying the Strong Seal MS 2 product directly to the contour of the manhole to form a structural cementitious liner of a minimum one half inch (1/2") thickness using a machine specially designed for the application. All aspects of the installation shall be in accordance with the manufacturer's recommendations and with the following specifications which includes:

1. The elimination of active infiltration prior to making the application.
2. The removal of any loose and unsound material.

3. The spray application of a pre blended cementitious mix to form a monolithic liner in a two (2) coat application.

405-4.1. MATERIALS

405-4.1.1. PATCHING MIX

Strong Seal shall be used as a patching mix according to the manufacturer's recommendations and shall have the following minimum requirements:

1. Compressive Strength (ASTM C-109)	15 min., 200 psi	6 hrs., 1,400 psi
2. Shrinkage (ASTM C-596)	28 days, 150 psi	
3. Bond (ASTM C-952)	28 days, 150 psi	
4. Cement	Sulfate resistant	
5. Density, when applied	105 +/- 5 pcf	

405-5. INFILTRATION CONTROL

Strong Plug shall be used to stop minor water infiltration according to the manufacturer's recommendations and shall have the following minimum requirements:

1. Compressive strength (ASTM C-109) - 600 psi, 1 hr.; 1000 psi 24 hrs.
2. Bond (ASTM C-952) - 30 psi, 1 hr.; 80 psi, 24 hrs.

405-6. GROUTING MIX

Strong-Seal Grout shall be used for stopping very active infiltration and filling voids according to the manufacturer's recommendations. The grout shall be volume stable and have a minimum twenty-eight (28) day compressive strength of 250 psi and a one (1) day strength of 50 psi.

405-7. LINER MIX

Strong Seal MS 2 shall be used to form the monolithic liner covering all interior manhole surfaces and shall have the following minimum requirements at twenty-eight (28) days:

1. Compressive strength (ASTM C 109)	3,000 psi
2. Tensile strength (ASTM C 496)	300 psi
3. Flexural strength (ASTM C 78)	600 psi
4. Shrinkage (ASTM C 596)	0% at 90% R.H.
5. Bond (ASTM C 952)	130 psi
6. Density, when applied	105 + pcf

Product must be factory blended requiring only the addition of water at the Project site. Bag weight shall be 50 to 51 pounds and contents shall have dry bulk density of 54 to 56 pounds per cubic foot. Fiberglass rods which are contained in the product shall be alkaline resistant and shall be one-

half inch (1/2") to five-eighths inch (5/8") long with a diameter of 635 to 640 microns. Products shall, in the unmixed state, have a lead content not greater than two percent (2%) by weight.

Strong Seal MS 2C shall be made with Calcium Aluminate Cement and shall be used according to the manufacturer's recommendations in applications where there is evidence of severe sulfide conditions.

Product must be factory blended requiring only the addition of water at job site.

Bag weight shall be 50 to 51 pounds and contents must have a dry bulk density of 50 to 56 pounds per cubic foot.

Cement content must be 65% to 75% of total weight of bag.

One bag of product when mixed with correct amount of water must have a wet density of 95 to 108 pounds per cubic foot and must yield a minimum of 0.67 cubic foot of volume.

Fiberglass rods must be alkaline resistant with rod lengths not less than one-half inch (1/2") in length nor greater than five-eighths inch (5/8") in height.

Product shall not include any basic ingredient that exceeds maximum allowable EPA limit for any heavy metal.

Manufacturer must provide MSDS sheets for product(s) to be used in reconstruction process.

A two (2) coat application of liner material will be required (no exceptions) with the first coat rough troweled to force materials into cracks and crevices to set the bond. The second coat to be spray applied to assure a minimum of one-half inch (1/2") thickness after troweling or brush finishing to a relatively smooth finish.

405-8. WATER

Shall be clean and potable.

405-9. OTHER MATERIALS

No other material shall be used with the mixes previously described without prior approval or recommendation from the manufacturer.

405-10. EQUIPMENT

A specially designed machine consisting of an optimized progressive cavity pump capable of producing a minimum of 250 psi pumping pressure, contra blend mixer with twin ribbon paddles with discharge, and an air system for spray application of product. Equipment must be complete with water storage and metering system. Mixer and pump is to be hydraulically powered. Equipment is to be mounted to heavy duty construction tandem axle road worthy trailer complete with electric brakes and running lights. Internal combustion engine must be included to power the hydraulic system and air compressor.

405-11. INSTALLATION AND EXECUTION

405-11.1. PREPARATION

1. Place boards over inverts to prevent extraneous material from entering the sewer lines and to prevent up stream line from flooding the manhole.
2. All foreign material shall be removed from the manhole wall and bench using a high pressure water spray (minimum 1,200 psi). Loose and protruding brick, mortar and concrete shall be removed using a mason's hammer and chisel and/or scraper. Fill any large voids with quick setting patching mix.
3. Active leaks shall be stopped using quick setting specially formulated mixes according to the manufacturer's recommendations. Some leaks may require weep holes to localize the infiltration during the application after which the weep holes shall be plugged with the quick setting mix prior to the final liner application. When severe infiltration is present, drilling may be required in order to pressure grout using a cementitious grout. Manufacturer's recommendations shall be followed when pressure grouting is required.
4. Any bench, invert or service line repairs shall be made at this time using the quick setting mix and following the manufacturer's recommendations.
5. After all preparation has been completed, remove all loose material.

405-11.2. MIXING

For each bag of product, use the amount of water specified by the manufacturer and mix using the Spray Mate Model 35C or 35D equipment for thirty (30) seconds to one (1) minute after all materials have been placed in the mixing hopper. Place the mix into the holding hopper and prepare another batch with timing such that the nozzleman can spray in a continuous manner without interruption until each application is complete.

405-11.3. SPRAYING

The surface, prior to spraying, shall be damp without noticeable free water droplets or running water. Materials shall be sprayed, applied to a minimum uniform thickness to insure that all cracks, crevices and voids are filled and a somewhat smooth surface remains after light troweling. The light troweling is performed to compact the material into voids and to set the bond. Not before the first application has begun to take an initial set (disappearance of surface sheen which could be fifteen (15) minutes to one (1) hour depending upon ambient conditions) is the second application made to assure a minimum total finished thickness of one-half inch (1/2"). The surface is then troweled to a smooth finish being careful not to over trowel so as to bring additional water to the surface and weaken it. A brush finish may be applied to the finished coat to remove trowel marks. Manufacturer's recommendation shall be followed whenever more than twenty-four (24) hours have elapsed between applications. The wooden bench covers shall be removed, and the bench is sprayed such that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than one-half inch (1/2"). The wall bench intersection shall be rounded to a uniform radius, the full circumference of the intersection. The final application shall have a minimum of four (4) hours cure time before being subjected to active flow.

405-11.4. PRODUCT TESTING

At some point during the application, at least four (4) two inch (2") cubes may be prepared each day or from every fifty (50) bags of product used, identified and sent, in accordance with the Owner's or Manufacturer's directions, for compression strength testing as described in ASTM C 109.

405-11.5. CURING

Ambient manhole conditions are adequate for curing so long as the manhole is covered. It is imperative that the manhole be covered as soon as possible after the application has been completed.

405-11.6. MANHOLE TESTING AND ACCEPTANCE

Manhole may be vacuum tested from the top of manhole frame to the manhole base. All pipes entering the manhole shall be plugged, taking care to securely place the plug from being drawn into the manhole. The test head shall be placed, and the seal inflated in accordance with the manufacturers' recommendations. A vacuum pump of ten inches (10") of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine inches (9"). The manhole shall pass if the time is greater than sixty (60) seconds for forty-eight inch (48") diameter, seventy five (75) seconds for sixty inch diameter (60"), and ninety (90) seconds for seventy-two inch (72") diameter manholes. If the manhole fails the initial test, necessary repairs shall be made. Retesting shall proceed until a satisfactory test is obtained. Tests shall be performed by the Contractor under the direction of the Project Engineer.

405-12. INNERLINE ENVIRONMENTAL SERVICES LINER PRODUCT SYSTEM

405-12.1. SCOPE

Materials and application procedures for manhole rehabilitation for the purpose of restoring structural integrity, providing corrosion resistance, and stopping infiltration by means of:

1. Hydraulic grouting, where required, as a preliminary measure to stop high volume infiltration.
2. Hydrophilic grouting (positive side waterproofing), where required, as follows:
 - a. Hydrophilic foam-injected through wall of manhole to fill voids, and/or
 - b. Hydrophilic gel-injected through wall of manhole to stop active leaks
3. Cementitious waterproofing with crystallization (negative side waterproofing)
4. Calcium aluminate cement lining, minimum of one-half inch (1/2")
5. Epoxy coating, minimum of thirty (30) dry mils

405-12.2. MATERIALS

405-12.2.1. REPAIRING CEMENT

A quick setting hydraulic cement compound shall be used to plug all visible minor leaks and to instantly stop major leaks, so that further waterproofing processes may proceed unhindered. The repairing cement shall be nonshrinking, nonmetallic, and noncorrosive. The compound shall have the following properties:

Set Time	1-3 minutes
Tensile Strength	1 day 510 psi
ASTM C 307	3 days 745 psi 28 days 855 psi
Compressive Strength	1 day 3,125 psi
ASTM -C 109	7 days 7,808 psi 28 days 9,543 psi
Flexural Strength ASTM C 78	1 day 410 psi 3 days 855 psi 28 days 1,245 psi

405-12.2.2. HYDROPHILIC GROUTING

Based on conditions found in and around the manhole, the applicator shall pressure inject either one or both of the following materials:

1. An expansive foam grout shall be used to stop major intrusion of water and fill cracks and voids behind the structure's surface. Physical properties are as follows:

Tensile Strength	380 psi	ASTM D 3574-86
Elongation	400%	ASTM D 3574-86
Bonding Strength	250-300 psi	

2. A hydrophilic gel grout shall be used for soil stabilization behind the manhole to prevent seepage, to provide a damming effect, and to place a hydrostatic barrier around exterior of manhole. Physical properties are as follows:

Density	8.75-9.17 lbs/gal	ASTM D-3574
Tensile Strength	150 psi	ASTM D- 412
Elongation	250%	ASTM D-3574
Shrinkage	Less than 4%	ASTM D-1042
Toxicity	Non Toxic	

405-12.2.3. WATERPROOFING

A waterproofing component based on the crystallization process shall be applied. The system combines cementitious and silicate based materials that are applied to negative side surfaces to seal and stop leakage caused by hydrostatic pressure. A combination of five coats (using three components-two powders and a special liquid) react with moisture and the constituents of the substrate to form the crystalline structure. It becomes an integral part of the structure and blocks the passage of water. With moisture present, the crystallization process will continue for

approximately six (6) months. Upon completion, the color will be light grey. Physical properties are as follows:

Slant/Shear bond Strength to Calcium Aluminate Cement ASTM C882 Modified	1,200 1,800 psi	
Tensile Strength (7 day cure)	380 psi (2.62 MPa)	at 100% RH
ASTM C 190	325 psi (2.24 MPa)	at 50% RH
Permeability (3 day cure) CRD 48 55	8.1x10 ⁻¹⁰ cm/sec to 7.6x10 ⁻¹¹ cm/sec	

405-12.2.4. CEMENT LINING

A self-bonding calcium aluminate cement shall be applied to restore structural integrity and provide corrosion resistance qualities. The cement (before adding fibers) shall have the following properties:

Calcium Aluminate Cement		12 Hrs	24 Hrs	7 Days	28 Days
Astm C 495	Compressive Strength, Psi	7000	11000	12000	13000
Astm C 293	Flexural Strength, Psi	1000	1500	1800	2000
Astm C 596	Shrinkage At 90% Humidity	--	<0.04	<0.06	<0.08
Astm C 666	Freeze-Thaw Aft 300 Cycle		No Damage		
Astm C 990	Pull - Out Strength		200 - 230 Psi Tensile		
Astm C 457	Air Void Content (7 Days)		3%		
Astm C 497	Porosity/Adsorption Test		4 - 5%		

Modules of Elasticity: 7.10 X 10 PSI after twenty-four (24) hours moist curing at 68 degrees Fahrenheit.

The calcium aluminate cement shall be reinforced with inert fibers which comply with ASTM C 1116 and ASTM C 1018, added at the rate of one (1) pound per cubic yard of concrete. The mixture shall be applied to a thickness of at least one half inch (1/2"), but no greater than two inches (2"). It will have a dark grey color.

405-12.2.5. EPOXY COATING

A high build, flexible waterproofing epoxy shall be applied to a minimum of thirty (30) dry mils. This epoxy will seal structure from moisture and provide protective qualities to the surface, including excellent resistance to chemical attack and abrasion. The epoxy shall be 100% solids, can be applied to damp surfaces, cures to a tile like finish, is easy to clean, and has no toxic fumes. Its uses include sewage treatment plants and other sewer structures. The epoxy shall have the following properties at 75 degrees Fahrenheit:

Mixing Ratio (Parts A:B), by volume	1:1
Color (other colors available on request)	Light Gray

Pot Life, hrs	1
Tensile Strength, psi, min	2,000
Tensile Elongation, %	10 –20
Water Extractable Substances, mg./sq. in., max	5
Bond Strength to Cement (ASTM 882) psi	1,800

405-12.2.6. CHEMICAL RESISTANCE

The sanitary sewer liner shall be resistant to: Alcohols, Trichloroethylene, Nitric Acid (3%), Jet Fuels, Water, Sulfuric Acid (3% 10%), MEK, Wine, Butyl Acetate, Beer, Lactic Acid (3%), Gasoline, Corn Oil, Aluminum Sulfate, Paraffin Oil, Vegetable Juice, Sodium Chloride, Motor Oil, Hydrochloric Acid (3%), and many others.

405-12.3. INSTALLATION AND EXECUTION

405-12.3.1. PROCEDURAL OVERVIEW

Work shall proceed as follows:

1. Remove rungs (steps), if desired by client.
2. Clean manhole and remove debris.
 - a. Plug lines and/or screen out displaced debris.
 - b. Apply acid wash, if necessary, to clean and degrease.
 - c. Hydroblast and/or sand blast structure.
 - d. Remove debris from work area.
3. Repair minor defects in walls, benches, and invert, as required, with repairing cement. (Note: Major structural repairs, such as rebuilding of benches, will also be made as required by client.)
4. Inject hydrophilic grout through all surfaces, as needed, to eliminate infiltration.
5. Apply cementitious/crystallization waterproofing agents to all surfaces, repeating steps as needed.
6. Spray and/or hand apply calcium aluminate cement lining to all surfaces.
7. Spray apply epoxy coating to all surfaces.

NOTE: Steps 1-5 shall be executed consecutively with minimal delays; calcium aluminate (Step 6) shall require a cure time of at least twenty-four (24) hours for needed adhesion of epoxy (Step 7) to cement lining.

405-12.3.2. PREPARATION

An acid wash shall be used (if needed) to clean and degrease. Then, if the client desires, the rungs shall be removed. Next, the entire structure is thoroughly water and/or sand blasted to remove any loose or deteriorated material. Care shall be taken to prevent any loose material from entering lines and other areas by either plugging the lines (where feasible) or inserting protective screens.

405-12.3.3. STRUCTURAL REPAIR

Hand place or spray apply hydraulic cement material as necessary to prepared surface to fill cracks and voids in structure. Allow twenty (20) minutes before applying waterproofing/crystallization.

405-12.3.4. INFILTRATION CONTROL

Pressure injection of hydrophilic gel and hydrophilic foam.

1. Drill five-eighths inch (5/8") holes through active leaking surface.
2. Install all zert fittings, as recommended by manufacturer.
3. Inject material until water flow stops.
4. Remove fittings (if necessary).

405-12.3.5. WATERPROOFING/CRYSTALLIZATION PROCESS

1. Apply a slurry coat of powder #1 to moist wall using a stiff brush, forming an undercoat.
2. Apply dry powder #2 to slurry coat by hand.
3. Brush or spray on sealing liquid during the application to penetrate and initiate the crystal forming process.
4. Repeat steps 2 and 3, until there are no visible leaks.
5. Apply powder #1 as an overcoat.
6. Allow one (1) hour to cure before applying cement lining.

405-12.3.6. CEMENT LINING

1. Dampen surface.
2. Mix material in mixer as recommended for spray or hand trowel application.
3. Apply cement until required build up of at least one half inch (1/2") (and no more than two inches (2")) has been achieved.
4. Trowel to smooth finish, restoring contours of manhole.
5. Texture brush surface to prepare for epoxy finish.
6. Allow for a twenty-four (24) hour cure time prior to epoxy coating.

NOTE: If conditions of heavy humidity prevail, a dry air blower shall be used to facilitate curing times.

405-12.3.7. EPOXY COATING

Spray apply epoxy coating using airless spraying equipment until surface is visibly covered and a thickness of at least thirty (30) mils has been achieved. Manhole may be safely entered after six (6) hours, as epoxy will be hardened. Full cure strength will be achieved at forty eight (48) hours.

405-12.3.8. CLEAN UP

The work crew shall remove all debris and clean work area.

405-12.3.9. MANHOLE TESTING AND ACCEPTANCE

Manhole may be vacuum tested from the top of manhole frame to the manhole base. All pipes entering the manhole shall be plugged, taking care to securely place the plug from being drawn into the manhole. The test head shall be placed, and the seal inflated in accordance with the manufacturer's recommendations. A vacuum pump of ten inches (10") of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine inches (9"). The manhole shall pass if the time is greater than sixty (60) seconds for a forty eight inch (48") diameter, seventy five (75) seconds for sixty (60) inches, and ninety (90) seconds for seventy-two inch (72") diameter manholes. If the manhole fails the initial test, necessary repairs shall be made. Retesting shall proceed until a satisfactory test is obtained. Tests shall be performed by the Contractor under the direction of the Project Engineer.

405-12.3.10. WARRANTY

All materials and workmanship shall be warranted to the Owner for a period of five (5) years, provided that all the above mentioned repair steps are used.

500 SERIES: POTABLE AND RECLAIMED WATER MAINS, FIRE LINES AND APPURTEANCES

501. SCOPE

The Contractor shall furnish all plant, labor, materials and equipment to perform all operations in connection with the construction of potable water mains, fire lines, reclaimed water mains and appurtenances including clearing, excavation, trenching, backfilling and clean up.

502. MATERIALS

502-1. GENERAL

Materials, equipment and supplies furnished and permanently incorporated into the project shall be of first quality in every respect and shall be constructed and finished to high standards of workmanship. Materials shall be suitable for service intended, shall reflect modern design and engineering and shall be fabricated in a first class workmanlike manner. All materials, equipment and supplies shall be new and shall have not been in service at any time previous to installation, except as required in tests or incident to installation. Machined metal surfaces, exposed bearings and glands shall be protected against grit, dirt, chemical corrosion and other damaging effects during shipment and construction.

502-2. PIPE MATERIALS AND FITTINGS

502-2.1. DUCTILE IRON PIPE

Ductile Iron Pipe shall be in accordance with ANSI/AWWA C151/A21.51 81 or latest revision. Pipe thickness class, wall thickness and working pressure shall conform to the following table:

Size	Class	Thickness (In.)	Rated Water Working Pressure (PSI)
4"	51	0.26	350
6"	50	0.25	350
8"	50	0.27	350
12"	50	0.31	350

The trench laying condition shall be Type 2, Flat bottom trench backfill lightly consolidated to centerline of pipe.

Pipe shall be manufactured in accordance with ANSI/AWWA C151/A21.51 81 or latest revision.

Pipe shall be asphalt coated on the outside and standard cement lined and sealed coated with approved bituminous seal coat in accordance with ANSI/AWWA C104/A21.4 80 or latest revision.

Ductile iron pipe shall be used for all hydrant installations and for fire line installations from the main to the backflow preventer.

502-2.2. POLYVINYL CHLORIDE (PVC) PIPE

Polyvinyl Chloride (PVC) Pipe four inch (4") through eight inch (8") shall be in accordance with ANSI/AWWA C900 or latest revision and the American Society for Testing Materials (ASTM) Standard D 2241 and PVC Resin Compound conforming to ASTM Specification D 1784.

Polyvinyl Chloride Pipe shall have the same O.D. as Cast and Ductile Iron Pipe and be compatible for use without special adapters with Cast Iron Fittings.

Pipe dimension ratio, working pressure and laying length shall conform to the following table:

Size	Dimension Ratio (OD/Thick.)	Rated Water Working Pressure (PSI)	Laying Length (Ft)
4	18	150	20
6	18	150	20
8	18	150	20

Pipe larger than eight inch (8") shall be ductile iron. The City Engineer reserves the right to require the use of ductile iron in sizes four inch (4") through eight inch (8") when needed due to laying conditions or usage.

The bell of four inch (4") and larger PVC pipe shall consist of an integral wall section with a solid cross section elastomeric ring which meets the requirements of ASTM D 1869.

Each length of pipe shall bear identification that will remain legible during normal handling, storage and installation and so designate the testing agency that verified the suitability of the pipe material for potable water service.

All polyvinyl chloride pipe shall be laid with two (2) strands of insulated twelve (12) gauge A.W.G. solid strand copper wire taped to the top of each joint of pipe with about eighteen inches (18") between each piece of tape. It is to be installed at every valve box through a two inch (2") PVC pipe to twelve inches (12") minimum above the top of the concrete slab. The two inch (2") PVC pipe shall be the same length as the adjustable valve box, and the two inch (2") PVC pipe shall be plugged with a two inch (2") removable brass plug with recessed nut. This wire is to be continuous with splices made only by direct bury 3M brand splice kit approved by the Engineer. This wire is to be secured to all valves, tees and elbows.

502-2.3. FITTINGS AND JOINTS

Fitting from four inch (4") through sixteen inch (16") in size will be compact ductile iron cast in accordance with ANSI/AWWA C153/A 21.53 with mechanical joint bells. Bolts, nuts and gaskets shall be in accordance with requirements of ANSI/AWWA C153/A 21.53. The working pressure rating shall be 350 psi. Ductile iron fittings shall be coated and lined in accordance with requirements of ANSI/AWWA C104/A21.4. Mechanical joint glands shall be ductile iron in accordance with ANSI/AWWA C111/A 21.11. When reference is made to ANSI/AWWA

Standards, the latest revisions apply. Only those fittings and accessories that are of domestic (USA) manufacture will be acceptable.

502-2.4. RESTRAINT

Restraint of plugs, caps, tees, bends, etc., shall be accomplished by the use of approved mechanical restraining rings or glands installed per manufacturer's recommendations. Hydrants shall be restrained by the use of swivel connecting joints. Restraining mechanical joint glands on hydrants shall be used only where hydrant runout length precludes the use of swivel joint connectors.

502-2.5. PIPE WITHIN CASING

All pipe placed within casings shall be slip joint ductile iron restrained by the use of restraining gaskets designed for use with the particular joint being installed and have properly sized casing spacers (Cascade Series) installed on the pipe so that the pipe will be centered within the casing. Each end of the casing shall be properly sealed to prevent the intrusion of soil, water, or debris within the casing itself. It shall be sealed by brick and mortar, cement or any approved method by the Engineer.

502-3. GATE VALVES

Discs of valves shall be operated by methods which will allow operation in any position with respect to the vertical. Gate valves for interior piping or exposed above grade outside structures, shall be hand wheel operated with rising stems. Valves four inches (4") and larger, buried in earth shall be equipped with two inch (2") square operating nuts, valve boxes and covers. Valves shall be fitted with joints suitable for the pipe with which they are to be used. The direction of opening for all valves shall be to the left (counter clockwise).

Unless otherwise shown or specified, valves for high pressure service shall be rated at not less than 150 psi cold water, non-shock.

The manufacturer's name and pressure rating shall be cast in raised letters on the valve body.

Installation shall be in accordance with good standard practice. Exposed pipelines shall be so supported that their weight is not carried through valves.

Two Inch (2") diameter and smaller are not allowed. These should be approved ball valves.

Three Inch (3") diameter are not allowed.

Gate Valves, four inch (4") to sixteen inch (16") diameter, inclusive, shall be resilient seated gate valves encapsulated with EPDM Rubber in conformance with ANSI/A.W.W.A. Standard Specification C509-515 latest revision. These valves shall include the following features consistent with C509-515, full opening unobstructed waterway, zero leakage at 200 psi differential pressure, all internal parts removable from bonnet without removing body from pressure main, corrosion resistant bronze or stainless steel nonrising stem with O-ring bonnet seal with epoxy coated inside and outside cast iron or ductile iron valve body.

Gate valves larger than sixteen inches (16") shall be suitable for the service intended and shall be resilient seated gate valves encapsulated with EPDM rubber in conformance with ANSI/AWWA. These valves shall include the following features consistent with C509-80, full opening unobstructed waterway, zero leakage at 200 psi differential pressure. All valves shall be equipped

with steel cut bevel gears, extended type gear case and rollers, bronze or babbitt tracks and scrapers and valved by-pass.

502-4. VALVE BOXES

Valve boxes shall be of standard extension design and manufacture and shall be made of cast iron. No PVC Risers or Derisers are allowed as part of a valve box assembly. They are to be three-piece valve box assemblies. The lower part of the assembly can be ordered in various heights to accommodate different depths. Suitable sizes of valve boxes and extension pieces shall be provided where shown. The valve box cover shall be of cast iron. Valve boxes and their installation shall be included in the bid price for valves. Refer to City Index No. 402; Sheet 1 of 5 & Sheet 2 of 5 for potable water valve pad detail, and City Index No. 502; Sheet 1 of 2 & Sheet 2 of 2 for reclaimed water valve boxes and pad detail.

502-5. HYDRANTS

No other hydrants, other than those listed below, may be used in extension to or replacement of the City of Clearwater potable water system:

- Kennedy Guardian #K 8ID Fire Hydrant,
- Mueller Super Centurion 25 Fire Hydrant
- AVK Nostalgic 2780.
- American Darling B-84-B.

No substitutions shall be allowed without the approval of the City of Clearwater.

Above hydrants shall be in accordance with the latest revision of the AWWA Specification C 502 and include the following modifications:

1. All shipments to be palletized and tailgate delivery.
2. Hydrants shall conform to A.W.W.A. Standard C-502 latest revision and must be UL/FM listed.
3. Hydrants shall be of the compression type, closing with line pressure.
4. The operating threads will be contained in an operating chamber sealed at the top and bottom with an O-ring seal. The chamber will contain a lubricating grease or oil.
5. Hydrants shall be of the traffic model breakaway type, with the barrel made in two sections with the break flange located approximately two inches (2") above the ground line. Breakaway bolts are not allowed.
6. Operating nut shall be of one-piece bronze or ductile iron construction.
7. A dirt shield shall be provided to protect the operating mechanism from grit buildup and corrosion due to moisture.
8. A thrust washer shall be supplied between the operating nut and stem lock nut to facilitate operation.
9. Operating nut shall be a #7 one and a half inch (1-1/2") pentagon nut.

10. Nozzles shall be of the tamper resistant, one quarter (1/4) turn type with O-ring seals or threaded into upper barrel. Nozzles shall be retained with a stainless steel locking device.
11. The main valve shall be of EPDM solid rubber.
12. The seat shall be of a bronze ring threaded to a bronze insert in the hydrant shoe, with O-rings to seal the barrel from leakage of water in the shoe.
13. The main valve stem will be 304 or higher grade stainless steel and made in two sections with a breakable coupling.
14. Hydrant shall have a six inch (6") Mechanical Joint epoxy lined elbow, less accessories.
15. Hydrant shall have a five and one quarter inch (5-1/4") valve opening, and shall be a left hand operation to open.
16. Hydrant shall be without drains.
17. Hydrant shall have two (2) two and one half inch (2-1/2") hose nozzles and one (1) four and one half inch (4-1/2") pumper nozzle. Threads shall be in accordance with the National Standard Hose Coupling Thread Specifications.
18. Hydrant body shall have a factory finish of yellow paint. All paints shall comply with AWWA standard C-502-85 or latest revision.

All hydrants will be shop tested in accordance with the latest AWWA Specification C 502.

Restrained joint assemblies shall be used which have bolted mechanical and swivel joints from the hydrant tee through to the hydrant. Restrained joints shall absorb all thrust and prevent movement of the hydrant.

All hydrants shall be provided with an auxiliary gate valve so that the water to the hydrant may be shut off without the necessity of closing any other valve in the distribution system.

No hydrants shall be installed on the reclaimed water system unless approved by the City of Clearwater's Engineering Department.

502-6. SERVICE SADDLES

Service saddles shall be used on all service taps to four inch (4") P.V.C. water main. The largest service connection allowable on four inch (4") main shall be one and one half inch (1-1/2"). Service saddles shall be used on all two inch (2") service connections to six inch (6") and larger mains. Service saddles (JCM 406 series or Ford FC 202 series) shall be wide bodied ductile iron with epoxy or nylon coating and shall have stainless steel straps.

502-7. TESTS, INSPECTION AND REPAIRS

1. All materials shall be tested in accordance with the applicable Federal, ASTM or AWWA Specification and basis of rejection shall be as specified therein. Certified copies of the tests shall be submitted with each shipment of materials.
2. All materials will be subject to inspection and approved by the Engineer after delivery; and no broken, cracked, misshapen, imperfectly coated or otherwise damaged or unsatisfactory material shall be used.

3. All material found during the progress of the work to have cracks, flaws, or other defects shall be rejected and promptly removed from the site.
4. If damage occurs to any pipe, fittings, valves, hydrants or water main accessories in handling, the damage shall be immediately brought to the Engineer's attention. The Engineer shall prescribe corrective repairs or rejection of the damaged items.

502-8. BACKFLOW PREVENTERS

The City of Clearwater owns and maintains all backflow prevention devices that are installed within their system. Therefore, any and all devices must be purchased from the City and installed by City work forces.

Backflow prevention devices installed on customer's service lines at the point of delivery (service connection) shall be of a type in accordance with AWWA specification C506 or latest revision.

Two (2) different types of backflow prevention devices are allowed. Type of device, and when required, is determined by the degree of hazard presented to the municipal water system from possible backflow of water within the customer's private system. The types of devices allowed are:

1. Double Check Valve Assembly - a device composed of two (2) single, independently acting, approved check valves, including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve.
2. Reduced pressure principle backflow prevention device - a device containing a minimum of two (2) independently acting, approved check valves, together with an automatically operated pressure differential relief valve located between the two check valves. The unit must include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with properly located test cocks.

502-9. TAPPING SLEEVES

Steel body tapping sleeves shall be JCM Industries Inc., JCM 412 or Smith-Blair 622. All steel body tapping sleeves shall have heavy welded ASTM A 285, Grade C steel body, stainless steel bolts, manufacturer's epoxy coated body, and three-quarter inch (3/4") bronze test plug.

502-10. BLOW OFF HYDRANTS

Blow offs are not allowed.

503. CONSTRUCTION

503-1. MATERIAL HANDLING

1. Pipe, fittings, valves, hydrants and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.

2. Pipe shall be so handled that the coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, the repair shall be made by the Contractor at their expense in a manner satisfactory to the Engineer.
3. In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

503-2. PIPE LAYING

503-2.1. ALIGNMENT AND GRADE

The pipe shall be laid and maintained to the required lines and grades with fittings, valves and hydrants at the required locations, spigots centered in bells; and all valves and hydrant stems plumb. All pipe installed shall be pigged and properly blown off before any pressure testing and sterilization of the pipe can be completed.

The depth of cover over the water main shall be a minimum of thirty inches (30") and a maximum of forty-two inches (42") below finished grade, except where approved by the Engineer to avoid conflicts and obstructions. Whenever obstructions not shown on the plans are encountered during the progress of the work and interfere to such an extent that an alteration of the plans is required, the Engineer shall have the authority to change the plans and order a deviation from the line and grade or arrange with the Owners of the structures for the removal, relocation, or reconstruction of the obstructions.

503-2.2. INSTALLATION

Proper implements, tools, and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient performance of the work. All pipe, fittings, valves and hydrants shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment in such a manner as to prevent damage to materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped in the trench.

If damage occurs to any pipe, fittings, valves, hydrants or accessories in handling, the damage shall be immediately brought to the Engineer's attention. The Engineer shall prescribe corrective repairs or rejection of the damaged items.

All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation in final position. Spigot ends shall be examined with particular care as this area is the most vulnerable to damage from handling. Defective pipe or fittings shall be laid aside for inspection by the Engineer who will prescribe corrective repairs or rejection.

All lumps, blisters, and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry and free from oil and grease before the pipe is laid. Pipe joints shall be made up in accordance with the manufacturer's recommendations.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into the pipe, the Engineer may require that, before lowering the pipe into the trench, a heavy, woven canvas bag of suitable size shall be placed over each end and left there until the

connection is to be made to the adjacent pipe. During laying operation, no debris, tools, clothing or other materials shall be placed in the pipe.

As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space.

At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the Engineer.

The cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or cement lining and so as to leave a smooth end at right angles to the axis of the pipe.

Pipe shall be laid with bell ends facing in the direction of laying unless directed otherwise by the Engineer. Where pipe is laid on the grade of ten percent (10%) or greater, the laying shall start at bottom and shall proceed upward with the bell ends of the pipe upgrade.

Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane to avoid obstructions or to plumb stems, or where long radius curves are permitted, the amount of deflection allowed shall not exceed that allowed under the latest edition of ANSI/AWWA C600-82 and C900 81 or latest revisions.

No pipe shall be laid when, in the opinion of the Engineer, trench conditions are unsuitable.

503-3. SETTING OF VALVES, HYDRANTS AND FITTINGS

503-3.1. GENERAL

Valves, hydrants, fittings, plugs and caps shall be set and joined to pipe in the manner specified above for installation of pipe.

503-3.2. VALVES

Valves in water mains shall, where possible, be located on the street property lines extended unless shown otherwise on the plans. All valves shall be installed at the tee in all cases, not to exceed eighteen inches (18") from the main line.

The valve box shall not transmit any shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed. Refer to City Index No. 402; Sheet 1 of 5 & Sheet 2 of 5 for potable water valve pad detail, and City Index No. 502; Sheet 1 of 2 & Sheet 2 of 2 for reclaimed water valve box and pad detail.

503-3.3. HYDRANTS

Hydrants shall be located as shown or as directed so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians. All hydrants located ten feet (10') or more from the main shall have a gate valve at the main and another gate valve at the hydrant location. No valve can be located anywhere in the hydrant run to circumvent the use of two valves. Refer to City Index No. 402; Sheet 4 of 4 for potable water hydrants. No hydrants shall

be installed on the reclaimed water system unless approved by the City of Clearwater's Engineering Department.

All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to, the curb, with the pumper nozzle facing the curb. Hydrants shall be set to the established grade, with nozzles as shown or as directed by the Engineer.

Each hydrant shall be connected to the main with a six inch (6") ductile iron branch controlled by an independent six inch (6") gate valve. If hydrant is placed greater than ten feet (10') from the main, an additional valve shall be installed at the hydrant and shall be included in the hydrant assembly cost.

503-3.4. ANCHORAGE

Movement of all plugs, caps, tees, bends, etc., unless otherwise specified shall be prevented by attaching approved mechanical restraining rings or glands and installed per manufacturer's recommendations. Hydrants shall be held in place with restrained swivel joints. Restraining mechanical joint glands on hydrants may be used where hydrant run out length precludes the use of hydrant connecting swivel joints.

Where special anchorage is required, such anchorage shall be in accordance with details shown on the plans.

503-4. CONNECTIONS TO EXISTING LINES

Where shown on the plans or directed by the Engineer, the water lines constructed under this contract shall be connected to the existing lines now in place. No such connection shall be made until all requirements of the specifications as to tests, flushing, and sterilization have been met and the plan of the cut in to the existing line has been approved by the Engineer.

Where connections are made between new work and existing work, the connections shall be made in a thorough and workmanlike manner using proper materials and fittings to suit the actual conditions. All fittings shall be properly sterilized, and pipe will be properly swabbed before connections to existing facilities. All connections to existing facilities will be completed under the supervision of the City of Clearwater.

504. TESTS

504-1. HYDROSTATIC TESTS

After installation of water mains, complete with all associated appurtenances including service taps, all sections of newly laid main shall be subject to a hydrostatic pressure test of 150 pounds per square inch for a period of two (2) hours and shall conform to AWWA C600 latest revision. All mains shall be pigged and flushed to remove all sand and other foreign matter before any hydrostatic test can or will be performed. The pressure test shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection and all necessary apparatus, together with operating personnel, shall be furnished by the Contractor at their expense.

The Contractor shall make all necessary taps into the pipe line. The Owner will furnish the water for the test. Before applying the test pressure, all air shall be expelled from the pipe line.

504-2. NOTICE OF TEST

The Contractor shall give the City of Clearwater's Owner Representative forty-eight (48) hours advance notice of the time when the installation is ready for hydrostatic testing.

505. STERILIZATION

Before the system is put into operation, all water mains and appurtenances and any item of new construction with which the water comes in contact, shall be thoroughly sterilized in accordance with AWWA C651.

505-1. STERILIZING AGENT

The sterilizing agent shall be liquid chlorine, sodium hypochlorite solution conforming to Federal Specification O-S-602B, Grade D, or dry hypochlorite, commonly known as "HTH" or "Perchloron".

505-2. FLUSHING SYSTEM

Prior to the application of the sterilization agent, all mains shall be thoroughly flushed. Flushing shall continue until a clean, clear stream of water flows from the hydrants. Where hydrants are not available for flushing, such flushing shall be accomplished at the installed blow off devices generally at the ends of the lines.

505-3. STERILIZATION PROCEDURE

All piping, valves, fittings and all other appurtenances shall be sterilized with water containing a minimum chlorine concentration of 75 ppm at any point in the system. This solution shall then remain in the distribution system for a minimum contact period of eight (8) hours and never more than twenty-four (24) hours before it is flushed out. All valves in the lines being sterilized shall be opened and closed several times during the contact period.

505-4. RESIDUAL CHLORINE TESTS

After the sterilization outlined above has been accomplished, flushing shall continue until free residual chlorine tests not less than 0.2 ppm nor more than 3.0 ppm. Residual chlorine test shall be in accordance with standard methods using a standard DPD test set.

505-5. BACTERIAL TESTS

After the water system has been sterilized and thoroughly flushed as specified herein, City of Clearwater Water Division or the Owner's Representative personnel shall take samples of water from remote points of the distribution system in suitable sterilized containers. The City shall forward the samples to a laboratory certified by the Florida State Board of Health for bacterial examination in accordance with AWWA C651. If tests of such samples indicate the presence of coliform organisms, the sterilization as outlined above shall be repeated until tests indicate the absence of such pollution. The bacterial tests shall be satisfactorily completed before the system is placed in operation and it shall be the Contractor's responsibility to perform the sterilization as outlined above.

If methods of sterilization differ materially from those outlined above, such methods shall be in accordance with directives of the Florida State Board of Health and all methods employed shall have the approval of that agency. Definite instructions as to the collection and shipment of samples shall be secured from the laboratory prior to sterilization and shall be followed in all respects. The City of Clearwater shall secure clearance of the water main from the Florida Department of Environmental Protection before the water distribution system is put into operation.

506. MEASUREMENT AND PAYMENT

506-1. GENERAL

Bids must include all sections and items as specified herein and as listed on the Bid Form. Payment for the work of constructing the project will be made at the unit price or lump sum payment for the items of work as set forth in the Bid, which payment will constitute full compensation for all labor, equipment, and materials required to complete the work. No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work:

- Clearing and grubbing
- Excavation, including necessary pavement removal
- Shoring and/or dewatering
- Structural fill
- Backfill
- Grading
- Tracer wire
- Refill materials
- Joint materials
- Tests and sterilization
- Appurtenant work as required for a complete and operable system.

506-2. FURNISH AND INSTALL WATER MAINS

506-2.1. MEASUREMENT

The quantity for payment shall be the actual number of feet of pipe of each size and type satisfactorily furnished and laid, as measured along the centerline of the completed pipe line, including the length of valves and fittings.

506-2.2. PAYMENT

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor, materials and equipment, and constructing the water mains completely and ready for operation.

506-3. FURNISH AND INSTALL FITTINGS

506-3.1. MEASUREMENT

The quantity for payment will be the number of tons, or decimal part thereof, of ductile iron fittings satisfactorily furnished and installed. Fitting weights shall be based on weights stamped on the body of the fitting, provided such weights do not exceed the theoretical weights by more than the tolerances permitted in ANSI/AWWA C110/A 21.10 82, latest revision, in which case, the weight will be based upon the theoretical weight plus the maximum tolerance.

506-3.2. PAYMENT

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor, materials, and equipment required to furnish and install ductile iron fittings.

506-4. FURNISH AND INSTALL GATE VALVES COMPLETE WITH BOXES AND COVERS

506-4.1. MEASUREMENT

The quantity for payment shall be the number of gate valves of each size satisfactorily furnished and installed.

506-4.2. PAYMENT

Payment of the applicable unit price for each size shall be full compensation for furnishing all plant, labor, material and equipment and installing the valve complete with box and cover.

506-5. FURNISH AND INSTALL FIRE HYDRANTS

506-5.1. MEASUREMENT

The quantity for payment shall be the number of fire hydrants satisfactorily furnished and installed. The only hydrants allowed to be installed in the City of Clearwater utilities system are listed in Article 501-2.5 of these Technical Specifications. No exceptions.

506-5.2. PAYMENT

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor, material and equipment and installing the fire hydrant completely including necessary thrust anchorage, six inch (6") pipe between the main and the hydrant and gate valve and valve box on the hydrant lead.

600 SERIES: STORMWATER

601. RAISING OR LOWERING OF STORM DRAINAGE STRUCTURES

Storm Drainage Structures shall be raised or lowered as indicated on the plans or as indicated by the Engineer.

601-1. BASIS OF PAYMENT

Payment, unless covered by a bid item, shall be included in the cost of the work.

602. UNDERDRAINS

The Contractor shall construct sub-surface drainage pipe as directed in the Scope of Work and detail drawings contained in the Project construction plans. In general, underdrain pipe shall be embedded in a bed of #6 FDOT aggregate, located behind the back of curb and aggregate surface covered with a non-degradable fibrous type filter material. A #57 aggregate may be used in lieu of #6 if it is washed and screened to remove fines. The aggregate may be stone, slag or crushed gravel. Unless otherwise noted on the plans, underdrain pipe shall be eight inches (8") in diameter, polyvinyl chloride pipe, in conformance with ASTM F-758 "Standard Specification For Smooth Wall PVC Underdrain Systems for Highways" latest revision, minimum stiffness of 46 in conformance with ASTM D2412, perforations in conformance with AASHTO M-189 described in FDOT Section 948-1.5 or latest revision and in conformance with ASTM D3034 - SDR 35.

Alternate acceptable underdrain pipe material is Contech A-2000 which is a rigid PVC pipe that exceeds ASTM Specifications D1784, minimum cell classification of 12454B or 12454C, manufactured per ASTM F949-93a, minimum pipe stiffness of 50 psi, with no evidence of splitting, cracking or breaking when pipe is tested in accordance with ASTM D2412 at 60% flattening and with a double gasket joint.

Underdrain pipe placed beneath existing driveways and roadways shall be non-perforated pipe with compacted backfill. All poly-chloride pipe which has become deteriorated due to exposure to ultra violet radiation shall be rejected. Where ductile iron pipe is specified, pipe material shall be the same as specified for potable water pipe in these technical specifications. All underdrain aggregate shall be fully encased in a polyester filter fabric "sock" (Mirafi 140-N or approved equal) per the construction detail drawings.

Filter aggregate for underdrains shall be as specified in the FDOT Standard Specifications, Section 901 – Course Aggregate, and shall be either #6 or #57. If #57 is used, it must be washed and screened to remove fines. The aggregate may be stone, slag, or crushed gravel.

602-1. BASIS OF MEASUREMENT

Measurement shall be the number of linear feet of eight inch (8") Sub-drain in place and accepted.

602-2. BASIS OF PAYMENT

Payment shall be based upon the unit price per linear foot for underdrain as measured above, which shall be full compensation for all work described in this section of the specifications and shall include all materials, equipment, and labor necessary to construct the underdrain (specifically underdrain pipe, aggregate and filter fabric). Underdrain clean-outs, sod, driveway, road and sidewalk restoration shall be paid by a separate bid item.

603. STORM SEWERS

All storm drain pipe installed within the City of Clearwater shall be steel reinforced concrete unless otherwise approved by the City Engineer. Said pipe shall comply with Section 430 of FDOT Standard Specifications.

All reinforced concrete pipe joints shall be wrapped with Mirafi 140N filter fabric or equivalent (as approved by the City Engineer). The cost for all pipe joint wraps shall be included in the unit price for the pipe.

All pipe, just before being lowered into a trench, is to be inspected and cleaned. If any difficulty is found in fitting the pieces together, this fitting is to be done on the surface of the street before laying the pipe, and the tops plainly marked in the order in which they are to be laid. No pipe is to be trimmed or chipped to fit. Each piece of pipe is to be solidly and evenly bedded, and not simply wedged up. Before finishing each joint, some suitable device is to be used to find that the inverts coincide and pipe is clear throughout.

603-1. TESTING AND INSPECTION

The Contractor shall take all precautions to secure a watertight sewer under all conditions.

The work under this Article shall include the internal video recording of new stormwater drainage pipes and drainage structures. The Contractor shall provide the City with a video of the completed stormwater drainage system, and a written report. The Contractor shall pump down and clean the pipes and drainage structures, to the satisfaction of the City, prior to video recording. The video shall be of the standard DVD format, in color, with all the pertinent data and observations recorded as audio on the DVD. The data should include:

- 1) An accurate recorded footage of the pipe lengths.
- 2) The drainage structure number and pipe size.
- 3) The run of the pipe and direction of flow (i.e. from S-1 to S-2).
- 4) Details of structural defects, broken pipes, sags, dips, misalignments, obstructions and infiltration.

The written report shall include the four (4) items listed previously.

All visual and video recording inspections shall be completed by the Contractor and be in accordance with Section 430-4.8 of FDOT Standard Specifications. Any deficient or damaged pipe discovered during the video recording process shall be the responsibility of the Contractor to repair or replace at their own expense within the contractual duration.

As a complement to the video report, the Contractor shall also provide digital photos of areas of concern in electronic (computer CD/DVD) and hard copy form (in color).

All known pipe breaks or those breaks discovered after the video inspection shall be repaired by the Contractor regardless of the test allowances. Faulty sections of drainage pipes or drainage structures rejected by the Engineer shall be removed and re-laid by the Contractor. Sections of pipe that are repaired, re-laid or replaced shall be accompanied with a corresponding post construction video inspection at the Contractor's expense. In all cases that a leak is found, re-inspection shall be required at the Contractor's expense, to confirm that the problem has been resolved.

603-2. BASIS OF PAYMENT

Payment shall be the unit price per linear foot for storm sewer pipe in place and accepted, measured along the centerline of the storm sewer pipe to the inside face of exterior walls of storm manholes or drainage structures and to the outside face of endwalls. Said unit price includes all work required to install the pipe (i.e. all materials, equipment, filter fabric wrap, gravel bedding if needed for stabilization, labor and incidentals, etc.).

604. STORM MANHOLES, INLETS, CATCH BASINS OR OTHER STORM STRUCTURES

For details on specific design of a type of storm structure refer to Index Numbers 201 to 231.

When required, inlets, catch basins or other structures shall be constructed according to the plans and applicable parts of the specifications, Articles 301, 302, 303 and 202, and as approved by the Engineer. Said structures shall be protected from damage by the elements or other causes until acceptance of the work.

604-1. BUILT UP TYPE STRUCTURES

Built up type manholes shall be constructed of brick with cast iron frames and covers as shown on Index Numbers 201. Invert channels shall be constructed smooth and semi circular in shape conforming to inside of adjacent sewer section. Changes in direction of flow shall be made in a smooth curve of as large a radius as possible. Changes in size and grade of channels shall be made gradually and evenly. Invert channels shall be built up with grout.

The storm structure floor outside of channels shall be made smooth and sloped toward channels.

Manhole steps shall not be provided. Joints shall be completely filled and the mortar shall be smoothed from inside of the manholes.

The entire exterior of brick manholes shall be plastered with a skim coat of one half inch (1/2") of mortar.

Brick shall be laid radially with every sixth course being a stretcher course.

In cases where a storm pipe extends inside a structure, the excess pipe will be cut off with a concrete saw and shall not be removed with a sledge hammer.

604-2. PRECAST TYPE

Precast manholes shall be constructed as shown on Index 202. The manhole base shall be set on a pad of dry native sand approximately five inches (5") thick to secure proper seating and bearing.

Precast Manholes and Junction Boxes: The Contractor may substitute precast manholes and junction boxes in lieu of cast in place units unless otherwise shown on the plans. Precast Inlets will not be acceptable. When precast units are substituted, the construction of such units must be in accordance with ASTM C 478, or the standard specifications at the manufacturer's option.

Precast structures must also meet the requirement that on the lateral faces, either inside or outside, the distance between precast openings for pipe or precast opening and top edge of precast structure be no less than wall thickness. A minimum of four courses of brick will be provided under manhole ring so that future adjustment of manhole lid can be accommodated. Manhole steps shall not be provided.

604-3. BASIS OF PAYMENT

Payment for Junction Boxes, Manholes or other structures shall be on a unit basis.

605. GABIONS AND MATTRESSES

605-1. MATERIAL

605-1.1. PVC COATED WIRE MESH GABIONS & MATTRESSES

605-1.1.1. GABION & MATTRESS BASKETS

Gabion and mattress baskets units shall conform to ASTM A975, be of non-raveling construction and fabricated from a double twist by twisting each pair of wires through three half turns developing the appearance of a triple twist. The galvanized wire core shall have a diameter of 0.106 inches.

605-1.1.2. PVC (POLYVINYL CHLORIDE) COATING

The coating shall be gray in color and shall have a nominal thickness of 0.0216 inches but not less than 0.015 inches in thickness. The protective PVC plastic shall be suitable to resist deleterious effects from exposure to light, immersion in salt or polluted water and shall not show any material difference in its initial compound properties. The PVC compound is also resistant to attack from acids and resistant to abrasion.

The PVC coating shall be extruded and adhere to the wire core prior to weaving. The PVC coated wire shall be woven into a double twisted hexagonal mesh having uniform openings of 3 1/4 inches by 4 1/2 inches. The overall diameter of the mesh wire (galvanized wire core plus PVC coating) shall be 0.146 inches. Selvedge and reinforcing wire shall be of heavily galvanized wire core, 0.134 inches in diameter, coated with PVC and having an overall diameter (galvanized wire core plus PVC coating) of 0.174 inches. Lacing and connecting wire shall be of soft tensile strength (75,000 PSI max), heavily galvanized wire core, 0.087 inches in diameter, coated with PVC and having an overall diameter (galvanized wire core plus PVC coating) of 0.127 inches. The use of alternate wire fasteners shall be permitted in lieu of tie wire providing the alternate fastener

produces a four (4) wire selvedge joint with a strength of 1200 lbs. per linear foot while remaining in a locked and closed condition. Properly formed interlocking fasteners shall be spaced from 4 to 6 inches and have a minimum 3/4 square inch inside area to properly confine the required selvedge wires.

605-1.1.3. GABION AND MATTRESS FILLER MATERIAL:

The filler stone shall be from a source approved by the Engineer before delivery is started. Representative preliminary samples of the stone shall be submitted by the contractor or supplier for examination and testing by the Engineer. The stone shall have a minimum specific gravity of 2.3 and be of a quality and durability sufficient to insure permanency in the structure. The individual stones shall be free of cracks, seams, and other defects that would tend to promote deterioration from natural causes, or which might reduce the stones to sizes that could not be retained in the gabion or mattress baskets.

All filler material shall be uniformly graded between 4 inch and 8 inch (equivalent spherical diameter) and shall be angular in form. Rounded stones shall not exceed 10% of the stone, by weight and 70% of the stone, by weight, shall exceed the largest dimension of the mesh opening. Crushed concrete shall not be used for filler material.

605-1.1.4. GEOTEXTILE FABRIC

Fabric shall conform to FDOT Standard Specifications, Section 985.

605-2. PERFORMANCE

Gabions and Reno Mattresses shall be installed according to the manufacturer's recommendations and as shown on the Drawings. Fabrication of gabion baskets shall be in such a manner that the sides, ends, lid and diaphragms can be assembled at the construction site into rectangular baskets of the sizes specified and shown on the Drawings. Gabions and mattresses shall be of single unit construction; the base, lid ends and sides shall be either woven into a single unit or one edge of these members connected to the base section of the gabion in such a manner that the strength and flexibility at the connecting point is at least equal to that of the mesh. Where the length of the gabion and mattress exceeds one and one-half its horizontal width, they shall be equally divided by diaphragms of the same mesh and gauge as the mattresses shall be furnished with the necessary diaphragms secured in proper position on the base so that no additional tying is required at this juncture. The wire mesh is to be fabricated so that it will not ravel. This is defined as the ability to resist pulling apart at any of the twists or connections forming the mesh when a single wire strand in a section of mesh is cut.

Each gabion or mattress shall be assembled by tying all untied edges with binding wire. The binding wire shall be tightly looped around every other mesh opening along seams so that single and double loops are alternated.

A line of empty gabions shall be placed into position according to the contract drawings and binding wire shall be used to securely tie each unit to the adjoining one along the vertical reinforced edges and the top selvedges. The base of the empty gabions placed on top of a filled line of gabions shall be tightly wire to the latter at front and back.

To achieve better alignment and finish in retaining walls, gabion stretching is recommended.

Connecting wires shall be inserted during the filling operation in the following manner: Gabions shall be filled to one third full and one connecting wire in each direction shall be tightly tied to opposite faces of each cell at one third height. The gabion shall then be filled to two thirds full and one connecting wire in each direction shall be tightly tied to opposite face of each cell at one two third height. The cell shall then be filled to the top.

Filler stone shall not be dropped more than twelve inches (12") into the gabions and mattresses.

Geotextile fabric shall be installed at locations shown in the Drawings. The surface to receive the cloth shall be prepared to a relatively smooth condition free of obstructions which may tear or cut the cloth. The panel shall be overlapped a minimum of 30 inches and secured against movement. Cloth damaged or displaced during installation, gabion work, or backfill shall be replaced or repaired to the satisfaction of the Engineer at the contractor's expense. The work shall be scheduled so that the fabric is not exposed to ultraviolet light more than the manufacturer's recommendations or five days, whichever is less.

In wet conditions, a base shall be established by spreading and compacting #57 stone prior to placement of geotextile fabric and gabions or mattresses.

700 SERIES: STREETS AND SIDEWALKS

701. RESTORATION OR REPLACEMENT OF DRIVEWAYS, CURBS, SIDEWALKS AND STREET PAVEMENT

Driveways, sidewalks, and curbs destroyed or damaged during construction shall be replaced and shall be the same type of material as destroyed or damaged, or to existing City Standards, whichever provides the stronger repair. All street pavement destroyed or damaged shall be replaced with the same type of material, to existing City Standards, unless the existing base is unsuitable as determined by the Engineer, then the base shall be replaced with City approved material. All replaced base shall be a minimum eight inches (8") compacted thickness, or same thickness as base destroyed plus two inches (2"), if over six inches (6"), and compacted to 98% of maximum density per AASHTO T-180.

Unless called for in the proposal as separate bid items, cost of the above work including labor, materials and equipment required shall be included in the bid price per linear foot of main or square yard of base.

The bid price for street pavement, restoration or replacement when called for in the proposals, shall include all materials, labor and equipment required to complete the work, and shall be paid for on a square yard basis. When replacement is over a trench for utilities, the area of replacement shall be limited to twice the depth of the cut plus twice the inside diameter of the pipe. All necessary restoration exceeding this footprint will be at the Contractor's expense.

The bid price for restoration or placement of driveways, curbs and sidewalks, when called for in the proposals, shall include all materials, labor and equipment required to complete the work and shall be paid for on the basis of the following units: Driveways, plant mix - per square yard; concrete - per square foot; curbs - per linear foot; sidewalk four inches (4") or six inches (6") thick - per square foot. Concrete walks at drives shall be a minimum of six inches (6") thick and be reinforced with 6/6 X 10/10 welded wire mesh (also see Articles 303 and 707). The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of all driveway, curb, sidewalk and street restoration and replacement work.

702. ROADWAY BASE AND SUBGRADE

702-1. BASE

This specification describes the construction of roadway base and subgrade. The Contractor shall refer to Section IV, Article 101 "Scope of Work" of the City's Contract Specifications for additional roadway base and subgrade items.

Roadway base shall be eight inches (8") compacted minimum thickness unless otherwise noted on the plans or directed by the Engineer. The subgrade shall be twelve inches (12") compacted minimum thickness with a minimum Limerock Bearing Ratio (LBR) of 40 unless otherwise noted on the plans or directed by the Engineer. The Contractor shall obtain from an independent testing laboratory a Proctor and an LBR for each type material. The Contractor shall also have an independent testing laboratory perform all required density testing. Where unsuitable material is

found within the limits of the base, Section IV, Article 204 (Unsuitable Material Removal) of the City's Technical Specifications will apply.

Once the roadway base is completed, it shall be primed that same day (unless otherwise directed by the Engineer) per Section 300 of FDOT's Standard Specifications. Repairs required to the base that result from a failure to place the prime in a timely manner shall be done to the City's satisfaction, and at the Contractor's expense. No paving of the exposed base can commence until the City approves the repaired base. The cost for placement of prime material shall be included in the bid item for base.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of all base and subgrade placement or reworking.

The following base materials are acceptable:

1. **Shell Base:** Shell base shall be constructed in accordance with Sections 200 and 913 of FDOT's Standard Specifications and shall have a minimum compacted thickness as shown on the plans. The shell shall be FDOT approved. The cost of the prime coat shall be included in the bid item price for base.
2. **Limerock Base:** Limerock base shall be constructed in accordance with Sections 200 and 911 of FDOT's Standard Specifications and shall have a minimum compacted thickness as shown on the plans. The limerock shall be from a FDOT approved certified pit. The cost of the prime coat shall be included in the bid item price for base.
3. **Crushed Concrete Base:** Crushed concrete base shall be constructed in accordance with Sections 204 and 901 of FDOT's Standard Specifications and shall have a minimum compacted thickness as shown on the plans. The crushed concrete material shall be FDOT approved. The Contractor shall provide certified laboratory tests on gradation to confirm that the crushed concrete base material conforms to the above specifications. The LBR shall be a minimum of 100. LBR and gradation tests shall be provided to the City by the Contractor once a week for continuous operations, or every 1000 tons of material, unless requested more frequently by the City Engineer or designee. The cost of the prime coat shall be included in the bid item price for base.
4. **Superpave Asphalt Base:** Full depth asphalt base shall be constructed in accordance with Section 234 of FDOT's Standard Specifications and shall have a minimum compacted thickness as shown on the plans. The cost for preparation, placement, and compaction shall be included in the per ton unit cost for asphalt unless otherwise noted in the project scope and plans. The cost of the tack coat shall be included in the bid item price for asphalt or base.
5. **Reclaimed Asphalt Pavement Base:** Reclaimed asphalt pavement base shall be constructed in accordance with Section 283 of FDOT's Standard Specifications and shall have a minimum compacted thickness as shown on the plans. As per FDOT Section 283, RAP material shall be used as a base course only on non-limited access paved shoulders, shared use paths, or other non-traffic bearing applications. The cost for preparation, placement, and compaction shall be included in the per ton unit cost for asphalt unless otherwise noted in the project scope and plans. The cost of the tack coat shall be included in the bid item price for asphalt or base.

702-1.1. BASIS OF MEASUREMENT FOR BASE AND REWORKED BASE

The basis of measurement shall be the number of square yards of base in place and accepted as called for on the plans. The maximum allowable deficiency shall be a half-inch (1/2"). Areas deficient in thickness shall either be fixed by the Contractor to within acceptable tolerance, or if so approved in writing by the City Engineer, may be left in place. No payment, however, will be made for such deficient areas that are left in place.

702-1.2. BASIS OF PAYMENT FOR BASE AND REWORKED BASE

The unit price for base shall include: all materials, roadbed preparation, placement, spreading, compaction, finishing, prime, base, subgrade (unless the plans specify a separate pay item), stabilization, mixing, testing, equipment, tools, hauling, labor, and all incidentals necessary to complete the work. Payment for asphalt base shall be included in the per ton unit cost for asphalt unless otherwise noted in the project scope and plans.

702-2. SUBGRADE

All subgrade shall be stabilized and constructed in accordance with Sections 160 and 914 of FDOT's Standard Specifications unless otherwise noted herein. All subgrade shall have a minimum compacted thickness of 12" unless otherwise shown on the plans or directed by the Engineer. If limerock is used, it shall also meet the requirements of Section 911 of FDOT's Standard Specifications. Where unsuitable material is found within the limits of the subgrade, Section IV, Article 204 (Unsuitable Material Removal) of the City's Contract Specifications will apply. The extent of said removal shall be determined by the Engineer in accordance with accepted construction practices. The Contractor is responsible for clearing, grading, filling, and removing any trees or vegetation in the roadbed below the subgrade to prepare it per the plans. The cost of this work shall be included in the unit price for base or subgrade. The Contractor shall obtain from an independent testing laboratory the bearing value of the subgrade after the materials are mixed for the stabilized subgrade.

702-2.1. BASIS OF MEASUREMENT

The basis of measurement shall be the number of square yards of stabilized subgrade in place and accepted as called for on the plans. The maximum allowable deficiency for mixing depth shall be per Section 161-6.4 of FDOT's Standard Specifications. Acceptable bearing values shall be per Section 160-7.2 of FDOT's Standard Specifications. Areas deficient in thickness or bearing values shall either be corrected by the Contractor to within acceptable tolerance, or if so approved in writing by the City Engineer, may be left in place. No payment, however, will be made for such deficient areas that are left in place.

702-2.2. BASIS OF PAYMENT

The unit price for subgrade shall include roadbed preparation, placement, spreading, compaction, finishing, testing, stabilizing, mixing, materials, hauling, labor, equipment and all incidentals necessary to complete the work. If no pay item is given, subgrade shall be included in the bid item for base.

703. ASPHALTIC CONCRETE MATERIALS

This specification is for the preparation and application of all asphaltic concrete materials on roadway surfaces unless otherwise noted.

703-1. ASPHALTIC CONCRETE

703-1.1. AGGREGATE

All aggregates shall be obtained from an approved FDOT source and shall conform to Sections 901 through 915 of FDOT's Standard Specifications.

703-1.2. BITUMINOUS MATERIALS

All bituminous materials shall conform to Section 916 of FDOT's Standard Specifications.

703-2. HOT BITUMINOUS MIXTURES – PLANT, METHODS, EQUIPMENT & QUALITY ASSURANCE

The plant and methods of operation used to prepare all asphaltic concrete and bituminous materials shall conform to the requirements of Section 320 of FDOT's Standard Specifications. Unless otherwise noted, all acceptance procedures and quality control/assurance procedures shall conform to the requirements of Section 330 of FDOT's Standard Specifications.

The City shall have the right to have an independent testing laboratory select, test, and analyze, at the expense of the City, test specimens of any or all materials to be used. The results of such tests and analyses shall be considered, along with the tests or analyses made by the Contractor, to determine compliance with the applicable specifications for the materials so tested or analyzed. The Contractor hereby understands and accepts that wherever any portion of the work is discovered, as a result of such independent testing or investigation by the City, which fails to meet the requirements of the Contract documents, all costs of such independent inspection and investigation as well as all costs of removal, correction, reconstruction, or repair of any such work shall be borne solely by the Contractor.

Payment reductions for asphalt related items shall be determined by the following:

1. Density per FDOT's Standard Specifications.
2. Final surface or friction course tolerances per FDOT's Standard Specifications.
3. Thickness will be determined from core borings. Deficiencies of $\frac{1}{4}$ " or greater shall be corrected by the Contractor, without compensation, by either replacing the full thickness for a length extending at least twenty-five feet (25') from each end of the deficient area, or when the Engineer allows for an overlay per FDOT's Standard Specifications. In addition, for excesses of one-quarter inch ($\frac{1}{4}$ ") or greater, the Engineer will determine if the excess area shall be removed and replaced at no compensation, or if the pavement in question can remain with payment to be made based on the thickness specified in the contract.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of the placement of all asphalt.

703-3. ASPHALT MIX DESIGNS AND TYPES

All asphalt mix designs, acceptance procedures and quality control/assurance procedures shall conform to the requirements of Sections 330 and 334 of FDOT Standard Specifications. All asphalt mix designs shall be approved by the Engineer prior to the commencement of the paving operation. Reclaimed asphalt pavement (RAP) material may be substituted for aggregate in the asphaltic concrete mixes up to 25% by weight.

703-4. ASPHALT PAVEMENT DESIGNS AND LAYER THICKNESS

All asphalt pavement designs shall conform to the following requirements:

Type SP/Spec 334-1

Type FC/Spec 337-8

Type B/Spec 234-8

ATPB/287-8

703-5. GENERAL CONSTRUCTION REQUIREMENTS

The general construction requirements for all hot bituminous pavements (including limitations of operations, preparation of mixture, preparation of surface, placement and compaction of mixture, surface requirements, correction of unacceptable pavement, Quality Control Testing, etc.) shall be in accordance with Section 330 of FDOT's Standard Specifications.

703-6. CRACKS AND POTHOLE PREPARATION

703-6.1. CRACKS

Cracks in roadway pavement shall be repaired prior to the application of asphaltic concrete by the following steps:

1. All debris to be removed from cracks by compressed air or other suitable method.
2. Apply a multiple layered application of bituminous binder and fine aggregate, as appropriate to the depth of the crack until the void of the crack is completely filled to the level of the surrounding roadway surface.
3. If application of asphaltic concrete is not to begin immediately after crack repair, cracks are to be sanded to prevent vehicular tracking.
4. Payment for crack filling shall be included in the unit price for asphaltic concrete.

703-6.2. POTHOLES

Potholes shall be repaired prior to the application of asphaltic concrete by the following steps:

1. All debris is to be removed from potholes by hand, sweeping, or other suitable method.
2. A tack coat is to be applied to the interior surface of the pothole.
3. The pothole is to be completely filled with asphaltic concrete, and thoroughly compacted.

4. Payment for pothole preparation shall be included in the unit price for asphaltic concrete.

703-7. ADJUSTMENT OF MANHOLES

The necessary adjustments of sanitary sewer and storm drain manholes and appurtenances shall be accomplished by the Contractor. The Contractor shall be paid on a per unit basis for each item.

The use of manhole adjustment risers is acceptable under the following conditions:

The riser shall meet or exceed all FDOT material, weld, and construction requirements. The riser shall consist of an A-36 hot rolled steel meeting or exceeding the minimum requirements of A.S.T.M. A-36. The riser shall be a single piece with a stainless steel adjustment stud and shall have a rust resistant finish. The use of cast iron, plastic, or fiberglass risers is not permitted. In addition, the installation of each riser shall be per manufacturer's specifications. Each manhole shall be individually measured, and each riser shall be physically marked to ensure that the proper riser is used. Also, the ring section shall be cleaned, and a bead of chemically resistant epoxy applied to the original casting, prior to installation of the riser. It is the Contractor's responsibility to ensure that the manholes are measured, the risers are physically marked, the ring sections are thoroughly cleaned, and that the epoxy is properly applied prior to installation of each riser.

If risers are not used, the adjustment of manholes shall be accomplished by the removal of pavement around manhole, grade adjustment of ring and cover, and acceptable replacement and compaction of roadway materials prior to paving. A full depth backfill using asphalt is acceptable. The use of Portland cement for backfill is not acceptable.

All manhole and valve adjustments shall be accomplished prior to the application of final asphaltic concrete surface. Unless otherwise noted in the specs or on the plans, the paving operation shall occur within seven (7) calendar days from the completion of the adjustment. On arterial roadways, the manholes are to be ramped with asphalt during the time period between initial adjustment and final resurfacing. Water and gas valves, sewer cleanouts, valve boxes, tree aeration vents, etc., will be adjusted by the Contractor with the cost for this work to be included in the unit cost of the asphalt. Care must be taken around said appurtenances to ensure that they are not paved over. It is the Contractor's responsibility to inform the owners of all utilities of impending work and coordinate their adjustments, so they are completed prior to the scheduled paving.

703-8. ADDITIONAL ASPHALT REQUIREMENTS

1. All impacted radius returns within project limits shall be paved unless otherwise directed by the Construction Inspector or Engineer, with payment to be included in the per ton bid item for asphalt.
2. All pavement markings impacted by placement of asphalt shall be replaced prior to the road being open to traffic unless otherwise noted in the contract scope and plans.
3. All project related debris shall be hauled off the job site by the Contractor in a timely manner and at their own expense in conformance with all regulatory requirements.
4. The Contractor shall pay particular attention to sweeping when paving. Prior to paving, all construction areas shall be swept with a Municipal type sweeper (either vacuum or mechanical type) that picks up and hauls off, dust and dirt. The sweeper must be equipped

with its own water supply for pre-wetting to minimize dust. Moreover, the Contractor shall sweep debris off of sidewalks, driveways, curbs and roadways each day before leaving the job site.

5. The application of tack and prime coats (either required or placed at the Engineer's discretion) shall be placed per Section 300 of FDOT's Standard Specifications. Tack shall also be applied to the face of all curbs and driveways. The cost (including heating, hauling and applying) shall be included in the per ton bid item for asphalt, unless otherwise noted in the project scope and plans.
6. Leveling course and spot patching shall be applied to sections of the road as noted on the plans, or as directed by the Engineer, per Section 330 of FDOT's Standard Specifications. The cost shall be included in the per ton unit cost for asphalt, unless otherwise noted in the project scope and plans.
7. If an asphalt rubber binder is required, it shall conform to the requirements of Section 336 of FDOT's Standard Specifications.
8. On all streets with curb and gutter, the final compacted asphalt shall be one-quarter inch ($\frac{1}{4}$ ") above the lip or face of said curb per City Index 101.

703-9. BASIS OF MEASUREMENT

Basis of measurement will be the number of tons of asphaltic concrete completed, in place and accepted. Truck scale weights will be required for all asphaltic concrete used.

703-10. BASIS OF PAYMENT

Payment shall be made at the contract unit price for asphaltic concrete surface as specified and measured above. This price shall include all materials, preparation, hauling, placement, tack and/or prime coat either required or placed at Engineer's discretion, leveling, spot patching, filling of cracks, pothole repair, sweeping, debris removal, labor, equipment, tools, and incidentals necessary to complete the asphalt work in accordance with the plans and specifications.

704. ADJUSTMENT TO THE UNIT BID PRICE FOR ASPHALT

When this Article applies to the contract, the unit bid price for asphalt will be adjusted in accordance with the following provisions:

1. Price adjustment for asphalt shall only be made when the current FDOT Asphalt Price Index varies more than ten percent (10%) from the bid price at the time of the bid opening.
2. The Bituminous Material Payment Adjustment Index published monthly by the FDOT shall be used for the adjustment of unit prices. This report is available on FDOT's internet site. The address is: <http://www.dot.state.fl.us/construction/fuel&bit/fuel&bit.shtm>. For additional information, call FDOT at (850) 414-4252.
3. The FDOT Payment Adjustment Index in effect at the time of the bid opening will be used for the initial determination of the asphalt price.
4. The FDOT Payment Adjustment Index in effect at the time of placement of the asphalt will be used for payment calculation.

5. The monthly billing period for contract payment will be the same as the monthly period for the FDOT Payment Adjustment Index.
6. No adjustment in bid prices will be made for either tack coat or prime coat.
7. No price adjustment reflecting any further increases in the cost of asphalt will be made for any month after the expiration of the allowable contract time.
8. The City reserves the right to make adjustments for decreases in the cost of asphalt.

705. ASPHALT DRIVEWAYS

New driveways or existing asphalt driveways that must be altered for project construction shall be constructed or replaced in accordance with the specifications for paving the street with the exception that the base shall be six inches (6"). Remove only enough to allow adequate grade for access to the street. Use Article 703 Asphaltic Concrete, of these Technical Specifications, as specified for the street paving.

When the finished surface of the existing drive is gravel, replacement shall be of like material. Payment shall be the same as Asphalt Driveways.

705-1. BASIS OF MEASUREMENT

Measurement shall be the number of square yard of Asphalt Driveways in place and accepted.

705-2. BASIS OF PAYMENT

Payment shall be the unit price per square yard for Asphalt Driveways as measured above, which price shall be full compensation for all work described in this section of the specifications and shall include all materials, equipment, tools, labor and incidentals necessary to complete the work.

706. CONCRETE CURBS

Concrete Curbs shall be constructed to the line, grade and dimensions as shown on the plans. Unless otherwise noted, all concrete curbs shall have fiber mesh reinforcement and have a minimum strength of 3000 psi at 28 days. Expansion joints shall be placed at intervals not to exceed 100 feet, and scored joints shall be placed at intervals not to exceed ten feet (10'). In addition, all the requirements of City Articles 301, 302 and 303 shall also apply. The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of the placement of all concrete curbs.

706-1. BASIS OF MEASUREMENT

The basis of measurement shall be linear feet of curb in place and accepted.

706-2. BASIS OF PAYMENT

Payment shall be the unit price per linear foot of curb, which price shall be full compensation for all work described in this and other applicable parts of the specifications and shall include all materials, equipment, tools, labor and incidentals necessary to complete the work.

707. CONCRETE SIDEWALKS AND DRIVEWAYS

707-1. CONCRETE SIDEWALKS

Concrete sidewalks shall be constructed to the line, grade and dimensions as shown on the plans or herein specified. Unless otherwise noted, all concrete sidewalks shall have fiber mesh reinforcement and have a minimum strength of 3000 psi at 28 days. Unless otherwise specified, all concrete sidewalks shall have a minimum width of four feet (4'). Concrete sidewalks shall have a minimum thickness of four inches (4"), except at driveway crossings where a minimum thickness of six inches (6") is required. Also, 6/6 X 10/10 welded wire mesh reinforcement is required for all sidewalk that crosses driveways. The welded wire mesh shall be positioned in the middle to upper third of the placement. No compensation shall be given if the welded wire mesh is not properly placed. Expansion joints shall be placed at intervals of not more than 100 hundred feet, and scoring marks shall be made every five feet (5'). Concrete shall be poured only on compacted subgrade. In addition, all the requirements of Articles 301, 302 and 303 of these Technical Specifications shall also apply.

707-2. CONCRETE DRIVEWAYS

Concrete driveways, whether new construction or replacement, shall be a minimum of six inches (6') in thickness with 6/6 x 10/10 welded wire mesh reinforcement and a minimum horizontal distance between expansion joints of no less than four feet (4') measured in any direction. The welded wire mesh shall be positioned in the middle to upper third of the placement. No compensation shall be given if the welded wire mesh is not properly placed. Concrete shall be poured only on compacted subgrade. In addition, all the requirements of Articles 301, 302 and 303 of these Technical Specifications shall also apply.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of the placement of all concrete sidewalks and driveways.

707-3. CONCRETE CURB RAMPS

The contractor is responsible for constructing ADA compliant concrete curb ramps per the plans and installing detectable warning surfaces on said ramps as called for in the plan set. Concrete curb ramps and detectable warning surfaces are to be constructed per FDOT Standards and Specifications.

707-4. BASIS OF MEASUREMENT

The basis of measurement shall be the number of square feet of four inch (4") concrete sidewalk, six inch (6") concrete sidewalk, and six inch (6") concrete driveways in place and accepted.

707-5. BASIS OF PAYMENT

Payment shall be the unit price per square foot for each item as measured above, which shall be full compensation for all work described in this section and other applicable parts of the specifications and shall include all materials, equipment, tools, welded wire mesh where required, labor and incidentals necessary to complete the work.

708. MILLING OPERATIONS

708-1. EQUIPMENT, CONSTRUCTION & MILLED SURFACE

Unless otherwise noted in the specs, plans or this Article, the milling operation shall be performed in accordance with Section 327 of FDOT's Standard Specifications. The Contractor shall notify the City of Clearwater Project Representative a minimum of twenty-four (24) hours in advance of all milling.

708-2. ADDITIONAL MILLING REQUIREMENTS

1. If the milling machine is equipped with preheating devices, the Contractor is responsible to secure any necessary permits, and for complying with all local, state and federal environmental regulations governing operation of this type of equipment.
2. All milled surfaces must be repaved within seven (7) days from the time it was milled, unless otherwise noted in the contract documents.
3. Prior to paving, all milled areas shall be swept with a Municipal type sweeper either of the vacuum or the mechanical type that picks up and hauls off, dust and dirt. The sweeper must be equipped with its own water supply for pre-wetting to minimize dust. Moreover, the Contractor shall sweep debris off of sidewalks, driveways and curbs in addition to the roadways before leaving the job site.
4. In cases where concrete valley swales are present, the adjoining pavement shall be milled to allow for the new asphalt grade to be flush with the concrete surface.
5. The Contractor shall be responsible for removing any asphalt that remains in the curb line and/or median curbs after the milling operation of a street is complete. The cost of this removal shall be included in the bid item for milling.
6. All radius returns on streets to be milled shall also be milled unless otherwise directed by the Engineer, with payment to be included in the bid item for milling.
7. Any leveling or base replacement required after milling shall be applied to sections of the road as noted on the plans, or directed by the Engineer, per Section 330 of FDOT's Standard Specifications. The cost shall be included in the per ton unit cost for asphalt, unless otherwise noted in the project scope and plans.
8. Any roadway base material exposed as a result of the milling operation shall be primed that same day (unless otherwise directed by the Engineer) per Section 300 of FDOT's Standard Specifications. Repairs required to said base that result from a failure to place the prime in a timely manner shall be done to the City's satisfaction, and at the Contractor's expense. No paving of the exposed base can commence until the City approves the repaired base. The cost of said prime shall be included in the bid item for milling.
9. Prior to the placement of asphalt, the face of all curbs and driveways shall be tacked after the milling operation is complete.

708-3. SALVAGEABLE MATERIALS

Unless otherwise specified, all salvageable materials resulting from milling operations shall remain the property of the City. The transporting and stockpiling of salvageable materials shall be performed by the Contractor. The Contractor shall contact the City Project Representative to schedule delivery of material at least 48 hours prior to starting work.

708-4. DISPOSABLE MATERIALS

All surplus materials not claimed by the City shall become the responsibility of the Contractor. The Contractor shall dispose of the material in a timely manner and in accordance with all regulatory requirements in areas provided by the Contractor at no additional expense to the City.

708-5. ADJUSTMENT AND LOCATION OF UNDERGROUND UTILITIES

All private utilities and related structures requiring adjustment shall be located and adjusted by their owners at the owner's expense. City-owned utilities and structures shall be located by the Owner/City and adjusted by the contractor. The Contractor shall arrange their schedule to allow utility owners the time required for such adjustments (minimum 48 hours' notice per State Statute). All utility adjustments shall be completed prior to the commencement of milling and resurfacing operations.

708-6. ADJUSTMENT OF UTILITY MANHOLES

The necessary adjustments of sanitary sewer and stormwater utility manholes and appurtenances shall be accomplished by the Contractor in accordance with Section IV, Article 703-7 of the City's Technical Specifications.

708-7. TYPES OF MILLING

There are two types of milling used by the City:

- A. Wedge – This will consist of milling a six foot (6') wide strip along the curb line of the pavement adjacent to the curb so the new asphalt will align with the original curb height and pavement cross section.
- B. Full Width – This will consist of milling the entire roadway (i.e. curb line/edge of pavement to curb line/edge of pavement). All existing horizontal and vertical geometry shall remain unless otherwise indicated or approved by the Engineer.

708-8. MILLING OF INTERSECTIONS

Intersections, as well as other areas (including radius returns) are to be milled and repaved to restore and/or improve the original drainage characteristics. Said work should extend approximately fifty (50) to one hundred (100) feet in both directions from the low point of the existing swale.

708-9. BASIS OF MEASUREMENT

The quantity to be paid for will be the area milled, in square yards, completed and accepted.

708-10. BASIS OF PAYMENT

The unit price for milling shall include: all materials, preparation, hauling, transporting and stockpiling of salvageable materials, disposal of all surplus material, any required milling of radius returns and intersections, prime and/or tack coat either required or placed at Engineer's discretion, removal of asphalt from curbs, sweeping, labor, equipment, and all incidentals necessary to complete the milling in accordance with the plans and specifications.

800 SERIES: TRAFFIC SIGNALS, SIGNS AND MARKINGS

801. TRAFFIC SIGNAL EQUIPMENT AND MATERIALS

All traffic signal work shall be performed per FDOT's Standard Specifications (Sections 603 through 699), unless otherwise specified in the contract documents and plans.

This specification includes, but is not limited to, the following items: all necessary equipment, materials, guaranties, acceptance procedures, signal timings, field tests, grounding, conduit, signal and interconnect cable, span wire assemblies, pull and junction boxes, electrical power service assemblies, poles, signal assemblies, pedestrian assemblies, inductive loop detectors, pedestrian detectors, traffic controller assemblies, controller cabinets and accessories, removal of existing traffic signal equipment, and internally illuminated signs.

All traffic signal installations shall be mast arms and conform to the requirements of FDOT's Mast Arm Assembly standard and shall be signed and sealed by a professional engineer registered in the State of Florida. All mast arm calculations, as well as the geotechnical report, shall also be signed and sealed by a professional engineer registered in the State of Florida. All mast arm colors shall be determined and approved by the City prior to ordering from the manufacturer.

All traffic signal indicators for vehicles and pedestrians shall be LEDs and, approved by both the City and FDOT. In addition to this, all pedestrian signal indicators shall utilize countdown features.

Contractor changes to the operation of an existing signal is prohibited unless directed by the City's Traffic Engineering Division.

All damaged inductive loop detectors shall be restored by the contractor per FDOT Index 17781.

801-1. BASIS OF MEASUREMENT AND PAYMENT

The basis of measurement and payment shall be specified in the contract documents and/or plans and shall include all equipment, preparation, materials, testing and incidentals required to complete the work per the plans.

802. SIGNING AND MARKING

All signing and marking work shall be performed per FDOT's Standard Specifications, unless otherwise specified in the contract documents and plans.

This specification includes the following work: RPM's (Section 706), painted traffic stripes and markings (Section 710), thermoplastic stripes and markings (Section 711) and tubular delineators/flex posts (Sections 705 and 972).

The Contractor is responsible to ensure that striping is correctly placed. Errors in striping or markings shall be "blacked-out" with paint, unless otherwise directed by the Engineer. No payment will be made for these incorrect or "blacked-out" areas. Omissions in striping or markings shall be corrected to the City's satisfaction prior to any payment being made.

The Contractor is responsible for restoring all striping in paint and reflective beading per the FDOT indices mentioned above. The City's Traffic Engineering department shall follow up with thermoplastic striping at a later date unless otherwise specified.

802-1. BASIS OF MEASUREMENT AND PAYMENT

The basis of measurement and payment shall be specified in the contract documents and/or plans and shall include all equipment, preparation, materials and incidentals required to complete the work per the plans.

803. ROADWAY LIGHTING

All roadway lighting shall be constructed per Sections 715 and 992 of FDOT's Standard Specifications, unless otherwise specified in the contract documents and plans.

803-1. BASIS OF MEASUREMENT AND PAYMENT

The basis of measurement and payment shall be specified in the contract documents and/or plans and shall include all equipment, materials, testing and incidentals required to complete the work per the plans.

900 SERIES: LANDSCAPING/RESTORATION

901. WORK IN EASEMENTS OR PARKWAYS

Restoration is an important phase of construction, particularly to residents affected by the construction progress.

The Contractor will be expected to complete restoration activities within a reasonable time following primary construction activity. Failure by the Contractor to accomplish restoration within a reasonable time shall be justification for a temporary stop on primary construction activity or a delay in approval of partial payment requests.

Reasonable care shall be taken for existing shrubbery. Contractor shall replace all shrubbery removed or disturbed during construction. No separate payment shall be made for this work.

The Contractor shall make provision and be responsible for the supply of all water, if needed, on any and all phases of the contract work. The Contractor shall not obtain water from local residents or businesses except as the Contractor shall obtain written permission.

Reuse water is available for the Contractor's use without charge from the City's Water Reclamation Facilities, provided the water is used on City of Clearwater contractual work. Details for Contractor to obtain and reuse water from the Water Reclamation Facilities will be coordinated at the pre-construction conference. The Contractor's use of reuse water must conform to all regulatory requirements.

902. GENERAL PLANTING SPECIFICATIONS

902-1. IRRIGATION

902-1.1. DESCRIPTION

- A. The work specified in this Section consists of the installation of an automatic underground irrigation system as shown or noted in the plans. Provide all labor, materials, equipment, services and facilities required to perform all work in connection with the underground sprinkler irrigation system, complete, as indicated on the drawings and/or specified. Work noted as "NIC", "existing", or "by others" is not included in this pay item.
- B. The irrigation plans are schematic in nature. Valves and pipes shall be located in the turf/landscape areas except at road/paving crossings. All piping under paving shall be sleeved. Changes in the irrigation system layout shall be modified with the approval of the Engineer.

902-1.1.1. QUALITY ASSURANCE

- A. The irrigation work shall be installed by qualified personnel or a qualified irrigation subcontracting company that has experience in irrigation systems of similar size, scope, mainline, system pressure, controls, etc.
- B. All applicable ANSI, ASTM, FED.SPEC. Standards and Specifications, and all applicable building codes and other public agencies having jurisdiction upon the work shall apply.

- C. Workmanship: All work shall be installed in a neat, orderly and responsible manner with the recognized standards of workmanship. The Engineer reserves the right to reject material or work which does not conform to the contract documents. Rejected work shall be removed or corrected at the earliest possible time at the Contractor's expense.
- D. Operation and Maintenance Manuals: The Contractor shall prepare and deliver to the Engineer within ten (10) calendar days prior to completion of construction a minimum of three (3) hard cover binders, with three rings, containing the following information:
 - 1. Index sheet stating the Contractor's address and business telephone number, twenty-four (24) hour emergency phone number, person to contact, list of equipment with name(s) and address(es) of local manufacturer's representative(s) and local supplier where replacement equipment can be purchased.
 - 2. Catalog and part sheet on every material and equipment installed under this contract.
 - 3. Complete operating and maintenance instructions on all major equipment.
 - 4. Provide the Engineer and the City of Clearwater maintenance staff with written and "hands on" instructions for major equipment and show evidence in writing to the Engineer at the conclusion of the project that this service has been rendered.
 - a. Four-hour instruction (minimum) for the Drip Emitter equipment operation and maintenance.
 - b. Two-hour instruction (minimum) for automatic control valve operation and maintenance.

902-1.1.2. PROJECT CONDITIONS

- A. The Contractor shall coordinate the work with all other trades, all underground improvements, the location and planting of trees and all other planting. Verify planting requiring excavation of twenty-four inch (24") diameter and larger with the Engineer prior to installation of main lines.
- B. Provide temporary irrigation at all times to maintain plant materials.
- C. The Contractor is responsible to maintain the work area and equipment until final acceptance by the Engineer. Repairs and replacement of equipment broken, stolen, or missing as well as regular maintenance operations shall be the obligation of the Contractor.
- D. The Contractor shall submit a traffic control plan (per FDOT specifications) to the Engineer prior to initiating construction on the site. The Contractor shall be responsible for the maintenance of traffic signs, barriers, and any additional equipment to comply with the FDOT standards and to ensure the safety of its employees and the public.

902-1.1.3. WARRANTY

- A. The Manufacturer(s) shall warrant the irrigation system components to give satisfactory service for one (1) year period from the date of acceptance by the Engineer and the City of Clearwater. Should any problems develop within the warranty period due to inferior or faulty materials, they shall be corrected at no expense to the City of Clearwater.

902-1.2. PRODUCTS

902-1.2.1. GENERAL

- A. All materials throughout the system shall be new and in perfect condition. No deviations from the specifications shall be allowed except as noted.

902-1.2.2. PIPING

- A. The irrigation system pipe shall be as stated herein and shall be furnished, installed and tested in accordance with these specifications.
- B. All pipe is herein specified to be Polyvinyl Chloride (PVC) Pipe, 1120, Schedule 40, conforming to ASTM D2665 and D1785.
- C. All nipples, pipe connections, bushings, swing joints, connecting equipment to the mainline is required to be threaded Polyvinyl Chloride (PVC) Pipe, Schedule 80.

902-1.2.3. PIPE FITTINGS

- A. All pipe fittings for Schedule 40 PVC pipe shall be as follows: Fittings shall conform to the requirements of ASTM D2466, Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable IPS schedule and NSF seal of approval. The connection of mainline pipe to the automatic control valve shall be assembled with threaded Schedule 80 fittings and threaded Schedule 80 nipples.

902-1.2.4. PVC PIPE CEMENT AND PRIMER

- A. Provide solvent cement and primer for PVC solvent weld pipe and fittings as recommended by the manufacturer. Pipe joints for solvent weld pipe to be belled end.
- B. Purple primer shall be applied after the pipe and fittings has been cut and cleaned. The Primer shall be of contrasting color and be easily recognizable against PVC pipe.

902-1.2.5. THREADED CONNECTIONS

- A. Threaded PVC connections shall be made using Teflon tape or Teflon pipe sealant.

902-1.2.6. GATE VALVES

902-1.2.6.1. MANUAL GATE VALVES TWO INCHES (2") AND SMALLER

- A. Provide the following, unless otherwise noted on Drawings:
 1. 200-250 psi Ball Valve
 2. PVC body - with Teflon Ball Seals
 3. Threaded-Dual end Union Connectors
 4. Non-Shock Safe-T-Shear Stem
 5. Safe-T-Shear True Union Ball Valve as manufactured by Spears Manufacturing Company, Sylmar, California, or approved equal.

902-1.2.6.2. GATE VALVES TWO AND A HALF INCHES (2½") AND LARGER

- A. Provide the following, unless otherwise noted on Drawings:
 - 1. AWWA-C-509
 - 2. 200 lb. O.W.G.
 - 3. Cast Iron body - ASTM A 126 Class B
 - 4. Deep socket joints
 - 5. Rising stem
 - 6. Bolted bonnet
 - 7. Double disc
 - 8. Equipped with two inch (2") square operating key with tee handle
- B. Provide two (2) operating keys for gate valve three inches (3") and larger. The "street key" shall be five feet (5') long with a two inch (2") square operating nut.

902-1.2.7. SLEEVES

- A. Sleeves: (Existing by City of Clearwater)

902-1.2.8. REMOTE CONTROL VALVES

- A. The remote control valve shall be a solenoid actuated, balance-pressure across-the diaphragm type capable of having a flow rate of 25-30 gallons per minute (GPM) with a pressure loss not to exceed 6.1 pounds per square inch (PSI). The valve pressure rating shall not be less than 150 psi.
- B. The valve body and bonnet shall be constructed of high impact weather resistant plastic, stainless steel and other chemical/UV resistant materials. The valve's one-piece diaphragm shall be of durable santoprene material with a clog resistant metering orifice.
- C. The valve body shall have a one inch (1") (FNPT) inlet and outlet or a one inch (1") slip by slip inlet and outlet for solvent weld pipe connections.
- D. The valve construction shall be as such to provide for all internal parts to be removable from the top of the valve without disturbing the valve installation.
- E. The valve shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California, or approved equal.
- F. Identify all control valves using metal I.D. tags numbered to match drawings.

902-1.2.9. VALVE BOXES

- A. For remote control drip valve assembly and UNIK control timer use a Brooks #36 concrete value box with #36-T cast iron traffic bearing cover or approved equal.
- B. For flush valve assembly use an Ametek #181014 ten inch (10") circular valve box with #181015 cover comparable to Brooks, or approved equal.

- C. For air relief assembly use an Ametek #182001 (6") economy turf box with #182002 cover comparable to Brooks or approved equal.

902-1.2.10. DRIP IRRIGATION

902-1.2.10.1.CONSTRUCTION

- A. Techline shall consist of nominal sized one-half inch (1/2") low-density linear polyethylene tubing with internal pressure compensating, continuously self-cleaning, integral drippers at a specified spacing (12", 18", or 24" centers). The tubing shall be brown in color and conform to an outside diameter (O.D.) of 0.67 inches and an inside diameter (I.D.) of 0.57 inches. Individual pressure compensating drippers shall be welded to the inside wall of the tubing as an integral part of the tubing assembly. These drippers shall be constructed of plastic with a hard plastic diaphragm retainer and a self-flushing/cleaning elastomer diaphragm extending the full length of the dripper.

902-1.2.10.2. OPERATION

- A. The drippers shall have the ability to independently regulate discharge rates, with an inlet pressure of seven to seventy (7-70) pounds per square inch (PSI), at a constant flow and with a manufacturer's coefficient of variability (Cv) of 0.03. Recommended operating pressure shall be between 15-45 PSI. The dripper discharge rate shall be 0.4, 0.6, or 0.9 gallons per hour (GPH) utilizing a combination turbulent flow/reduced pressure compensation cell mechanism and a diaphragm to maintain uniform discharge rates. The drippers shall continuously clean themselves while in operation. The dripperline shall be available in 12", 18" and 24" spacing between drippers unless otherwise specified. Techline pipe depth shall be under mulch unless otherwise specified on Plans. Maximum system pressure shall be 45 PSC. Filtration shall be 120 mesh or finer. Bending radius shall be seven inch (7").
- B. For on-surface or under mulch installations, six inch (6") metal wire staples (TLS6) shall be installed three feet (3') to five feet (5') on center, and two staples installed at every change of direction.

902-1.2.10.3. LINE FLUSHING VALVES

- A. The sub-surface system shall utilize Automatic Line Flush Valves at the end of each independent zone area. This valve shall be capable of flushing one gallon at the beginning of each irrigation cycle. The valves shall match the dripline manufacturer and connect directly to the dripline.

902-1.2.10.4. AIR/VACUUM RELIEF VALVE

- A. Each independent irrigation zone shall utilize an Air/Vacuum Relief Valve at its high point(s). The air and vacuum relief valve shall seal effectively from 2 to 110 psi.

902-1.2.10.5. PRESSURE REGULATORS

- A. The pressure regulator shall be designed to handle steady inlet pressures over 150 pounds per square inch (psi) and maintain a constant outlet pressure of 25 psi. Regulating accuracy shall be within +/-6%. The pressure regulator shall be manufactured from high-impact

engineering grade thermoplastics. Regulation shall be accomplished by a fixed stainless steel compression spring which shall be enclosed in a chamber separate from the water passage.

902-1.2.10.6. FILTERS

- A. The filter shall be a multiple disc type filter with notation indicating the minimum partial size to travel through or the mesh size of the element being used. The discs shall be constructed of chemical resistant thermoplastic for corrosion resistance.

902-1.2.10.7. FITTINGS

- A. All connections shall be made with barb or compression type fitting connections. Fittings and dripline shall be as manufactured by the manufacturer of the dripline to ensure the integrity of the subsurface irrigation system.

902-1.2.11. AUTOMATIC CONTROL TIMER

- A. The irrigation controller (control module) shall be programmable by a separate transmitter device only. The program shall be communicated to the Control Module from the Field Transmitter via an infrared connection. The controller shall be of a module type which may be installed in a valve box underground. The controller shall function normally if submerged in water and the communication from the transmitter shall function if submerged in water.
- B. The control module shall be housed in an ABS plastic cabinet and shall be potted to insure waterproof operation. The control module shall have two mounting slots for screws allowing the module to be securely mounted inside a valve box.
- C. The controller shall operate on one nine volt (9V) alkaline battery for one full year regardless of the number of stations utilized. The controller shall operate 1, 2, or 4 stations either sequentially or independently.
- D. The controller shall have three (3) independent programs with eight (8) start times each, station run time capability from one (1) minute to twelve (12) hours in one (1) minute increments, and a seven (7) day calendar. The controller shall turn on stations via latching solenoids installed on the valves. Manual operations shall be initiated by attaching the Field Transmitter to the Control Module and programming a manual start. The controller shall be capable of manual single station or manual program operation.
- E. The controller shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California USA.

902-1.2.12. FIELD TRANSMITTER

- A. The irrigation controller shall be programmable by a separate transmitter device (Field Transmitter) only. The Field Transmitter shall communicate to the Control Module via an infrared connection. The Field Transmitter shall be water resistant and housed in ABS plastic and have a removable, reversible protective sheath. The Field Transmitter shall operate on one nine volt (9V) alkaline battery.

- B. The Field Transmitter shall have a large LCD screen and a seven-key programming pad. A beep sound shall confirm every key stroke. The screen shall automatically turn off after one minute when not in use.
- C. The Field Transmitter shall be capable of programming an unlimited number of UNIK Control Modules.
- D. The Field Transmitter shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California USA.

902-1.2.13. LATCHING SOLENOID

- A. The Latching Solenoid shall be supplied with an installed, filtered adapter allowing installation of the solenoid onto any Rain Bird DV, PGA, PEB, PES-B, GB, or EFB series valve.
- B. The Latching Solenoid shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California USA.

902-1.3. EXECUTION

902-1.3.1. GENERAL INSTALLATION REQUIREMENTS

- A. Before work is commenced, hold a conference with the Engineer to discuss general details of the work.
- B. Verify dimensions and grades at job site before work is commenced.
- C. During the progress of the work, a competent superintendent and any assistants necessary shall be on site, all satisfactory to the Engineer. This superintendent shall not be changed, except with the consent of the Engineer. The superintendent shall represent the Contractor in Contractor's absence and all directions given to the superintendent shall be as binding as if given to the Contractor.
- D. Obtain and pay for all irrigation and plumbing permits and all inspections required by outside authorities.
- E. All work indicated or notes on the Drawings shall be provided whether or not specifically mentioned in these Technical Specifications.
- F. If there are ambiguities between the Drawings and Specifications, and specific interpretation or clarification is not issued prior to bidding, the interpretation or clarification will be made only by the Engineer, and the Contractor shall comply with the decisions. In the event the installation contradicts the directions given, the installation shall be corrected by the Contractor at no additional cost.
- G. Layout of sprinkler lines shown on the Drawing is diagrammatic only. Location of sprinkler equipment is contingent upon and subject to integration with all other underground utilities. Contractor shall employ all data contained in the contract Documents and shall verify this information at the construction site to confirm the manner by which it relates to the installation.

- H. Do not proceed with the installation of the sprinkler system when it is apparent that obstructions or grade differences exist or if conflicts in construction details, legend, or specific notes are discovered. All such obstructions, conflicts, or discrepancies shall be brought to the attention of the Engineer.
- I. The disturbance of existing paving will not be permitted. Install all required sleevng prior to roadway base.

902-1.3.2. EXCAVATING AND BACKFILLING

902-1.3.2.1. TRENCHING - GENERAL

- A. Dig sides of trenches straight. Provide continuous support for pipe on bottom of trenches. Lay pipe to uniform grade. Trenching excavation shall follow layout indicated on Drawings.
- B. Maintain six inch (6") horizontal and minimum clearance between sprinkler lines and between all lines of other trades.
- C. Do not install sprinkler lines directly above another line of any kind.
- D. Maintain six inch (6") vertical minimum between sprinkler lines which cross at angles of 45 degrees to 90 degrees.
- E. Exercise care when excavating, trenching and working near existing utilities.

902-1.3.2.2. BACKFILLING

- A. All pressure supply lines (mainline) shall have eighteen inches (18") of fill placed over the pipe.
- B. Initial backfill on all lines shall be of a fine granular material with no foreign matter larger than one half inch ($\frac{1}{2}$ ").
- C. Compact backfill according to Section 125 of FDOT Standard Specifications.
- D. Do not, under any circumstances, use equipment or vehicle wheels for compacting soil.
- E. Restore grades and repair damages where settling occurs.
- F. Compact each layer of fill with approved equipment to achieve a maximum density per AASHTO T 180. Under landscaped area, compaction shall not exceed 95% of maximum density.
- G. Compaction shall be obtained by the use of mechanical tampers or approved hand tampers. When hand tampers are used, the materials shall be deposited in layers not more than six inches (6") thick. The hand tampers shall be suitable for this purpose and shall have a face area of not more than 100 square inches. Special precautions shall be taken to prevent damage to the irrigation system piping and adjacent utilities.

902-1.3.2.3. ROUTING OF PIPING:

- A. Routing of pressure and non-pressure piping lines are indicated diagrammatically on Drawings.

- B. Coordinate specimen trees and shrubs with routing of lines.
 - 1. Planting locations shall take precedence over sprinkler and piping locations.
 - 2. Report to Owner any major deviation from routing indicated.
- C. Conform to Drawings layout without offsetting the various assemblies from the pressure supply line.
- D. Layout drip tube and make any minor adjustments required due to differences between site and Drawings. Any such deviations in layout shall be within the intent of the original Drawings, and without additional cost.
- E. Layout all systems using an approved staking method and maintain the staking of approved layout.

902-1.3.3. INSTALLATION

902-1.3.3.1. WATER SUPPLY

- A. Connections to the water sources shall be at the approximate locations indicated on the Drawings. Make minor changes caused by actual site conditions without additional cost to the Owner.

902-1.3.3.2. ASSEMBLIES

- A. Routing or pressure supply lines as indicated on Drawings is diagrammatic only. Install lines and required assemblies in accordance with details on Drawings.
- B. Do not install multiple assemblies on plastic lines. Provide each assembly with its own outlet. When used, the pressure relief valve shall be the last assembly.
- C. Install all assemblies in accord with the respective detail Drawings and these Technical Specifications.
- D. Plastic pipe and threaded fittings shall be assembled using Teflon tape, applied to the male threads only.

902-1.3.3.3. SLEEVES: (EXISTING BY CITY OF CLEARWATER)

- A. The Contractor shall verify the location of all existing sleeves as shown on the roadway, utility and/or irrigation plans and notify the Engineer of any discrepancies.

902-1.3.3.4. PLASTIC PIPE

- A. Install plastic pipe in accord with manufacturer's recommendations.
- B. Prepare all welded joints with manufacturer's cleaner prior to applying solvent.
 - 1. Allow welded joints at least fifteen (15) minutes setup/curing time before moving or handling.
 - 2. Partially center load pipe in trenches to prevent arching and shifting when water pressure is on.

3. Do not permit water in pipe until a period of at least four (4) hours has elapsed for solvent weld setting and curing, unless recommended otherwise by solvent manufacturer.

C. Curing

1. When the temperature is above 80 degrees F., allow soluble weld joints at least twenty-four (24) hours curing time before water is introduced under pressure.

D. Flushing the system:

1. After all sprinkler pipe lines and risers are in place and connected, open the control valves and flush out the system with a full head of water.

E. Installing piping under existing pavement:

1. Piping under existing pavement may be installed by jacking & boring.
2. Secure permission from the Engineer before cutting or breaking any existing pavement. All repairs and replacements shall be approved by Engineer and shall be accomplished at no additional cost.

902-1.3.3.5. CONTROLLERS

A. Install all automatic controllers as shown in the plans.

1. The location of all controllers shall be approved by the Engineer's representative prior to installation.

902-1.3.3.6. REMOTE CONTROL VALVES

A. Install at sufficient depth to provide not more than six inches (6"), nor less than four inches (4") cover from the top of the valve to finish grade.

B. Install valves in a plumb position with twenty-four inch (24") minimum maintenance clearance from other equipment, three feet (3') minimum from edges of sidewalks, buildings, and walls, and no closer than seven feet (7') from the back of curb or edge of pavement along roadways.

C. Contractor shall adjust the valve to provide the proper flow rate or operating pressure for each sprinkler zone.

902-1.3.3.7. GATE VALVES

A. Install where indicated and with sufficient clearance from other materials for proper maintenance.

B. Check and tighten valve bonnet packing before backfill.

902-2. LANDSCAPE

902-2.1. GENERAL

902-2.1.1. REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with Federal, State, Local, and other duly constituted authorities and regulatory agencies, without additional cost to the Owner in matters pertaining to codes, safety, and environmental matters.
- B. Any permits for the installation or construction of any of the work included under the contract, which are required by any of the legally constituted authorities having jurisdiction, shall be arranged for by the Contractor and paid for directly by the Contractor, unless otherwise agreed upon in writing.

902-2.1.2. SCOPE OF WORK

- A. All provisions of Contract, including General and Special Provisions and Plans, apply to the work specified in this Article. The Scope of Work includes everything for and incidental to executing and completing all landscape work shown on the Plans, Schedules, Notes and as specified herein.
- B. Furnish and provide all labor, plants and materials tools and equipment necessary to prepare the soil for plantings, to install and care for all plant materials (including finish grading if necessary); to remove and/or transplant existing plants if indicated; to furnish, plant, fertilize, guy and brace, water, mulch and prune all new plant materials; and to execute all other Work as described herein or indicated on the Plans.
- C. Work under this Article shall include labor and materials for final grading and raking to prepare the site for sodding, sprigging, or seeding, so finished lawn or playing field will appear even and uniform, will drain adequately, and will comply with the intent of the landscape drawings.
- D. Initial maintenance of landscape materials as specified in this document.

902-2.1.3. QUALITY ASSURANCE

- A. Landscape work shall be contracted to a single firm specializing in landscape work, who shall in turn subcontract no more than 40% of the work specified. All subcontractors under the control of the Contractor involved in the completion of the landscape work, shall be made known to the Owner and the Landscape Architect prior to their commencement of work on the project.
- B. All work of this Article shall conform to the highest standard of landscape practices.
- C. The Plant Material Schedule included with these Plans is provided only for the Contractor's convenience; it shall not be construed as to conflict or predominate over the Plans. If conflict between the Plans and Specifications exists, the Plans shall predominate and be considered the controlling document.
- D. During this work, the Contractor shall be responsible for maintaining safety among persons in their employ in accordance with the standards set by The Occupational Safety and Health

Act of 1970 (and all subsequent amendments). Owner and Landscape Architect shall be held harmless from any accident, injury or any other incident resulting from compliance or non-compliance with these standards.

- E. The Contractor shall cooperate with and coordinate with all other trades whose work is built into or affects the work in this Article.
- F. All appropriate utility companies and agencies shall be contacted 72 hours prior to excavation. Call “One Call”/“Sunshine 811” at 8-1-1; “Sunshine 811” administrative offices may be reached at (800) 638-4097.
- G. The Contractor shall carefully examine the site and all existing conditions affecting the work, such as: soil, obstructions, existing trees, utilities, etc. Report any conditions in conflict with the work to the Landscape Architect.

902-2.1.4. SUBMITTALS

- A. The Contractor is required to submit prior to the expiration of the required maintenance period, two (2) copies of typewritten instructions recommending procedures to be established by the Owner for maintenance of landscape work for a period of one (1) year.
- B. Furnish unit prices for all plant materials and inert materials, including labor for all specified work.

902-2.1.5. ALTERNATES, ADDITIONS, DELETIONS, SUBSTITUTIONS

- A. If there are additions/alternates included in these Plans and Specifications, the Contractor must propose prices to accomplish the work stated as additions/alternates at the time of bidding.
- B. The Owner, through their Project Representative, reserves the right to add or deduct any of the work stated herein without rendering the Contract void.
- C. The Contractor must have written approval by the Project Representative for any substitutions not previously agreed to in the purchase agreement: installation without approval is entirely at the Contractor’s risk.
- D. All material acquired through additions or substitutions shall be subject to all conditions and warranties stated herein.

902-2.1.6. ABBREVIATIONS/DEFINITIONS

O.A. or HT.: The over-all height of the plant measured from the ground to the natural, untied state of the majority of the foliage, not including extreme leaves, branches or fronds.

C.T.: Clear trunk is measured from the ground to the bottom of the first leaf or frond stem with no foliage from ground to specified height. For example, on Canary Island Date Palms or similar, the clear trunk measurement includes the “nut” at the base of the fronds.

C.W.: Clear wood is measured from the ground to the bottom of the base of the lowest leaf sheath or boot, trimmed in a natural manner. For example, on Canary Island Date Palms or similar, the clear wood measurement does not include the “nut” at the base of the fronds.

SPR.: Spread, branches measured in natural untied position to the average crown diameter, not including extreme leaves, branches or fronds.

ST.TR.: Straight trunk.

MIN.: Minimum.

GAL.: Gallon container size, i.e., 1 gallon, 3 gallon, 7 gallon, etc.

O.C.: On center, distance between plant centers.

DIA.: Diameter.

LVS.: Leaves.

D.B.H.: Diameter or caliper of main trunk of tree as measured at breast height at 4-1/2 feet above grade.

CAL.: Caliper, the outside diameter of up to a four inch tree is measured six inches above grade, larger trees are measured at 12 inches above grade.

B&B: Balled and burlapped in accordance with horticultural standards of the American Association of Nurserymen.

PPP: Plants per pot.

FG: Field grown.

STD.: Standard, single, straight trunk.

Owner: To be known as that entity which holds title or control to the premises on which the work is performed.

Owner's Representative: Owner's on-site representative shall be responsible for approval of quantity and quality of *materials specified and execution of installation*.

Contractor: Shall refer to that person or enterprise commonly known as the Landscape Contractor.

Landscape Architect: This person or firm is the responsible representative of the Owner who produces the landscape Plans and Specifications.

902-2.1.7. PRODUCT DELIVERY, STORAGE, AND HANDLING

902-2.1.7.1. PLANT MATERIALS

- A. Provide container-grown or, if appropriate, freshly dug trees and shrubs. Do not prune prior to delivery. Do not bend or bind trees or shrubs in such a manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. If plant delivery is made in open vehicles, the entire load shall be suitably covered.
- B. All plants are to be handled at all times so that roots or root balls are adequately protected from sun, cold, or drying winds. No root balls for trees and container plants that have been cracked or broken shall be planted except upon special approval. Plants shall not be pulled by the tops or stems, nor handled in a rough or careless manner at any time.

- C. Balled and burlapped (“B & B”) plants shall be moved with firm, natural, balls of soil, not less than one foot (1') diameter of ball to every one inch (1") caliper of trunk; root ball depth shall not be less than two-thirds (2/3) of root ball diameter. B & B plants which cannot be planted upon delivery shall have their root balls covered with moist soil or mulch.
- D. Trees shall be dug with adequate balls, burlapped, and wire bound if needed. Root pruning to be done a minimum of four (4) weeks before removal from the field and planting at the site. Root balls may not be encased in “grow bags” or other synthetic material, except plastic shrink wrap for transport only.
- E. Remove all fronds from sabal palms prior to planting, but leave a minimum of twelve inches (12") of new frond growth above the bud. Do not damage bud. On all other palms, only a minimum of palm fronds shall be removed from crown to facilitate moving and handling. Clear trunk shall be determined after minimum fronds have been removed. Boots shall be removed from trunk unless otherwise specified. Palms shall be planted within twenty-four (24) hours of delivery.
- F. Deliver trees and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and cover to keep the roots moist.
- G. Label at least one tree and one shrub of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.
- H. Time delivery so that sod will be placed within twenty-four (24) hours after stripping. Protect sod against drying and breaking by covering palettes of sod or placing in a shaded area.

902-2.1.8. JOB CONDITIONS

902-2.1.8.1. ACCEPTANCE OF JOB CONDITIONS.

- A. The Contractor shall examine the sub-grade, verify elevations, observe the conditions under which work is to be performed and notify the Landscape Architect or Project Representative in writing of unsatisfactory conditions prior to beginning work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Landscape Architect. Start of work shall indicate acceptance of conditions and full responsibility for the completed work.
- B. Proceed with and complete the landscape work as rapidly as portions of the site become available, working within the seasonal limitations for each kind of landscape work and following the approved schedule. If seasonal limitations apply, notify the Landscape Architect for adjustments to the Schedule.
- C. Determine locations of all underground utilities and review for conflicts with planting procedures.
- D. When adverse conditions to plant growth are encountered, such as rubble fill, drainage conditions or obstruction, the Contractor shall notify the Landscape Architect in writing prior to planting.

- E. Plant trees and shrubs after final grades are established and prior to sod installation or seeding lawns. Protect existing lawn, trees, and promptly repair damages from planting operations.

902-2.1.8.2. SCHEDULING OF WORK

- A. The work shall be carried out to completion with the utmost speed. Immediately upon award of contract, the Contractor shall prepare a construction schedule and furnish a copy to the Owner's Representative and/or the Landscape Architect for approval. The Contractor shall carry out the work in accordance with the approved schedule.
- B. If the Contractor incurs unforeseen costs, such as overtime hours, holidays, etc., in order to complete the work within the time stated in the Contract, and/or to maintain the progress schedule, all said costs shall be borne by the Contractor at no additional cost to the Owner.
- C. The Owner's Representatives may request work stoppage in writing. Upon written request from the Owner's Representative, the Landscape Contractor shall suspend delivery of material and stop all work for such a period as deemed necessary by the Owner, the Owner's Representative, or the General Contractor, with respect to any additional costs which may result from work stoppage.

902-2.1.8.3. UTILITIES

- A. The Contractor shall perform work in a manner which will avoid conflicts with utilities. Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes set by others until removal is mutually agreed upon by all parties concerned.

902-2.2. PRODUCTS

902-2.2.1. MATERIALS

902-2.2.1.1. PLANT MATERIALS: NOMENCLATURE

- A. Plant species, sizes, etc., shall be per Plans and Specifications on Plant Material Schedule. Nomenclature is per Manual of Cultivated Plant, Standard Encyclopedia of Horticulture, L.H. Bailey, or Standardized Plant Names Dictionary, American Joint Committee on Horticultural Nomenclature (latest editions) or conforms with names accepted in the nursery trade.

902-2.2.1.2. PLANT MATERIALS: QUALITY ASSURANCE

- A. Provide healthy, vigorous stock grown under climatic conditions similar to conditions in the locality of the project. Plants shall have a habit of growth that is normal for the species and be sound, healthy, vigorous and free from insects, pests or their eggs, plant diseases, defects and injuries. Plants shall be well branched and densely foliated when in leaf and shall have healthy, well-developed root systems.
- B. Trees shall be heavily branched or, in the case of palms, be heavily leafed. Some plant materials may be collected stock with the approval of the Landscape Architect. Provided

tree species that have a single main trunk (central leader), unless otherwise stated. Trees that have the main trunk forming a “Y” shape or parallel branching are not acceptable.

- C. Plant materials shall be specified and shall be Florida #1 or better as to shape and quality for the species as outlined in Grades and Standards for Nursery Plants Part I and II, Florida Department of Agriculture and Consumer Services (latest edition).
- D. The Owner or Landscape Architect reserves the right to inspect plant materials either at the place of growth or at the project site prior to planting for compliance with requirements for name, variety, size, quality, or designated area.
- E. Landscape materials shall be shipped with certificates of inspection as required by governmental authorities. The Contractor shall comply with all governing regulations that are applicable to landscape materials.
- F. Do not make substitutions. If specified landscape material is not available, submit to the Landscape Architect proof of it being non-available. In such event, if the Landscape Architect designates an available source, such shall be acquired from designated source. When authorized, a written change order for substitute material will be made by adjustment to Contract amount.
- G. Height and/or width of trees shall be measured from ground up; width measurement shall be normal crown spread of branches with plants in the normal position. This measurement shall not include immediate terminal growth. All measurements shall be taken after pruning for specified sizes. All trees and shrubs shall conform to measurements specified in the plant material schedule, except that plant material larger than specified may be used with the approval of the Owner or Landscape Architect, with no increase to the Contract price. Plant materials shall not be pruned prior to delivery.
- H. Plant Material shall be symmetrical, typical for variety and species. Plants used where symmetry is required shall be matched as nearly as possible.
- I. Balled and burlapped plants shall have firm, natural balls of earth of sufficient diameter and depth to encompass the feeding root system necessary for full development of the plant and to conform with the standards of the American Association of Nurserymen. Root balls and tree trunks shall not be damaged by improper binding and B & B procedures.
- J. Container-grown plants may be substituted for balled and burlapped plants or vice-versa provided the quality is equal or better than specified and the Landscape Architect approves the substitution.
- K. Container-grown stock shall have been grown in containers for at least four months, but not over two years. If requested, samples must be shown to prove no root bound condition exists.

902-2.2.1.3. GRASSES: SOD OR SEED

- A. Sod or seed (as/if specified) shall be a species as stated on the Plan. Solid sod shall be of even thickness and with a good root structure, 95% free of noxious weed, freshly mowed before cutting, and in healthy condition when laid. It must not be stacked more than twenty-four (24) hours before laying and it must be grown in soil compatible to that in which it will be installed. Sod must be kept moist prior to and after installation.

- B. Seed shall be delivered to the site in unopened bags with certification tags in place. Purity, germination and weed content shall be as certification requirements.

902-2.2.1.4. MULCH

- A. Mulch shall be as specified in the plans or by the project manager.
- B. Install mulch to an even depth of three inches (3") before compaction, as shown in the PLANTING DETAILS in the plans.

902-2.2.1.5. FERTILIZER

- A. Granular fertilizer shall be uniform in composition; free flowing and suitable for application with approved equipment; received at the site in full, labeled, unopened bags bearing the name, trade name or trademark and warranty of the producer; fully conforming to State of Florida fertilizer laws.
- B. All fertilizer shall bear the manufacturer's statement of analysis and shall contain the appropriate minimum amounts of elements for the type of use specified herein.
- C. Agriform 20-10-5 fertilizer tablets or approved equal, shall be placed in planting pit for all plant materials at time of installation and prior to completion of pit backfilling.
- D. Ground cover and annual areas shall receive fertilization with Osmocote Time Release Fertilizer according to product instructions and rate.
- E. For sod and seeded areas, fertilize with a complete granular fertilizer on Bahia and St. Augustine grasses at the rate of one pound (1 lb.) of nitrogen per one thousand square feet (1000 sq ft). Fertilizer shall be commercial grade, mixed granules, with 30% to 50% of the nitrogen being in slow or controlled release form. The ratio of nitrogen to potash will be 1:1 or 2:1 for complete fertilizer formulations. Phosphorus shall be no more than one-fourth ($\frac{1}{4}$) the nitrogen level. They shall also contain magnesium and micronutrients (i.e. manganese, iron, zinc, copper, etc.).

902-2.2.1.6. STAKES AND GUYS

- A. For trees, approved plastic or rubber guys shall be used between the stakes and the tree trunk. Galvanized steel guy wire shall not be used.
- B. Stakes shall be cut from 2" x 4" pressure treated (p.t.) stock for trees over two inch (2") caliper. Stakes shall be 2" x 2" pressure treated (p.t.) stock for trees two inch (2") caliper and under. A minimum of two (2) stakes per tree or an optional three (3) stakes per tree shall be used.
- C. For single trunk palms, stakes shall be cut from 2" x 4" pressure treated (p.t.) stock, with a minimum of three (3) stakes per palm. Batten consisting of 5 layers of burlap and 5 - 2" x 4" by 16" wood connected with two – three-quarter inch ($\frac{3}{4}$ ") steel bands shall be used around the palm trunk.
- D. Other tree staking systems may be acceptable if approved.

902-2.2.1.7. PLANTING SOIL

- A. Unless stated on the plans or in the specifications, install plant material in tilled and loosened native soil backfill. It is the responsibility of the Landscape Contractor to test, prior to planting and at no additional cost to the City, any soils which may be unsuitable for the vigorous growth of plants. Unsuitable conditions shall be reported to the Landscape Architect immediately in writing.
- B. When required, planting soil media shall be provided by the Contractor and shall consist of one-third (1/3) peat and two-thirds (2/3) sandy loam, with no lumps over one inch (1").
- C. Backfill and clean fill dirt provided by the Contractor shall be in a loose, friable soil. There must be slight acid reaction to the soil (about 6.0 – 6.5 pH) with no excess of calcium or carbonate, and it shall be free from excess weeds, clay lumps, stones, stumps, roots and toxic substances or any other materials that might be harmful to plant growth or a hindrance to grading, planting, and maintenance procedures and operations. No heavily organic soil, such as muck or peat shall be used as fill dirt.
- D. Bed preparation for annual beds under one (1) gallon container size shall consist of three inches (3") of Florida peat or other approved organic soil amendment spread over full length and width of planting area. Rototil organic layer six inches (6") to eight inches (8") into native soil.

902-2.2.1.8. SOIL AMENDMENTS

- A. Terra-Sorb AG or approved equal, soil amendment shall be mixed with native or planting soil for all trees, shrubs, ground cover, and annuals according to manufacturer's recommended application rates and methods, if specified on the Plans.

902-2.2.1.9. TREE PROTECTION

- A. Wood fencing shall be 2" x 4" pressure treated (p.t.) stock with flagging on horizontal members. Space vertical members six feet (6') to eight feet (8') on center. The barricade shall be placed so as to protect the critical protection zone area, which is the area surrounding a tree within a circle described by a radius of one foot (1') for each inch of the tree's diameter at breast height DBH (four and one half feet') above grade.

902-2.2.1.10. ROOT BARRIER SYSTEM

- A. Root barrier fabric shall be installed when specified in the plans and/or specifications for protection of adjacent paved surfaces according to specific product name or equal. Install as directed by the manufacturer.

902-2.2.1.11. PACKAGED MATERIALS

- A. Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at the site.

902-2.2.1.12. PESTICIDES

- A. Pesticides shall be only approved, safe brands applied according to manufacturer's directions.

902-2.3. EXECUTION

902-2.3.1. PREPARATION

902-2.3.1.1. OBSTRUCTIONS BELOW GROUND

- A. It shall be the responsibility of the Contractor to locate and mark all underground utilities, irrigation lines and wiring prior to commencement of the work.
- B. If underground construction, utilities or other obstructions are encountered in excavation of planting areas or pits, the Landscape Architect shall be immediately notified to select a relocated position for any materials necessary.

902-2.3.1.2. GRADING AND PREPARATION FOR PLANT MATERIALS

- A. All proposed landscape areas containing existing turf grass or weeds shall be treated with Monsanto's "Round-Up" per manufacturer's specifications. All proposed landscape areas adjacent to water bodies shall be treated with "Rodeo" per the manufacturer's specifications.
- B. New plant materials will not be installed until a 98% weed/turf eradication has been achieved. More than one application may be required to produce an acceptable planting bed.
- C. Pre-emergent herbicides are not a substitute for spray treatment of "Round-Up" or "Rodeo" and may be used only with the written approval of the Landscape Architect.
- D. Should any plant material in the same or adjacent beds be damaged by these chemicals, the same size, quantity and quality of plants shall be immediately replaced by the Contractor at no cost to the Owner.
- E. Any necessary corrections or repairs to the finish grades shall be accomplished by the Contractor. All planting areas shall be carefully graded and raked to smooth, even finish grade, free from depressions, lumps, stones, sticks or other debris and such that they will conform to the required finish grades and provide uniform and satisfactory surface drainage without puddling.
- F. The Contractor shall remove debris (sticks, stones, rubbish) over one and one half inches (1½") in any dimension from individual tree, shrub and hedge pits and dispose of the excavated material off the site.

902-2.3.1.3. PREPARATION FOR ANNUAL BED PLANTING

- A. Prepare native subgrade by rototilling or loosening by hand methods. Spread three inches (3") of one-third (1/3) Florida peat and two-thirds (2/3) sandy, or other approved organic soil amendment over the full length and width of planting area for annuals. Rototill organic layer six inches (6") to eight inches (8") into the native soil. Grade the planting bed by "crowning" to ensure that surface drainage, percolation, and aeration occur at rapid rates. Add Osmocote time release fertilizer according to product instructions and rate.

902-2.3.1.4. PREPARATION FOR SEEDING AND SOD AREAS

- A. All proposed sod areas containing existing turf grass or weeds shall be treated with Monsanto's "Round-Up" per manufacturer's specifications. All proposed sod areas adjacent to water bodies shall be treated with "Rodeo" per the Manufacturer's Specifications.
- B. Limit preparation to areas which will be planted promptly after preparation. Loosen sub-grade of seed and sod areas to a minimum depth of four inches (4").
- C. Immediately prior to any turf work, the Contractor shall finish grade the soil to a smooth, even surface assuring positive drainage away from buildings and the subsequent turf flush to the tops of adjacent curbs and sidewalks. The surface shall be sloped to existing yard drains.
- D. A complete fertilizer shall be applied to St. Augustine or Bahia grass at a rate of one pound (1 lb.) of nitrogen per one thousand square feet (1000 sq ft). Fertilizer shall be commercial grade, mixed granules, with 30% to 50% of the nitrogen being in slow or controlled release form. Thoroughly work fertilizer into the top four inches (4") of soil.
- E. Moisten prepared seed and sod areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

902-2.3.2. INSTALLATION

902-2.3.2.1. BERM CONSTRUCTION (IF SPECIFIED)

- A. Install berms at location and design shown on Plans and at the height and slope indicated. Height stated is for finished berm with soil at natural compaction.
- B. Exact location and configuration of berms may require modification to allow proper drainage; such changes will be coordinated with the Landscape Architect.
- C. If shown on the Plan, construct berms using clean sandy loam fill dirt which is well-drained, free of rocks, roots, or other debris, with a soil pH of an acid Nature (about 6.0 - 6.5). No heavily organic soil, such as muck or peat shall be used in berm construction.

902-2.3.2.2. LAYOUT OF PLANT MATERIALS

- A. Unless otherwise stipulated, plant materials shall be approximately located per the plans by scale measurements using established building, columns, curbs, screen walls, etc., as the measuring reference point. Slight shifting may be required to clear wires, prevent blockage of signage, etc.
- B. Shrubs and ground covers shall be located and spaced as noted on the plant material schedule (if provided), otherwise plants will be placed in the planting beds at the normally accepted spacing for each species.
- C. Leave an eighteen inch (18") (450 millimeters) border of mulched space between outer leaves of installed plant material and the bed line, curb, or building foundation wall for all plant sizes.
- D. Any necessary "minor" adjustments in the layout of planting shall be made by the Contractor with the approval of the Landscape Architect in order to conform as nearly as possible to the intent of the Plans.

902-2.3.2.3. PLANTING PROCEDURES

- A. All shrubs, trees and ground covers or vines shall be planted in pits having vertical sides and being circular in outline. Planting pit shall be three (3) to five (5) times the width of the root ball.
- B. Plants shall be set straight or plumb, in the locations shown, at such level that after settlement normal or natural relationship of the top of the root ball with the ground surface will be established. With regards to proper nursery practices, plants under certain conditions (i.e. low and wet areas) will benefit from being planted “high” with the root ball about one inch (1”) higher than the surrounding grade.
- C. All plant materials shall be fertilized with Agriform 20-10-5 planting tablets, or approved equal, at time of installation and prior to completion of pit backfilling. Agriform planting tablets shall be placed uniformly around the root mass at a depth that is between the middle and the bottom of the root mass.

Application rate:

1 gallon	1 - 21 gram tablet
3 gallon	2 - 21 gram tablet
5 gallon	3 - 21 gram tablet
7 gallon	4 - 21 gram tablet
Trees	3 tablets each $\frac{1}{2}$ " (12 millimeters) caliper
Palms	7 - 21 gram tablets

- D. Native soil shall be used in back-filling plant pits or as specified. The Contractor shall be responsible for providing additional soil for building tree saucers.
- E. When balled and burlapped plants are set, undisturbed native soil shall be left under the base of the root ball to prevent voids. Backfill tilled and loosened native soil around the sides of the root ball. Remove the top 4 four inches (4") (100 millimeters) of burlap wire, and all tie-down material from the root ball. Do not remove these materials from the bottom of the root ball. Thoroughly water-in before bringing the back-fill up to the proper grade. Roots of bare plants shall be properly spread out, and planting soil carefully worked in among them. Failure to comply is cause for rejection.
- F. Containerized plants shall be installed with undisturbed native soil left under the base of the root ball to prevent voids. Planting pit shall be three (3) to five (5) times the width of the root ball. Backfill tilled and loosened native soil around the sides of the root ball. Thoroughly water-in before bringing the backfill up to the proper grade.
- G. Plant spacing shall be “on center” and varies with the different plant species. Space each variety of plant equally in the planting areas. Shrubs and ground covers adjacent to straight or curved edges shall be triangular - spaced in rows parallel to those edges. Plant a minimum of eighteen inches (18") from the back of the curb to the outside edge of the plant.
- H. All azaleas shall be placed into a prepared bed of amended soil containing 50% weed-free Florida peat or approved equivalent. Root balls shall be scarified vertically at 120 degree angles in a triangular pattern.
- I. Sabal palms may be planted deeper than normal if conditions warrant and if approved.

902-2.3.2.4. SODDING

- A. During periods of drought, sod shall be watered sufficiently at its origin to moisten the soil adequately to the depth to which it is to be cut.
- B. An application of 6-6-6, 40% organic, slow or controlled release fertilizer shall be made to all lawn areas just prior to the laying of the sod at a rate of one pound (1 lb.) of nitrogen per one thousand square feet (1000 sq ft). The ground shall be moistened before the sod is laid in place.
- C. Solid sod shall be laid tightly with closely abutting staggered joints with an even surface edge and sod edge, in a neat and clean manner to the edge of all the paving and shrub areas. Cut down soil level to one inch (1") to one and one half inches (1-1/2") below top of walks prior to laying sod.
- D. Within two (2) hours after installing sod and prior to rolling, irrigate the sod. Sufficient water shall be applied to wet the sod thoroughly and to wet the sod to a depth of two inches (2") (50 millimeters). Watering shall be done in a manner that will avoid erosion due to the application of excessive quantities, and the watering equipment shall be a type that will prevent damage to the finished sod surface. Watering shall be repeated as necessary to keep sod moist until rooted to subgrade.
- E. The sod shall be pressed firmly into contact with the sod bed using a turf roller or other approved equipment so as to eliminate air pockets, provide a true and even surface and insure knitting without any displacement of the sod or deformation of the surfaces of sodded areas. After the sodding operation has been completed, the edges of the area shall be smooth and shall conform to the grades indicated.
- F. If, in the opinion of the Landscape Architect, top dressing is necessary after rolling, clean silica sand shall be used to fill voids. Evenly apply sand over the entire surface to be leveled, filling-in dips and voids and thoroughly washing into the sod areas.
- G. On slopes 3:1 or steeper, and as required, a geotextile fabric shall be installed per manufacturer's specifications prior to placing sod. The sod shall be fastened in place with suitable wooden pins or by other approved method.

902-2.3.2.5. SEEDING

- A. Seed shall be installed per the specifications of the State of Florida Department of Transportation. See plan for type of seed.

902-2.3.2.6. TREE GUYING, BRACING AND STAKING

- A. Tree guying, staking and bracing shall be the responsibility of the Contractor per sound nursery practices, and shall be done per details shown on the Plans. For trees, a minimum of two (2) stakes per tree or an optional three (3) stakes per tree at 120 degree spacing shall be used. Stakes shall be driven in at an angle, then tightened to vertical supported by approved plastic or rubber guys. Trees shall be staked with a minimum of four feet (4') height of stake above grade and a minimum of thirty inches (30") of stake below grade.
- B. For single trunk palms, a minimum of three (3) stakes per palm at 120 degree spacing shall be used. Toenail the stakes to batten consisting of five (5) layers of burlap and five (5) - 2

inch x 4 inch x 16 inch wood connected with two (2) three-quarter inch (3/4") steel bands. Palms shall be staked with a minimum of five feet (5') of stake above grade.

- C. Contractor shall remove all tree guying, staking, and bracing from trees six (6) months after the date of final acceptance of the landscape work.
- D. Stake only trees that require support to maintain a plumb position or are in potentially hazardous areas.

902-2.3.2.7. MULCHING

- A. All planting beds shall be weed-free prior to mulching.
- B. All curb, roadway, and bed line edges will be “trenched” to help contain the applied mulch. Mulch should be below top of curb and resistant to washout from stormwater run-off.
- C. All plant beds and tree rings shall be mulched evenly with a three inch (3") layer (before compaction) of 100% Grade B recycled cypress bark mulch, or other mulch as specified on the Plans or General Notes.
- D. Mulch shall not be placed against the trunks of plant materials or foundations of buildings. Maintain a minimum three inch (3") clearance for trees and shrub trunks and a minimum six inch (6") clearance for the walls of buildings.
- E. For beds of annual flowers, a 12 inch wide x 3 inch deep band of mulch shall be installed in front of the first row of annuals. Maintain a minimum six inches (6") of non-mulched clearance from the outside edge of annuals.

902-2.3.2.8. PRUNING

- A. Pruning shall be done by an experienced certified Arborist to maintain the natural shape and form of the plant.
- B. Upon acceptance by the Owner, prune any broken branches, remove crossed branches, and branches hanging below the clear trunk of the tree.

902-2.3.2.9. CLEAN-UP

- A. During landscape work, store materials and equipment where directed by the Owner.
- B. The Contractor shall promptly remove any materials and equipment used on the job, keeping the area neat at all times. Upon completion of all planting, dispose of all excess soil and debris leaving pavements and work areas in safe and orderly condition.
- C. The clean-up of the site shall include the removal and proper disposal of the tree guying, staking, and bracing materials as described in specifications.

902-2.3.2.10. PROTECTION

- A. The Contractor shall provide safeguards for the protection of workmen and others on, about, or adjacent to the work, as required under the parameters of the Occupational Safety and Health Administration (O.S.H.A.) standards.
- B. The Contractor shall protect the Owner's and adjacent property from damage.

- C. The Contractor shall protect the landscape work and materials from damage due to landscape operations. Maintain protection during installation and maintenance periods.
- D. The Contractor shall provide protection (tree barricades) for all existing trees and palms as specified.

902-2.3.2.11. REPAIR OF DAMAGES

- E. The Contractor shall repair all damage caused by their operations to other materials, property, or trades to a level equal in quality to the existing condition prior to damage.
- F. The Contractor shall be held responsible for all damage done by their work or employees to other materials or trades' work. Patching and replacement of damaged work may be done by others, at the Owner's direction, but the cost of same shall be paid by the Contractor who is responsible for the damage.

902-2.3.3. MAINTENANCE

- A. The Contractor shall maintain all plant materials in a first class condition from the beginning of landscape construction until Final Acceptance.
- B. Operations:
 - 1. Maintenance shall include, but not be limited to, watering of turf and planting beds, mowing, fertilizing, cultivation, weeding, pruning, disease and pest control, replacement of dead materials, straightening, turf or planter settlement corrections, replacement of rejected materials, staking and guying repair and tightening, wash-out repairs and regrading, and any other procedures consistent with the good horticultural practice necessary to insure normal, vigorous and healthy growth of all work under the Contract. Mowing shall be consistent with the recommended height per the University of Florida Cooperative Extension Service.
 - 2. Within the warranty period, the Contractor shall notify the Owner of any maintenance practices being followed or omitted which would be detrimental to the healthy, vigorous growth of the landscape.
 - 3. The Contractor shall be responsible for the final watering of not less than one inch (1") of water for all planted materials before leaving the site.

902-2.3.4. INSPECTION, REJECTION, AND ACCEPTANCE

902-2.3.4.1. INSPECTION

- A. Upon completion of the installation, the Contractor will notify the Owner or the Owner's Representative that the job is ready for inspection. Within fifteen (15) days of notifications, the installation will be inspected by the Landscape Architect. A written and/or graphic inspection report will be sent to the Owner and/or Landscape Contractor.

902-2.3.4.2. REJECTION AND REPLACEMENT

- A. The Landscape Architect shall be final judge as to the suitability and acceptability of any part of the work. Plant material will be rejected if it does not meet the requirements set forth in the Plans and Specifications.

- B. Replace any rejected materials immediately or within fifteen (15) days and notify the Landscape Architect that the correction has been made.

902-2.3.4.3. ACCEPTANCE

- A. After replacement of rejected plant material, if any, have been made, and completion of all other correction items, the Owner or Project Representative will accept the project in writing.
- B. Upon Final Acceptance, the Owner assumes responsibility for maintenance within the terms of the Contract. Acceptance will in no way invalidate the Contractor's warranty period.
- C. The Contractor's warranty period will begin after final acceptance of the project by the Owner.
 1. If evidence exists of any lien or claim arising out of or in connection with default in performance of this Contract, the Owner shall have the right to retain any payment sufficient to discharge such claim and all costs in connection with discharging such claim.
 2. Where the Specifications call for any stipulated item or an "approved equivalent", or in words to that effect, the Contractor shall indicate the price of the type and species specified in the proposal, giving the price to be added or deducted from their Contract price. The final selection rests with the Owner or their representative.
 3. Where plants installed do not meet specifications, the Owner reserves the right to request plant replacement or an appropriate deduction from the Contract amount to compensate for the value not received from the under-specified plant materials. No additional compensation will be made to the Contractor for plants installed that exceed specifications.

902-2.3.5. WARRANTY

- A. The Contractor shall warranty all palms and trees furnished under this contract for a period of one (1) year and all shrubs for a period of six (6) months. Material which is either dead or in poor health during this period or at completion will be replaced at no charge to the Owner. Should any of the plant materials show 50% or more defoliation during the warranty period, due to the Contractor's use of poor quality or improper materials or workmanship, the Contractor upon notice, shall replace without delay same with no additional cost to the Owner. Should any plant require replacing, the new plant shall be given the equal amount of warranty.

903. SODDING

Unless otherwise noted herein, the Contractor shall place all sod, either shown on the plans or at the direction of the Engineer, in conformance with Sections 575, 981, 982 and 983 of FDOT's Standard Specifications. The area for sod application shall be loosened and excavated to a suitable depth and finished to a grade compatible with existing grass and structures. Sod shall be placed with edges in close contact and shall be compacted to uniform finished grade with a sod roller immediately after placement. In sloped areas, the sod shall be graded and placed so as to prohibit

erosion and undermining of the adjacent sidewalk. No sod that has been cut for more than seventy-two (72) hours can be used unless authorized by the Engineer in advance. The sod shall be thoroughly watered immediately after placement. The Contractor shall continue to water sod as needed and/or directed by the Engineer as indicated by sun exposure, soil, heat and rain conditions, to establish and assure growth, until termination of the contract. Dead sod, or sod not acceptable to the Engineer, shall be removed and replaced by the Contractor at no additional compensation. Any questions concerning the type of existing sod shall be determined by the Engineer.

Unless otherwise noted on the plans, payment for sod (including labor, equipment, materials, placement, rolling, watering, etc.) shall be included in other bid items. Payment for these associated bid items may be withheld until the Contractor provides the City a healthy, properly placed stand of grass. When this work is given as a separate bid item, it shall cover all labor, equipment and materials, (including water) required for this work and shall be paid for on the basis of each square foot in place and accepted. No payment for sod shall be made until the Contractor provides the City a healthy, properly placed stand of grass.

904. SEEDING

Seed, or seed and mulch, shall only be used when specified for certain demolition projects. The seed and/or mulch shall be placed as called for on the plans in the following manner. The area to be seeded shall be brought to the required line and grade, fertilized and seeded in basic conformance with FDOT's Standard Specifications Sections 570, 981, 982 and 983. However, no wildflower seed shall be used, and Argentine Bahia Seed shall be used instead of Pensacola Bahia. No sprigging will be required. Also, the addition of 20 lb. of Rye Seed (to total 60 lb. of seed per acre) will be required during the stated periods. It is also required that the Contractor maintain said seed until growth is assured.

When this work is given as a bid item, the item shall cover all labor, material, equipment (including water), required for this work, and shall be paid for on the basis of each square yard in place and accepted. If called for on the plans, but not shown as a bid item, then the cost of such work as stated above shall be included in the cost of other work.

905. LAWN MAINTENANCE SPECIFICATIONS

905-1. SCOPE

To remove trash and debris from landscape and paved area; maintenance and fertilization of plant beds and landscape materials; maintenance, repair, and operation of irrigation systems; ornamental pest control; palm pruning; maintenance of traffic; and the cleaning of hard surfaces at designated areas. The Contractor is to work with the City in coordinating maintenance activities and reporting irregularities in the work zone.

The Contractor(s) will provide the labor and materials required to maintain the specified landscaped street areas including:

- Traffic safety and Maintenance of Traffic;
- Trash and debris removal from the job site;
- Removal of weeds in landscaped areas and hard surfaces;
- Proper trimming and pruning of landscape plants and palms;

- Proper fertilization and pest control of landscape and palms (may be subcontracted);
- Irrigation service and repair;
- Mulch replacement;
- Cleaning of hard surfaces; and the
- Reporting of irregularities at the job site.

905-2. SCHEDULING OF WORK

The Contractor(s) shall accomplish all landscape maintenance required under the contract between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday, excluding observed holidays. The City may grant, on an individual basis, permission to perform contract maintenance at other hours.

All work shall be completed in a continuous manner, such as cleanup, weeding, trimming, etc., be completed before leaving the job site.

905-3. WORK METHODS

905-3.1. MAINTENANCE SCHEDULING

The Contractor(s) will adhere to a work schedule provided by the City (see Level of Service). Any variations to that schedule, requested by either party, must be approved, either verbally or in writing by an authorized representative of the other party.

905-3.2. DUTIES PER SERVICE VISIT

The Contractor(s) shall provide the following service at each scheduled visit to the designated location:

905-3.2.1. LITTER AND DEBRIS

Remove trash and debris from the project site. Proper disposal of collected trash and debris is the Contractor's responsibility. Extraordinary amounts of debris caused by hurricanes, tornadoes, vandalism, etc., would be the responsibility of the City to clean up. The Contractor should report such accumulations of debris when they are encountered. Bids for the extraordinary cleanup from the Contractor would be considered. Work sites should be left in a clean and neat appearance upon completion. All debris from pruning process is to be removed from the job site and disposed of by the Contractor.

905-3.2.2. VISUAL CHECK

The site should be checked for irregularities, such as irrigation leaks, vehicle damage, dead or damaged plant material, vandalism, etc., which should be reported to the City within twenty-four (24) hours after providing the service.

905-3.2.3. PLANT TRIMMING AND PALM PRUNING

All plant material should be trimmed in a manner that promotes the natural shape and mature size of the particular species. Trimming should be performed at intervals that will maintain plants in a neat appearance. Trimming should be performed to promote fullness of the plants, while

maintaining height restrictions in Clear Sight Zones as established on the landscape plans. Plants shall be kept trimmed to the back of curb. Brown foliage shall be removed from Liriope.

Palm pruning to be performed at least once per year, preferably in late June or July following flower formation, consistent with the following specification:

905-3.2.3.1. PHOENIX SPECIES (CANARY DATE, INDIA DATE, PYGMY DATE, ETC.)

Remove all descending fronds, to the base of the frond; all parallel and ascending fronds are to remain in order to leave a full, rounded head; seed heads may remain, but remove old faded heads that are encountered in the pruning process; and remove loose frond boots; remove vegetation, such as strangler figs, Brazilian Pepper, Asparagus fern, etc., growing in the frond boots or on the trunk. Provide the rounded, classic cut on all Medjool palm boots. No climbing spikes allowed on palms.

905-3.2.3.2. TRAFFIC CONTROL

Proper and safe work zones in vehicular traffic areas are to be set up and maintained by the Contractor, according to the approved Maintenance of Traffic specifications.

905-3.2.3.3. PEDESTRIAN SAFETY

Contractor is responsible for maintaining safe work zones in areas where pedestrian and park users are present. The City reserves the right to limit the hours of operation in certain high pedestrian use areas.

905-3.2.4. PLANT FERTILIZATION

All tree and plant material should be fertilized with the appropriate amount of 20-6-12 sulfur coated, slow release, ornamental fertilizer, three times per year. Applications should be made in mid-February, early June, and mid-September, for the first two years. Fertilizer types and amounts will change with requirements of maturing landscape materials.

905-3.2.5. WEED REMOVAL IN LANDSCAPED AREA

Weeds should be removed on a regular basis in order to keep them from being visibly noticeable. Weed control with the use of appropriate herbicides is allowable, given they are properly applied by a certified applicator. Herbicide damage to landscape material will be remedied by Contractor at their expense.

905-3.2.6. MULCH CONDITION

Should be maintained at a thickness that will discourage weed growth as well as help retain soil moisture, usually three inches (3").

905-3.2.7. IRRIGATION SERVICE AND REPAIR

Should be performed at each visit to assure the system's proper operation and timing. Drip tubing should be kept covered with mulch. Timer should be checked for proper time of day and operating schedule. Leaks or breaks in the system should be repaired before the next scheduled system running time.

905-3.2.8. LAWN AND ORNAMENTAL PEST CONTROL

Should be performed by a properly licensed and certified applicator to keep pest populations at a less than damaging level. Landscape materials lost to or extensively damaged by pests will be replaced by the Contractor at the Contractor's expense. Diazinon products are not to be used on City properties.

905-3.2.9. PALM FERTILIZATION

Apply three (3) pounds of Magnesium sulfate and one pound of Potassium evenly, per tree, across the root zone (typically within the dripline), annually in early February.

905-3.2.10. FREEZE PROTECTION

The City will provide a freeze/frost protection fabric for the Contractor to install over freeze/frost sensitive plants (Lantana and Pentas). The covering material will be stored at a City facility. Contractor will remove the covering material from storage and install over the sensitive plants, securely fastening edges of the material to the ground per manufacturer's directions. The City will furnish metal pins needed for securing fabric to the ground. The City will notify the Contractor one (1) day or twenty-four (24) hours minimum prior to the need to protect plant material. After uses, the Contractor will prepare the fabric for storage and return it to the designated City facility. Protective covering shall be removed the following afternoon or remain in place as directed by the City. The City shall notify the Contractor by 11:00 a.m. about removing the cover or keeping it in place due to continued freezing temperatures. The City may cancel the freeze protection event at any time prior to the end of the scheduled installation day (5:00 p.m.) The Contractor will be compensated for the number of hours mobilization or on-site work at the contracted rate per man-hour unit price. The Contractor shall provide a unit price for the installation and removal of the covering fabric on a per event basis, as well as an hourly rate per employee required. The City and Contractor will coordinate appropriate irrigation operations with weather conditions. Should freeze/frost damage occur, the Contractor shall perform remedial work as per unit basis, as directed by the City.

906. LEVEL OF SERVICE

The Project Site is to be serviced weekly. Repairs to damage or vandalism to be made within seven (7) working days of reported irregularity. Weekly visits should occur no closer than six (6) and no further than ten (10) calendar days apart.

907. COMPLETION OF WORK

Within twenty-four (24) hours of completing work the City either in person or by phone of said completion. It is acceptable to leave a phone message.

908. INSPECTION AND APPROVAL

Upon receiving notification from the Contractor, the City shall inspect the serviced location the following business day. If, upon inspection, the work specified has not been completed, the City shall contact the Contractor to indicate the necessary corrective measures. The Contractor will be

given forty-eight (48) hours from this notification to make appropriate corrections. If the work has been completed successfully then the City will pay for services billed.

909. SPECIAL CONDITIONS

1. This location will be newly installed and under warranty by the installer for a twelve (12) month period on plants, trees and palms. Landscape installer will coordinate irrigation operation with the Maintenance contractor to assure adequate irrigation to the landscape materials. Installer will also be responsible for the untying of palm heads/fronds as they feel appropriate.
2. All listed acreage or square footage figures are estimates.
3. All work shall be performed in a good and workmanlike manner, consistent with trade practices and standards which prevail in the industry.
4. The Contractor shall be responsible for damage to any plant material or site feature caused by the Contractor or their employees. The Contractor shall be notified in writing of the specific nature of the damage and cost of repair. The City shall, at its option, invoice the Contractor for the payment, or reduce by the amount of the repairs on the next regular payment to the Contractor.
5. Occasionally circumstances (standing water, prolonged inclement weather, parked vehicles, etc.) may make all or portions of a location unserviceable during the regular schedule. The Contractor shall notify the City Supervisor of such occurrences and shall schedule to perform the required work to the location as soon as the pertaining circumstances are relieved.

910. TREE PROTECTION

910-1. TREE BARRICADES

- A. A protective barrier shall be placed around all protected trees and palms prior to land preparation or construction activities within or adjacent to the work zone, including all staging and/or lay down areas. Protective barriers shall be installed as follows:
 1. At or greater than the full dripline of all species of Mangroves and Cabbage Palms.
 2. At or greater than the full dripline of all protected native pine trees and other conifer species.
 3. At or greater than two-thirds (2/3) of the dripline of all other protected species
 4. At or greater than the full dripline of trees within a specimen tree stand.
- B. Protective barriers are to be constructed using no less than two inch (2") lumber for upright posts. Upright posts are to be at least four feet (4') in length with a minimum of one foot (1') anchored in the ground. Upright posts are to be placed at a maximum distance of eight feet (8') apart. Horizontal rails are to be constructed using no less than one inch (1") by four-inch (4") lumber and shall be securely attached to the top of the upright post. The City's representative must approve any variation from the above requirements.

- C. Whenever a protective barrier is required, it shall be in place until all construction activity is terminated. The area within the barrier limits shall remain undisturbed by any activity during construction. Native ground cover and understory vegetation existing within the barriers shall remain throughout construction. Exotic plant species may only be removed by manual labor utilizing hand tools or by other means if authorized in writing by the City's representative.
- D. Prior to the erection of any required protective barrier, all surface foreign material, trash or debris shall be removed from the area enclosed by the barrier, and after erection of the barrier no such material or litter shall be permitted to remain within the protected area. No equipment, chemicals, soil deposits or construction materials shall be placed within such protective barriers.
- E. No signs, building permits, wires, or other attachments of any kind shall be attached to any protected tree or palm.
- F. At all times, due care shall be taken to protect the critical root zone of trees protected by this section, and root pruning requirements shall apply to such trees.

910-2. ROOT PRUNING

- A. Where proposed construction improvements involve excavation and/or impacts to the critical root zone of protected trees, the Contractor shall be required to have an International Society of Arboriculture (ISA) certified arborist perform, or directly supervise root pruning to reduce the impacts of construction. The critical root zone is equivalent to the tree's dripline. Prior to any clearing, grubbing or excavation activities, the affected roots must be severed by clean pruning cuts at the point where grubbing or excavation impacts the root system. Roots can be pruned utilizing specified root pruning equipment designed for that purpose or by hand digging a trench and pruning roots with a pruning saw, chain saw or other equipment designed for tree pruning. Root pruning by trenching equipment or excavation equipment is strictly prohibited. Roots located in the critical root zone that will be impacted by construction activities shall be pruned to a minimum depth of eighteen inches (18") below existing grade or to the depth of the proposed impact if less than eighteen inches (18") from existing grade. The City's Representative on Engineering Department projects for Root Pruning issues is the Senior Landscape Architect and can be reached at (727) 562-4747, or through the construction inspector assigned to the project.
- B. Root pruning shall only be performed by or under the direct supervision of an International Society of Arboriculture (ISA) certified arborist.
- C. Any proposed root pruning trenches shall be identified on site (i.e. staked or painted) inspected and approved by the City's representative prior to actual root pruning.
- D. Root pruning shall be performed as far in advance of other construction activities as is feasible, but at a minimum shall be performed prior to ANY impacts to the soil. Associated tree protection measures should be implemented upon completion of said root pruning.
- E. If there is a likelihood of excessive wind and/or rain exceptional care shall be taken on any root pruning activities.

- F. Root pruning shall be limited to a minimum of ten inches (10") per one inch (1") of the trunk diameter from the tree base. Any exception must be approved by the City's representative prior to said root pruning.
- G. Roots shall be cut cleanly, as far from the trunk of the tree as possible. Root pruning shall be done to a minimum depth of eighteen inches (18") from existing grade, or to the depth of the disturbance if less than eighteen inches (18").
- H. Root pruning shall be performed using a root cutting machine specifically designed for this purpose. Alternate equipment or techniques must be approved by the City's representative, prior to any work adjacent to trees to be preserved.
- I. Root pruning shall be completed, inspected and accepted prior to the commencement of any excavation or other impacts to the critical root zones of trees to be protected.
- J. Excavations in an area where root are present shall not cause the tearing or ripping of tree roots. Roots must first be cleanly severed prior to continuing with the excavation, or tunneled around to prevent damage to the root.
- K. Tree roots shall not be exposed to drying out. Root ends shall be covered with native soil or burlap and kept moist until final backfill or final grades has been established.
- L. When deemed appropriate (e.g., during periods of drought) the City representative may require a temporary irrigation system be utilized in the remaining critical root zones of root pruned trees.
- M. When underground utility lines are to be installed within the critical root zone, the root pruning requirement may be waived if the lines are installed via tunneling or directional boring as opposed to open trenching.

910-3. PROPER TREE PRUNING

- A. All tree pruning and/or root pruning on existing trees to remain shall only be performed by or under the direct supervision of an International Society of Arboriculture (ISA) certified arborist. Furthermore, all tree work shall conform to the American National Standards Institute (ANSI) 2001, American National Standard for tree care operations – Tree, Shrub and other Woody Plant Maintenance – Standard practices (pruning) ANSI A-300.
- B. Proper pruning techniques for all lateral branches of protected trees are required. Flush cuts (pruning cuts that remove the branch collar) and stub cuts (cuts that leave a stub on the tree) are improper techniques. Any protected tree that has been improperly pruned will not be recognized as a tree left on the project in a healthy growing condition, and will require replacement consistent with the current City Code of Ordinances and Community Development Code.
- C. No protected tree shall have more than thirty percent (30%) of its foliage removed.
- D. No protected tree shall be topped, hat racked or lion-tailed. Any protected tree that has been improperly pruned will not be recognized as a tree left on the project in a healthy growing condition, and will require replacement consistent with the current City Code of Ordinances and Community Development Code.

SECTION IV – Technical Specifications

E. Tree Trunks and limbs shall be protected. The use of tree spikes or other devices that damage trunk and bark tissue on protected trees shall be prohibited. Any protected tree that has been damaged in such a manner will not be recognized as a tree left on the project in a healthy growing condition and will require replacement consistent with the current City Code of Ordinances and Community Development Code.

SECTION IVA

MARSHALL STREET WRF DIGESTER DEMOLITION

SUPPLEMENTAL TECHNICAL SPECIFICATIONS

(PROJECT No. 09-0024-UT)

PREPARED FOR:



CITY OF CLEARWATER
ENGINEERING DEPARTMENT
100 SOUTH MYRTLE AVENUE
CLEARWATER, FL 33756

PREPARED BY:



KING ENGINEERING ASSOCIATES, INC.
4921 MEMORIAL HIGHWAY, SUITE 300
TAMPA, FL 33634

Bid Specifications

January 2021

SECTION IVa – SUPPLEMENTAL TECHNICAL SPECIFICATIONS

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1 SECTION 01005
2

3 GENERAL REQUIREMENTS
4

5 PART 1 - GENERAL
6

7 1.01 SCOPE OF WORK
8

9 A. Description
10

11 The work to be completed consists of the furnishing of all labor, materials and
12 equipment, and the performance of all Work included in this Contract.
13

14 B. Work Included
15

16 The Contractor shall furnish all labor, superintendence, materials, plant, power,
17 light, heat, fuel, water, tools, appliances, equipment, supplies and other means
18 of construction necessary or proper for performing and completing the Work.
19 He shall perform and complete the Work in the manner best calculated to
20 promote rapid construction consistent with safety of life and property and to the
21 satisfaction of the Engineer, and in strict accordance with the Contract
22 Documents. The Contractor shall clean up the Work and maintain it during and
23 after construction, until accepted, and shall do all work and pay all costs
24 incidental thereto. He shall repair or restore all structures and property that may
25 be damaged or disturbed during performance of the Work.
26

27 The cost of incidental work described in these General Requirements, for which
28 there are no specific Contract Items, shall be considered as part of the general
29 cost of doing the work and shall be included in the prices for the various Contract
30 Items. No additional payment will be made therefore.
31

32 The Contractor shall provide and maintain such modern plant, tools, and
33 equipment as may be necessary, in the opinion of the Engineer, to perform in a
34 satisfactory and acceptable manner all the work required by this Contract. Only
35 equipment of established reputation and proven efficiency shall be used. The
36 Contractor shall be solely responsible for the adequacy of his workmanship,
37 materials and equipment, prior approval of the Engineer notwithstanding.
38

39 C. Public Utility Installation and Structures
40

41 Public utility installations and structures shall be understood to include all poles,
42 tracks, pipes, wires, conduits, house service connections, vaults, manholes and
43 all other appurtenances and facilities pertaining thereto whether owned or
44 controlled by the Owner, other governmental bodies or privately owned by
45 individuals, firms or corporations, used to serve the public with transportation,
46 traffic control, gas, electricity, telephone, sewerage, drainage, water or other

1 public or private property which may be affected by the work shall be deemed
2 included hereunder.
3

4 The Contractor shall protect all public utility installations and structures from
5 damage during the work. Access across any buried public utility installation, or
6 structure, shall be made only in such locations and by means approved by the
7 Engineer. The Contractor shall so arrange his operations as to avoid any
8 damage to these facilities. All required protective devices and construction shall
9 be provided by the Contractor at his expense. All existing public utilities
10 damaged by the Contractor, which are shown on the Plans or have been located
11 in the field by the utility, shall be repaired by the Contractor, at his expense, as
12 directed by the Engineer. No separate payment shall be made for such
13 protection or repairs to public utility installations or structures.
14

15 Public utility installations or structures owned or controlled by the Owner or other
16 governmental body, which are shown on the Plans to be removed, relocated,
17 replaced or rebuilt by the Contractor shall be considered as a part of the general
18 cost of doing the Work and shall be included in the prices bid for the various
19 contract items. No separate payment shall be made therefore.
20

21 Where public utility installations or structures owned or controlled by the Owner
22 or other governmental body are encountered during the course of the Work, and
23 are not indicated on the Plans or in the Specifications, and when, in the opinion
24 of the Engineer, removal, relocation, replacement or rebuilding is necessary to
25 complete the work under this Contract, such work shall be accomplished by the
26 utility having jurisdiction, or such work may be ordered, in writing by the
27 Engineer, for the Contractor to accomplish. If such work is accomplished by the
28 utility having jurisdiction it will be carried out expeditiously and the Contractor
29 shall give full cooperation to permit the utility to complete the removal,
30 relocation, replacement or rebuilding as required. If such work is accomplished
31 by the Contractor, it will be in accordance with the General and Supplemental
32 General Conditions.
33

34 All Owners, other governmental utility departments, and other owners of public
35 utilities that may be affected by the Work will be informed in writing by the
36 Engineer within two weeks after the execution of the Contract or Contract
37 covering the work. Such notice will set out, in general, and direct attention to,
38 the responsibilities of the Owner and other governmental utility departments and
39 other owners of public utilities for such installations and structures as may be
40 affected by the work and will be accompanied by one set of Plans and
41 Specifications covering the work under such Contract or Contracts.
42

43 In addition to the general notice given by the Engineer, the Contractor shall give
44 written notice to Owner and other governmental utility departments and other
45 owners of public utilities of the locations of his proposed construction
46 operations, at least forty-eight hours in advance of breaking ground in any area
47 or on any unit of the work.

1
2 The maintenance, repair, removal, relocation or rebuilding of public utility
3 installations and structures, when accomplished by the Contractor as herein
4 provided, shall be done by methods approved by the Engineer.
5

6 **1.02 DRAWINGS AND SPECIFICATIONS**
7

8 **A. Drawings**
9

10 When obtaining data and information from the Drawings, figures shall be used
11 in preference to scaled dimensions, and large scale drawings in preference to
12 small scale drawings.
13

14 **B. Copies Furnished to Contractor**
15

16 The Engineer will incorporate the addenda into a set of "conformed" drawings
17 and specifications, and provide one electronic copy of each to the Contractor.
18 The conformed drawings and specifications shall not supersede the Contract
19 Documents provided to the Contractor. It shall be the responsibility of the
20 Contractor to check that the conformed drawings and specifications properly
21 include all addenda and revisions to the Contract Documents. The Contractor
22 shall furnish each of the subcontractors, manufacturers, and suppliers such
23 copies of the Contract Documents as may be required for their work. Additional
24 copies of the Drawings and Specifications, when requested, may be furnished
25 to the Contractor at cost of reproduction.
26

27 **C. Supplementary Drawings**
28

29 When, in the opinion of the Engineer, it becomes necessary to explain more
30 fully the work to be done or to illustrate the work further or to show any changes
31 which may be required, Drawings known as Supplementary Drawings, with
32 Specifications pertaining thereto, will be prepared by the Engineer and copies
33 thereof will be given to the Contractor and the Owner.
34

35 **D. Contractor to Check Drawings and Data**
36

37 The Contractor shall verify all dimensions, quantities and details shown on the
38 Drawings, Supplementary Drawings, Schedules, Specifications or other data
39 received from the Engineer and shall notify him of any errors, omissions,
40 conflicts and discrepancies found therein. The Contractor shall submit to the
41 Engineer a Request for Information (RFI), consecutively numbered, detailing all
42 errors, omissions, conflicts and discrepancies. Engineer shall promptly provide
43 a response to all RFIs submitted by the Contractor. Contractor will not be
44 allowed to take advantage of any errors or omissions, as full instructions will be
45 furnished by the Engineer, should such errors or omissions be discovered.
46

47 **E. Specifications**

1
2 The Technical Specifications generally consist of three parts: General,
3 Products, and Execution. The General Section contains General Requirements
4 that govern the work. Products and Execution modify and supplement these by
5 detailed requirements for the work and shall always govern whenever there
6 appears to be a conflict.
7

8 F. Intent
9

10 All Work called for in the Specifications applicable to this Contract, but not
11 shown on the Drawings in their present form, or vice versa, shall be of like effect
12 as if shown or mentioned in both. Work not specified in either the Drawings or
13 in the Specifications, but involved in carrying out their intent or in the complete
14 and proper execution of the work, is required and shall be performed by the
15 Contractor as though it were specifically delineated or described.
16

17 The apparent silence of the Specifications as to any detail, or the apparent
18 omission from them of a detailed description concerning any work to be done
19 and materials to be furnished, shall be regarded as meaning that only the best
20 general practice is to prevail and that only material and workmanship of the best
21 quality is to be used, and interpretation of these Specifications shall be made
22 upon that basis.
23

24 The inclusion of the Related Requirements (or work specified elsewhere) in the
25 General part of the specifications is only for the convenience of the Contractor,
26 and shall not be interpreted as a complete list of related Specification Sections.
27

28 1.03 MATERIALS AND EQUIPMENT
29

30 A. Manufacturer
31

32 The names of proposed manufacturers, suppliers and dealers who are to furnish
33 materials, fixtures, equipment, appliances or other fittings shall be submitted to
34 the Engineer for approval. Such approval must be obtained before shop
35 drawings will be checked. No manufacturer will be approved for any materials
36 to be furnished under this Contract unless he shall be of good reputation and
37 have a plant of ample capacity. He shall, upon the request of the Engineer, be
38 required to submit evidence that he has manufactured a similar product to the
39 one specified and that it has been previously used for a like purpose for a
40 sufficient length of time to demonstrate its satisfactory performance. All
41 transactions with the manufacturers or subcontractors shall be through the
42 Contractor, unless the Contractor shall request, in writing to the Engineer, that
43 the manufacturer or subcontractor deal directly with the Engineer. Any such
44 transactions shall not in any way release the Contractor from his full
45 responsibility under this Contract.
46

1 Any two or more pieces of material or equipment of the same kind, type or
2 classification, and being used for identical types of service, shall be made by
3 the same manufacturer.

4

5 B. Delivery

6

7 The Contractor shall deliver materials in ample quantities to insure the most
8 speedy and uninterrupted progress of the work so as to complete the work within
9 the allotted time. The Contractor shall also coordinate deliveries in order to
10 avoid delay in, or impediment of, the progress of the work of any related
11 Contractor.

12

13 C. Tools and Accessories

14

15 The Contractor shall, unless otherwise stated in the Contract Documents,
16 furnish with each type, kind or size of equipment, one complete set of suitably
17 marked high grade special tools and appliances which may be needed to adjust,
18 operate, maintain or repair the equipment. Such tools and appliances shall be
19 furnished in approved painted steel cases, properly labeled and equipped with
20 good grade cylinder locks and duplicate keys.

21

22 Spare parts shall be furnished as specified. Where spare parts are specified to
23 be "manufacturer's recommended" or "as recommended by the manufacturer",
24 the Contractor shall furnish those spare parts that are normally or commonly
25 recommended by the manufacturer as shown on the manufacturer's readily
26 available literature.

27

28 Each piece of equipment shall be provided with a substantial nameplate,
29 securely fastened in place and clearly inscribed with the manufacturer's name,
30 year of manufacture, serial number, weight and principal rating data.

31

32 D. Installation of Equipment

33

34 The Contractor shall have on hand sufficient proper equipment and machinery
35 of ample capacity to facilitate the work and to handle all emergencies normally
36 encountered in work of this character.

37

38 Equipment shall be erected in a neat and workmanlike manner on the
39 foundations at the locations and elevations shown on the Drawings, unless
40 directed otherwise by the Engineer during installation. All equipment shall be
41 correctly aligned, leveled and adjusted for satisfactory operation and shall be
42 installed so that proper and necessary connections can be made readily
43 between the various units.

44

45 The Contractor shall furnish, install and protect all necessary anchor and
46 attachment bolts and all other appurtenances needed for the installation of the
47 devices included in the equipment specified. Anchor bolts shall be as approved

1 by the Engineer and made of ample size and strength for the purpose intended.
2 Substantial templates and working drawings for installation shall be furnished.
3

4 The Contractor shall, at his own expense, furnish all materials and labor for, and
5 shall properly bed in non-shrink grout, each piece of equipment on its supporting
6 base that rests on masonry foundations. Grout shall completely fill the space
7 between the equipment base and the foundation. All metal surfaces coming in
8 contact with concrete or grout shall receive a coat of coal tar epoxy equal to
9 Kop-Coat 300M.

10
11 E. Service of Manufacturer's Representative
12

13 The prices for equipment shall include the cost of furnishing a competent and
14 experienced engineer or superintendent who shall represent the manufacturer
15 and shall assist the Contractor, when required, to install, adjust, test and place
16 in operation the equipment in conformity with the Contract Documents.
17

18 Prior to placing the equipment in permanent operation, the manufacturer shall
19 furnish to the Engineer and Contractor a written Certificate of Proper Installation
20 stating that the equipment has been installed in strict accordance with the
21 manufacturer's recommendations.
22

23 After the equipment is placed in permanent operation by the Owner, such
24 engineer or superintendent shall make all adjustments and tests required by the
25 Engineer to prove that such equipment is proper and in satisfactory operating
26 condition, shall instruct such personnel as may be designated by the Owner in
27 the proper operation and maintenance of such equipment.
28

29 1.04 INSPECTION AND TESTING
30

31 A. General
32

33 For tests specified to be made by the Contractor, the testing personnel shall
34 make the necessary inspections and tests and the reports thereof shall be in
35 such form as will facilitate checking to determine compliance with the Contract
36 Documents. Five copies of the reports shall be submitted and authorities'
37 certification thereof must be furnished to the Engineer as a prerequisite for the
38 acceptance of any material or equipment.
39

40 If, in the making of any test of any material or equipment, it is ascertained by
41 the Engineer that the material or equipment does not comply with the Contract,
42 the Contractor will be notified thereof and he will be directed to refrain from
43 delivering said material or equipment, or to remove it promptly from the site or
44 from the work and replace it with acceptable material, without cost to the Owner.
45

1 Tests of electrical and mechanical equipment and appliances shall be
2 conducted in accordance with recognized test codes of the ANSI, ASME, or the
3 IEEE, except as may otherwise be stated herein.
4

5 The Contractor shall be fully responsible for the proper operation of equipment
6 during tests and instruction periods and shall neither have nor make any claim
7 for damage that may occur to equipment prior to the time when the Owner
8 formally takes over the operation thereof.
9

10 B. Costs
11

12 All inspections and testing of materials furnished and demolished under this
13 Contract shall be performed by the Contractor at his expense, unless otherwise
14 expressly specified.
15

16 The cost of shop and field tests of equipment and of certain other tests
17 specifically called for in the Contract Documents shall be borne by the
18 Contractor and such costs shall be deemed to be included in the Contract price.
19

20 Materials and equipment submitted by the Contractor as equivalent to those
21 specified may be tested by the Owner for compliance with the specifications.
22 The Contractor shall reimburse the Owner for the expenditures incurred in
23 making such tests on materials and equipment that are rejected for non-
24 compliance.
25

26 C. Inspection of Materials
27

28 The Contractor shall give notice in writing to the Engineer, sufficiently in
29 advance of his intention to commence the manufacture or preparation of
30 materials especially manufactured or prepared for use in or as part of the
31 permanent construction. Such notice shall contain a request for inspection, the
32 date of commencement and the expected date of completion of the manufacture
33 or preparation of materials. Upon receipt of such notice, the Engineer will
34 arrange to have a representative present at such times during the manufacture
35 as may be necessary to inspect the materials or he will notify the Contractor that
36 the inspection will be made at a point other than the point of manufacture, or he
37 will notify the Contractor that inspection will be waived. The Contractor must
38 comply with these provisions before shipping any material. Such inspection
39 shall not release the Contractor from the responsibility for furnishing materials
40 meeting the requirements of the Contract Documents.
41

42 D. Certificate of Manufacture
43

44 When inspection is waived or when the Engineer so requires, the Contractor
45 shall furnish to him authoritative evidence in the form of Certificates of
46 Manufacture that the materials to be used in the work have been manufactured
47 and tested in conformity with the Contract Documents. These certificates shall

1 be notarized and shall include copies of the results of physical tests and
2 chemical analyses, where necessary, that have been made directly on the
3 product or on similar products of the manufacturer.

4

5 E. Shop Tests of Operating Equipment

6

7 Each piece of equipment for which pressure, duty, capacity, rating, efficiency,
8 performance, function or special requirements are specified shall be tested in
9 the shop of the maker in a manner which shall conclusively prove that its
10 characteristics comply fully with the requirements of the Contract Documents.
11 No such equipment shall be shipped to the work until the Engineer notifies the
12 Contractor, in writing, that the results of such tests are acceptable.

13

14 Five copies of the manufacturer's actual test data and interpreted results
15 thereof, accompanied by a certificate of authenticity sworn to by a responsible
16 official of the manufacturing company, shall be forwarded to the Engineer for
17 approval.

18

19 The cost of shop tests and of furnishing manufacturer's preliminary and shop
20 test data of operating equipment shall be borne by the Contractor.

21

22 F. Preliminary Field Tests

23

24 As soon as conditions permit, the Contractor shall furnish all labor, materials,
25 and instruments and shall make preliminary field tests of equipment. If the
26 preliminary field tests disclose any equipment furnished under this Contract that
27 does not comply with the requirements of the Contract Documents, the
28 Contractor shall, prior to the acceptance tests, make all changes, adjustments
29 and replacement required. The furnishing Contractor shall assist in the
30 preliminary field tests as applicable.

31

32 G. Final Field Tests

33

34 Upon completion of the work and prior to final payment, all equipment and piping
35 installed under this Contract shall be subjected to acceptance tests as specified
36 or required to prove compliance with the Contract Documents.

37

38 The Contractor shall furnish labor, fuel, energy, water and all other materials,
39 equipment and instruments necessary for all acceptance tests, at no additional
40 cost to the Owner. The Supplier shall assist in the final field tests as applicable.

41

42 H. Failure of Tests

43

44 Any defects in the materials and equipment or their failure to meet the tests,
45 guarantee or requirements of the Contract Documents shall be promptly
46 corrected by the Contractor by replacements or otherwise as directed by the
47 Engineer. The decision of the Engineer as to whether or not the Contractor has

1 fulfilled his obligations under the Contract shall be final and conclusive. If the
2 Contractor fails to make these corrections or if the improved materials and
3 equipment, when tested, shall again fail to meet the guarantees or specified
4 requirements, the Owner, notwithstanding its partial payment for work, and
5 materials and equipment, may reject the materials and equipment and may
6 order the Contractor to remove them from the site at his own expense.
7

8 I. Final Inspection
9

10 During such final inspections, the work shall be clean and free from water. In
11 no case will the final estimate be prepared until the Contractor has complied
12 with all requirements set forth and the Engineer has made his final inspection of
13 the entire work and is satisfied that the entire work is properly and satisfactorily
14 constructed in accordance with the requirements of the Contract Documents.
15

16 1.05 TEMPORARY STRUCTURES
17

18 A. Temporary Fences
19

20 If, during the course of the work, it is necessary to remove or disturb any fence
21 or part thereof, the Contractor shall, at his own expense, if so ordered by the
22 Engineer, provide a suitable temporary fence, which shall be maintained until
23 the permanent fence is replaced. The Engineer shall be solely responsible for
24 the determination of the necessity for providing a temporary fence and the type
25 of temporary fence to be used.
26

27 B. Temporary Driveways
28

29 At its own expense, the Contractor shall furnish, install, maintain and remove all
30 temporary driveways and access roads required to provide access to the work
31 and through the site of the work to maintain existing operations and to allow
32 construction of other projects in the area. The Contractor shall fully cooperate
33 with the Owner in providing this access.
34

35 C. Temporary Structures and Facilities
36

37 The Contractor shall construct any temporary piping and facilities as required in
38 order to maintain existing treatment capacity and operations during
39 construction.
40

41 1.06 TEMPORARY SERVICES
42

43 A. First Aid
44

45 The Contractor shall keep upon the site, at each location where work is in
46 progress, a completely equipped first aid kit and shall provide ready access
47 thereto at all times when people are employed on the work.

1
2 1.07 LINES AND GRADE
3

4 A. Grade
5

6 All work under this Contract shall be constructed in accordance with the lines
7 and grades shown on the Drawings, or as given by the Engineer. The full
8 responsibility for keeping alignment and grade rests upon the Contractor.
9

10 The Contractor, prior to commencing of construction, shall have established
11 bench marks and base line controlling points. The Contractor shall so place
12 excavation and other materials as to cause no inconvenience in the use of the
13 reference marks provided. He shall remove any obstructions placed by him
14 contrary to this provision.
15

16 B. Surveys
17

18 The Contractor shall furnish and maintain, at his own expense, stakes and other
19 such materials to establish all working or construction lines and grades, as
20 required, and shall be solely responsible for the accuracy thereof.
21

22 All surveying shall be performed in accordance with Specification 01050.
23

24 C. Safeguarding Marks
25

26 The Contractor shall safeguard all points, stakes, grade marks, monuments and
27 bench marks made or established on the work, bear the cost of re-establishing
28 them if disturbed, and bear the entire expense of rectifying work improperly
29 installed due to not maintaining or protecting or to removing without
30 authorization such established points, stakes and marks.
31

32 The Contractor shall safeguard all existing and known property corners,
33 monuments and marks adjacent to but not related to the work and, if required,
34 shall bear the cost of re-establishing them if disturbed or destroyed.
35

36 1.08 ADJACENT STRUCTURES AND LANDSCAPING
37

38 A. The Contractor shall also be entirely responsible and liable for all damage or
39 injury as a result of his operations to all other adjacent public and private
40 property, structures of any kind and appurtenances thereto met with during the
41 progress of the work. The cost of protection, replacement in their original
42 locations and conditions or payment of damages for injuries to such adjacent
43 public and private property and structures affected by the work, whether or not
44 shown on the Drawings or specified shall be included in the various Contract
45 Items and no separate payments will be made therefore. Where such public
46 and private property, structures of any kind and appurtenances thereto are not

1 shown on the Drawings and when, in the opinion to avoid interference with the
2 work, payment therefore will be made as provided for in the General Conditions.
3

4 Contractor is expressly advised that the protection of buildings structures,
5 tunnels, tanks, pipelines, etc. and related work adjacent to and in the vicinity of
6 his operations, wherever they may be, is solely his responsibility. Conditional
7 inspection of buildings or structures in the immediate vicinity of the project which
8 may reasonably be expected to be affected by the Work shall be performed by
9 and be the responsibility of the Contractor.

10 Contractor shall, before starting operations, make an examination of the interior
11 and exterior of the adjacent structures, buildings, facilities, etc., and record by
12 noted, measurements, photographs, etc., conditions which might be aggravated
13 by open excavation and construction. Repairs or replacement of all conditions
14 disturbed by the construction shall be made to the satisfaction of the Owner and
15 to the satisfaction of the Engineer. This does not preclude conforming to the
16 requirements of the insurance underwriters. Copies of surveys, photographs,
17 reports, etc., shall be given to the Engineer.

18 Prior to the beginning of any excavations the Contractor shall advise the
19 Engineer of all building or structures on which he intends to perform work or
20 which performance of the project work will affect.

21 B. Protection of Trees

- 22 1. The Contractor shall adequately protect all trees and shrubs with boxes
23 or otherwise in accordance with ordinances governing the protection of
24 trees. No excavated materials shall be placed so as to injure such trees
25 or shrubs. Trees or shrubs destroyed through negligence of the
26 Contractor or his employees shall be replaced with new stock of similar
27 size and age, in the proper season and at the sole expense of the
28 Contractor.
- 29 2. Beneath trees or other surface structures, where possible, pipelines may
30 be built in short tunnels, backfilled with excavated materials, except as
31 otherwise specified, or the trees or structures carefully supported and
32 protected from damage.
- 33 3. The Owner may order the Contractor, for the convenience of the Owner,
34 to remove trees along the line or trench excavation. If so ordered, the
35 Owner will obtain any permits required for removal of trees.

36 C. Lawn Areas

37 Lawn areas shall be left in as good condition as before the starting of the work.
38 Where sod is to be removed, it shall be carefully removed, and later replaced,
39 or the area where sod has been removed shall be restored with new sod.

1
2 D. Restoration of Fences
3

4 Any fence, or part thereof, that is damaged or removed during the course of the
5 work shall be replaced or repaired by the Contractor and shall be left in as good
6 or better a condition as existed before starting the work. The manner in which
7 the fence is repaired or replaced and the materials used in such work shall be
8 subject to the approval of the Engineer. No additional payment will be made for
9 the replacement or repair of any fence.
10

11 1.09 PROTECTION OF WORK AND PUBLIC
12

13 A. Barriers and Lights
14

15 During the prosecution of the work, the Contractor shall put up and maintain at
16 all times such barriers and lights as will effectively prevent accidents. The
17 Contractor shall provide suitable barricades, red lights, "danger" or "caution" or
18 "street closed" signs and watchmen at all places where the work causes
19 obstructions to the normal traffic or constitutes in any way a hazard to the public.
20

21 B. Smoke Prevention
22

23 The Contractor shall use hard coal, coke, oil or gas as fuel for equipment
24 generating steam. A strict compliance with ordinances regulating the production
25 of emission of smoke will be required. No open fires will be permitted.
26

27 C. Noise
28

29 The Contractor shall eliminate noise to as great an extent as practicable at all
30 times. Air compressing plants shall be equipped with silencers and the exhaust
31 of all gasoline motors or other power equipment shall be provided with mufflers.
32 In the vicinity of hospitals and schools, special care shall be used to avoid noise
33 or other nuisances. The Contractor shall strictly observe all local regulations
34 and ordinances covering noise control.
35

36 Except in the event of an emergency, no work shall be done between the hours
37 of 7:00 P.M. and 7:00 A.M., or on Sundays. If the proper and efficient
38 prosecution of the work requires operations during the night, the written
39 permission of the Engineer shall be obtained before starting such items of the
40 work.
41

42 D. Access to Public Services
43

44 Neither the materials excavated nor the materials or plant used in the
45 construction of the work shall be so placed as to prevent free access to all fire
46 hydrants, valves or manholes.
47

1 E. Dust Prevention
2

3 The Contractor shall prevent dust nuisance from his operations or from traffic
4 by keeping the roads and/or construction areas sprinkled with water at all times
5 or when directed by the Owner and/or Engineer.
6

7 1.10 CUTTING AND PATCHING
8

9 A. The Contractor shall do all cutting, fitting or patching of his portion of the work
10 that may be required to make the several parts thereof join and coordinate in a
11 manner satisfactory to the Engineer and in accordance with the Drawings and
12 Specifications. The work shall be performed by competent workmen skilled in
13 the trade required by the restoration.
14

15 1.11 CLEANING
16

17 A. During construction of the work, the Contractor shall, at all times, keep the site
18 of the work and adjacent premises as free from material, debris and rubbish as
19 is practicable and shall remove the same from any portion of the site if, in the
20 opinion of the Engineer, such material, debris, or rubbish constitutes a nuisance
21 or is objectionable.
22

23 The Contractor shall remove from the site all of his surplus materials and
24 temporary structures when no further need therefore develops.
25

26 B. Final Clearing
27

28 At the conclusion of the work, all erection plant, tools, temporary structures and
29 materials belonging to the Contractor shall be promptly taken away, and he shall
30 remove and promptly dispose of all water, dirt, rubbish or any other foreign
31 substances.
32

33 The Contractor shall thoroughly clean all equipment and materials installed by
34 him and shall deliver such materials and equipment undamaged in a bright,
35 clean, polished and new operating condition.
36

37 1.12 MISCELLANEOUS
38

39 A. Protection Against Siltation and Bank Erosion
40

41 1. The Contractor shall arrange his operations to minimize siltation and
42 bank erosion on construction sites and on existing or proposed water
43 courses, drainage ditches, wetlands and other areas of concern.
44

45 2. The Contractor, at his own expense, shall remove any siltation deposits
46 and correct any erosion problems as directed by the Engineer that results
47 from his construction operations.

1
2 3. The Contractor shall be solely responsible for any fines resulting from the
3 encroachment of any environmentally protected areas.
4

5 B. Protection of Wetland Areas
6

7 The Contractor shall properly dispose of all surplus material, including soil, in
8 accordance with Local, State and Federal regulations and the permits issued
9 for this project. Under no circumstances shall surplus material be disposed of
10 in wetland areas as defined by the Florida Department of Environmental
11 Protection, Southwest Florida Water Management District, U.S. Army Corps of
12 Engineers, etc.

13 C. Existing Facilities
14

15 The work shall be so conducted to maintain existing facilities in operation insofar
16 as is possible. Requirements and schedules of operations for maintaining
17 existing facilities in service during construction shall be as described in herein.
18

19 D. Use of Chemicals
20

21 All chemicals used during project construction or furnished for project operation,
22 whether herbicide, pesticide, disinfectant, polymer, reactant, or of other
23 classification, must show approval of either EPA or USDA. Use of all such
24 chemicals and disposal of residues shall be in strict conformance with
25 manufacturers' instructions.
26

27 E. Tree Removal
28

29 The Contractor shall notify the Engineer and any regulatory authorities forty-
30 eight (48) hours in advance of any removal of trees on the project. No clearing
31 shall occur and no earth moving equipment shall be placed on-site until after
32 the notice has been issued. The Contractor shall provide maintenance of the
33 tree barricades and other preventive measures to protect the trees that are to
34 remain. Failure to notify the Engineer before removing trees shall result in the
35 in-kind replacement of the tree at no additional cost to the Owner.
36

37 F. Sanitary and Storm Sewer Systems
38

39 The Contractor shall be entirely responsible for the satisfactory installation of
40 storm sewer and sanitary sewer systems to be in substantial conformance to
41 the approved Drawings. It is strongly recommended that no roadway base or
42 paving be constructed until the Contractor has performed lamping of these lines
43 to his and the Engineer's satisfaction, and all storm sewer and sanitary sewer
44 invert grades are verified in the field by the Owner. The lamping of lines and
45 verification of elevations in no way absolves the Contractor from any of his
46 contractual obligations.
47

1
2 G. Related Permits
3

4 The Contractor recognizes that the Owner has applied for, and may have
5 received, certain permits pertaining to the work. At the sole discretion of the
6 Owner, the Owner may assign said permits to the Contractor and the Contractor
7 shall accept said assignments upon such request from the Owner.
8

9 H. All work in the vicinity of open waters, wetlands or any jurisdictional area is to
10 be performed in strict accordance with the environmental permits and their
11 conditions. Erosion barriers, when shown on the construction Drawings, are the
12 minimum required. If the Contractor's construction methods require that
13 additional erosion control is necessary to satisfy these permits, such controls
14 shall be supplied, installed and maintained throughout the construction process
15 by the Contractor at no additional cost to the Owner or Engineer.
16

17 It is the sole responsibility of the Contractor to submit, in a timely manner, any
18 information, data, etc. which is required as a condition of a permit. Required
19 information, data, etc. shall be submitted directly to the permitting agency by the
20 Contractor with copies to the permittee and the Engineer. The Contractor will
21 be held responsible for any fine(s) or other action resulting from a violation of
22 permit conditions.
23

24 1.13 DISPOSAL
25

26 A. The Contractor shall directly pay all tipping fees associated with disposal of the
27 construction demolition debris at all site. The Contractor shall provide and
28 include in its bid all costs associated with hauling, disposal, and tipping fees.
29

30 1.14 RESTORATION OF PROPERTY
31

32 A. Responsibility. All damage resulting from construction work on existing
33 structures, wetland areas, roadway pavement, driveways, other paved areas,
34 fences, utilities, traffic control devices and any other obstruction not specifically
35 named herein, shall be repaired, restored or replaced by the Contractor unless
36 otherwise specified.
37

38 B. Temporary Repairs. All damage named in Paragraph A above shall be at least
39 temporarily repaired, restored or replaced immediately following construction
40 efforts at that location. Temporary restoration shall mean putting the affected
41 area back into a safe, usable condition. In no case shall trenches remain open
42 overnight within a street right-of-way unless the governing Traffic Control
43 Division grants specific approval.
44

45 C. Permanent Repairs. All damage shall be permanently repaired, restored, or
46 replaced not later than the 30th calendar day following the completion of
47 construction at that location unless otherwise stipulated. Permanent repairs will

be accomplished in a professional workmanship-like manner in accordance with Specifications contained herein, or contract documents, if addressed. The Contractor may be relieved of the 30-day time limit above only by specific written agreement with the Engineer.

D. Owner Retribution. In the event that the Contractor fails to make the permanent repairs within the time specified, the Owner, at its option, will, with its own resources or by contract with others, cause the repair, restoration, or replacement of the affected area to be accomplished. The costs of such work will be deducted either from the next pay request or from any other monies owed the Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

1 SECTION 01014
2

3 SUMMARY OF WORK
4

5 PART 1 - GENERAL
6

7 1.01 LOCATION OF WORK
8

9 A. All Work of this Contract is located in rights-of-way, easements, or on property
10 owned by the City of Clearwater, Florida.
11

12 1.02 WORK TO BE DONE
13

14 A. The Contractor shall furnish all labor, materials, equipment, tools, services
15 and incidentals to complete all work required by these Specifications and as
16 shown on the Drawings.
17

18 B. The Contractor shall perform the work complete, in place and ready for
19 continuous service, and shall include repairs, testing, permits, clean up,
20 replacements, and restoration required as a result of damages caused during
21 this construction.
22

23 C. All materials, equipment, skills, tools, and labor that is reasonably and
24 properly inferable and necessary for the proper completion of the work in a
25 substantial manner and in compliance with the requirements stated or implied
26 by these Specifications or Drawings, or required by Law, shall be furnished
27 and installed by the Contractor without additional compensation, whether
28 specifically indicated in the Contract Documents or not.
29

30 D. The Contractor shall comply with all Municipal, County, State, Federal, and
31 other codes applicable to the proposed demolition, removal, and disposal
32 work.
33

34 1.03 OVERALL DESCRIPTION OF WORK TO BE PERFORMED
35

36 A. The purpose of this Contract is to demolish and dispose of the liquid and solids
37 contents of the digester off-site and to demolish and dispose of off-site the
38 digester structure including roofing system, the attached building, the adjacent
39 trees including the stumps, and to restore the ground surface as shown on the
40 Contract Drawings, as specified herein, and as generally described as follows:
41

- 42 1. Provide mobilization, demobilization, insurances, permits and bonds.
43 2. Prepare the site by installing stormwater system inlet protection and
44 erosion control devices.
45

- 1 4. Perform the work identified on the drawings and described in these
2 specifications.
- 3
- 4 5. Obtain, fill out and submit all forms and permit applications required for
5 the work including but not limited to demolition and disposal of all
6 Hazardous and Non-Hazardous Waste and debris. Secure all permits
7 required for the work including but not limited to demolition and
8 disposal of all Hazardous and Non-Hazardous Waste and debris.
- 9
- 10 6. Remove and dispose of the foliage growing in the digester.
- 11
- 12 7. Furnish all labor, materials, services, permits, equipment, utility,
13 disposal and transportation services required and necessary for the
14 testing and lawful removal, transportation, and disposal of materials
15 found in and on the digester cover, as well as those hazardous
16 materials in the piping and pumping building/structures as identified in
17 the investigations and surveys prepared for this project and included in
18 the Appendix to these specifications.
- 19
- 20 8. Remove and dispose of all liquids and solids inside the digester as
21 described in Section 01016 Construction Phasing Plan.
- 22
- 23 9. Demolish and dispose of the digester structure, internal and external
24 piping, adjacent building, heat exchanger, pumping equipment, and
25 associated mechanical and electrical equipment, and other work
26 identified on the drawings or in these specifications.
- 27
- 28 10. Remove and/or cap and abandon existing piping as noted on the
29 drawings.
- 30
- 31 11. Survey locations of existing foundation piling, if found.
- 32
- 33 12. Fill, compact and grade the site, including pre and post topographical
34 surveys.
- 35
- 36 13. Restore the site.

37

B. Existing Conditions

- 38
- 39
- 40 1. The existing digester is shown on the original construction drawings to
41 be 100-foot in diameter and 25.5-feet deep from the top of the vertical
42 side wall to the invert of the conical bottom. The digester may or may
43 not have been constructed on piles. If constructed on piles, the
44 Contractor shall preserve the piles and document those locations as
45 described elsewhere in these specifications.
- 46

2. There is considerable foliage and trees visible atop the digester cover. The Contractor should note that if digester roof collapses, it could damage the internal digester piping that could, in-turn, damage the wall of the digester structure resulting in an unregulated discharge of liquids, solids and other materials from the digester. Following the Notice to Proceed, the Contractor shall be solely responsible for the proper clean-up of any materials discharged from the digester, to the satisfaction of the Owner and regulatory agencies having jurisdiction, as well as any fines imposed by regulatory agencies having jurisdiction.
 3. The Contractor's attention is directed to the previous hazardous materials investigations and surveys contained in the Appendix to these Contract Documents, which have been conducted on the digester, the adjacent piping and pumping building, and associated facilities that are to be demolished as part of this project.

The Contractor shall be solely responsible for preparing all necessary regulatory notifications needed to meet the Contract Times. See Section 01016 Construction Phasing Plan.

The Contractor shall be solely responsible for performing all work in accordance with all laws and permits.

The Contractor shall be responsible for field verifying all conditions and quantities that may affect his work prior to bidding this project.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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1 SECTION 01015
2

3 CONTROL OF WORK
4

5 PART 1 - GENERAL
6

7 1.01 WORK PROGRESS
8

9 A. The Contractor shall provide equipment that will be efficient, safe, appropriate
10 and large enough to secure a satisfactory quality of work and a rate of progress
11 which will insure the completion of the work within the Contract Times. If, at any
12 time, such facilities appear to the Engineer to be inefficient, inappropriate,
13 insufficient or unsafe for securing the quality of work required or for producing
14 the rate of progress aforesaid, he may order the Contractor to increase the
15 facilities equipment, and the Contractor shall conform to such order. Failure of
16 the Engineer to give such order shall in no way relieve the Contractor of his
17 obligations to secure the quality of the work and rate of progress required.
18

19 1.02 PRIVATE LAND
20

21 A. The Contractor shall not enter or occupy private land outside of easements,
22 except by permission of the Owner.
23

24 1.03 WORK LOCATIONS
25

26 A. Work shall be located substantially as indicated on the Drawings, but the
27 Engineer reserves the right to make such modifications in locations as may be
28 found desirable to avoid interference with existing structures or for other
29 reasons. Where fittings are noted on the Drawings, such notation is for the
30 Contractor's convenience and does not relieve him from laying and jointing
31 different or additional items where required.
32

33 1.04 OPEN EXCAVATIONS
34

35 A. All open excavations shall be adequately safeguarded by providing temporary
36 barricades, caution signs, lights and other means to prevent accidents to
37 persons, and damage to property. The Contractor shall, at his own expense,
38 provide suitable and safe bridges and other crossings for accommodating travel
39 by Owner's personnel, pedestrians and workmen. Bridges provided for access
40 to private property during construction shall be removed when no longer
41 required. The length of open trench will be controlled by the particular
42 surrounding conditions and does not endanger existing facilities. If the
43 excavation becomes a hazard, or if it excessively restricts traffic, construction
44 procedures such as limiting the length of open trench, prohibiting stacking
45 excavated material in the street, and requiring that the trench shall not remain
46 open overnight.
47

1 B. The Contractor shall take precautions to prevent injury to the public due to open
2 trenches. All trenches, excavated material, equipment, or other obstacles,
3 which could be dangerous to the public, shall be well lighted at night.
4

5 **1.05 TEST PITS**

6

7 A. The Contractor shall excavate test pits for locating underground pipeline or
8 structures in advance of construction to verify that the work can be constructed
9 as intended. Test pits shall be excavated and backfilled by the Contractor so
10 as not to create a hazardous area. Test pits shall be backfilled immediately
11 after their purpose has been satisfied and the surface restored and maintained
12 in a manner satisfactory to the Engineer.

13

14 **1.06 MAINTENANCE OF TRAFFIC**

15

16 A. Unless permission to close a street is received in writing from the proper
17 authority, all excavated material shall be placed so that vehicular and pedestrian
18 traffic may be maintained at all times. If the Contractor's operations cause traffic
19 hazards, he shall repair the road surface, provide temporary ways, erect wheel
20 guards or fences, or take other measures for safety satisfactory to the Engineer.

21

22 B. Detours around construction will be subject to the approval of the Owner and
23 the Engineer. Where detours are permitted, the Contractor shall provide all
24 necessary barricades and signs as required to divert the flow of traffic. While
25 traffic is detoured the Contractor shall expedite construction operations and
26 those periods when traffic is being detoured will be strictly controlled by the
27 Owner.

28

29 C. The Contractor shall take precautions to prevent injury to the public due to open
30 trenches. Night watchmen may be required where special hazards exist, or
31 police protection provided for traffic while work is in progress. The Contractor
32 shall be fully responsible for damage or injuries whether or not police protection
33 has been provided.

34

35 **1.07 CARE AND PROTECTION OF PROPERTY**

36

37 A. The Contractor shall be responsible for the preservation of all public and private
38 property and shall use every precaution necessary to prevent damage thereto.
39 If any direct or indirect damage is done to public or private property by or on
40 account of any act, omission, neglect, or misconduct in the execution of the work
41 on the part of the Contractor, such property shall be restored by the Contractor,
42 at his expense, to a condition similar or equal to that existing before the damage
43 was done, or he shall make good the damage in other manner acceptable to
44 the Engineer.

45

46 B. All sidewalks that are disturbed by the Contractor's operations shall be restored
47 to their original condition with the use of similar or comparable materials. All

1 curbing shall be restored in a condition equal to the original construction and in
2 accordance with the best modern practice.
3

- 4 C. Along the location of the work all fences, walks, bushes, trees, shrubbery, and
5 other physical features shall be protected and restored in a thoroughly
6 workmanlike manner. Fences and other features removed by the Contractor
7 shall be replaced in the location indicated by the Engineer as soon as conditions
8 permit. All grass areas beyond the limits of construction that have been
9 damaged by the Contractor shall be restored to original conditions.
10
- 11 D. Trees close to the work shall be boxed or otherwise protected against injury.
12 The Contractor shall trim all branches that are susceptible to damage because
13 of his operations, but in no case shall any tree be cut or removed without prior
14 notification of the appropriate tree authority. All injuries to bark, trunk, limbs,
15 and roots of trees shall be repaired by dressing, cutting, and painting in
16 accordance with approved methods, using only approved tools and materials.
17
- 18 E. The protection, removal, and replacement of existing physical features shall be
19 part of the work under the Contract and all costs in connection therewith shall
20 be included in the unit and/or lump sum prices established.
21

22 1.08 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES
23

- 24 A. The Contractor shall assume full responsibility for the protection of all buildings,
25 structures, and utilities, public or private, including poles, signs, services to
26 buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains,
27 and electric and telephone cables, whether or not they are shown on the
28 Drawings. The Contractor shall carefully support and protect all such structures
29 and utilities from injury of any kind. Any damage resulting from the Contractor's
30 operations shall be repaired by him at his expense.
31
- 32 B. The Contractor shall bear full responsibility for obtaining all locations of
33 underground structures and utilities (including existing water services, drain
34 lines, and sewers). Services shall be maintained and all costs or charges
35 resulting from damage thereto shall be paid by the Contractor.
36
- 37 C. If, in the opinion of the Engineer, permanent relocation of a utility owned by the
38 Owner is required, the Engineer may direct the Contractor in writing, to perform
39 the work. Work so ordered will be paid for at the unit prices bid in the Proposal,
40 if applicable, or as extra work as provided for in the General Conditions. If
41 relocation of a privately-owned utility is required, the Owner will notify the Utility
42 to perform the work as expeditiously as possible. The Contractor shall fully
43 cooperate with the Owner and the Utility, and shall have no claim for delay due
44 to such relocation.
45
- 46 D. Underground and above ground utilities/facilities are identified on the Drawings
47 based on best information available at the time for the preparation of the plans.

1 It is the responsibility of the Contractor to locate all utilities prior to any
2 excavation. The Contractor shall be responsible for any damage to existing
3 underground utilities and facilities and shall coordinate the protection of these
4 utilities with the Owner.

5

6 **1.09 DISTRIBUTION SYSTEMS AND SERVICES**

7

- 8 A. The Contractor shall interrupt water, telephone, Cable TV, sewer, gas, or other
9 related utility services and disrupt the normal functioning of the system as little
10 as possible, and shall notify the Engineer and public well in advance of any
11 requirement for dewatering, isolating, or relocating a section of a utility, so that
12 necessary arrangements may be made with the appropriate agency.
- 13 B. If it appears that utility service will be interrupted for an extended period, the
14 Engineer may order the Contractor to provide temporary service lines.
15 Inconvenience of the users shall be the minimum, consistent with the existing
16 conditions. The safety and integrity of the system is of prime importance in
17 scheduling work.
- 18

19

20 **1.10 PROTECTION OF CONSTRUCTION AND EQUIPMENT**

21

- 22 A. All newly constructed work shall be carefully protected from injury or damage in
23 every way. No wheeling or walking or placing of heavy loads shall be allowed
24 and any portion injured or damaged shall be reconstructed by the Contractor at
25 his own expense.

26

27 **1.11 WATER FOR CONSTRUCTION PURPOSES**

28

- 29 A. Except as noted elsewhere in these specifications, the Contractor shall be
30 responsible for providing and paying for all water required for construction
31 purposes. The Contractor shall make all connections and other provisions,
32 including backflow prevention and metering provisions, necessary to obtain said
33 water from the local utility's potable and/or reclaimed water system, as required.
34 The Contractor shall pay the appropriate party for all water used for construction
35 purposes. Bid prices shall include the costs incurred for water usage.

36

37 **1.12 MAINTENANCE OF FLOW**

38

- 39 A. The Contractor shall, at his own cost, provide for the flow of sewers, drains, and
40 water courses interrupted during the progress of the work, and shall immediately
41 remove all offensive matter. The entire procedure for maintaining existing flows
42 shall be approved by the Engineer in advance of the interruption of any flow.

43

44 **1.13 COOPERATION WITHIN THIS CONTRACT**

45

- 46 A. All firms or persons authorized to perform any work under this Contract shall
47 cooperate with the General Contractor and his subcontractors or trades, and

1 shall assist in incorporating the work of other trades where necessary or
2 required.
3

- 4 B. Cutting and patching, drilling and fitting shall be carried out where required by
5 the trade or subcontractor having jurisdiction, unless otherwise indicated herein
6 or directed by the Engineer.
7

8 1.14 COOPERATION OUTSIDE THIS CONTRACT
9

- 10 A. As part of normal and/or emergency system operations and maintenance, the
11 Owner may employ the services of contractors outside this contract. As such,
12 the Contractor of this Work shall coordinate their schedule with and
13 accommodate said contractor as necessary for the execution of their work. This
14 coordination shall be provided at no additional cost to the Owner.
15
- 16 B. As part of normal and/or emergency system operations and maintenance, the
17 Owner has normal delivery and maintenance suppliers that will be on-site on a
18 regular basis. Contractor shall allow continuous access to all equipment and
19 facilities, so as not to impede the operation and maintenance of said facility.
20 This coordination shall be provided at no additional cost to the Owner.
21

22 1.15 CLEAN-UP
23

- 24 A. During the course of the work, the Contractor shall keep the site of his
25 operations in a clean and neat condition. He shall remove, transport and
26 properly dispose of all surplus broken pavement, crushed concrete, lumber,
27 excess steel, equipment, temporary structures, and any other refuse from the
28 construction operation, on a weekly basis or as directed by the Owner and/or
29 Engineer. At the conclusion of the work, he shall remove, transport and properly
30 dispose of any surplus excavation, and refuse remaining from the construction
31 operation, and shall leave the entire site of his work in a neat and orderly
32 condition.
33
- 34 B. The Contractor shall provide for disposal of excavated material removed from
35 the site.
36

37 1.16 COORDINATION WITH GAS AND ELECTRICAL UTILITIES
38

- 39 A. If required, the Contractor shall be responsible for coordinating with the power
40 company and the gas company to have electrical/gas service
41 supplied/disconnected.
42

43 1.17 WORK SEQUENCE
44

- 45 A. The Owner may incur penalties for failure to maintain service/operations.
46 Therefore, the Contractor will schedule and complete the work in a manner that
47 assures that the facility maintains service throughout the duration of the project.

1 Prior to taking any service or operation off-line, Contractor shall prepare a work
2 sequence and coordinate all shutdowns with the Owner and/or Engineer. All
3 temporary measures and materials required to meet this condition during
4 construction will be provided, installed, maintained and removed by the
5 Contractor. All costs associated with this effort will be borne by the Contractor.
6 All fines imposed by failure to meet this operating condition, due to the
7 Contractor's Work Sequence, will be borne by the Contractor.

8
9 PART 2 – PRODUCTS (Not Used)

10
11 PART 3 – EXECUTION (Not Used)

12
13
14 END OF SECTION

15
16
17
18
19
20

1 SECTION 01016

2
3 CONSTRUCTION PHASING PLAN
4

5 PART 1 - GENERAL
6

7 1.01 SCOPE
8

- 9 A. At all times during construction of the project, the Marshall Street Water
10 Reclamation Facility (WRF) shall remain in service. At all times the Contractor
11 shall cooperate fully with the operations staff of the WRF in order to minimize
12 disruption to facility operations. No facility or structure shall be taken out of
13 service, except those specifically scheduled to be demolished, without the prior
14 written approval of the Owner or Engineer.
15
- 16 B. The Contractor shall prepare and submit to the Engineer for review a Demolition
17 Plan prior to beginning any work onsite, in accordance with Section 01340, Shop
18 Drawings. The Demolition Plan shall be closely coordinated with the
19 Contractor's construction schedule.
20
- 21 C. Brief, temporary shutdowns of equipment and facilities, and limitations on
22 access to existing facilities may be allowed during critical phases of demolition.
23 The Contractor shall indicate such shutdowns and restricted access in the
24 Demolition Plan and notify the Owner and Engineer requesting approval two (2)
25 weeks prior to any anticipated temporary shutdowns.
26
- 27 D. The Contractor shall maintain clear and safe access around the work area and
28 to the driveway around the facility for passenger vehicles, and other larger
29 vehicles.
30
- 31 E. The Contractor shall monitor and maintain an accounting (weights and volumes)
32 of solids and liquids removed from or added to the digester as described in
33 Section 1.03 of this Specification.
34

35 1.02 DEMOLITION PHASING
36

- 37 A. The demolition phasing described in this section is representative only and the
38 Contractor shall be solely responsible for scheduling and performing the work.
39 The Contractor is referred to Section 01014 Summary of Work and the drawings
40 regarding existing conditions. The Contractor shall prepare and submit for
41 review a Demolition Plan in accordance with Section 02050 and this Section
42 01016.
43
- 44 B. Remove and dispose of those materials and equipment containing hazardous
45 materials in accordance with all regulatory agency requirements.
46

- 1 C. Sample and analyze liquids and solids in the digester, if required by the
2 receiving/disposal entity, and remove and dispose of same in accordance with
3 these specifications and all applicable federal, state, and local regulations.
- 4
- 5 D. Remove and dispose of off-site the foliage growing in the digester tank and on
6 the digester tank cover. Remove the plant debris, soil and sludge that is
7 accumulated on top of the ceiling plate of the floating cover.
- 8
- 9 E. Remove and dispose of the digester cover off-site in accordance with these
10 specifications and all applicable federal, state, and local regulations. The cover
11 of the digester has been identified as having steel trusses, steel purlins, wooden
12 rafters, wooden tongue and groove sheeting, plywood sheathing, and built-up
13 roofing components. The built-up roofing is on top of the plywood and consists
14 of multiple layers of tar paper/felt with asphalt covered with pea gravel. Steel
15 ceiling plates are attached to the underside of the steel truss lower members.
16 An analysis of the paint on the various steel structures comprising the roof
17 structure was performed by Terracon and found to contain lead-based paint,
18 see Appendix.
- 19
- 20 F. The ceiling plate of the digester cover was exposed and cored. A core sample
21 was taken of the digester contents on May 29, 2020. A visual representation of
22 the various quantities of liquids and solids based on this core sample is provided
23 in the reference drawings. An analysis of the various liquids and solids within
24 the digester was performed by Pace Laboratories, see Appendix.
- 25
- 26 G. Remove and dispose of off-site the liquid and solid materials inside the digester.
- 27
- 28 H. Demolish and dispose of the digester and adjacent piping and pumping building
29 structures, including mechanical and electrical equipment.
- 30
- 31 I. Remove underground piping or cap and abandon in place, as indicated on the
32 drawings.
- 33
- 34 J. Survey the horizontal locations and top elevations of the existing foundation
35 piles, if same are found under the digester and associated pump building.
- 36
- 37 K. Fill and grade the site and perform all restoration activities.

- 1
2 B. The discharge of liquids from the digester, as well as the liquids from any solids
3 dewatering activities or wash down activities, shall be disposed of off-site. No
4 liquids shall be returned to the head of the plant or disposed of in the City's
5 sanitary sewer collection system.
6

7 **1.04 REMOVAL AND DISPOSAL OF THE CONTENTS OF THE DIGESTER**
8

- 9 A. All solids and liquids in the digester shall be removed and hauled off-site for
10 disposal. All liquids and solids removed from the digester shall be disposed of
11 off-site in accordance with these specifications and all laws and regulations. No
12 liquids or solids will be returned to the plant or processed by the plant.
13
14 B. Truck and trailers used during the project may not be staged or queued
15 outside of fenced-in grounds of the plant. Truck and trailers used during the
16 project may not block traffic lanes or restrict access to buildings, structures or
17 equipment inside the plant fence.
18
19 E. The Contractor may dewater digester solids on-site. The selection and
20 operation of any dewatering equipment and ancillary equipment is the sole
21 responsibility of the Contractor. All liquids generated by the dewatering
22 operation shall be hauled off site for disposal and shall not be returned to the
23 plant. The dewatered solids shall be lawfully disposed of off-site. The
24 Contractor shall be responsible for securing the necessary permits for hauling
25 and disposing of the solids from the appropriate regulatory agencies, shall
26 maintain all such manifests, and shall submit copies thereof to the Owner, the
27 Engineer and as required by the agencies having jurisdiction.
28
29 F. The Contractor shall collect a representative sample of the solids of each
30 batch or load prior to hauling off-site and analyze the sample for solids
31 concentration (mg/l or % solids). The sample shall be "split" with the City. The
32 Contractor shall secure the services of a NELAC-certified Laboratory to
33 oversee the sampling and to perform the analyses in an approved laboratory
34 in accordance with *Standard Methods* before the materials are removed from
35 the site. Obtain Engineer's approval of each sample taken.
36
37

38 **PART 2 – PRODUCTS**
39 **(NOT USED)**
40

41 **PART 3 – EXECUTION**
42 **(NOT USED)**
43

44 **END OF SECTION**
45

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1 SECTION 01030
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3 SPECIAL PROJECT PROCEDURES
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5 PART 1 - GENERAL
6

7 1.01 WORKMANSHIP, MATERIAL AND EQUIPMENT
8

- 9 A. When a particular product is specified or called for, it is intended and shall be
10 understood by the Contractor that the Contractor's proposal includes those
11 products in its bid. Should the Contractor desire to incorporate products equal
12 to those specified, the Contractor shall furnish information as described in the
13 General Conditions. The alternate product or products submitted by the
14 Contractor shall meet the requirements of the Specifications and shall, in all
15 respects, be equal to the products specified by name herein.
16
- 17 B. All apparatus, mechanism, equipment, machinery and manufactured articles for
18 incorporation into the Work shall be the new and unused standard products of
19 recognized reputable manufacturers unless specifically noted otherwise.
20
- 21 C. Contractor shall properly dispose of all excess materials from the site.
22

23 1.02 CONNECTIONS TO EXISTING SYSTEMS
24

- 25 A. The Contractor shall perform all work necessary to locate, excavate and prepare
26 for connections to the existing systems, as shown on the Drawings. All
27 connections to existing systems shall be coordinated with the Owner and/or
28 Engineer prior to commencing the work. All connections to existing systems
29 shall be attended by the Owner and/or Owner's Representative. The costs for
30 this work and for the actual connection to the existing systems shall be included
31 in the various prices bid and shall not result in any additional cost to the Owner.
32

33 1.03 EXISTING UNDERGROUND PIPING, STRUCTURES AND UTILITIES
34

- 35 A. The attention of the Contractor is directed to the fact that during excavation, the
36 possibility exists that the Contractor may encounter various water, gas,
37 telephone, electrical, and/or other utilities not shown on the Drawings. The
38 Contractor shall exercise extreme care before and during excavation to locate
39 and flag these lines to avoid damage thereto. Should damage occur to an
40 existing line, the Contractor shall immediately contact the utility and the Owner.
41 If the repair is to be completed by the Contractor, it shall be carried out in a
42 timely and quality manner. Costs associated with such damage shall be borne
43 by the Contractor at no additional cost to the Owner.
44
- 45 B. It is the responsibility of the Contractor to ensure that all utility or other poles,
46 the stability of which may be endangered by the close proximity of excavation,
47 are temporarily supported in position while work proceeds in the vicinity of the

1 pole and that utility or other companies concerned be given reasonable advance
2 notice of any such excavation by the Contractor.
3

- 4 C. The locations of existing utilities are shown without express or implied
5 representation, assurance, or guarantee that they are complete or correct or
6 that they represent a true picture of underground piping to be encountered.
7 Encountering existing utilities at different depths or locations than shown on the
8 Drawings shall not be cause for additional costs to the Owner.
9
- 10 D. The existing piping and utilities that interfere with new construction shall be
11 rerouted as shown, specified or required. The Contractor shall excavate test
12 pits sufficiently ahead of the proposed work to predict potential conflicts. Before
13 any piping and utilities not shown on the Drawings are disturbed, the Contractor
14 shall immediately notify the Engineer of the location of the pipeline or utility and
15 shall reroute or relocate the pipeline or utility as directed.
16
- 17 E. The Contractor shall exercise care in any excavation to locate all existing piping
18 and utilities. All utilities that do not interfere with completed work shall be
19 carefully protected against damage. Any existing utilities damaged in any way
20 by the Contractor shall be restored or replaced by the Contractor at his expense,
21 as directed by the Engineer.
22
- 23 F. It is intended that wherever existing utilities such as water, gas, telephone,
24 electrical, or other service lines must be crossed, deflection of the pipe within
25 recommended limits and cover shall be used to satisfactorily clear the
26 obstruction unless otherwise indicated on the Drawings. However, when in the
27 opinion of the Owner or Engineer this procedure is not feasible, he may direct
28 the use of fittings for the utility crossing. The Contractor shall verify utility
29 crossings with test pits prior to construction as required by the Engineer.
30

31 1.04 SERVICES OF MANUFACTURER'S FIELD SERVICE TECHNICIAN
32

- 33 A. Bid prices for equipment furnished shall include the cost of a competent field
34 service technician of the manufacturers of all equipment to supervise the
35 installation, adjustment and testing of the equipment, and to instruct the Owner's
36 operating personnel on operation and maintenance. The approved
37 manufacturer's operation and maintenance data shall be delivered to the
38 Engineer prior to instructing the Owner's personnel. This supervision may be
39 divided into two or more time periods, as required by the installation program or
40 as directed by the Engineer.
41
- 42 B. After installation of the equipment has been completed and the equipment is
43 presumably ready for operation, but before it is operated by others, the
44 manufacturer's field service technician shall inspect, operate, test and adjust the
45 equipment. The inspection shall include at least the following points where
46 applicable:
47

1. Soundness (without damaged parts).
 2. Completeness in all details, as specified and required.
 3. Correctness of setting, alignment, and relative arrangement of various parts.
 4. Adequacy and correctness of packing, sealing and lubricants.
 5. Calibration and adjustment of all related instrumentation and controls.
 6. Energize equipment.
 7. Deficiency correction.
 8. Demonstration of compliance with applicable performance specification.
- C. The operation, testing and adjustment shall be as required to prove that the equipment has been left in proper condition for satisfactory operation under the conditions specified.
- D. Upon completion of this work, the manufacturer's field service technician shall submit to the Engineer in triplicate, a complete, signed report of the results of his inspection, operation, adjustments and tests. The report shall include detailed descriptions of the points inspected, tests and adjustments made, quantitative results obtained if such are specified, and suggestions for precautions to be taken to ensure proper maintenance.
- E. Each equipment manufacturer shall provide instruction to the Owner's operating personnel. Training shall not be performed until the requirements of Paragraphs B, C and D above have been fully satisfied and any specified performance testing completed. Training shall be provided for the number of days specified in each equipment section of these specifications. Training shall be provided on an 8-hour per day basis. Partial days of less than eight (8) full working hours shall not be credited toward the specified duration. Training shall not be concurrent with on-going testing, debugging or installation activities; but shall be on a separate activity devoted exclusively to the instruction of the Owner's personnel in the operation and maintenance of the manufacturer's equipment. Qualified representatives of each equipment manufacturer specifically skilled in providing instruction to operations personnel shall perform training. Training shall provide an overview of operations and maintenance requirements and shall include as a minimum, but not be limited to:
1. Description of unit and component parts.
 2. Operating capabilities and performance criteria.

3. Operating procedures.
4. Maintenance procedures.
5. Servicing and lubrication schedules.
6. Troubleshooting.
7. Electrical instrumentation and control requirements and interface.

The operating and maintenance data to be provided shall be used as a basis for training.

- F. A written "Certificate of Proper Installation" executed by the manufacturer stating that the installation of the equipment is satisfactory, that the equipment has been satisfactorily tested and ready for operation, and that the operating personnel have been instructed in the operation and maintenance of the equipment shall be submitted before start-up by the Owner. The Certificate shall indicate date and time instruction was given and names of operating personnel in attendance. This certification shall be submitted on a certification form approved by the Engineer.
- G. See the Technical Specifications for additional requirements for furnishing the services of the manufacturer's field service technician.
- H. For other equipment furnished, the Contractor, unless otherwise specified, shall furnish the services of accredited field services technicians of the manufacturer only when some evident malfunction or over-heating makes such services necessary in the opinion of the Engineer.

1.05 OPERATING AND MAINTENANCE DATA

- A. Operating and maintenance data for each piece of equipment furnished shall be delivered directly to the Engineer for approval within 60 days of shop drawing approval. No payment shall be made for equipment installed or stored on-site until the Engineer has approved the adequacy and completeness of operating and maintenance data. Final approved copies of operating and maintenance data shall have been delivered to the Engineer prior to scheduling the instruction period with the Owner.

1.06 EQUIPMENT DATA LIST

- A. Obtain, prepare and submit a complete, detailed listing of equipment and motor data for all electrical items furnished under this Contract. This listing shall be submitted with the preliminary draft of Operations and Maintenance Data Manuals on Equipment Data Sheets.

1 1.07 SPARE PARTS

- 2
- 3 A. Spare parts for certain equipment to be provided are specified in the pertinent
4 sections of the Specifications. The Contractor shall collect and store all spare
5 parts in a manner approved by the manufacturer. In addition, the Contractor
6 shall furnish to the Engineer an inventory listing all spare parts, the equipment
7 they are associated with, the name and address of the supplier, and the
8 delivered cost of each item. Copies of actual invoices for each item shall be
9 furnished with the inventory to substantiate the delivered cost. The Contractor
10 shall deliver the spare parts to the Engineer ten (10) days prior to facility start-
11 up.
- 12
- 13 B. All spare parts shall be furnished in containers clearly identified in indelible
14 markings as to contents. Each container shall be packed for prolonged storage.

16 1.08 INSTALLATION OF EQUIPMENT

- 17
- 18 A. Special care shall be taken to ensure proper alignment of all equipment, with
19 particular attention to mechanical equipment such as pumps and electric drives.
20 The units shall be carefully aligned on their foundations by qualified millwrights
21 after their sole plates have been shimmed to true alignment at the anchor bolts.
22 The anchor bolts shall be set in place and the nuts tightened against the shims.
23 After the foundation alignments have been approved by the manufacturer, the
24 bedplates or wing feet of the equipment shall be securely bolted in place. The
25 alignment of equipment shall be further checked after securing to the
26 foundations, and after confirmation of all alignments, the sole plates shall be
27 finally grouted in place. The Contractor shall be responsible for the exact
28 alignment of equipment with associated piping and, under no circumstances,
29 will "pipe springing" be allowed.
- 30
- 31 B. All wedges, shims, filling pieces, keys, packing, or other materials necessary to
32 properly align, level and secure apparatus in place shall be furnished by the
33 Contractor. All parts intended to be plumb or level must be proven exactly so.
34 Any grinding necessary to bring parts to proper bearing after erection shall be
35 done at the expense of the Contractor.

37 1.09 MAINTENANCE AND LUBRICATION SCHEDULES

- 38
- 39 A. For all mechanical and electrical equipment furnished, the Contractor shall
40 provide a list including the equipment name, address and telephone number of
41 the manufacturer's representative and service company so that service and/or
42 spare parts can be readily obtained.

1 1.10 INSTALLATION LISTS

- 2
- 3 A. All manufacturers or equipment suppliers who propose to furnish equipment or
4 products shall submit an installation list to the Engineer along with the required
5 Shop Drawings.
- 6
- 7 B. The installation list shall include all installations (minimum of two) where
8 identical equipment has been installed and has been in operation for a period
9 of at least one (1) year.

10 1.11 SLEEVES AND OPENINGS

- 11
- 12 A. The Contractor shall provide all openings, channels, chases, etc., and install
13 anchor bolts and other items to be embedded in concrete, as required to
14 complete the work under this Contract, together with those required by
15 subcontractors, and shall do all cutting and patching, excepting cutting and
16 patching of materials of a specified trade and as stated otherwise in the following
17 paragraph.
- 18
- 19 B. The Contractor shall coordinate with the subcontractors to provide all sleeves,
20 inserts, hangers, anchor bolts, etc., of the proper size and material for the
21 execution of the work. The Contractor shall be responsible for any corrective
22 cutting and refinishing required to make the necessary openings, chases, etc.
23 In no case shall beams, lintels or other structural members be cut without the
24 written approval of the Engineer.
- 25

26 1.12 PROVISIONS FOR CONTROL OF EROSION

- 27
- 28 A. Sufficient precautions shall be taken during construction to minimize the run-off
29 of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride,
30 or other polluting materials harmful to humans, fish, or other life, into the
31 supplies and surface waters of the state. Control measures must be adequate
32 to assure that turbidity in the receiving water will not be increased more than 10
33 nephelometric turbidity units (NTU), or as otherwise required by the state or
34 other controlling body, in water used for public water supply or fish unless limits
35 have been established for the particular water. In surface water used for other
36 purposes, the turbidity must not exceed 25 NTU unless otherwise permitted.
37 Special precautions shall be taken in the use of construction equipment to
38 prevent operations that promote erosion.
- 39
- 40 B. The Contractor shall comply with the requirements of the EPA-NPDES general
41 permit for storm water discharges and the storm water pollution prevention plan
42 developed for the project.
- 43

1 1.13 VALVE INDICES
2

- 3 A. The Contractor shall be responsible for furnishing tags for all valves required on
4 the work and installing the tags required for his own work. Tags on above
5 ground valves shall be non-corrosive metal or plastic, 2 inches in diameter, 19-
6 gauge thickness. Tags for buried valves shall be secured to a concrete base
7 as shown on the Drawings. Submit to the Engineer for approval, two (2)
8 samples of each type of tag proposed and manufacturer's standard color chart
9 and letter styles. Tags shall have stamped on them the information shown on
10 the Drawings and the data described herein. The Contractor shall submit to the
11 Engineer for approval, not less than 120 days before start-up, a valve schedule
12 containing all valves required for the work. The schedule shall contain for each
13 valve, the location, type, a number, words to identify the valve's function, and
14 the normal operating position. The information contained in the valve schedules
15 shall be coded on the tags in a system provided by the Owner. Above ground
16 valve tags shall be furnished with non-corrosive metal wire for attachment
17 thereof.

18
19 1.14 HURRICANE PREPAREDNESS PLAN
20

- 21 A. Within 30 days of the date of Notice to Proceed, the Contractor shall submit to
22 the Engineer and Owner a Hurricane Preparedness Plan. The Plan should
23 outline the necessary measures that the Contractor proposes to perform at no
24 additional cost to the Owner in case of a hurricane warning.
25
26 B. In the event of inclement weather, or whenever Engineer shall direct; the
27 Contractor shall carefully protect the Work and materials against damage or
28 injury from the weather. If, in the opinion of Engineer, any portion of Work or
29 material has been damaged or injured by reason of failure on the part of the
30 Contractor or subcontractors to set protect the Work, such Work and materials
31 shall be removed and replaced at the expense of the Contractor.
32

33 1.15 WARRANTIES
34

- 35 A. The Contractor and the equipment manufacturers shall warranty all equipment
36 supplied under these Specifications for a minimum period of one (1) year unless
37 otherwise specified. Warranty period shall commence on the date that the Work
38 is accepted by the Owner as substantially complete.
39
40 B. The equipment shall be warranted to be free from defects in workmanship,
41 design and materials. If any part of the equipment should fail during the
42 warranty period, it shall be replaced and returned to service at no expense to
43 the Owner.
44
45 C. If, within the guarantee period, repairs or changes are required in connection
46 with work that in the opinion of the Engineer is rendered necessary as the result
47 of the use of materials, equipment or workmanship that is inferior, defective, or

1 not in accordance with the terms of the Contract, the Contractor shall promptly
2 upon receipt of notice from the Owner and without expense to the Owner:
3

- 4 1. Place in satisfactory condition all such work and correct all defects
5 herein.
 - 6 2. Repair or replace all damage to buildings, the site, or equipment or
7 contents thereof, which, in the opinion of the Engineer, is the result of the
8 use of materials, equipment or workmanship that are inferior, defective,
9 or not in accordance with the terms of the Contract.
 - 10 3. Repair or replace any work or material or equipment disturbed in fulfilling
11 any such guarantee.
- 12 D. If the Contractor, after notice, fails within ten (10) days to proceed to comply
13 with the terms of this guarantee, the Owner may have the defects corrected,
14 and the Contractor and his surety shall be liable for all expenses incurred,
15 provided, however, that in case of an emergency where, in the opinion of the
16 Owner, delay would cause loss or damage, repairs may be started without
17 notice being given to the Contractor and the Contractor shall pay the cost
18 thereof.
- 19 E. All special guarantees or warranties applicable to specific parts of the work, as
20 may be stipulated in the Contract Documents, shall be subject to the terms of
21 this paragraph during the first year following acceptance. All special guarantees
22 and manufacturers' warranties shall be assembled by the Contractor and
23 delivered to the Engineer, along with a summary list thereof, before the
24 acceptance of the Work.
- 25 F. The manufacturer's warranty period shall run concurrently with the Contractor's
26 warranty or guarantee period. No exception to this provision shall be allowed.
27 The Contractor shall be responsible for obtaining equipment warranties from
28 each of the respective suppliers or manufacturers for all the equipment
29 specified. The form of warranty may be included in the Contract Documents, or
30 shall otherwise be acceptable to the Owner.
- 31 G. In the event that the manufacturer is unwilling to provide a one-year warranty
32 commencing at the time of Substantial Completion, the Contractor shall obtain
33 from the manufacturer a three (3) year warranty starting at the time that the
34 manufacturer certified proper installation as specified elsewhere herein. This
35 three-year warranty shall not relieve the Contractor of the one-year warranty
36 commencing upon Substantial Completion.
- 37 H. The Contractor's one-year warranty or guarantee period shall be part of the
38 project's Performance Bond.

1 1.16 WATERTIGHTNESS

- 2
- 3 A. Special precautions shall be taken in the curing of concrete to reduce concrete
4 cracking. All water-retaining structures (those that are intended to hold a liquid)
5 shall be filled and tested for leaks by the Contractor, with water acceptable to
6 the Engineer, prior to surface coating or painting. Procedure and manner in
7 which any leaks are repaired must meet the approval of the Engineer. All cost
8 associated with the testing and repair of leaks shall be at the expense of the
9 Contractor.

10 1.17 CONSTRUCTION CONDITIONS

- 11
- 12 A. The Contractor shall strictly adhere to the specific requirements of the
13 governmental unit or agencies having jurisdiction over the work. Wherever
14 there is a difference in the requirements of a jurisdictional body and these
15 Specifications, the more stringent shall apply.

16 1.18 PUBLIC NUISANCE

- 17
- 18 A. The Contractor shall not create a public nuisance including, but not limited to,
19 encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.
- 20 B. Sound levels measured by the Engineer personnel shall not exceed 45 dBA 7
21 PM to 7 AM or 55 dBA 7 AM to 7 PM. This sound level shall be measured at
22 the exterior of the exterior wall of the nearest residence. Levels at the equip-
23 ment shall not exceed 85 dBA measured five (5) feet from the equipment at any
24 time. Sound levels in excess of these values are sufficient cause to have the
25 work suspended. Work stoppage by the Engineer or Owner for excessive noise
26 shall not relieve the Contractor of completing the Work in accordance with the
27 Contract Time, at no additional cost to the Owner.
- 28
- 29 C. No extra charge may be made for time lost due to work stoppage resulting from
30 the creation of a public nuisance.

31 1.19 HAZARDOUS LOCATIONS

- 32
- 33 A. Contractor shall perform work in accordance with OSHA, state and local safety
34 requirements.

35 1.20 SUSPENSION OF WORK DUE TO WEATHER

- 36
- 37 A. During inclement weather, all work that could be damaged or rendered inferior
38 by such weather conditions shall be suspended. The orders and decisions of
39 the Engineer as to suspensions shall be final and binding. The ability to issue
40 such an order shall not be interpreted as a requirement to do so. During
41 suspension of the work for any cause, the work shall be suitably covered and

protected so as to preserve it from injury by the weather or otherwise; and, if the Engineer shall so direct, rubbish and surplus materials shall be removed.

B. The Contractor shall be responsible for documenting all inclement weather conditions.

1.21 RELOCATIONS

A. The Contractor shall be responsible for the relocation of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work as set out on the Drawings. The cost of all such relocations shall be borne by the Contractor at no additional cost to the Owner.

1.22 SALVAGE

A. Any existing equipment or material including, but not limited to, valves, pipes, fittings, couplings, etc., which is removed or replaced as a result of construction under this project may be designated by the Owner to be salvaged. Any existing equipment or material to be salvaged shall remain onsite and the Contractor shall be responsible for delivering the salvage equipment/materials to the exact location onsite as directed by the Engineer.

1.23 PERMITS

A. Upon notice of award, the Contractor shall immediately apply for all applicable permits, not previously obtained by the Owner, from the appropriate governmental agency or agencies. No work shall commence until all applicable permits have been obtained and copies delivered to the Engineer. The costs for obtaining all permits shall be borne by the Contractor.

1.24 PUMPING

A. The Contractor with his own equipment shall perform all pumping necessary to prevent flotation of any part of the structures during construction operations. All water collected during pumping operations shall be properly disposed of in accordance with these specifications and/or regulatory requirements, whichever is more stringent.

B. The Contractor shall, with his own equipment, pump out water that may seep or leak into the excavations or structures. All water collected during pumping operations shall be properly disposed of in accordance with these specifications and/or regulatory requirements, whichever is more stringent. Below grade galleries and other operating areas shall be kept dry at all times. The extent of pumping required in tanks, channels and other non-operating areas will be determined by the Owner/Engineer.

1.25 NOTIFICATION OF WORK ON EXISTING FACILITIES

A. Before commencing work on any of the existing structures or equipment, the Contractor shall notify the Owner/Engineer, in writing, at least 10 calendar days in advance of the date he proposed to commence such work.

1.26 OWNER OCCUPANCY AND OPERATION OF COMPLETED FACILITIES

A. It is understood that certain portions of the work may be completed prior to completion of the entire work. Upon completion of construction of each individual facility, including testing, if the Owner, at his sole discretion, desires to accept the individual facility, the Contractor will be issued a dated certificate of completion and acceptance for each individual facility. The Owner will assume ownership and begin operation of the individual facility on that date and the one-year guaranty period shall commence on that date. The Owner has the option of not accepting any individual completed facility, but accepting the entire work as a whole when it is completed and tested.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 01040

COORDINATION

PART 1 - GENERAL

1.1 PROJECT COORDINATION

A. The Contractor shall provide for the complete coordination of all construction efforts. This shall include but not necessarily be limited to coordination of the following:

1. The work of subcontractors.
 2. The flow of material and equipment from suppliers.
 3. The effort of equipment manufacturers during test and checkout.
 4. The interrelated work with public and private utility companies.
 5. The interrelated work with the Owner where tie-ins to existing facilities are required.
 6. The effort of independent testing agencies.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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COORDINATION
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09/06/17

1 SECTION 01050
2

3 FIELD ENGINEERING AND SURVEYING
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

- 9 A. The Contractor shall provide and pay for all field engineering and survey
10 services required. Such work shall include survey work to establish existing
11 and/or proposed lines and grades and to locate and lay out site boundaries and
12 easements, project control, site improvements, structures, controlling lines and
13 levels and all other survey required for the construction of the work. Also
14 included are such engineering services as are specified or required to execute
15 the Contractor's construction methods. Engineers and surveyors shall be
16 licensed professionals registered in the State of Florida.
17
- 18 B. The accuracy of any method of staking shall be the responsibility of the
19 Contractor. All surveying for vertical and horizontal control shall be the
20 responsibility of the Contractor.
21
- 22 C. The Contractor shall be held responsible for the preservation of all stakes and
23 marks. If any stakes or marks are carelessly or willfully disturbed by the
24 Contractor, the Contractor shall not proceed with any work until he has
25 established such points, marks, lines and elevations as may be necessary for
26 the prosecution of the work.
27

28 1.02 SURVEY REFERENCE POINTS
29

- 30 A. Existing basic horizontal and vertical control points for the project will be
31 provided by the Owner. The Contractor shall locate and protect control points
32 prior to starting site work and shall preserve all permanent reference points
33 during construction. In working near any permanent property corners or
34 reference markers, the Contractor shall use care not to remove or disturb any
35 such markers. In the event that markers must be removed or are disturbed due
36 to the proximity of construction work, the Contractor shall have them referenced
37 and reset by a Registered Land Surveyor.
38

39 1.03 PROJECT SURVEY REQUIREMENTS
40

- 41 A. The Contractor shall engage the services of a Florida Registered Land Surveyor
42 to establish all lines and grades on the Drawings necessary to record the
43 locations of the foundation piles, if found, in accordance with Chapter 5J-17 of
44 the Florida Administrative Code.
45
- 46 B. The Registered Land Surveyor shall establish a temporary benchmark system
47 in accordance with Chapter 5J-17 F.A.C. and shall provide a written list to the

1 Contractor for his use.
2

- 3 C. The Contractor shall provide an as-built survey of all pipes and structures
4 constructed under the project and existing piping encountered/abandoned that
5 shall be signed and sealed by a Florida Registered Surveyor and Mapper. At
6 minimum, the As-Built Survey shall include:
7
- 8 1. Pipe inverts for gravity pipelines and top of pipe elevations for pressure
9 pipelines for all yard piping encountered, including northings and
10 eastings.
11
- 12 2. Topographic survey of the site conducted following demolition of the
13 digester and before any site filling activities, and topographic survey of
14 the site conducted following site fill activities showing the final grade
15 elevations.

16 1.04 RECORDS
17

- 18 A. Contractor shall maintain a complete, accurate log of all control and survey work
19 as construction progresses. Survey notes indicating the information and
20 measurements used in establishing locations and grades shall be kept in
21 notebooks and furnished to the Engineer with the Record Drawings.
22

23 1.05 SUBMITTALS
24

- 25 A. Submit name and address of surveyor to the Engineer.
26
- 27 B. On request of the Engineer, submit documentation to verify accuracy of field
28 engineering work.
29

30 PART 2 - PRODUCTS (Not Used)
31

32 PART 3 - EXECUTION (Not Used)
33

34 END OF SECTION
35

1 SECTION 01065
2

3 PERMITS AND EASEMENTS
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

- 9 A. The Contractor shall be responsible to ensure that the construction of the project
10 adheres to City, County, State, and Federal standards and regulations, and to
11 all permits and easements acquired for the project.
12
- 13 B. The Contractor shall coordinate all work within rights-of-way with the agency
14 having jurisdiction, including all road/lane closures, road/lane narrowing and
15 detours.
16
- 17 C. Copies of any Permits, Deeds, Easement Agreements or License Agreements
18 that the Owner has obtained will be available for review by prospective bidders
19 at the City of Clearwater's Plan Room – website address:
20 www.myclearwater.com/cityprojects. The Contractor shall conduct all operations
21 in accordance with the requirements of all Permits, Easements and License
22 Agreements.
23
- 24 D. Where Permits, Deeds, Easement Agreements, or License Agreements require
25 that certain Work is to be performed only in the presence of a representative of
26 the permitting entity, the Contractor shall provide all coordination and
27 notification required to assure full compliance with the permit conditions.
28
- 29 E. The Owner has obtained or will obtain certain Permits, Deeds, Easement
30 Agreements, or License Agreements required for construction of the project. A
31 listing of those Permits, Deeds, Easement Agreements, or License Agreements
32 that the Owner has obtained or applied for is listed below. The Contractor shall
33 be responsible for obtaining all other Permits, Easement Agreements, or
34 License Agreements necessary for the proper execution of the Work not
35 specifically noted to be obtained by the Owner.
36
- 37 F. The Contractor shall comply with all terms, conditions, provisions and
38 requirements of all permits issued or to be issued for the Project. Should the
39 Contractor's failure to comply with said permits lead to enforcement action by
40 any of the permitting or jurisdictional agencies, any resultant costs in the forms
41 of repairs, fines, penalties, administrative costs, attorney's fees or consultant
42 fees shall be deducted from the Contract Price or shall be otherwise collectible
43 from the Contractor and its Surety, jointly and severally.
44
- 45 G. The Contractor shall notify the Owner a minimum of 30 days prior to the
46 expiration of a permit if said expiration occurs prior to completion of the Work.

1
2 H. Prior to any land clearing or tree removal, the Contractor shall construct a soil
3 tracking device in accordance with current Florida Department of Transportation
4 (FDOT) design standards.
5

6 1.02 PERMITS
7

- 8 A. Permits obtained by, or applied for by, the Owner are as follows: None.
9
10 B. Each bidder shall be familiar with the requirements of the permit conditions that
11 relate to construction activities and shall include the cost of satisfying these
12 permit conditions in developing a bid for the project.
13
14 C. At a minimum, the Contractor shall register with appropriate authorities, obtain
15 the following permits as required, comply with their respective conditions, and
16 submit copies of all applications and final permits to Engineer and Owner:
17
18 1. City of Clearwater Building Department Demolition Permit(s)
19 2. City of Clearwater Building Department Sewer Cut and Cap
20 Permit
21 3. Generic Permit for the Production of Groundwater.
22 4. Storm Water NPDES
23 5. Pinellas County - Hazardous Waste Abatement
24 6. City of Clearwater Tree Removal Permit
25
26 D. The Contractor shall obtain all construction permits required including those
27 necessary for clearing, grubbing, and tree removal. No clearing shall occur and
28 no earth-moving equipment shall be placed on-site until after the permits have
29 been issued.
30
31 E. The Contractor shall obtain, implement and comply with all local and state
32 permits required for dewatering, including consumptive or water use permitting,
33 if required for construction from the Southwest Florida Water Management
34 District.
35
36 F. The Contractor shall be responsible for obtaining, and complying with, all
37 required permits relating to discharges from dewatering shall obtain a State of
38 Florida Department of Environmental Protection Generic Permit for the
39 Discharge of Produced Ground Water From Any Non-Contaminated Site
40 Activity in accordance with 62-621.300(2) FAC.
41
42 G. The Contractor shall obtain, implement and comply with the requirements of a
43 Generic Permit for Storm Water Discharge from Large and Small Construction
44 Activities (CGP), in accordance with 62-621.300(4) FAC. The Contractor shall
45 submit a CGP Notice of Intent (NOI) to the Florida Department of Environmental

1 Protection (FDEP) and develop and submit a Storm Water Pollution Prevention
2 Plan (SWPPP) as part of the CGP.

- 3
- 4 1. Obtain the CGP form and NOI Application Form from the FDEP or its
5 website, DEP Documents 62-621.300(4)(a) and 62-621.300(4)(b),
6 respectively.
- 7
- 8 2. Develop an SWPPP in compliance with FDEP storm water permitting
9 rules that shall include, at a minimum, the following:
- 10 a. A site evaluation of how and where pollutants may be mobilized
11 by storm water.
12 b. A site plan for managing storm water runoff.
13 c. Identification of appropriate erosion and sediment controls
14 including Best Management Practices to reduce erosion,
15 sedimentation, and storm water pollution.
16 d. A maintenance and inspection schedule.
17 e. Plan and procedures for record keeping.
18 f. A map depicting storm water exit areas.
- 19
- 20 3. Complete and submit the NOI Application, including all attachments, to
21 the local FDEP office along with the appropriate application fee.
- 22
- 23 4. The Contractor shall furnish a copy of the FDEP Notice of Permit, along
24 with a copy of the SWPPP, to the Engineer.
- 25

26 **1.03 EASEMENTS**

- 27 A. Not Applicable.

28

29

Easement Number	Owner	County Parcel ID

30

31 **PART 2 – PRODUCTS**
32 (NOT USED)

33

34 **PART 3 – EXECUTION**
35 (NOT USED)

36

37 END OF SECTION

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SECTION 01090

2

REFERENCE STANDARDS

3

4

PART 1 - GENERAL

5

1.01 REQUIREMENTS INCLUDED

6

- 7 A. Abbreviations and acronyms are used in the Contract Documents to identify
9 reference standards.

10

11

1.02 QUALITY ASSURANCE

12

- 13 A. Application: When a standard is specified by reference, comply with
14 requirements and recommendations stated in that standard, except when
15 requirements are modified by the Contract Documents or applicable codes
16 establish stricter standards.
- 17 B. Publication Date: The publication in effect on the date of issue of Contract
18 Documents, except when a specific publication date is specified.

19

1.03 ABBREVIATIONS, NAMES, AND ADDRESSES OF ORGANIZATIONS

20

21 Obtain copies of referenced standards direct from publication source, when needed for
22 proper performance of Work, or when required for submittal by Contract Documents.

23

24 AA Aluminum Association
25 900 19th Street NW
26 Washington, DC 20006

27

28 AASHTO American Association of State Highway
29 and Transportation Officials
30 444 North Capitol Street, NW Suite 249
31 Washington, DC 20001

32

33 ACI American Concrete Institute
34 38800 Country Club Drive
35 Farmington Hills, MI 48331

36

37 AI Asphalt Institute
38 2696 Research Park Drive
39 Lexington KY 40511

40

41 AISC American Institute of Steel Construction
42 One East Wacker Drive
43 Suite 3100
44 Chicago, IL 60601-2001

45

46

47

1	AISI	American Iron and Steel Institute 1140 Connecticut Avenue Suite 705 Washington DC 20036
2	ANSI	American National Standards Institute 1819 L Street, NW Washington, DC 20036
3	ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990
4	ASTM	American Society for Testing and Materials 100 BarrHarbor Drive West Conshohoken, PA 19428
5	AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235
6	AWS	American Welding Society 550 N.W. LeJeune Road Miami, FL 33126
7	CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173-4758
8	FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) 470 L'enfant Plaza – Suite 8100 Washington, DC 20407
9	NEMA	National Electrical Manufacturers' Association 1300 North 17 th Street Suite 1847 Rosslyn, VA 22209
10	PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
11	PCI	Prestressed Concrete Institute 209 W. Jackson Blvd.

Chicago, IL 60606

Society for Protective Coatings
40 24th Street,. 6th floor
Pittsburgh, PA 15222

UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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1 SECTION 01150
2

3 MEASUREMENT AND PAYMENT
4

5 PART 1 - GENERAL
6

7 1.01 SCOPE OF WORK
8

- 9 A. This section defines the Work included in each bid item in the Bid/Proposal
10 section of the Contract Documents. Payment will be made based on the
11 specified items included in the description in this section for each pay item
12 number.
- 13 B. All prices included in the Bid Form / Schedule of Prices will be full compensation
14 for all labor, supervision, materials, tools, equipment, and incidentals necessary
15 to complete the Work as shown on the Drawings and/or as specified in the
16 Contract Documents. Actual quantities of each item bid on a unit price basis
17 will be determined upon completion of the construction in the manner
18 established for each item in this section. Payment for all items listed in the Bid
19 Form / Schedule of Prices shall constitute full compensation for all work shown
20 and/or specified to be performed under the Contract.
- 21 C. Restoration is considered to be an integral part of the Work, and all bid prices
22 shall include the cost of restoration necessitated by the Work related to that bid
23 item. All existing structures and property including, but not limited to, paving,
24 stabilized roads, drainage piping and ditches, catch basins, head walls, yard
25 culverts, lawns, fences, trees, shrubs, ground areas, walkways, sidewalks,
26 driveways, alleys, curbs, gutters, irrigation systems, buildings, structures and
27 equipment that are altered, removed or damaged during construction shall be
28 restored to the same or better condition than existed prior to construction at no
29 additional cost to the Owner. Cleanup is an integral part of restoration process.
- 30 D. The Contractor shall exercise care to preserve and protect existing facilities
31 during all periods for the construction phase. All existing structures, equipment,
32 and private property, including, but not limited to paving, stabilized roads,
33 drainage piping and ditches, catch basins, head walls, yard culverts, lawns,
34 fences, trees, shrubs, ground areas, walkways, driveways, alleys, curbs, gutters
35 and irrigation systems that are altered, removed or damaged during
36 construction and are not included in the proposed alterations of the new work
37 shall be restored to the same or better condition than existed prior to
38 construction.
- 39 E. The Contractor shall be responsible for all traffic maintenance requirements
40 necessitated by the construction/installation of those specific bid items requiring
41 traffic maintenance. The cost for this work shall be included in the specific unit
42 price submitted for that particular bid item.

1 PART 2 - PRODUCTS (Not Used)

2

3 PART 3 - EXECUTION

4

5 3.01 MEASUREMENT AND PAYMENT

6

7 A. Mobilization – Bid Item No. 1

8

9 1. Measurement for payment for Mobilization shall be on a lump sum basis

10 and the cost shall not exceed four percent (4%) of the proposed Subtotal

11 for Bid Items 1-9.

12

13 2. Payment of the lump sum price bid for Bid Item No. 1 shall be full

14 compensation for all costs associated with initiating the project as limited

15 by other sections of the Contract including the Contractor's Performance

16 and Payment Bonds, permits and other similar activities. Payment for

17 these performances shall be based on the terms of Section III and in

18 accordance with the Schedule of Values.

19

20 B. Bid Item No. 2 - Not Used

21

22 C. Remove, Haul Off-Site, and Dispose of All Digester Liquids and Solids – Bid

23 Item No. 3

24

25 1. Measurement for payment to Remove, Haul Off-Site, and Dispose of

26 All Digester Liquids and Solids shall not be made and all costs shall be

27 included in the lump sum price bid.

28

29 2. Payment of the lump sum price bid for Bid Item No. 3 shall be full

30 compensation for furnishing all labor, materials, equipment, testing,

31 and incidentals required to remove and dispose of the liquid and solid

32 contents of the digester off-site. The Contractor shall be fully

33 responsible for the off-site disposal costs including all dilution and

34 washwater used. No additional compensation will be made for the net

35 change in liquid volume resulting from evaporation and/or rainfall.

36

37 D. Demolish, Remove, and Dispose of Hazardous Materials – Bid Item No. 4

38

39 1. Measurement for payment to Demolish, Remove and Dispose of

40 Hazardous Materials specifically shown on the Contract Documents or

41 identified in the investigations and surveys included in the Appendices to

42 the Contract Documents, including fluorescent bulbs, thermostats

43 containing mercury, items containing lead, all metal with lead-based paint

44 including the steel components of the digester cover, and asbestos

1 gaskets, shall not be made and all items of Work shall be included in the
2 lump sum price bid.
3

- 4 2. Payment of the lump sum price bid for Bid Item No. 4 shall be in
5 accordance with the Schedule of Values, and shall be full compensation
6 for furnishing all labor, materials, equipment, testing, and incidentals
7 required to complete the removal and disposal of hazardous materials.
8

9 E. Demolish, Remove and Dispose of Nonhazardous Materials – Bid Item No. 5
10

- 11 1. Measurement for payment for Demolish, Remove and Disposal of
12 Nonhazardous Materials shall be the actual tons of nonhazardous
13 materials as shown on the appropriate weigh scale receipt submitted with
14 the pay request.
15
16 2. Payment of the unit price bid for Bid Item No. 5 shall be based on the
17 actual tons of nonhazardous materials removed and disposed of as
18 established on the weigh tickets of the receiving landfill, and shall be full
19 compensation for furnishing all labor, materials, equipment, hauling,
20 tipping and incidentals and all other costs required to complete the
21 removal and disposal of nonhazardous materials.
22

23 F. Excavate and Survey Foundation Piles – Bid Item No. 6
24

- 25 1. Measurement for payment to Excavate and Survey existing foundation
26 piles if found during demolition shall not be made and all items of Work
27 shall be included in the lump sum price bid.
28
29 2. Payment of the lump sum price bid for Bid Item No. 6 shall be in
30 accordance with the schedule of values and shall be full compensation
31 for furnishing all labor, materials, equipment, and incidentals required to
32 cut and remove the reinforced concrete connections to the foundations
33 piles, survey the horizontal layout and top elevation of the entire
34 foundation pile system relative to the WRF's existing benchmark, and the
35 horizontal and vertical survey of the foundation pile system, if found
36 during demolition of the structures.
37

38 G. Import and Place Structural Fill Materials – Bid Item No. 7
39

- 40 1. Measurement for payment for Import and Place Structural Fill Materials
41 shall be the actual number of cubic yards of structural fill imported,
42 placed, and compacted, as determined from a comparison of topographic
43 surveys conducted prior to constructing the fill and following construction
44 of the compacted fill, to the limits and elevations shown on the Drawings.
45

2. Payment of the unit price bid for Bid Item No. 7 shall be full compensation for furnishing all labor, materials, equipment, testing and incidentals required to complete the import and placement of fill material, including the topographic surveys conducted prior to and following site fill and compaction activities.

H. Miscellaneous Work and Site Restoration – Bid Item No. 8

1. Measurement for payment of the lump sum price bid for Miscellaneous Work and Site Restoration shall not be made and all items of Work shall be included in the lump sum price bid.
 2. Payment of the lump sum price bid for Bid Item No. 8 shall be made in accordance with the Schedule of Values and shall be full compensation for furnishing all labor, materials, equipment, testing, and incidentals required to coordinate the capping of the gas main with the gas company; provide inlet protection, erosion control, tree barricades; cut and cap potable water, sewer and the thickened waste activated sludge (TWAS) piping; pavement cutting and restoration; abandoning or removing underground piping; and, all other miscellaneous work required for the proper completion of the work.

I. Indemnification – Bid Item No. 9

1. Measurement for payment of indemnification shall not be made and all items shall be included in the lump sum.
 2. Payment of the lump sum of One Hundred Dollars (\$100.00) under Bid Item No. 9 shall be full compensation for Indemnification of the Owner and the Owner's Engineer as specified in the General Conditions and shall be included in the first payment request.

J. Contingency Allowance – Bid Item No. 10

1. Measurement for payment of the Contingency Allowance shall be as agreed upon by the Owner and Contractor.
 2. Payment for Bid Item No. 10 shall be made in accordance with the terms of the contingency allowance request or Work Change Directive and, if applicable, in accordance with the Schedule of Values.

END OF SECTION

1 SECTION 01152
2

3 APPLICATIONS FOR PAYMENT
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

- 9 A. Submit Applications for Payment to the Engineer in accordance with the
10 approved payment schedule and in the format established by the Owner.
11
12 B. Contractor shall submit to the Engineer for review, the proposed Application for
13 Payment form, prior to the first payment request.

14 1.02 FORMAT AND DATA REQUIRED
15

- 16 A. Submit applications typed on forms either provided in these Specifications,
17 furnished by the Owner, or as approved by the Owner, with itemized data typed
18 on 8-1/2 inch x 11 inch or 8-1/2 inch x 14-inch white paper continuation sheets.
19
20 B. Provide itemized data on continuation sheet:
21
22 1. Format, schedules, line items and values: those of the Schedule of
23 Values accepted by the Engineer.
24

25 1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT
26

27 A. Application Form:
28

- 29
30 1. Fill in required information, including that for Change Orders executed
31 prior to date of submittal of application.
32
33 2. Fill in summary of dollar values to agree with respective totals indicated
34 on continuation sheets.
35
36 3. Execute certification with signature of a responsible officer of the
37 Contractor.

38 B. Continuation Sheets:
39

- 40
41 1. Fill in total list of all scheduled component items of work, with item
42 number and scheduled dollar value for each item.
43
44 2. Fill in dollar value in each column for each scheduled line item when work
45 has been performed or products stored.
46

- 1 3. List each Change Order executed prior to date of submission, at the end
2 of the continuation sheets.
- 3
- 4 a. List by Change Order Number, and description, as for an original
5 component item of work.
- 6
- 7 4. To receive approval for payment on component material stored on site,
8 submit copies of the original invoices with the Application for Payment.
9 The application for payment must also include a table summarizing the
10 amount of each invoice and the schedule of values line item to which the
11 stored materials apply.
- 12

13 **1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS**

14

- 15 A. Provide substantiating data, containing suitable information for review of costs
16 requested with a cover letter identifying:
- 17
- 18 1. Project.
- 19
- 20 2. Application number and date.
- 21
- 22 3. Detailed list of enclosures.
- 23
- 24 4. For stored products:
- 25
- 26 a. Item number and identification as shown on application.
- 27
- 28 b. Description of specific material.
- 29
- 30 c. Supplier invoices.
- 31
- 32 d. A table identifying stored material, amount stored, amount
33 installed, and schedule of values item, which the material applies.
- 34
- 35 B. Submit one copy of data and cover letter for each copy of application.
- 36
- 37 C. The Contractor is to maintain an updated set of drawings to be used as record
38 drawings. As a prerequisite for monthly progress payments, the Contractor is
39 to exhibit the updated record drawings for review by the Owner and the
40 Engineer.
- 41
- 42 D. Contractor shall maintain an updated construction schedule in accordance with
43 the Specification. As a prerequisite for monthly progress payments, Contractor
44 shall submit the updated construction schedule with the applications for
45 progress payments. If the Contractor fails to submit the required updated
46 schedule within the time prescribed, the Engineer may withhold approval of

progress payment estimates until such a time as the Contractor submits the required updated schedule.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in application form as specified for progress payments.
 - B. Use continuation sheet for presenting the final statement of accounting as specified in the Specification.
 - C. All appropriate information must be entered on the application form.
 - 1. The line title, "Application Period", must indicate the dates between which all work was completed during the pay period. These dates must be consecutive with the dates of the previous Payment Request and they must not overlap.
 - 2. All blank lines within the "Contract Data" and "Summary of Project Status" section of the application must be completed. Also, if any Change Orders have been approved, the "Change Orders" section must include that information.
 - 3. All calculations and arithmetic must be precise to the penny.
 - 4. The application must be signed and dated by an authorized representative of the Contractor.

1.06 SUBMITTAL PROCEDURE

- A. Prior to submitting a completed Application for Payment request, the Contractor shall arrange a field meeting with the Owner and/or Engineer to review and verify all installed quantities and/or stored materials. Only when the Owner/Engineer and Contractor agree on installed quantities and percentages, should the Application for Payment be submitted.
 - B. Submit six (6) copies of Applications for Payment to the Engineer at the times stipulated in the General Conditions.
 - C. When the Engineer finds Application properly completed and correct, he will transmit certificate for payment to Owner, with copy to Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

APPLICATIONS FOR PAYMENT 01152-3

09/06/17

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1 SECTION 01153
2

3 CHANGE ORDER PROCEDURES
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

- 9 A. Promptly implement Change Order procedures.
10
 - 11 1. Provide full written data required to evaluate changes.
 - 12 2. Maintain detailed records of work done on a time and material/force
13 account basis.
 - 14 3. Provide full documentation to Engineer on request.
- 15 B. Designate in writing the member of Contractor's organization:
16
 - 17 1. Who is authorized to accept changes in the work.
 - 18 2. Who is responsible for informing others in the Contractor's employ of the
19 authorization of changes in the work.

20 1.02 DEFINITIONS
21

- 22 A. Change Order: See General Conditions.
- 23 B. Work Directive Change: A written order to the Contractor, signed by Owner and
24 Engineer, which amends the Contract Documents as described, authorizes
25 Contractor to proceed with a change that affects the Contract Sum or the
26 Contract Time, and that will be included in a subsequent Change Order.
- 27 C. Engineer's Supplemental Instructions: A written order, instructions, or
28 interpretations, signed by Engineer making minor changes in the Work not
29 involving a change in Contract Sum or Contract Time.
- 30 D. Field Order: A written order to the Contractor, signed by the Engineer and the
31 Contractor, which is issued to interpret/clarify the Contract Documents, order
32 minor changes in the work. The work described by a Field Order is to be
33 accomplished without change to the Contract Sum, Contract Time, and/or
34 claims for other costs.

1 1.03 PRELIMINARY PROCEDURES

- 2
- 3 A. Owner and Engineer may initiate changes by submitting a Work Directive
4 Change to the Contractor. Request will include:
- 5
- 6 1. Detailed description of the change, products, and location of the change
7 in the Project.
- 8
- 9 2. Supplementary or revised Drawings and Specifications.
- 10
- 11 3. The projected time span for making the change and a specific statement
12 as to whether overtime work is or is not authorized.
- 13
- 14 4. A specific period of time during which the requested price will be
15 considered valid.
- 16
- 17 B. Contractor may initiate changes by submitting a written notice to the Engineer,
18 containing:
- 19
- 20 1. Description of the proposed changes.
- 21
- 22 2. Statement of the reason for making the changes.
- 23
- 24 3. Statement of the effect on the Contract Sum and the Contract Time.
- 25
- 26 4. Statement of the effect on the work of separate contractors.
- 27
- 28 5. Documentation supporting any change in Contract Sum or Contract
29 Time, as appropriate.
- 30

31 1.04 CONSTRUCTION CHANGE AUTHORIZATION

- 32
- 33 A. Work Directive Change will describe changes in the Work, both additions and
34 deletions, with attachments of revised Contract Documents to define details of
35 the change and will designate the method of determining any change in the
36 Contract Sum and any change in Contract Time.
- 37
- 38 B. Owner and Engineer will sign and date the Work Directive Change as
39 authorization for the Contractor to proceed with the changes.
- 40

41 1.05 DOCUMENTATION OF PROPOSALS AND CLAIMS

- 42
- 43 A. Support each quotation for a lump sum proposal, and for each unit price, which
44 has not previously been established, with sufficient substantiating data to allow
45 the Engineer to evaluate the quotation.
- 46

- 1 B. On request, provide additional data to support time and cost computations:
- 2 1. Labor required.
- 3 2. Equipment required.
- 4 3. Products required.
- 5 a. Recommended source of purchase and unit cost.
- 6 b. Quantities required.
- 7 4. Taxes, insurance, and bonds.
- 8 5. Credit for work deleted from Contract, similarly documented.
- 9 6. Overhead and profit.
- 10 7. Justification for any change in Contract Time.
- 11 C. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a Lump Sum proposal, plus additional information:
- 12 1. Name of the Owner's authorized agent who ordered the work and date of the order.
- 13 2. Dates and times work was performed and by whom.
- 14 3. Time record, summary of hours worked, and hourly rates paid.
- 15 4. Receipts and invoices for:
- 16 a. Equipment used, listing dates, and times of use.
- 17 b. Products used, listing of quantities.
- 18 c. Subcontracts.

40 1.06 PREPARATION OF CHANGE ORDERS AND FIELD ORDERS

- 41 A. Engineer will prepare each Change Order and Field Order.
- 42 B. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

- 1 C. Change Order will provide an accounting of the adjustment in the Contract Sum
2 and in the Contract Time.
- 3 D. Field Order will describe interpretations or clarifications of Contract Documents,
4 order minor changes in the Work, and/ or memorialize trade-off agreements.
- 5 E. Field Order work will be accomplished without change in the Contract Sum,
6 Contract Time, and/or claims for other costs.

7

8

9

10 **1.07 LUMP SUM/FIXED PRICE CHANGE ORDER**

- 11
- 12 A. Engineer initiates the form, including a description of the changes involved and
13 attachments based upon documents and proposals submitted by Contractor, or
14 requests from Owner, or both.
- 15
- 16 B. Once Engineer has completed and signed the form, all copies should be sent to
17 Contractor for approval. After approval by Contractor, all copies should be sent
18 to Owner for approval. Engineer should make distribution of executed copies.

19

20 **1.08 UNIT PRICE CHANGE ORDER**

- 21
- 22 A. Content of Change Orders will be based on either:
- 23
- 24 1. Engineer's definition of the scope of the required changes.
- 25
- 26 2. Contractor's Proposal for a change, as recommended by Engineer.
- 27
- 28 3. Survey of complete work.
- 29
- 30 B. The amounts of the unit prices to be:
- 31
- 32 1. Those stated in the Agreement.
- 33
- 34 2. Those mutually agreed upon between Owner and Contractor.
- 35
- 36 C. When quantities of each of the items affected by the Change Order can be
37 determined prior to start of the work:
- 38
- 39 1. Owner and Engineer will sign and date a Work Directive Change as
40 authorization for Contractor to proceed with the changes.
- 41
- 42 D. When quantities of the items cannot be determined prior to start of the work:
- 43
- 44 1. Engineer or Owner will issue a Work Directive change directing the
45 Contractor to proceed with the change on the basis of unit prices, and
46 the Engineer will cite the applicable unit prices.

- 1
2. Upon completion of the change, the Engineer will determine the cost of
3 such work based on the unit prices and quantities used. Contractor shall
4 submit documentation to establish the number of units of each item and
5 any claims for a change in Contract Time.
- 6
7. Engineer will sign and date the Change Order to establish the change in
8 Contract Sum and in Contract Time.
- 9
10. Contractor will sign and date the Change Order to indicate their
11 agreement with the terms therein.
- 12
13. Owner will then sign the change order.
- 14

15 1.09 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/CONSTRUCTION
16 CHANGE AUTHORIZATION

- 18 A. Engineer and Owner will issue a Work Directive Change directing Contractor to
19 proceed with the changes.
- 20 B. Upon completion of the change, the Contractor shall submit itemized accounting
21 and supporting data.
- 22 C. Engineer will determine the allowable cost of such work, as provided in General
23 Conditions and Supplementary Conditions.
- 24 D. Engineer will sign and date the Change Order to establish the change in
25 Contract Sum and in Contract Time.
- 26 E. Contractor will sign and date the Change Order to indicate agreement therewith.
- 27 F. Owner will then sign the Change Order.
- 28

34 1.10 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- 36 A. Not greater than monthly revise Schedule of Values and Application for
37 Payment forms to record each change as a separate item of work and to record
38 the adjusted Contract Amount.
- 39 B. Not greater than monthly revise the Progress Schedule to reflect each change
40 in Contract Time. Revise sub-schedules to show changes for other items of
41 work affected by the Change Order.
- 42 C. Upon completion of work under a Change Order, enter pertinent changes in
43 Record Documents.
- 44

45 PART 2 - PRODUCTS (NOT USED)

46 PART 3 - EXECUTION (NOT USED)

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2
3
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CHANGE ORDER PROCEDURES
01153-6

09/06/17

1 SECTION 01200
2

3 MEETINGS AND CONFERENCES
4

5 PART 1 - GENERAL
6

7 1.01 PRE-CONSTRUCTION CONFERENCE
8

- 9 A. In accordance with the Contract Documents, prior to the commencement of
10 Work, a preconstruction conference shall be held at a mutually agreed time and
11 place.
- 12 B. The purpose of the conference shall be to designate responsible personnel and
13 establish a working relationship. Matters requiring coordination shall be
14 discussed and procedures for handling such matters established. The agenda
15 shall include as a minimum:
- 16 1. Contractor's Initial Construction Schedule
17
18 2. Procedures for Transmittal, Review and Distribution of Shop Drawings
19
20 3. Procedures for Submittal and Review of Monthly Applications for
21 Payment
22
23 4. Maintaining Record Drawings
24
25 5. Critical Work Sequencing and Construction Restrictions
26
27 6. Field Decisions and Change Orders
28
29 7. Field Office, Storage Areas and Security
30
31 8. Equipment and Material Deliveries
32
33 9. Safety Meetings and Program
34
35 10. Traffic Control Plan
36
37 11. Pre-construction Video
38
39 C. The Engineer shall preside at the conference and shall arrange for keeping the
40 minutes and distributing them to all persons in attendance.
41

42 1.02 PROGRESS MEETINGS
43

- 44 A. The Owner shall schedule and conduct regular project meetings at least
45

1 monthly and at other times as deemed necessary by the progress of the work.
2 The Contractor and the Engineer shall be represented at each meeting. The
3 Contractor and/or Engineer may request attendance by representatives of
4 material Supplier(s) and Subcontractor(s).

- 5
- 6 B. The Engineer shall preside at the conference and shall arrange for keeping the
7 minutes and distributing them to all persons in attendance. The purpose of the
8 meetings shall include but not be limited to reviewing the progress of the Work,
9 maintaining coordination of efforts, discussing changes in scheduling and
10 resolving problems that may develop; claims review; and future scheduling.

11

12 PART 2 – PRODUCT (Not Used)

13

14 PART 3 – EXECUTION (Not Used)

15

16

17

18 END OF SECTION

19

1 SECTION 01300
2

3 SUBMITTALS
4

5 PART 1 - GENERAL
6

7 1.01 CONSTRUCTION SCHEDULE
8

- 9 A. Before Work is started, Contractor shall submit to Engineer for review a
10 schedule of the proposed construction operations. The construction schedule
11 shall indicate the sequence of the Work, the time of starting and completion of
12 each part, the installation date for each major item of equipment, and the time
13 for making connections to existing piping, structures, or facilities.
14
- 15 B. At least every 30 days the schedule shall be revised as necessary to reflect
16 changes in the progress of the Work.
17
- 18 C. Owner may require Contractor to add to his equipment, or construction forces,
19 as well as increase the working hours, if operations fall behind schedule at any
20 time during the construction period.
21

22 1.02 PROGRESS REPORTS
23

- 24 A. A progress report shall be furnished to Engineer with each Application for
25 Payment. If the Work falls behind schedule, Contractor shall submit additional
26 progress reports at such intervals as Engineer may request.
27
- 28 B. Each progress report shall include sufficient narrative to describe current and
29 anticipated delaying factors, their effect on the construction schedule, and
30 proposed corrective actions. Any Work reported complete, but which is not
31 readily apparent to Engineer, must be substantiated with satisfactory evidence.
32
- 33 C. Each progress report shall also include three (3) prints of the accepted graphic
34 schedule marked to indicate actual progress.
35

36 1.03 SCHEDULE OF VALUES
37

- 38 A. The Contractor shall submit to the Engineer for review a schedule of values after
39 review of the tentative schedule and before submission of the first application
40 for payment. The schedule of values, showing the value of each kind of work,
41 shall be acceptable to Engineer before any application for payment is prepared
42 or approved.
43
- 44 B. The sum of the items listed in the schedule of values shall equal the Contract
45 Price. Such items as Bond premium, temporary construction facilities, may be
46 listed separately in the schedule of values, provided the amounts can be

substantiated. Overhead and profit shall not be listed as separate items.

- C. In addition to those items listed in Paragraph B, items that shall also be included on the schedule of values include O & M manuals (including electronic format), As-Builts, Start-Up and Training, and any individualized component that the Contractor wishes to separately itemize for payment.
 - D. An unbalanced Schedule of Values providing for overpayment of Contractor on items of Work that would be performed first will not be accepted. The Schedule of Values shall be revised and resubmitted until acceptable to Engineer. Final acceptance by Engineer shall indicate only consent to the schedule of values as a basis for preparation of Applications for Payments and shall not constitute an agreement as to the value of each indicated item.

1.04 SCHEDULE OF PAYMENTS

- A. Within thirty (30) days after award of the Contract, Contractor shall furnish to Engineer a schedule of estimated monthly payments. The schedule shall be revised and resubmitted each time an Application for Payment varies more than 10 percent from the estimated Schedule of Payment.

1.05 SURVEY DATA

- A. All field books, notes, and other data developed by Contractor in performing surveys required as part of the Work shall be available to Engineer for examination throughout the construction period. All such data shall be submitted to Engineer with the other documentation required for final acceptance of the Work.

1.06 SHOP DRAWINGS AND ENGINEERING DATA

- A. Engineering data covering all equipment and fabricated materials that will become a permanent part of the Work shall be submitted to Engineer, for review. These data shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement, and operation of component materials and devices; the external connections, anchorages, and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.
 - B. All submittals, regardless of origin, shall be stamped with the approval of Contractor and identified with the name and number of this Contract, Contractor's name, and references to applicable specification paragraphs and Contract Drawings. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

- 1
- 2 C. Contractor's stamp of approval is a representation to Owner and Engineer that
- 3 Contractor accepts full responsibility for determining and verifying all quantities,
- 4 dimensions, field construction criteria, materials, catalog numbers, and similar
- 5 data, and that he has reviewed or coordinated each submittal with the
- 6 requirements of the Work and the Contract Documents.
- 7
- 8 D. All deviations from the Contract Documents shall be identified on each submittal
- 9 and shall be tabulated in Contractor's letter of transmittal. Such submittals shall
- 10 indicate, as pertinent to the deviation, essential details of all changes proposed
- 11 by Contractor (including modifications to other facilities that may be a result of
- 12 the deviation) and all required piping and wiring diagrams.
- 13
- 14 E. Contractor shall accept full responsibility for the completeness of each
- 15 submission, and, in the case of a resubmission, shall verify that all exceptions
- 16 previously noted by Engineer have been taken into account. In the event that
- 17 more than one resubmission is required because of failure of Contractor to
- 18 account for exceptions previously noted, Contractor shall reimburse Owner for
- 19 the charges of Engineer for review of the additional resubmissions.
- 20
- 21 F. Resubmittals shall be made within seven (7) days of the date of the letter
- 22 returning the material to be modified or corrected, unless within seven (7) days
- 23 the Contractor submits an acceptable request for an extension of the stipulated
- 24 time period, listing the reasons the resubmittal cannot be completed within that
- 25 time.
- 26
- 27 G. Any need for more than one resubmission, or any other delay in obtaining
- 28 Engineer's review of submittals, will not entitle Contractor to extension of the
- 29 Contract Time unless delay of the Work is directly caused by a change in the
- 30 work authorized by a Change Order or by failure of Engineer to return any
- 31 submittal within 21 days after its receipt in Engineer's office.
- 32
- 33 H. Contractor's letter of resubmittal shall list the date of his original submittal letter,
- 34 the date of the Engineer's letter returning the submittal, and the dates of
- 35 submission and return of any previous resubmittals. In addition, the Contractor
- 36 shall reimburse the Engineer in the amount of \$200.00 for review of the second
- 37 resubmittal and each of any subsequent resubmittals.
- 38
- 39 I. Engineer's review of drawings and data submitted by Contractor will cover only
- 40 general conformity to the drawings and specifications, external connections,
- 41 and dimensions which affect the layout. Engineer's review does not indicate a
- 42 thorough review of all dimensions, quantities, and details of the material,
- 43 equipment, device or item shown. Engineer's review of submittals shall not
- 44 relieve Contractor from responsibility for errors, omissions, or deviations, nor
- 45 responsibility for compliance with the Contract Documents.
- 46

- J. Combined electronic copies in ".pdf." format of each drawing and necessary data, plus the number of copies that the Contractor wants returned, shall be submitted to Engineer. Engineer will not accept submittals from anyone but Contractor. Submittals shall be consecutively numbered in direct sequence of submittal based on the 5 digit Specification Section number and a sequential number (001, 002, etc.), and without division by subcontract or trade. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal. If applicable, the Engineer will provide the Contractor with an electronic file of the submittal format to be followed.
 - K. When corrected copies are resubmitted, Contractor shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by Engineer on previous submissions.

1.07 LAYOUT DATA

- A. Contractor shall keep neat and legible notes of measurements and calculations made by him in connection with the layout of the Work. Copies of such data shall be furnished to the Engineer for use in checking.
 - B. Contractor's layout data as provided under Lines and Grades. All such data considered of value to Owner will be transmitted to Owner by Engineer with other records upon completion of the Work.

1.08 OTHER SUBMITTALS

- A. The Contractor shall make all other submittals as specified in other Sections of these specifications, including those for abatement of hazardous materials and demolition.

PART 2 – PRODUCT

PART 3 – EXECUTION (Not Used)

END OF SECTION

1 SECTION 01310
2

3 CONSTRUCTION SCHEDULES
4

5
6 PART 1 - GENERAL
7

8 1.01 GENERAL
9

- 10 A. Construction under this contract must be coordinated to assure that construction
11 is completed within the time allowed by the Contract Documents. The Contractor
12 will also coordinate his activities with the other contractors to allow orderly and
13 timely completion of all the work.
14
- 15 B. All construction schedules shall be of the critical path method, bar chart type, and
16 shall be prepared using SURETRACK, PRIMAVERA P3, or equal.
17

18 1.02 CONSTRUCTION SCHEDULING GENERAL PROVISIONS
19

- 20 A. Within 15 calendar days after the issuance of the Notice of Award, the Contractor
21 shall prepare and submit to the Engineer a preliminary construction progress
22 schedule. The schedule shall contain a sufficient number of tasks such that no
23 single task has a value that exceeds 2.0% of the total Contract Price. Partial
24 payments will not be approved until an acceptable construction progress schedule
25 has been approved by the Engineer.
26
- 27 B. The schedule shall be updated monthly reflecting the approved baseline schedule
28 and the Contractor's progress on each activity. No progress payment will be
29 approved until the updated schedule is submitted and approved by the Engineer.
30
- 31 C. Night work may be established by the Contractor as regular procedure only with
32 the prior written permission of the Owner. Such permission, however, may be
33 revoked at any time by the Owner if the Contractor fails to maintain adequate
34 equipment and supervision for the proper execution and control of the work at
35 night.
36
- 37 D. The Contractor shall designate an authorized representative who shall be
38 responsible for development and maintenance of the schedule and of progress
39 and payment reports. This representative of the Contractor shall have direct
40 project control and complete authority to act on behalf of the Contractor in fulfilling
41 the commitments of the Contractor's schedule.
42

43 1.03 PROGRESS OF THE WORK
44

- 45 A. The work shall be executed with such progress as may be required to prevent any
46 delay to the general completion of the work. The work shall be executed at such

1 times and in or on such parts of the project, and with such forces, materials and
2 equipment to assure completion of the work in the time established by the
3 Contract.

- 4
- 5 B. If the Contractor, for his convenience and at his own expense, should desire to
6 carry on his work at night or outside regular hours, he shall submit written notice
7 to the Engineer and he shall allow ample time for satisfactory arrangements to be
8 made for inspecting the work in progress. The Contractor shall reimburse the
9 Owner for extra inspection required for work outside regular hours. The Contractor
10 shall light the different parts of the project as required to comply with all applicable
11 Federal and State regulations and with all applicable requirements of the
12 municipality in which the work is being done.

13

PART 2 - PROGRESS SCHEDULE SUBMITTALS

2.01 GENERAL REQUIREMENTS

- 18 A. As required within the General Conditions, the Contractor shall submit a critical
19 path progress schedule as described herein. The schedule shall take into
20 considerations all work phasing and restrictions as specified elsewhere in the
21 Contract Documents.
- 23 B. The critical path progress schedule requirement shall consist of a detailed
24 schedule, monthly status reports (Monthly Reports), a start-up schedule, and
25 revisions to the schedules and analyses as described. The planning, scheduling,
26 management and execution of the work are the sole responsibilities of the
27 Contractor. The progress schedule shall allow the Engineer to review Contractor's
28 planning, scheduling, management and execution of the work; to assist Engineer
29 in evaluating work progress and make progress payments; to allow other
30 contractors to cooperate and coordinate their activities with those of the
31 Contractor; and to provide Owner with information about "construction schedule"
32 and "cumulative outlay schedule."
- 34 C. Engineer's review of the schedule submittals shall not relieve Contractor from the
35 responsibility for any deviations from the Contract Documents unless Contractor
36 has in writing called Engineer's attention to such deviations at the time of
37 submission and Engineer has given written concurrence to the specific deviations,
38 nor shall any concurrence by Engineer relieve Contractor from responsibility for
39 errors and omissions in the submittals.
- 41 D. Float or slack time is not for the exclusive benefit of the Owner, the Engineer or
42 the Contractor. Extensions of time for performance, as specified in the General
43 and Supplementary Conditions, will be granted only to the extent that equitable
44 time adjustments for the network activity, or activities affected, exceed the total
45 float or slack time along the affected network paths, as shown in the precedence
46 diagram and report in effect at the instant of either (a) a notice to proceed with a

1 change, or (b) a notice of suspension of work or possession, or (c) detection of a
2 subsequently acknowledged differing site condition, or (d) occurrence of cause for
3 an excusable delay. Further, use of float time in the schedule, or the allocation of
4 float time to activities by means of special logic restraints or imposed dates, shall
5 be shared to the benefit of Owner, Engineer, Contractor, and his subcontractors
6 and suppliers in proportion of their scope of responsibilities. Excessive use of float
7 time to the detriment of succeeding activities may be cause for denying an
8 extension of time if it can be demonstrated that the float along the network paths
9 affected at the instant of the delaying condition would have been larger than the
10 delay had it not been for the excessive and unreasonable float usage in violation
11 of the sharing concept required by this Specification.

- 12
- 13 E. Engineer's review of the schedule submittals shall be only for conformance with
14 the information given in the Contract Documents and shall not extend to the
15 means, methods, sequences and techniques or procedures of construction or to
16 safety precautions or programs incident thereto. Engineer's review of the
17 schedule submittals will be predicated on a Contractor's stamp of approval signed
18 off by Contractor. Contractor's stamp of approval on any schedule submittals shall
19 constitute a representation to Owner and Engineer that Contractor, has either
20 determined or verified all data on the submittal, or assumes full responsibility for
21 doing so, and that Contractor and his subcontractors and suppliers have reviewed
22 and coordinated the sequences shown in the submittal with the requirements of
23 the work under the Contract Documents.

24

25 2.02 SUPPLEMENTARY REQUIREMENTS

26

- 27 A. Graphic network diagrams shall be on a time-scaled precedence network format.
28 The graphic network diagram shall include the following format:
- 29
- 30 1. Description of each activity, or restraint, shall be brief but convey the scope
31 of work described.
- 32
- 33 2. Activities shall identify all items of work that must be accomplished to
34 achieve Substantial Completion, or any interim substantial completion,
35 such as the major disciplines of work; items pertaining to the approval of
36 regulatory agencies; contractor's time required for submittals, fabrication
37 and deliveries; the time required by Engineer to review all submittals as set
38 forth in the Contract Documents; items of work required of Owner to
39 support pre-operational and start-up testing; time required for the relocation
40 of utilities. Activities shall also identify interface milestones with the work
41 of other contract work under separate contracts with Owner.
- 42
- 43 3. Any activities not shown on the graphic network diagram shall be
44 considered to have no effect on the Contractor's ability to achieve
45 Substantial Completion, or any interim substantial completion, within the
46 Contract Time. Any delays to activities that do not appear in the concurred

1 detailed schedule shall give rise only to non-prejudicial delays. Attempts
2 to impose after-the-fact logic constraints where none existed previously to
3 justify time extensions will not be permitted.

- 4
5. 4. Activity durations shall be in whole working days.
6
7. 5. Graphic diagrams shall be time-scaled and sequenced by work areas. The
8 Diagram of Activities shall show numerical values for total float and be
9 shown on their early schedules. The diagram shall be neat and legible and
10 submitted on sheets no larger than 24 inches by 36 inches on a medium
11 suitable for reproduction.

12

13. B. Printout reports shall contain the following data for each activity or restraint:

14

- 15
16. 1. Activity identification, activity description, activity duration, activity
17 man-days, computed or specified early start date, computed early finish
18 date, computed late start date, computed or specified late finish date, and
19 total float and free float.
- 20
21. 2. Five separate reports shall be provided, including all activities and
22 restraints, and shall be submitted monthly as follows:
- 23
24. a. Activity, sort by early start dates in order of ascending numbers.
25 b. Activity, sort by department.
26 c. Float report, in order of ascending total float values.
27 d. Successor/predecessor report.

28 PART 3 - EXECUTION

29

30 3.01 DETAILED SCHEDULE SUBMITTAL

31

- 32
33. A. Submittal shall include a time-scaled graphic diagram showing all Contract
34 activities, computer printout reports, and a supporting narrative. The initial
35 Detailed Schedule submittal shall be delivered within 10 calendar days after the
36 Notice to Proceed, and shall use the Notice to Proceed as the "data date". Upon
37 receipt of Engineer's comments, Contractor shall meet with Engineer and discuss
38 an appraisal and evaluation of the proposed work plan. Necessary revisions
39 resulting from this review shall be made by Contractor and the detailed schedule
40 resubmitted within 15 calendar days after the meeting. The re-submittal, if agreed
41 to by the Owner, and unless subsequently changed with the concurrence of or at
42 the direction of Owner, shall be the work plan to be used by the Contractor for
43 planning, scheduling, managing and executing the work. If Contractor fails to
44 provide an acceptable Detailed Schedule submittal, he will be deemed not to have
45 provided a basis upon which progress may be evaluated, which will further
46 constitute reasons for refusing to recommend payment.

- 1 B. The graphic diagram shall be formatted in accordance with Article 2.02(A) above.
2 The diagram shall include (1) all detailed activities grouped by major areas of work.
3 The critical path activities shall be identified, including critical paths for interim
4 dates, if applicable, by clearly highlighting the path on the graphics diagram.
5
- 6 C. This submittal shall include five copies of the graphic diagram, the printout reports
7 and the narrative, in accordance with Article 2.02 of these scheduling
8 requirements.
9
- 10 D. The narrative shall include sufficient data to explain the basis of Contractor's
11 determination of durations, describe the contract conditions and restraints plugged
12 into the schedule, and provide a "what-if" analysis pertaining to potential problems
13 and practical steps to mitigate them. Should Engineer require additional data, this
14 information shall be supplied by Contractor within ten calendar days.
15

16 **3.02 MONTHLY STATUS REPORTS**

- 17
- 18 A. Beginning with the first month, and every month thereafter, Contractor shall submit
19 to Engineer, with each Application for Payment, a Monthly Status Report (based
20 on the Detailed Schedule) with data as of the last day of the pay period. The
21 monthly Status Report shall include a revised copy of the currently accepted
22 graphic diagram, computer printouts and a narrative. The Monthly Status Report
23 will be reviewed by the Engineer. The Contractor shall address the Engineer's
24 comments in the subsequent Monthly Status Report. If Contractor fails to provide
25 acceptable Monthly Status Reports, he will be deemed not to have provided a
26 basis upon which progress may be evaluated, which will be reason for refusing to
27 recommend progress payments.
28
- 29 B. The revised diagram shall show, for the currently accepted detailed diagram,
30 percentages of completion for all activities, actual start and finish dates, and
31 remaining durations, as appropriate. Activities not previously included in the
32 currently accepted detailed schedule shall be added, except that contractual dates
33 will not be changed except by Change Order. Review of a revised diagram by the
34 Engineer will not be construed to constitute concurrence with the time frames,
35 duration, or sequencing for such added activities; instead the corresponding data
36 as ultimately incorporated into an appropriate change order shall govern.
37
- 38 C. The narrative shall include the information shown in the following outline in a
39 narrative form:
40
- 41 1. Construction progress (refer to activity number in the Detailed Schedule)
42 including:
43
- 44 a. Activities completed this reporting period;
45 b. Activities in progress this reporting period;
46 c. Activities scheduled to commence next reporting period.

- 1
2 2. Description of problem areas
3
4 3. Current and anticipated delays
5
6 a. Cause of the delay;
7 b. Corrective action and schedule adjustments to correct the delay;
8 c. Impact of the delay on other activities, on milestones, and on
9 completion dates.
10
11 4. Changes in construction sequence
12
13 5. Pending items and status thereof
14
15 a. Permits
16 b. Change Orders
17 c. Time extensions
18 d. Other
19
20 6. Contract completion date status
21
22 a. Ahead of schedule and number of days
23 b. Behind schedule and number of days
24

25 3.03 REVISIONS
26

- 27 A. All revised Detailed Schedule submittals shall be in the same form and detail as
28 the initial submittal and shall be accompanied by an explanation of the reasons for
29 such revisions, all of which shall be subject to review by Engineer. The revision
30 shall incorporate all previously made changes to reflect current as-built conditions.
31 Minor changes to the submittal may be reviewed at monthly meetings. Changes
32 to activities having adequate float shall be considered a minor change.
33
34 B. A revised detailed work plan submittal shall be submitted for review, when required
35 by Engineer, for one of the following reasons:
36
37 1. Owner or Engineer directs a change that affects the date(s) specified in the
38 Agreement or alters the length of a critical path.
39
40 2. Contractor elects to change any sequence of activities so as to affect a
41 critical path of the currently accepted detailed schedule documents.
42
43 C. If, prior to agreement on an equitable adjustment to the Contract Time, Engineer
44 requires revisions to the Detailed Schedule in order to evaluate planned progress,
45 Contractor shall provide an interim revised submittal for review with change

1 effect(s) incorporated as directed. Approved interim revisions to the documents
2 will be incorporated during the first subsequent Monthly Status Report.

3

4 3.04 START-UP SCHEDULE SUBMITTALS - Not Used

- 5
- 6 A. At least 90 calendar days prior to the date of Substantial Completion, Contractor
7 shall submit a time-scaled (days after notice to proceed) graphic diagram detailing
8 the work to take place in the period between 60 days prior to Substantial
9 Completion, together with a supporting narrative. Engineer shall respond within
10 10 calendar days after receipt of the submittal. Upon receipt of Engineer's
11 comments, Contractor shall make the necessary revisions and submit the revised
12 schedule within ten calendar days. If Contractor fails to provide acceptable
13 Start-up Schedule Submittals, he will be deemed not to have provided a basis
14 upon which progress may be evaluated, which will be reason for refusing to
15 recommend payment.
- 16
- 17 B. The Start-up Schedule may not be combined with the Detailed Schedule. The
18 Start-up Schedule is intended to show much greater detail than the Detailed
19 Schedule for start-up activities. Typical information required includes, but is not
20 limited to, the timing of vendor representatives, pre-op testing, individual
21 equipment start-ups, Owner's training, and performance certification testing.
- 22
- 23 C. The graphic diagram shall use the currently accepted Detailed Schedule for those
24 activities completed ahead of the last 60 calendar days prior to Substantial
25 Completion, and detailed activities for the remaining 60-day period within the time
26 frames outlined in the currently accepted Detailed Schedule.
- 27
- 28 D. Contractor will be required to continue the requirement for monthly reports, as
29 outlined in Articles 3.03 and 3.04 above. In preparing these reports, Contractor
30 must assure that the Detailed Schedule is consistent with the progress noted in
31 the Start-up Schedule.
- 32
- 33 E. In addition, Contractor will be required to submit a revised copy of the start-up
34 graphic diagram on a monthly basis with a start-up narrative. This revised diagram
35 shall highlight percentages of completion, actual start and finish dates, and
36 remaining durations as applicable. Activities not previously included in the
37 accepted detailed work plan shall be added in these submittals, except that
38 contractual dates shall not be changed except by Change Order. Reviews of
39 these submittals by Engineer will not be construed to constitute concurrence with
40 the time frames, durations or sequence of work for each added activity.

41

42 3.05 CONSTRUCTION PERIOD

- 43
- 44 A. Whenever it becomes apparent from the current monthly progress evaluation and
45 updated schedule data that any milestone and/or Contract completion date will not

be met, the Contractor shall take appropriate action to bring the work back on schedule. Actions could include:

1. Increase construction manpower in such quantities and crafts as to substantially eliminate the backlog of work;
 2. Increase the number of working hours per shift, shifts per work day, work days per week, or the amount of construction equipment, or any combination of the foregoing sufficient to substantially eliminate the backlog of work; and
 3. Reschedule work items to achieve concurrency of accomplishment.

B. The addition of equipment or construction forces, increasing the working hours or any other method, manner, or procedure to return to the current Detailed Schedule shall be at the Contractor's own cost and shall not be considered justification for a Change Order or treated as an acceleration order.

END SECTION

1 SECTION 01340
2

3 SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

- 9 A. The Contractor shall submit to the Engineer for review such working drawings,
10 shop drawings, test reports and data on materials and equipment (hereinafter
11 in this Section called data), and material samples (hereinafter in this Section
12 called samples) as are required for the proper control of work, including but not
13 limited to those working drawings, shop drawings, data and samples for
14 materials and equipment specified elsewhere in the Specifications and in the
15 Contract Drawings.
16
- 17 B. The Contractor shall note that there are specific submittal requirements in other
18 sections of these Specifications.

19 20 1.02 SHOP DRAWINGS
21

- 22 A. When used in the Contract Documents, the term "shop drawings" shall be
23 considered to mean Contractor's Drawings for material and equipment that will
24 become an integral part of the Project. These drawings shall be complete and
25 detailed. Shop drawings shall consist of fabrication, erection and setting
26 drawings and schedule drawings, manufacturer's scale drawings, bills of
27 material, wiring and control diagrams, and inspection and test reports including
28 performance curves and certifications as applicable to the Work.
29
- 30 B. All details on shop drawings submitted for review shall show clearly the
31 elevations of the various parts to the main members and lines of the structure
32 and/or equipment, and where correct fabrication of the work depends upon field
33 measurements, such measurements shall be made and noted on the shop
34 drawings before being submitted for review.
35
- 36 C. See Shop Drawing Schedule requirements in Subparagraph 1.07
37 CONTRACTOR'S RESPONSIBILITY.

38 39 1.03 PRODUCT DATA
40

- 41 A. Product data as specified in individual sections, include, but are not necessarily
42 limited to, standard prepared data for manufactured products (sometimes
43 referred to as catalog data), such as the manufacturers product specification
44 and installation instructions, availability of colors and patterns, manufacturer's
45 printed statements of compliances and applicability, roughing-in diagrams and
46 templates, catalog cuts, product photographs, standard wiring diagrams, printed

1 performance curves and operational-range diagrams, production or quality
2 control inspection and test reports and certifications, mill reports, product
3 operating and maintenance instructions and recommended spare-parts listing
4 storage instructions, and printed product warranties, as applicable to the work.
5

6 **1.04 WORKING DRAWINGS**

- 7
- 8 A. When used in the Contract Documents, the term "working drawings" shall be
9 considered to mean the Contractor's Drawings for temporary structures such as
10 temporary bulkheads, support of open cut excavation, support of utilities,
11 ground water control systems, forming and falsework; for underpinning; and for
12 such other work as may be required for construction but does not become an
13 integral part of the Project.
14
- 15 B. Working drawings shall be signed and sealed by a registered Professional
16 Engineer, currently licensed to practice in the State and shall convey, or be
17 accompanied by, calculations or other sufficient information to completely
18 explain the structure, machine, or system described and its intended manner of
19 use. Prior to commencing such work, working drawings must have been
20 reviewed without specific exceptions by the Engineer. Such review will be for
21 general conformance and will not relieve the Contractor in any way from his
22 responsibility with regard to the fulfillment of the terms of the Contract. All risks
23 of error are assumed by the Contractor. The Owner and Engineer shall have
24 no responsibility for errors on the working drawings or the finished work.
25

26 **1.05 SAMPLES**

- 27
- 28 A. The Contractor shall furnish, for review of the Engineer, samples required by
29 the Contract Documents or requested by the Engineer. Samples shall be
30 delivered to the Engineer as specified or directed and in quantities and sizes as
31 specified. A minimum of two samples of each item shall be submitted unless
32 otherwise specified. The Contractor shall prepay all shipping charges on
33 samples. Materials or equipment for which samples are required shall not be
34 used in work until reviewed by the Engineer.
35
- 36 B. Samples specified in individual sections, include, but are not necessarily limited
37 to, physical examples of the work such as sections of manufactured or
38 fabricated work, small cuts or containers of materials, complete units of
39 repetitively-used products, color/textured/pattern swatches and range sets,
40 specimens for coordination of visual effect, graphic symbols, and units of work
41 to be used by the Engineer or Owner for independent inspection and testing, as
42 applicable to the Work.
43
- 44 C. The Contractor shall prepare a transmittal letter for each shipment of sample,
45 shall enclose a copy of this letter with the shipment, and shall send a copy of

1 this letter to the Engineer. Review of a sample shall be only for the characteristics or use named in such review and shall not be construed to change or modify
2 any Contract requirements.
3

4

5 1.06 SUBMITTAL REQUIREMENTS

6

- 7 A. The Contractor shall review, approve, and submit, with reasonable promptness
8 and in such sequence, so as to cause no delay in the Contract Work or in the
9 Work of the Owner or any separate contractor, all shop drawings, product data,
10 working drawings and samples required by the Contract Documents.
11
- 12 B. The Contractor shall submit to the Engineer five (5) copies of all shop drawings,
13 plus the number of copies he wants returned. The Engineer will review the
14 submittal and return to the Contractor marked-up copies of the shop drawings
15 with the appropriate review comments.
16
- 17 C. Shop drawings, product data, working drawings and samples shall be
18 transmitted using a form provided by the Engineer and furnished with the
19 following information:
20
- 21 1. Number and title of the drawing.
22 2. Date of drawing or revision.
23 3. Name of project building, facility or system.
24 4. Name of contractor, subcontractor, and manufacturer submitting
25 drawing.
26 5. Clear identification of contents, location of the work, and the sheet
27 numbers where the product is found in the contract drawings.
28 6. Contractor Certification Statement.
29 7. Submittal Identification Number.
30 8. Contract Drawing Number Reference.
31 9. Statement indicating any deviations from the Contract Documents.
32
- 33 D. All items specified are not necessarily intended to be a manufacturer's standard
34 product. Variations from specified items will be considered on an "or equal"
35 basis. If submittals show variations from Contract requirements because of
36 standard shop practice or for other reasons, the Contractor shall describe such
37 variations in his letter of transmittal and on the shop drawings along with
38 notification of his intent to seek contract adjustment. If acceptable, proper
39 adjustment in the Contract shall be implemented where appropriate. If the
40 Contractor fails to describe such variations he shall not be relieved of the
41 responsibility for executing the work in accordance with the Contract, even
42 though such drawings have been reviewed. Variations submitted but not
43 described may be cause for rejection. Any variations initiated by the Contractor
44 will not be considered as an addition to the scope of work unless specifically
45 noted and then approved as such in writing by the Engineer.
46

- 1 E. Data on materials and equipment shall include materials and equipment lists
2 giving, for each item thereon, the name and location of the supplier or
3 manufacturer, trade name, catalog reference, material, size, finish and all other
4 pertinent data.
- 5
- 6 F. For all mechanical and electrical equipment, the Contractor shall provide a
7 single list that includes the equipment name, and address and telephone
8 number of the manufacturer's representative and service company, so that
9 service and/or spare parts can be readily obtained. In addition, a maintenance
10 and lubrication schedule for each piece of equipment shall be submitted as
11 specified elsewhere.
- 12
- 13 G. The Contractor shall use the color "green" to make his remarks on the
14 Submittals. Only the Engineer will utilize the color "red" in marking submittals.

15

16 1.07 CONTRACTOR'S RESPONSIBILITY

17

- 18 A. It is the duty of the Contractor to check, and coordinate with the work of all
19 trades, all drawings, data, schedules and samples prepared by or for him before
20 submitting them to the Engineer for review. Each copy of every drawing or data
21 sheet 11"x17" and larger shall bear Contractor's stamp showing that they have
22 been so checked and approved. Drawings or data sheets 11"x17" and smaller
23 shall be bound together in an orderly fashion and bear the Contractor's stamp
24 on the cover sheet. The cover sheet shall fully describe the packaged data and
25 include a list of all sheet numbers within the package. Shop drawings submitted
26 to the Engineer without the Contractor's stamp will be returned to the Contractor,
27 without review, at the Engineer's option.
- 28
- 29 B. The Contractor shall review shop drawings, product data, and samples prior to
30 submission to determine and verify the following:
- 31
- 32 1. Field measurements.
- 33
- 34 2. Field construction criteria.
- 35
- 36 3. Manufacturer's catalog numbers and similar data.
- 37
- 38 4. Conformance with Specifications.
- 39
- 40 C. Shop drawings shall indicate any deviations in the submittal from the
41 requirements of the Contract Documents.
- 42
- 43 D. At a time decided upon at the pre-construction meeting the Contractor shall
44 furnish the Engineer a Shop Drawing schedule fixing the respective dates for
45 the initial submission of shop and working drawings, the beginning of
46 manufacture, testing and installation of materials, supplies and equipment. This

1 schedule shall be provided as a separate entity and indicate those submittals
2 that are critical to the progress schedule. The Contractor shall prepare and
3 transmit each submittal sufficiently in advance of performing the related work or
4 other applicable activities, or within the time specified in the individual work
5 sections of the Specifications, so that the installation will not be delayed by
6 processing times including disapproval and resubmittal (if required),
7 coordination with other submittals, testing, purchasing, fabrication, delivery, and
8 similar sequenced activities. No extension of time will be authorized because
9 of the Contractor's failure to transmit complete and acceptable submittals
10 sufficiently in advance of the Work.
11

- 12 E. The Contractor shall not begin any work affected by a submittal returned,
13 "Rejected. Revise as indicated and resubmit". Before starting this work, all
14 revisions must be corrected by the Contractor. After resubmittal they will be
15 reviewed and returned to him by the Engineer. If returned marked, "No
16 exceptions noted" or "Exceptions as noted", then the Contractor may begin this
17 work. Any corrections made to the shop drawings are to be followed without
18 exception.
19
- 20 F. The Contractor shall submit to the Engineer all shop drawings and data
21 sufficiently in advance of construction requirements to provide no less than
22 twenty-one (21) calendar days for Engineer's review from the time the Engineer
23 receives them.
24
- 25 G. The Contractor shall be responsible for and bear all cost of damages that may
26 result from the ordering of any material or from proceeding with any part of work
27 prior to review by the Engineer of the necessary shop drawings.
28
- 29 H. All shop drawings, product data, working drawings and samples submitted by
30 subcontractors for review shall be sent directly to the Contractor for checking.
31 The Contractor shall be responsible for their submission according to the
32 approved shop drawing schedule so as to prevent delays in delivery of materials
33 and project completion.
34
- 35 I. The Contractor shall check all subcontractor's shop drawings, product data,
36 working drawings and samples regarding measurements, size of members,
37 materials, and details to satisfy himself that they are in conformance to the
38 Contract Documents. Shop drawings found to be inaccurate or otherwise in
39 error shall be returned to the subcontractors for correction before submission to
40 the Engineer.
41

42 1.08 ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING
43 DRAWINGS AND SAMPLES
44

- 45 A. The Engineer's review is for general conformance with the design concept and
46 Contract Documents. Markings or comments shall not be construed as relieving

1 the Contractor from compliance with the Contract Drawings and Specifications
2 or departures thereof. The Contractor remains responsible for details and
3 accuracy, for coordinating the work with all other associated work and trades,
4 for selecting fabrication processes, for techniques of assembly, and for
5 performing work in a safe manner.

6
7 B. The review of shop drawings, data, and samples will be general. The review
8 shall not be construed as:

- 9
10 1. Permitting any departure from the Contract Documents;
11
12 2. Relieving the Contractor of responsibility for any errors, including details,
13 dimensions, and materials; or,
14
15 3. Approving departures from details furnished by the Engineer, except as
16 otherwise provided herein.

17
18 C. If the shop drawings, data or samples as submitted describe variations per
19 subparagraph 1.06D show a departure from the Contract Documents that
20 Engineer finds to be in the interest of the Owner and to be so minor as not to
21 involve a change in Contract Price or time for performance, the Engineer may
22 return the reviewed drawings without noting an exception.

23
24 D. Submittals will be returned to the Contractor under one of the following:

25
26 "NO EXCEPTIONS NOTED" is assigned when there are no notations or
27 comments on the submittal. When returned under this code the Contractor may
28 release the equipment and/or material for manufacture.

29
30 "EXCEPTIONS AS NOTED" is assigned when notations or comments have
31 been made on the submittal pointing out minor discrepancies as compared with
32 the Contract Documents. Resubmittal or confirmation is not necessary prior to
33 release for manufacturing.

34
35 "EXCEPTIONS AS NOTED - CONFIRM." This combination of codes is
36 assigned when a confirmation of the notations and comments is required by the
37 Contractor. The Contractor may release the equipment or material for
38 manufacture; however, all notations and comments must be incorporated into
39 the final product. This confirmation is to address the omissions and/or
40 nonconforming items that were noted. Only the items to be "confirmed" need to
41 be resubmitted.

42
43 "EXCEPTIONS AS NOTED - RESUBMIT." This combination of codes is
44 assigned when a resubmittal is required by the Contractor. The Contractor may
45 release that portion of the equipment or material for manufacture for which there
46 were no corrections noted; however, all notations and comments must be

1 incorporated into the final submittal. This resubmittal is to address the
2 omissions and/or nonconforming items that were noted.
3

4 "REJECTED - REVISE AS INDICATED AND RESUBMIT." This combination of
5 codes is assigned when the submittal is in noncompliance with the Contract
6 Documents and must be corrected and the entire package resubmitted. This
7 code generally means that the equipment or material cannot be released for
8 manufacture unless the Contractor takes full responsibility for providing the
9 submitted items in accordance with Contract Documents.
10

11 "FOR YOUR INFORMATION" is assigned when the package provides
12 information of a general nature that may or may not require a response.
13

- 14 E. Resubmittals will be handled in the same manner as first submittals. On
15 resubmittals the Contractor shall direct specific attention, in writing, on the letter
16 of transmittal and on resubmitted shop drawings by use of revision triangles or
17 other similar methods, to revisions other than the corrections requested by the
18 Engineer on previous submissions. Any such revisions that are not clearly
19 identified shall be made at the risk of the Contractor. The Contractor shall make
20 corrections to any work done because of this type revision that is not in
21 accordance to the Contract Documents as may be required by the Engineer.
22
- 23 F. If the Contractor considers any correction indicated on the shop drawings to
24 constitute a change to the Contract Documents, the Contractor shall give written
25 notice thereof to the Engineer at least seven (7) working days prior to release
26 for manufacture.
27
- 28 G. The Engineer will review a submittal/resubmittal a maximum of two (2) times
29 after which cost of review will be borne by the Contractor. The cost of
30 engineering shall be as specified in Section 01300 or, if not specified therein,
31 shall be equal to the Engineer's charges to the Owner under the terms of the
32 Engineer's agreement with the Owner.
33
- 34 H. When the shop drawings have been completed to the satisfaction of the
35 Engineer, the Contractor shall carry out the construction in accordance
36 therewith and shall make no further changes therein except upon written
37 instruction from the Engineer.
38
- 39 I. Partial submittals may not be reviewed. The Engineer will be the only judge as
40 to the completeness of a submittal. Submittals not complete will be returned to
41 the Contractor. The Engineer may at his option provide a list or mark the
42 submittal directing the Contractor to the areas that are incomplete.
43

44 PART 2 - PRODUCTS
45

46 2.01 SHOP DRAWINGS
47

1 Final approved shop drawings shall be submitted in electronic format.
2

3 PART 3 - EXECUTION (NOT USED)

5
6 END OF SECTION
7
8

1 SECTION 01410
2

3 TESTING AND TESTING LABORATORY SERVICES
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

9 A. Contractor shall employ and pay for the services of an Independent Testing
10 Laboratory to perform the testing specifically indicated in the Contract Drawings
11 or specified in the Contract Specifications and may at any other time elect to
12 have materials and equipment tested for conformity with the Contract
13 Documents.

- 14
- 15 1. Contractor shall cooperate with the laboratory to facilitate the execution
16 of its required services.
17
- 18 2. Employment of the laboratory shall in no way relieve Contractor's
19 obligations to perform the Work of the Contract.

20 A. Contractor shall perform and pay for all other sampling and testing required in
21 the specifications, including:

- 22
- 23 1. Digester liquids;
24 2. Digester solids;
25 3. Others, as specified or required.

26 1.02 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY
27

28 A. Laboratory is not authorized to:
29

- 30
- 31 1. Release, revoke, alter or enlarge on requirements of Contract
32 Documents.
33
- 34 2. Approve or accept any portion of the Work.
35
- 36 3. Perform any duties of the Contractor.

37 1.03 CONTRACTOR'S RESPONSIBILITIES
38

- 39 A. Cooperate with laboratory personnel, provide access to Work, and to
40 Manufacturer's operations.
41
- 42 B. Secure and deliver to the laboratory adequate quantities of representational
43 samples of materials proposed to be used and/or that require testing.
44

- 1 C. Provide to the laboratory the preliminary design mix proposed to be used for
2 concrete, and other materials mixes, which require control by the testing
3 laboratory.
- 4
- 5 D. Materials and equipment used in the performance of work under this Contract
6 are subject to inspection and testing at the point of manufacture or fabrication.
7 Standard specifications for quality and workmanship are indicated in the
8 Contract Documents. The Engineer may require the Contractor to provide
9 statements or certificates from the manufacturers and fabricators that the
10 materials and equipment provided by them are manufactured or fabricated in
11 full accordance with the standard specifications for quality and workmanship
12 indicated in the Contract Documents. All costs of this testing and providing
13 statements and certificates shall be a subsidiary obligation of the Contractor,
14 and no extra charge to the Owner shall be allowed on account of such testing
15 and certification.
- 16
- 17 E. Furnish incidental labor and facilities:
- 18
- 19 1. To provide access to work to be tested.
- 20
- 21 2. To obtain and handle samples at the Project site or at the source of the
22 product to be tested.
- 23
- 24 3. To facilitate inspections and tests.
- 25
- 26 4. Proper storage and curing of test samples.
- 27
- 28 F. The Contractor shall be responsible for notifying the laboratory sufficiently in
29 advance (minimum 48 hours) of operations to allow for laboratory assignment
30 of personnel and scheduling of tests.
- 31
- 32 1. When tests or inspections cannot be performed after such notice,
33 reimburse Owner for laboratory personnel and travel expenses incurred
34 due to Contractor's negligence.
- 35
- 36 G. Employ and pay for the services of the same or a separate, equally qualified
37 independent testing laboratory to perform additional inspections, sampling and
38 testing required for the Contractor's convenience and as approved by the
39 Engineer.
- 40
- 41 PART 2 - PRODUCTS (NOT USED)
- 42 PART 3 - EXECUTION (NOT USED)
- 43 END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SANITARY FACILITIES

- A. The Contractor shall furnish temporary facilities at the site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.
 - B. Temporary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. The Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

1.02 MAINTENANCE OF TRAFFIC

- A. Contractor shall conduct his work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them. Driveway access to commercial properties shall be maintained at all times. Such maintenance of traffic shall not be required when Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point. At all times, the Contractor shall perform the Work in accordance with the permits and easement agreements.
 - B. Traffic control shall be in accordance with DOT Roadway and Traffic Design Standards for Traffic Control Through Work Zones. All local Traffic Regulations shall be followed.
 - C. In making open-cut street crossings, the Contractor shall not block more than one-half of the street at a time. Whenever possible, Contractor shall widen the shoulder on the opposite side to facilitate traffic flow. Temporary surfacing shall be provided as necessary on shoulders.

1.03 BARRICADES AND LIGHTS

- A. All streets, roads, highways, and other public thoroughfares that are closed to traffic shall be protected by effective barricades on which shall be placed

1 acceptable warning signs. Barricades shall be located at the nearest
2 intersecting public highway or street on each side of the blocked section.
3

- 4 B. All open trenches and other excavations shall have suitable barricades, signs,
5 and lights to provide adequate protection to the public. Obstructions such as
6 material piles and equipment shall be provided with similar warning signs and
7 lights. Contractor shall be responsible for public safety within the construction
8 area.
- 9 C. All barricades and obstructions shall be illuminated with warning lights from
10 sunset to sunrise. Material storage and conduct of the Work on or alongside
11 public streets and highways shall cause the minimum obstruction and
12 inconvenience to the traveling public. All barricades, signs, lights and other
13 protective devices shall be installed and maintained in conformity with
14 applicable statutory requirements and, where within railroad and highway rights-
15 of-way, as required by the authority having jurisdiction thereof.
16
- 17 D. Open trenches and other excavations shall not be left open over weekends and
18 holidays, or greater than one calendar day, except during extreme weather
19 conditions.
20

21 1.04 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

- 22 A. Contractor shall protect, shore, brace, support, and maintain all underground
23 pipes, conduits, drains, and other underground construction uncovered or
24 otherwise affected by his construction operations. All pavement, surfacing,
25 driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other
26 surface structures affected by construction operations, together with all sod and
27 shrubs in yards and parking areas, shall be restored to their original condition,
28 whether within or outside the easement. All replacements shall be made with
29 new materials.
30

31 1.05 PARKING

- 32 A. Contractor shall provide and maintain suitable parking areas for the use of all
33 construction workers and others performing work or furnishing services in
34 connection with the Project, as required to avoid any need for parking personal
35 vehicles where they may interfere with public traffic, Owner's operations, or
36 construction activities, where indicated on the drawings or directed by the
37 Engineer.
38

39 1.06 DUST CONTROL

- 40 A. Contractor shall take reasonable measures to prevent unnecessary dust. Earth
41 surfaces subject to dusting shall be kept moist with water or by application of a
42 chemical dust suppressant. Dusty materials in piles or in transit shall be
43

covered when practicable to prevent blowing.

B. Buildings or operating facilities that may be adversely affected by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels or similar equipment, shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.07 SWEEPING

A. The Contractor shall sweep loose material from all pavement at the end of each workday.

1.08 POLLUTION CONTROL

A. Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris or other substance will be permitted to enter sanitary sewers and reasonable measures will be taken to prevent such materials from entering any drain or watercourse.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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TEMPORARY FACILITES
01500-4

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SECTION 01505

MOBILIZATION

PART 1 - GENERAL

1.01 DEFINITION AND SCOPE

A. Mobilization shall include the obtaining of all permits, insurance, and bonds; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary facilities, and other construction facilities; all as required for the proper performance and completion of the Work. Mobilization shall include, but not be limited to, the following principal items:

1. Move onto the site all plant and equipment required for first month's operations.
 2. Install temporary construction power, wiring, and lighting facilities.
 3. Establish fire protection plan and safety program.
 4. Secure construction water supply.
 5. Provide on-site sanitary facilities and potable water facilities.
 6. Arrange for and erect Contractor's work and storage yard and employees' parking facilities.
 7. Submit all required insurance certificates and bonds.
 8. Obtain all required permits.
 9. Post all OSHA, Environmental Protection Agency, Department of Labor, and all other required notices.
 10. Have superintendent at the job site full time.
 11. Submit a detailed construction schedule acceptable to the Engineer.
 12. If required, erect project construction sign(s).
 13. Submit a finalized schedule of values of the Work acceptable to the Owner.
 14. Submit a finalized schedule of submittals.

1 15. Provide a continuous color audio-videotape recording of existing
2 conditions.
3

4 PART 2 – PRODUCT (Not Used)
5

6 PART 3 – EXECUTION (Not Used)
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10 END OF SECTION
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SECTION 01510

TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Furnish, install and maintain temporary utilities required for construction, remove on completion of Work.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code, NEMA, and UL standards.
- B. Comply with Federal, State and local codes and regulations and with utility company requirements.
- C. Comply with Pinellas County Health Department Regulations.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials may be new or used but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with utility company and Owner to provide service required for power and lighting and pay all costs for service and for power used in the construction, testing and trial operation prior to final acceptance of the work by the Owner. All cost associated with obtaining temporary and permanent power shall be at Contractor expense.
- B. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.
- C. Provide additional power service and distribution service for exclusive use of the industrial hygiene components. Dedicated 15 amp, 120 volt circuits with ground fault interrupt equipped receptacles will be required.

2.03 TEMPORARY TELEPHONE SERVICE

- 1 A. Arrange with local telephone service-company to provide direct line telephone
2 service at the construction site for the use by personnel and employees.
3
4 B. Pay all costs for installation, maintenance and removal, and service charges.
5
6 C. In lieu of direct service from the local telephone provider, provide cellular phone
7 service for site superintendent(s) and all employees requiring need for such
8 service.

9

10 2.04 TEMPORARY WATER

- 11
- 12 A. The Contractor shall install at each connection to the local water supply system
13 a backflow preventer and meter meeting local utility requirements.
14
- 15 B. The Contractor shall pay for all temporary water facilities, including the backflow
16 preventers and meters, and the actual amount of water used during
17 construction.

18

19 2.05 TEMPORARY SANITARY FACILITIES

- 20
- 21 A. Provide sanitary facilities in compliance with laws and regulations.
22
- 23 B. Service, clean and maintain facilities and enclosures.

24

25 PART 3 - EXECUTION

26

27 3.01 GENERAL

- 28
- 29 A. Maintain and operate systems to assure continuous service.
30
- 31 B. Modify and extend systems as work progress requires.
32
- 33 C. Allow the Owner and Engineer reasonable use of all temporary utilities.

34

35 3.02 REMOVAL

- 36
- 37 A. Completely remove temporary materials and equipment when their use is no
38 longer required as determined by the Engineer.
39
- 40 B. Clean and repair damage caused by temporary installations or use of temporary
41 facilities.

42

43 END OF SECTION

- 1 SECTION 01640
2
3 QUALITY CONTROL
4
5 PART 1 - GENERAL
6
7 1.01 SECTION INCLUDES
8
9 A. Quality assurance and control of installation.
10 B. References.
11 C. Field samples.
12 D. Mock-up.
13 E. Inspection and testing laboratory services.
14 F. Manufacturers' field services and reports.
15
16 1.02 RELATED SECTIONS
17
18 A. Section 01090 - Reference Standards.
19 B. Section 01410 - Testing Laboratory Services.
20
21 1.03 REFERENCES
22
23 A. Conform to reference standard by date of issue current on date of Owner Bids.
24 B. Should specified reference standards conflict with Contract Documents, request
25 clarification for Engineer before proceeding.
26
27 C. The contractual relationship of the parties to the Contract shall not be altered
28 from the Contract Documents by mention or inference otherwise in any
29 reference document.
30
31 1.04 FIELD SAMPLES
32
33 A. Install field samples at the site as required by individual specifications Sections
34 for review.
35 B. Acceptable samples represent a quality level for the Work.
36 C. Where field sample is specified in individual Sections to be removed, clear area
37 after field sample has been accepted by Engineer.

- 1
2 1.05 MOCK-UP
3
4 A. Tests will be performed under provisions identified in this section.
5
6 B. Assemble and erect specified items, with specified attachment and anchorage
7 devices, flashings, seals, and finishes.
8
9 C. Where mock-up is specified in individual Sections to be removed, clear area
10 after mock-up has been accepted by Engineer.
11
12 1.06 INSPECTION AND TESTING LABORATORY SERVICES
13
14 A. Refer to Specification 01410.
15
16 B. The independent firm will perform inspections, tests, and other services
17 specified in individual specification Sections and as required by the Engineer.
18
19 C. Reports will be submitted by the independent firm to the Engineer, in duplicate,
20 indicating observations and results of tests and indicating compliance or
21 non-compliance with Contract Documents.
22
23 D. Cooperate with independent firm; furnish samples of materials, design mix,
24 equipment, tools, storage and assistance as requested.
25
26 1. Notify Engineer and independent firm 48 hours prior to expected time for
27 operations requiring services.
28
29 2. Make arrangements with independent firm and pay for additional
30 samples and tests required for Contractor's use.
31
32 E. Retesting required because of non-conformance to specified requirements shall
33 be performed by the same independent firm on instructions by the Engineer.
34 Payment for retesting will be charged to the Contractor by deducting inspection
35 or testing charges from the Contract Price.
36
37 PART 2 - PRODUCTS (NOT USED)
38
39 PART 3 - EXECUTION (NOT USED)
40
41
42 END OF SECTION
43
44

1 SECTION 01700
2

3 CONTRACT CLOSEOUT
4

5 PART 1 - GENERAL
6

7 1.01 REQUIREMENTS INCLUDED
8

- 9 A. Comply with requirements stated in General Conditions and in Specifications
10 for administrative procedures in closing out the Work.
- 12 B. Electronic Shop Drawings and O&M Manuals – Not Applicable
13
- 14 1. The Contractor shall furnish final approved Shop Drawings and
15 Operations and Maintenance Data in electronic ".pdf" format for all
16 equipment furnished under all Specification Sections in Divisions 11, 12,
17 13, 14, 15 and 16.
- 19 2. The Contractor shall organize all electronic Shop Drawings and
20 Operations and Maintenance Data by specification division and section
21 number and submit two (2) copies on compact disk media (CDROM).

23 1.02 SUBSTANTIAL COMPLETION
24

- 25 A. When Contractor considers the Work is substantially complete, he shall submit
26 to the Engineer:
 - 28 1. A written notice that the Work, or designated portion thereof, is
29 substantially complete.
 - 31 2. A list of items to be completed or corrected.
- 33 B. Within a reasonable time after receipt of such notice, the Engineer will make an
34 inspection to determine the status of completion.
- 36 C. Should the Engineer determine that the Work is not substantially complete:
 - 38 1. The Engineer will promptly notify the Contractor, in writing, giving the
39 reasons therefore.
 - 41 2. Contractor shall remedy the deficiencies in the Work and send a second
42 written notice of substantial completion to the Engineer.
 - 44 3. The Engineer will re-inspect the Work.
- 46 D. When the Engineer finds that the Work is substantially complete, he will:

1. Prepare and deliver to Owner a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment.
 2. After consideration of any objections made by the Owner as provided in General Conditions, and when the Engineer considers the Work substantially complete, he will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

- A. When Contractor considers all the Work to be complete, he shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 5. Work is completed and ready for final inspection.
 - B. The Engineer will inspect the work to verify the status of completion with reasonable promptness after receipt of such certification.
 - C. Should the Engineer consider that the Work is incomplete or defective:
 - 1. The Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to the Engineer that the Work is complete.
 - 3. The Engineer will re-inspect the Work.
 - D. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.03 PARTIAL SUBSTANTIAL COMPLETION ACCEPTANCE

- 1 A. For the purpose of construction phasing and for the commencement of the
2 warranty period for equipment, the Owner shall accept Partial Substantial
3 Completion of process systems. Partial Substantial Completion shall be
4 allowed for a complete process system only, or combination of process systems
5 working together, and the Owner shall only consider for partial substantial
6 completion those systems as specified herein.
7
- 8 B. The following general requirements must be completed prior to the Owner
9 accepting partial substantial completion of a system. Owner shall accept stand-
10 alone ancillary systems for consideration of partial substantial acceptance.
11
- 12 1. An equipment manufacturer representative shall be present for all initial
13 start-up and testing and all other start-up and testing as required in the
14 equipment specifications in Division 11.
15
- 16 2. The Contractor shall provide training of Owner personnel in the operation
17 of new equipment, according to the equipment specifications outlined in
18 Divisions 1 and 11.
19
- 20 3. Contractor shall provide Operating and Maintenance Data to the Owner
21 as specified elsewhere.
22
- 23 4. All electrical equipment including controls, conduit, wiring and safety
24 interlocks for each piece of equipment as shown on the Drawings must
25 be completed as outlined in Divisions 13 and 16.
26
- 27 5. All Control System equipment must be installed and operational for the
28 system that is being tested for partial substantial completion as outlined
29 in Divisions 13 and 16.
30
- 31 6. All inlet and discharge piping must be connected and tested for each
32 system that is being tested for partial substantial completion in
33 compliance with Division 01.
34
- 35 7. Certifications of Proper Installation shall be furnished, along with spare
36 parts, calibration certificates, and the results of all tests.
37

38 1.05 RE-INSPECTION FEES
39

- 40 A. Should the Engineer perform re-inspections, due to failure of the Work, to
41 comply with the claims of status of completion made by the Contractor:
42
- 43 1. Owner will compensate the Engineer for such additional services.
44
- 45 2. Owner will deduct the amount of such compensation from the final
46 payment to the Contractor.

- 1
2 1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER
3
4 A. Evidence of compliance with requirements of governing authorities.
5
6 B. Project Record Documents.
7
8 C. Evidence of Payment and Release of Liens.
9
10 D. Certificate of Insurance for Products and Completed Operations.
11
12 E. Contractor's Final Affidavit.
13
14 F. Lien Waivers from Subcontractors and Suppliers.
15
16 G. Consent of Surety from the bonding company.
17
18 H. Contractor's Guarantee.

19
20 1.07 FINAL ADJUSTMENT OF ACCOUNTS
21

- 22 A. Submit a final statement of accounting to the Engineer.
23
24 B. Statement shall reflect all adjustments to the Contract Sum:
25
26 1. The original Contract Sum.
27
28 2. Additions and deductions resulting from:
29
30 a. Previous Change Orders.
31
32 b. Unit Prices.
33
34 c. Deductions for uncorrected Work.
35
36 d. Penalties and Bonuses.
37
38 e. Deductions for liquidated damages.
39
40 f. Deductions for re-inspection payments.
41
42 g. Other adjustments.
43
44 3. Total Contract Sum, as adjusted.
45
46 4. Payments.

1
2 5. Sum remaining due.
3

4 C. Engineer will prepare a final Change Order, reflecting approved adjustments to
5 the Contract Sum, which were not previously made by Change Orders.
6

7 1.08 FINAL APPLICATION FOR PAYMENT
8

9 A. Contractor shall submit the final Application for Payment in accordance with
10 procedures and requirements stated in the General Conditions.
11

12 PART 2 - PRODUCTS (NOT USED)
13

14 PART 3 – EXECUTION (NOT USED)
15

16 END OF SECTION
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CONTRACT CLOSEOUT
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SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Maintain at the site for the Owner one record copy of:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. Engineer's Field Orders or written instructions
 - 6. Approved Shop Drawings, Working Drawings and Samples
 - 7. Field Test Records
 - 8. Construction Photographs, if provided
 - 9. Detailed progress schedule

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet of secure storage space for storage of samples.
- B. File documents and samples in accordance with CSI format.
- C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by the Engineer.

1 E. As a pre-requisite for monthly progress payments, the Contractor is to exhibit
2 the currently updated "record documents" for review by the Engineer and
3 Owner.

4

5 1.03 MARKING DEVICES

6

7 A. Provide felt tip marking pens for recording information in the color code
8 designated by the Engineer.

9

10 1.04 RECORDING

11

12 A. Label each document "PROJECT RECORD" in neat large printed letters.

13 B. Record information concurrently with construction progress.

14 1. Do not conceal any work until required information is recorded.

15 C. Drawings: Legibly mark to record actual construction:

16 1. Depths of various elements of finished grade.

17 2. Denote all demolished underground piping elevations and dimensions;
18 all changes to piping location; horizontal and vertical locations of
19 underground utilities and appurtenances, all referenced to permanent
20 surface improvements.

21 3. Locations of internal utilities and appurtenances concealed in the
22 construction, referenced to visible and accessible features of the
23 structure.

24 4. Field changes of dimension and detail.

25 5. Changes made by Field Order or by Change Order.

26 6. Details not on original Contract Documents.

27 7. Equipment and piping relocations.

28 8. Major architectural and structural changes including relocation of doors,
29 windows, etc.

30 9. Architectural schedule changes according to Contractor's records and
31 shop drawings.

32 D. Specifications and Addenda; legibly mark each Section to record:

1 1. Changes made by Field Order or by Change Order.

2 E. Shop Drawings (after final review and approval):

3 1. One (1) electronic copy in “.pdf” format of shop drawings. .

4 1.05 SUBMITTAL

5 A. At contract close-out, deliver Record Documents to the Engineer for the Owner.

6 B. Accompany submittal with transmittal letter in duplicate, containing:

7 1. Date,

8 2. Project title and number,

9 3. Contractor's name and address,

10 4. Title and number of each Record Document, and

11 5. Signature of Contractor or his authorized representative.

12 PART 2 - PRODUCTS (NOT USED)

13 PART 3 - EXECUTION (NOT USED)

14 END SECTION

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SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall remove and dispose of or salvage existing structures, piping, conduits, electrical equipment, mechanical equipment, and appurtenances or portions thereof, as shown on the Drawings and specified herein or required to complete the project.
- B. All materials designated for disposal shall, when released by the Engineer, become the Contractor's property and shall be removed from the site and lawfully disposed of by the Contractor.
- C. All materials designated to be salvaged shall be carefully removed and stored in a designated location on site.
- D. The following surveys and reports were performed for this project and are attached in the Appendix to these specifications.
 - A Report on the NESHAP Demolition Survey, Sampling and Evaluation of Asbestos-Containing Materials, prepared by Greenfield Environmental, Inc., May 30, 2013.
 - Report on the analysis of the digester contents by Test America dated February 2014.
 - Asbestos Renovation, Lead Paint and Hazardous Materials Survey report, prepared by Terracon Consultants, Inc., January 16, 2014.
 - A follow up survey was conducted by Terracon on September 5, 2014. An addendum to the original report was issued on September 22, 2014 and is attached in the Appendix to these specifications.
 - GHD Supplemental Asbestos Survey and Hazardous Materials Evaluation dated February 14, 2019.
 - ADS Post Job Submittal dated February 2019
 - Pace Labs Core Sampling Report dated June 29, 2020

- 1 • Terracon Lead Paint Analysis Report dated July 2020.
- 2
- 3 E. A summary of the status of the hazardous materials indicates:
- 4 • The digester composite roofing does not contain asbestos
- 5 • The heat exchanger has no asbestos materials in it
- 6 • The light ballast(s) listed as potentially containing PCBs do not contain PCBs
- 7 • The 3 spin top pump heads do not contain PCBs
- 8 • The mercury thermostats are still in place and contain mercury
- 9 • There are fluorescent bulbs still in place
- 10 • Three asbestos gaskets remain
- 11 • Electrical starters are still in place and may contain lead
- 12 • The paint on all structural and mechanical components contains lead that
- 13 does not pass the EPA TCLP test.
- 14
- 15 F. All of the hazardous materials identified in all the previous reports have been
- 16 removed from the site by the previous Contractor with the exception as listed
- 17 above. The Contractor shall remove all hazardous and non-hazardous material
- 18 in accordance with all state and federal laws and regulations.
- 19
- 20 G. It is not known whether the existing structures to be demolished are supported
- 21 on foundation piles. The foundation piles, if found to be existing, are to remain
- 22 and no additional payment will be made for demolishing the structures
- 23 supported by or connected to these piles. The foundation piles are to be located
- 24 and surveyed in accordance with Section 01014.
- 25
- 26 H. Existing conditions are as shown on the drawings and described in Section
- 27 01014 based on best available information. All bidders shall visit the site and
- 28 become familiar with existing conditions not shown on the drawings or described
- 29 in Section 01014.

30

31 1.02 SUBMITTALS

32

- 33 A. The Contractor shall submit for review, in accordance with Section 01300, a
- 34 proposed Demolition Plan describing the proposed methods, equipment and
- 35 operational sequence for demolition. Include coordination for shut-off,
- 36 temporary services, continuation of service and other applicable items to ensure
- 37 no interruption of operations except as herein before specified.
- 38
- 39 B. The Demolition Plan shall be fully coordinated as described in Sections 01040
- 40 and 01043, and with the Construction Phasing Plan restrictions specified in
- 41 Section 01016.
- 42
- 43 1. The Contractor shall identify the proposed disposal site(s) for all
- 44 materials in the Demolition Plan submittal.
- 45

- 1 2. Submit shipping receipts or bills of lading for all containers that are
2 hauled away
- 3
- 4 3. Contractor's statement of proposed removal and recycling of steel
5 demolition materials. Statement to include name of proposed recycling
6 subcontractor and financial benefits.
- 7
- 8 4. The sequence of work shall be detailed in Demolition Plan and submitted
9 as a shop drawing in accordance with Sections 01016, 01300, and
10 01310.
- 11
- 12 5. The Demolition Plan should address the Contractor's response in the
13 event the tank fails before the liquids have been removed.
- 14

15 **1.03 JOB CONDITIONS**

- 16 A. The Contractor shall execute the demolition and removal work to prevent
17 damage or injury to structures, occupants thereof and adjacent features which
18 might result from falling debris or other causes, and so as not to interfere with
19 the use, and free and safe passage to and from adjacent structures.
- 20
- 21 B. Closing or obstructing of roadways adjacent to the work by the placement or
22 storage of materials will not be permitted. All operations shall be conducted with
23 a minimum interference to traffic on these ways.
- 24
- 25 C. The Contractor shall repair damage done to facilities to remain, or any property
26 belonging to the Owner.
- 27
- 28 D. The Contractor shall carry out his operations so as to avoid interference with
29 operations and work in the existing facilities.
- 30
- 31 E. At least seven (7) calendar days prior to commencement of a demolition or
32 removal, the Contractor shall notify the Owner in writing of his proposed removal
33 schedule. No removals shall be started until the schedule is acceptable to the
34 Owner.
- 35

36 **1.04 REGULATORY AND SAFETY REQUIREMENTS**

- 37
- 38 A. Demolition Work shall be accomplished in strict accordance with 29 CFR 1926-
39 Subpart T and all other applicable local, state, and federal requirements.
- 40
- 41 B. Comply with federal, state, and local hauling and disposal regulations. In
42 addition to the requirements of the General Conditions, Contractor's safety
43 requirements shall conform to all applicable local, state, and federal
44 requirements.
- 45

1 C. Furnish timely notification of this demolition/alteration project to applicable
2 federal, state, regional, and local authorities in accordance with 40 CFR 61-
3 Subpart M.

4

5 **1.05 SEQUENCING AND SCHEDULING**

6

- 7 A. The Work of this Specification shall not commence until Contractor's Demolition
8 Plan has been reviewed by Engineer.
- 9
- 10 B. Include the Work of this Specification in the progress schedule, as specified in
11 Section 01310, Construction Schedules.
- 12
- 13 C. Work areas are shown on the Contract Drawings.
- 14

15 **1.06 USE OF EXPLOSIVES**

16

- 17 A. Use of explosives for demolition is prohibited.
- 18

19 **1.07 DUST CONTROL**

20

- 21 A. The Contractor shall use temporary enclosures and other suitable methods to
22 limit the amount of dust and dirt rising and scattering in the air to the lowest
23 practical level. Existing electrical and mechanical equipment to remain shall be
24 protected from damage, dust, and debris.
- 25

26 **1.08 REFERENCES**

27

- 28 A. The following is a list of standards that may be referenced in this Section:
- 29

- 30 1. Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Guideline K,
31 Containers for Recovered Non-flammable Fluorocarbon Refrigerants.
- 32 2. American National Standards Institute (ANSI): A10.6, Safety
33 Requirements for Demolition Operations.
- 34 3. Occupational Safety and Health Administration (OSHA), U.S. Code of
35 Federal Regulations (CFR) Title 29 Part 1926—Occupational Safety and
36 Health Regulations for Construction.
- 37 4. Environmental Protection Agency (EPA), U.S. Code of Federal
38 Regulations (CFR), Title 40:
 - 39 a. Part 61—National Emission Standards for Hazardous Air
40 Pollutants.
 - 41 b. Part 82—Protection of Stratospheric Ozone.
 - 42 c. Part 273—Standards for Universal Waste Management.

43 **1.09 DEFINITIONS**

44

- 1 A. ACM: Asbestos-containing material.
- 2
- 3 B. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building or
- 4 structure or any part thereof.
- 5
- 6 C. Modify: Provide all necessary material and labor to modify an existing item to
- 7 the condition indicated or specified.
- 8
- 9 D. Relocate: Remove, protect, clean and reinstall equipment, including electrical,
- 10 instrumentation, and all ancillary components required to make the equipment
- 11 fully functional, to the new location identified on the Drawings.
- 12
- 13 E. Renovation/Alteration: Modifying/changing an existing building by changing
- 14 systems, layout, or appurtenances.
- 15
- 16 F. Salvage/Salvageable: Remove and deliver, to the specified location(s), the
- 17 equipment, building materials, or other items so identified to be saved from
- 18 destruction, damage, or waste; such property to remain that of Owner. Unless
- 19 otherwise specified, title to items identified for demolition shall revert to
- 20 Contractor.
- 21
- 22 G. Steel Building: Steel building envelope consisting of rigid frame primary steel,
- 23 steel girts, purlins, corrugated steel panels, and steel columns.
- 24
- 25 H. Recycle: Remove, protect, and handle demolished items for recycling by a third
- 26 party entity, as approved by Owner.
- 27
- 28 I. Universal Waste Lamp: In accordance with 40 CFR 273, the bulb or tube portion
- 29 of an electric lighting device, examples of which include, but are not limited to,
- 30 fluorescent, high-intensity discharge, neon, mercury vapor, high pressure
- 31 sodium, and metal halide lamps.

33 PART 2 - PRODUCTS (NOT USED)

35 PART 3 - EXECUTION

37 3.01 GENERAL

- 39 A. Prior to commencing work, the Contractor shall check all underground and
- 40 exposed existing utility and process piping and all equipment in any way
- 41 associated or in the proximity to the items to be removed and shall verify that
- 42 the piping is inactive (abandoned) and that electric power to equipment, lighting,
- 43 controls, etc., has been permanently disconnected. Active services shall be
- 44 brought to the attention of the Owner for proper action.
- 45

1 B. The Contractor shall collect and analyze samples of the digester contents in
2 accordance with Sections 01014 and 01016.
3

4 C. The Contractor shall remove and dispose of the foliage growing in the tank and
5 on the digester tank cover.
6

7 3.02 UNAUTHORIZED REMOVAL
8

9 A. Any equipment, piping, and appurtenances removed without proper
10 authorization, shall be replaced to the satisfaction of the Engineer at no cost to
11 the Owner.
12

13 3.03 DEMOLITION
14

15 A. All materials and equipment shown on the Drawings to be removed or
16 demolished shall become the property of the Contractor, with the exception of
17 items tagged by the Owner to be salvaged. Prior to removal of any existing
18 equipment or piping from the site of work, the Contractor shall ascertain from
19 the Engineer whether or not the particular item or items are to be salvaged. The
20 Contractor shall dispose of all demolition materials, equipment, debris and all
21 other items off the project site and in conformance with all existing applicable
22 laws and regulations.
23

24 3.04 STRUCTURAL REMOVALS
25

26 A. The Contractor shall remove structures to the lines and grades shown, unless
27 otherwise indicated by the Engineer.
28

29 B. All wood, concrete, brick, tile, concrete block, roofing materials, reinforcement,
30 structural or miscellaneous metals, plaster, wire mesh and other items
31 contained in or upon the structure shall be removed and taken from the project
32 site. These items shall not be used in backfill.
33

34 3.05 MECHANICAL REMOVALS
35

36 A. Mechanical removals shall consist of dismantling and removing of existing
37 piping, equipment and other appurtenances as shown or required for the
38 completion of the work. It shall include cutting, capping and plugging as
39 required.
40

41 B. Wherever piping is to be removed, adjacent pipe headers that are to remain in
42 service shall be blanked off or plugged and then anchored in an acceptable
43 manner.
44

3.06 ELECTRICAL REMOVALS

- A. Electrical removals shall consist of the removal of conduits and wires, and miscellaneous electrical equipment all as shown, specified or required to perform the work.

3.07 REPAIR WORK

- A. Certain areas of existing structures, piping, conduits, and the like will be affected by work necessary to complete modifications under this Contract. The Contractor shall be responsible to rehabilitate those areas affected by its construction activities.
 - B. All debris, materials, piping, and miscellaneous waste products from the work described in this section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

3.08 CLEANUP

- A. The Contractor shall remove from the project site all debris resulting from the demolition and removal operations as it accumulates. Upon completion of the demolition work, all materials, equipment, waste and debris of every sort shall be removed and the premises shall be left clean, neat and orderly.

END OF SECTION

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DEMOLITION
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1 SECTION 02085
2

3 OTHER HAZARDOUS MATERIALS REMOVAL AND DISPOSAL
4

5 PART 1 - GENERAL
6

7 1.01 SUBMITTALS
8

- 9 A. The Contractor shall dispose of the hazardous material in accordance with all
10 State and Federal laws and regulations. Receipts or manifests showing the
11 disposal or recycling destination for all hazardous waste generated on this
12 project to the Engineer at the completion of the project.
13

14 1.01 FLUORESCENT LIGHT BULBS
15

- 16 A. The Contractor shall remove fluorescent light bulb debris and segregate from
17 other waste generated and move them to a designated bulb disposal area.
18 Bulbs and bulb debris shall be disposed of utilizing a device specifically
19 designed for the crushing and disposal of fluorescent light bulbs. This device
20 shall allow for the bulbs to be crushed and deposited into a container (drum)
21 with minimal exposure to workers performing the task. Workers shall be
22 properly protected to minimize exposure to mercury. Workers shall be
23 monitored to verify that the PEL for mercury exposure is not exceeded. Drums
24 of crushed light bulbs shall be disposed of as hazardous waste. Contractor
25 shall submit landfill receipts for all hazardous waste generated on this project
26 to the Engineer at the completion of the project. This work shall be performed
27 in accordance with all applicable federal, state, and local regulations.
28

29 1.02 LEAD PAINT AND OTHER LEAD ITEMS
30

- 31 A. Paint identified to be at or above the detection limit is considered to be lead
32 paint. Workers shall be properly protected to minimize exposure to lead.
33 Contractor shall comply with 29 CFR 1926.62 and all other applicable federal,
34 state and local laws and regulations pertaining to lead.
35
- 36 B. All steel components of the digester floating cover are painted, and the paint
37 was tested for lead in July 2020. The results are included in the Appendix and
38 show that the paint contains lead. A TCLP test was performed on the lead
39 paint and shows that the paint does not pass the TCLP test.
40
- 41 C. All metal including pipes, fittings, valves, equipment, and structural steel shall
42 be considered to have a lead paint coating that does not pass the EPA TCLP
43 test. The Contractor shall dispose of this material in accordance with all State
44 and Federal laws and regulations.
45

OTHER HAZARDOUS MATERIALS REMOVAL AND DISPOSAL

02085-1

08/13/2020

D. Electrical Starters may contain lead and shall be disposed of in accordance with all State and Federal laws and regulations.

1.03 MERCURY THERMOSTATS AND SWITCHES

A. Mercury thermostats shall be placed in sealed, vapor-tight drums (55-gallons or less) for disposal as mercury-containing hazardous waste and shall be classified as RCRA characteristic hazardous waste (Note: thermostats can be co-mingled with broken fluorescent lamps as appropriate). Suspect mercury containing devices shall be disposed of as hazardous waste.

1.04 ASBESTOS GASKETS

A. Asbestos gaskets shall be disposed of in accordance with all State and Federal laws and regulations.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

1 SECTION 02125
2

3 SILT BARRIERS
4

5 PART 1 – GENERAL
6

7 1.01 SCOPE OF WORK
8

- 9 A. The work included under this section consists of furnishing all necessary labor,
10 equipment, tools and materials, and in performing all operations in connection
11 with the installation of a staked silt barrier, of cloth or straw bales, or a floating silt
12 barrier for the protection of open water, wetland systems or areas intended to
13 remain undisturbed by adjoining work.
14
- 15 B. This work shall be performed in strict accordance with the requirements of all
16 applicable sections of these specifications and in conformity with lines, grades,
17 notes and typical sections as shown on the drawings, as directed by the Engineer
18 or as directed by representatives of governmental agencies having permitting
19 jurisdiction over areas to be protected.

21 PART 2 – PRODUCTS
22

23 2.01 STAKED FABRIC SILT BARRIER
24

- 25 A. The sediment control fabric is to be woven polypropylene meeting the following
26 standards:

Mullen Burst Test	(ASTM D-3786)	200 psi (min.)
Grab Elongation	(ASTM D-1682)	30% (max.)
Slurry Flow Rate	(VTM-51)	0.3 gpm/sf (min.)
Retention Efficiency	(VTM-51)	75% (min.)

- 33 B. The fabric shall be provided in widths adequate to provide a barrier of a minimum
34 of 24 inches in height and allow for 8 inches of fabric to be buried for restraint.

36 PART 3 – EXECUTION
37

38 3.01 STAKED CLOTH SILT BARRIER
39

- 40 A. The sediment control fabric shall be attached per the manufacturer's
41 recommendations to the uphill or sediment producing side of the stakes. The
42 stakes shall be spaced at 6 to 10 foot intervals. A 4" to 6" trench shall be dug
43 along the fence line and backfilled with the bottom 10 inches of control fabric in
44 place.

- 46 B. The ends of each unit of fence shall be connected to adjoining fence sections
47 with a connector provided by the manufacturer or by intertwining the two end

posts to overlap the fabric sufficiently to prevent sediment from escaping, as shown in the Drawings.

3.02 STAKED STRAW/SYNTHETIC BALES

- A. Securely bound straw/synthetic bales may be used as a sediment barrier. The bales shall be securely bound with two strands of rope or wire. The bales shall be positioned in a 4 inch trench along the plan alignment and each bale is to be secured by driving two 1"x 2" stakes or #5 rebar through the bale and 6" min. into the ground. The tops of the stakes shall then be secured by a continuous wire tie.
 - B. Deteriorated bales shall be replaced as directed by the Engineer.

- B. Deteriorated bales shall be replaced as directed by the Engineer.

3.03 REMOVAL

- A. Upon obtaining Substantial Completion, the Contractor shall be responsible for the complete removal of all silt barriers unless so directed by the Engineer. Following removal, all materials shall become the property of the Contractor.

END OF SECTION

1 SECTION 02220
2

3 EXCAVATION, BACKFILL, FILL AND GRADING FOR STRUCTURES
4

5 PART 1 - GENERAL
6

7 1.01 SCOPE OF WORK
8

- 9 A. The Contractor shall furnish all labor, materials, equipment, and incidentals
10 necessary to perform all excavation, backfill, fill, and grading for structures
11 required to complete the work as shown on the Drawings and specified herein.
12 The work shall include, but not necessarily be limited to, excavation for
13 structures, footings, all backfilling and fill; embankment and grading for structures;
14 disposal of waste and surplus materials; and all related work such as sheeting,
15 bracing and dewatering.
- 16 B. Excess topsoil and fill generated during construction of the project shall be
17 stockpiled on site for the Contractors use. All unused excess fill shall be
18 salvaged/disposed of by the Contractor.

21 1.02 QUALITY ASSURANCE
22

23 A. Soil Testing
24

- 25 1. Prior to the general placement of fill, and during such placement, the
26 Engineer may select areas within the limits of the fill for testing the degree
27 of compaction obtained. The Contractor shall cooperate fully in obtaining
28 the information desired.
- 30 2. Payment for testing shall be made by the Owner. If test results are
31 unsatisfactory, all costs involved in correcting deficiencies in compacted
32 materials to the satisfaction of the Engineer, shall be borne by the
33 Contractor. Repeated testing cost due to construction deficiencies shall
34 be paid by the Contractor.

36 B. Reference Standards:
37

- 38 1. American Society for Testing and Materials (ASTM, latest edition):
39
- 40 a. ASTM C 136, Sieve or Screen Analysis of Fine and Coarse
41 Aggregates.
- 43 b. ASTM D 1556 (1974), Density of Soil in Place by the Sand-Cone
44 Method.
- 46 c. ASTM D 1557, Moisture-Density Relations of Soils using 10-lb.
47 (4.5-kg) Rammer and 18-in. (457-mm) Drop.

- 1 d. ASTM D 2167, Density of Soil in Place by The Rubber Balloon
2 Method.
3
4 e. ASTM D 2487, Classification of Soils for Engineering Purposes.
5
6 f. ASTM D 2937, Density of Soil in Place by the Drive-Cylinder
7 Method.
8
9 g. ASTM D 2972, Density of Soil in Place by the Nuclear Method.

10 **1.03 SUBMITTALS**

- 11 A. Testing laboratory reports that material for controlled fill meets requirements of
12 this Section.

13 **1.04 JOB CONDITIONS**

- 14 A. Lateral Support of Excavation for Structures

15 Furnish, put in place, and maintain sheeting and bracing required to support the
16 sides of the excavations, to prevent any movement which could in any way
17 diminish the width of the excavation below that necessary for proper construction,
18 and to protect structures, pipe and utilities from damage due to lateral movement
19 or settlement of ground. If the Engineer is of the opinion that at any point
20 sufficient or proper supports have not been provided, he may order additional
21 supports put in at the expense of the Contractor, and compliance with such order
22 shall not relieve or release the Contractor from his responsibility for the
23 sufficiency of such supports.

- 24 B. Dewatering for Structures

25 Furnish, install, maintain, operate, and remove a temporary dewatering system,
26 as required to lower and control the groundwater level, so that the structures may
27 be constructed in the dry. The Contractor shall, at his own expense, correct all
28 damage resulting from inadequacy of the dewatering system or from flooding or
29 the construction site from other causes.

- 30 C. Dewatering System

- 31 1. The dewatering system shall be adequate to drain any excavated area, to
32 maintain the water at such a level as to permit construction in the dry, and
33 to maintain the lowered water table until the structure has been completed
34 to the required stages.
35
36 2. Continuously maintain excavation in a dry condition so as to prevent
37 damage to the subsoil or fill during interruptions due to weather, labor
38 strikes, power failures or other delays. Provide and have ready for

immediate use at all times diesel or gasoline powered standby pumping units to serve the system in case of failure of the normal pumping units.

3. Piping and boiling, or any form of uncontrolled seepage, in the bottom or sides of the excavation shall be prevented at all times. If for any reason the dewatering system is found to be inadequate to meet the requirements set forth herein, the Contractor shall, at his own expense, make such additions, changes and/or replacements as necessary to provide a satisfactory dewatering system.

D. Control of Groundwater Level

1. Maintain the groundwater level at or below subgrade of the structure until the concrete structures are up high enough to: (1) prevent flooding the structure, (2) support both bottom and top levels of walls, and (3) prevent flotation.
2. After the structure has been completed in its entirety, backfill as described hereinafter.
3. Flotation shall be prevented by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages, which may result from failure of this system.
4. Disposal of drainage water shall be in an area approved by the Engineer. Precautions shall be taken to prevent the flow or seepage of drainage back into the drainage area. Particular care shall be taken to prevent the discharge of unsuitable drainage to a water supply or surface water body.
5. Removal of the dewatering system shall be accomplished after the dewatering system is no longer required.

PART 2 - PRODUCTS

2.01 MATERIAL FOR CONTROLLED FILL

A. General

1. Materials shall be furnished, as required from off-site sources, hauled to the site and placed at the locations indicated on the Drawings.
2. For each on-site or off-site material proposed, the Contractor shall notify the Testing Lab of the source of the material at least ten (10) calendar days prior to the date of anticipated use of such material.

1 B. Structural Fill

- 2
- 3 1. Compacted granular fill, which will provide support for building or structure
- 4 foundations, will be referred to as "structural fill." Backfill, which is placed
- 5 against the exterior side of the building walls or structures, or as fill over
- 6 pipe lines, will be referred to as "common fill."
- 7
- 8 2. Materials for compacted structural granular fill shall be gravel, sandy
- 9 gravel, or gravelly sand free of organic material, loam, wood, trash, and
- 10 other objectionable material and shall be well-graded within the following
- 11 limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
6-in.	100
No. 4	20 - 95
No. 40	0 - 60
No. 200	0 - 8

20 C. Common Fill

- 21
- 22 1. Common fill shall consist of mineral soil, free of organic material, loam,
- 23 wood, trash and other objectionable material which may be compressible
- 24 or which cannot be compacted properly. Common fill shall not contain
- 25 stones larger than 10-in. in any dimension, broken concrete, masonry,
- 26 rubble or other such materials. It shall have physical properties such that it
- 27 can be readily spread and compacted during filling.
- 28
- 29 2. Material falling within the above Specification, encountered during the
- 30 excavation, may be stored in segregated stockpiles for reuse. All material
- 31 which, in the opinion of the Engineer is not suitable for reuse, shall be
- 32 spoiled as specified herein for disposal of unsuitable materials.
- 33

34 D. Crushed Stone

- 35
- 36 1. Crushed stone shall be used for manhole bases, as a drainage layer
- 37 below structures with underdrains and at other locations indicated on the
- 38 Drawings.
- 39
- 40 2. Crushed stone shall be size No. 57 with gradation as noted in Table 1 of
- 41 Section 901 of Department of Transportation, Construction of Roads and
- 42 Bridges.
- 43

44 2.02 UNSUITABLE MATERIAL

- 45
- 46 A. Unsuitable material will be designated as highly organic soil ASTM D 2487 Group
- 47 PT, topsoil, roots, vegetable matter, trash and debris. All unsuitable material shall

1 be removed in its entirety as to provide adequate bearing capacity for proposed
2 structures, buildings, manholes, pipelines, etc.
3

4 **PART 3 - EXECUTION**
5

6 **3.01 STRUCTURE EXCAVATION AND COMPACTION PROCEDURES - GENERAL**
7

- 8 A. Excavation shall be made to such widths as will give suitable room for
9 construction of the structures, for bracing and supporting, pumping and drainage;
10 and the bottom of the excavations shall be rendered firm and dry and in all
11 respects acceptable to the Engineer.
12
- 13 B. Excavation and dewatering shall be accomplished by methods, which preserve
14 the undisturbed state of subgrade soils. Subgrade soil, which becomes soft,
15 loose, "quick," or otherwise unsatisfactory for support of structures as a result of
16 inadequate excavation, dewatering or other construction methods shall be
17 removed and replaced by structural fill as required by the Engineer at the
18 Contractor's expense.
19
- 20 C. Dewatering shall be such as to prevent boiling or detrimental underseepage at
21 the base of the excavation as specified herein. The Contractor shall install such
22 means as required to preserve the stability of the base of the operation.
23
- 24 D. Excavating equipment shall be satisfactory for carrying out the work in
25 accordance with the Specifications. In no case shall the earth be ploughed,
26 scraped or dug with machinery so near to the finished subgrade as to result in
27 excavation of, or disturbance of material below grade, the last of the excavated
28 material being removed with pick and shovel just before placing of concrete or
29 working mat thereon.
30
- 31 E. During final excavation to subgrade level, take whatever precautions are required
32 to prevent disturbance and remolding of the subgrade. Material which has
33 become softened and mixed with water shall be removed. Hand excavation of
34 the final 3 to 6-in. will be required as necessary to obtain a satisfactory
35 undisturbed bottom. The Engineer will be the sole judge as to whether the work
36 has been accomplished satisfactorily.
37
- 38 F. All structure areas shall be stripped, cleared and grubbed of all surface
39 vegetation and root laden top soils.
40
- 41 G. After stripping, the structure areas should be leveled sufficiently to permit
42 equipment traffic and then proof-rolled. Careful observations should be made
43 during proofrolling of the stripped subgrade area to identify any areas of soft
44 yielding soils that may require over excavation and replacement.
45

1 H. Compaction should continue until a minimum density of 98% of the maximum
2 modified Proctor dry density, as established in accordance with ASTM D-1557, is
3 achieved for a minimum depth of 2 feet below the subgrade surface.
4

5 **3.02 BACKFILLING AND COMPACTION**
6

- 7 A. Following satisfactory proofrolling of the stripped subgrade, the structure areas
8 may be brought up to finished subgrade level. Structural fill shall be placed in
9 loose lifts not exceeding 12-inches and should be compacted to a minimum of
10 98% of the maximum modified Proctor dry density, as established in accordance
11 with ASTM D-1557. Density tests should be performed in each fill lift to confirm
12 compaction before the next lift is placed.
13
- 14 B. Common fill may be used as backfill against the exterior walls of the structures,
15 including manholes and storm structures, or in other areas as designated by the
16 Engineer. Common fill shall be placed in loose lifts not exceeding 12-inches and
17 should be compacted to a minimum of 98% of the maximum modified Proctor dry
18 density, as established in accordance with ASTM D-1557. Density tests should
19 be performed in each fill lift to confirm compaction before the next lift is placed.
20 Common fill material in place shall be compacted with such mechanical
21 compaction equipment as approved by the Engineer.
22
- 23 C. Materials placed in fill areas shall be deposited to the lines and grades shown on
24 the Drawings making due allowance for settlement of the material and for the
25 placing of topsoil thereon.
26
- 27 D. The surfaces of filled areas shall be grades to smooth true lines, strictly
28 conforming to grades indicated on the paving and grading Drawings, and no soft
29 spots or uncompacted areas will be allowed in the work.
30
- 31 E. No compacting shall be done when the material is too wet either from rain or from
32 excess application of water. At such times, work shall be suspended until the
33 previously placed and new materials have dried sufficiently to permit proper
34 compaction.
35

36 **3.03 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL**
37

- 38 A. Unsuitable excavated materials and pavement shall become the property of the
39 Contractor. These materials shall be removed and/or disposed of off site by the
40 Contractor at his own expense.
41
- 42 B. Suitable excavated material may be used for fill or backfill if it meets the
43 Specifications for common fill and is approved by the Engineer. Excavated
44 materials so approved may be neatly stockpiled at the site, where there is an
45 area available that will not interfere with the operation of the plant or
46 inconvenience traffic or adjoining property owners. If space limitations do not
47 permit stockpiling on the project site, then the Contractor will be required to make

1 arrangements for off-site stockpiling. Transport of such material to and from the
2 project site, including any stockpiling agreements, shall be entirely at the
3 Contractor's expense and shall not constitute grounds for additional payment.
4

- 5 C. Surplus excavated material shall be used to fill depressions or other purposes as
6 the Engineer may direct. Otherwise, it shall become the property of the
7 Contractor and shall be removed and disposed of by him off the project site.
8

9 3.04 GRADING
10

- 11 A. Grading in preparation for placing of topsoil, planting areas, paved walks and
12 drives, and appurtenances shall be performed at all places that are indicated on
13 the Drawings, to the lines, grades, and elevations shown and otherwise as
14 directed by the Engineer. Such work shall be performed in a manner that the
15 requirements for formation of slopes, lines, and grades can be followed. All
16 material encountered, of whatever nature, within the limits indicated, shall be
17 removed and disposed of as directed. During the process of grading, the
18 subgrade shall be maintained in such condition that it will be well drained at all
19 times. When directed, temporary drains and drainage ditches shall be installed to
20 intercept or divert surface water, which may affect the progress or condition of the
21 work.
22
- 23 B. If, at the time of grading, it is not possible to place any material in its proper
24 section of the permanent structure, it shall be stockpiled for later use. No extra
25 payment will be made for the stockpiling or double handling of excavated
26 material.
27
- 28 C. The right is reserved to make minor adjustments or revisions in lines or grades, if
29 found necessary as the work progresses, due to discrepancies on the Drawings
30 or in order to obtain satisfactory construction.
31
- 32 D. Stones or rock fragments larger than 4-in. in their greatest dimensions will not be
33 permitted in the top 6-in. of the finished subgrade of all fills or embankments.
34 E. In cuts, all loose or protruding rocks on the back slopes shall be barred loose or
35 otherwise removed to line or finished grade of slope. All cut and fill slopes shall
36 be uniformly dressed to the slope, cross section, and alignment shown on the
37 Drawings or as directed by the Engineer.
38
- 39 F. No grading is to be done in areas where there are existing pipe lines that may be
40 uncovered or damaged until such lines have been located and it has been
41 determined if such lines must be maintained are relocated, or where lines are to
42 be abandoned, all required valves are closed and remaining pipes are plugged.
43

44
45 END OF SECTION
46

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1 SECTION 02276
2

3 TEMPORARY EROSION AND SEDIMENTATION CONTROL
4

5 PART 1 - GENERAL
6

7 1.01 SCOPE OF WORK
8

- 9 A. The work specified in this Section consists of designing, providing, maintaining
10 and removing temporary erosion and sedimentation controls as necessary.
11
- 12 B. Temporary erosion controls include, but are not limited to, straw, hay, filter fabric,
13 permanent vegetation, grassing, mulching, netting, watering and reseeding on-
14 site surfaces, spoil and borrow areas and providing interceptor ditches at those
15 locations that will ensure that erosion during construction will be either eliminated
16 or maintained within acceptable limits as established by the Engineer, Owner and
17 the permitting agencies.
18
- 19 C. Temporary sedimentation controls include, but are not limited to, silt dams, traps,
20 barriers and appurtenances, which ensure that sedimentation, will be either
21 eliminated or maintained within acceptable limits as established by the Owner
22 and the permitting agencies.
23
- 24 D. The Contractor shall provide routine re-establishment, daily maintenance of
25 permanent and temporary erosion and sediment control measures features until
26 the project is complete and all soil stabilized.
27
- 28 E. Contractor shall be required to comply with all permit conditions included as
29 attachments to these Contract Documents and as required by these
30 Specifications.
31
- 32 F. The Contractor shall use all methods and products that meet or exceed those set
33 forth in the FDOT Standard Specifications.
34

35
36 1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS
37

- 38 A. Standard Building Code.
39
- 40 B. Environmental Resource Permit
41

42 PART 2 - PRODUCTS
43

44 2.01 EROSION CONTROL
45

- 46 A. Loaming, seeding, sodding, and mulching is specified in Section 02485.
47

1 B. Netting - fabricated of material acceptable to the Engineer.

2

3 **2.02 SEDIMENTATION CONTROL**

4

5 A. Bales – synthetic or clean, seed-free cereal hay type.

6

7 B. Netting - fabricated of material acceptable to the Engineer.

8

9 C. Filter stone - crushed stone conforming to Florida Department of Transportation
10 specifications.

11

12 D. Concrete block - hollow, non-load-bearing type.

13

14 E. Concrete - exterior grade not less than one inch thick.

15

16 F. Drain pipe with sock (sedimentation control) shall be used to prevent and control
17 soil erosion runoff and intrusion into stormwater drainage systems.

18

19 1. Drain sock products such as "ADSSock" or approved equal.

20

21 2. Sock material shall be on ultra-porous filter (synthetic wrap material) fitted
22 snuggly over pipe. Material shall be 100 percent knitted polyester (or
23 approved equal), equivalent opening size of 30 to 40, burst strength of
24 100-135 (ASTM D 3786), fiber size of 100-40 200 denier filament, 2.5 to
25 3.5 ounces per square yard (ASTM D 3776).

26

27 3. Approval of material is required by Owner prior to use.

28

29 4. Drain pipe with sock shall span the entire opening of the inlet.

30

31 **PART 3 - EXECUTION**

32

33 **3.01 EROSION CONTROL**

34

35 A. Type of erosion control barriers used shall be governed by the nature of the
36 construction operation, Contract Documents and all applicable permits.

37

38 B. Diversion ditches or swales may be required to prevent turbid storm water runoff
39 from being discharged to wetlands or other water bodies. It may be necessary to
40 employ a combination of barriers, ditches and other erosion/turbidity control
41 measures as conditions warrant.

42

43 C. Fill material stockpiles shall be protected at all times by on-site drainage controls
44 which prevent erosion of the stockpiled material. Control of dust from such
45 stockpiles may be required, depending upon their location and the expected
46 length of time the stockpiles will be present. In no case shall an unstabilized
47 stockpile remain after thirty (30) calendar days.

- 1
- 2 D. No disturbed area may be denuded for more than thirty (30) calendar days
- 3 unless otherwise authorized by the City Engineer. Within sixty (60) calendar days
- 4 after final grade is established on any portion of a project site, that portion of the
- 5 site shall be provided with established permanent soil stabilization measures per
- 6 the original site plan, whether by impervious surface or landscaping.
- 7
- 8 E. Minimum procedures for grassing are:
- 9
- 10 1. Scarify slopes to a depth of not less than 6 inches and remove large clods,
- 11 rock, stumps and roots all larger than 1/2-inch in diameter and debris.
- 12
- 13 2. Sow seed within twenty-four (24) hours after the ground is scarified with
- 14 either mechanical seed drills or rotary hand seeders.
- 15
- 16 3. Apply mulch loosely and to a thickness between 3/4-inch and 1-1/2 inches.
- 17
- 18 4. Apply netting over mulched areas on all sloped surfaces.
- 19
- 20 5. Roll and water seeded areas in a manner which will encourage sprouting
- 21 of seeds and growing of grass. Reseed areas that exhibit unsatisfactory
- 22 growth. Backfill and seed eroded areas.
- 23

24 **3.02 SEDIMENTATION CONTROL**

25

- 26 A. Install and maintain silt dams, traps, barriers and appurtenances, as shown on
- 27 the Drawings and as described herein. Hay bales that deteriorate and filter stone
- 28 that is dislodged shall be replaced.
- 29
- 30 B. Existing storm water systems shall be protected at all times to prevent
- 31 sedimentation of the storm water system. Sedimentation prevention shall comply
- 32 with or exceed "Best Management Practices" in accordance with the Southwest
- 33 Florida Water Management District.
- 34
- 35 C. Siltation accumulations greater than the lesser of 12 inches or one-half the depth
- 36 of the siltation control barrier shall be immediately removed and placed in upland
- 37 areas.
- 38
- 39 D. Where pumps are to be used to remove turbid waters from the construction area,
- 40 the water shall be treated to reduce turbidity to state water quality standards prior
- 41 to discharge to the wetlands. Treatment methods include, for example, turbid
- 42 water being pumped into grassed swales or appropriate vegetated areas (other
- 43 than upland preservation areas and wetland buffers), sediment basins, or
- 44 confined by an appropriate enclosure such as turbidity barriers and kept confined
- 45 until its turbidity level meets state water quality standards.
- 46

- 1 E. Sediment basins and traps, perimeter berms, filter fences, berms, sediment
2 barriers, vegetative buffers and other measures intended to trap sediment and/or
3 prevent the transport of sediment onto adjacent properties, or into existing water
4 bodies; must be installed, constructed, or, in the case of vegetative buffers,
5 protected from disturbance, as a first step in the land alteration process. Such
6 systems shall be fully operative and inspected by the City before any other
7 disturbance of the site begins. Earthen structures including but not limited to
8 berms, earth filters, dams or dikes shall be stabilized and protected from
9 drainage damage or erosion within one week of installation.
- 10 F. Areas of 3 acres or more shall be required to have temporary sedimentation
11 basins as a positive remedy against downstream siltation and will be shown and
12 detailed on construction plans. During development, permanent detention areas
13 may be used in place of silt basins provided they are maintained to the
14 satisfaction of the City.
- 15 G. The Contractor shall be prohibited from discharging silt through any stormwater
16 outfall structure during construction. When temporary sedimentation basins are
17 used, they shall be capable at all times of containing at least one (1) cubic foot of
18 sediment for each one hundred (100) square feet of area tributary to the basin.
19 Such capacity shall be maintained throughout the project by regular removal of
20 sediment from the basin.
- 21 H. Land alteration and construction shall be minimized in both permanent and
22 intermittent waterways and the immediately adjacent buffer of 25 feet from top of
23 bank of the waterways and the buffer area whenever possible, and barriers shall
24 be used to prevent access. Where in channel work cannot be avoided,
25 precautions must be taken to stabilize the work area during land alteration,
26 development and/or construction to minimize erosion. If the channel and buffer
27 area are disturbed during land alteration, they must be stabilized within three (3)
28 calendar days after the in channel work is completed.
- 29 I. Silt curtains or other filter/siltation reduction devices must be installed on the
30 downstream side of the in channel alteration activity to eliminate impacts due to
31 increased turbidity. Wherever stream crossings are required, properly sized
32 temporary culverts shall be provided by the contractor and removed when
33 construction is completed. The area of the crossing shall be restored to a
34 condition as nearly as possible equal to that which existed prior to any
35 construction activity.

36 41 3.03 PERFORMANCE

- 37 42 A. Should any temporary erosion and sediment control measures employed by the
38 Contractor fail to produce results, which comply with the requirements of the
39 State of Florida, the Contractor shall immediately take the necessary steps to
40 correct the deficiency at his or her own expense.

1 3.04 MAINTENANCE

6 3.05 COMPLIANCE

8 A. Failure to comply with the aforementioned requirements may result in a fine
9 and/or more stringent enforcement procedures such as (but not limited to)
10 issuance of a "Stop Work Order".

END OF SECTION

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1 SECTION 02335
2
3 FLOWABLE FILL
4
5

6 PART 1 - GENERAL
7
8

9 1.01 SCOPE OF WORK
10
11

12 A. This Section specifies the requirements for flowable fill used in backfill and to fill
13 all abandoned pipelines. All existing mains shown on the Drawings to be cut and
14 capped shall be filled with flowable fill meeting the requirements specified herein.
15

16 1.02 REFERENCES
17
18

19 The materials used shall conform to the requirements specified in Division III of
20 the Standard Specifications, and herein. Specific references are as follows:
21
22

- 23 (1) Portland Cement (Types I, II, or III) Section 921
24 (2) Fly Ash, Slag and other Pozzolanic
25 Materials for Portland Cement Concrete Section 929
26 (3) Fine Aggregate (Sand)* Section 902
27 (4) Water Section 923
28
29 * Any clean sand with 100% passing 3/8" sieve and not more than 10% passing
30 the 200 mesh may be used.
31

32 1.03 SUBMITTALS
33
34

- 35 A. Technical information for equipment and operational procedures including
36 projected slurry injection rate, flowable fill pressure, method of controlling
37 flowable fill pressure.
38 B. At least 60 days prior to commencing abandonment activities, submit plan for
39 abandonment, describing proposed sequence and any other information pertinent
40 to completion of work.
41

42 PART 2 – PRODUCTS
43
44

45 2.01 MATERIALS
46
47

- 48 A. The Contractor shall be responsible for producing a flowable mixture using these
49 guidelines and adjusting his mixture design as called for by circumstances or as
50

1 may be directed by the Engineer.
2

3 B. The Flowable fill material shall be proportioned to produce a 28-day compressive
4 strength of approximately 150-450 psi.

5 C. General mix requirements are as follows:
6

<u>Components</u>	<u>Pounds per Cubic Yard</u>
Cement	50-100*
Fly Ash or Granulated Blast	
Furnace Slag	0-600
Fine Sand	2750
	(adjust to yield one cubic yard of flowable fill)
Water	500 (maximum)

18 *The percentage of cement may be increased above these limits only
19 when early strength is required and future removal is very unlikely.

21 D. Weights for fine aggregate and water shall be adjusted according to cementitious
22 content. The mix proportions shall be adjusted for removability, pumpability and
23 flowability. If required, strength test data shall be provided prior to batching.

25 E. If required by the Engineer, the flowability can be measured by afflux time
26 determined in accordance with ASTM C 939 and shall be 30 seconds +/- 5
27 seconds as measured on mortar passing the No. 4 sieve. The equipment
28 required to perform this test shall be provided by the Contractor.

30 PART 3 – EXECUTION

32 3.01 PREPARATION

34 A. The Contractor shall remove all raw sewage, sludge, debris, and water from the
35 force mains/water mains prior to filling pipeline with flowable fill.

37 B. Locate previously unidentified connections, which have not been redirected and
38 reconnected as part of this project, and report them to the Engineer. During
39 placement of fill, compensate for irregularities in sewer pipe, such as
40 obstructions, open joints, or broken pipe to ensure no voids remain unfilled.

42 C. Clean placement areas of sewer and water lines of debris that may hinder fill
43 placement. Remove excessive amounts of sludge and other substances that may
44 degrade performance of fill.

46 D. Remove free water prior to starting fill placement.
47

- 1 E. All raw sewage, sludge, debris, and water removed from the mains shall become
2 the property of the Contractor and shall be legally disposed in location approved
3 by the Owner.

4

5 **3.02 PRODUCTION AND PLACING**

6

- 7 A. Flowable fill shall be produced and delivered using concrete construction
8 equipment. Placing flowable fill shall be by chute, pumping or other methods
9 approved by the Engineer.
- 10 B. The flowable fill shall be placed to the designated fill line without vibration or other
11 means of compaction. Placement shall be avoided during inclement weather,
12 e.g. rain or ambient temperatures below 40 degrees F. The Contractor shall take
13 all necessary precautions to prevent any damages caused by the hydraulic
14 pressure of the fill during placement prior to hardening. Also, necessary means
15 to confine the materials within the designated space shall be provided by the
16 Contractor.
- 17
- 18 C. All pipes shall be abandoned in the manner which results in the abandoned
19 pipeline not being pressurized.
- 20
- 21 D. During placement of the fill the Contractor is to avoid construction stoppage that
22 would exceed the working time of the fill. If for any case that the fill would harden
23 the Contractor is responsible for properly installing fill into the abandoned pipeline
24 from another location and shall meet the requirements specified herein.
- 25

26

27 **3.03 ACCEPTANCE**

28

- 29 A. An Owner Representative shall be present to witness the placement of flowable
30 fill in abandoned pipelines. A 48-hour notice shall be given by the Contractor
31 before the placement of fill.
- 32
- 33 B. The flowable fill shall be proportioned and placed as specified herein. In general,
34 the strength desired is the maximum hardness that can be excavated at a later
35 date using conventional excavating equipment. No curing protection is required.
- 36
- 37 C. The fill shall be left undisturbed until material obtains sufficient strength.
38 Sufficient strength is 250 psi penetration resistance as measured using a hand
39 held penetrometer. The penetrometer shall be provided by the Contractor.

40

END OF SECTION

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1 SECTION 02485
2

3 SURFACE RESTORATION AND SIDEWALKS
4

5 PART 1 - GENERAL
6

7 1.01 SCOPE OF WORK
8

- 9 A. Furnish all labor, materials, and equipment necessary to satisfactorily return all
10 construction areas to their original conditions or better.
11
12 B. Work includes furnishing and placing seed, sod, fertilizer, gravel, concrete,
13 asphalt, planting, watering and maintenance until acceptance by the Owner.
14

15 1.02 QUALITY ASSURANCE
16

17 A. Requirements
18

19 It is the intent of this Specification that the Contractor is obligated to deliver a
20 satisfactory stand of grass as specified. If necessary, the Contractor shall repeat
21 any or all of the work, including grading, fertilizing, watering, and seeding or
22 sodding at no additional cost to the Owner until a satisfactory stand is obtained.
23

24 B. Satisfactory Stand
25

26 For purposes of grassing, a satisfactory stand of grass is herein defined as a full
27 lawn cover over areas to be seeded or sodded, with grass free of weeds, alive
28 and growing, leaving no bare spots larger than 3/4 sq. yd. within a radius of 10 ft.
29

30 1.03 SUBMITTALS
31

- 32 A. Provide technical data as required for shop drawings on all materials or
33 installation procedures required under this Section and in accordance with
34 Section 01300 and 01340.
35
36 B. Submit representative topsoil samples for analysis by a private laboratory to
37 determine nutrient deficiencies and outline a proper fertilization program.
38

39
40 PART 2 - PRODUCTS
41

42 2.01 MATERIALS
43

44 A. Fertilizer
45

- 46 1. Fertilizer shall be a complete fertilizer, the elements of which are derived
47 from organic sources. Fertilizer shall be a standard product complying
48 with State and Federal fertilizer laws.

- 1
2 2. Percentages of nitrogen, phosphorus and potash shall be based on
3 laboratory tests on soils outlined in Paragraph 1.03B and approved by the
4 Engineer. For purpose of bidding, assume 6% nitrogen, 6% phosphorus
5 and 6% potash by weight. At least 50% of the total nitrogen shall contain
6 no less than 3% water-insoluble nitrogen.
7
8 3. Fertilizer shall be delivered to the site, mixed as specified, in the original
9 unopened standard size bags showing weight, analysis and name of
10 manufacturer. Containers shall bear the manufacturer's guaranteed
11 statement of analysis, or a manufacturer's certificate of compliance
12 covering analysis shall be furnished to the Engineer. Store fertilizer in a
13 weatherproof place and in such a manner that it will be kept dry and its
14 effectiveness will not be impaired.
15
16 4. Superphosphate shall be composed of finely ground phosphate rock as
17 commonly used for agricultural purposes containing not less than 20%
18 available phosphoric acid.
19
20 B. Grass seed shall be the same as existed prior to construction or as approved by
21 the Engineer and shall be 99 percent minimum purity, 80 percent minimum
22 germination and 1 percent maximum weed seed, labeled in accordance with U.S.
23 Department of Agriculture Rules and Regulations under Federal Seed Act in
24 effect. Seed which has become wet, moldy, or otherwise damaged in transit or
25 storage shall not be acceptable.
26
27 C. All disturbed areas with the limits of construction shall receive vegetative
28 treatment after final grading in accordance with these plans or landscaping plans.
29 Disturbed areas not specifically designated with a vegetative cover shall be
30 vegetated as follows:
31
32 1. Side slopes constructed at 4:1 (H to V) shall be sodded with Argentine
33 Bahia or seeded and then covered with an erosion control blanket. The
34 blanket shall be the S75BN blanket as manufactured by North America
35 Gree or approved equal.
36
37 2. Side slopes less than 4:1 (H to V) shall be seeded and mulched.
38
39 D. Sodding
40
41 1. Sod shall be Argentine Bahia of firm texture having a compacted growth
42 and good root development as approved.
43
44 2. Sod shall be certified to meet Florida State Plant Board Specifications,
45 absolutely true to varietal type, and free from weeds or other objectionable
46 vegetation, fungus, insects and disease of any kind.
47

- 1 3. Before being cut and lifted the sod shall have been mowed 3 times with
2 the final mowing not more than a week before cutting into uniform
3 dimensions.
- 4
- 5 E. Mulch shall be fresh hay. Rate of application specified herein shall correspond to
6 depth not less than 1 inch or more than 3 inches according to texture and
7 moisture content of mulch material.
- 8
- 9 F. It is the Contractor's responsibility to water the site, as required during seeding
10 and sodding operations and through the maintenance period and until the work is
11 accepted. The Contractor shall make whatever arrangements may be necessary
12 to ensure an adequate supply of water to meet the needs for his work. The
13 Contractor shall also furnish all necessary hose, equipment, attachments and
14 accessories for the adequate irrigation of lawns and planted areas as may be
15 required.
- 16
- 17 G. Asphaltic concrete surface shall consist of either Type S-1 or Type S-3 asphaltic
18 concrete meeting the specified criteria outlined by the Florida Department of
19 Transportation Specifications, and Placement & Compaction Procedures.
- 20
- 21 H. Base material shall consist of either limerock or shell material complying with
22 FDOT specifications and meeting a minimum LBR of 100.
- 23
- 24

25 PART 3 – EXECUTION

26

27 3.01 INSTALLATION

28

- 29 A. Following the subgrade preparation, the Contractor shall commence work on
30 lawns and grassed areas. Areas to be seeded or sodded shall be free from soft
31 spots and uneven grades. Apply 20 lbs. of 12-3-6 fertilizer per 1,000 sq. ft.
- 32
- 33 B. Seeded and sodded areas shall be protected against the traffic or other use by
34 placing warning signs or erecting barricades as necessary. Any areas damaged
35 prior to actual acceptance by the Owner shall be repaired by the Contractor as
36 directed by the Engineer.
- 37

38 3.02 LAWN BED PREPARATION

39

- 40 A. Areas to be sodded shall be cleared of all rough grass, weeds, and debris and
41 the ground brought to an even grade as approved.
- 42
- 43 B. The soil shall then be thoroughly tilled to a minimum 8-inch depth.
- 44
- 45 C. Superphosphate at a rate for bidding purposes of 5 pounds per 1,000 square foot
46 and complete fertilizer at a rate for bidding purposes of 16 pounds per 1000

1 square foot shall be evenly distributed over entire area and cross-disked into a
2 depth of 4-6 inches.
3

- 4 D. The areas shall then be brought to proper grade, free of sticks, stones, or other
5 foreign matter over 1-inch in diameter of dimension. The surface shall conform
6 to finish grade, less the thickness of sod, free of water-retaining depressions, the
7 soil friable and of uniformly fill texture.

8
9 3.03 SOD HANDLING AND INSTALLATION
10

- 11 A. A one-foot wide strip of sod shall be provided around all structures, except
12 fencing, along the edges of slabs and along the edge of pavement.
13
14 B. During delivery, prior to planting, and during the planting of the lawn areas, the
15 sod panels at all times be protected from excessive drying and unnecessary
16 exposure of the roots to the sun. All sod shall be stacked during construction and
17 planting so as not to be damaged by sweating or excessive heat and moisture.
18
19 C. After completion of soil conditioning as specified above, sod panels shall be laid
20 tightly together so as to make a solid sodded lawn area. On mounds and other
21 slopes, the long dimension of the sod shall be laid perpendicular to the slope.
22 Immediately following sod laying the lawn areas shall be rolled with a lawn roller
23 customarily used for such purposes, and then thoroughly watered.
24
25 D. Bring the sod edge in a neat, clean manner to the edge of all paving and shrub
26 areas. Top dressing with approved, clean, weed free, sand may be required at
27 no additional cost to the Owner if deemed necessary by the Engineer.

28
29 3.07 CLEANUP
30

- 31 A. Soil, mulch, seed, or similar materials spilled onto paved areas shall be removed
32 promptly, keeping those areas as clean as possible at all times. Upon completion
33 of seeding and sodding operations, all excess soil, stones, and debris remaining
34 shall be removed from the construction areas.
35

36 3.08 MAINTENANCE
37

- 38 A. Any existing landscape items damaged or altered during construction by the
39 Contractor shall be restored or replaced as directed by the Engineer.
40
41 B. Maintain landscape work until Owner accepts project. Watering, weeding,
42 cultivating, restoration of grade, mowing and trimming grass, protection from
43 insects and diseases, fertilizing and similar operations as needed to ensure
44 normal growth and good health for live plant material shall be the responsibility of
45 the Contractor and at no additional cost to the Owner. Sodded areas shall
46 receive no less than 1.5 inches of water per week.
47

1 3.09 REPAIRS TO LAWN AREAS DISTURBED BY CONTRACTOR'S OPERATIONS

A. Lawn areas planted under this Contract and all lawn areas damaged by the Contractor's operation shall be repaired by proper soil preparation, fertilizing, and reseeding, in accordance with these Specifications.

END SECTION

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APPENDIX

FORMS AND OTHER PROJECT DOCUMENTATION

Table of Contents

VERIFICATION OF EMPLOYMENT ELIGIBILITY FORM	1
REPORTS AND FORMS.....	2

- Report on the NESHAP Demolition Survey, Sampling and Evaluation of Asbestos-Containing Materials, prepared by Greenfield Environmental, Inc., May 30, 2013.
- Report on the analysis of the digester contents by Test America dated February 2014.
- Asbestos Renovation, Lead Paint and Hazardous Materials Survey report, prepared by Terracon Consultants, Inc., January 16, 2014.
- Terracon addendum to the original report September 2014.
- GHD Supplemental Asbestos Survey and Hazardous Materials Evaluation dated February 2019.
- Pinellas County Notification Form February 2019
- ADS Post Job Submittal dated February 2019
- Pace Labs Core Sampling Report dated June 2020
- Terracon Lead Paint Analysis Report dated July 2020.

INFORMATION FOR BIDDER

- Reference Drawings REF-01 thru RFE-08 are attached as Information for Bidders. These drawings are not part of the Contract Documents and are being provided as information only to the Bidder. The Bidder is responsible for any interpretation or conclusion the Bidder draws from the drawings and the technical data or any other data, interpretations, or opinions, or information contained on the drawings

VERIFICATION OF EMPLOYMENT ELIGIBILITY FORM

PER FLORIDA STATUTE 448.095, CONTRACTORS AND SUBCONTRACTORS MUST REGISTER WITH AND USE THE E-VERIFY SYSTEM TO VERIFY THE WORK AUTHORIZATION STATUS OF ALL NEWLY HIRED EMPLOYEES.

THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE BID/PROPOSAL. FAILURE TO SUBMIT THIS FORM AS REQUIRED MAY DEEM YOUR SUBMITTAL NONRESPONSIVE.

The affiant, by virtue of the signature below, certifies that:

1. The Contractor and its Subcontractors are aware of the requirements of Florida Statute 448.095.
2. The Contractor and its Subcontractors are registered with and using the E-Verify system to verify the work authorization status of newly hired employees.
3. The Contractor will not enter into a contract with any Subcontractor unless each party to the contract registers with and uses the E-Verify system.
4. The Subcontractor will provide the Contractor with an affidavit stating that the Subcontractor does not employ, contract with, or subcontract with unauthorized alien.
5. The Contractor must maintain a copy of such affidavit.
6. The City may terminate this Contract on the good faith belief that the Contractor or its Subcontractors knowingly violated Florida Statutes 448.09(1) or 448.095(2)(c).
7. If this Contract is terminated pursuant to Florida Statute 448.095(2)(c), the Contractor may not be awarded a public contract for at least 1 year after the date on which this Contract was terminated.
8. The Contractor is liable for any additional cost incurred by the City as a result of the termination of this Contract.

Authorized Signature

Printed Name

Title

Name of Entity/Corporation

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of physical presence or online notarization on, this _____ day of _____, 20____, by _____ (name of person whose signature is being notarized) as the _____ (title) of _____ (name of corporation/entity), personally known _____, or produced _____ (type of identification) as identification, and who did/did not take an oath.

Notary Public

Printed Name

My Commission Expires: _____

NOTARY SEAL ABOVE



**REPORT OF THE NESHAP DEMOLITION SURVEY, SAMPLING AND
EVALUATION OF ASBESTOS-CONTAINING MATERIALS**

at the

**SLUDGE DIGESTION FACILITY -
SECONDARY SLUDGE DIGESTER
1605 HARBOR DRIVE
CLEARWATER, FLORIDA**

**May 30, 2013
GE Project Number 1051-1068**

Submitted to:

**City Of Clearwater
Mr. Kelly O'Brien
Engineering
100 S. Myrtle Avenue
Suite 220
Clearwater, Florida 33756-5520**

Prepared by:

**Greenfield Environmental, Inc.
432 3rd Street North
St. Petersburg, Florida 33701**

EXECUTIVE SUMMARY

The survey and laboratory analysis conducted at the Sludge Digestion Facility - Secondary Sludge Digester located at 1605 Harbor Drive in Clearwater, Florida indicated that three (3) of the materials sampled were found to contain asbestos in amounts greater than one (1) percent. These materials include Category I non-friable materials in the form of caulking and two (2) types of roofing mastic.

The materials must be removed by a State of Florida Licensed Asbestos Abatement Contractor prior to demolition activities which may disturb these materials. Proper notification must be provided to Pinellas County prior to asbestos removal and demolition activities.

Please note, the roof of the sludge digester tank was collapsed during the survey. Therefore, the tank roof was not inspected. Once the digester tank has been drained of liquid and cleared of vegetation, the former tank roof will need to be evaluated prior to demolition.

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APPENDIX B -	SITE MAP
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1.0 INTRODUCTION

A survey for asbestos-containing materials (ACMs) was conducted by Greenfield Environmental, Inc. (GE) at the Sludge Digestion Facility - Secondary Sludge Digester located at 1605 Harbor Drive in Clearwater, Florida. The survey was performed on May 16, 2013 by Nicholas Barron, Accredited EPA Asbestos Inspector. Greenfield Environmental, Inc. is a Florida Licensed Asbestos Consulting Firm with a corresponding license number of ZA-0000268.

The survey was conducted in order to identify any asbestos-containing materials which may exist prior to demolition activities in accordance with the National Emissions Standard for Hazardous Air Pollutants (NESHAP) Regulation.

More specifically, our scope of services for this project consisted of the five following

steps:

- Site Walk-Through and Observations,
- Bulk Sampling of Suspect ACMs,
- Polarized Light Microscopy (PLM) Analysis of Bulk Samples,
- Hazard Assessment and Evaluation, and
- Final Report Development.

The findings of this report represent Greenfield Environmental, Inc.'s (GE) best professional judgement and no other warranty is expressed or implied. This report is intended only for the use of the **CITY OF CLEARWATER** and its agents. The contents should not be relied upon by any other parties without the expressed written consent of GE.

2.0 FACILITY DESCRIPTION

The secondary sludge digester consists of a large tank and an equipment room. The digester is constructed of concrete and concrete block on a concrete slab foundation. The floors and walls are finished with concrete. Exterior finishes consist of stucco. The equipment room roof area consists of a built-up roofing system and roofing mastic. The roof finishes of the large tank were not observed, because the roof had collapsed into the tank. The doors were either metal with styrofoam insulation or metal with cardboard insulation.

3.0 SURVEY METHODS AND LABORATORY ANALYSIS

The sampling conducted in this asbestos survey was performed in accordance with Title 40, Code of Federal Regulations (CFR), Part 763 for suspect ACMs. The EPA regulations require that sample locations be randomly selected. All suspect asbestos-containing materials and PACM (materials presumed to contain asbestos under the OSHA Asbestos Rule, 29 CFR 1910) were identified and samples of each different material were obtained.

The bulk sampling procedure utilized for collection of suspect samples required the establishment of homogeneous sampling areas. A homogeneous sampling area is defined as an area of friable or non-friable material of similar type that appeared to be applied or installed during the same general period of time. All sample locations were identified with numbers corresponding to those listed in Section 5.0 " Description of Materials" of this report.

Samples which were collected from these pre-determined homogeneous sampling areas were labeled and transported to Air Quality Environmental, Inc. (NVLAP No. 200957-0) for analysis. All samples were analyzed using EPA approved Polarized Light Microscopy (PLM) coupled with dispersion staining. Properties such as refractive indices, birefringence, sign of elongation and extinction angle are unique to crystalline asbestos forms and are used to identify the type of asbestos mineral as chrysotile, amosite, crocidolite, anthophyllite, tremolite or actinolite. Percentages of the identified types of asbestos are determined by visual estimation. Attempts are made to mix the sample thoroughly to provide a more accurate percentage. Any material containing greater than one percent (1%) by weight of any type of asbestos is considered by the EPA to be an ACM and if disturbed must be handled according to specific regulations.

4.0 SUSPECTED ASBESTOS-CONTAINING MATERIALS

The following is a summary of the materials sampled and tested during the survey and evaluation of the Secondary Sludge Digester:

- Tar and Gravel Built-up Roofing
- Roofing Mastic
- Stucco
- Rolled Roofing
- Caulking
- Gasket

5.0 DESCRIPTION OF MATERIALS

The following is a description of the materials sampled at the Secondary Sludge Digester:

Homo. Area	Sample Number	Description/ Location	Asbestos Content	Friability	Condition	Approx. Quantity
1	01 02 03	Tar and Gravel Built-up Roofing Located at the Equipment Room Roof Area Throughout	No Asbestos Detected	Non-Friable	Fair	-----
2	04 05 06	Black Roofing Mastic Located at the Flashing and Penetrations on the Equipment Room Roof Area	3% Chrysotile Asbestos	Non-Friable	Fair	100 Square Feet
3	07 08 09	Black Roofing Mastic Located Under the Metal Framing on the Equipment Room Roof Area	4% Chrysotile Asbestos	Non-Friable	Fair	60 Square Feet
4	10 11 12	Tan Stucco Located at Exterior Walls Throughout	No Asbestos Detected	Friable	Good	-----
5	13 14 15	Black Rolled Roofing Located at the Walkway Areas on the Equipment Room Roof	No Asbestos Detected	Non-Friable	Poor	-----
6	16 17 18	Gray Caulking Located at Select Electrical Lines on the Equipment Room Roof Area	No Asbestos Detected	Non-Friable	Fair	-----
7	19 20 21	Black Gasket Material Located at Select Equipment and Pipe Fittings Throughout	No Asbestos Detected	Non-Friable	Fair	-----
8	22 23 24	Red Gasket Material Located at Select Equipment and Pipe Fittings Throughout	No Asbestos Detected	Non-Friable	Fair	-----
9	25 26 27	White Caulking Located at Select Patches and Window Seams	No Asbestos Detected	Non-Friable	Good	-----

Homo. Area	Sample Number	Description/ Location	Asbestos Content	Friability	Condition	Approx. Quantity
10	28 29 30	White/Black Caulking Located at the Concrete Wall and Concrete Deck Seams in the Equipment Room	2% Chrysotile Asbestos	Non-Friable	Fair	20 Square Feet

Note-Quantities are provided for convenience only and shall not be used for any bidding purposes.

6.0 CONCLUSIONS

The results of our observations and laboratory testing at the Sludge Digestion Facility - Secondary Sludge Digester located at 1605 Harbor Drive in Clearwater, Florida indicated that of the thirty (30) samples collected, three (3) of the materials sampled were found to contain asbestos in amounts greater than one (1) percent.

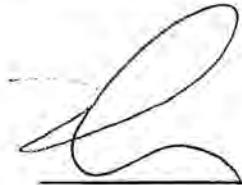
Category I non-friable asbestos-containing materials were discovered during our survey in the form of caulking and two (2) types of roofing mastic. Category I non-friable asbestos-containing materials are those in which the asbestos fibers are bound with other materials in such a way that the release of those fibers into the air from casual contact or normal wear is unlikely. If these materials are left undisturbed, they present a low threat to release harmful asbestos fibers. Category I non-friable ACMs should not be removed, cut or abraded in any way as these actions may result in a significant fiber release episode.

All asbestos containing materials must be removed by a State of Florida Licensed Asbestos Abatement Contractor prior to demolition activities. Proper notification must be provided to Pinellas County prior to asbestos removal and demolition activities

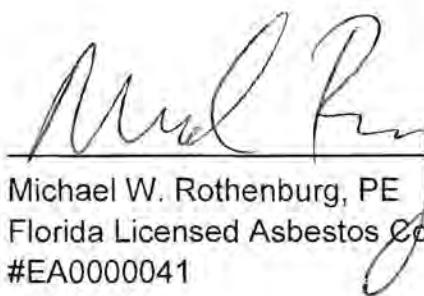
Please note, the roof of the sludge digester tank was collapsed during the survey. Therefore, the tank roof was not inspected. Once the digester tank has been drained of liquid and cleared of vegetation, the former tank roof will need to be evaluated prior to demolition.

PROFESSIONAL CERTIFICATIONS

The discussions and conclusions contained in this asbestos survey have been prepared and reviewed by the following certified professionals.



Nicholas E. Barron
Project Manager
AHERA Inspector #510131



Michael W. Rothenburg, PE
Florida Licensed Asbestos Consultant
#EA0000041

APPENDIX A
LABORATORY ANALYTICAL RESULTS



Air Quality Environmental, Inc.

Laboratory Services

9325 Seminole Boulevard, Seminole, Florida 33772 (727) 398-0900 FAX (727) 398-0996

Client Name: Greenfield Environmental
432 3rd Street North
St. Petersburg, Florida 33701

Project Name: City of Clearwater 1051-1068
1605 Harbor Drive, Clearwater, FL

Date Analyzed: May 21, 2013

Asbestos, Bulk Sample Analysis

Test Method: PLM / DS - EPA Method 600/R-93/116

Lab #	Client #	Sample Type	Description	% Asbestos	% Other Fibers	% Binders
194509	1	Roofing Material	black	NAD	15% Cellulose	85% Bitumen and Binders
194510	2	Roofing Material	black	NAD	15% Cellulose	85% Bitumen and Binders
194511	3	Roofing Material	black	NAD	15% Cellulose	85% Bitumen and Binders
194512	4	Roofing Material	black	3% Chrysotile	30% Cellulose	67% Bitumen and Binders
194513	5	Not Analyzed, First Positive Stop Protocol				
194514	6	Not Analyzed, First Positive Stop Protocol				
194515	7	Roofing Material	black	4% Chrysotile	30% Cellulose	66% Bitumen and Binders
194516	8	Not Analyzed, First Positive Stop Protocol				
194517	9	Not Analyzed, First Positive Stop Protocol				
194518	10	Stucco	gray	NAD		100% Quartz and Binders
194519	11	Stucco	gray	NAD		100% Quartz and Binders
194520	12	Stucco	gray	NAD		100% Carbonates and Binders
194521	13	Roofing Material	black	NAD	20% Cellulose	80% Bitumen and Binders
194522	14	Roofing Material	black	NAD	20% Cellulose	80% Bitumen and Binders
194523	15	Roofing Material	black	NAD	20% Cellulose	80% Bitumen and Binders
194524	16	Caulk	gray	NAD	15% Cellulose	85% Carbonates and Binders
194525	17	Caulk	gray	NAD	15% Cellulose	85% Carbonates and Binders
194526	18	Caulk	gray	NAD	15% Cellulose	85% Carbonates and Binders
194527	19	Caulk	black / tan	NAD		100% Binders

†These samples were analyzed by layers. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than 1% asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials which are friable or may become friable, be further analyzed by point counting when the results indicate less than 10% asbestos by CVAE. Air Quality Environmental utilizes CVAE on a routine basis and does not include point counting unless specifically requested. Additionally, these results may not be reproduced except in full. This report data is to be interpreted only by the person(s) whom have collected the samples. Furthermore, this report may not be used as a claim to product certification, approval or endorsement by NVLAP, NIST or any other agency of the Federal Government.

†Floor Tile and other resinously bound materials, when analyzed by EPA method, may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. When a definitive result is required, AQE recommends utilizing alternative methods of identification, including Transmission Electron Microscopy.

Lab File Number: 25979

Analysis Pages 1 of 3

Analyzed by:

Leanne Giles
Microscopist

NVLAP Lab Code 200759-0

Client Name: Greenfield Environmental
432 3rd Street North
St. Petersburg, Florida 33701

Project Name: City of Clearwater 1051-1068
1605 Harbor Drive, Clearwater, FL
Date Analyzed: May 21, 2013

Asbestos, Bulk Sample Analysis

Test Method: PLM / DS - EPA Method 600/R-93/116

Lab #	Client #	Sample Type	Description	% Asbestos	% Other Fibers	% Binders
194528	20	Caulk	black / tan	NAD		100% Binders
194529	21	Caulk	black / tan	NAD		100% Binders
194530	22	Building Material	red	NAD		100% Carbonates and Binders
194531	23	Building Material	red	NAD		100% Carbonates and Binders
194532	24	Building Material	red	NAD		100% Carbonates and Binders
194533	25	Caulk	tan	NAD	5% Synth. Fibers	95% Binders
194534	26	Caulk	tan	NAD	5% Synth. Fibers	95% Binders
194535	27	Caulk	tan	NAD	5% Synth. Fibers	95% Binders
194536	28	Caulk	tan / black	2% Chrysotile		98% Carbonates and Binders
194537	29		Not Analyzed, First Positive Stop Protocol			
194538	30		Not Analyzed, First Positive Stop Protocol			

†These samples were analyzed by layers. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than 1% asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials which are friable or may become friable, be further analyzed by point counting when the results indicate less than 10% asbestos by CVAE. Air Quality Environmental utilizes CVAE on a routine basis and does not include point counting unless specifically requested. Additionally, these results may not be reproduced except in full. This report data is to be interpreted only by the person (s) whom have collected the samples. Furthermore, this report may not be used as a claim to product certification, approval or endorsement by NVLAP, NIST or any other agency of the Federal Government.

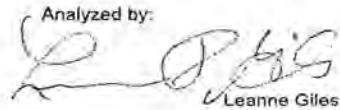
‡Floor Tile and other resinously bound materials, when analyzed by EPA method, may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. When a definitive result is required, AQE recommends utilizing alternative methods of identification, including Transmission Electron Microscopy.

Lab File Number: 25979

Analysis Pages 2 of 3

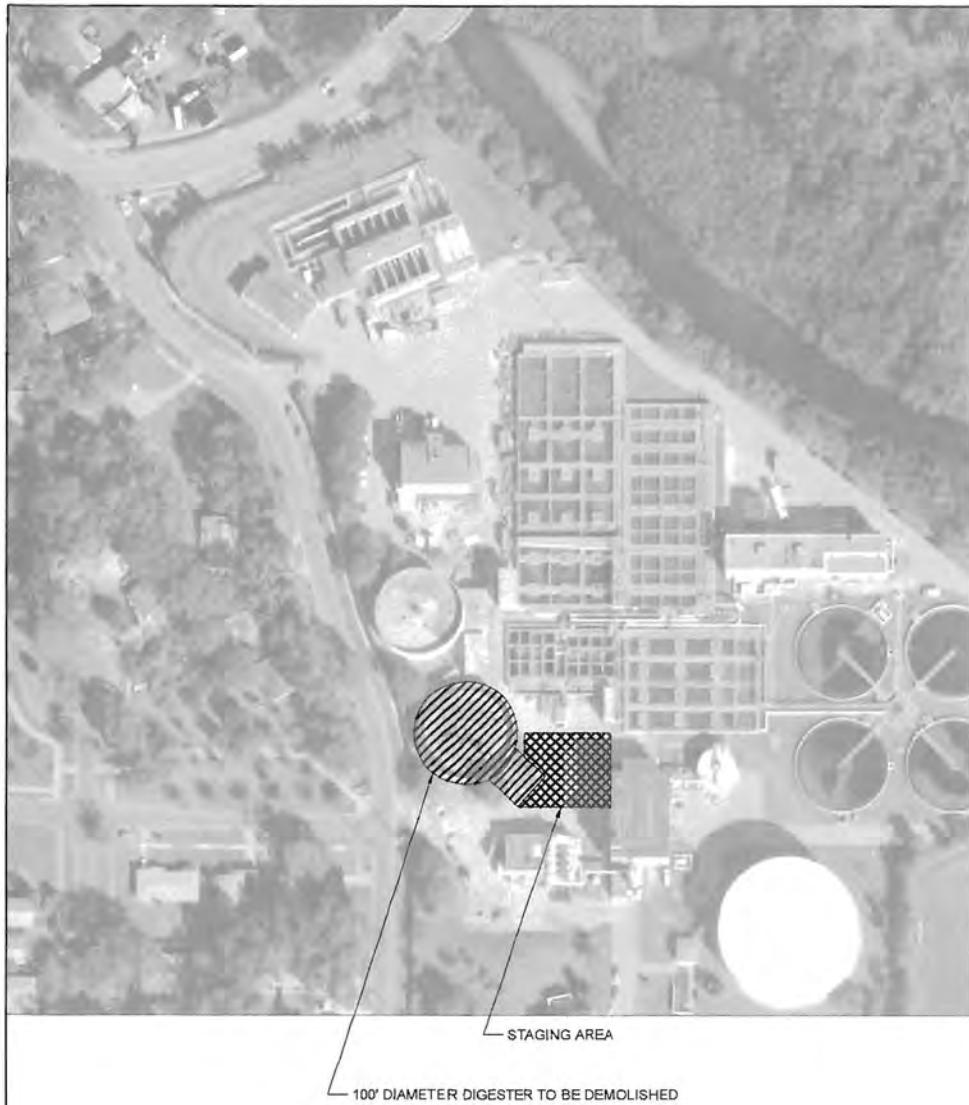
NVLAP Lab Code 200759-0

Analyzed by:


Leanne Giles
Microscopist

APPENDIX B

SITE MAP



Digester Structure Looking North



Digester Structure Looking West



100' Diameter Digester Cover



Recirculation Pump Bldg. Looking South



Recirculation Pump Bldg. Looking South



Recirculation Pump Bldg. Looking North



Recirculation Pump Bldg. Looking Southwest

RECORD DRAWINGS	DRAW IN		
REVISED BY			
APPROVED BY	PROJECT ENGINEER	DATE	
APPROVED BY	City Engineer: Michael R. Waller, P.E.	DATE	

REVISION	BY	DATE
----------	----	------



CITY OF CLEARWATER, FLORIDA
ENGINEERING DEPARTMENT
100 S. Myrtle Ave.
Clearwater, FL 33756



MARSHALL STREET ADVANCED POLLUTION CONTROL FACILITY DIGESTER DEMOLITION PLAN

DATE ISSUED	RECEIVED BY	APPROVED BY	NAME
2009/02/1	N/A	N/A	N/A
CONTRACT NO.	NAME	NAME	NAME
09-0024-UT	B.J.R.	B.J.R.	N/A
JOB NO.	PERIOD #	GRADE #	PERIOD #
2009/02/1	K.J.O.	6	5 of 5
APPROVED FOR CONSTRUCTION			
CITY ENGINEER: MICHAEL R. WALLER, P.E. 2/2009			

APPENDIX C
CERTIFICATIONS

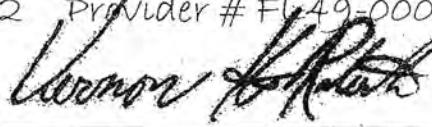
Vern Roberts Environmental Training, Inc.
13987 94th Avenue N Seminole, FL 33776
727-593-3067
Asbestos Survey & Mechanical (Inspector) Refresher
Training

This is to certify that
Nicholas E Barron

Has completed the requisite training for asbestos accreditation
under TSCA TITLE II
Date of Examination 5/10/13

Date of Course: 5/10/13 Expiration Date 04/03/2014 5/10/14
Certificate # 510131

Course # FL49-0006326322 Provider # FL49-0003810



Instructor



STATE OF FLORIDA

DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

ASBESTOS LICENSING UNIT
1940 NORTH MONROE STREET
TALLAHASSEE FL 32399-0783

(850) 487-1395

GREENFIELD ENVIRONMENTAL INC
MICHAEL ROTHENBURG
432 3RD STREET NORTH
ST. PETERSBURG FL 33701

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AC# 5768945
STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

ZA0000268 09/22/11 110112727

ASBESTOS BUSINESS ORGANIZATION
GREENFIELD ENVIRONMENTAL INC
MICHAEL ROTHENBURGIS LICENSED under the provisions of Ch.469 FS.
Expiration date: NOV 30, 2013 L11092202852

DETACH HERE

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AC# 5768945

STATE OF FLORIDA

DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
ASBESTOS LICENSING UNIT

SEQ#L11092202852

DATE	BATCH NUMBER	LICENSE NBR
09/22/2011	110112727	ZA0000268

The ASBESTOS BUSINESS ORGANIZATION
Named below IS LICENSED
Under the provisions of Chapter 469 FS.
Expiration date: NOV 30, 2013

GREENFIELD ENVIRONMENTAL INC
MICHAEL ROTHENBURG
432 3RD STREET NORTH
ST. PETERSBURG FL 33701

RICK SCOTT
GOVERNOR

DISPLAY AS REQUIRED BY LAW

KEN LAWSON
SECRETARY

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634
Tel: (813)885-7427

TestAmerica Job ID: 660-58615-1

Client Project/Site: Biosolid
Revision: 1

For:

Clean Harbors Environmental Services Inc
170 Bartow Municipal Airport
Bartow, Florida 33830

Attn: Mr. Jeffry G. Astin



Authorized for release by:
2/17/2014 2:35:22 PM

Nancy Robertson, Project Manager II
(813)885-7427
nancy.robertson@testamericainc.com

LINKS

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results through

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The
Expert

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Certification Summary	19
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Sample Summary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
660-58615-1	Biosolid	Solid	01/16/14 11:00	01/16/14 13:40

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Case Narrative

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Job ID: 660-58615-1

Laboratory: TestAmerica Tampa

Narrative

Job Narrative 660-58615-1

Results are now reported "as is" and not on dry weight basis.

Receipt

The sample was received on 1/16/2014 1:40 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 15.8° C. The sample is considered acceptable since it was collected and submitted to the laboratory on the same day and there is evidence that the chilling process has begun.

GC Semi VOA

Method 8151A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for batch 312346 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the matrix spikes and associated parent sample required a dilution for sample matrix.

No other analytical or quality issues were noted.

Metals

No other analytical or quality issues were noted.

General Chemistry

Method 351.2: The sample duplicate precision for the following sample associated with batch 312370 was outside control limits: (660-58615-1 DU). Non-homogeneity of the sample matrix is suspected.

Method 365.4: The sample duplicate precision for the following sample associated with batch 312370 was outside control limits: (660-58615-1 DU). Non-homogeneity of the sample matrix is suspected.

No other analytical or quality issues were noted.

Definitions/Glossary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates that the compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
D1	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.

Metals

Qualifier	Qualifier Description
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
U	Indicates that the compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

General Chemistry

Qualifier	Qualifier Description
U	Indicates that the compound was analyzed for but not detected.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.

Glossary

Abbreviation

These commonly used abbreviations may or may not be present in this report.

□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: Clean Harbors Environmental Services Inc
 Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Client Sample ID: Biosolid

Lab Sample ID: 660-58615-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4-D	0.0081	I	0.0083	0.0050	mg/Kg	1		8151A	Total/NA
Silvex (2,4,5-TP)	0.0032	I	0.0083	0.0016	mg/Kg	1		8151A	Total/NA
Copper	1.7	I	2.0	0.50	mg/Kg	1		6010B	Total/NA
Potassium	0.0019	I	0.0099	0.0016	Percent	1		6010B	Total/NA
Molybdenum	0.17	I	0.99	0.16	mg/Kg	1		6010B	Total/NA
Lead	0.18	I	0.50	0.15	mg/Kg	1		6010B	Total/NA
Zinc	8.2		2.0	0.50	mg/Kg	1		6010B	Total/NA
Nitrogen, Total Kjeldahl	0.015		0.0049	0.0030	Percent	1		351.2	Total/NA
Phosphorus, Total	0.0031		0.0020	0.0011	Percent	1		365.4	Total/NA
Nitrogen, Total	0.024		0.0045	0.0045	Percent	1		Total Nitrogen	Total/NA
pH	7.59		1.00	1.00	SU	1		9045C	Soluble

This Detection Summary does not include radiochemical test results.

TestAmerica Tampa

Client Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Client Sample ID: Biosolid

Lab Sample ID: 660-58615-1

Date Collected: 01/16/14 11:00

Matrix: Solid

Date Received: 01/16/14 13:40

Percent Solids: 0.1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.0081	I	0.0083	0.0050	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
2,4-DB	0.0030	U	0.0083	0.0030	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
2,4,5-T	0.0023	U	0.0083	0.0023	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Silvex (2,4,5-TP)	0.0032	I	0.0083	0.0016	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Dalapon	0.0029	U	0.10	0.0029	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Dicamba	0.0019	U	0.0083	0.0019	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Dichlorprop	0.0011	U	0.0083	0.0011	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Dinoseb	0.0046	U	0.050	0.0046	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
MCPA	0.19	U	2.0	0.19	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Mecoprop	0.17	U	2.0	0.17	mg/Kg		01/21/14 12:06	01/23/14 08:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	100		35 - 137				01/21/14 12:06	01/23/14 08:10	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.23	U	0.50	0.23	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Cadmium	0.086	U	0.50	0.086	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Copper	1.7	I	2.0	0.50	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Potassium	0.0019	I	0.0099	0.0016	Percent		01/17/14 09:17	01/17/14 11:24	1
Molybdenum	0.17	I	0.99	0.16	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Nickel	0.43	U	4.0	0.43	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Lead	0.18	I	0.50	0.15	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Selenium	0.37	U	0.99	0.37	mg/Kg		01/17/14 09:17	01/17/14 11:24	1
Zinc	8.2		2.0	0.50	mg/Kg		01/17/14 09:17	01/17/14 11:24	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.012	U	0.030	0.012	mg/Kg		01/17/14 13:06	01/17/14 14:34	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Total Kjeldahl	0.015		0.0049	0.0030	Percent		01/21/14 14:00	01/22/14 15:10	1
Phosphorus, Total	0.0031		0.0020	0.0011	Percent		01/21/14 14:00	01/22/14 15:10	1
Nitrogen, Total	0.024		0.0045	0.0045	Percent			01/27/14 10:38	1

General Chemistry - Soluble

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.000055	U	0.00020	0.000055	Percent			01/17/14 17:22	1
pH	7.59		1.00	1.00	SU			01/17/14 06:50	1

TestAmerica Tampa

QC Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 680-312346/5-A

Matrix: Solid

Analysis Batch: 312592

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 312346

Analyte	MB		PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,4-D	0.0050	U	0.0083	0.0050	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
2,4-DB	0.0030	U	0.0083	0.0030	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
2,4,5-T	0.0023	U	0.0083	0.0023	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
Silvex (2,4,5-TP)	0.0016	U	0.0083	0.0016	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
Dalapon	0.0029	U	0.10	0.0029	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
Dicamba	0.0019	U	0.0083	0.0019	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
Dichlorprop	0.0011	U	0.0083	0.0011	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
Dinoseb	0.0046	U	0.050	0.0046	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
MCPA	0.19	U	2.0	0.19	mg/Kg		01/21/14 12:06	01/23/14 06:41	1
Mecoprop	0.17	U	2.0	0.17	mg/Kg		01/21/14 12:06	01/23/14 06:41	1

MB MB

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCAA	83		35 - 137	01/21/14 12:06	01/23/14 06:41	1

Lab Sample ID: LCS 680-312346/6-A

Matrix: Solid

Analysis Batch: 312592

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 312346

Analyte	Spike		LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	%Rec.
	Added	Result							
2,4-D	0.0666	0.0542	mg/Kg	81	53 - 130				
2,4-DB	0.0666	0.0234	mg/Kg	35	10 - 130				
2,4,5-T	0.0666	0.0468	mg/Kg	70	17 - 130				
Silvex (2,4,5-TP)	0.0666	0.0469	mg/Kg	70	29 - 130				
Dalapon	0.333	0.241	mg/Kg	72	19 - 130				
Dicamba	0.0666	0.0562	mg/Kg	84	58 - 130				
Dichlorprop	0.0666	0.0500	mg/Kg	75	23 - 130				
Dinoseb	0.0666	0.0258	I	39	20 - 130				
MCPA	6.66	4.44	mg/Kg	67	47 - 130				
Mecoprop	6.66	4.07	mg/Kg	61	10 - 130				

LCS LCS

Surrogate	LCS		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCAA	86		35 - 137	01/21/14 12:06	01/23/14 06:41	1

Lab Sample ID: 680-97803-A-3-B MS

Matrix: Solid

Analysis Batch: 312592

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 312346

Analyte	Sample		Spike	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Added	Result				
2,4-D	0.025	J3 U	0.0665	0.130	J3	mg/Kg	196	53 - 130	
2,4-DB	0.015	U	0.0665	0.0582		mg/Kg	87	10 - 130	
2,4,5-T	0.011	U	0.0665	0.0221	I	mg/Kg	33	17 - 130	
Silvex (2,4,5-TP)	0.0079	J3 U	0.0665	0.0438		mg/Kg	66	29 - 130	
Dalapon	0.014	U	0.332	0.211	I	mg/Kg	63	19 - 130	
Dicamba	0.0094	U	0.0665	0.0455		mg/Kg	68	58 - 130	
Dichlorprop	0.0054	U	0.0665	0.0520		mg/Kg	78	23 - 130	
Dinoseb	0.023	J3 U	0.0665	0.023	J3 U	mg/Kg	0	20 - 130	
MCPA	0.94	J3 U	6.65	1.91	I J3	mg/Kg	29	47 - 130	

TestAmerica Tampa

QC Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: 680-97803-A-3-B MS										Client Sample ID: Matrix Spike				
Matrix: Solid										Prep Type: Total/NA				
Analysis Batch: 312592										Prep Batch: 312346				
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec.	Limits					
Mecoprop	0.84	J3 U	6.65	23.1	J3	mg/Kg	347	10 - 130						
Surrogate	MS %Recovery	MS Qualifier	MS Limits											
DCAA	0	D1	35 - 137											

Lab Sample ID: 680-97803-A-3-C MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Solid										Prep Type: Total/NA				
Analysis Batch: 312592										Prep Batch: 312346				
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec.	Limits					
2,4-D	0.025	J3 U	0.0659	0.0837		mg/Kg	127	53 - 130						
2,4-DB	0.015	U	0.0659	0.0634		mg/Kg	96	10 - 130						
2,4,5-T	0.011	U	0.0659	0.0247	I	mg/Kg	38	17 - 130						
Silvex (2,4,5-TP)	0.0079	J3 U	0.0659	0.0437		mg/Kg	66	29 - 130						
Dalapon	0.014	U	0.329	0.216	I	mg/Kg	65	19 - 130						
Dicamba	0.0094	U	0.0659	0.0427		mg/Kg	65	58 - 130						
Dichlorprop	0.0054	U	0.0659	0.0541		mg/Kg	82	23 - 130						
Dinoseb	0.023	J3 U	0.0659	0.023	J3 U	mg/Kg	0	20 - 130						
MCPA	0.94	J3 U	6.59	1.80	I J3	mg/Kg	27	47 - 130						
Mecoprop	0.84	J3 U	6.59	34.1	J3	mg/Kg	517	10 - 130						
Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits											
DCAA	0	D1	35 - 137											

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 660-145302/1-A										Client Sample ID: Method Blank				
Matrix: Solid										Prep Type: Total/NA				
Analysis Batch: 145298										Prep Batch: 145302				
Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared		Analyzed	Dil Fac				
Arsenic	0.23	U	0.50	0.23	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Cadmium	0.087	U	0.50	0.087	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Copper	0.50	U	2.0	0.50	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Potassium	0.0016	U	0.010	0.0016	Percent	01/17/14 09:17	01/17/14 10:47			1				
Molybdenum	0.16	U	1.0	0.16	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Nickel	0.43	U	4.0	0.43	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Lead	0.15	U	0.50	0.15	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Selenium	0.37	U	1.0	0.37	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				
Zinc	0.50	U	2.0	0.50	mg/Kg	01/17/14 09:17	01/17/14 10:47			1				

Lab Sample ID: LCS 660-145302/2-A

Client Sample ID: Lab Control Sample

Matrix: Solid										Prep Type: Total/NA				
Analysis Batch: 145298										Prep Batch: 145302				
Analyte	Spike Result	LCS Qualifier	LCS Result	LCS Qualifier	Unit	D	%Rec.	Limits						
Arsenic	50.0		49.6		mg/Kg	99	75 - 125							
Cadmium	50.0		47.5		mg/Kg	95	75 - 125							

TestAmerica Tampa

QC Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 660-145302/2-A

Matrix: Solid

Analysis Batch: 145298

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 145302

Analyte		Spike	LCS	LCS	Unit	D	%Rec	Limits	
		Added	Result	Qualifier					
Copper		50.0	55.2		mg/Kg		110	75 - 125	
Potassium		0.125	0.133		Percent		106	75 - 125	
Molybdenum		50.0	52.0		mg/Kg		104	75 - 125	
Nickel		50.0	52.7		mg/Kg		105	75 - 125	
Lead		50.0	48.6		mg/Kg		97	75 - 125	
Selenium		50.0	47.6		mg/Kg		95	75 - 125	
Zinc		50.0	47.5		mg/Kg		95	75 - 125	

Lab Sample ID: 660-58605-C-2-B MS ^5

Matrix: Solid

Analysis Batch: 145298

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 145302

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits	
	Result	Qualifier	Added	Result	Qualifier					
Arsenic	3.2	J3	49.5	39.8	J3	mg/Kg		74	75 - 125	
Cadmium	0.44	J3 U	49.5	36.0	J3	mg/Kg		73	75 - 125	
Copper	4.8	I	49.5	47.4		mg/Kg		86	75 - 125	
Potassium	0.013	I	0.124	0.120		Percent		87	75 - 125	
Molybdenum	0.82	J3 U	49.5	35.8	J3	mg/Kg		72	75 - 125	
Nickel	6.0	I	49.5	49.5		mg/Kg		88	75 - 125	
Lead	5.0		49.5	42.7		mg/Kg		76	75 - 125	
Selenium	1.9	J3 U	49.5	34.4	J3	mg/Kg		69	75 - 125	
Zinc	12		49.5	49.7		mg/Kg		77	75 - 125	

Lab Sample ID: 660-58605-C-2-C MSD ^5

Matrix: Solid

Analysis Batch: 145298

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 145302

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Arsenic	3.2	J3	49.5	42.1		mg/Kg		79	75 - 125	6	20
Cadmium	0.44	J3 U	49.5	38.6		mg/Kg		78	75 - 125	7	20
Copper	4.8	I	49.5	51.3		mg/Kg		94	75 - 125	8	20
Potassium	0.013	I	0.124	0.127		Percent		92	75 - 125	6	20
Molybdenum	0.82	J3 U	49.5	38.4		mg/Kg		78	75 - 125	7	20
Nickel	6.0	I	49.5	52.2		mg/Kg		93	75 - 125	5	20
Lead	5.0		49.5	44.0		mg/Kg		79	75 - 125	3	20
Selenium	1.9	J3 U	49.5	36.9		mg/Kg		75	75 - 125	7	20
Zinc	12		49.5	57.5		mg/Kg		92	75 - 125	15	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 660-145332/13-A

Matrix: Solid

Analysis Batch: 145336

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 145332

Analyte	MB	MB	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	0.012	U	0.030	0.012	mg/Kg		01/17/14 13:06	01/17/14 14:15	1

TestAmerica Tampa

QC Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 660-145332/14-A

Matrix: Solid

Analysis Batch: 145336

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	0.167	0.177		mg/Kg		106	80 - 120

Lab Sample ID: 660-58627-A-1-B MS

Matrix: Solid

Analysis Batch: 145336

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Mercury	0.51	J3	0.167	0.558	J3	mg/Kg		30	80 - 120

Lab Sample ID: 660-58627-A-1-C MSD

Matrix: Solid

Analysis Batch: 145336

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Mercury	0.51	J3	0.167	0.493	J3	mg/Kg		-9	80 - 120	12	20

Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 680-312370/2-A

Matrix: Solid

Analysis Batch: 312572

Analyte	MB	MB	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Nitrogen, Total Kjeldahl	0.0030	U	0.0050	0.0030	Percent		01/21/14 14:00	01/22/14 14:42	1

Lab Sample ID: LCS 680-312370/1-A

Matrix: Solid

Analysis Batch: 312572

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits
	Added	Result	Qualifier				
Nitrogen, Total Kjeldahl	0.0400	0.0397		Percent		99	75 - 125

Lab Sample ID: 640-46428-B-1-C MS

Matrix: Solid

Analysis Batch: 312572

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Nitrogen, Total Kjeldahl	0.13		0.0395	0.171		Percent		98	75 - 125

Lab Sample ID: 640-46428-B-1-D MSD

Matrix: Solid

Analysis Batch: 312572

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Nitrogen, Total Kjeldahl	0.13		0.0386	0.170		Percent		97	75 - 125	1	40

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 145332

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 145332

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 145332

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 312370

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 312370

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 312370

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 312370

QC Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method: 351.2 - Nitrogen, Total Kjeldahl (Continued)

Lab Sample ID: 660-58615-1 DU

Matrix: Solid

Analysis Batch: 312572

Client Sample ID: Biosolid
Prep Type: Total/NA
Prep Batch: 312370

1

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Nitrogen, Total Kjeldahl	0.015		0.0361	J3	Percent		84	40

2

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-311988/2-A

Matrix: Solid

Analysis Batch: 312027

Client Sample ID: Method Blank
Prep Type: Soluble

3

Analyte	MB	MB	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Nitrate Nitrite as N	0.000055	U	0.00020	0.000055	Percent		01/17/14 17:15		1

4

Lab Sample ID: LCS 680-311988/1-A

Matrix: Solid

Analysis Batch: 312027

Client Sample ID: Lab Control Sample
Prep Type: Soluble

5

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits	%Rec.
	Added	Result	Qualifier					
Nitrate Nitrite as N	0.00200	0.00204		Percent		102	80 - 120	

6

Lab Sample ID: 460-69405-B-1-I MS

Matrix: Solid

Analysis Batch: 312027

Client Sample ID: Matrix Spike
Prep Type: Soluble

7

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Nitrate Nitrite as N	0.00020		0.00199	0.00208		Percent		94	80 - 120

8

Lab Sample ID: 460-69405-B-1-J MSD

Matrix: Solid

Analysis Batch: 312027

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

9

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Nitrate Nitrite as N	0.00020		0.00200	0.00205		Percent		93	80 - 120	1	20

10

Method: 365.4 - Phosphorus, Total

Lab Sample ID: MB 680-312370/2-A

Matrix: Solid

Analysis Batch: 312571

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 312370

11

Analyte	MB	MB	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Phosphorus, Total	0.0011	U	0.0020	0.0011	Percent		01/21/14 14:00	01/22/14 14:42	1

12

Lab Sample ID: LCS 680-312370/1-A

Matrix: Solid

Analysis Batch: 312571

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 312370

13

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
Phosphorus, Total	0.0400	0.0393		Percent		98	60 - 140	1	20

14

TestAmerica Tampa

QC Sample Results

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method: 365.4 - Phosphorus, Total (Continued)

Lab Sample ID: 640-46428-B-1-C MS

Matrix: Solid

Analysis Batch: 312571

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 312370

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier				
Phosphorus, Total	0.059		0.0395	0.0970		Percent		96	60 - 140

Lab Sample ID: 640-46428-B-1-D MSD

Matrix: Solid

Analysis Batch: 312571

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 312370

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Phosphorus, Total	0.059		0.0386	0.0988		Percent		102	60 - 140	2	40

Lab Sample ID: 660-58615-1 DU

Matrix: Solid

Analysis Batch: 312571

Client Sample ID: Biosolid

Prep Type: Total/NA

Prep Batch: 312370

Analyte	Sample	Sample	Spike	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				
Phosphorus, Total	0.0031			0.00951	J3	Percent		102	40

Method: 9045C - pH

Lab Sample ID: MB 660-145292/1-A

Client Sample ID: Method Blank

Prep Type: Soluble

Analysis Batch: 145293

Analyte	MB	MB	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
pH	7.780		1.00	1.00	SU			01/17/14 06:50	1

Lab Sample ID: LCS 660-145292/2-A

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Matrix: Solid

Analysis Batch: 145293

Analyte	Spike	LCS	LCS	Unit	D	%Rec.	Limits
	Added	Result	Qualifier				
pH	6.00	6.040		SU		101	98 - 102

Lab Sample ID: 660-58615-1 DU

Client Sample ID: Biosolid

Prep Type: Soluble

Matrix: Solid

Analysis Batch: 145293

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
pH	7.59		7.490		SU		1	20

TestAmerica Tampa

QC Association Summary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

GC Semi VOA

Prep Batch: 312346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Total/NA	Solid	8151A	
680-97803-A-3-B MS	Matrix Spike	Total/NA	Solid	8151A	
680-97803-A-3-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8151A	
LCS 680-312346/6-A	Lab Control Sample	Total/NA	Solid	8151A	
MB 680-312346/5-A	Method Blank	Total/NA	Solid	8151A	

Analysis Batch: 312592

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Total/NA	Solid	8151A	312346
680-97803-A-3-B MS	Matrix Spike	Total/NA	Solid	8151A	312346
680-97803-A-3-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8151A	312346
LCS 680-312346/6-A	Lab Control Sample	Total/NA	Solid	8151A	312346
MB 680-312346/5-A	Method Blank	Total/NA	Solid	8151A	312346

Metals

Analysis Batch: 145298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58605-C-2-B MS ^5	Matrix Spike	Total/NA	Solid	6010B	145302
660-58605-C-2-C MSD ^5	Matrix Spike Duplicate	Total/NA	Solid	6010B	145302
660-58615-1	Biosolid	Total/NA	Solid	6010B	145302
LCS 660-145302/2-A	Lab Control Sample	Total/NA	Solid	6010B	145302
MB 660-145302/1-A	Method Blank	Total/NA	Solid	6010B	145302

Prep Batch: 145302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58605-C-2-B MS ^5	Matrix Spike	Total/NA	Solid	3050B	
660-58605-C-2-C MSD ^5	Matrix Spike Duplicate	Total/NA	Solid	3050B	
660-58615-1	Biosolid	Total/NA	Solid	3050B	
LCS 660-145302/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 660-145302/1-A	Method Blank	Total/NA	Solid	3050B	

Prep Batch: 145332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Total/NA	Solid	7471A	
660-58627-A-1-B MS	Matrix Spike	Total/NA	Solid	7471A	
660-58627-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	
LCS 660-145332/14-A	Lab Control Sample	Total/NA	Solid	7471A	
MB 660-145332/13-A	Method Blank	Total/NA	Solid	7471A	

Analysis Batch: 145336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Total/NA	Solid	7471A	145332
660-58627-A-1-B MS	Matrix Spike	Total/NA	Solid	7471A	145332
660-58627-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	145332
LCS 660-145332/14-A	Lab Control Sample	Total/NA	Solid	7471A	145332
MB 660-145332/13-A	Method Blank	Total/NA	Solid	7471A	145332

QC Association Summary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

General Chemistry

Leach Batch: 145292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Soluble	Solid	DI Leach	
660-58615-1 DU	Biosolid	Soluble	Solid	DI Leach	
LCS 660-145292/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
MB 660-145292/1-A	Method Blank	Soluble	Solid	DI Leach	

Analysis Batch: 145293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Soluble	Solid	9045C	
660-58615-1 DU	Biosolid	Soluble	Solid	9045C	145292
LCS 660-145292/2-A	Lab Control Sample	Soluble	Solid	9045C	145292
MB 660-145292/1-A	Method Blank	Soluble	Solid	9045C	145292

Analysis Batch: 145323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Total/NA	Solid	Moisture	
660-58617-D-1 DU	Duplicate	Total/NA	Solid	Moisture	

Leach Batch: 311988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-69405-B-1-I MS	Matrix Spike	Soluble	Solid	DI Leach	
460-69405-B-1-J MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
660-58615-1	Biosolid	Soluble	Solid	DI Leach	
LCS 680-311988/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
MB 680-311988/2-A	Method Blank	Soluble	Solid	DI Leach	

Analysis Batch: 312027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-69405-B-1-I MS	Matrix Spike	Soluble	Solid	353.2	
460-69405-B-1-J MSD	Matrix Spike Duplicate	Soluble	Solid	353.2	311988
660-58615-1	Biosolid	Soluble	Solid	353.2	311988
LCS 680-311988/1-A	Lab Control Sample	Soluble	Solid	353.2	311988
MB 680-311988/2-A	Method Blank	Soluble	Solid	353.2	311988

Prep Batch: 312370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-46428-B-1-C MS	Matrix Spike	Total/NA	Solid	Digestion	
640-46428-B-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	Digestion	
660-58615-1	Biosolid	Total/NA	Solid	Digestion	
660-58615-1 DU	Biosolid	Total/NA	Solid	Digestion	
LCS 680-312370/1-A	Lab Control Sample	Total/NA	Solid	Digestion	
MB 680-312370/2-A	Method Blank	Total/NA	Solid	Digestion	

Analysis Batch: 312571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-46428-B-1-C MS	Matrix Spike	Total/NA	Solid	365.4	
640-46428-B-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	365.4	312370
660-58615-1	Biosolid	Total/NA	Solid	365.4	312370
660-58615-1 DU	Biosolid	Total/NA	Solid	365.4	312370
LCS 680-312370/1-A	Lab Control Sample	Total/NA	Solid	365.4	312370
MB 680-312370/2-A	Method Blank	Total/NA	Solid	365.4	312370

TestAmerica Tampa

QC Association Summary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

General Chemistry (Continued)

Analysis Batch: 312572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-46428-B-1-C MS	Matrix Spike	Total/NA	Solid	351.2	312370
640-46428-B-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	351.2	312370
660-58615-1	Biosolid	Total/NA	Solid	351.2	312370
660-58615-1 DU	Biosolid	Total/NA	Solid	351.2	312370
LCS 680-312370/1-A	Lab Control Sample	Total/NA	Solid	351.2	312370
MB 680-312370/2-A	Method Blank	Total/NA	Solid	351.2	312370

Analysis Batch: 313103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-58615-1	Biosolid	Total/NA	Solid	Total Nitrogen	9

Lab Chronicle

Client: Clean Harbors Environmental Services Inc
 Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Client Sample ID: Biosolid

Date Collected: 01/16/14 11:00

Date Received: 01/16/14 13:40

Lab Sample ID: 660-58615-1

Matrix: Solid

Percent Solids: 0.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab	
Total/NA	Prep	8151A			312346	01/21/14 12:06	JMW	TAL SAV	1
Total/NA	Analysis	8151A		1	312592	01/23/14 08:10	JEM	TAL SAV	2
Total/NA	Prep	3050B			145302	01/17/14 09:17	GAF	TAL TAM	3
Total/NA	Analysis	6010B		1	145298	01/17/14 11:24	SR1	TAL TAM	4
Total/NA	Prep	7471A			145332	01/17/14 13:06	RAG	TAL TAM	5
Total/NA	Analysis	7471A		1	145336	01/17/14 14:34	RAG	TAL TAM	6
Soluble	Analysis	9045C		1	145293	01/17/14 06:50	AJG	TAL TAM	7
Soluble	Leach	DI Leach			145292	01/17/14 06:50	AJG	TAL TAM	8
Total/NA	Analysis	Moisture		1	145323	01/17/14 07:23	AJG	TAL TAM	9
Soluble	Leach	DI Leach			311988	01/17/14 10:19	GRX	TAL SAV	10
Soluble	Analysis	353.2		1	312027	01/17/14 17:22	GRX	TAL SAV	11
Total/NA	Analysis	365.4		1	312571	01/22/14 15:10	CMP	TAL SAV	12
Total/NA	Prep	Digestion			312370	01/21/14 14:00	AJO	TAL SAV	13
Total/NA	Analysis	351.2		1	312572	01/22/14 15:10	CMP	TAL SAV	14
Total/NA	Analysis	Total Nitrogen		1	313103	01/27/14 10:38	JER	TAL SAV	

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Method Summary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	TAL SAV
6010B	Metals (ICP)	SW846	TAL TAM
7471A	Mercury (CVAA)	SW846	TAL TAM
351.2	Nitrogen, Total Kjeldahl	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
365.4	Phosphorus, Total	EPA	TAL SAV
9045C	pH	SW846	TAL TAM
Moisture	Percent Moisture	EPA	TAL TAM
Total Nitrogen	Nitrogen, Total	EPA	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Certification Summary

Client: Clean Harbors Environmental Services Inc
 Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Laboratory: TestAmerica Tampa

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40610	06-30-14
Florida	NELAP	4	E84282	06-30-14
Georgia	State Program	4	905	06-30-14
USDA	Federal		P330-11-00177	04-20-14

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	01-31-15
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-14
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	06-30-14
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	04-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14
Iowa	State Program	7	353	07-01-15
Kentucky (DW)	State Program	4	90084	12-31-14
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	LA100015	12-31-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-14
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	03-31-14
North Carolina DENR	State Program	4	269	12-31-14
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14

* Expired certification is currently pending renewal and is considered valid.

TestAmerica Tampa

Certification Summary

Client: Clean Harbors Environmental Services Inc
Project/Site: Biosolid

TestAmerica Job ID: 660-58615-1

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
West Virginia DEP	State Program	3	94	06-30-14
West Virginia DHHR	State Program	3	9950C	12-31-13 *
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

TestAmerica Tampa

Login Sample Receipt Checklist

Client: Clean Harbors Environmental Services Inc

Job Number: 660-58615-1

Login Number: 58615

List Source: TestAmerica Tampa

List Number: 1

Creator: McNulty, Carol

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Clean Harbors Environmental Services Inc

Job Number: 660-58615-1

Login Number: 58615

List Source: TestAmerica Savannah

List Number: 1

List Creation: 01/17/14 09:39 AM

Creator: Banda, Christy S

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Asbestos Renovation, Lead Paint and Hazardous Materials Survey Report

Clearwater Wastewater Treatment Plant

1601 Harbor Drive

Clearwater, Pinellas County, Florida

February 3, 2014

Terracon Project No.: H4147006



Prepared for:

King Engineering Associates, Inc.
4921 Memorial Highway
Tampa, Florida 33634

Prepared by:

Terracon Consultants, Inc.
Tampa, Florida

Offices Nationwide
Employee-Owned

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Terracon

Geotechnical



Environmental



Construction Materials



Facilities

February 3, 2014



King Engineering Associates, Inc.
4921 Memorial Highway
Tampa, Florida 33634

Attention: Mr. Thomas Traina
Telephone: (813) 880-8881
Email: ttraina@kingengineering.com

Re: Asbestos, Lead Paint and Hazardous Materials Survey Report
Clearwater Wastewater Treatment Plant
Secondary Digester Building
1601 Harbor Drive, Clearwater, Florida
Terracon Project No.: H4147006

Dear Mr. Traina:

The purpose of this report is to present the results of an asbestos demolition, lead paint and hazardous materials survey performed on January 16, 2014, at the above referenced property in Clearwater, Florida. This survey was conducted in general accordance with Terracon Proposal Number PH4130014 Rev 1 dated January 14, 2013 and our contract issued to Terracon Consultants, Inc. (Terracon), dated January 10, 2014. We understand that this survey was requested due to the planned demolition of the building and tank.

During the course of our survey the following were identified:

- Samples of non-friable and friable asbestos-containing materials
- Lead paint concentrations above laboratory method detection levels
- Hazardous materials including appurtenances containing mercury, lead and potential PCBs.

Terracon appreciates the opportunity to provide this service to King Engineering Associates, Inc. If you have any questions regarding this report, please contact Nacole Bowersox at (813) 220-3927.

Sincerely,

Terracon Consultants, Inc.

Florida Asbestos Business License Number ZA-337



Nacole Bowersox, MBA, CIE

Project Manager



Brian J. DuChene, P.E.

FL Licensed Asbestos Consultant
License No. EA0000075



Terracon Consultants, Inc. 504 E. Tyler Street Tampa, Florida 33602
P [813] 221 0050 F [813] 221 0051 terracon.com

Geotechnical



Environmental



Construction Materials



Facilities

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- Appendix C Asbestos PLM Analytical Laboratory Data**
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- Appendix F Photographs**
- Appendix G Inspector Certifications**

**ASBESTOS, LEAD PAINT AND HAZARDOUS MATERIALS
SURVEY REPORT**

**CLEARWATER WASTEWATER TREATMENT PLANT
1601 HARBOR DRIVE
CLEARWATER, PINELLAS COUNTY, FLORIDA**

**Project No. H4147006
Report Date: February 3, 2014**

1.0 Introduction

Terracon Consultants, Inc. (Terracon) conducted an asbestos, lead paint and hazardous materials survey at the Clearwater Wastewater Treatment Plant (WWTP) located at 1601 Harbor Drive in Clearwater, Florida. The purpose of this survey was to identify and sample suspect asbestos-containing materials (ACM), paint for lead content, investigate and inventory select hazardous materials. This survey will provide information regarding the identity, location, condition, and approximate quantities of ACM, lead paint, and select hazardous materials in the interior building components and associated appurtenances scheduled for demolition.

The survey was conducted on January 16, 2014, by an Asbestos Hazard Emergency Response Act (AHERA)-accredited building inspector and certified lead paint risk assessor in general accordance with Terracon Proposal Number PH4130014 Rev 1 dated January 14, 2013 and our contract issued to Terracon, dated January 10, 2014.

Interior and exterior building components were surveyed and homogeneous areas of suspect ACM were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in walls, in voids or in other concealed areas. Suspect ACM samples were collected in general accordance with the sampling protocols outlined in EPA AHERA regulation 40 CFR 763.86. Samples were delivered to an accredited laboratory for analysis by Polarized Light Microscopy (PLM).

Paint chip samples were collected for lead paint analysis based on the visual assessment. Paint chip samples were collected from building components and equipment with unique paint combinations.

Fluorescent light bulbs and thermostats containing mercury, potential polychloridated biphenols containing (PCB) ballasts, potential PCB containing pumps, and lead containing motors were inventoried during this survey.

Asbestos, Lead Paint and Hazardous Materials Survey

Clearwater WWTP ■ Clearwater, Florida

February 3, 2014 ■ Terracon Project No. H4147006



1.1 Project Objective

We understand this asbestos survey was requested due to the planned demolition of the building and tank. The EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation 40 CFR 61, Subpart M, prohibits the release of asbestos fibers to the atmosphere during renovation or demolition activities. The asbestos NESHAP requires that potentially regulated asbestos-containing building materials be identified, classified and quantified prior to planned disturbances or demolition activities.

Lead paint samples were collected from substrates scheduled for demolition including building components and equipment. Contractors that will disturb potentially lead containing paints must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62.

Fluorescent light bulbs and thermostats containing mercury, potential polychloridated biphenols containing (PCB) ballasts, potential PCB containing pumps, and lead containing motors were inventoried during this survey.

2.0 Building Description

The survey includes the assessment of interior and exterior components of the Secondary Digester Building including appurtenances. The building was reportedly constructed in the 1950's and was approximately 300 square feet. The building consisted of a restroom and equipment rooms housing piping, motors and a heater. This one-story concrete block building consisted of a built-up tar and gravel roofing and was attached to a large tank. The large tank reportedly was equipped with a floating cover also covered with built-up tar and gravel; however, Terracon was not able to observe the cover due to overgrown foliage that was pushing the cover down into the liquid in the tank.

3.0 Field Activities

The asbestos survey was conducted by Ms. Tolu Adesanya, an AHERA-accredited building inspector and the lead paint and hazardous materials survey was conducted by Ms. Nacole Bowersox, an EPA certified lead paint risk assessor. Copies of the inspectors' certificates are provided in Appendix G. The survey was conducted in general accordance with the sample collection protocols established in EPA AHERA regulation 40 CFR 763.86 and generally accepted practices for sampling paint containing lead. A summary of survey activities is provided below.

3.1 Visual Assessment

Survey activities began with a visual inspection of the interior of the building to identify homogeneous areas of suspect ACM. A homogeneous area consists of building materials that appear similar throughout in terms of color, texture and date of application. Interior assessment was conducted throughout visually accessible areas of the building. Building materials identified as concrete, glass, wood, masonry, metal or rubber were not considered suspect ACM.

Building components that are currently scheduled for demolition were visually assessed for unique paint testing combinations suspected to contain lead. A unique testing combination of paint is based on paint type, color history, component, and substrate.

Terracon conducted a visual survey for the presence of suspect mercury-containing equipment such as thermostats and fluorescent light bulbs. Terracon also documented potential PCB containing equipment.

3.2 Physical Assessment

A physical assessment of each homogeneous area of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the EPA as a material which can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

A condition assessment of each unique testing combination of paint suspected of containing lead was conducted to assess the presence of peeling, chipping, chalking or cracking, or any paint or coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Hazardous materials were assessed by visual observation only.

3.3 Sample Collection

Based on results of the visual observation, bulk samples of suspect ACM were collected in general accordance with AHERA sampling protocols. Random samples of suspect materials were collected in each homogeneous area. The surveyor followed good Industrial Hygiene practices during sample collection in order to minimize fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

Twenty-seven (27) bulk samples were collected from nine (9) homogeneous areas of suspect ACM. A summary of suspect ACM samples collected during the survey is included as Appendix A.

Eleven (11) samples of painted building components and equipment were collected to determine the amount of lead content. Samples were collected by carefully scraping a small section of the paint and immediately placing it in a sealable plastic bulk container.

3.4 Sample Analysis

Bulk samples were submitted under proper chain of custody procedures to EMSL Analytical, Inc. (EMSL) for analysis by Polarized Light Microscopy with dispersion staining techniques per EPA methodology (40 CFR 763, Subpart F). The percentage of asbestos, where applicable, was determined by microscopic visual estimation. EMSL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP Accreditation No. 101151-0).

Paint chip samples were submitted under chain of custody to EMSL for analysis by the Flame Atomic Absorption method, according to Environmental Protection Agency (EPA) Method SW 846 3050B/700B. EMSL is accredited under the Environmental Lead Laboratory Accreditation Program (ELLAP) (Accreditation No. 163563).

4.0 Regulatory Overview

The regulatory agency responsible for the oversight of the rules pertaining to asbestos-containing building materials (ACBM) is the Environmental Protection Agency (EPA). Prior to demolition or renovation of a facility a survey must be conducted in accordance with section 40 CFR 61-M National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revisions, Final Rule. The asbestos NESHAP regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. In the State of Florida, the Department of Environmental Protection (DEP) enforces the rules pertaining to ACM. Some counties have developed an enforcement division to carry out the responsibilities of the DEP and have developed environmental and asbestos ordinances in which additional compliance is required.

Under NESHAP, asbestos-containing building materials are classified as either friable, Category I non-friable or Category II non-friable ACM. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I non-friable ACM includes packings, gaskets, resilient floor coverings and asphalt roofing products containing more than 1% asbestos. Category II non-friable ACM are any materials other than Category I materials that contain more than 1% asbestos.

Friable ACM, Category I and Category II non-friable ACM which is in poor condition and has become friable or which will be subjected to drilling, sanding, grinding, cutting or abrading and which could be crushed or pulverized during anticipated renovation or demolition activities are considered regulated ACM (RACM). In the state of Florida, asbestos activities are regulated by the Florida Department of Environmental Protection (FDEP). RACM must be removed prior to

demolition activities which will disturb the materials. The owner or operator must provide the FDEP with written notification of planned removal activities at least 10 working days prior to the commencement of asbestos abatement activities. Removal of RACM must be conducted by a State of Florida-licensed asbestos abatement contractor. In addition, third party air monitoring should be performed during and following the abatement.

The OSHA Asbestos standard for construction (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below 0.1 asbestos fibers per cubic centimeter of air (0.1 f/cc). The OSHA standard classifies construction and maintenance activities which could disturb ACM, and specifies work practices and precautions which employers must follow when engaging in each class of regulated work.

Construction work where an employee may be occupationally exposed to lead including painting and decorating by alteration and/or repair, that would disturb lead paint should be performed within compliance with OSHA lead in construction standard 29 CFR 1926.62.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 Asbestos Analysis

Laboratory analysis identified the presence of asbestos in samples of the following materials:

- Grey gasket on heater pipes
- Roof flashing
- Black over white caulk

Approximately four square feet of asbestos-containing gaskets were observed on the heater pipes. This material was observed to be friable and must be removed prior to demolition of the structure.

Approximately 120 square feet of asbestos-containing roof flashing was identified along the roof perimeter. This material was in poor condition and is considered to be a Category I nonfriable material.

Approximately 20 square feet of black over white caulking was observed on the ceiling near the wall penetration to the restroom. This material is considered to be a Category II nonfriable material in good condition.

The heater was not able to be dismantled during our assessment, but is assumed to contain asbestos insulation and potentially other gaskets. In addition, the tank cover was not able to be assessed due to the condition of the tank. The tank cover must be assumed ACM until it can be sampled and laboratory analysis determines the asbestos content. The cover is considered to be a Category I nonfriable material in poor condition.

Terracon recommends the identified and assumed ACM be removed prior to demolition of the building.

A summary of the approximate quantity of identified ACM is presented in Appendix B – Identified Asbestos-Containing Materials. Photographs of identified ACM are located in Appendix F. The laboratory analytical report and chain-of-custody are provided in Appendix C – Asbestos Analytical Laboratory Data.

It should be noted that suspect materials, other than those identified during the January 16, 2014, survey may exist within the building. Should suspect materials other than those which were identified during this survey be uncovered prior to or during the abatement or demolition process, those materials should be assumed asbestos-containing until sampling and analysis can confirm or deny their asbestos content.

5.2 Lead Paint Analysis

Laboratory analysis identified the presence of lead above detectable limits in nine of the eleven samples of paint chip samples collected. A summary of the color and location of identified lead paint are presented in Appendix D. Photographs of identified lead paint are located in Appendix F. Laboratory analytical reports are included in Appendix E.

During construction activities which involve the disturbance of lead paints, the contractor should use lead safe work practices. Personnel sampling to monitor workers during the removal of materials with lead paint should be performed to document compliance with the OSHA lead in construction standard, 29 CFR 1926.62.

5.3 Hazardous Materials Analysis

Terracon identified ten fluorescent light bulbs and five potential PCB ballasts during the course of our assessment.

Two mercury thermostats (water bath thermostats) were observed on the heater.

The motor starter on the heater is suspected of containing lead.

The three Spin Top Enclosure pumps from the Square D Company are suspected of containing PCBs.

If this equipment will not be reused, Terracon recommends that the potential PCB containing equipment and identified suspect mercury-containing fluorescent light bulbs and thermostats be removed and properly disposed or recycled prior to demolition activities in accordance with Federal, state, and local regulations. Photographs of hazardous materials are located in Appendix F.

6.0 General Comments

This asbestos renovation, lead paint, and hazardous materials survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our survey of the buildings. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.

Reliance on this Asbestos Renovation, Lead Paint, and Hazardous Materials Survey Report dated February 3, 2014, and prepared by Terracon for the client will be subject to the terms, conditions, and limitations stated in Proposal Number PH4130014 REV 1 dated January 14, 2013 and our contract dated January 14, 2013.

APPENDIX A
ASBESTOS SURVEY SAMPLE SUMMARY

CLEARWATER WASTEWATER TREATMENT PLANT
1601 HARBOR DRIVE
CLEARWATER, PINELLAS COUNTY, FLORIDA

Project No. H4147006
Report Date: February 3, 2014

HA	Sample No.s	Description	Homogeneous Areas	Analytical Result
1	01 – 03	Red Gasket	White Pipes	NAD
2	04 – 06	Grey Gasket	Heater Pipes	65% Chrysotile
3	07 – 09	Black Rubbery Gasket	White Pipes	NAD
4	10 – 12	Fibrous Insulating Material	White Pipes	NAD
5	13 – 15	Black Gasket	Orange Pipes on Roof	NAD
6	16 – 18	Red Gasket	Orange Pipes on Roof	NAD
7	19 – 21	Built-up Roof	Building Roof	NAD
8	22 – 24	Roof Flashing	Building Roof Perimeter	5% Chrysotile
9	25 – 27	Black over White Caulk	Ceiling/Wall Seam at Restroom	3% Chrysotile
10	n/a	Built-up Cover	Tank Cover	Assumed
11	n/a	Insulating Material	Heater Contents	Assumed

NAD = No asbestos detected

APPENDIX B
IDENTIFIED ASBESTOS-CONTAINING MATERIALS
CLEARWATER WASTEWATER TREATMENT PLANT
1601 HARBOR DRIVE
CLEARWATER, PINELLAS COUNTY, FLORIDA

Project No. H4147006
Report Date: February 3, 2014

HA No.	Description	Material Location	Asbestos Type	NESHAP Classification	Condition	Estimated Quantity
2	Grey Gasket	Heater	65% Chrysotile	Friable - RACM	Fair	4 SF
8	Roof Flashing	Building Roof Perimeter	5% Chrysotile	Category I Nonfriable	Poor	120 SF
9	Black over White Caulk	Ceiling/Wall Seam at Restroom	3% Chrysotile	Category II Nonfriable	Good	20 SF
10	Built-up Cover	Tank Cover	Assumed	Category I Non-friable	Poor	500 SF
11	Insulating Material	Heater Contents	Assumed	Friable - RACM	Fair	Unknown*

SF = square feet

CF = cubic feet

RACM = Regulated Asbestos Containing Material

* = Heater could not be disassembled to identify and quantify ACM

APPENDIX C

PLM ASBESTOS ANALYTICAL LABORATORY DATA



EMSL Analytical, Inc.

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>

orlandolab@emsl.com

EMSL Order:	341400386
CustomerID:	TERA72
CustomerPO:	
ProjectID:	

Attn: **Terracon Consultants, Inc.**
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 01/17/14 9:43 AM
Analysis Date: 1/21/2014
Collected: 1/16/2014

Project: H4147006

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
01 341400386-0001	On White Pipes - Red Gasket	White/Red Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
02 341400386-0002	On White Pipes - Red Gasket	White/Red Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
03 341400386-0003	On White Pipes - Red Gasket	White/Red/Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
04 341400386-0004	On Heater Pipes - Grey Gasket	Gray/White Fibrous Heterogeneous		35% Non-fibrous (other)	65% Chrysotile
05 341400386-0005	On Heater Pipes - Grey Gasket				Stop Positive (Not Analyzed)
06 341400386-0006	On Heater Pipes - Grey Gasket				Stop Positive (Not Analyzed)
07 341400386-0007	- Black Rubbery Gasket	Black/Silver/Green Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					

Analyst(s)

Jonathan Teda (4)

Manolo Hernandez (12)

Katelyn Wright (7)

Jonathan Teda, Asbestos Lab Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Orlando, FL NVLAP Lab Code 101151-0

Initial report from 01/22/2014 08:16:20



EMSL Analytical, Inc.

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>

orlandolab@emsl.com

EMSL Order:	341400386
CustomerID:	TERA72
CustomerPO:	
ProjectID:	

Attn: **Terracon Consultants, Inc.**
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 01/17/14 9:43 AM
Analysis Date: 1/21/2014
Collected: 1/16/2014

Project: H4147006

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
08 341400386-0008	- Black Rubbery Gasket	Black/Silver/Green Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
09 341400386-0009	- Black Rubbery Gasket	Black/Silver/Green Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
10 341400386-0010	- Fibrous Insulating Material	Brown Fibrous Heterogeneous	10% Synthetic 50% Cellulose 5% Hair	35% Non-fibrous (other)	None Detected
11 341400386-0011	- Fibrous Insulating Material	Brown Fibrous Heterogeneous	25% Cellulose 20% Synthetic 5% Hair	50% Non-fibrous (other)	None Detected
12 341400386-0012	- Fibrous Insulating Material	Various Fibrous Heterogeneous	35% Cellulose 15% Synthetic 5% Hair	5% Quartz 40% Non-fibrous (other)	None Detected
13 341400386-0013	Roof - Black Gasket - Orange Pipe	Black Fibrous Heterogeneous	40% Synthetic	60% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
14 341400386-0014	Roof - Black Gasket - Orange Pipe	Black Fibrous Heterogeneous	40% Synthetic	60% Non-fibrous (other)	None Detected

Analyst(s)

Jonathan Teda (4)

Manolo Hernandez (12)

Katelyn Wright (7)

Jonathan Teda, Asbestos Lab Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%. Samples analyzed by EMSL Analytical, Inc. Orlando, FL NVLAP Lab Code 101151-0

Initial report from 01/22/2014 08:16:20



EMSL Analytical, Inc.

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>

orlandolab@emsl.com

EMSL Order:	341400386
CustomerID:	TERA72
CustomerPO:	
ProjectID:	

Attn: **Terracon Consultants, Inc.**
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 01/17/14 9:43 AM
Analysis Date: 1/21/2014
Collected: 1/16/2014

Project: H4147006

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
15 341400386-0015	Roof - Black Gasket - Orange Pipe	Tan/Black Fibrous Heterogeneous	30% Synthetic	70% Non-fibrous (other)	None Detected
16 341400386-0016	Roof - Red Gasket - Orange Pipe	Red Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
17 341400386-0017	Roof - Red Gasket - Orange Pipe	Red Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
18 341400386-0018	Roof - Red Gasket - Orange Pipe	Red/Orange Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
19-Roofing 341400386-0019	- Built-up Roof	Black Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	None Detected
19-Mastic 341400386-0019A	- Built-up Roof	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
20-Roofing 341400386-0020	- Built-up Roof	Black Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	None Detected
20-Mastic 341400386-0020B	- Built-up Roof	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

Jonathan Teda (4)

Manolo Hernandez (12)

Katelyn Wright (7)

Jonathan Teda, Asbestos Lab Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Orlando, FL NVLAP Lab Code 101151-0

Initial report from 01/22/2014 08:16:20



EMSL Analytical, Inc.

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>

orlandolab@emsl.com

EMSL Order:	341400386
CustomerID:	TERA72
CustomerPO:	
ProjectID:	

Attn: **Terracon Consultants, Inc.**
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 01/17/14 9:43 AM
Analysis Date: 1/21/2014
Collected: 1/16/2014

Project: H4147006

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
21 341400386-0021	- Built-up Roof	Brown/Black Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (other)	None Detected
22 341400386-0022	- Roof Flashing	Gray/Black Fibrous Heterogeneous		95% Non-fibrous (other)	5% Chrysotile
23 341400386-0023	- Roof Flashing				Stop Positive (Not Analyzed)
24 341400386-0024	- Roof Flashing				Stop Positive (Not Analyzed)
25 341400386-0025	Seam - Black over White Caulk	Tan/Black Non-Fibrous Heterogeneous		97% Non-fibrous (other)	3% Chrysotile
		Inseparable paint / coating layer included in analysis			
26 341400386-0026	Seam - Black over White Caulk				Stop Positive (Not Analyzed)
27 341400386-0027	Seam - Black over White Caulk				Stop Positive (Not Analyzed)

Analyst(s)

Jonathan Teda (4)

Manolo Hernandez (12)

Katelyn Wright (7)

Jonathan Teda, Asbestos Lab Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%. Samples analyzed by EMSL Analytical, Inc. Orlando, FL NVLAP Lab Code 101151-0

Initial report from 01/22/2014 08:16:20



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS + TRAINING

Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

341400386

EMSL ANALYTICAL, INC.
5125 ADANSON ST
SUITE 900
ORLANDO, FL 32804
PHONE: (407) 599-5887
FAX: (407) 599-9063

Company : Terracon		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments** <i>Third Party Billing requires written authorization from third party</i>	
Street: 504 East Tyler Street			
City: Tampa	State/Province: FL	Zip/Postal Code: 33602	Country: USA
Report To (Name): Nacole Bowersox		Fax #: (813) 221-0051	
Telephone #: (813) 321-0319		Email Address: nlbowersox@terracon.com	
Project Name/Number: H4147006			
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		Purchase Order:	U.S. State Samples Taken: Florida
Turnaround Time (TAT) Options* – Please Check			
<input type="checkbox"/> 3 Hour <input type="checkbox"/> 6 Hour <input type="checkbox"/> 24 Hour <input type="checkbox"/> 48 Hour <input checked="" type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week			
*For TEM Air 3 hours/6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PCM - Air <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA	TEM – Air <input type="checkbox"/> 4-4.5hr TAT (AHERA only)		TEM- Dust
	<input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312		<input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/J-93/167)
PLM - Bulk (reporting limit) <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable in NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NIOSH 9002 (<1%)	TEM - Bulk		Soil/Rock/Vermiculite
	<input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> Chatfield SOP <input type="checkbox"/> TEM Mass Analysis-EPA 600 sec. 2.5		<input type="checkbox"/> PLM CARB 435 - A (0.25% sensitivity) <input type="checkbox"/> PLM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - C (0.01% sensitivity) <input type="checkbox"/> EPA Protocol (Semi-Quantitative) <input type="checkbox"/> EPA Protocol (Quantitative)
	TEM – Water: EPA 100.2		Other:
	Fibers >10µm <input type="checkbox"/> Waste <input type="checkbox"/> Drinking All Fiber Sizes <input type="checkbox"/> Waste <input type="checkbox"/> Drinking		<input type="checkbox"/>
<input checked="" type="checkbox"/> Check For Positive Stop – Clearly Identify Homogenous Group			
Samplers Name: Nacole Bowersox		Samplers Signature: <i>Nacole Bowersox</i>	
Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
01	Red gasket on white pipes	1	1/16/14 AM
02		↓	
03		↓	
04	Grey gasket on heater Pipes	2	
05		↓	
06		↓	
07	Black Rubbery gasket	3	
08		↓	
Client Sample # (s):		01 -	Total # of Samples:
Relinquished (Client):		Date:	Time:
Received (Lab): <i>British Disabafire</i>		Date: 1/17/14	Time: 9:43am
Comments/Special Instructions:			



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody
EMSL Order Number (Lab Use Only):

341400386

EMSL ANALYTICAL, INC.
5125 ADANSON ST,
SUITE 900
ORLANDO, FL 32804
PHONE: (407) 599-5887
FAX: (407) 599-9063

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
09	Black Rubbery gasket	3	1/12/14 AM
10	Fibrous insulating material	4	
11		↓	
12		↓	
13	Black gasket -orange pipe (Root)	5	
14		↓	
15		↓	
16	Red gasket - orange pipe (Root)	6	
17		↓	
18		↓	
19	Built-up Roof	7	
20		↓	
21		↓	
22	Roof Flashing	8	
23		↓	
24		↓	✓

*Comments/Special Instructions:



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

**Asbestos Chain of Custody
EMSL Order Number (Lab Use Only):**

EMSL Order Number (Lab Use Only):

34B00386

EMSL ANALYTICAL, INC.
5125 ADANSON ST,
SUITE 900
ORLANDO, FL 32804
PHONE: (407) 599-5887
FAX: (407) 599-9063

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
25	Black over white caulk (seam)	9	1/16/14 AM
26			
27			

***Comments/Special Instructions:**

APPENDIX D
IDENTIFIED LEAD PAINT

CLEARWATER WASTEWATER TREATMENT PLANT
1601 HARBOR DRIVE
CLEARWATER, PINELLAS COUNTY, FLORIDA

Project No. H4147006
Report Date: February 3, 2014

SAMPLE NO.	COLOR	SUBSTRATE	LOCATION	LEAD CONCENTRATION (% WEIGHT)
L-01	Blue over Green	Metal	Heater	0.024
L-02	Tan	Concrete	Wall	<0.010
L-03	Red	Metal	Pipe	0.018
L-04	White	Metal	Pipe	0.028
L-05	Yellow and Grey	Metal	Rail	0.043
L-06	Brown	Concrete	Wall	0.021
L-07	Green	Metal	Motor – Belt Cover	0.015
L-08	Off-White	Wood	Ceiling	<0.010
L-09	Green	Metal	Pipe	0.240
L-10	Off-White	Concrete	Exterior Wall	0.029
L-11	Orange	Metal	Pipe	0.19

APPENDIX E
LEAD PAINT ANALYTICAL LABORATORY DATA



EMSL Analytical, Inc.

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>

orlandolab@emsl.com

EMSL Order:	341400390
CustomerID:	TERA72
CustomerPO:	
ProjectID:	

Attn: **Nacole Bowersox**
Terracon Consultants, Inc.
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 01/17/14 9:43 AM
Collected: 1/16/2014

Project: H4147006

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B*/7000B)

Client Sample Description	Lab ID	Collected	Analyzed	Lead Concentration
L-01	0001	1/16/2014	1/18/2014	0.024 % wt
		Site: Heater/Green & Blue Metal		
L-02	0002	1/16/2014	1/18/2014	<0.010 % wt
		Site: Wall/Tan Concrete		
L-03	0003	1/16/2014	1/18/2014	0.018 % wt
		Site: Pipe/Red Metal		
L-04	0004	1/16/2014	1/18/2014	0.028 % wt
		Site: Pipe/White Metal		
L-05	0005	1/16/2014	1/18/2014	0.043 % wt
		Site: Rail/Yellow & Grey Metal		
L-06	0006	1/16/2014	1/18/2014	0.021 % wt
		Site: Wall/Brown Concrete		
L-07	0007	1/16/2014	1/18/2014	0.015 % wt
		Site: Belt Cover/Green Metal		
L-08	0008	1/16/2014	1/18/2014	<0.010 % wt
		Site: Ceiling/Offwhite Wood		
L-09	0009	1/16/2014	1/18/2014	0.24 % wt
		Site: Pipe/Green Metal		
L-10	0010	1/16/2014	1/18/2014	0.029 % wt
		Site: Ext Wall/Offwhite Concrete		
L-11	0011	1/16/2014	1/18/2014	0.19 % wt
		Site: Pipe/Orange Metal		

Blanca Cortes, Ph.D., Laboratory Manager
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted.
* slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Analytical, Inc. Orlando, FL AIHA-LAP, LLC--ELLAP Accredited #163563

Initial report from 01/21/2014 14:58:44



Lead & Metals Chain of Custody
EMSL Order Number(Lab Use Only):

341400390

Orlando, FL
 Suite 900
 5125 Adanson St
 Orlando, FL 32804
 PHONE: (407) 599-5887
 FAX: (407) 599-9063

Company: Terracon		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments** <i>Third Party Billing requires written authorization from third party</i></small>			
Street: 504 E. Tyler Street					
City/State/Zip: Tampa, FL 33602					
Report To (Name): Nacole Bowersox		Fax:			
Telephone: 813-220-3927		Email Address: nibowersox@terracon.com			
Project Name/Number: H4147006					
Please Provide Results: Email		Purchase Order:	State Samples Taken: FL		
Turnaround Time (TAT) Options* - Please Check					
<input type="checkbox"/> 3 Hour <input type="checkbox"/> 6 Hour <input type="checkbox"/> 24 Hour <input type="checkbox"/> 48 Hour <input checked="" type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week					
*Analysis completed in accordance with EMSL's Terms and Conditions located in the Price Guide					
Matrix	Method		Instrument	Reporting Limit	Check
Chips <input type="checkbox"/> mg/cm ² <input checked="" type="checkbox"/> % by wt.	SW846-7000B/7420 or AOAC 974.02		Flame Atomic Absorption	0.01%	<input checked="" type="checkbox"/>
Air	NIOSH 7082		Flame Atomic Absorption	4 µg/filter	<input type="checkbox"/>
	NIOSH 7105		Graphite Furnace AA	0.03 µg/filter	<input type="checkbox"/>
	NIOSH 7300 modified		ICP-AES	0.5 µg/filter	<input type="checkbox"/>
Wipe* <input type="checkbox"/> ASTM <input type="checkbox"/> non ASTM *If no box is checked, non-ASTM Wipe is assumed	SW846-7000B/7420		Flame Atomic Absorption	10 µg/wipe	<input type="checkbox"/>
	SW846-6010B or C		ICP-AES	0.5 µg/wipe	<input type="checkbox"/>
TCLP	SW846-1311/7420/SM 3111B		Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW846-6010B or C		ICP-AES	0.1 mg/L (ppm)	<input type="checkbox"/>
	Soil	SW846-7000B/7420		Flame Atomic Absorption	40 mg/kg (ppm)
SW846-7421		Graphite Furnace AA	0.3 mg/kg (ppm)	<input type="checkbox"/>	
SW846-6010B or C		ICP-AES	1 mg/kg (ppm)	<input type="checkbox"/>	
Wastewater	SM3111B or SW846-7000B/7420		Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.9		Graphite Furnace AA	0.003 mg/L (ppm)	<input type="checkbox"/>
	SW846-6010B or C		ICP-AES	1 mg/kg (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.9		Graphite Furnace AA	0.003 mg/L (ppm)	<input type="checkbox"/>
Other:		Preservation Method (Water)			
Name of Sampler: Nacole Bowersox		Signature of Sampler: <i>Nacole Bowersox</i>			
Sample #	Location		Volume/Area	Date/Time Sampled	
L-01	Heater	green & blue	metal	1/16/14 AM	
L-02	Wall	tan	concrete		
L-03	Pipe	Red	metal		
L-04	Pipe	white	metal		
L-05	Rail	yellow & grey	metal		
L-06	Wall	Brown	concrete		
Client Sample #'s		Total # of Samples:		11	
Relinquished (Client): <i>Nacole Bowersox</i>		Date: 1/16/14	Time:		
Received (Lab): <i>Brittany DiSabatino</i>		Date: 1/17/14	Time: 9:43am		
Comments/Special Instructions:					



Lead & Metals Chain of Custody

EMSL Order Number (*Lab Use Only*)

EMSE Order Number / Lan
34400390

Corporate - Cinnaminson, NJ
200 Route 130 North
Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

Controlled Document – Lead & Metals COC – LM

Controlled Document – Lead & Metals COC – LM-1.0 – 11/23/2009

APPENDIX F
PHOTOGRAPHS

Asbestos, Lead Paint and Hazardous Materials Survey

Clearwater WWTP ■ Clearwater, Florida

February 3, 2014 ■ Terracon Project No. H4147006

Terracon



Photo #1 HA 1: Red Gasket



Photo #2 HA 2: Grey Gasket on Heater



Photo #3 HA 3: Black Rubbery Gasket



Photo #4 HA 4: Black Gasket



Photo #5 HA 5: Roof Flashing



Photo #6 HA 6: Black over White Caulk

Asbestos, Lead Paint and Hazardous Materials Survey

Clearwater WWTP ■ Clearwater, Florida

February 3, 2014 ■ Terracon Project No. H4147006

Terracon



Photo #7 HA 11: Heater with assumed ACM in insulating material



Photo #8 Green over blue paint on heater



Photo #9 White paint on pipes



Photo #10 Off-white paint on ceiling

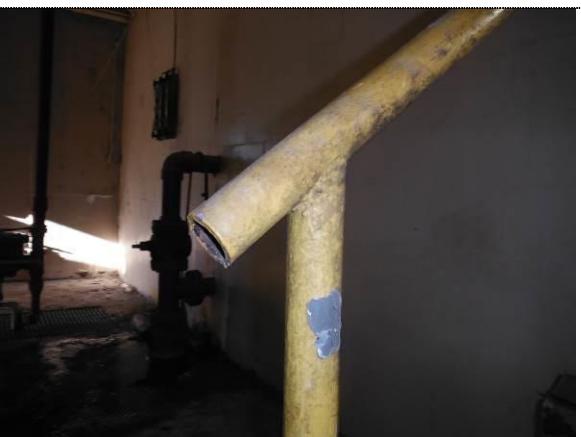


Photo #11 Yellow and grey paint on rail



Photo #12 Mercury containing thermostats

Asbestos, Lead Paint and Hazardous Materials Survey

Clearwater WWTP ■ Clearwater, Florida

February 3, 2014 ■ Terracon Project No. H4147006

Terracon



Photo #13 Pumps potentially containing PCBs



Photo #14 Motor potentially containing lead

APPENDIX G

INSPECTOR CERTIFICATIONS

Asbestos Survey Report Addendum

**Clearwater Wastewater Treatment Plant
1601 Harbor Drive
Clearwater, Pinellas County, Florida**

September 22, 2014
Terracon Project No.: H4147006



Prepared for:
King Engineering Associates
4921 Memorial Highway
One Memorial Center, Suite 300
Tampa, Florida 33634

Prepared by:
Terracon Consultants, Inc.
Tampa, Florida

Offices Nationwide
Employee-Owned

Established in 1965
terracon.com

Terracon

September 22, 2014



King Engineering Associates, Inc.
4921 Memorial Highway
One Memorial Center, Suite 300
Tampa, FL 33634

Attention: Thomas Traina
Telephone: (813) 810-8881
Email: ttraina@kingengineering.com

RE: Asbestos Survey Addendum
Clearwater Wastewater Treatment Plant
1601 Harbor Drive
Clearwater, FL
Terracon Project No.: H4147006

Dear Mr. Traina:

The purpose of this report is to present the results of a follow-up site visit performed on September 5, 2014, at the above referenced property in Clearwater, Florida. This survey was conducted in general accordance with Project Task No.: PH4130014, dated January 14, 2013, provided by King Engineering Associates, Inc. to Terracon Consultants, Inc. We understand that this survey was requested due to the planned demolition of the facility. The original survey performed on January 16, 2014 did not include sampling of the concrete walls of the 2nd Digester Tank, as well as the concrete walls, roof, and slab of the attached building.

Terracon collected an additional 6 bulk samples of suspect ACMs from one homogenous sampling area. Asbestos was not identified in samples collected during this assessment by laboratory analysis.

If the scope of the demolition changes or additional suspect materials is identified, Terracon should be notified and sampling of the additional materials should be performed prior to disturbance.

This survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our survey of the building. The information contained in this report is relevant to the date on which this survey was performed and should not be relied upon to represent conditions at a later date. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies,

Asbestos Survey Addendum

Wastewater Treatment Plant ■ 1601 Harbor Drive ■ Tampa, Florida
September 22, 2014 ■ Terracon Project No. H4147006



laboratories or other third parties supplying information which may have been used in the preparation of this report. No warranty, expressed or implied is made.

Reliance on this Report dated September 22, 2014 and prepared by Terracon for the client and King Engineering Associates, Inc. will be subject to the terms, conditions, and limitations stated in our Master Services Agreement as engaged by Project Task No.: H4130014, dated January 14, 2014.

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to provide this service to King Engineering Associates, Inc.. If you have any questions regarding this report, please contact the undersigned at (813) 221-0050.

Sincerely,

Terracon

Florida Asbestos Business License Number ZA-337

A blue ink signature of the initials "CA".

Christopher Abraham
Staff Environmental Scientist

A blue ink signature of the name "Michael Schrum, P.E." followed by a horizontal line.

Michael Schrum, P.E.
FL Licensed Asbestos Consultant
License Number AX78

APPENDIX A
ASBESTOS SURVEY SAMPLE SUMMARY

**CLEARWATER WASTEWATER TREATMENT PLANT
1601 HARBOR DRIVE
CLEARWATER, PINELLAS COUNTY, FLORIDA**

**Project No. H4147006
Report Date: September 22, 2014**

HA	Sample No.s	Description	Homogeneous Areas	Analytical Result (% Asbestos)
12	28 - 33	Concrete	2 nd Digester Walls, Roof, and Slab	None Detected

APPENDIX B

PHOTOGRAPHS OF HOMOGENOUS AREAS

Asbestos Demolition Survey

Wastewater Treatment Plant ■ 1601 Harbor Drive ■ Clearwater, Florida

Photos taken: September 5, 2014 ■ Terracon Project No. H4147006

Terracon**Photo #1** Concrete Block Wall - Interior**Photo #2** Concrete Block Wall - Exterior**Photo #3** Concrete Slab**Photo #4** Concrete Wall - Tank**Photo #5** Concrete Wall – Building
Interior/Exterior**Photo #6** Concrete - Roof

APPENDIX C

PLM ASBESTOS ANALYTICAL LABORATORY DATA



EMSL Analytical, Inc.

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>

orlandolab@emsl.com

EMSL Order:	341407857
CustomerID:	TERA72
CustomerPO:	
ProjectID:	

Attn: **Chris Abraham**
Terracon Consultants, Inc.
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 09/08/14 9:09 AM
Analysis Date: 9/8/2014
Collected: 9/5/2014

Project: H4147006

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
12-28 341407857-0001	Building Walls Interior - Concrete Block	Gray/Beige Non-Fibrous Heterogeneous		55% Quartz 10% Ca Carbonate 35% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
12-29 341407857-0002	Building Walls Exterior - Concrete Block	Gray/Beige Non-Fibrous Heterogeneous		55% Quartz 10% Ca Carbonate 35% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
12-30 341407857-0003	Building Floor - Concrete Slab	Gray/Tan Non-Fibrous Heterogeneous		50% Quartz 10% Ca Carbonate 40% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
12-31-Gray Concrete 341407857-0004	Tank Wall - Concrete	Gray Non-Fibrous Heterogeneous		55% Quartz 10% Ca Carbonate 35% Non-fibrous (other)	None Detected
12-31-White Concrete 341407857-0004A	Tank Wall - Concrete	White/Beige Non-Fibrous Heterogeneous		55% Quartz 10% Ca Carbonate 35% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
12-32 341407857-0005	Building Int/Ext Walls - Concrete	Gray/White Non-Fibrous Heterogeneous		55% Quartz 10% Ca Carbonate 35% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					

Analyst(s)

Katelyn Wright (3)

Manolo Hernandez (4)

Jonathan Teda, Asbestos Lab Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%.

Samples analyzed by EMSL Analytical, Inc. Orlando, FL NVLAP Lab Code 101151-0

Initial report from 09/09/2014 08:46:33

**EMSL Analytical, Inc.**

5125 Adanson Street, Suite 900, Orlando, FL 32804

Phone/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com>orlandolab@emsl.com

EMSL Order: 341407857
CustomerID: TERA72
CustomerPO:
ProjectID:

Attn: **Chris Abraham**
Terracon Consultants, Inc.
504 E. Tyler St.
Tampa, FL 33602

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 09/08/14 9:09 AM
Analysis Date: 9/8/2014
Collected: 9/5/2014

Project: H4147006

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
12-33	Roof - Concrete	Gray/Beige		55% Quartz	None Detected
341407857-0006		Non-Fibrous Heterogeneous		10% Ca Carbonate 35% Non-fibrous (other)	

Inseparable paint / coating layer included in analysis

Analyst(s)

Katelyn Wright (3)

Manolo Hernandez (4)

Jonathan Teda, Asbestos Lab Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Orlando, FL NVLAP Lab Code 101151-0

Initial report from 09/09/2014 08:46:33

EMSL ANALYTICAL, INC.
LABORATORY/PRODUCTS/TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

5125 Adanson Street, Suite 5

Orlando, FL 32804

PHONE: (407) 599-5887

FAX: (407) 599-9063

341407857

Company : Terracon		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: 504 East Tyler Street		Third Party Billing requires written authorization from third party	
City: Tampa	State/Province: FL	Zip/Postal Code: 33602	Country: United States
Report To (Name): Chris Abraham		Telephone #: 813-221-0050	
Email Address: crabraham@terracon.com		Fax #: 813-221-0051	Purchase Order:
Project Name/Number: H 4147006		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: FL		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* – Please Check

3 Hour 6 Hour 24 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PLM - Bulk (reporting limit) PLM EPA 600/R-93/116 (<1%) PLM EPA NOB (<1%)Point Count 400 (<0.25%) 1000 (<0.1%)Point Count w/Gravimetric 400 (<0.25%) 1000 (<0.1%) NIOSH 9002 (<1%) NY ELAP Method 198.1 (friable in NY) NY ELAP Method 198.6 NOB (non-friable-NY) OSHA ID-191 Modified Standard Addition Method TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1 NY ELAP Method 198.4 (TEM) Chatfield Protocol (semi-quantitative) TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2 TEM Qualitative via Filtration Prep Technique TEM Qualitative via Drop Mount Prep Technique**Other**

Check For Positive Stop – Clearly Identify Homogenous Group Date Sampled: 09/05/2014

Samplers Name: Chris Abraham

Samplers Signature:

Sample #	HA #	Sample Location	Material Description
12-28	12	Building walls - interior	Concrete Block
12-29	12	Building walls ^(A) walls - ext.	Concrete Block
12-30	12	ext. ^(B) Building floor	Concrete slab
12-31	12	Tank wall	Concrete
12-32	12	Building int./ext. walls	Concrete
12-33	12	Roof	Concrete

Client Sample # (s):

Total # of Samples:

Relinquished (Client):

Date: 09/05/14

Time: 1045

Received (Lab):

Date: 9/6/14

Time: 909 AM

Comments/Special Instructions:



February 14, 2019

Reference No. 11188936

Mr. Duy Nguyen
Utilities Engineering Specialist I
City of Clearwater
100 S. Myrtle Avenue, #220
Clearwater, Florida 33756-5520

**Re: Supplemental Asbestos Survey and Hazardous Materials Evaluation
Marshall Street WRF Digester Demolition
Clearwater, Florida
Project Number 09-0024-UT**

Mr. Nguyen

1. Introduction

As part of the requirements of the project specifications **GHD Services Inc. (GHD)** has performed a supplemental asbestos inspection and testing of the roofing materials on the digester tank, concrete materials used in the construction of the tank and pump house, and further investigated the heat exchanger at the above referenced project. Two previous surveys were conducted on the Cities behalf. Greenfield Environmental conducted a survey as outlined in their report dated May 30, 2013 and Terracon Consultants Inc. issued a report titled *Asbestos, Lead Paint and Hazardous Materials Survey Report* dated February 3, 2014. Both these survey failed to address the content of the digester roofing materials from the standpoint of asbestos and both assumed the entire heat exchanger unit to be an asbestos containing material. The purpose of the supplemental report is to address asbestos survey findings of the digester roof, the heat exchanger, concrete from the tanks and pump house building as well as address potential hazardous materials called out in the Terracon Report.

2. Summary

GHD conducted this limited asbestos survey in general accordance with the National Emissions Standard for Hazardous Air Pollutants (NESHAP) and the U.S. Environmental Protection Agency (EPA). The survey was conducted on February 12, 2019 by EPA certified asbestos inspector and Florida Licensed Asbestos Consultant, Scott Crandall, PE, FLAC. (applicable EPA and State of Florida licenses/certificates can be found in **Attachment A**).

The purpose of the survey was to identify, locate, and quantify suspect ACM not addressed by the two previous studies mentioned above. During the survey, nine (9) samples were collected from six (6) homogeneous areas. The samples were sent to Eurofins CEI Labs, Inc. (CEI) located in Cary, North Carolina and were analyzed by Polarized Light Microscopy (PLM).

3. Methodology

Asbestos survey and sampling procedures conducted by GHD were performed in general accordance with the NESHAP regulation and the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987.

3.1 Homogeneous Material Classifications

An initial walk-through of the inspection area was conducted to determine the presence, locations and condition of suspect materials that were accessible and/or exposed. Building materials that were similar in general appearance were grouped into “homogeneous” sampling areas as termed by the EPA.

Following the EPA inspection protocol, each identified suspect homogeneous material was placed in one of the following EPA classifications:

- **Surfacing Materials** (sprayed or trowel applied to building members)
- **Thermal System Insulation** (materials generally applied to various mechanical systems)
- **Miscellaneous Materials** (any materials which do not fit either of the above categories)

3.2 Sampling Procedures

Following the walk-through, sampling locations were chosen to be representative of each homogeneous material and then collected. Quantities of accessible and/or exposed building materials that were suspected of containing asbestos were estimated by taking approximate measurements in the field

4. The Laboratory

All samples collected during this survey were analyzed at EurofinsCEI in Cary, North Carolina. CEI is accredited under the National Institute of Standards and Technology's (NIST) certification program. The National Voluntary Laboratory Accreditation (NVLAP) replaces the EPA's interim program for Bulk Sample Quality Assurance. CEI has also received American Industrial Hygiene Association (AIHA) accreditation. Their NVLAP Laboratory Number is 101768-0.

4.1 Method of Analysis

The bulk samples collected were analyzed by polarized light microscopy (PLM). The samples were mounted on slides and then analyzed for asbestos (*i.e.*, chrysotile, amosite, crocidolite, anthophyllite, and actinolite/tremolite), fibrous non-asbestos constituents (*i.e.*, mineral wool, paper, etc.) and non-fibrous constituents. Refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation were utilized to identify asbestos. The same characteristics were used to identify the non-asbestos constituents. The microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample, using a stereoscope.

4.2 EPA Requirements

The EPA considers a homogeneous material to be asbestos containing if at least one sample of this material is greater than one percent (1%) asbestos. Conversely, EPA considers a homogeneous material to be non-asbestos containing if all the samples of that material contain 1% or less asbestos.

The test results are based on a visual determination of relative volume of the bulk sample components. The results are valid only for the item tested. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: EPA Interim Method of the determination of asbestos in bulk insulation samples, 40 CFR Chapter I, Part 763, Appendix A to Subpart F.

5. Observations and Findings

5.1 Asbestos

A total of 9 samples were collected from 6 homogeneous areas. The following table lists each material sampled, percentage and type of asbestos fibers (if any) found in the material sampled, and the NESHAP Category (if applicable) of the sampled material. A copy of the laboratory analytical results can be found in **Attachment B**.

Homo. No.	Sample No.	Material Description	% Asbestos Type	NESHAP Category ⁽¹⁾
01	01	Tank Composite Roofing	NAD ⁽²⁾	N/A ⁽³⁾
	02	Tank Composite Roofing	NAD	N/A
	03	Tank Composite Roofing	NAD	N/A
02	04	Concrete- Floor of Pump House (Replacement Tiles)	NAD	N/A
03	05	Masonry Block from Pump House	NAD	N/A
04	06	Concrete from Tank- South Side	NAD	N/A
	07	Concrete from Tank- North Side	NAD	N/A
05	08	White Coating inside Igniter of Firebox of Exchanger	NAD	N/A
06	09	Black Gasket on Heat Exchanger Return Header	NAD	N/A

(1) Category I = Category I non-friable asbestos-containing material (ACM) means asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy.

Category II = Category II non-friable ACM means any material, excluding Category I non-friable ACM, containing more than 1 percent (1%) asbestos as determined using the methods specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

RACM = Regulated asbestos-containing material means (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

(2) N/A – Not Applicable

(3) NAD – No Asbestos Detected

Digester Tank Composite Roofing- Three samples were obtained from the digester roof. The samples we obtained by us of a hand auger extended below the water to the roof decking and twisting to recover a sample of

roofing material. Roof appears to a typical built up roof assembly with multiple layers (three) of tarpaper/felt with asphalt covered with a pea gravel ballast. Three samples were obtained and all were found to be non ACM.



Photo 1- Roofing felts for digester tank roof- none ACM

Heat Exchanger – The heat exchanger was partially disassembled so access to interior portions of the heat exchanger could be viewed and sampled where needed. The heat exchanger is a Shell and tube type exchanger. Fiberglass insulation was observed on the inside the exterior sheet metal sides. Internal components were bare metals shell and tubes. A white cementitious coating on the interior of the fire box at the igniter was observed and sampled. The material was non ACM. Black Gaskets on the return headers were also sampled. The gaskets were non ACM. No other suspect materials were observed on the heat exchanger. Only the three grey gaskets identified on the previous reports, where the pump assembly was formerly connected are ACM. These materials will be removed prior to scrapping of the heat exchanger.



Photo 2 - White cementitious coating in fire box- none ACM



Photo 3 - Bare metal exchanger tubes



Photo 4 - Bare metal shell with Fiberglass insulation above flashlight



Photo 5 – Black gasket on return Header of heat exchanger- none ACM

Concrete and Block – Concrete materials and block from the tank and pump house was sampled. These were samples 4-7 in the above table. None of the samples were found to contain ACM.

5.2 Potential Hazardous Materials

Terracon called out 5 potentially hazardous materials in their 2014 report. These include the following.

- Mercury containing fluorescent bulbs
- Possible PCB containing light ballasts
- Two mercury containing thermosets
- Motor Starter on the heater as potentially containing lead
- Possible PCBs in three Spin Top Enclosure Pumps from Square D Company

GHD has done additional due diligence on some of the above items and offer the following:

Light Ballasts - The light ballasts at the site are manufactured by OSRAM Sylvania Corporation. The ballast is the Quicktronic High Efficiency model that were produced starting in 2011. OSRAM Sylvania product literature states no PCBs are used in their products. (Attached) Furthermore, PCB usage in ballast manufacturing was phased out starting in 1979 and required PCB labeling until 1998, when labeling was no longer required. These ballasts being manufactured in 2011 are not PCB containing. As such these will be disposed of as general waste.

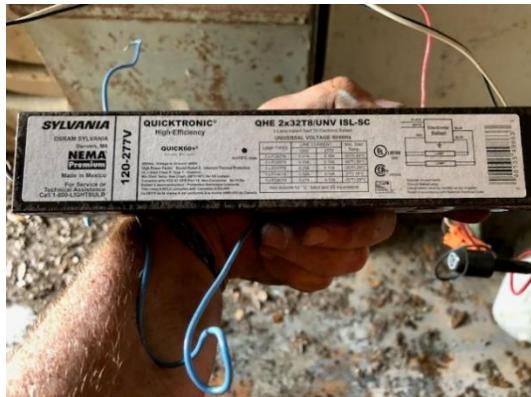


Photo 6 – OSRAM Sylvania Quicktronic HE ballast manufactured starting 2011

Three Spin Top Pumps for the Square D Company – These are not pumps but rather a weather-proof container with modern electrical relays. No PCB fluids are present in the containers. These materials will be disposed of as general debris.



Photo 7 & 8 Square D electrical relay components inside plastic weather proof container.

Possible lead containing motor starter- The starter may or may not contain lead however the starter along with the heat exchanger will be sent for scrap metal recycling. Any lead, if present, will be recovered by the recycler.

6. Conclusions

None of the additional materials sampled for asbestos were found to contain asbestos. The roofing material on the digester will be handled as typical C&D debris. The heat exchanger has been surveyed and determined not to contain any ACMs. As such this will be sent for recycling as scrap metal. The Spin Top motors and ballast called out by Terracon as potentially PCB containing, do not contain PCBs and will be disposed of a general C&D waste. The mercury thermostats and light bulbs will be sent for recycling to an approved mercury recycler.

This report and the information contained herein will be used to develop an *Asbestos and Hazardous Waste Abatement Plan* per the requirements of the project Specifications 1043.

Sincerely,

GHD Service

Asbestos Business License No. ZA338



Scott Crandall, PE
Florida Licensed Asbestos Consultant
License No. EA000060

SSC

Encl: Attachment A Florida Licenses and Certifications
Attachment B Laboratory Analytical Results
Attachment C PCB ASRAM Sylvania literature



Pinellas County Notification Form

ASBESTOS REMOVAL PROJECT

Air Quality Division

509 East Avenue South, Ste. 138 Clearwater, Florida 33756

Phone: (727) 464-4422 (727) Fax: 453-3548

AirQualityAsbestos@pinellascounty.org

N# _____

DEP# _____

I. Check at least one item for each type below, check additional items within a type if it applies:

Notice Type: Original Notice Revised Notice Revision # Cancellation On-hold Late Revision

Project Type: Asbestos Removal Phased Project Emergency Removal Planned Reno.(annual) Courtesy

Facility Type: NESHAP Applicable Residential Exemption Four or Fewer Apt. Units School/College/University

II. Facility Name: CLEARWATER WASTE WATER TREATMENT PLANT Prior Use: UNKNOWN

Address 1601 HARBOR DR. Parcel ID: 10/29/15/00000/120/0200

City: ST. PETE County: Pinellas Zip Code: 33704

Description Affected Area :

# of Bldgs.	1	# of Floors:	1	Age (Yrs):	30+	# of Rooms:	1	Bldg Size(SF):	64000
-------------	---	--------------	---	------------	-----	-------------	---	----------------	-------

III. Start Date: Feb 21, 2019 Finish Date: Feb 22, 2019 Daily Work Hours: 7AM-5PM Weekends

IV. Emission Controls\Procedures\Amounts of Asbestos\Fee (check or complete all items that apply):

Wet Method Containment Decon. Neg. Air HEPA Glove Bag Dry Method (prior approval) Encapsulation

Component Removal Stripping Mechanical Non-Mechanical Trained Rep./Worker Certification Trained Rep./Worker Photo ID

Procedures used if unexpected RACM is found or created: Stop/Wet RACM/Call Air Quality/Revise Notice

RACM SqFt	RACM LF (pipe only)	Total SF+ LF	Fee Due (SF/LF)	Describe Material
4				
RACM Cubic Feet	Total CuFt		Fee Due Cubic Feet	Describe Material

Estimate amount of RACM in Cubic Feet when the facility component is missing and the square feet or linear feet cannot be calculated.

Total Fee Amount:

\$0

Make check payable to "Pinellas County Board of County Commissioners".

Category I & II (Non-RACM) CAT I SF CAT II SF/LF Describe Material

Please Note: Only Cat I and II material, which is not expected to be become RACM is quantified and described in this space.

640

ROOFLASHING, BLACK CAULKING WALL
RESTROOM, TANK COVER.

V. Fee Receipt (check one) Mail To: Asbestos Contractor Facility Owner Other (Name and Address attached)

VI. I certify that all information provided on this form is true and correct to the best of my knowledge.

Signature / Date

FEBRAURY 19, 2019

Print Full Name: GABRIEL CARRASCO

Signature made by (check one): Asbestos Contractor Facility Owner Other (Name and Address attached)

Contact Fax #: 813-872-0901

Contact Phone #: 813-875-4600

Contact e-mail: gabriel@adsenviro.com

Contact Name: GABRIEL CARRASCO

DEP#

Pinellas County Notification Form (Page 2)

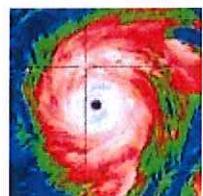
N#

VII. Asbestos Consultant: TERRACON		Consultant Lic.#: EA0000075
Asbestos Detection/Analytical Procedures: <input checked="" type="checkbox"/> Thorough Asb. Insp./Asb. Survey <input checked="" type="checkbox"/> PLM <input type="checkbox"/> Point Count <input type="checkbox"/> Other		
VIII. Facility Owner: CLEARWATER, CITY OF		
Address: PO BOX 4748		
City: CLEARWATER	State: FL	Zip: 33758
Contact Name: SCOTT CRANDALL		Phone: 813-335-5341
IX. Asbestos Contractor: KRANE DEVELOPMENT dba ADS SERVICES INC.		
Address: 5451 N. 59TH STREET		
City: TAMPA	State: Florida	Zip: 33610
Contact Name: BRAGG CRANE		Phone: 813-875-4600
Asb.Contr.Lic.# CJC051793	PCCLB # I-CJC051793	<input type="checkbox"/> This project is exempt from licensure under section 469.004(7) F.S.
X. Landfill Name: ANGELO'S		Class:
City: DADE CITY	County: PASCO	State: Florida
Contact Name: DONEL M. CROSS		Phone: 352-567-7676
Transporter#1: ADS SERVICES INC.		Phone: 813-875-4600
Transporter #2: ANGELO'S		Phone: 352-567-7676
Transporter # 3:		Phone:
B. Any Combination; Sq. Ft. & Linear Ft.	<ul style="list-style-type: none"> - An annual notification is \$360. - A late revision to a notification is \$250. - After-the-fact notifications are double the normal fee. - For phased renovation projects, the fee is based on the amount of asbestos in each phase per the above schedule. - Notifications will not be accepted without the appropriate fee. - Separate notifications are required for renovations and demolitions. - If in the course of a demolition or renovation it is determined that the project belongs in a higher fee category than was initially determined, re-notify Air Quality and pay the balance of the fee for the higher category. 	
If combination of square feet and linear feet totals >420		
0 - 159 square feet	\$0.00	
160 - 420 square feet	\$360.00	
0 - 259 linear feet	\$0.00	
260 - 420 linear feet	\$360.00	
421 - 1,000	\$480.00	
1,001 - 4,000	\$720.00	
4,001 - 7,000	\$960.00	
7,001 - 10,000	\$1,200.00	
10,001 - 20,000	\$1,320.00	
20,001 - 30,000	\$1,460.00	
Greater than 30,000	\$1,600.00	
C. Asbestos removal in Cubic Feet	<ul style="list-style-type: none"> - For asbestos, which cannot be accurately measured as Sq. Ft. or Linear Ft., use cubic foot measurements; the total fee is derived by adding the cubic foot fee to the Sq. Ft. and Linear Ft. fee. - Fee requirements are not applicable when the demolition or asbestos removal project is in a school, college, university, or a residential dwelling, as residential dwelling is defined in Rule 62-257.200, F.A.C. 	
0 - 34	\$0.00	
35 - 44	\$360.00	
45 - 54	\$600.00	
55 - 64	\$840.00	
65 - 74	\$1,080.00	
75 - 84	\$1,320.00	
85 - 100	\$1,460.00	
Greater than 100	\$1,600.00	

**Clearwater Waste
Water Treatment**



POST JOB SUBMITTAL



Corporate Office
5010 North Cortez Ave.
Tampa, FL 33614
Tel: (813) 875-4600
Fax: (813) 872-0901

For more information, visit www.adsenviro.com

POST-JOB SUBMITTAL

Clearwater Wastewater Treatment

JOB # 19B-078A

PREPARED FOR

**Scott Crandall. GHD Construction Group
5904 Hampton oaks pkwy
Tampa, Fl.**



**5451 N. 59TH STREET
TAMPA, FL 33610
T. (813) 875-4600
F. (813) 872-0901
WWW.ADSENVIRO.COM**

POST JOB SUBMITTAL

Table of Contents

1. Containment Sign-In/Out Logs
2. Daily Project Logs
3. Daily Sign-In Logs
4. Waste Manifest
5. Workers Documentation

CONTAINMENT SIGN-IN/OUT LOGS



CONTAINMENT SIGN IN/OUT

Date: 2-21-19 Project No.: 19B-078A Project Name: WASTEWATER PLANT
Foreman: _____ Location: 1601 Harbor DR CLEARWATER FL
Supervisors Name: Martine Carrasco Title: Supervisor

Instructions

1. Crew Supervisor should be responsible for location of his crew and for proper signing in and out.
 2. Use a new log for each calendar day.
 3. Use separate Log for each Regulated Area; post at Entry Point.

This signature certifies that I have been advised of the proper protective clothing and equipment to be worn in this regulated area.



CONTAINMENT SIGN IN/OUT

Date: 2-22-19 Project No.: 19B-078A Project Name: wastewater plant

Foreman: _____ Location: 1601 Harbor DR Clearwater FL

Supervisors Name: Martin Carrasco Title: Supervisor

Instructions

1. Crew Supervisor should be responsible for location of his crew and for proper signing in and out.
 2. Use a new log for each calendar day.
 3. Use separate Log for each Regulated Area; post at Entry Point.

This signature certifies that I have been advised of the proper protective clothing and equipment to be worn in this regulated area.

DAILY PROJECT LOGS

ADS

Daily Project Log

Date: 2-22-19

Job Name: Wastewater Plant Job No.: 19B-07817 Report No.: 2

Project Manager: Bragg Supervisor: Martin Corrao

Foreman: _____ Workers: 3 Support: _____ Office: _____ Total: _____

Contract Days: 2 Days Worked to date: 2 Percent Complete: 100%

Weather: Sunny _____ Overcast _____ Rain _____ Snow _____ Temp out _____ Temp In _____

Work Summary:

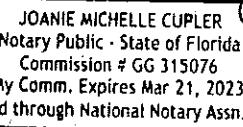
7:AM we arrive job and we start cleanup all floor of heater room at 11:30 we finish and we jump up to roof to scrape roofing tar from concrete deck 12:we took lunch 12:30 we back and we continue on same process at 3:30 we finish complete and we left job

Equipment Type	Quantity	Consultants/Visitors
Terminations/Equipment Problems/P.O. No's		
Sub-Contractors & Description of Work		

Job Injuries: Yes No ✓

(If "Yes", Attach Supervisor's Accident Report)

Martin C.
Supervisor Signature



100-777-9222

ADS

Daily Project Log

Date: 1-21-19

Job Name: Wastewater plant Job No.: 19B-078A Report No.: _____

Project Manager: Bragg Supervisor: Martin Carrasco

Foreman: _____ Workers: 3 Support: _____ Office: _____ Total: _____

Contract Days: _____ Days Worked to date: _____ Percent Complete: _____

Weather: Sunny Overcast Rain Snow Temp out Temp In

Work Summary:

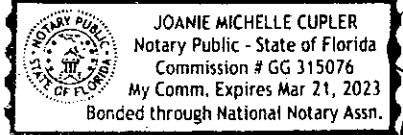
7am we arrive Job and we sign in
and we start mobilizing equipment we regulate
the work area at 8:30 we start removing
roofing Flashing and begin 12: we took lunch
12:30 we back to continue on same process
at 3:PM we stop to load up bags 3:30 we
left job

Equipment Type	Quantity	Consultants/Visitors
Terminations/Equipment Problems/P.O. No's		
Sub-Contractors & Description of Work		

Job Injuries: Yes No ✓

(If "Yes", Attach Supervisor's Accident Report)

Martin C.
Supervisor Signature



Opposite

DAILY SIGN-IN/OUT LOGS

ADS

DAILY SIGN IN LOG

Project: Wastewater Plant Project No: 19B-0782 Date: 2-21-19 M T W TH F SAT SUN

Contract No: _____

General Contractor: _____

Supervisor: LL Cool J Caring CC

Employee Name (Print)	Employee Signature	Last 4 of SS#	Time In	Lunch Out	Lunch In	Time Out	Total
1. <u>EZELL, El</u>	<u>El</u>	<u>5441</u>	<u>6:00am</u>	<u>12:10</u>		<u>3:30</u>	<u>9</u>
2. <u>Bentoros</u>	<u>Bentoros</u>	<u>3219</u>	<u>7:00am</u>	<u>12:</u>		<u>3:30</u>	<u>8</u>
3. <u>Alela Rangel</u>	<u>Alela Rangel</u>	<u>7812</u>	<u>7:00am</u>	<u>12:30</u>		<u>3:30</u>	<u>8</u>
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							

Supervisor's Signature Martie

ANS

DAILY SIGN IN LOG

Project: 4 Jester Water PlantProject No: 152-0787 Date: 2/22/19 M T W TH F SAT SUN

Contract No: _____ General Contractor: _____

Supervisor: Martin Carrasco

Employee Name (Print)	Employee Signature	Last 4 of SS#	Time In	Lunch Out	Lunch In	Time Out	Total
1. EZEQUIEL REINOS		59 46	6:00 AM	12:15	12:30	3:30	9
2. Adela Rangel		2812	7:00 AM	12:15	12:30	3:30	8
3. BENITO TIRAC		3249	7:00 AM	12:15	12:30	3:30	8
4. Olveria Rangel		7:AM	12:15	12:30	3:30	8	
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							

Supervisor's Signature

WASTE MANIFEST

4011

WASTE SHIPMENT RECORD

19B-078A

GENERATOR Wastewater Plant		
1. Work site name and mailing address <i>1601 Harbor Dr. Clearwater, Pinellas County FL</i>	Owner's name	Owner's Telephone no.
2. Operator's name and address Krane Development dba ADS Services, Inc. 5451 N. 59th St., Tampa, FL 33610	Operator's Telephone no. 813-875-4600	
3. Waste disposal site (WDS) name, Mailing address, and physical site location <i>Angelos 4111 Enterprise Rd Dade City FL 33525</i>	WDS Telephone no. <i>352-567-7676</i>	
4. Name, address of responsible agency Asbestos Coordinator Bureau of Air Quality Management State of Florida, Dept. of Environmental Regulation	2600 Blair Stone Rd. Tallahassee, FL 32399-2400	
5. Description of materials <i>ACM non friable</i>	6. Containers No. Type	7. Total quantity m ³ (yd ³) <i>86 Bags</i>
8. Special handling instructions and additional information		
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.		
Printed/typed name & title <i>Martin Carrasco supervisor</i>	Signature <i>Marti C.</i>	Month Day Year <i>2-21-19</i>
TRANSPORTER		
10. Transporter 1 (Acknowledgement of receipt of materials)		
Printed/typed name & title Address and telephone no. <i>Xavier Colmenares</i>	Signature <i>[Signature]</i>	Month Day Year <i>3/20/19</i>
11. Transporter 2 (Acknowledgement of receipt of materials)		
Printed/typed name & title Address and telephone no. <i>EM Haws</i>	Signature <i>[Signature]</i>	Month Day Year <i>3/23/19</i>
DISPOSAL SITE		
12. Discrepancy indication space		
13. Waste disposal site Owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12		
Printed/typed name & title <i>Donald M Cross</i>	Signature <i>[Signature]</i>	Month Day Year <i>3/23/19</i>

WORKERS DOCUMENTATION

Active Environmental Training

PO Box 707
Loughman, Fl. 33858
407-860-0369

Certifies that:

Martin Carrasco

***_**_9208

Has Successfully Met the Requirements, Training and Passed the Exam for Asbestos Accreditation as Required by AHERA, Section 206 TSCA Title II, E.P.A. 40 CFR part 763, Appendix C to Subpart E,
In the Discipline of

AHERA Asbestos Supervisor Refresher

A
Active
Environmental
Training

AET06152018SR-03

Attended Class	June 15, 2018
Exam Date	June 15, 2018
Expiration Date	June 15, 2019

Certificate Authentication
Number

Provider No: 0005086
Course No: 0006351

R. Morales

Roberto Morales
Course Administrator



ADS SERVICES, INC.

5451 N. 59th Street Tampa, FL 33610
(O) 813-875-4600 (F) 813-872-0901 ZA0000406
www.ADSenviro.com

PHYSICIAN'S WRITTEN OPINION (ASBESTOS)

TO: ADS Services, Inc. **Dr. Janet S. Pettyjohn D.O.**
From: Examining Physician/Clinic: **MED A PHYSICALS**
Physician/Clinic Address: **6302 Benjamin Road #410**
Telephone Number: **Tampa, Fl. 33634**
 PH. (813) 639-9119
 FAX (813) 639-1039

In accordance with the requirements of section (1)(7)(i), of OSHA General Industry Asbestos Standard, 29 CFR 1910.1001, and accordance with the requirements of Section (m)(4)(i), of the OSHA Construction Industry Asbestos Standard, 29 CFR 1926.1101, the examining physician/clinic will provide the employer with a written opinion containing the following:

1. This is to certify, that on this date 06/28/2013, and in accordance with the OSHA requirements, I have examined CARRASCO, Martin whose Social Security number is XXX-XX-9208 and based on my findings, have determined this individual may may not use respiratory device while performing his/her required employment services and is is not capable of working in hot work environments,
2. The results of this examination have have not detected any medical condition which would place the employee at an increased risk of material health impairment from exposure to asbestos; and
3. In accordance with OSHA requirements, I have informed the above named individual of the results of his/her medical examination and of any medical condition that may result from his/her exposure to asbestos; and
4. I have informed the above named individual of the risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

The complete medical examination report on the above named individual will be forwarded to the employer pending final conclusion and interpretation of any additional medical data collected during the examination.

Signed: DR. JANET PETTYJOHN
(Examining Physician/Physician's Representative)

DR. JANET PETTYJOHN
Physician's Name: Typed or Printed



QUALITATIVE FIT TEST RECORD

DATE: 4/1/19 EMPLOYEE: Martin Carrasco SS# 9208

I. Sensitivity Test:

IS: _____

IA: DID NOT RUN

SA: DID NOT RUN

II. Note Usual Conditions:

NONE

III: Respirator Selection:

Mask:

Size:

Result:

1. North PAPR

Med

Passed

2. North Half Face 7700

Med

Passed

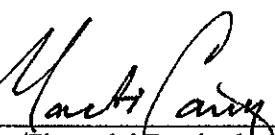
3. North RU6500

4. MSA

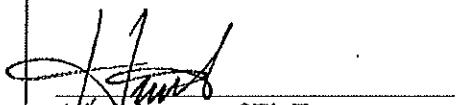
5. North Type C 85780

IV: Qualitative Tests:

NP PP IS IA SA


Signature/Firma del Empleado

4/1/19
Date/Fecha


Administrator of Fit Test

4/1/19
Date/Fecha

I. IS: Irritant Smoke

IA: Isomyl Acetate

SA: Saccharin

II. 1. Beard/Heavy 2. Beard/Light 3. Sears 4. Wrinkles 5. Glasses 6. Several days 7. Other

III. Mask-Name

Filter-NIOSH #

Mask-Model

Sizes

Results

1. North (PAPR)

MSA 10010420

3M 450-01-01R20

1. Small

1. Passed

2. North (Half Face)

OV/P100

7700-30

2. Medium

2. Fail

3. North RU6500

Optimair MM PAPR

3. Large

3. Did not Test

4. MSA

85780

5. North (Type C)

PP: Positive Pressure IS: Irritant Smoke IA: Isoamyl Acetate SA: Saccharin

IV, NP: Negative Pressure

Roberto Morales

PO Box 707
Loughman, Fl. 33858
407-860-0369

Certifies that:

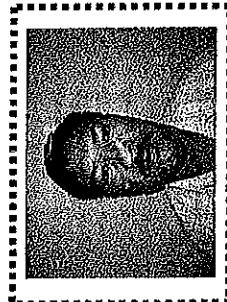
Martin Cannazza

Has successfully attended and completed the
OSHA 30 hour Outreach Training Course

"As an OSHA authorized trainer, I verify that I have conducted this OSHA outreach training class in accordance with OSHA Outreach Training Program requirements. I will document this class to my authorizing OSHA training organization. Upon successful review of my documentation, I will provide each student their completion card within 90 days of the end of the class."

1-10-2012 to 1-13-2012

Course completed on the
above date



Roberto Morales
Course Administrator

ADS

**CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT
FOR ASBESTOS ABATEMENT PROJECTS**

PROJECT NAME: Wastewater Plant

PROJECT NUMBER: 19B-078A DATE: 2-21-19

CONTRACTOR: ADS SERVICES, INC.

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF A NON-SMOKER.

Your employer's contract with the Owner for the above project requires that: You must be supplied with the proper respirator and be trained in its use. You must be trained in safe work practices and in the use of the equipment found on the job. You must receive a medical examination per OSHA requirements. These things are to be done at no cost to you. By signing this certificate, you are assuring the Owner that your employer has met these obligations to you.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators, and informed of the type of respirator to be used on the above referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost, with the respirator to be used on the above project.

TRAINING: I have been trained in the dangers inherent in handling asbestos, and breathing asbestos dust. I have also been trained in proper work procedures, and protective measures in the handling of hazardous materials. The topics covered in my training include the following:

- Health hazards associated with asbestos, tremolite, anthophyllite and actinolite exposure.
- Physical characteristics and methods of recognizing asbestos, tremolite, anthophyllite and actinolite.
- Respiratory protection and medical surveillance program requirements.
- Use of protective equipment.
- Negative air systems.
- Work practices including hands-on or on-the-job training.
- Personal decontamination procedures.
- Both personal and area air monitoring.
- OSHA asbestos standards, including appendices.
- Hazardous materials training per OSHA 29 CFR 1910.1200 and 1926.59.
- Relationship between smoking and asbestos, tremolite, anthophyllite and actinolite in producing lung cancer.

MEDICAL EXAMINATION: I have had a medical examination within the last year. This examination includes: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

Print Name: Martin Carrasco SSN: 9208

Signature: Martin C.

Active Environmental Training

PO Box 707
Loughman, Fl. 33858
407-860-0369

Certifies that:

Ezequiel Rameo

***_**-5941

Has Successfully Met the Requirements, Training and Passed the Exam for Asbestos Accreditation as Required by AHERA, Section 206 TSCA Title II, E.P.A. 40 CFR part 763, Appendix C to Subpart E,
In the Discipline of:

AHERA Asbestos Worker Refresher



Roberto Morales
Course Administrator
Provider No: 0005086

Attended Class May 12, 2018
Exam Date May 12, 2018
Expiration Date May 12, 2019

AET05122018WR-05
Certificate Authentication
Number



ADS SERVICES, INC.

5451 N. 59th Street Tampa, FL 33610
(O) 813-875-4600 (F) 813-872-0901 ZA0000406
www.ADSenviro.com

PHYSICIAN'S WRITTEN OPINION (ASBESTOS)

TO: ADS Services, Inc. Dr. Janet S. Pettyjohn D.O.
MED A PHYSICALS
6302 Benjamin Road #410
Tampa, FL 33634
Physician/Clinic Address: PH. (813) 639-9119
FAX (813) 639-1039

From: Examining Physician/Clinic: _____

Telephone Number: _____

In accordance with the requirements of section (1)(7)(i), of OSHA General Industry Asbestos Standard, 29 CFR 1910.1001, and accordance with the requirements of Section (m)(4)(i), of the OSHA Construction Industry Asbestos Standard, 29 CFR 1926.1101, the examining physician/clinic will provide the employer with a written opinion containing the following:

1. This is to certify, that on this date 03/15/2019; and in accordance with the OSHA requirements, I have examined RAMOS, ELEQUIP. whose Social Security number is XXX-XX-5941, and based on my findings, have determined this individual may () may not () use respiratory device while performing his/her required employment services and is () is not () capable of working in hot work environments,
2. The results of this examination have () have not () detected any medical condition which would place the employee at an increased risk of material health impairment from exposure to asbestos; and
3. In accordance with OSHA requirements, I have informed the above named individual of the results of his/her medical examination and of any medical condition that may result from his/her exposure to asbestos; and
4. I have informed the above named individual of the risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

The complete medical examination report on the above named individual will be forwarded to the employer pending final conclusion and interpretation of any additional medical data collected during the examination.

Signed: Dr. Janet Pettyjohn
(Examining Physician/Physician's Representative)

DR. Janet Pettyjohn
Physician's Name: Typed or Printed

QUALITATIVE FIT TEST RECORD

DATE: 3/21/19EMPLOYEE: Ezequiel RamosSS# 5941

I. Sensitivity Test:

IS: XIA: DID NOT RUNSA: DID NOT RUN

II. Note Usual Conditions:

NONE

III: Respirator Selection:

Mask:

Size:

Result:

1. North PAPR

Med✓

2. North Half Face 7700

Med✓

3. North RU6500

4. MSA

5. North Type C 85780

IV: Qualitative Tests:

 NP PP IS IA SA

Ezequiel Ramos
 Signature/Firma del Empleado
3/21/19

Date/Fecha

Ramón Hernández
 Administrator of Fit Test
3/21/19

Date/Fecha

I. IS: Irritant Smoke

IA: Isomyl Acetate

SA: Saccharin

II: 1. Beard/Heavy 2. Beard/Light 3. Sears 4. Wrinkles 5. Glasses 6. Several days 7. Other

III. Mask-Name

Filter-NIOSH #

Mask-Model

Sizes

Results

1. North (PAPR)

MSA 10010420

3M 450-01-01R20

1. Small

1. Passed

2. North (Half Face)

OV/P100

7700-30

2. Medium

2. Fail

3. North RU6500

3. Large

3. Did not Test

4. MSA

Optimair MM PAPR

5. North (Type C)

85780

IV, NP: Negative Pressure

PP: Positive Pressure

IS: Irritant Smoke

IA: Isoamyl Acetate SA: Saccharin

ADS

**CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT
FOR ASBESTOS ABATEMENT PROJECTS**

PROJECT NAME: Wastewater Plant

PROJECT NUMBER: 19B-0784 DATE: 2-21-19

CONTRACTOR: ADS SERVICES, INC.

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF A NON-SMOKER.

Your employer's contract with the Owner for the above project requires that: You must be supplied with the proper respirator and be trained in its use. You must be trained in safe work practices and in the use of the equipment found on the job. You must receive a medical examination per OSHA requirements. These things are to be done at no cost to you. By signing this certificate, you are assuring the Owner that your employer has met these obligations to you.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators, and informed of the type of respirator to be used on the above referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost, with the respirator to be used on the above project.

TRAINING: I have been trained in the dangers inherent in handling asbestos, and breathing asbestos dust. I have also been trained in proper work procedures, and protective measures in the handling of hazardous materials. The topics covered in my training include the following:

- Health hazards associated with asbestos, tremolite, anthophyllite and actinolite exposure.
- Physical characteristics and methods of recognizing asbestos, tremolite, anthophyllite and actinolite.
- Respiratory protection and medical surveillance program requirements.
- Use of protective equipment.
- Negative air systems.
- Work practices including hands-on or on-the-job training.
- Personal decontamination procedures.
- Both personal and area air monitoring.
- OSHA asbestos standards, including appendices.
- Hazardous materials training per OSHA 29 CFR 1910.1200 and 1926.59.
- Relationship between smoking and asbestos, tremolite, anthophyllite and actinolite in producing lung cancer.

MEDICAL EXAMINATION: I have had a medical examination within the last year. This examination includes: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

Print Name: EZEOVIEL Nemes SSN: 5741

Signature: [Signature]

Active Environmental Training, LLC

PO Box 707 - Loughman, Florida - 33858 Ph #: 407-860-0369
active@activeet.com

Certifies that:

Benito Jaral

***-**-3219



Has Successfully Met the Requirements, Training and Passed the Exam for Asbestos Accreditation as Required by AHERA, Section 206 TSCA Title II, E.P.A. 40 CFR part 763, Appendix C to Subpart E, In the Discipline of:

AHERA Asbestos Worker Refresher (Spanish)

Attended Class	Jan 12, 2019
Exam Date	Jan 12, 2019
Expiration Date	Jan 12, 2020

AET01122019WR-01
Certificate Authentication Number
<i>[Handwritten signature]</i>
For verification Call 407-860-0369

Roberto Morales
Course Administrator

This Certificate is not valid without
the authentication seal

Please avoid fraudulent activities by calling 407-860-0360 for authentication of this certificate



ADS SERVICES, INC.

5451 N. 59th Street Tampa, FL 33610
(O) 813-875-4600 (F) 813-872-0901 ZA0000406
www.ADSenviro.com

PHYSICIAN'S WRITTEN OPINION (ASBESTOS)

TO: ADS Services, Inc.

From: Examining Physician/Clinic: _____
Dr. Janet S. Pettyjohn D.O.
Physician/Clinic Address: _____
MED A PHYSICALS
8302 Benjamin Road #410
Telephone Number: _____
Tampa, Fl. 33634
PH. (813) 639-9119
FAX (813) 639-4039

In accordance with the requirements of section (1)(7)(i), of OSHA General Industry Asbestos Standard, 29 CFR 1910.1001, and accordance with the requirements of Section (m)(4)(i), of the OSHA Construction Industry Asbestos Standard, 29 CFR 1926.1101, the examining physician/clinic will provide the employer with a written opinion containing the following:

1. This is to certify, that on this date May 15, 2018 and in accordance with the OSHA requirements, I have examined JAKAL, BENITO whose Social Security number is XXX-XX-3219, and based on my findings, have determined this individual may may not use respiratory device while performing his/her required employment services and is is not capable of working in hot work environments;
2. The results of this examination have have not detected any medical condition which would place the employee at an increased risk of material health impairment from exposure to asbestos; and
3. In accordance with OSHA requirements, I have informed the above named individual of the results of his/her medical examination and of any medical condition that may result from his/her exposure to asbestos; and
4. I have informed the above named individual of the risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

The complete medical examination report on the above named individual will be forwarded to the employer pending final conclusion and interpretation of any additional medical data collected during the examination.

Signed: Dr. Janet Pettyjohn
(Examining Physician/Physician's Representative)

Janet Pettyjohn DO
Physician's Name: Typed or Printed

QUALITATIVE FIT TEST RECORD

DATE: 1/8/19EMPLOYEE: Benito JaralSS# 3219

I. Sensitivity Test:

IS: _____

II. Note Usual Conditions:

NONEIA: DID NOT RUNSA: DID NOT RUN

III: Respirator Selection:

Mask:

Size:

Result:

1. North PAPR

3
3good
good

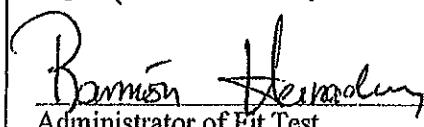
2. North Half Face 7700

3. North RU6500

4. MSA

5. North Type C 85780

IV: Qualitative Tests:

 NP PP IS IA SA
Signature/Firma del Empleado1/8/19
Date/Fecha
Administrator of Fit Test1/8/19
Date/Fecha

I. IS: Irritant Smoke

IA: Isomally Acetate

SA: Saccharin

II: 1. Beard/Heavy

2. Beard/Light

3. Sears

4. Wrinkles

5. Glasses

6. Several days

7. Other

III. Mask-Name

Filter-NIOSH

Mask-Model

Sizes

Results

1. North (PAPR)

MSA 10010420

3M 450-01-01R20

1. Small

1. Passed

2. North (Half Face)

OV/P100

7700-30

2. Medium

2. Fail

3. North RU6500

3. Large

3. Did not Test

4. MSA

Optimair MM PAPR

5. North (Type C)

85780

IV, NP: Negative Pressure

PP: Positive Pressure

IS: Irritant Smoke

IA: Isoamyl Acetate

SA: Saccharin

ADS

**CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT
FOR ASBESTOS ABATEMENT PROJECTS**

PROJECT NAME: WATERWATER Plant

PROJECT NUMBER: 19B-078A DATE: 2-21-19

CONTRACTOR: ADS SERVICES, INC.

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF A NON-SMOKER.

Your employer's contract with the Owner for the above project requires that: You must be supplied with the proper respirator and be trained in its use. You must be trained in safe work practices and in the use of the equipment found on the job. You must receive a medical examination per OSHA requirements. These things are to be done at no cost to you. By signing this certificate, you are assuring the Owner that your employer has met these obligations to you.

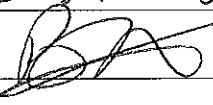
RESPIRATORY PROTECTION: I have been trained in the proper use of respirators, and informed of the type of respirator to be used on the above referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost, with the respirator to be used on the above project.

TRAINING: I have been trained in the dangers inherent in handling asbestos, and breathing asbestos dust. I have also been trained in proper work procedures, and protective measures in the handling of hazardous materials. The topics covered in my training include the following:

- Health hazards associated with asbestos, tremolite, anthophyllite and actinolite exposure.
- Physical characteristics and methods of recognizing asbestos, tremolite, anthophyllite and actinolite.
- Respiratory protection and medical surveillance program requirements.
- Use of protective equipment.
- Negative air systems.
- Work practices including hands-on or on-the-job training.
- Personal decontamination procedures.
- Both personal and area air monitoring.
- OSHA asbestos standards, including appendices.
- Hazardous materials training per OSHA 29 CFR 1910.1200 and 1926.59.
- Relationship between smoking and asbestos, tremolite, anthophyllite and actinolite in producing lung cancer.

MEDICAL EXAMINATION: I have had a medical examination within the last year. This examination includes: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

Print Name: BENITO JARAC SSN: 8219

Signature: 

Active Environmental Training

P.O. Box 707
Loughman, FL 33858
407-860-0369

Certifies that

Andrea Ringer

7812

Has Successfully Met the Requirements, Training and Passed the Exam for
Asbestos Accreditation as Required by AHERA, Section 206 TSCA Title U
EPA 40 CFR part 763, Appendix C to Subpart E,
In the Discipline of

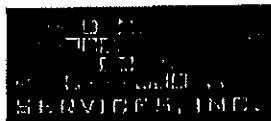
AHERA Asbestos Worker Refresher

Active Environmental Training

Attended Class	June 23, 2018
Exam Date	June 23, 2018
Expiration Date	June 23, 2019

Certificate Authentication Number	AE106232018WR-01
Provider No.	0003086

Roberto Morales
Course Administrator
Provider No. 0003086



ADS SERVICES, INC.

5451 N. 59th Street Tampa, FL 33610
(O) 813-875-4600 (F) 813-872-0901 ZA0000406
www.ADSenviro.com

PHYSICIAN'S WRITTEN OPINION (ASBESTOS)

TO: ADS Services, Inc. Dr. Janet S. Pettyjohn D.O.
MED A PHYSICALS
From: Examining Physician/Clinic: 6302 Benjamin Road #410
Tampa, Fl. 33634
Physician/Clinic Address: PH. (813) 639-9119
FAX (813) 639-1039
Telephone Number: _____

In accordance with the requirements of section (1)(7)(I), of OSHA General Industry Asbestos Standard, 29 CFR 1910.1001, and accordance with the requirements of Section (m)(4)(I), of the OSHA Construction Industry Asbestos Standard, 29 CFR 1926.1101, the examining physician/clinic will provide the employer with a written opinion containing the following:

1. This is to certify, that on this date 02/15/2014, and in accordance with the OSHA requirements, I have examined 12ANGELA DE LA whose Social Security number is XXX-XX-7812 and based on my findings, have determined this individual may () may not () use respiratory device while performing his/her required employment services and is () is not () capable of working in hot work environments;
2. The results of this examination have () have not () detected any medical condition which would place the employee at an increased risk of material health impairment from exposure to asbestos; and
3. In accordance with OSHA requirements, I have informed the above named individual of the results of his/her medical examination and of any medical condition that may result from his/her exposure to asbestos; and
4. I have informed the above named individual of the risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

The complete medical examination report on the above named individual will be forwarded to the employer pending final conclusion and interpretation of any additional medical data collected during the examination.

Signed: Dr. Janet Pettyjohn
(Examining Physician/Physician's Representative)

Dr. Janet Pettyjohn
Physician's Name: Typed or/printed

QUALITATIVE FIT TEST RECORD

DATE: 2/6/19 EMPLOYEE: Adela Rangel SS# 7812

I. Sensitivity Test:

IS: XIA: DID NOT RUNSA: DID NOT RUN

II. Note Usual Conditions:

NONE

III: Respirator Selection:

Mask:

Size:

Result:

1. North PAPR
2. North Half Face 7700
3. North RU6500
4. MSA
5. North Type C 85780

Small
Small

✓
✓

IV: Qualitative Tests:

NP PP IS IA SA

Adela Rangel
Signature/Firma del Empleado

2/6/19
Date/Fecha

Jean Hinch
Administrator of Fit Test

2/6/19
Date/Fecha

I. IS: Irritant Smoke	IA: Isomally Acetate	SA: Saccharin				
II: 1. Beard/Heavy	2. Beard/Light	3. Sears	4. Wrinkles	5. Glasses	6. Several days	7. Other
III. Mask-Name	Filter-NIOSH #	Mask-Model	Sizes	Results		
1. North (PAPR)	MSA 10010420	3M 450-01-01R20	1. Small	1. Passed		
2. North (Half Face)	OV/P100	7700-30	2. Medium	2. Fail		
3. North RU6500			3. Large	3. Did not Test		
4. MSA	Optimair MM PAPR					
5. North (Type C)	85780					
IV. NP: Negative Pressure	PP: Positive Pressure	IS: Irritant Smoke	IA: Isoamyl Acetate	SA: Saccharin		

ADS

**CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT
FOR ASBESTOS ABATEMENT PROJECTS**

PROJECT NAME: wastewater plant

PROJECT NUMBER: 19B-078A DATE: 2-21-19

CONTRACTOR: ADS SERVICES, INC.

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF A NON-SMOKER.

Your employer's contract with the Owner for the above project requires that: You must be supplied with the proper respirator and be trained in its use. You must be trained in safe work practices and in the use of the equipment found on the job. You must receive a medical examination per OSHA requirements. These things are to be done at no cost to you. By signing this certificate, you are assuring the Owner that your employer has met these obligations to you.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators, and informed of the type of respirator to be used on the above referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost, with the respirator to be used on the above project.

TRAINING: I have been trained in the dangers inherent in handling asbestos, and breathing asbestos dust. I have also been trained in proper work procedures, and protective measures in the handling of hazardous materials. The topics covered in my training include the following:

- Health hazards associated with asbestos, tremolite, anthophyllite and actinolite exposure.
- Physical characteristics and methods of recognizing asbestos, tremolite, anthophyllite and actinolite.
- Respiratory protection and medical surveillance program requirements.
- Use of protective equipment.
- Negative air systems.
- Work practices including hands-on or on-the-job training.
- Personal decontamination procedures.
- Both personal and area air monitoring.
- OSHA asbestos standards, including appendices.
- Hazardous materials training per OSHA 29 CFR 1910.1200 and 1926.59.
- Relationship between smoking and asbestos, tremolite, anthophyllite and actinolite in producing lung cancer.

MEDICAL EXAMINATION: I have had a medical examination within the last year. This examination includes: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

Print Name: Adele Rangel SSN: 7812

Signature: Adele Rangel

June 29, 2020

Hatem Elgendi
City of Clearwater Public Utilities
1605 Harbor Drive
Clearwater, FL 33755

RE: Project: Old Digester Sludge
Pace Project No.: 35553408

Dear Hatem Elgendi:

Enclosed are the analytical results for sample(s) received by the laboratory on June 01, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Ormond Beach
- Pace Analytical Services - Tampa

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Chelsea Gagne
chelsea.gagne@pacelabs.com
813-855-1844
Project Manager

Enclosures

cc: Accounting, City of Clearwater Public Utilities
Michael Flanigan, City of Clearwater Public Utilities
Jack Sadowski, City of Clearwater Public Utilities



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Old Digester Sludge
Pace Project No.: 35553408

Pace Analytical Services Ormond Beach

8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
Arizona Certification# AZ0819
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236

Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
New Hampshire Certification #: 2958
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Ohio DEP 87780
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

Pace Analytical Services Tampa

110 South Bayview Blvd., Tampa, FL 34677

Florida Certification #:E84129

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Old Digester Sludge
 Pace Project No.: 35553408

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35553408001	A	Solid	05/29/20 10:00	06/01/20 15:00
35553408002	B	Water	05/29/20 10:00	06/01/20 15:00
35553408003	C	Water	05/29/20 10:00	06/01/20 15:00
35553408004	D	Solid	05/29/20 10:00	06/01/20 15:00
35553408005	E	Solid	05/29/20 10:00	06/01/20 15:00
35553408006	F	Solid	05/29/20 10:00	06/01/20 15:00
35553408007	G	Water	05/28/20 04:30	06/01/20 15:00
35553408008	H	Water	05/29/20 10:30	06/01/20 15:00
35553408009	I	Solid	05/28/20 04:30	06/01/20 15:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Old Digester Sludge
Pace Project No.: 35553408

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35553408001	A	EPA 6010	ATC, LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JEA	1	PASI-O
		SM 2540G	JMW	1	PASI-O
		EPA 9012	CMV	1	PASI-O
		EPA 9056	YMP	2	PASI-O
		EPA 6010	ATC, KPP, LEC	10	PASI-O
35553408002	B	EPA 7470	JNK	1	PASI-O
		SM 2540D	LF	1	PASI-Tp
		SM 5210B	AGS	1	PASI-O
		EPA 300.0	JDW	2	PASI-O
		EPA 6010	ATC	10	PASI-O
35553408003	C	EPA 7470	JNK	1	PASI-O
		SM 2540D	LF	1	PASI-Tp
		SM 5210B	AGS	1	PASI-O
		EPA 300.0	JDW	2	PASI-O
		EPA 6010	LEC	10	PASI-O
35553408004	D	EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JEA	1	PASI-O
		SM 2540G	JMW	1	PASI-O
		EPA 9012	MH1	1	PASI-O
		EPA 9056	YMP	2	PASI-O
35553408005	E	EPA 6010	ATC, LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JEA	1	PASI-O
		SM 2540G	JMW	1	PASI-O
		EPA 9012	MH1	1	PASI-O
35553408006	F	EPA 9056	YMP	2	PASI-O
		EPA 6010	ATC, LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JEA	1	PASI-O
		SM 2540G	JMW	1	PASI-O
35553408007	G	EPA 9012	MH1	1	PASI-O
		EPA 9056	YMP	2	PASI-O
		EPA 6010	ATC	10	PASI-O
		EPA 7470	JNK	1	PASI-O

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Old Digester Sludge
Pace Project No.: 35553408

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35553408008	H	SM 2540D	LF	1	PASI-Tp
		SM 5210B	AGS	1	PASI-O
		EPA 300.0	JDW	2	PASI-O
		EPA 335.4	CMV	1	PASI-O
		EPA 6010	ATC	10	PASI-O
		EPA 7470	JNK	1	PASI-O
		SM 2540D	LF	1	PASI-Tp
		SM 5210B	AGS	1	PASI-O
		EPA 300.0	JDW	2	PASI-O
		EPA 335.4	CMV	1	PASI-O
35553408009	I	EPA 6010	ATC, LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JEA	1	PASI-O
		SM 2540G	JMW	1	PASI-O
		EPA 9012	CMV	1	PASI-O
		EPA 9056	YMP	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

PASI-Tp = Pace Analytical Services - Tampa

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: A Lab ID: 35553408001 Collected: 05/29/20 10:00 Received: 06/01/20 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050 Pace Analytical Services - Ormond Beach								
Arsenic	23.6	mg/kg	4.4	2.2	1	06/04/20 05:06	06/04/20 13:47	7440-38-2	
Cadmium	8.8	mg/kg	0.44	0.22	1	06/04/20 05:06	06/04/20 13:47	7440-43-9	
Chromium	99.8	mg/kg	2.2	1.1	1	06/04/20 05:06	06/04/20 13:47	7440-47-3	
Copper	2220	mg/kg	21.9	11.0	10	06/04/20 05:06	06/08/20 15:55	7440-50-8	
Lead	156	mg/kg	4.4	2.2	1	06/04/20 05:06	06/04/20 13:47	7439-92-1	
Manganese	150	mg/kg	2.2	1.1	1	06/04/20 05:06	06/04/20 13:47	7439-96-5	
Molybdenum	28.2	mg/kg	4.4	2.2	1	06/04/20 05:06	06/04/20 13:47	7439-98-7	
Selenium	5.7 I	mg/kg	6.6	3.3	1	06/04/20 05:06	06/04/20 13:47	7782-49-2	
Silver	184	mg/kg	21.9	11.0	10	06/04/20 05:06	06/08/20 15:55	7440-22-4	
Zinc	1680	mg/kg	8.8	4.4	1	06/04/20 05:06	06/04/20 13:47	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471 Pace Analytical Services - Ormond Beach								
Mercury	6.9	mg/kg	0.16	0.080	2	06/04/20 08:32	06/05/20 10:42	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Ormond Beach								
Percent Moisture	88.1	%	0.10	0.10	1			06/11/20 10:23	
2540G Total Solids	Analytical Method: SM 2540G Pace Analytical Services - Ormond Beach								
Total Solids	10.9	%	0.0010	0.0010	1			06/03/20 15:58	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012 Pace Analytical Services - Ormond Beach								
Cyanide	1.2 U	mg/kg	2.1	1.2	1	06/23/20 11:40	06/23/20 18:34	57-12-5	J(M1),Q
9056 IC Anions	Analytical Method: EPA 9056 Preparation Method: EPA 9056 Pace Analytical Services - Ormond Beach								
Bromide	42.1 U	mg/kg	84.1	42.1	1	06/05/20 12:30	06/06/20 02:01	24959-67-9	
Chloride	621	mg/kg	421	210	1	06/05/20 12:30	06/06/20 02:01	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: B	Lab ID: 35553408002	Collected: 05/29/20 10:00	Received: 06/01/20 15:00	Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Ormond Beach								
Arsenic	247	ug/L	100	71.0	1	06/04/20 12:15	06/05/20 09:55	7440-38-2	D3
Cadmium	62.2	ug/L	10.0	3.3	1	06/04/20 12:15	06/05/20 09:55	7440-43-9	D3
Chromium	758	ug/L	50.0	17.0	1	06/04/20 12:15	06/05/20 09:55	7440-47-3	D3
Copper	19400	ug/L	500	260	10	06/04/20 12:15	06/06/20 19:07	7440-50-8	D3
Lead	1340	ug/L	100	46.0	1	06/04/20 12:15	06/05/20 09:55	7439-92-1	D3
Manganese	1720	ug/L	50.0	4.2	1	06/04/20 12:15	06/05/20 09:55	7439-96-5	D3
Molybdenum	275	ug/L	100	16.0	1	06/04/20 12:15	06/05/20 09:55	7439-98-7	D3
Selenium	85.0 U	ug/L	150	85.0	1	06/04/20 12:15	06/05/20 09:55	7782-49-2	D3
Silver	2030	ug/L	500	100	1	06/07/20 18:39	06/08/20 14:56	7440-22-4	D3
Zinc	16800	ug/L	200	110	1	06/04/20 12:15	06/05/20 09:55	7440-66-6	D3
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Ormond Beach								
Mercury	29.4	ug/L	1.6	0.72	1	06/03/20 07:51	06/04/20 11:34	7439-97-6	D3
2540D Total Susp. Solids Tampa	Analytical Method: SM 2540D Pace Analytical Services - Tampa								
Total Suspended Solids	3900	mg/L	100	100	1			06/02/20 10:13	
5210B cBOD, 5 day	Analytical Method: SM 5210B Preparation Method: SM 5210B Pace Analytical Services - Ormond Beach								
Carbonaceous BOD, 5 day	95.4	mg/L	94.2	94.2	60	06/03/20 11:28	06/08/20 13:48		Q
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Ormond Beach								
Bromide	0.81	mg/L	0.50	0.18	5			06/06/20 00:03	24959-67-9
Chloride	62.6	mg/L	25.0	12.5	5			06/06/20 00:03	16887-00-6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: C	Lab ID: 35553408003	Collected: 05/29/20 10:00	Received: 06/01/20 15:00	Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Ormond Beach								
Arsenic	625	ug/L	250	178	5	06/03/20 11:32	06/03/20 17:55	7440-38-2	D3
Cadmium	142	ug/L	25.0	8.2	5	06/03/20 11:32	06/03/20 17:55	7440-43-9	D3
Chromium	1890	ug/L	125	42.5	5	06/03/20 11:32	06/03/20 17:55	7440-47-3	D3
Copper	44900	ug/L	250	130	10	06/03/20 11:32	06/03/20 17:59	7440-50-8	D3
Lead	3410	ug/L	250	115	5	06/03/20 11:32	06/03/20 17:55	7439-92-1	D3
Manganese	3730	ug/L	125	10.5	5	06/03/20 11:32	06/03/20 17:55	7439-96-5	D3
Molybdenum	577	ug/L	250	40.0	5	06/03/20 11:32	06/03/20 17:55	7439-98-7	D3
Selenium	212 U	ug/L	375	212	5	06/03/20 11:32	06/03/20 17:55	7782-49-2	D3
Silver	3920	ug/L	250	50.0	10	06/03/20 11:32	06/03/20 17:59	7440-22-4	D3
Zinc	37300	ug/L	500	275	5	06/03/20 11:32	06/03/20 17:55	7440-66-6	D3
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Ormond Beach								
Mercury	64.3	ug/L	1.6	0.72	1	06/03/20 07:51	06/04/20 11:36	7439-97-6	D3
2540D Total Susp. Solids Tampa	Analytical Method: SM 2540D Pace Analytical Services - Tampa								
Total Suspended Solids	68000	mg/L	500	500	1			06/02/20 10:13	
5210B cBOD, 5 day	Analytical Method: SM 5210B Preparation Method: SM 5210B Pace Analytical Services - Ormond Beach								
Carbonaceous BOD, 5 day	1580	mg/L	942	942	600	06/03/20 11:29	06/08/20 13:50		Q
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Ormond Beach								
Bromide	1.1 I	mg/L	2.0	0.72	20			06/09/20 00:36	24959-67-9
Chloride	106	mg/L	100	50.0	20			06/09/20 00:36	16887-00-6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: D Lab ID: 35553408004 Collected: 05/29/20 10:00 Received: 06/01/20 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050 Pace Analytical Services - Ormond Beach								
Arsenic	4.6 U	mg/kg	9.1	4.6	1	06/04/20 05:06	06/04/20 13:50	7440-38-2	
Cadmium	1.7	mg/kg	0.91	0.46	1	06/04/20 05:06	06/04/20 13:50	7440-43-9	
Chromium	20.1	mg/kg	4.6	2.3	1	06/04/20 05:06	06/04/20 13:50	7440-47-3	
Copper	436	mg/kg	4.6	2.3	1	06/04/20 05:06	06/04/20 13:50	7440-50-8	
Lead	27.7	mg/kg	9.1	4.6	1	06/04/20 05:06	06/04/20 13:50	7439-92-1	
Manganese	26.7	mg/kg	4.6	2.3	1	06/04/20 05:06	06/04/20 13:50	7439-96-5	
Molybdenum	6.6 I	mg/kg	9.1	4.6	1	06/04/20 05:06	06/04/20 13:50	7439-98-7	
Selenium	6.8 U	mg/kg	13.7	6.8	1	06/04/20 05:06	06/04/20 13:50	7782-49-2	
Silver	35.1	mg/kg	4.6	2.3	1	06/04/20 05:06	06/04/20 13:50	7440-22-4	
Zinc	331	mg/kg	18.3	9.1	1	06/04/20 05:06	06/04/20 13:50	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471 Pace Analytical Services - Ormond Beach								
Mercury	1.4	mg/kg	0.15	0.076	1	06/04/20 08:32	06/05/20 10:28	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Ormond Beach								
Percent Moisture	93.5	%	0.10	0.10	1			06/11/20 10:24	
2540G Total Solids	Analytical Method: SM 2540G Pace Analytical Services - Ormond Beach								
Total Solids	6.8	%	0.0010	0.0010	1			06/03/20 15:59	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012 Pace Analytical Services - Ormond Beach								
Cyanide	2.3 U	mg/kg	4.1	2.3	1	06/11/20 16:34	06/12/20 09:06	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056 Preparation Method: EPA 9056 Pace Analytical Services - Ormond Beach								
Bromide	76.5 U	mg/kg	153	76.5	1	06/05/20 12:30	06/06/20 02:23	24959-67-9	
Chloride	1350	mg/kg	765	382	1	06/05/20 12:30	06/06/20 02:23	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: E Lab ID: 35553408005 Collected: 05/29/20 10:00 Received: 06/01/20 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050 Pace Analytical Services - Ormond Beach								
Arsenic	19.5	mg/kg	4.5	2.3	1	06/04/20 05:06	06/04/20 13:53	7440-38-2	
Cadmium	6.6	mg/kg	0.45	0.23	1	06/04/20 05:06	06/04/20 13:53	7440-43-9	
Chromium	78.5	mg/kg	2.3	1.1	1	06/04/20 05:06	06/04/20 13:53	7440-47-3	
Copper	1660	mg/kg	22.5	11.3	10	06/04/20 05:06	06/08/20 15:59	7440-50-8	
Lead	168	mg/kg	4.5	2.3	1	06/04/20 05:06	06/04/20 13:53	7439-92-1	
Manganese	127	mg/kg	2.3	1.1	1	06/04/20 05:06	06/04/20 13:53	7439-96-5	
Molybdenum	28.7	mg/kg	4.5	2.3	1	06/04/20 05:06	06/04/20 13:53	7439-98-7	
Selenium	4.2 I	mg/kg	6.8	3.4	1	06/04/20 05:06	06/04/20 13:53	7782-49-2	
Silver	167	mg/kg	22.5	11.3	10	06/04/20 05:06	06/08/20 15:59	7440-22-4	
Zinc	1590	mg/kg	9.0	4.5	1	06/04/20 05:06	06/04/20 13:53	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471 Pace Analytical Services - Ormond Beach								
Mercury	3.4	mg/kg	0.084	0.042	1	06/04/20 08:32	06/05/20 10:30	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Ormond Beach								
Percent Moisture	89.0	%	0.10	0.10	1			06/11/20 10:24	
2540G Total Solids	Analytical Method: SM 2540G Pace Analytical Services - Ormond Beach								
Total Solids	10.8	%	0.0010	0.0010	1			06/03/20 16:00	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012 Pace Analytical Services - Ormond Beach								
Cyanide	1.3 U	mg/kg	2.4	1.3	1	06/11/20 16:34	06/12/20 09:07	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056 Preparation Method: EPA 9056 Pace Analytical Services - Ormond Beach								
Bromide	45.4 U	mg/kg	90.8	45.4	1	06/05/20 12:30	06/06/20 03:27	24959-67-9	
Chloride	1060	mg/kg	454	227	1	06/05/20 12:30	06/06/20 03:27	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: F Lab ID: 35553408006 Collected: 05/29/20 10:00 Received: 06/01/20 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050 Pace Analytical Services - Ormond Beach								
Arsenic	8.6	mg/kg	1.2	0.62	1	06/04/20 05:06	06/04/20 14:03	7440-38-2	
Cadmium	3.8	mg/kg	0.12	0.062	1	06/04/20 05:06	06/04/20 14:03	7440-43-9	
Chromium	44.3	mg/kg	0.62	0.31	1	06/04/20 05:06	06/04/20 14:03	7440-47-3	
Copper	875	mg/kg	6.2	3.1	10	06/04/20 05:06	06/08/20 16:02	7440-50-8	
Lead	92.1	mg/kg	1.2	0.62	1	06/04/20 05:06	06/04/20 14:03	7439-92-1	
Manganese	56.8	mg/kg	0.62	0.31	1	06/04/20 05:06	06/04/20 14:03	7439-96-5	
Molybdenum	8.4	mg/kg	1.2	0.62	1	06/04/20 05:06	06/04/20 14:03	7439-98-7	
Selenium	0.92 U	mg/kg	1.8	0.92	1	06/04/20 05:06	06/04/20 14:03	7782-49-2	
Silver	65.9	mg/kg	6.2	3.1	10	06/04/20 05:06	06/08/20 16:02	7440-22-4	
Zinc	606	mg/kg	24.6	12.3	10	06/04/20 05:06	06/08/20 16:02	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471 Pace Analytical Services - Ormond Beach								
Mercury	1.9	mg/kg	0.050	0.025	2	06/04/20 08:32	06/05/20 10:48	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Ormond Beach								
Percent Moisture	61.5	%	0.10	0.10	1			06/11/20 10:24	
2540G Total Solids	Analytical Method: SM 2540G Pace Analytical Services - Ormond Beach								
Total Solids	37.5	%	0.0010	0.0010	1			06/03/20 16:08	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012 Pace Analytical Services - Ormond Beach								
Cyanide	0.38 U	mg/kg	0.66	0.38	1	06/11/20 16:34	06/12/20 09:08	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056 Preparation Method: EPA 9056 Pace Analytical Services - Ormond Beach								
Bromide	12.9 U	mg/kg	25.8	12.9	1	06/05/20 12:30	06/06/20 03:49	24959-67-9	
Chloride	239	mg/kg	129	64.6	1	06/05/20 12:30	06/06/20 03:49	16887-00-6	

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: G	Lab ID: 35553408007	Collected: 05/28/20 04:30	Received: 06/01/20 15:00	Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Ormond Beach								
Arsenic	33.8	ug/L	10.0	7.1	1	06/03/20 11:32	06/03/20 18:02	7440-38-2	
Cadmium	2.4	ug/L	1.0	0.33	1	06/03/20 11:32	06/03/20 18:02	7440-43-9	
Chromium	27.7	ug/L	5.0	1.7	1	06/03/20 11:32	06/03/20 18:02	7440-47-3	
Copper	849	ug/L	5.0	2.6	1	06/03/20 11:32	06/03/20 18:02	7440-50-8	
Lead	53.1	ug/L	10.0	4.6	1	06/03/20 11:32	06/03/20 18:02	7439-92-1	
Manganese	394	ug/L	5.0	0.42	1	06/03/20 11:32	06/03/20 18:02	7439-96-5	
Molybdenum	20.7	ug/L	10.0	1.6	1	06/03/20 11:32	06/03/20 18:02	7439-98-7	
Selenium	8.5 U	ug/L	15.0	8.5	1	06/03/20 11:32	06/03/20 18:02	7782-49-2	
Silver	57.7	ug/L	5.0	1.0	1	06/03/20 11:32	06/03/20 18:02	7440-22-4	
Zinc	1480	ug/L	20.0	11.0	1	06/03/20 11:32	06/03/20 18:02	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Ormond Beach								
Mercury	1.4 I	ug/L	1.6	0.72	1	06/03/20 07:51	06/04/20 11:39	7439-97-6	D3
2540D Total Susp. Solids Tampa	Analytical Method: SM 2540D Pace Analytical Services - Tampa								
Total Suspended Solids	12900	mg/L	100	100	1				06/02/20 10:13
5210B cBOD, 5 day	Analytical Method: SM 5210B Preparation Method: SM 5210B Pace Analytical Services - Ormond Beach								
Carbonaceous BOD, 5 day	31.6	mg/L	31.4	31.4	20	06/03/20 11:26	06/08/20 13:45		Q
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Ormond Beach								
Bromide	0.72	mg/L	0.10	0.036	1				06/06/20 00:24 24959-67-9
Chloride	56.7	mg/L	5.0	2.5	1				06/06/20 00:24 16887-00-6
335.4 Cyanide, Total	Analytical Method: EPA 335.4 Preparation Method: EPA 335.4 Pace Analytical Services - Ormond Beach								
Cyanide	0.0050 U	mg/L	0.010	0.0050	1	06/10/20 13:15	06/10/20 17:07	57-12-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: H	Lab ID: 35553408008	Collected: 05/29/20 10:30	Received: 06/01/20 15:00	Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Ormond Beach								
Arsenic	12.8	ug/L	10.0	7.1	1	06/03/20 11:32	06/03/20 18:06	7440-38-2	
Cadmium	0.33 U	ug/L	1.0	0.33	1	06/03/20 11:32	06/03/20 18:06	7440-43-9	
Chromium	1.7 U	ug/L	5.0	1.7	1	06/03/20 11:32	06/03/20 18:06	7440-47-3	
Copper	13.5	ug/L	5.0	2.6	1	06/03/20 11:32	06/03/20 18:06	7440-50-8	
Lead	4.6 U	ug/L	10.0	4.6	1	06/03/20 11:32	06/03/20 18:06	7439-92-1	
Manganese	40.4	ug/L	5.0	0.42	1	06/03/20 11:32	06/03/20 18:06	7439-96-5	
Molybdenum	4.8 I	ug/L	10.0	1.6	1	06/03/20 11:32	06/03/20 18:06	7439-98-7	
Selenium	8.5 U	ug/L	15.0	8.5	1	06/03/20 11:32	06/03/20 18:06	7782-49-2	
Silver	1.0 U	ug/L	5.0	1.0	1	06/03/20 11:32	06/03/20 18:06	7440-22-4	
Zinc	315	ug/L	20.0	11.0	1	06/03/20 11:32	06/03/20 18:06	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Ormond Beach								
Mercury	0.090 U	ug/L	0.20	0.090	1	06/03/20 07:51	06/04/20 11:46	7439-97-6	
2540D Total Susp. Solids Tampa	Analytical Method: SM 2540D Pace Analytical Services - Tampa								
Total Suspended Solids	9.5	mg/L	5.0	5.0	1		06/02/20 10:13		PP
5210B cBOD, 5 day	Analytical Method: SM 5210B Preparation Method: SM 5210B Pace Analytical Services - Ormond Beach								
Carbonaceous BOD, 5 day	2.0 U	mg/L	2.0	2.0	1	06/03/20 11:31	06/08/20 13:53		Q
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Ormond Beach								
Bromide	0.99	mg/L	0.50	0.18	5		06/06/20 01:26	24959-67-9	
Chloride	206	mg/L	25.0	12.5	5		06/06/20 01:26	16887-00-6	
335.4 Cyanide, Total	Analytical Method: EPA 335.4 Preparation Method: EPA 335.4 Pace Analytical Services - Ormond Beach								
Cyanide	0.0050 U	mg/L	0.010	0.0050	1	06/10/20 13:15	06/10/20 17:14	57-12-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Old Digester Sludge
Pace Project No.: 35553408

Sample: I Lab ID: 35553408009 Collected: 05/28/20 04:30 Received: 06/01/20 15:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050 Pace Analytical Services - Ormond Beach								
Arsenic	27.1	mg/kg	4.1	2.1	1	06/04/20 05:06	06/04/20 14:06	7440-38-2	
Cadmium	10.1	mg/kg	0.41	0.21	1	06/04/20 05:06	06/04/20 14:06	7440-43-9	
Chromium	101	mg/kg	2.1	1.0	1	06/04/20 05:06	06/04/20 14:06	7440-47-3	
Copper	2550	mg/kg	20.5	10.3	10	06/04/20 05:06	06/08/20 16:05	7440-50-8	
Lead	169	mg/kg	4.1	2.1	1	06/04/20 05:06	06/04/20 14:06	7439-92-1	
Manganese	167	mg/kg	2.1	1.0	1	06/04/20 05:06	06/04/20 14:06	7439-96-5	
Molybdenum	23.5	mg/kg	4.1	2.1	1	06/04/20 05:06	06/04/20 14:06	7439-98-7	
Selenium	6.8	mg/kg	6.2	3.1	1	06/04/20 05:06	06/04/20 14:06	7782-49-2	
Silver	216	mg/kg	20.5	10.3	10	06/04/20 05:06	06/08/20 16:05	7440-22-4	
Zinc	1870	mg/kg	82.1	41.0	10	06/04/20 05:06	06/08/20 16:05	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471 Pace Analytical Services - Ormond Beach								
Mercury	4.6	mg/kg	0.16	0.078	2	06/04/20 08:32	06/05/20 10:51	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Ormond Beach								
Percent Moisture	87.4	%	0.10	0.10	1			06/11/20 10:24	
2540G Total Solids	Analytical Method: SM 2540G Pace Analytical Services - Ormond Beach								
Total Solids	11.8	%	0.0010	0.0010	1			06/03/20 15:56	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012 Pace Analytical Services - Ormond Beach								
Cyanide	1.9 I	mg/kg	1.9	1.1	1	06/23/20 11:40	06/23/20 15:55	57-12-5	Q
9056 IC Anions	Analytical Method: EPA 9056 Preparation Method: EPA 9056 Pace Analytical Services - Ormond Beach								
Bromide	39.5 U	mg/kg	79.0	39.5	1	06/05/20 12:30	06/06/20 04:10	24959-67-9	
Chloride	480	mg/kg	395	198	1	06/05/20 12:30	06/06/20 04:10	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	637758	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples: 35553408002, 35553408003, 35553408007, 35553408008			

METHOD BLANK: 3468505 Matrix: Water

Associated Lab Samples: 35553408002, 35553408003, 35553408007, 35553408008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	0.090 U	0.20	0.090	06/04/20 10:09	

LABORATORY CONTROL SAMPLE: 3468506

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2	2.1	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468507 3468508

Parameter	Units	MS Result	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	0.090 U	2	2	1.4	0.17 I	64	4	75-125	20	J(M1)

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	638177	Analysis Method:	EPA 7471
QC Batch Method:	EPA 7471	Analysis Description:	7471 Mercury
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples:	35553408001, 35553408004, 35553408005, 35553408006, 35553408009		

METHOD BLANK: 3470591 Matrix: Solid

Associated Lab Samples: 35553408001, 35553408004, 35553408005, 35553408006, 35553408009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	0.0050 U	0.010	0.0050	06/05/20 09:45	

LABORATORY CONTROL SAMPLE: 3470592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.099	0.095	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3470593 3470594

Parameter	Units	MS Result	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.089	0.13	0.13	0.25	0.23	125	112	80-120	9	20 J(M1)

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QUALITY CONTROL DATA

Project: Old Digester Sludge

Pace Project No.: 35553408

QC Batch:	638138	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3050	Analysis Description:	6010 MET Solid
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples:	35553408001, 35553408004, 35553408005, 35553408006, 35553408009		

METHOD BLANK: 3470475

Matrix: Solid

Associated Lab Samples: 35553408001, 35553408004, 35553408005, 35553408006, 35553408009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	0.30 U	0.60	0.30	06/04/20 12:09	
Cadmium	mg/kg	0.030 U	0.060	0.030	06/04/20 12:09	
Chromium	mg/kg	0.15 U	0.30	0.15	06/04/20 12:09	
Copper	mg/kg	0.15 U	0.30	0.15	06/04/20 12:09	
Lead	mg/kg	0.30 U	0.60	0.30	06/04/20 12:09	
Manganese	mg/kg	0.15 U	0.30	0.15	06/04/20 12:09	
Molybdenum	mg/kg	0.30 U	0.60	0.30	06/04/20 12:09	
Selenium	mg/kg	0.45 U	0.89	0.45	06/04/20 12:09	
Silver	mg/kg	0.15 U	0.30	0.15	06/04/20 12:09	
Zinc	mg/kg	0.60 U	1.2	0.60	06/04/20 12:09	

LABORATORY CONTROL SAMPLE: 3470476

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	14.3	14.1	99	80-120	
Cadmium	mg/kg	1.4	1.5	106	80-120	
Chromium	mg/kg	14.3	15.3	107	80-120	
Copper	mg/kg	14.3	14.6	103	80-120	
Lead	mg/kg	14.3	14.8	104	80-120	
Manganese	mg/kg	14.3	15.5	109	80-120	
Molybdenum	mg/kg	14.3	15.2	107	80-120	
Selenium	mg/kg	14.3	13.2	92	80-120	
Silver	mg/kg	1.4	1.4	99	80-120	
Zinc	mg/kg	71.3	74.8	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3470477 3470478

Parameter	Units	35553742001	MS	MSD	MS Result	MSD	MS % Rec	MSD	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.		Result		% Rec				
Arsenic	mg/kg	0.29 U	12.7	12.9	11.7	12.1	90	92	75-125	3	20	
Cadmium	mg/kg	0.029 U	1.3	1.3	1.3	1.3	102	104	75-125	4	20	
Chromium	mg/kg	1.1	12.7	12.9	14.4	14.9	105	107	75-125	4	20	
Copper	mg/kg	0.20 I	12.7	12.9	12.8	13.3	99	101	75-125	4	20	
Lead	mg/kg	0.52 I	12.7	12.9	14.2	14.7	108	109	75-125	3	20	
Manganese	mg/kg	1.6	12.7	12.9	14.9	15.4	104	106	75-125	3	20	
Molybdenum	mg/kg	0.29 U	12.7	12.9	12.8	13.3	99	102	75-125	4	20	
Selenium	mg/kg	0.43 U	12.7	12.9	11.0	11.5	85	88	75-125	5	20	

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:			3470477		3470478									
Parameter	Units	Result	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.	MS Result	MSD Result								
Silver	mg/kg	0.14 U	1.3	1.3	1.2	1.3	96	98	75-125	3	20			
Zinc	mg/kg	0.57 U	63.5	64.7	65.2	67.8	102	104	75-125	4	20			

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QUALITY CONTROL DATA

Project: Old Digester Sludge

Pace Project No.: 35553408

QC Batch: 637886 Analysis Method: EPA 6010

QC Batch Method: EPA 3010 Analysis Description: 6010 MET

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35553408003, 35553408007, 35553408008

METHOD BLANK: 3468840 Matrix: Water

Associated Lab Samples: 35553408003, 35553408007, 35553408008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	7.1 U	10.0	7.1	06/03/20 17:48	
Cadmium	ug/L	0.33 U	1.0	0.33	06/03/20 17:48	
Chromium	ug/L	1.7 U	5.0	1.7	06/03/20 17:48	
Copper	ug/L	2.6 U	5.0	2.6	06/03/20 17:48	
Lead	ug/L	4.6 U	10.0	4.6	06/03/20 17:48	
Manganese	ug/L	0.42 U	5.0	0.42	06/03/20 17:48	
Molybdenum	ug/L	1.6 U	10.0	1.6	06/03/20 17:48	
Selenium	ug/L	8.5 U	15.0	8.5	06/03/20 17:48	
Silver	ug/L	1.0 U	5.0	1.0	06/03/20 17:48	
Zinc	ug/L	11.0 U	20.0	11.0	06/03/20 17:48	

LABORATORY CONTROL SAMPLE: 3468841

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	250	243	97	80-120	
Cadmium	ug/L	25	25.0	100	80-120	
Chromium	ug/L	250	252	101	80-120	
Copper	ug/L	250	245	98	80-120	
Lead	ug/L	250	251	100	80-120	
Manganese	ug/L	250	253	101	80-120	
Molybdenum	ug/L	250	253	101	80-120	
Selenium	ug/L	250	250	100	80-120	
Silver	ug/L	25	25.0	100	80-120	
Zinc	ug/L	1250	1260	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468842 3468843

Parameter	Units	35553408008	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result										
Arsenic	ug/L	12.8	250	250	263	262	100	100	75-125	0	20	
Cadmium	ug/L	0.33 U	25	25	24.6	24.7	97	98	75-125	0	20	
Chromium	ug/L	1.7 U	250	250	252	252	101	100	75-125	0	20	
Copper	ug/L	13.5	250	250	268	268	102	102	75-125	0	20	
Lead	ug/L	4.6 U	250	250	246	245	98	98	75-125	0	20	
Manganese	ug/L	40.4	250	250	291	290	100	100	75-125	0	20	
Molybdenum	ug/L	4.8 I	250	250	261	260	102	102	75-125	0	20	
Selenium	ug/L	8.5 U	250	250	247	246	98	98	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468842 3468843

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max	
		35553408008	Spike Conc.	Spike Conc.	MS Result						RPD	RPD
Silver	ug/L	1.0	U	25	25	25.3	25.2	101	101	75-125	0	20
Zinc	ug/L	315		1250	1250	1540	1530	98	97	75-125	0	20

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QUALITY CONTROL DATA

Project: Old Digester Sludge

Pace Project No.: 35553408

QC Batch: 638314

QC Batch Method: EPA 3010

Laboratory:

Associated Lab Samples: 35553408002

Associated Lab Samples: 35553408002

METHOD BLANK: 3470949

Matrix: Water

Associated Lab Samples: 35553408002

Parameter	Units	Blank		Reporting		Analyzed	Qualifiers
		Result	Limit	MDL			
Arsenic	ug/L	7.1	U	10.0	7.1	06/05/20	07:50
Cadmium	ug/L	0.33	U	1.0	0.33	06/05/20	07:50
Chromium	ug/L	1.7	U	5.0	1.7	06/05/20	07:50
Copper	ug/L	2.6	U	5.0	2.6	06/05/20	07:50
Lead	ug/L	4.6	U	10.0	4.6	06/05/20	07:50
Manganese	ug/L	0.42	U	5.0	0.42	06/05/20	07:50
Molybdenum	ug/L	1.6	U	10.0	1.6	06/05/20	07:50
Selenium	ug/L	8.5	U	15.0	8.5	06/05/20	07:50
Zinc	ug/L	11.0	U	20.0	11.0	06/05/20	07:50

LABORATORY CONTROL SAMPLE: 3470950

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	250	248	99	80-120	
Cadmium	ug/L	25	25.5	102	80-120	
Chromium	ug/L	250	256	102	80-120	
Copper	ug/L	250	257	103	80-120	
Lead	ug/L	250	260	104	80-120	
Manganese	ug/L	250	262	105	80-120	
Molybdenum	ug/L	250	254	102	80-120	
Selenium	ug/L	250	256	102	80-120	
Zinc	ug/L	1250	1270	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3470951

3470952

Parameter	Units	35554114001		MS		MSD		MS		MSD		% Rec		Max			
		Spike	Conc.	Spike	Conc.	MS	Result	MSD	Result	MS	% Rec	MSD	% Rec	% Rec	Limits	RPD	RPD
Arsenic	ug/L	7.1	U	250	250	253	252	101	101	75-125	1	20					
Cadmium	ug/L	0.33	U	25	25	25.5	25.1	102	100	75-125	2	20					
Chromium	ug/L	1.7	U	250	250	259	254	103	101	75-125	2	20					
Copper	ug/L	2.6	U	250	250	264	263	105	104	75-125	0	20					
Lead	ug/L	4.6	U	250	250	260	256	103	102	75-125	2	20					
Manganese	ug/L	9.3		250	250	270	272	104	105	75-125	1	20					
Molybdenum	ug/L	7.7	I	250	250	266	261	103	101	75-125	2	20					
Selenium	ug/L	8.5	U	250	250	255	251	101	99	75-125	2	20					
Zinc	ug/L	11.0	U	1250	1250	1290	1260	103	101	75-125	2	20					

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	638935	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples:	35553408002		

METHOD BLANK: 3475411 Matrix: Water

Associated Lab Samples: 35553408002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Silver	ug/L	1.0 U	5.0	1.0	06/08/20 16:40	

LABORATORY CONTROL SAMPLE: 3475412

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Silver	ug/L	25	25.5	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3475413 3475414

Parameter	Units	MS Result	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	ug/L	1.0 U	25	25	25.1	25.3	100	101	75-125	1	20

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	640170	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
		Laboratory:	Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35553408001, 35553408004, 35553408005, 35553408006, 35553408009

SAMPLE DUPLICATE: 3481397

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	88.1	87.8	0	10	

SAMPLE DUPLICATE: 3481398

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	1.3	1.2	8	10	

SAMPLE DUPLICATE: 3481400

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.5	6.6	2	10	

SAMPLE DUPLICATE: 3481401

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.6	5.7	21	10	J(D6)

SAMPLE DUPLICATE: 3481402

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	3.3	2.8	18	10	J(D6)

SAMPLE DUPLICATE: 3481403

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.8	10	8	10	

SAMPLE DUPLICATE: 3481404

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.2	11.6	4	10	

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	637461	Analysis Method:	SM 2540D
QC Batch Method:	SM 2540D	Analysis Description:	2540D Total Susp. Solids Tampa
		Laboratory:	Pace Analytical Services - Tampa

Associated Lab Samples: 35553408002, 35553408003, 35553408007, 35553408008

METHOD BLANK: 3466657 Matrix: Water

Associated Lab Samples: 35553408002, 35553408003, 35553408007, 35553408008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	5.0 U	5.0	5.0	06/02/20 10:12	

LABORATORY CONTROL SAMPLE: 3466658

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	98.0	98	90-110	

SAMPLE DUPLICATE: 3466659

Parameter	Units	35552576001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	71.0	72.0	1	10	

SAMPLE DUPLICATE: 3466660

Parameter	Units	35552594001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	5.0 U	5.0 U		10	

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	637537	Analysis Method:	SM 2540G
QC Batch Method:	SM 2540G	Analysis Description:	2540G Total Solids
		Laboratory:	Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35553408001, 35553408004, 35553408005, 35553408006, 35553408009

SAMPLE DUPLICATE: 3466880

Parameter	Units	35553490001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	2.9	3.0	6	5	J(D6)

SAMPLE DUPLICATE: 3466881

Parameter	Units	35553488001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	2.9	3.0	4	5	

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	637762	Analysis Method:	SM 5210B
QC Batch Method:	SM 5210B	Analysis Description:	5210B cBOD, 5 day
		Laboratory:	Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35553408002, 35553408003, 35553408007, 35553408008

METHOD BLANK: 3468521 Matrix: Water

Associated Lab Samples: 35553408002, 35553408003, 35553408007, 35553408008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Carbonaceous BOD, 5 day	mg/L	2.0 U	2.0	2.0	06/08/20 13:38	

LABORATORY CONTROL SAMPLE: 3468523

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Carbonaceous BOD, 5 day	mg/L	199	180	91	85-115	

SAMPLE DUPLICATE: 3468524

Parameter	Units	35553288001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbonaceous BOD, 5 day	mg/L	4.8	4.4	11	20	

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QUALITY CONTROL DATA

Project: Old Digester Sludge

Pace Project No.: 35553408

QC Batch: 638764

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Laboratory:

Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35553408002, 35553408007

METHOD BLANK: 3474081

Matrix: Water

Associated Lab Samples: 35553408002, 35553408007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Bromide	mg/L	0.036 U	0.10	0.036	06/05/20 14:49	
Chloride	mg/L	2.5 U	5.0	2.5	06/05/20 14:49	

LABORATORY CONTROL SAMPLE: 3474082

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	10	10.0	100	90-110	
Chloride	mg/L	50	49.4	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3474083 3474084

Parameter	Units	35553092001	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result										
Bromide	mg/L	0.078 I	10	10	9.6	10.0	95	99	90-110	5	20	
Chloride	mg/L	19.7	50	50	69.7	72.1	100	105	90-110	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3474085 3474086

Parameter	Units	35553383002	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result										
Bromide	mg/L	0.42	10	10	9.7	10.3	92	99	90-110	6	20	
Chloride	mg/L	172	50	50	225	227	105	110	90-110	1	20	L

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	638765	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples: 35553408008			

METHOD BLANK: 3474089 Matrix: Water

Associated Lab Samples: 35553408008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Bromide	mg/L	0.036 U	0.10	0.036	06/06/20 00:41	
Chloride	mg/L	2.5 U	5.0	2.5	06/06/20 00:41	

LABORATORY CONTROL SAMPLE: 3474090

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	10	10.6	106	90-110	
Chloride	mg/L	50	52.1	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3474091 3474092

Parameter	Units	35553915003	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.								
Bromide	mg/L	0.039 I	10	10	10.4	10.6	104	105	90-110	1	20	
Chloride	mg/L	14.9	50	50	68.7	69.5	108	109	90-110	1	20	

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	639148	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples: 35553408003			

METHOD BLANK: 3476054 Matrix: Water

Associated Lab Samples: 35553408003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Bromide	mg/L	0.036 U	0.10	0.036	06/08/20 23:51	
Chloride	mg/L	2.5 U	5.0	2.5	06/08/20 23:51	

LABORATORY CONTROL SAMPLE: 3476055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	10	10.6	106	90-110	
Chloride	mg/L	50	52.3	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3476056 3476057

Parameter	Units	35553072001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Bromide	mg/L	0.065	10	10	10.5	10.6	105	105	90-110	1	20	
Chloride	mg/L	50.5	50	50	108	108	115	115	90-110	0	20	J(M1), L

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	639803	Analysis Method:	EPA 335.4
QC Batch Method:	EPA 335.4	Analysis Description:	335.4 Cyanide, Total
Associated Lab Samples:	35553408007, 35553408008	Laboratory:	Pace Analytical Services - Ormond Beach

METHOD BLANK: 3479365 Matrix: Water

Associated Lab Samples: 35553408007, 35553408008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cyanide	mg/L	0.0050 U	0.010	0.0050	06/10/20 17:00	

LABORATORY CONTROL SAMPLE: 3479366

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/L	0.05	0.048	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3479766 3479767

Parameter	Units	35553556003 MS Result	Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.0050 U	0.025	0.025	0.023	0.024	90	94	90-110	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3479769 3479770

Parameter	Units	35553556001 MS Result	Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.0050 U	0.025	0.025	0.022	0.023	90	91	90-110	1	20	

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	640300	Analysis Method:	EPA 9012
QC Batch Method:	EPA 9012	Analysis Description:	9012 Cyanide
		Laboratory:	Pace Analytical Services - Ormond Beach
Associated Lab Samples:	35553408004, 35553408005, 35553408006		

METHOD BLANK: 3481911 Matrix: Solid

Associated Lab Samples: 35553408004, 35553408005, 35553408006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cyanide	mg/kg	0.14 U	0.25	0.14	06/12/20 09:03	

LABORATORY CONTROL SAMPLE: 3481912

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	1.3	1.3	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3482547 3482548

Parameter	Units	MS Result	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	<2.6	11.4	11.4	3.4 I	2.7 I	17	10	80-120	20	J(M1)

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QUALITY CONTROL DATA

Project: Old Digester Sludge
Pace Project No.: 35553408

QC Batch:	643111	Analysis Method:	EPA 9012
QC Batch Method:	EPA 9012	Analysis Description:	9012 Cyanide
Associated Lab Samples:	35553408001, 35553408009		

Laboratory: Pace Analytical Services - Ormond Beach

METHOD BLANK: 3497046 Matrix: Solid

Associated Lab Samples: 35553408001, 35553408009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cyanide	mg/kg	0.14 U	0.24	0.14	06/23/20 15:47	

LABORATORY CONTROL SAMPLE: 3497047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	1.3	1.3	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3497050 3497051

Parameter	Units	MS Result	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	1.2 U	5.4	5	1.2 U	1.1 U	2	-6	80-120	20	J(M1), Q

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QUALITY CONTROL DATA

Project: Old Digester Sludge

Pace Project No.: 35553408

QC Batch: 638592 Analysis Method: EPA 9056

QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35553408001, 35553408004, 35553408005, 35553408006, 35553408009

METHOD BLANK: 3472828 Matrix: Solid

Associated Lab Samples: 35553408001, 35553408004, 35553408005, 35553408006, 35553408009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Bromide	mg/kg	5.0 U	10	5.0	06/06/20 00:57	
Chloride	mg/kg	25.0 U	49.9	25.0	06/06/20 00:57	

LABORATORY CONTROL SAMPLE: 3472829

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/kg	99.5	100	100	80-120	
Chloride	mg/kg	497	496	100	80-120	

MATRIX SPIKE SAMPLE: 3472831

Parameter	Units	35553408004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/kg	76.5 U	1540	1420	91	80-120	
Chloride	mg/kg	1350	7680	8450	92	80-120	

SAMPLE DUPLICATE: 3472830

Parameter	Units	35553408004 Result	Dup Result	RPD	Max RPD	Qualifiers
Bromide	mg/kg	76.5 U	76.6 U		20	
Chloride	mg/kg	1350	1340	0	20	

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QUALIFIERS

Project: Old Digester Sludge
Pace Project No.: 35553408

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 639140

[1] BOD seed blank was outside acceptance criteria. Reported results were accepted based on remaining quality control indicators.

ANALYTE QUALIFIERS

- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- U Compound was analyzed for but not detected.
- D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- J(D6) Estimated Value. The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
- J(M1) Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- L Off-scale high. Actual value is known to be greater than value given.
- PP The mass of dried residue obtained did not meet the test method requirements based on volume used.
- Q Sample held beyond the accepted holding time.
- Q Sample held beyond the accepted holding time. Sample was received outside EPA method holding time.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Old Digester Sludge
Pace Project No.: 35553408

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35553408001	A	EPA 3050	638138	EPA 6010	638199
35553408004	D	EPA 3050	638138	EPA 6010	638199
35553408005	E	EPA 3050	638138	EPA 6010	638199
35553408006	F	EPA 3050	638138	EPA 6010	638199
35553408009	I	EPA 3050	638138	EPA 6010	638199
35553408002	B	EPA 3010	638314	EPA 6010	638336
35553408002	B	EPA 3010	638935	EPA 6010	639001
35553408003	C	EPA 3010	637886	EPA 6010	638004
35553408007	G	EPA 3010	637886	EPA 6010	638004
35553408008	H	EPA 3010	637886	EPA 6010	638004
35553408002	B	EPA 7470	637758	EPA 7470	637873
35553408003	C	EPA 7470	637758	EPA 7470	637873
35553408007	G	EPA 7470	637758	EPA 7470	637873
35553408008	H	EPA 7470	637758	EPA 7470	637873
35553408001	A	EPA 7471	638177	EPA 7471	638232
35553408004	D	EPA 7471	638177	EPA 7471	638232
35553408005	E	EPA 7471	638177	EPA 7471	638232
35553408006	F	EPA 7471	638177	EPA 7471	638232
35553408009	I	EPA 7471	638177	EPA 7471	638232
35553408001	A	ASTM D2974-87	640170		
35553408004	D	ASTM D2974-87	640170		
35553408005	E	ASTM D2974-87	640170		
35553408006	F	ASTM D2974-87	640170		
35553408009	I	ASTM D2974-87	640170		
35553408002	B	SM 2540D	637461		
35553408003	C	SM 2540D	637461		
35553408007	G	SM 2540D	637461		
35553408008	H	SM 2540D	637461		
35553408001	A	SM 2540G	637537		
35553408004	D	SM 2540G	637537		
35553408005	E	SM 2540G	637537		
35553408006	F	SM 2540G	637537		
35553408009	I	SM 2540G	637537		
35553408002	B	SM 5210B	637762	SM 5210B	639140
35553408003	C	SM 5210B	637762	SM 5210B	639140
35553408007	G	SM 5210B	637762	SM 5210B	639140
35553408008	H	SM 5210B	637762	SM 5210B	639140
35553408002	B	EPA 300.0	638764		
35553408003	C	EPA 300.0	639148		
35553408007	G	EPA 300.0	638764		
35553408008	H	EPA 300.0	638765		
35553408007	G	EPA 335.4	639803	EPA 335.4	639941

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Old Digester Sludge
Pace Project No.: 35553408

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35553408008	H	EPA 335.4	639803	EPA 335.4	639941
35553408001	A	EPA 9012	643111	EPA 9012	643125
35553408004	D	EPA 9012	640300	EPA 9012	640375
35553408005	E	EPA 9012	640300	EPA 9012	640375
35553408006	F	EPA 9012	640300	EPA 9012	640375
35553408009	I	EPA 9012	643111	EPA 9012	643125
35553408001	A	EPA 9056	638592	EPA 9056	639027
35553408004	D	EPA 9056	638592	EPA 9056	639027
35553408005	E	EPA 9056	638592	EPA 9056	639027
35553408006	F	EPA 9056	638592	EPA 9056	639027
35553408009	I	EPA 9056	638592	EPA 9056	639027

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY / Analytical Request Document

WWW.PACELAS.COM

Section A

Section B

Section C

WO# : 35553408


Company: City of Clearwater- Public Utilities	Report To: Hatem Elgenaidi	Attention:
Address: 1605 Harbor Drive Clearwater, FL 33755	Copy To:	Company Name:
Email: hatem.elgenaidi@myclearwater.com	Purchase Order #:	Address:
Phone: 727-462-6664	Project Name: Old Digester Sludge	Pace Quote: *
Requested Due Date:	Project #: 7228-12	Pace Project Manager: chelsea.gagne@pacelabs.com,
		State / Location: FL

***Metals:** As,Cd,Cr,Cu,Pb,Mn,Mo,Se,Ag,Zn,Hg

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	WES PADOLI w/ DLSI
SIGNATURE of SAMPLER:	<i>[Signature]</i>
	DATE Signed: 5-29-20
TEMP in C	
Received on ice (Y/N)	
Custody Sealed Cooler (Y/N)	
Samples Intact (Y/N)	



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 13

Document Revised:
May 30, 2018
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #
Project Manager:
Client:

WO# : 35553408

PM: CLG Due Date: 06/15/20
CLIENT: 37-CITCLE

Date and Initials of person:

Examining contents: DL

Label:

Deliver:

pH:

6/1/20

Thermometer Used: Therm Date: 6/1/20 Time: 1505 Initials: MVL

State of Origin: FL

For WV projects, all containers verified to ≤ 6 °C

Cooler #1 Temp. °C 4.8 (Visual) 16.3 (Correction Factor) 5.1 (Actual)

Samples on ice, cooling process has begun

Cooler #2 Temp. °C 3.3 (Visual) 10.3 (Correction Factor) 3.6 (Actual)

Samples on ice, cooling process has begun

Cooler #3 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)

Samples on ice, cooling process has begun

Cooler #4 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)

Samples on ice, cooling process has begun

Cooler #5 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)

Samples on ice, cooling process has begun

Cooler #6 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual)

Samples on ice, cooling process has begun

Courier: Fed Ex UPS USPS Client Commercial Pace

Other _____

Shipping Method: First Overnight Priority Overnight Standard Overnight Ground

International Priority

Other _____

Billing: Recipient Sender Third Party Credit Card Unknown

Tracking # _____

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No Ice: Wet Blue Dry None

Packing Material: Bubble Wrap Bubble Bags None Other _____

Samples shorted to lab (If Yes, complete) Shorted Date: _____ Shorted Time: _____ Qty: _____

Comments:

Chain of Custody Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	samples out of hold for CBOD -CLG 6/1/20
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did not receive cyanide bottle for sample "C" -CLG 6/1/20
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	CLG 6/1/20 Preservation Information: Preservative: _____ Lot #: Trace #: _____ Date: _____ Time: _____ Initials: _____
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Headspace in VOA Vials? (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:

Person Contacted: _____

Date/Time: _____

Comments/ Resolution (use back for additional comments): Could Not Put Samples Some
Due to Matrix 14, 5, 6, 9, 12, 14, 7, 8

Unable to analyze solid samples for CBOD -CLG 6/1/20

Project Manager Review: _____

Date: _____



July 27, 2020

Ardurra Group, Inc.
Attn: Jeff Elick, Senior Engineer
4921 Memorial Highway
Suite 300
Tampa, Florida 33634

E: jelick@ardurra.com
C: 813.310.5573

Re: Report of Lead Paint & TCLP Testing
Designated Steel C-Channel Material
City of Clearwater Marshall Street Wastewater Plant
1605 Harbor Drive
Clearwater, Florida 33755
Terracon Project No: H4207264

Mr. Elick:

Terracon Consultants, Inc. (Terracon) is pleased to submit this report to Ardurra Group, Inc (Ardurra). Two samples of lead suspect paint were obtained from examples of designated steel C-channel material associated with the City of Clearwater Marshall Street Wastewater Plant. The initial sampling was performed on July 7th, 2020 by Mr. Karl Kologiski of Terracon . Paint chip samples were submitted under chain of custody to EMSL Analytical Inc. for analysis by flame atomic absorption spectrometry per EPA SW-846/3050B/7000B. EMSL is accredited under the Environmental Lead Laboratory Accreditation Program (ELLAP) (ELLAP Accreditation No. 163563).

Analytical results from the initial paint chip sampling event indicated that the two paint chip samples (1A and 2A) were above laboratory detection limits for lead. Based on the elevated lead level results in the initial paint samples, a TCLP (Toxicity Characteristic Leaching Procedure) test was performed. TCLP was developed to estimate the mobility of specific organic and inorganic contaminants in a landfill environment.

Additional paint material was obtained from the original designated steel C-channel material and submitted to EMSL for analysis for TCLP on July 15, 2020. TCLP Samples were analyzed using EPA Analytical Method 6010, Preparation Method EPA3010, and Leachate Method EPA 1311 for Lead. TCLP was developed to estimate the mobility of specific organic and inorganic contaminants in a landfill environment.

The results of the TCLP sample was 31 milligrams per liter (mg/L) which is above the EPA definition of hazardous material of 5 mg/L.

Lead in Paint & TCLP Analysis Report

Marshall Street Wastewater Plant ■ Clearwater, Florida

July 27, 2020 ■ Terracon Project No. H4207264



The initial limited paint containing lead sample and TCLP laboratory results are attached.

All data generated as a result of this sampling will remain confidential and will not be released to unauthorized person(s) without your prior consent.

Terracon appreciates the opportunity to provide this service to Ardurra . If you have any questions regarding this report, please contact Mr. Tom Holley at 813-804-7968.

Sincerely,

Terracon Consultants, Inc.

Prepared By:

A handwritten signature in black ink that reads "Karl Kologiski".

Karl Kologiski CIEC
Staff Industrial Hygienist

Reviewed By:

A handwritten signature in black ink that reads "Tom Holley".

Tom Holley CHMM, CIH, CSP
Authorized Project Reviewer



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 786-5974

<http://www.EMSL.com>

EMSL Order:	202005967
CustomerID:	TERA72
CustomerPO:	H4207264
ProjectID:	

Attn: **Karl Kologiski**
Terracon Consultants, Inc.
5463 West Waters Avenue
Suite 830
Tampa, FL 33634

Project: H4207264 Marshall St. Waste Water Treatment Plant

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 7/8/2020 11:00 AM
Collected: 7/7/2020

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	Lab ID	Collected	Analyzed	Weight	Lead Concentration
1A	202005967-0001	7/7/2020	7/10/2020	0.2639 g	2.4 % wt
		Site: I beam section			
2A	202005967-0002	7/7/2020	7/10/2020	0.2564 g	2.5 % wt
		Site: section of cut steel			

Phillip Worby, Lead Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.

Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, AIHA-LAP, LLC ELLAP 100194, A2LA 2845.01

Initial report from 07/11/2020 17:07:36

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 786-5974

<http://www.EMSL.com>

EMSL Order:	202006282
CustomerID:	TERA72
CustomerPO:	H4207264
ProjectID:	

Attn: **Karl Kologiski**
Terracon Consultants, Inc.
5463 West Waters Avenue
Suite 830
Tampa, FL 33634

Phone: (813) 626-1730
Fax: (813) 626-1452
Received: 07/16/20 10:30 AM
Collected: 7/15/2020

Project: H4207264 Marshall St. Waste Water Treatment Plant

Test Report: Toxicity Characteristic Leachate Procedure (1311/7000B)

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
1X	202006282-0001	7/15/2020	7/23/2020 Site: I Beam & Plate Steel Section	31 mg/L

Phillip Worby, Lead Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NELAP Certifications: NJ 03036, NY 10872, PA 68-00367

Initial report from 07/23/2020 17:18:56

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SECTION V

CONTRACT DOCUMENTS

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Bond No.: _____

PUBLIC CONSTRUCTION BOND

(1)

This bond is given to comply with § 255.05, Florida Statutes, and any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in subsections (2) and (10).

Pursuant to § 255.05(1)(b), Florida Statutes, “**Before commencing the work or before recommencing the work after a default or abandonment, the contractor shall provide to the public entity a certified copy of the recorded bond.** Notwithstanding the terms of the contract or any other law governing prompt payment for construction services, the public entity may not make a payment to the contractor until the contractor has complied with this paragraph.”

<u>CONTRACTOR</u>	<u>SURETY</u>	<u>OWNER</u>
[name]	[name]	City of Clearwater Engineering 100 S. Myrtle Avenue Clearwater, FL 33756 (727) 562-4750
[principal business address]	[principal business address]	
[phone number]	[phone number]	

PROJECT NAME: MARSHALL STREET WRF DIGESTER DEMOLITION**PROJECT NO.: 09-0024-UT**

PROJECT DESCRIPTION: The scope of work includes demolition and disposal of an existing anaerobic digester, adjacent, attached heat exchanger building, hazardous materials, related mechanical and electrical equipment and associated liquids and solids in the digester.

BY THIS BOND, We, _____, as Contractor, and _____, a corporation, as Surety, are bound to the City of Clearwater, Florida, herein called Owner, in the sum of \$[x,xxx,xxx.xx], for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Contractor:

1. Performs the contract dated _____, between Contractor and Owner for construction of Marshall Street WRF Digester Demolition, the contract documents being made a part of this bond by reference (which include the Advertisement for Bids, Proposal, Contract, Surety Bond, Instructions to Bidders, General Conditions, Plans, Technical Specifications and Appendix, and such alterations as may be made in said Plans and Specifications as therein provided for), at the times and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Contractor with labor, materials, or supplies, used directly or indirectly by Contractor in the prosecution of the work provided for in the contract; and

Bond No.: _____

PUBLIC CONSTRUCTION BOND
(2)

3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Contractor under the contract; and
4. To the limits of § 725.06(2), Florida Statutes, shall indemnify and hold harmless Owner, their officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of Contractor and persons employed or utilized by Contractor in the performance of the construction contract; and
5. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.
6. Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.
7. Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond, and Surety does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN TESTIMONY WHEREOF, witness the hands and seals of the parties hereto this _____ day of _____, 20___.

(If sole Ownership or Partnership, two (2) Witnesses required).

(If Corporation, Secretary only will attest and affix seal).

[TYPE LEGAL NAME OF CONTRACTOR]

By: _____
 Title: _____
 Print Name: _____

WITNESS:

 Corporate Secretary or Witness
 Print Name: _____

(affix corporate seal)

 Print Name: _____

(Corporate Surety)

By: _____
 ATTORNEY-IN-FACT
 Print Name: _____

(affix corporate seal)

(Power of Attorney must be attached)

CONTRACT

(1)

This **CONTRACT** made and entered into this ____ day of _____, 20____ by and between the City of Clearwater, Florida, a municipal corporation, hereinafter designated as the "City", and _____, of the City of _____ County of _____ and State of Florida, hereinafter designated as the "Contractor".

[Or, if out of state:]

This **CONTRACT** made and entered into this ____ day of _____, 20____ by and between the City of Clearwater, Florida, a municipal corporation, hereinafter designated as the "City", and _____, a/an _____ (State) Corporation authorized to do business in the State of Florida, of the City of _____ County of _____ and State of _____, hereinafter designated as the "Contractor".

WITNESSETH:

That the parties to this contract each in consideration of the undertakings, promises and agreements on the part of the other herein contained, do hereby undertake, promise and agree as follows:

The Contractor, and his or its successors, assigns, executors or administrators, in consideration of the sums of money as herein after set forth to be paid by the City and to the Contractor, shall and will at their own cost and expense perform all labor, furnish all materials, tools and equipment for the following:

PROJECT NAME: MARSHALL STREET WRF DIGESTER DEMOLITION

PROJECT NO.: 09-0024-UT

in the amount of \$_____

In accordance with such proposal and technical supplemental specifications and such other special provisions and drawings, if any, which will be submitted by the City, together with any advertisement, instructions to bidders, general conditions, technical specifications, proposal and bond, which may be hereto attached, and any drawings if any, which may be herein referred to, are hereby made a part of this contract, and all of said work to be performed and completed by the contractor and its successors and assigns shall be fully completed in a good and workmanlike manner to the satisfaction of the City.

If the Contractor should fail to comply with any of the terms, conditions, provisions or stipulations as contained herein within the time specified for completion of the work to be performed by the Contractor, then the City, may at its option, avail itself of any or all remedies provided on its behalf and shall have the right to proceed to complete such work as Contractor is obligated to perform in accordance with the provisions as contained herein.

CONTRACT

(2)

THE CONTRACTOR AND HIS OR ITS SUCCESSORS AND ASSIGNS DOES HEREBY AGREE TO ASSUME THE DEFENSE OF ANY LEGAL ACTION WHICH MAY BE BROUGHT AGAINST THE CITY AS A RESULT OF THE CONTRACTOR'S ACTIVITIES ARISING OUT OF THIS CONTRACT AND FURTHERMORE, IN CONSIDERATION OF THE TERMS, STIPULATIONS AND CONDITIONS AS CONTAINED HEREIN, AGREES TO HOLD THE CITY FREE AND HARMLESS FROM ANY AND ALL CLAIMS FOR DAMAGES, COSTS OF SUITS, JUDGMENTS OR DECREES RESULTING FROM ANY CLAIMS MADE UNDER THIS CONTRACT AGAINST THE CITY OR THE CONTRACTOR OR THE CONTRACTOR'S SUB CONTRACTORS, AGENTS, SERVANTS OR EMPLOYEES RESULTING FROM ACTIVITIES BY THE AFOREMENTIONED CONTRACTOR, SUB CONTRACTOR, AGENT SERVANTS OR EMPLOYEES, TO THE LIMITS OF § 725.06(2).

In addition to the foregoing provisions, the Contractor agrees to conform to the following requirements:

In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, sex, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; lay off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees or applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non-discrimination clause.

The Contractor further agrees to insert the foregoing provisions in all contracts hereunder, including contracts or agreements with labor unions and/or worker's representatives, except sub-contractors for standard commercial supplies or raw materials.

It is mutually agreed between the parties hereto that time is of the essence of this contract, and in the event that the work to be performed by the Contractor is not completed within the time stipulated herein, it is then further agreed that the City may deduct from such sums or compensation as may be due to the Contractor the sum of **\$1,000.00 per day** for each day that the work to be performed by the Contractor remains incomplete beyond the time limit specified herein, which sum of **\$1,000.00 per day** shall only and solely represent damages which the City has sustained by reason of the failure of the Contractor to complete the work within the time stipulated, it being further agreed that this sum is not to be construed as a penalty but is only to be construed as liquidated damages for failure of the Contractor to complete and perform all work within the time period as specified in this contract.

It is further mutually agreed between the City and the Contractor that if, any time after the execution of this contract and the public construction bond which is attached hereto for the faithful performance of the terms and conditions as contained herein by the Contractor, that the City shall at any time deem the surety or sureties upon such public construction bond to be unsatisfactory or if, for any reason, the said bond ceases to be adequate in amount to cover the performance of the work the Contractor shall, at his or its own expense, within ten (10) days after receipt of written notice from the City to do so, furnish an additional bond or bonds in such term and amounts and with such surety or sureties as shall be satisfactory to the City. If such an event occurs, no further payment shall be made to the Contractor under the terms and provisions of this contract until such new or additional security bond guaranteeing the faithful performance of the work under the terms hereof shall be completed and furnished to the City in a form satisfactory to it.

CONTRACT

(3)

In addition to all other contract requirements as provided by law, the contractor executing this agreement agrees to comply with public records law.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, THE CONTRACTORS DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT. CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT 727-562-4092, Rosemarie.Call@myclearwater.com, 600 Cleveland St. Clearwater, FL 33756

The contractor's agreement to comply with public records law applies specifically to:

- a) Keep and maintain public records required by the City of Clearwater (hereinafter “public agency”) to perform the service being provided by the contractor hereunder.
- b) Upon request from the public agency’s custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided for in Chapter 119, Florida Statutes, as may be amended from time to time, or as otherwise provided by law.
- c) Ensure that the public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the records to the public agency.
- d) Upon completion of the contract, transfer, at no cost, to the public agency all public records in possession of the contractor or keep and maintain public records required by the public agency to perform the service. If the contractor transfers all public records to the public agency upon completion of the contract, the contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the contractor keeps and maintains public records upon completion of the contract, the contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the public agency, upon request from the public agency’s custodian of public records, in a format that is compatible with the information technology systems of the public agency.
- e) A request to inspect or copy public records relating to a public agency’s contract for services must be made directly to the public agency. If the public agency does not possess the requested records, the public agency shall immediately notify the contractor of the request and the contractor must provide the records to the public agency or allow the records to be inspected or copied within a reasonable time.
- f) The contractor hereby acknowledges and agrees that if the contractor does not comply with the public agency’s request for records, the public agency shall enforce the contract provisions in accordance with the contract.
- g) A contractor who fails to provide the public records to the public agency within a reasonable time may be subject to penalties under Section 119.10, Florida Statutes.
- h) If a civil action is filed against a contractor to compel production of public records relating to a public agency’s contract for services, the court shall assess and award against the contractor the reasonable costs of enforcement, including reasonable attorney fees, if:
 1. The court determines that the contractor unlawfully refused to comply with the public records request within a reasonable time; and

CONTRACT

(4)

2. At least 8 business days before filing the action, the plaintiff provided written notice of the public records request, including a statement that the contractor has not complied with the request, to the public agency and to the contractor.
- i) A notice complies with subparagraph (h)2. if it is sent to the public agency's custodian of public records and to the contractor at the contractor's address listed on its contract with the public agency or to the contractor's registered agent. Such notices must be sent by common carrier delivery service or by registered, Global Express Guaranteed, or certified mail, with postage or shipping paid by the sender and with evidence of delivery, which may be in an electronic format.
 - j) A contractor who complies with a public records request within 8 business days after the notice is sent is not liable for the reasonable costs of enforcement.

IN WITNESS WHEREOF, the parties to the agreement have hereunto set their hands and seals and have executed this Agreement, the day and year first above written.

**CITY OF CLEARWATER
IN PINELLAS COUNTY, FLORIDA**

By: _____ (SEAL)
 William B. Horne, II
 City Manager

Attest:

Countersigned: _____
 Rosemarie Call
 City Clerk

By: _____ Approved as to form:
 Frank Hibbard
 Mayor

Owen Kohler
 Assistant City Attorney

Contractor must indicate whether:
 Corporation, Partnership, Company, or Individual

_____ (Contractor)

By: _____ (SEAL)
 Print Name: _____
 Title: _____

The person signing shall, in his own handwriting, sign the Principal's name, his own name, and his title; where the person is signing for a Corporation, he must, by Affidavit, show his authority to bind the Corporation – **provide Affidavit**.

CONSENT OF SURETY TO FINAL PAYMENT

TO OWNER: City of Clearwater PROJECT NAME: Marshall Street WRF Digester Demolition
Engineering PROJECT NO.: 09-0024-UT
100 S. Myrtle Ave. CONTRACT DATE: [REDACTED]
Clearwater, FL 33756 BOND NO.: [REDACTED], recorded in O.R. Book [REDACTED],
Page [REDACTED], of the Public Records of Pinellas County, Florida.

CONTRACTOR: [REDACTED]

Pursuant to § 255.05(11), Florida Statutes, and in accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the:

[insert name of Surety]
[address]
[address]

,SURETY,

on bond of

[insert name of Contractor]
[address]
[address]

,CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve Surety of any of its obligations to

City of Clearwater
Engineering
100 S. Myrtle Ave.
Clearwater, FL 33756 ,OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand this ____ day of _____, _____

(Surety)

(Signature of authorized representative)

(Printed name and title)

Attest:
(Seal):

PROPOSAL/BID BOND

(Not to be filled out if a certified check is submitted)

KNOWN ALL MEN BY THESE PRESENTS: That we, the undersigned, _____

_____ as Contractor, and _____
_____ as Surety, whose address is _____

_____, are held and firmly bound unto the City
of Clearwater, Florida, in the sum of _____ Dollars
(\$_____) (being a minimum of 10% of Contractor's total bid amount) for the payment of which,
well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors,
administrators, successors and assigns.

The condition of the above obligation is such that if the attached Proposal of _____

_____ as Contractor, and _____ as Surety, for
work specified as: _____

all as stipulated in said Proposal, by doing all work incidental thereto, in accordance with the plans and
specifications provided herefor, all within Pinellas County, is accepted and the contract awarded to the
above named bidder, and the said bidder shall within ten days after notice of said award enter into a contract,
in writing, and furnish the required Public Construction Bond with surety or sureties to be approved by the
City Manager, this obligation shall be void, otherwise the same shall be in full force and virtue by law and
the full amount of this Proposal/Bid Bond will be paid to the City as stipulated or liquidated damages.

Principal must indicate whether:

Corporation, Partnership, Company, or Individual

Signed this _____ day of _____, 20____.

Contractor

Principal

By: _____
Title

Surety

The person signing shall, in his own handwriting, sign the Principal's name, his own name, and his title;
where the person is signing for a Corporation, he must, by Affidavit, show his authority to bind the
Corporation – **provide Affidavit**.

AFFIDAVIT

(To be filled in and executed if the bidder is a corporation)

STATE OF FLORIDA

COUNTY OF _____)

_____, being duly sworn, deposes and says that he/she is
Secretary of _____
a corporation organized and existing under and by virtue of the laws of the State of Florida, and having its
principal office at:

(Street & Number) _____ (City) _____ (County) _____ (State) _____

(City)

(County)

(State)

Affiant further says that he is familiar with the records, minute books and by-laws of

(Name of Corporation)

Affiant further says that _____ is _____
(Officer's Name) (Title)

of the corporation, is duly authorized to sign the Proposal for _____

or said corporation by virtue of _____

(state whether a provision of by laws or a Resolution of Board of Directors. If by Resolution give date of adoption).

Affiant

Sworn to before me this _____ day of _____, 20____.

Notary Public

Type/print/stamp name of Notary

Title or rank, and Serial No., if any

NON-COLLUSION AFFIDAVIT

STATE OF FLORIDA)
COUNTY OF _____)

_____ being, first duly sworn, deposes and says that he is

_____ of _____, the party making the foregoing Proposal or Bid; that such Bid is genuine and not collusive or sham; that said bidder is not financially interested in or otherwise affiliated in a business way with any other bidder on the same contract; that said bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidders or person, to put in a sham bid or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or that of any other bidder, or to secure any advantage against the City of Clearwater, Florida, or any person or persons interested in the proposed contract; and that all statements contained in said proposal or bid are true; and further, that such bidder has not directly or indirectly submitted this bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

Affiant

Sworn to and subscribed before me this _____ day of _____, 20____.

Notary Public

PROPOSAL

(1)

TO THE CITY OF CLEARWATER, FLORIDA, for

MARSHALL STREET WRF DIGESTER DEMOLITION, PROJECT #09-0024-UT

and doing such other work incidental thereto, all in accordance with the contract documents, marked

MARSHALL STREET WRF DIGESTER DEMOLITION, PROJECT #09-0024-UT

Every bidder must take notice of the fact that even though his proposal be accepted and the documents signed by the bidder to whom an award is made and by those officials authorized to do so on behalf of the City of Clearwater, Florida, that no such award or signing shall be considered a binding contract without a certificate from the Finance Director that funds are available to cover the cost of the work to be done, or without the approval of the City Attorney as to the form and legality of the contract and all the pertinent documents relating thereto having been approved by said City Attorney; and such bidder is hereby charged with this notice.

The signer of the Proposal, as bidder, also declares that the only person, persons, company or parties interested in this Proposal, are named in this Proposal, that he has carefully examined the Advertisement, Instructions to Bidders, Contract Specifications, Plans, Supplemental Specifications, General Conditions, Special Provisions, and Public Construction Bond, that he or his representative has made such investigation as is necessary to determine the character and extent of the work and he proposes and agrees that if the Proposal be accepted, he will contract with the City of Clearwater, Florida, in the form of contract; hereto annexed, to provide the necessary labor, materials, machinery, equipment, tools or apparatus, do all the work required to complete the contract within the time mentioned in the General Conditions and according to the requirements of the City of Clearwater, Florida, as herein and hereinafter set forth, and furnish the required surety bonds for the following prices to wit:

If the foregoing Proposal shall be accepted by the City of Clearwater, Florida, and the undersigned shall fail to execute a satisfactory contract as stated in the Advertisement herein attached, then the City may, at its option determine that the undersigned has abandoned the contract, and thereupon this Proposal shall be null and void, and the certified check or bond accompanying this Proposal, shall be forfeited to become the property of the City of Clearwater, Florida, and the full amount of said check shall be retained by the City, or if the Proposal Bond be given, the full amount of such bond shall be paid to the City as stipulated or liquidated damages; otherwise, the bond or certified check accompanying this Proposal, or the amount of said check, shall be returned to the undersigned as specified herein.

PROPOSAL

(2)

Attached hereto is a bond or certified check on _____
_____, Bank, for the sum of _____
_____ (\$_____)
(being a minimum of 10% of Contractor's total bid amount).

The full names and residences of all persons and parties interested in the foregoing bid are as follows:

(If corporation, give the names and addresses of the President and Secretary. If firm or partnership, the names and addresses of the members or partners. The Bidder shall list not only his name but also the name of any person with whom bidder has any type of agreement whereby such person's improvements, enrichment, employment or possible benefit, whether sub-contractor, materialman, agent, supplier, or employer is contingent upon the award of the contract to the bidder).

NAMES:

ADDRESSES:

Signature of Bidder: _____

The person signing shall, in his own handwriting, sign the Principal's name, his own name and his title. Where the person signing for a corporation is other than the President or Vice President, he must, by affidavit, show his authority, to bind the corporation.

Principal: _____

By: _____ Title: _____

Company Legal Name: _____

Doing Business As (if different than above): _____

Business Address of Bidder: _____

City and State: _____ Zip Code _____

Phone: _____ Email Address: _____

Dated at _____, this _____ day of _____, A.D., 20__.

CITY OF CLEARWATER
ADDENDUM SHEET

PROJECT: MARSHALL STREET WRF DIGESTER DEMOLITION, PROJECT #09-0024-UT

Acknowledgment is hereby made of the following addenda received since issuance of Plans and Specifications.

Addendum No. _____ Date: _____

(Name of Bidder)

(Signature of Officer)

(Title of Officer)

(Date)

BIDDER'S PROPOSAL**PROJECT: MARSHALL STREET WRF DIGESTER DEMOLITION, PROJECT #09-0024-UT****CONTRACTOR:** _____**BIDDER'S GRAND TOTAL:** \$ _____ (Numbers)**BIDDER'S GRAND TOTAL:** _____

_____ (Words)

BID ITEMS		QTY	UNIT	UNIT PRICE	TOTAL
1	Mobilization (Not to Exceed 4% of Sub-Total Items 1-9)	1	LS	\$	\$
2	Not Used			\$	\$
3	Remove, Haul Off-Site, and Dispose of All Liquids and Solid Materials in the Digester	1	LS	\$	\$
4	Demolish, Haul Off-Site, and Dispose of Hazardous Materials	1	LS	\$	\$
5	Demolish, Remove and Dispose of Nonhazardous Materials	1200	TON	\$	\$
6	Excavate and Survey Foundation Piles	1	LS	\$	\$
7	Import and Place Structural Fill Materials	3,600	CYD	\$	\$
8	Miscellaneous Work and Site Restoration	1	LS	\$	\$
9	Indemnification	1	LS	\$100.00	\$100.00
Sub-Total Digester Demolition (Items 1-9)					
10	10% Contingency Allowance			\$	\$
BID GRAND TOTAL (ITEMS 1-10)					\$

THE BIDDER'S GRAND TOTAL ABOVE IS HIS TOTAL BID BASED ON HIS UNIT PRICES AND LUMP SUM PRICES AND THE ESTIMATED QUANTITIES REQUIRED FOR EACH SECTION. THIS FIGURE IS FOR INFORMATION ONLY AT THE TIME OF OPENING BIDS. THE CITY WILL MAKE THE TABULATION FROM THE UNIT PRICES AND LUMP SUM PRICE BID. IF THERE IS AN ERROR IN THE TOTAL BY THE BIDDER, IT SHALL BE CHANGED AS ONLY THE UNIT PRICES AND LUMP SUM PRICE SHALL GOVERN.

THE CONTRACTOR SHALL PROVIDE COPIES OF A CURRENT CONTRACTOR LICENSE/REGISTRATION WITH THE STATE OF FLORIDA AND PINELLAS COUNTY IN THE BID RESPONSE.

**SCRUTINIZED COMPANIES AND BUSINESS OPERATIONS WITH
CUBA AND SYRIA CERTIFICATION FORM**

***PER SECTION III, ITEM 25, IF YOUR BID IS \$1,000,000 OR MORE, THIS FORM MUST BE
COMPLETED AND SUBMITTED WITH THE BID PROPOSAL. FAILURE TO SUBMIT THIS
FORM AS REQUIRED, MAY DEEM YOUR SUBMITTAL NONRESPONSIVE.***

The affiant, by virtue of the signature below, certifies that:

1. The vendor, company, individual, principal, subsidiary, affiliate, or owner is aware of the requirements of section 287.135, Florida Statutes, regarding companies on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaging in business operations in Cuba and Syria; and
2. The vendor, company, individual, principal, subsidiary, affiliate, or owner is eligible to participate in this solicitation and is not listed on either the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Sector List, or engaged in business operations in Cuba and Syria; and
3. Business Operations means, for purposes specifically related to Cuba or Syria, engaging in commerce in any form in Cuba or Syria, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing or operating equipment, facilities, personnel, products, services, personal property, real property, military equipment, or any other apparatus of business or commerce; and
4. If awarded the Contract (or Agreement), the vendor, company, individual, principal, subsidiary, affiliate, or owner will immediately notify the City of Clearwater in writing, no later than five (5) calendar days after any of its principals are placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Sector List, or engages in business operations in Cuba and Syria.

Authorized Signature

Printed Name

Title

Name of Entity/Corporation

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me on this _____ day of _____, 20____, by _____ (name of person whose signature is being notarized) as the _____ (title) of _____ (name of corporation/entity), personally known to me as described herein _____, or produced a _____ (type of identification) as identification, and who did/did not take an oath.

Notary Public

Printed Name

My Commission Expires: _____
NOTARY SEAL ABOVE

SCRUTINIZED COMPANIES THAT BOYCOTT ISRAEL LIST
CERTIFICATION FORM

PER SECTION III, ITEM 25, THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE BID PROPOSAL. FAILURE TO SUBMIT THIS FORM AS REQUIRED, MAY DEEM YOUR SUBMITTAL NONRESPONSIVE.

The affiant, by virtue of the signature below, certifies that:

1. The vendor, company, individual, principal, subsidiary, affiliate, or owner is aware of the requirements of section 287.135, Florida Statutes, regarding companies on the Scrutinized Companies that Boycott Israel List, or engaged in a boycott of Israel; and
2. The vendor, company, individual, principal, subsidiary, affiliate, or owner is eligible to participate in this solicitation and is not listed on the Scrutinized Companies that Boycott Israel List, or engaged in a boycott of Israel; and
3. “Boycott Israel” or “boycott of Israel” means refusing to deal, terminating business activities, or taking other actions to limit commercial relations with Israel, or persons or entities doing business in Israel or in Israeli-controlled territories, in a discriminatory manner. A statement by a company that it is participating in a boycott of Israel, or that it has initiated a boycott in response to a request for a boycott of Israel or in compliance with, or in furtherance of, calls for a boycott of Israel, may be considered as evidence that a company is participating in a boycott of Israel; and
4. If awarded the Contract (or Agreement), the vendor, company, individual, principal, subsidiary, affiliate, or owner will immediately notify the City of Clearwater in writing, no later than five (5) calendar days after any of its principals are placed on the Scrutinized Companies that Boycott Israel List, or engaged in a boycott of Israel.

Authorized Signature

Printed Name

Title

Name of Entity/Corporation

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me on this _____ day of _____, 20____, by _____ (name of person whose signature is being notarized) as the _____ (title) of _____ (name of corporation/entity), personally known to me as described herein _____, or produced a _____ (type of identification) as identification, and who did/did not take an oath.

Notary Public

Printed Name

My Commission Expires: _____
NOTARY SEAL ABOVE