This Contract No. 2023-40.003 ("Contract") is entered into by and between the City of North Port, Florida, a municipal corporation of the State of Florida ("City") and Miller Pipeline, LLC, an Indiana Limited Liability Corporation, registered to do business in the State of Florida, whose principal place of business is 8850 Crawfordsville Rd., Indianapolis, Indiana, 46234 ("Contractor").

WITNESSETH

NOW THEREFORE, in consideration of the mutual covenants contained herein and for other good and valuable consideration, the sufficiency and receipt of which are acknowledged, the parties agree as follows:

1. CONTRACT TERM.

A. Time is of the essence in the performance of this Contract. The term of this Contract is from the effective date of award through and including September 30, 2026. This Contract may be renewed for up to three (3) additional one-year terms upon mutual written agreement of the Parties, entered into by the Parties not more than one-hundred and twenty (120) days and not less than thirty (30) days from the expiration of the term. The time of completion set for a Work Assignment will be determined at the time the Work Assignment is executed.

B. The Contractor agrees that no work will begin prior to the start of the term provide by the Work Assignment. All work must be performed to the specification provided in the Work Assignment and must continue until reaching Substantial Completion.

C. Substantial Completion will be defined within the time frame specified in each individual Work Assignment; and will include at least an additional 30 calendar days for the Contractor to reach Final Acceptance. The only acceptable delays are those caused through no fault of the Contractor or by unforeseeable acts of nature.

D. Process for Completion.

(1) Delivery of Documents Prior to Substantial Completion. Fourteen (14) calendar days prior to the expiration of the time for substantial completion, the Contractor must deliver to the City the record drawings and all other submittals required in the Contract. After delivery, the City will review the work identified in the Contract, the record drawings, and other submittals, excluding pay requests.

(2) Notice. The City must issue a written notice of substantial completion when the City has determined that the work identified in this Contract is substantially complete, and the record drawings are submitted and approved by the City.

(3) Punch List.

(a) Process and Costs for Punch List; Contractor's Response. The City will deliver to the Contractor within twenty (20) calendar days after delivering the notice of substantial completion, a punch list with costs consistent with RFB ("Punch List"), and any related questions. If the costs for any work on the punch list is not included in the RFB then the costs will be negotiated and determined by mutual agreement of the parties. The Punch List must include each remaining item required and the costs to render the construction services complete, satisfactory, and acceptable to the City and for the Contractor to meet its obligations under this Contract. The Contractor must deliver a response to all questions within five (5) calendar days after receipt. The City will deliver the completed Punch List within five (5) calendar days after receiving the Contractor's response.

(b) Timing. The City will develop the punch list within thirty (30) calendar days after delivering the notice of substantial completion.

(c) Notice of Noncompliance. The City must give the Contractor written notice of its failure to comply with the requirements for development of the Punch List as provided in this Contract.

(4) Final Completion. The Contractor must complete the items on the Punch List to the satisfaction of the City within the Contract Time and prior to submittal of the application for reduction of retainage or final payment.

2. CONTRACT AMOUNT AND WORK ASSIGNMENT PRICE.

A. Contractor understands that this is a nonexclusive contract, and the City may award more than one contract for this project as outlined in the Contract specifications. The cumulative total for all work assignments issued under each contract must not exceed the Contract amount indicated below as selected for this Contract.

B. The Contract amount for all Work Assignments must not exceed the budgeted amount per fiscal year.

C. In consideration of the work, labor, services, and materials to be furnished by the Contractor, and in accordance with the agreed upon plans and specifications, the City agrees to pay Contractor, upon the completion and acceptance thereof by the City. The total Contract amount for all Work Assignments set forth above is an estimate based upon anticipated Work Assignments for all applicable contracts. However, the Contractor understands and acknowledges that no minimum amount of work is guaranteed under this Contract.

D. The Contract amount set forth herein is an estimate based upon anticipated Work Assignments. However, the Contractor understands and acknowledges that no minimum amount of work is guaranteed under this Contract.

3. CONTRACT DOCUMENTS.

A. Scope and Incorporation of Bid Documents. The work includes inflow and infiltration rehabilitation as described in the Request for Bid No. 2023-40 ("RFB"), including plans, drawings, specifications, addenda, permits, diagrams, and other related documents, as well as the Contractor's response to the RFB (collectively, "Contract Documents"). The Contract Documents are specifically made a part of this Contract and are incorporated by reference. If a conflict exists between or among the documents or any ambiguity or missing specifications or instruction, the following priority is established:

(1) This Contract and all attachments and exhibits.

(2) The RFB, including all attachments and addenda.

(3) The Contractor's response to the solicitation.

(4) Specific direction from the City Manager or designee.

4. THE CONTRACTOR'S RESPONSIBILITIES.

A. Supervision.

(1) The Contractor must supervise and direct all work performed to the best of its ability, give the work all the attention necessary for proper supervision and direction, and only employ workers with sufficient skill to perform the job assigned.

(2) The Contractor assumes full responsibility for all acts, negligence, or omissions of its employees, for those subcontractors and their employees, and for those of all other persons doing work under a contract with the Contractor in furtherance of this Contract.

B. Labor and Materials.

(1) The Contractor must provide and pay for all labor, materials, and equipment, including tools, construction equipment, and machinery, as well as all transportation and all other facilities and services necessary for the proper completion of the work in strict conformity with the provisions of this Contract and the Contract Documents.

(2) The Contractor represents and warrants that all equipment and materials used in the work and made a part of the structures or permanently placed in connection with the work, must be new unless otherwise specified in this Contract or Contract Documents, must be of good quality, free of defects, and in conformity with this Contract and related Contract Documents. The Contractor and the City agree that all equipment and materials not in conformity with this Contract are defective.

C. Public Records Law. In accordance with Florida Statutes Section 119.0701, the Contractor must comply with all public records laws, and must specifically:

(1) Keep and maintain public records required by the City to perform the service.

(a) The timeframes and classifications for records retention requirements must be in accordance with the General Records Schedule GS1-SL for State and Local Government Agencies.
(*See* http://dos.state.fl.us/library-archives/records-management/general-records-schedules/)

(b) "Public records" means and includes those items specified in Florida Statutes Section 119.011(12), as amended from time to time, and currently defined as: All documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, or other material, regardless of the physical form, characteristics, or means of transmission, made, or received pursuant to law or ordinance or in connection with the transaction of official business with the City. The Contractor's records under this Contract include but are not limited to, supplier/subcontractor invoices and contracts, project documents, meeting notes, e-mails and all other documentation generated during the term and in furtherance of this Contract.

(2) Upon request from the City's custodian of public records, provide the City, at no cost, 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 by law. All records kept electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

(3) Ensure that project 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 if the Contractor does not transfer the records to the City following completion of the Contract, the Contractor must maintain the project records for the time specified in General Records Schedule GS1-SL for State and Local Government Agencies.

(4) Upon completion of the Contract, transfer, at no cost to the City, all public records in the Contractor's possession or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the Contract, the Contractor must 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 the completion of the Contract, the Contractor must comply with all applicable requirements for retaining public records.

(5) **IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF FLORIDA STATUTES CHAPTER 119 TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: CITY CLERK, 4970 CITY HALL**

BOULEVARD, NORTH PORT, FLORIDA 34286, 941.429.7063 OR HOTLINE 941.429.7270, publicrecordsrequest@northportfl.gov.

(6) Failure of the Contractor to comply with these requirements constitutes a breach of this Contract. Further, the Contractor may be subject to penalties under Florida Statutes Section 119.10.

D. Contractor's Affidavit. When all work contemplated by this Contract has been completed and has been inspected and approved by the City or its authorized agent, the Contractor must furnish the City with a Contractor's Affidavit in a form acceptable to the City. Signed affidavits of payment are required from all subcontractors hired by the Contractor, unless payment is approved by the surety in accordance with Florida Statutes Section 255.05(11). The affidavits must state whether the subcontractor(s) have been paid in full or whether there are payments remaining. A list of all subcontractors must be furnished to the City prior to any payments against the Contract.

E. Subcontractors and Suppliers. All contracts between the Contractor and any subcontractor that the Contractor hires must conform to the provisions of this Contract and the Contract Documents. The Contractor must incorporate the requirements of this Contract in the subcontracts. The Contractor must furnish the City with a list of all subcontractors and suppliers prior to any payments against the Contract. All subcontractors are subject to the City's approval. No change in subcontractors or suppliers will be made without written consent and approval from the City. All subcontractors must comply with Florida Statutes Section 448.095 for registration and use of the E-Verify system operated by the United States Department of Homeland Security.

F. Licenses and Permits. The Contractor must pay all taxes required by law in connection with the activities done in furtherance of this Contract including sales, use, and similar taxes, and unless otherwise mutually agreed to in writing, must secure all licenses and permits necessary for proper completion of the work, and pay any related fees.

G. Laws and Regulations. Violation of any local, state, or federal law in the performance of this Contract constitutes a breach of this Contract. The Contractor must comply with all laws, ordinances, rules, regulations, and orders of all public authorities relating to the performance of the work required. If any of the Contract documents are at variance with any law or regulation, the Contractor must notify the City promptly upon discovery.

H. E-Verify System. During the term of this Contract, the Contractor must be registered with and use the Department of Homeland Security E-Verify System as required by Florida Statutes Section 448.095, Employment Eligibility, including but not limited to verifying the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor must maintain a copy of the affidavit for the duration of the Contract.

5. PAYMENT.

A. Payment Requests. The Contractor must use a City approved form for all payment requests, along with an updated work schedule reflecting the progress of all work. Payment requests must be accompanied by either written approval and direction of the surety, or receipt of updated affidavits of payment by subcontractors and/or suppliers, in accordance with Florida Statutes Section 255.05(11). The Contractor's payment request must include any changes approved in previous payment requests.

B. Payment. The Contract Price is net, and all payment requests are payable according to the Florida Local Government Prompt Payment Act (Florida Statutes Section 218.70, *et seq.*). The City or its authorized agent will make payment to the Contractor for all services or work completed or materials furnished in accordance with this Contract only upon certification and approval of the payment request.

C. Timing of Payments; Retainage. The City will not make payments to the Contractor more frequently than monthly. Payment must be based on the total value of the work completed and accepted during the preceding month, less five percent (5%) retainage. Notwithstanding any other section of this Contract, within twenty (20) business days after delivery of the completed Punch List, the City must pay to the Contractor the remaining Contract Price less one-hundred and fifty percent (150%) of the estimated cost to complete the items on the Punch List. The City must inform the Contractor's surety of any reduction in retainage. Retainage may be reduced upon issuance of the Certificate of substantial completion by the City if, in the sole opinion of the City, sufficient progress on the schedule has been accomplished, all required affidavits have been provided, and the City has retained adequate coverage for the project through the achievement of Final Completion.

D. Improper Payment Request. The City will determine any dispute between the Contractor and the City concerning a payment request pursuant to the City's dispute resolution procedure. The City will pay the undisputed remaining balance of the payment request within twenty (20) business days after receipt of the payment request.

E. Payment Not Required. The City is not obligated:

(1) For the payment or release of any amounts that are the subject of a good faith dispute made in writing and delivered to the Contractor.

(2) For processing or paying retainage, if the City has notified the Contractor in writing of its failure regarding the development of the Punch List or any contractual responsibilities regarding the Punch List or a claim relating to the bond.

F. Final Payment. The Contractor's submittal for final payment must include the Contractor affidavit, final waiver, and release of lien for all subcontractors, materialmen and suppliers, warranty of work, and consent of surety in the forms acceptable to the City. The City's or its authorized agent's approval is required before making final payment for all work, materials, or services furnished under this Contract.

6. WORK ASSIGNMENTS:

A. Upon completion and approval by the City of Work Assignments lasting less than 90-days in duration and which cost less than $100,000.00, monthly payments may be made to the Contractor upon application for all services or work completed or materials furnished in accordance with the Work Assignment.

B. Upon the City's certification and approval of Work Assignments lasting more than 90-days in duration and which cost less than $100,000.00, monthly payments may be made to the Contractor upon application for all services or work completed or materials furnished in accordance with the Contract. Prior to completion, monthly payments must not exceed eighty percent (80%) of the value of the materials furnished or services and work completed up to the time of application for payment. The Contractor must update each new request in accordance with any changes made to the previous submittal. Final payment will be made after approval by the City, of all work, materials or services required under the Work Assignment.

C. Upon certification and approval by the City of Work Assignments valued at more than $100,000.00, monthly payments may be made to the Contractor upon application for all services or work completed or materials furnished in accordance with the Contract. The Contractor must submit the application for payment as further described by the Work Assignment, and in a form satisfactory with the City of North Port. Prior to substantial completion, monthly payments will be made on the value of materials furnished or services and work completed up to the time of application for payment. Retainage must be in accordance with Florida Statutes, section 255.078, and may be reduced upon the City's issuance of the Certificate of Substantial Completion if, in the sole opinion of the City, sufficient progress on the schedule has been accomplished, all Notices of Lien have been resolved, and the County has retained adequate retainage for the final completion of the project and all estimated liquidated damages. The City will inform the Contractor's surety of any reduction in retainage. Contractor must update each new application for payment in accordance with any changes made to the previous application.

D. Final payment will be made after the City's approval of all work, materials or services required under this Contract.

(1) Contractor must submit Applications for payment monthly and payment will be due on the anniversary date of the Notice to Proceed, except as otherwise required in this Contract.

(2) Except in the case of an application for final payment, applications for payment of less than $200.00 will not be accepted or processed.

7. LIQUIDATED DAMAGES.

A. Generally. The work performed must be completed within the Contract Time.

B. Amount. The City and the Contractor agree that the City will suffer damages if the work is not substantially completed within the Contract Time, plus any extensions allowed by Change Order(s). The parties further agree determining the exact value of the City's damages due to a

delay in the substantial completion of the work would be a difficult, time consuming, and costly process. The parties agree that it is in their mutual interest to establish a figure at time of issuing a work assignment for liquidated damages (but not as a penalty) to be paid by the Contractor to the City for each calendar day that substantial completion is delayed beyond the Contract Time.

C. Adjustments prohibited. The parties agree that neither will make any claim to increase or reduce the amount to be paid under liquidated damages as the result of any calculation of actual damages the City suffered as the result of delay in the substantial completion of the work.

8. BOND REQUIREMENTS.

A. **Bond Requirements:** The Contractor must provide the required performance and payment bond or other acceptable security to the City within **ten (10) business days of being awarded the work assignment. Failure by the Contractor to provide the bond within ten (10) business days will be considered a default under Sec. 2-404 of the Code of the City of North Port.** Upon such default the City may immediately award the bid to the next lowest responsive and responsible bidder and recover from the original successful bidder the difference in cost between the original winning bid and the next lowest responsive and responsible bidder. Such default will only be curable at the option of the City.

B. Performance and Payment Bond. The Contractor must furnish the receipt of the recording and certified copy of the bond to the Purchasing Department at the time of the pre-construction meeting for the work assignment. The Contractor's failure to provide the receipt will constitute a default and will only be curable at the option of the City. The Contractor must provide a performance and payment bond in the form prescribed in Florida Statutes Section 255.05, in the amount of one hundred percent (100%) of the Contract Price, the costs of which are to be paid by the Contractor. The bond will be acceptable to the City only if the surety company:

(1) Is licensed to do business in the State of Florida;

(2) Holds a certificate of authority authorizing it to write surety bonds in the State of Florida;

(3) Has twice the minimum surplus and capital required by the Florida Insurance Code at the time the invitation to bid is issued;

(4) Is otherwise in compliance with the provisions of the Florida Insurance Code;

(5) Holds a currently valid certificate of authority issued by the United States Department of Treasury under 31 U.S.C. §§ 9304-9308;

(6) Has a current rating of at least Excellent (A or A-) as reported in the most current Best Key Rating Guide, published by A.M. Best Company, Inc., of 75 Fulton Street, New York, New York 10038; and

(7) Has an underwriting limitation of at least two times the dollar amount of the Contract Price.

C. Substitute Bond Required. If the surety company for any bond furnished by the Contractor files for bankruptcy, has a receiver appointed, is declared bankrupt, becomes insolvent, has an assignment made for the benefit of creditors, has its right to do business terminated in the State of Florida, or ceases to meet the requirements imposed by this Contract, the Contractor must, within five (5) calendar days thereafter, substitute another bond and surety company, both of which are subject to the City's approval.

D. Surety Acceptance of Terms. The Contractor warrants that the Contractor delivered this Contract to the surety prior to execution of the bond, and that the surety company acknowledged that it has read the surety qualifications and surety obligations imposed by this Contract and satisfies all conditions.

E. Delivery of the Bond. The Contractor must provide the required performance and payment bond to the City within ten (10) calendar days of the Effective Date. The Contractor's failure to provide the bond timely constitutes a default. Pursuant to Section 2-404 of the Code of City of North Port, Florida, upon default, the City may immediately award the bid to the next lowest responsive and responsible bidder and recover from the Contractor the difference in cost between the original winning bid and the next lowest responsive and responsible bidder. The default is only curable at the option of the City.

F. Recording the Bond. The Contractor is responsible and bears all costs associated with recording the required bond or security with the Sarasota County Clerk of the Circuit Court. The Contractor must furnish the receipt for and certified copy of the recorded bond to the Purchasing Division at the time of the pre-construction meeting. The default is only curable at the option of the City.

9. CONTRACTOR'S INSURANCE.

A. Insurance.

(1) Before performing any work, the Contractor and subcontractors must procure and maintain during the Contract Time the insurance identified in this Section 8 against all claims of injury to persons or damage to property which may arise from or in connection with its performance of the Contract work, unless otherwise specified. The insurance policies must remain in full force and effect until their obligations and warranty periods have been discharged or satisfied.

(2) The policies of insurance must be primary and written on forms acceptable to the City, placed with insurance carriers approved and licensed by the State of Florida Department of Financial Services, and meet a minimum financial A.M. Best and Company, Inc. rating of no less than "A – Excellent: FSC VII."

(3) The City Manager or designee may alter the amounts or types of insurance policies required by this Contract upon written agreement with the Contractor.

(4) Proof of insurance must be filed by the Contractor with the City within ten (10) calendar days after the Effective Date of this Contract.

(5) These insurance requirements are minimum requirements and in no way limit the indemnity covenants contained in this Contract. The City in no way warrants that the minimum limits are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work done by the Contractor, its agents, representatives, employees, or subcontractors. The Contractor is free to purchase additional insurance as it may determine necessary. The extent of the Contractor's liability for indemnity of the City must not be limited by insurance coverage or lack thereof, or unreasonably delayed for any reason, including but not limited to, insurance coverage disputes between the Contractor and its carrier.

B. Workers' Compensation and Employers' Liability Insurance. Coverage pursuant to Florida Statutes, Chapter 440 must apply to all employees at the statutory limits provided by state and federal laws. The policy must include Employers' Liability with a limit of $1,000,000 for each accident; $1,000,000 for each employee; and $1,000,000 policy limit for bodily injury or disease.

C. Comprehensive Commercial General Liability Insurance. A comprehensive commercial general liability policy, including but not limited to bodily injury, property damage, broad form contractual liability and Explosion, Collapse and Underground (XCU) coverage.

(1) The general aggregate limit must apply separately to this Contract, or the general aggregate limit must be twice the required occurrence limit.

(2) The policy must include General Liability with a limit of $2,000,000 for general aggregate; $2,000,000 for each occurrence; $2,000,000 for products and completed operations; $100,000 for damage to rented premises; and $100,000 for fire damage.

D. Automobile Liability Insurance. Automobile liability insurance to include all owned, leased, hired, and non-owned vehicles.

(1) Automobile liability insurance must be written on a standard ISO form (CA 00 01) covering any auto (Code 1), or if the Contractor has no owned autos, hired (Code 8) and non-owned (Code 9) autos.

(2) The policy must include liability insurance with a limit of $1,000,000 for Combined Single Limit (CSL) for each accident; $1,000,000 per person for bodily injury; $1,000,000 per accident for bodily injury; and $1,000,000 per accident for property damage.

E. Other Insurance. Other insurance is only required if checked below. If not checked, the referenced insurance is not required.

[ ] Builder's Risk Insurance for the Course of Construction or Installation Floater Insurance. The policy must include the "All Risk" (Special Perils) coverage with limits equal to the completed value of the project; and must not include coinsurance penalty provisions.

[ ] Contractor's Pollution Legal Liability for Projects Involving Environmental Hazards.

[ ] Environmental/Pollution Liability**.** Required when chemicals being used are listed as "hazardous" on www.epa.gov website**.**

F. Waiver of Subrogation. All required insurance policies, except for Workers' Compensation, are to be endorsed with a Waiver of Subrogation. The insurance companies, by proper endorsement or through other means, must agree to waive all rights of subrogation against the City, its Commissioners, officers, officials, employees, volunteers, and the City's insurance carriers, for losses paid under the terms of these policies that arise from the contractual relationship or work performed by the Contractor for the City. It is the Contractor's responsibility to notify its insurance company of the Waiver of Subrogation and request written authorization or the proper endorsement. ADDITIONALLY, THE CONTRACTOR, ITS OFFICERS, OFFICIALS, AGENTS, EMPLOYEES, VOLUNTEERS, AND ANY SUBCONTRACTORS, AGREE TO WAIVE ALL RIGHTS OF SUBROGATION AGAINST THE CITY AND ITS INSURANCE CARRIERS FOR ANY LOSSES PAID, SUSTAINED, OR INCURRED, BUT NOT COVERED BY INSURANCE, THAT ARISE FROM THE CONTRACTUAL RELATIONSHIP OR WORK PERFORMED. THIS WAIVER APPLIES TO ANY DEDUCTIBLES OR SELF-INSURED RETENTIONS FOR WHICH THE CONTRACTOR OR ITS AGENTS MAY BE RESPONSIBLE.

G. Policy Form.

(1) All policies required by this Contract, except for Workers' Compensation, or unless specific approval is given by Risk Management through the City's Purchasing Division, are to be written on an occurrence basis, and must name the City of North Port, Florida, its Commissioners, officers, agents, employees, and volunteers as additional insured as their interest may appear under this Contract. Claims made policies may be accepted for professional liability, hazardous materials and other risks as are authorized by the City's Purchasing Division. All claims made policies contributing to the satisfaction of the insurance requirements must have an extended reporting period option or automatic coverage of not less than two (2) years. If provided as an option, the Contractor must purchase the extended reporting period on cancellation or termination unless a new policy is affected with a retroactive date, including at least the last policy year.

(2) Insurance requirements itemized in this Contract, and required of the Contractor, must be provided by or on behalf of all subcontractors to cover their operations performed under this Contract. The Contractor is responsible for any modifications, deviations, or omissions in these insurance requirements as they apply to its subcontractors.

(3) Each insurance policy required by this Contract must:

(a) Apply separately to each insured against whom claim is made and suit is brought, except with respect to limits of the insurer's liability.

(b) Be endorsed to state that coverage must not be suspended, voided, or cancelled by either party except after notice is delivered in accordance with the policy provisions. The Contractor is to notify the City's Purchasing Division of any occurrence by written notice via certified mail, return receipt requested.

(4) The City retains the right to review, at any time, coverage, form, and amount of insurance.

(5) The Contractor is solely responsible for payment of all premiums for insurance required in this Contract and is solely responsible for the payment of all deductibles, SIR (self-insured retentions), any loss or portion of any loss that is not covered by any available insurance policy, and retention as set forth in the policies, whether the City is an insured under the policy. The Contractor's insurance is considered primary for any loss, regardless of any insurance maintained by the City.

(6) All certificates of insurance must be approved by the City before commencement of any work. All required certificates of insurance must be accompanied by a copy of the additionally insured documents/endorsements (CG 20101185 or combination of CG 2010370704 and CG 20370704). Certificates of insurance evidencing claims made or occurrences form coverage and conditions to this Contract, as well as the contract number and description of work, are to be furnished to the City's Purchasing Division at 4970 City Hall Boulevard, Suite 337, North Port, FL 34286 prior to commencement of the work and a minimum of thirty (30) calendar days prior to expiration of the insurance contract when applicable. The certificate of insurance issued by the underwriting department of the insurance carrier must certify compliance with the insurance requirements of this Contract. No changes may be made to these specifications without prior written approval by the City Manager or designee.

H. Notices. Notices of Accidents (Occurrences) and Notices of Claims associated with work being performed must be provided to the Contractor's insurer(s) and the City's Purchasing Division as soon as practicable after notice to the insured Contractor.

10. INDEMNITY, DEFENSE, AND RELEASE.

A. **TO THE EXTENT PERMITTED BY FLORIDA LAW, THE CONTRACTOR ASSUMES ALL LIABILITY FOR, AND RELEASES AND AGREES TO INDEMNIFY, PROTECT, AND HOLD HARMLESS THE CITY, ITS COMMISSIONERS, OFFICERS, AGENTS AND EMPLOYEES, FROM ALL LIABILITIES, FINES, CLAIMS, ASSESSMENTS, SUITS, JUDGMENTS, DAMAGES, LOSSES AND COSTS, INCLUDING CONSEQUENTIAL, SPECIAL, INDIRECT, AND PUNITIVE DAMAGES, (INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND COURT COSTS, WHETHER THE FEES AND COSTS ARE INCURRED IN NEGOTIATIONS, AT THE TRIAL LEVEL OR ON APPEAL, OR IN THE COLLECTION OF ATTORNEYS' FEES), ARISING OUT OF ANY ACTS, ACTIONS, BREACHES, NEGLECT OR OMISSIONS OF THE CONTRACTOR, OR THE CONTRACTOR'S OFFICERS, EMPLOYEES, AGENTS, SUB-CONTRACTORS, SUB-CONSULTANTS, AND OTHER PERSONS EMPLOYED OR UTILIZED BY THE CONTRACTOR IN THE PERFORMANCE OF, OR THE FAILURE TO PERFORM, THIS CONTRACT. THIS CONTRACT DOES NOT CONSTITUTE A WAIVER OF SOVEREIGN IMMUNITY OR CONSENT BY THE CITY OR ITS SUBDIVISIONS TO SUIT BY THIRD PARTIES.**

B. **FURTHER, THE CONTRACTOR MUST FULLY INDEMNIFY, AND HOLD HARMLESS THE CITY FROM ALL SUITS, ACTIONS, DAMAGES, AND COSTS OF EVERY NAME AND DESCRIPTION, INCLUDING ATTORNEYS' FEES, ARISING FROM, OR RELATING TO VIOLATION OR INFRINGEMENT OF A TRADEMARK, COPYRIGHT, PATENT, TRADE SECRET, OR INTELLECTUAL PROPERTY RIGHT.**

C. The City must provide all available information and assistance that the Contractor may reasonably require regarding any claim. If a claim is received, the City must promptly notify the Contractor in writing by prepaid certified mail (return receipt requested) or by delivery through any nationally recognized courier service (Federal Express, UPS, USPS, or others) which provides evidence of delivery, at the address provided for receipt of notices in this Contract.

D. The insurance coverage and limits required in this Contract may or may not be adequate to protect the City and the insurance coverage must not be deemed a limitation on the Contractor's liability under the indemnity provided in this section. In any proceedings between the parties arising out of or related to this indemnity provision, the prevailing party must be reimbursed all costs, expenses, and reasonable attorney fees through all proceedings (at both trial and appellate levels).

E. Nothing in this Contract shall be deemed to affect the rights, privileges and immunities of the city as set forth in Florida Statutes Section 768.28.

F. The terms of this section survive the termination or completion of this Contract.

11. TERMINATION.

A. Termination With or Without Cause. The City Manager or designee may terminate the work under this Contract with or without cause, in whole or in part, whenever the City Manager or designee determines that termination is in the City's best interest.

(1) Any termination must be effective by delivery to the Contractor of a written notice of termination at least thirty (30) calendar days before the date of termination, specifying the extent to which performance of the work is terminated and the date upon which the termination becomes effective.

(2) Except as otherwise directed, the Contractor must cease all work on the date of receipt of the notice of termination or other date specified in the notice; place no further orders or subcontracts for materials, services, or facilities except as necessary for completion of the portion of the work not terminated; terminate all vendors and subcontracts; and settle all outstanding liabilities and claims.

(3) The Contractor must deliver to the City all documents (including but not limited to reports, designs, specifications, and all other data) prepared or obtained by the Contractor in connection with its services.

(4) The City must pay the Contractor in full settlement of all claims as the work actually completed bears to the entire work under this Contract, as determined by the City, less payments already made to the Contractor, and any amounts withheld by the City to settle claims or to pay indebtedness of the Contractor in accordance with the provisions of this Contract. The City has no obligation under any circumstance to make any payment to the Contractor for services that have not been performed or that are performed after the termination date.

B. Termination for Non-Appropriation. The parties acknowledge and agree that the financial obligations of the City in this Contract, or any subsequent contract entered into or referenced when the City is a party, are subject to the provisions of Florida Statutes Section 166.241, as amended, regardless of whether a particular obligation has been expressly so conditioned. Since funds are appropriated annually by the City Commission on a fiscal year basis, the City's legal liability for the payment of any costs must not arise unless and until appropriations for the costs are approved for the applicable fiscal year by the City Commission; nor will liability arise if a request for the appropriations is excluded from the budget approved by the City Commission. Notwithstanding the foregoing, no Commissioner, officer, employee, director, member or other natural person or agent of the City will have any personal liability in connection with a breach of the provisions of this Section or if the City should default under this Section. This Contract does not constitute an indebtedness of the City nor an obligation of the City to levy or pledge any form of taxation nor an obligation for which the City has levied or pledged any form of taxation.

C. Termination for Abandonment. If the Contractor abandons performance under this Contract, the City Manager or designee may terminate this Contract upon three (3) calendar days' written notice to the Contractor indicating the intention to do so. The written notice must state the evidence indicating the Contractor's abandonment.

D. Contractor's Termination. The Contractor may terminate this Contract only if the City fails to pay the Contractor's properly documented and submitted payment request within ninety (90) calendar days of the approval by the City's Administrative Agent, or if the project is suspended by the City for a period greater than ninety (90) calendar days.

E. Court Proceedings. The City Manager or designee reserves the right to terminate this Contract if the Contractor is placed in either voluntary or involuntary bankruptcy, a receiver is appointed for the Contractor, or an assignment is made for the benefit of creditors.

F. Breach. If the Contractor is in breach of this Contract, the City must provide written notice of the breach and the Contractor will have ten (10) calendar days to cure, calculated from the date the Contractor receives the notice. If the Contractor fails to cure within the ten (10) calendar days, the City Manager or designee may immediately terminate the Contract and/or refuse to make any additional payment, in whole or in part, and may demand the return of a portion or the entire amount previously paid to the Contractor due to:

(1) The quality of a portion or all the Contractor's work not being in accordance with the requirements of this Contract;

(2) The quantity of the Contractor's work not being as represented in the Contractor's payment request, or otherwise;

(3) The Contractor's rate of progress is, in the City's opinion, whether substantial or final completion, or both, inexcusably delayed;

(4) The Contractor's failure to pay the Contractor's project related obligations including, but not limited to, subcontractors, laborers, materialmen, equipment, and other suppliers;

(5) Claims made, or likely to be made, against the City or its property;

(6) Loss caused by the Contractor;

(7) The Contractor's failure or refusal to perform any of the obligations to the City, after written notice and a reasonable opportunity to cure, as set forth above; or

(8) Violation of any local, state, or federal law in the performance of this Contract constitutes a breach of this Contract.

G. Waiver. Any delay or failure to enforce any breach of this Contract by either the City or the Contractor will not be binding upon the waiving party unless the waiver is in writing. The waiver will not affect the waiving party's rights with respect to any other or further breach. The making or acceptance of a payment by either party with knowledge of the existence of a default or breach must not operate or be construed to operate as a waiver of any subsequent default or breach.

H. Payment Adjustments. If the City makes written demand upon the Contractor for amounts previously paid by the City, the Contractor must promptly comply with the demand. The City's rights will survive the term of this Contract and are not waived by final payment and/or acceptance.

I. E-Verify Violation.

(1) If the City has a good faith belief that the Contractor has knowingly violated Florida Statutes Section 448.09(1), then this Contract may be terminated by the City.

(2) If the City has a good faith belief that a subcontractor has knowingly violated Florida Statutes Section 448.09(1), but the Contractor has otherwise complied, then the City must promptly notify the Contractor and order the Contractor to immediately terminate this Contract with the subcontractor.

(3) The Contractor must comply with Florida Statutes Section 448.095(2) for any challenge to termination of this Contract under this Section.

J. Remedies. In the event of a default or breach of the Contract terms, the City may avail itself of every remedy specifically given to it now existing at law or in equity, and every remedy must be in addition to every other remedy so specifically given or otherwise so existing and may be exercised from time to time and as often and in the order as may be deemed expedient by the City. The exercise, or the beginning of the exercise, of one remedy must not be deemed to be a waiver of the right to exercise, at the same time or thereafter, any other remedy. The City's rights and remedies as set forth in this Contract are not exclusive and are in addition to any other rights and remedies available to it in law or in equity.

K. Dispute Resolution Procedure. Any dispute must be finally determined by the City pursuant to the dispute resolution procedure as established by the City which will commence within thirty (30)

days after the receipt date of the payment request. The City must notify the Contractor of its intent to invoke the dispute resolution process. The City will issue its final decision in writing and conclude the proceeding within forty-five (45) days after the payment request.

12. EQUAL EMPLOYMENT OPPORTUNITY.

The City of North Port, Florida, consistent with the provisions of Title VII of the Civil Rights Act of 1964 (”Title VII”) and the regulations issued pursuant to Title VII and Florida Statutes Section 287.09451, states that in any contract entered into pursuant to the advertisement, minority business enterprises will be afforded full opportunity to submit replies in response to the advertisement and will not be discriminated against on the grounds of race, color or national origin in consideration for an award.

13. NOTICES.

Any notice, demand, communication, or request required or permitted by this Contract must be sent by certified mail, return receipt requested, or by delivery through any nationally recognized courier service (Federal Express, UPS, USPS, and others) that provides evidence of delivery, at the address provided for receipt of notices in this Contract and e-mailed to:

As to the City:
Utilities Engineering Manager
City of North Port
Utilities Department
6644 W. Price Blvd
North Port, Florida 34291
Telephone: 941-240-8013
macosta@northportfl.gov

With copies of claims and demands sent to:
City of North Port, Florida
City Attorney’s Office
4970 City Hall Boulevard
North Port, Florida 34286
northportcityattorney@northportfl.gov

As to Contractor:
Miller Pipeline, LLC
Chad Shuler
8850 Crawfordsville Rd.
Indianapolis, IN 46234
Telephone: 317.653.5296
E-Mail: bids@millerpipeline.com

Notices are effective when received at the addresses specified above. Changes to the respective addresses may be made from time to time by either party by written notice. This Section must not be

construed to restrict the transmission of routine communications between representatives of the Contractor and the City.

14. ATTORNEYS' FEES.

In any proceedings between the parties arising out of or related to this Contract, the prevailing party must be reimbursed all costs, expenses, and reasonable attorneys' fees through all proceedings, at both trial and appellate levels.

15. SCRUTINIZED COMPANIES.

A. Certification. As required by Florida Statutes Section 287.135(2), for contracts of any amount, the Contractor must certify on a form provided by the City, that it is not on the Scrutinized Companies that Boycott Israel List, created pursuant to Florida Statutes Section 215.4725, and that it is not engaged in a boycott of Israel.

B. Requirements. As required by Florida Statutes Section 287.135(5), for contracts of $1,000,000 or more, the Contractor must certify on a form provided by the City, that all the following are true:

(1) The Contractor is not on the Scrutinized Companies that Boycott Israel List, created pursuant to Florida Statutes Section 215.4725, and that it is not engaged in a boycott of Israel; and

(2) The Contractor is not on the Scrutinized Companies with Activities in Sudan list or the Scrutinized Companies with Activities in Iran Petroleum Energy Sector list, created pursuant to Florida Statutes Section 215.473; and

(3) The Contractor is not engaged in business operations in Cuba or Syria.

C. Termination. If the Contractor provides a false certification or has been placed on one of the above-noted Lists of Scrutinized Companies or has engaged in business operations in Cuba or Syria, the Contractor will be in breach of this Contract and the City may terminate this Contract.

D. Penalty.

(1) A Contractor that has been found to have provided a false certification may be subject to a civil penalty equal to the greater of $2 million or twice the amount of this Contract, plus all reasonable attorneys' fees and costs, including any costs for investigations that led to the finding of the false certification; and

(2) Will be ineligible to bid on any contract with the City for three (3) years after the date the City determined that the Contractor submitted a false certification.

16. FORCE MAJEURE.

A. Should performance of any obligation created under this Contract become illegal or impossible by reason of:

(1) A strike or work stoppage, unless caused by a negligent act or omission of either party;

(2) An act of God, tornado, hurricane, flood, sinkhole, fire, explosion, landslide, earthquake, epidemic, pandemic, quarantine, pestilence, or extremely abnormal and excessively inclement weather;

(3) An act of a public enemy, act of war, terrorism, effect of nuclear radiation, blockage, insurrection, riot, civil disturbance, state of martial law, or national or international calamity;

(4) A declared emergency of the federal, state, or local government; or

(5) Any other like event that is beyond the reasonable control of the non-performing party;

then the performance of the obligation is suspended during the period of, and only to the extent of, the prevention or hindrance, provided that:

(6) The non-performing party provides written notice within five (5) calendar days of the event of *force majeure*, describing the event in sufficient detail, including but not limited to: the nature of the occurrence, a good faith estimate of the duration of the delay, proof of how the event has precluded the non-performing party from performing, and the means and methods for correcting the delay; and continues to furnish timely reports of all actions required for it to commence or resume performance of its obligations under this Contract;

(7) The excuse of performance is no greater in scope or duration than required by the event of *force majeure*;

(8) No obligations of either party that arose before the *force majeure* are excused as a result of the event of *force majeure*; and

(9) The non-performing party uses all reasonable diligence to remedy its inability to perform.

B. Economic hardship of a party does not constitute an event of *force majeure.* A party must not be excused from performance due to forces that it could have reasonably prevented, removed, or remediated prior to, during, or immediately after their occurrence.

C. The non-performing party's affected obligations under this Contract will be temporarily suspended during, but not longer than, the continuance of the event of *force majeure* and a reasonable time thereafter as may be required to commence or resume performance of its obligations. Notwithstanding the above, performance will not be excused under this Section for a period exceeding two (2) consecutive months, provided that in extenuating circumstances, the City may excuse performance for a longer term.

D. The term of this Contract will be extended by a period equal to that during which the non-performing party's performance is suspended under this Section.

17. MISCELLANEOUS.

A. Authority to Execute. The signature by any person to this Contract will be deemed a personal warranty that the person has the full power and authority to bind any corporation, partnership, or any other business or governmental entity for which the person purports to act.

B. Binding Effect/Counterparts. By the signatures affixed hereto, the parties intend to be bound by the terms and conditions hereof. This Contract is binding upon and will inure to the benefit of the parties and their respective heirs, executors, administrators, successors, and assigns. It may be signed in counterparts.

C. Governing Law and Venue. The laws of the State of Florida govern the rights, obligations, and remedies of the parties under this Contract. The exclusive venues for any legal or judicial proceedings in connection with the enforcement or interpretation of this Contract are the Circuit Court of the Twelfth Judicial Circuit in and for Sarasota County, Florida, and the United States District Court for the Middle District of Florida.

D. No Agency. Nothing contained herein must be deemed or construed as creating the relationship of principal and agent, or of partnership or joint venture, between the parties, it being understood and agreed that no provision, or any acts of the parties will be deemed to create any relationship between them other than that as detailed.

E. Severability. If any court holds any provision of this Contract to be illegal, invalid, or unenforceable, the remaining provisions must be valid and binding upon the parties. One or more waivers by either party of any breach of any provision, term, condition, or covenant must not be construed as a waiver of a subsequent breach by the other party.

F. Headings. The descriptive titles appearing in each respective paragraph are for convenience only and are not a part of this Contract and do not affect its construction.

G. Complete Contract. This Contract incorporates and includes all prior negotiations, correspondence, agreements, or understandings between the parties, and the parties agree that there are no commitments, agreements, or understandings concerning the subject matter of this Contract that are not contained in this document. This Contract supersedes all other agreements between the parties, whether oral or written, with respect to the subject matter.

H. Amendment. No amendment, change, or addendum to this Contract is enforceable unless agreed to in writing by both parties and incorporated into this Contract. Any amendments changing the City's financial obligations under this Contract will require approval by the City Commission. The City Commission hereby authorizes the City Manager or designee to approve and execute all Contract amendments on behalf of the City that do not change the City's financial obligations under this Contract.

I. Assignment. The Contractor must not assign this Contract or any right or responsibility without the written consent of the City.

J. Non-Discrimination. The City of North Port, Florida does not discriminate on the basis of race, color, national origin, sex, age, disability, family, or religious status in administration of its programs, activities, or services. The Contractor must not administer this Contract in an unlawfully discriminatory manner, nor deny participation in or the benefits of same to any individual based on that individual's race, color, national origin, sex, age, disability, family or religious status, marital status, sexual orientation, gender identity or expression, or physical characteristic.

IN WITNESS WHEREOF, the parties have executed this Contract on the dates as indicated below.

CONTRACTOR

MILLER PIPELINE, LLC

By: _____
Name: Chris Schuler
Title: Vice President

ACKNOWLEDGEMENT

STATE OF INDIANA
COUNTY OF MARION

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization, this 19 day of October 2023, by Chris Schuler (name), as Vice President (title) for Miller Pipeline, LLC.

_____
Notary Public

X Personally Known ~~OR ----- Produced Identification~~
~~Type of Identification Produced~~ N/A

EMMA L. BELICH
Notary Public - State of Indiana
County of Residence: Hendricks
My Commission Exp. Feb. 14, 2024

Approved by the City Commission of the City of North Port, Florida on NOV 28, 2023.

CITY OF NORTH PORT, FLORIDA

A. JEROME FLETCHER II, ICMA-CM, MPA
CITY MANAGER

ATTEST

HEATHER FAUST, MMC
CITY CLERK

APPROVED AS TO FORM AND CORRECTNESS

AMBER L. SLAYTON, B.C.S.
CITY ATTORNEY

EXHIBIT A TO CONTRACT NO. 2023-40.003

SCOPE OF SERVICES

SPECIAL PROVISIONS

SP-01 INTENT: The purpose of this project is to obtain a competent, experienced, and responsible Contractor to construct the project in accordance with the plans and specifications, in an expeditious manner that reasonably protects the public and adjacent property from the construction of the project.

The Contract Documents comprise the entire agreement between City and Contractor concerning the work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the project. The work specified in this Contract will consist of furnishing all supervision, labor, equipment, material, and any incidentals required for the successful completion of all work as specified herein. All work must conform within the limits as specified and shown and be in conformance with the appropriate Technical Specifications contained herein.

The plans, technical specifications, and other documents provided are intended to provide the Contractor with known conditions of the existing site and proposed work area. The Contractor is responsible to conduct all investigations, surveys, or other activities required to fully understand the existing site and conditions that will be encountered during the project, and on which their bid will be based. Additional investigations may be necessary for the purposes of carrying out the construction project. The City of North Port will not consider or approve any claim for additional time or monetary compensation submitted by the Contractor caused by unknown site conditions or a failure by the Contractor to fully investigate and understand the full extent and nature of the work. This includes, but is not limited to, existing utilities as well as subsurface conditions.

SP-02 EQUIPMENT: The Contractor must only use equipment, machines, or combination of machines that are in good and safe working condition. The equipment must produce results that meet or exceed the Technical Specifications stated herein.

Equipment incapable of providing this will not be acceptable for use on this Project. The Contractor must not use equipment which is unsafe or in need of repair. Work completed with equipment that does not properly function, will be deemed unacceptable.

SP-03 CONSTRUCTION SCHEDULE: The construction schedule will be set per work assignment.

The Contractor must furnish copies of the Construction Schedule to the City when requested to perform the work as outlined in the Bid Form. The City will notify the Contractor of such as needed work and the Contractor will provide a Construction Schedule to the City within thirty (30) days of the City's notification. A project update meeting will be held bi-weekly, or as required during contract.

SP-04 PRE-CONSTRUCTION CONFERENCE: A Pre-Construction Conference will be held, at which time the Contractor must submit the following for the City's approval or acceptance:

A telephone list specifying the name, address, office phone number and cell phone numbers of all subcontractors or suppliers to be used on this project. If the Contractor proposes to subcontract any survey work that may be required, the Contractor must include the registration number of the surveyor. The telephone list must also include emergency telephone numbers. The Contractor must include a 24-hour emergency telephone for the City's use, which the Contractor must update as necessary throughout the project. The Contractor will request, in writing, any changes in subcontractors or suppliers.

No change in subcontractors or suppliers will be made without written consent and approval from the City.

A. In addition to the telephone and facsimile numbers, the Contractor must provide an e-mail address where emails can be sent. The e-mail address must be monitored at least daily and capable of transferring electronic files.

B. The Contractor must submit to the City a list of equipment the Contractor proposes to utilize on this project.

C. The Contractor must submit for City approval a paper copy and electronic copy of a Construction Schedule prepared using City approved software, and a Schedule of Progress Payment Requests.

D. The Contractor must also submit all other materials or mix designs, which will be used by the Contractor for this Contract.

Mobilization may not start until all submittals have been accepted by the City and/or City's Representative. Once approved, no changes will be allowed without the written approval of the City and/or the City's Representative.

The Contractor must also provide, monthly, an update to the Construction Schedule reflecting changes made because of such reasons as weather, breakdowns, and unanticipated delays, as a means of better monitoring the project.

SP-05 PROGRESS MEETING: For this project, progress meetings will be held bi-weekly, or as requested by the Contractor or the City. The Contractor must designate a representative to attend Progress Meetings held at the North Port Utilities Field Office, 6644 West Price Boulevard, North Port, Florida. The Contractor must submit, at each meeting, up-to-date schedule information, a written projected schedule for the next two weeks, written claims for additional compensation, written claims for weather days to extend the Contract, results of all testing and Value Engineering Proposals. The City will use the updated schedule information to monitor the Contractor's production rate. Upon written notice from the City, the Contractor must dedicate additional resources to increase the production rate such that the Contractor will be back on schedule. Failure to comply with the approved Construction Schedule will result in the Contractor being considered in default and subject to suspension of this Contract. Contractor may request progress meetings be on a different schedule than bi-weekly provided the City can confirm work is

proceeding expeditiously. City may require a return to bi-weekly progress meetings at any time.

SP-06 COOPERATION WITH UTILITIES: The Contractor must notify all utility owner(s) affected by the construction prior to beginning work. Any expense of utility repair or other damage due to Contractor's operations will be borne by the Contractor. Protection of utilities will be the responsibility of the Contractor, who must provide adequate protection to maintain proper service.

NOTE: The Contractor is to include within his bid prices, the costs to protect, and/or support, all above ground, overhead and underground utilities, which may conflict with the construction of this proposed project.

Attention is called to the Florida Underground Facility Damage Prevention and Safety Act defined in Florida Statute. This act provides for a "One Call Toll Free" telephone number to be used by all parties doing excavation, demolition, or other underground construction.

SP-07 CONTRACT TIME: Contract time will be set in in each work assignment. The Contractor specifically agrees that it will commence operations within a mutually agreed-upon time following notification by the City to commence work and that all work to be performed under the provisions of this Contract must be completed after the Notice to Proceed; subject only to delays caused through no fault of the Contractor or acts of God. Time is of the essence in the performance of this Contract. The contract time includes up to fourteen (14) calendar days for City and/or City's Engineer of Record review of each submittal and resubmittal. There will be no extension of time provided for modification and corrections or re-submittals to address deficiencies therein identified during the review by the City and/or City's Engineer of Record.

City will provide the Contractor with a listing of items to be corrected or completed (punch list) after Substantial Completion is issued. The punch list will identify the remaining items that must be addressed to the satisfaction of the City by the Contractor to meet his/her obligations under the Contract. The Contractor must complete all items on the punch lists to the satisfaction of the City prior to submittal of the application for final payment.

All extensions to the Contract time for permitted delays must be by Change Order and signed by the City.

SP-08 PROJECT COMPLETION: Project final completion will be defined as "the stage in the progress of the Work where the Work is complete in accordance with the Contract Documents so that the City can begin to utilize the Work for its intended use, all punch list items are complete, and the Contractor has completely demobilized from the project area." Completion time is listed in the work assignment.

SP-09 LIQUIDATED DAMAGES: Liquidated damages will be discussed per work assignment and listed on the Notice to Proceed. The work must be completed within the contract time as required by SP-08 "PROJECT COMPLETION." The contract time includes the preparation, submittal, review and approval of submittals, delivery of materials, and construction, assembly, adjustment, and placement into service for beneficial use of all facilities covered under this Contract. The City of North Port will issue a Notice of Completion when it has determined that the work identified in the contract has been completed per SP-08 "PROJECT COMPLETION."

The City and the Contractor hereby agree that time is of the essence on this Contract and the City will

suffer damages if the work is not completed within the contract time as required by SP-07 “Contract Time”. It is further recognized and agreed by the City and the Contractor that the determination of the exact value of the damages the City would suffer due to a delay in the Completion of the work would be a difficult, time consuming and costly process. It is therefore hereby agreed by the City and the Contractor that it is in their mutual interest to establish a figure **at the time of issuing a Work Assignment and to be listed on the Notice to Proceed** as Liquidated Damages (but not as a penalty) to be paid by the Contractor to the City for each calendar day that Completion is delayed beyond the Contract Time. It is mutually agreed by the City and the Contractor that neither will make any claim to increase or reduce the amount to be paid under Liquidated Damages as the result of any calculation of actual damages suffered by the City as the result of delay in the Completion of the work.

For all contracts, regardless of whether the contract time is stipulated in calendar days or working days, the City will count default days in calendar days. If the Contractor or, in case of his default, the surety fails to complete the work within the time stipulated in the Contract, or within such extra time that the City may have granted the Contractor or, in case of his default, the surety must pay to the City, not as a penalty, but as liquidated damages, **that is listed on the Notice to Proceed** per calendar day in which work is not completed.

The City has the right to apply, as payment on such liquidated damages, any money the City owes the Contractor.

The City does not waive its right to liquidated damages due under the Contract by allowing the Contractor to continue and finish the work, or any part of it, after the expiration of the Contract Time including granted time extensions.

In the case of default of the Contract and the completion of the work by the City, the Contractor and his surety are liable for the liquidated damages under the Contract, but the City will not charge liquidated damages for any delay in the final completion of the City’s performance of the work due to any unreasonable action or delay on the part of the City.

The City considers the Contract complete when the Contractor has completed all work and the City has accepted the work. The City will then release the Contractor from further obligation except as set forth in his bond.

SP-10 DAMAGES: Areas adjacent to the construction that are damaged must be repaired at the Contractor's expense. Restoration of adjoining areas must be equal to or better than original condition and to the satisfaction of the City. Protection of personal property, utilities, structures, access drives, conduits, pavement, curbs, sidewalks, trees, and shrubs will be the responsibility of the Contractor, who must provide adequate protection to maintain proper service.

SP-11 CONTINUOUS PROSECUTION OF WORK: The Contractor must continuously prosecute the work in accordance with the Contract Documents. Upon written direction from the City, the Contractor must remove any personnel for the duration of the Contract, who fails to comply with the Contract Documents.

Once commencing the project, the operation must be continuously prosecuted during normal hours to its completion. At no time, will the Contractor suspend work, for any reason for more than seven (7) calendar

days, excluding delays granted for inclement weather. Should the Contractor fail to perform any work on the project for three (3) or more workdays, the Contractor must submit a written request to the City, no less than twenty- four (24) hours in advance of the restart of work, to allow the City to schedule the required inspection personnel. No work may restart, prior to the expiration of the twenty-four (24) hour notice without the City's approval.

Correction of safety concerns will be given priority and must be corrected as soon as practicable, but not later than 24 hours after discovery by the City and notification to the Contractor. Failure to comply with these Provisions and/or Technical Specifications will result in the Contractor being considered in default and subject to suspension of this contract.

SP-12 SAFETY AND PROTECTION:

A. Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. Contractor must take all necessary precautions for the safety of and must provide the necessary protection to prevent damage, injury, or loss to:

   i. All employees on the work and other persons or organizations who may be affected thereby.

   ii. All the work and materials and equipment to be incorporated therein, whether in storage on or off the site.

B. 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 during construction. Contractor must comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of person or property or to protect them from damage, injury, or loss; and must erect and maintain all necessary safeguards for such safety and protection.

C. All personnel working within the City's right-of-way must always wear City approved safety vests, including personnel who may only briefly be out of their vehicle (i.e., supervisors, truck drivers).

D. No open excavations are allowed on the project. Any pipe installation must be backfilled properly the same day of work on such pipe area to allow safe passing of pedestrians and vehicles. The Contractor must immediately remove any personnel who fail to conform to this requirement.

E. Contractor must designate a responsible representative at the site whose duty will be the prevention of accidents. This person must be the contractor's superintendent unless otherwise designated in writing by Contractor to City.

SP-13 CHANGES IN THE WORK: The City, without invalidating the Contract, may order extra work or make changes by altering, adding to, or deducting from the work, the Contract sum being adjusted accordingly. Such work must be executed under the conditions of the original Contract. The change and amount of compensation must be agreed upon in writing in a document of equal dignity herewith prior to any deviation from the terms of this Contract.
In giving instructions, the City will have authority to make minor changes in the work, not involving extra

cost, and not inconsistent with the purposes of the work. Except in an emergency endangering life or property, no extra work or change will be made unless in pursuance of a written order by the City; and no claim for an addition to the Contract sum will be valid, unless ordered. Value of any such extra work or change must be determined in one or more of the following ways:

3.1.18.1 By estimate and acceptance in a lump sum.
3.1.18.2 By unit prices named in the Contract or subsequently agreed upon.
3.1.18.3 By cost and percentage or by cost and a fixed fee.

If none of the previous methods are agreed upon, the Contractor, provided he/she receives an order as above, must proceed with the work. In such case, and under case, he/she must keep amendment in such form as the City may direct, a correct amount of the net cost of labor and materials, together with vouchers. The City must certify to the amount, including reasonable allowance for overhead and profit, due to the Contractor. Pending final determination of value, no payment on changes will be made. When requiring a change in the scope of services the Contractor must notify the City by written notice that a change order is requested within five (5) days of any occurrence.

SP-14 SUBCONTRACTING, SUBLETTING AND/OR ASSIGNMENT: Do not, sell, transfer, assign or otherwise dispose of the Contract or Contracts or any portion thereof, or of the right, title, or interest therein, without written consent of the City. If the Contractor chooses to sublet any portion of the Contract, the Contractor must provide a written request to sublet work to the City for approval. With the City's acceptance of the request, the Contractor may sublet a portion of the work, but must perform with its own organization work amounting to **not less than 40%** of the total Contract amount. The request will be deemed acceptable by the City, for purposes of the City's consent, unless the City notifies the Contractor within five (5) business days of receipt of the request that the City is not consenting to the requested subletting.

Include in the total Contract amount the cost of materials and manufactured component products, and their transportation to the project site. For meeting this requirement, the City will not consider off-site commercial production of materials and manufactured component products that the Contractor purchases, or their transportation to the project, as subcontracted work.

If the Contractor sublets a part of a Contract item, the City will use only the sublet proportional cost in determining the percentage of subcontracted normal work. Execute all agreements to sublet work in writing and include all pertinent provisions and requirements of the Contract. All other agreements must be in writing and reference all applicable Contract provisions. Upon request, furnish the City with a copy of the subcontract and agreement. The subletting of work does not relieve the Contractor or the surety of their respective liabilities under the Contract.

The City recognizes a subcontractor only in the capacity of an employee or agent of the Contractor and the Engineer may require the Contractor to remove the subcontractor as in the case of an employee.

All sublets will be in continued compliance with all Contract provisions and the Contractor will continue to perform the minimum percentage of Contract work with its own organization, as required by the Contract. It is recognized and agreed that the prime contractor remains responsible for the proper

performance of all requirements of the contract and use of sublet does not relieve or release the Contractor and his surety or either of them of any liability under the contract bond. A false statement or omission made in connection with subletting is sufficient cause for suspension, revocation, or denial of qualification to bid, and a determination of non-responsibility, and may subject the person and/or entity making the false statement to all civil and criminal penalties available pursuant to applicable Federal and State Law.

SP-15 AVAILABILITY OF LANDS: Work is planned to occur within rights of way or existing utility easements. The Contractor will be held responsible to obtain right of way use permit(s) from the City of North Port. NPU will pay the permit fee directly to the Neighborhood Development Services Department. Any additional or repeat inspection or testing charges will be paid by the Contractor. See Special Provision SP-17.

SP-16 COORDINATION OF THE SPECIFICATIONS: Where conflicts between the City of North Port General Provisions, Special Provisions, Technical Specifications and Construction Plans, references, should they exist, it is the responsibility of the bidding Contractor to bring those conflicts to the attention of the Purchasing Agent prior to the bid date. After bids, have been received, the contractor will be held to the most stringent requirement.

The Contractor must take no advantage of any apparent error or omission in the plans or specifications. If the Contractor discovers such an error or omission, he/she must immediately notify the City. The City will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.

SP-17 CONSTRUCTION PERMITS: Florida Department of Environmental Protection/Department of Health permits are not required for this work.

The City will pay for all permit fees determined by the Neighborhood Development Services Department and the City of North Port Public Works Department. For this project, Right of Way (ROW) permit(s) will not be required. The City will make payment directly to the Neighborhood Development Services Department for any miscellaneous fees assessed for the necessary permits and related inspections. Additional or re-inspection fees will be paid for by the Contractor. Pressure testing the system will be paid for by the Contractor. Permits and licenses necessary for the prosecution of the work must be secured by the Contractor.

SP-18 NOTICE-OF-INTENT (NOI): If necessary, the Contractor for the project must submit a Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, along with the permit fee with the Florida Department of Environmental Protection.

SP-19 SPECIFICATIONS AND PLANS: Information regarding this project may be viewed and downloaded from DemandStar's website at www.demandstar.com. Links to DemandStar are also available from the city website, at www.northportfl.gov.

SP-20 CONTRACTOR'S UNDERSTANDING: It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and locations of the work, the conformation of the ground, the character, quality, and quantity of materials to be encountered, the character of equipment and

facilities needed prior to and during prosecution of the work under this Contract. No verbal agreement or conversation with any officer, agent, or employee of the City, either before or after execution of this Contract, will modify the terms or obligations of this Contract.

SP-21 ERRORS OR OMISSIONS IN PERMITS, PLANS OR SPECIFICATIONS: The Contractor must not take advantage of any apparent error or omission, which may be discovered in the Permits, Plans or Specifications but must notify the City Representative of such discovery, who will then make such correction and interpretations as deemed necessary for reflecting the actual spirit and intent of the Permits and Specifications.

SP-22 ROAD/LANE CLOSURE: No road closures are allowed. The contractor must submit a lane closure request in writing five (5) business days in advance of the requested lane closure. The time and length of closure(s) must be approved by the City of North Port. The Contractor must provide a Maintenance of Traffic (MOT) Plan for the requested lane closure(s) for review and approval by the City of North Port.

SP-23 MAINTENANCE OF TRAFFIC: The Contractor will be responsible for all maintenance of traffic and obtaining approval of a Maintenance of Traffic (MOT) Plan from the City for work within the ROW of any City Road. The Contractor must always maintain traffic during construction.

SP-24 DEWATERING: The Contractor must request approval from the City of North Port Project Manager before applying for a permit from the Southwest Florida Water Management District.

SP-25 PRIVATE PROPERTY: The Contractor must not occupy private land outside of any easements or rights of way unless a written authorization has been signed by the property owner. The Contractor must obtain these agreements prior to construction, if required. Prior to the use of private lands, the Contractor must submit a copy of the agreement(s) to the City. If the Contractor uses private property for any purpose without first having obtained the necessary approvals from the property owner or provided the necessary agreement to the City, the City will direct the Contractor in writing to immediately cease using such property.

Prior to application for final payment, the Contractor must provide documentation from the owner of each piece of private property for which an agreement for use was provided, or for which the City has issued written notification to the Contractor, that each owner is satisfied with the Contractor’s restoration of the property. Final payment or reduction in retainage will not be paid until such documentation is received by the City.

Any areas, outside of the rights-of-way or easements that are impacted or damaged by the Contractor's activities must be repaired at the Contractor's expense to the property owner's satisfaction. Restoration of impacted areas must be equal to or better than original condition and to the satisfaction of the property owner. The Contractor will be responsible to secure written approval of the restoration of the property from the property owner and submitting a copy to the City prior to requesting Substantial Completion. The City will not release retainage to the Contractor until such time as the approvals are submitted by the Contractor.

SP-26 RESIDENTS CONCERNS: During the work of this Contract, residents may contact the City to question the progress of the work or express concerns regarding the work. These concerns are responded by City's Utilities Department, but normally the Contractor will have more detailed information on the actual scheduling of the work or corrective measures required. Therefore, the Contractor will provide a telephone number and email address where City's Utilities Department can fax or email inquiries. The Contractor must respond to these inquiries within two (2) business days detailing how the inquiry will be addressed and the time frame the Contractor will take in addressing this inquiry. City's Utilities Department will maintain a log of inquiries, which will be reviewed at each progress meeting.

SP-27 TESTING: All testing requirements born out of, but not limited to contract requirements and permits, for the installation of utility piping, including but not limited to, pressure testing, will be included in the Contract Price. Testing must include all utilities installed as part of the work of these Contract Documents. Testing will be arranged in advance with an independent testing firm (also included in the Contract Price) for the testing of concrete and compaction. The City requests to be notified three (3) business days in advance of any test to have a City representative and the Engineer of Record, if required, present. Where less time for notice is specified in the specifications or plans, this special provision will prevail.

SP-28 MISCELLANEOUS ITEMS: Miscellaneous items and accessories which are not specifically mentioned, but which are essential to produce a complete and properly operating installation, or usable structure or plant, providing the indicated function, must be furnished and installed without change in the Contract Price. Such miscellaneous items and accessories must be of the same quality standards, including material, style, finish, strength, class, weight, and other applicable characteristics, as specified for the major component of which the miscellaneous items or accessory is an essential part, and must be approved by the City's Engineer of Record before installation. The above requirement is not intended to include major components not covered by or inferable from the Drawings and Specifications.

SP-29 SOURCES OF WATER FOR TESTING, CLEANING, AND OTHER CONSTRUCTION PURPOSES: Reclaimed water piping pressure and flow testing and flushing may be done with reclaimed water. All Contractor's connection(s) to the City reclaimed water supply must include the City's metering for the amount of reclaimed water used in testing, flushing, and other miscellaneous purposes during construction, etc. The Contractor is responsible for obtaining meter(s) and associated appurtenances; and paying all appropriate fees/deposits. Contractor must not use any water until meter is installed. The actual reclaimed water used will be provided at no cost to the Contactor by Utilities. Any fees/deposits due back to the Contractor will be returned after the project is completed and the meter is removed.

If potable water is required for the Work of this Contract, all Contractors' connection(s) to the City potable water supply must include the City metering for the amount of water used. All potable water connections must include a reduced pressure zone backflow preventer. The Contractor is responsible for obtaining meter(s), backflow preventers, and associated appurtenances, and paying all appropriate fees/deposits. Contractor must not use any potable water until meter and backflow preventer are installed. The Contractor will set up an account with the City and will be billed at the City's normal rates for actual potable water used. Any fees/deposits due back to the Contractor will be returned after the project is completed and the meter is removed.

SP-30 POTABLE WATER AND WASTEWATER FORCE MAIN OVER-DEPTH AND PLACEMENT: Potable water mains and wastewater force mains must be installed with a minimum of thirty-six (36") inches of cover over the pipe. Any required over-depth, whether shown on the plans or not, will be incidental to the main installation and no additional compensation will be made.

SP-31 PRE-INSTALLATION VIDEO: No construction will take place prior to the City's acceptance of the Pre-Installation Video. The video must thoroughly capture the intended work area as outlined in the Contract Documents. The Pre- Installation Video will be used to protect all parties involved in the project.

SP-32 PERIODIC CLEAN UP AND RESTORATION: During construction, the Contractor must regularly remove from site and properly dispose of all accumulated debris and surplus material of any kind that result from their operations. The Contractor must remove unsightly mounds of earth, large stones, boulders, and debris so the site presents a neat appearance. Burial of construction debris is not permitted. Unused tools and equipment must be stored at the Contractor's yard or base of operations for the project. When the contract work involves ROWs, private property, roadways, private driveways or access roads, easements and sidewalks, and any site work that may impede pedestrian or vehicular traffic while the installation work is in progress, the Contractor must backfill, grade, compact, and otherwise restore the area to the basic condition which existed prior to work to allow vehicular and pedestrian use. All areas should be restored to their original design grade to facilitate drainage.

SP-33 CONNECTION TO EXISTING POTABLE WATER AND WASTEWATER FORCE MAIN(S): The connections to the existing potable water and wastewater force mains will be paid at the Contract Price per each which must include the cost of connection, satisfactory coordination of utility construction, labor, material, equipment, and all other associated appurtenances required to complete the project in accordance with the Contract Documents. Tie-ins to existing main(s) must be coordinated with City Utilities.

The Contractor must connect his Work to each part of the existing work or of work previously installed as required by the Drawings and Specifications to provide a complete installation.

Connections/modifications to existing piping requires coordination with City Utilities staff. The Contractor must not operate any existing valves.

SP-34 MAINTENANCE OF FLOW: It is the Contractor's responsibility to maintain the flow of the existing potable water, wastewater force mains, and lift stations during the construction. Maintenance of flow is considered incidental to the work and must be done at no additional cost to the City.

SP-35 CITY RIGHT-OF-WAY RESTORATION: The ROW restoration includes all procedures to restore the ROW to a condition equal to or better than the original condition to the satisfaction of the City. The Contractor will be responsible for restoration of items including but not limited to existing structures, stabilized roads, and ground areas damaged during construction.

During installation of new utilities, the Contractor must maintain, an undisturbed existing buffer strip of ground cover measuring a minimum of one foot (1') in width from the edge-of- pavement (EOP) to minimize potential erosion along the pavement edge. The Contractor will be responsible for all costs to restore this buffer strip if disturbed during construction.

SP-36 LABOR, MATERIALS AND EQUIPMENT: The Contractor will provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The Contractor must always maintain good discipline and order at the site.

The Contractor will furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, local telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation, and completion of the Work.

All materials and equipment will be new, except as otherwise provided in the Contract Documents. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or approved, such materials must be delivered to the site in their original packages or container with seals unbroken and labels intact.

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

SP-37 MATERIALS, EQUIPMENT, PRODUCTS, AND SUBSTITUTIONS: Materials, equipment and products incorporated in the Work must be approved for use before being purchased by the Contractor. The Contractor must submit to the City a list of proposed materials, equipment, or products, together with such samples as may be necessary of him to determine their acceptability and obtain his approval. No request for payment for “or equal” equipment will be approved until this list has been received and approved by the City.

Whenever a material, article or piece of equipment is identified on the Drawings or Specifications by reference to brand name or catalog number, the Contractor agrees that this is referenced for the purpose of defining the performance or other salient requirements and that the Contractor will consider other products of equal capacities, quality, and function pursuant to 40 CFR 33.255(c) as referenced in Chapter 62-552, FAC. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents be reference to brand name or catalog number, and if, in the opinion of the City, such material, article, or piece of equipment is of equal substance and function to that specified, the City may approve its substitution and use by the Contractor. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time.

No substitute will be ordered or installed without the written approval of the City who will be the judge of equality. Delay caused by obtaining approvals for substitute materials will not be considered justifiable grounds for an extension of construction time.

Should any work or materials, equipment or products not conform with requirements of the Drawings and Specifications or become damaged during the progress of the Work, such Work, or materials must be removed and replaced, together with any work disarranged by such alteration, at any time before completion and acceptance of the Project. All such work will be done at the expense of the Contractor.

No materials or supplies for the Work will be purchased by the Contractor or by any Subcontractor subject

to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the Seller. The Contractor warrants that he has good title to all materials and supplies used by him in the Work.

SP-38 USE OF PREMISES: The Contractor must confine his apparatus, storage of materials, and operations of his workmen to limits indicated by law, ordinances, permits, and directions of City, and must not unnecessarily encumber any part of the site.

Contractor must not overload or permit any part of any structure to be loaded with such weight as will endanger its safety, nor will the Contract subject any part of the Work to stresses or pressures that will endanger it.

Contractor must enforce City's instructions in connection with signs, advertisements, fires, and smoking.

Contractor must arrange and cooperate with City in routing and parking of automobiles of his employees, Subcontractors, and other personnel, and in routing material delivery truck and other vehicles to the Project site.

SP-39 SURVEY: All survey monuments and benchmarks that may be disturbed during construction must be referenced and replaced by the Contractor. All monuments and benchmarks disturbed or destroyed by the Contractor or any of his forces through accident or negligence must be replaced by a Florida Licensed Professional Land Surveyor at the Contractor's expense.

SP-40 MANUFACTURER'S LITERATURE: Manufacturer's literature, when referenced, must be dated and numbered and is intended to establish the minimum requirements acceptable. Whenever reference is given to codes, or standard specifications or other data published by regulating agencies or accepted organizations, including but not limited to National Electrical Code, applicable State Building Code, Federal Specifications, ASTM Specifications, various institute specifications, and the like, the reference means the latest edition including addenda in effect on the date of Bid.

SP-41 BRAND NAMES: Brand names, where used in the technical specifications, are intended to denote the standard of quality and performance required, of the material or product. The term "equal" or "equivalent", when used in connection with brand names, means a material or product that is similar and equal in type, quality, size, capacity, composition, finish, color and other applicable characteristics to the material or product specified by trade name, and that is suitable for the same use and capable of performing the same function, in the opinion of the City's Engineer of Record, as the material or product so specified. The City's Engineer of Record must approve proposed equal items before they are purchased or incorporated in the Work.

SP-42 RECORD DRAWINGS: The Contractor will keep one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. Record Drawings must list all equipment removed from existing facilities. Record Drawings must be available to the City, City's Representative, City's Engineer of Record, and to the State of Florida Department of Environmental Protection (FDEP) and must be delivered to the City upon completion of the Project. The Contractor must use the Record Drawings for purposes of this Contract only. Final payment will not be made until receipt and approval by the City of Record Drawings.

SP-43 RECORD DRAWINGS CERTIFICATION: The certification statement must be as follows:
"I hereby certify that the as-built location information of the water and wastewater facilities shown on these drawings conforms to the Minimum Technical Standards for Land Surveying in the State of Florida, Chapter 5J-17.052 (Florida Administrative Code), as adopted by the Department of Agriculture and Consumer Services, Division of Consumer Services, Board of Professional Surveyors and Mappers in 2010, and that the as-builts are true and correct to the best of my knowledge and belief as surveyed under my direction."

SP-44 COMPLETION OF THE PROJECT: The Completion of the project must be accomplished and finalized prior to submittal of the application for final payment by the Contractor. The City will determine the date of completion for the project when at the minimum, the following are met as well as all other conditions defined in the Contract Documents:

A. All punch list items have been addressed to the satisfaction of the City;

B. All testing has been completed and results are satisfactory (including but not limited to Pipe Pressure Test, Concrete, and Compaction Tests);

C. Record Drawing requirements have been accepted and approved by the City and all other governmental agencies, if applicable;

D. All associated equipment and facilities necessary for the reliable operation of the project are complete in accordance with contract requirements; and

E. All release of liens have been submitted and are satisfactory to the City, certifying that all payrolls, material bills, and other indebtedness incurred by the Contractor in connection with this project have been paid in full.

SP-45 STORED MATERIALS: Payment for stored materials will made in accordance with Section 3.2 of the General Provisions.

SP-46 PAYMENT ADJUSTMENT: The following will apply: This Contract will *not* provide for fuel or other payment adjustments due to increase in material costs during the life of the contract.

SP-47 TERMINOLOGY: Throughout the Contract Documents, references to City or Owner will, where appropriate, refer to the City of North Port, a municipal corporation of the State of Florida. References to Utilities Department and North Port Utilities refer to the City of North Port's Utilities Department and are used interchangeably. References to Engineer or "Resident Project Representative" may, where appropriate, refer to either the City's Engineer of Record for the Project, which is CDM Smith, or to the City's Utilities Engineering Manager.

The terms "General Conditions and General Provisions" are used interchangeably in the Contract Documents. The terms "Special Conditions and Special Provisions" are used interchangeably in the Contract Documents.

The term “Contract” is used interchangeably with “Agreement.”

SP-48 WORK HOURS: The Contractor must conduct work between 7 A.M. and 3:30 P.M. Monday through Friday, which is defined as regular work hours. The Contractor must not conduct work on Saturdays, Sundays, legal holidays, or holidays observed by the City. Work conducted outside of the regular work hours and days may only be permitted with written permission from the City. Any additional cost incurred by North Port Utilities and/or the Engineer of Record for work outside these hours will be paid by the Contractor.

SP-49 NOTIFICATIONS OF 48 HOURS: Wherever the technical specifications or plans indicate a minimum of 48 hours’ notice to Owner/City or Engineer, this special provision will prevail dictating a minimum of three (3) business days’ notice to Owner/City or Engineer.

SP-50 QUALIFICATIONS/REFERENCES: Prime Contractor must be fully licensed to do business in the State of Florida and be currently licensed as a Certified General Contractor or Certified Underground Utilities Contractor in the State of Florida and provide proof of licensure with the submitted Bid Proposal. Contractor must submit a minimum of eight (8) recent (within the past five years) references of projects of similar size and scope involving manholes, frames and covers, Television Inspection, Gravity Sewer System Smoke Testing, Sewer Line and Manhole Cleaning, Manhole Rehabilitation, Temporary By-Pass Pumping, Monolithic Manhole Lining Systems, Cured in Place Pipe Lining, Sewer line joint testing, Cured in Place Spot Repair, Grouting Lateral Connections, lift station rehabilitations and grouting or any combination of services being offered to the City. Each reference must include a project description, project location, name and phone number of a contact person, total project amount, and completion date. Contractor must comply with the **Technical Specifications included in the Contract Documents.**

SP-51 LICENSE(s) REQUIREMENT: Certified General Contractor **OR** Certified Underground Utilities Contractor.

SP-52 CITY'S STATUS: The City will examine and inspect the work to assure compliance with the requirements of these Contract Documents. The City will determine the quality and acceptability of materials and workmanship relative to the requirements of the Plans and Technical Specifications. The City has the authority as follows:

A. To stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract.

B. To reject all work which does not conform to the Contract.

C. To resolve questions which arise in the execution of the work.

D. To stop work whenever materials or shop drawings have not been approved prior to placement.

No additional time or compensation will be added to the Contract when stopping the work for the above listed reasons.

SP-53 CRITERIA FOR AWARD: This Contract may have multiple awards based on the unit prices for each Category. The awards of work assignments are not guaranteed or implied to be equal.

WORK ASSIGNMENTS: Work Assignment size may vary. No guarantee is expressed or implied as to the quantity of services. All requests for changes to the Work Assignments must be made in writing and are subject to approval by the appropriate level of City authority.

All change orders, including no-cost change orders, to Work Assignments require approval by City Manager, at a minimum. Some change orders will require Commission approval.

An understanding and agreement, by and between the Consultant and the City, that the completion time will be as specified in approved work assignments and that all work must be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will ensure full completion thereof as specified in the Scope of Services.

PRICE ADJUSTMENT: The Vendor may submit requests for unit price adjustments annually. Any price adjustment will require at least thirty (30) calendar days written notice from the Vendor to the City for approval. If the unit price adjustment request is for an increase, and the request is not submitted within this thirty-day timeframe, the Vendor will not be entitled to a price increase for the upcoming year.

Any price adjustments for the subsequent one-year term(s) must only increase or decrease according to the latest version of data published by the U.S. Department of Labor, Bureau of Labor Statistics for the 12-month percentage change, all Items, as published by the United States Department of Labor, Bureau of Labor Statistics, https://www.bls.gov/cpi/.

The City reserves the right to evaluate all requested unit price adjustments to determine if they are appropriate and reasonable. Should the City and the Vendor not mutually agree to a price adjustment, then the City may terminate the agreement with written notice to Vendor. The Vendor must justify its request for an increase by submitting detailed price data and supporting documentation to verify the validity of the unit price increase. The Vendor must also furnish a written statement which states that the increase represents the cost of the service or supply of the goods, and in no way includes an increase for profits or overhead. The City’s Purchasing Division may require additional information to verify the price increase.

CONTRACT PRICE/TERM: The term of the contract commences on the date of executed by the parties and continues through and including September 30, 2026. The contract may be renewed at the same unit prices, terms, and conditions for three (3) additional one (1) year terms, by mutual agreement.

EXHIBIT B TO CONTRACT NO. 2023-40.003
City of North Port Utilities Technical Specifications
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END OF SECTION

SECTION 011000

SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION OF WORK

A. The work of this contract is located in easements, rights-of-way, or on property owned by the City of North Port.

1.2 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, equipment, tools, services, fuel, power, water, shop drawings and incidentals to complete construction of all the work in good faith for the fulfillment of the contract in strict conformance with the contract documents. All materials shall be furnished by the Contractor unless otherwise specified within the contract documents.

B. The Contractor shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements and restoration required as a result of damages caused during this construction.

C. All materials, equipment, skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Plans shall be furnished and installed by the Contractor without additional compensation, whether specifically indicated in the Contract Documents or not. Materials shall be furnished by the Contractor unless otherwise specified within the contract documents.

D. The Contractor shall comply with all municipal, county, state, federal, and other codes which are applicable to the proposed construction work.

E. The Contractor shall perform the work for providing construction services in accordance with the Inflow and Infiltration (I/I) rehabilitation of sanitary sewers and manholes. The City intends to select one or more Contractors to establish three (3) year contracts for as-needed I/I rehabilitation services that the City can use based on planned inspections of the City's sanitary sewer system. The types of rehabilitation work anticipated include sewer line cleaning, gravity sewer smoke testing, manhole rehabilitation, manhole lining systems, cured-in-

place pipe lining and spot repairs, and grouting lateral connections. Contractors do not need to bid on all items.

F. The Contractor is responsible for field measurement and review of existing conditions prior to submitting bid. This shall be performed during the mandatory pre-bid site visit. No additional site visits prior to bid will be allowed.

1.3 SUMMARY OF WORK

A. Furnish all labor, materials, equipment and incidentals required to construct the d Infiltration (I/I) rehabilitation of sanitary sewers and manholes for the City of North Port. Materials shall be furnished by the Contractor unless otherwise specified within the contract documents.

B. The work includes, but is not necessarily limited to, the following:

Providing construction services in accordance with the Inflow and Infiltration (I/I) rehabilitation of sanitary sewers and manholes. The City intends to select one or more Contractors to establish three (3) year contracts for as-needed I/I rehabilitation services that the City can use based on planned inspections of the City's sanitary sewer system. The types of rehabilitation work anticipated include sewer line cleaning, gravity sewer smoke testing, manhole rehabilitation (which includes post-rehabilitation CCTV inspection), manhole lining system, cured-in-place pipe lining and spot repairs, and grouting lateral connections.

1.4 WORK SEQUENCE

A. All work to be done under this contract shall be done with minimum inconvenience to the public and the existing collection systems. The Contractor shall coordinate his/her work with the City and Engineer such that the existing facilities are maintained in operation at all times or provide a by-pass to divert the flow during the construction.

B. The Contractor shall submit a working schedule detailing the order in which the Contractor proposes to perform the work. The working schedule shall be submitted at the pre-construction meeting and comply with the requirements of Section II – General Provisions.

1. The Contractor's schedule shall allow enough time for the City and Engineer to review necessary submittals. The schedule shall allow a minimum of two (2) weeks for the City and Engineer to review and comment on any submittal.

2. The Contractor's schedule shall take into consideration the performance of construction efforts to include the periods between 7:00 AM and 3:30 PM on weekdays. No work shall occur on weekends, legal holidays, or

on weekdays between the hours of 3:30 PM and 7:00 AM without prior written authorization from the City. City holidays are:

a. New Year's Day: January 1

b. Martin Luther King, Jr., Day: 3rd Monday in January

c. President's Day: 3rd Monday in February

d. Memorial Day (observed): Last Monday in May

e. Juneteenth: June 19

f. Independence Day: July 4

g. Labor Day: 1st Monday in September

h. Columbus Day: 2nd Monday in October

i. Veterans Day: November 11

j. Thanksgiving Day: 4th Thursday in November

k. Day after Thanksgiving: Friday after 4th Thursday in November

l. Christmas Eve: December 24

m. Christmas Day: December 25

3. The general sequence of work is listed below.

   a. Maintenance of Traffic (MOT) plan submittal. The Contractor will be required to submit a Maintenance of Traffic Plan (MOT) that is signed/sealed by Florida licensed professional engineer or prepared by someone who possesses FDOT MOT credentials. Submittal of the Maintenance of Traffic plan is in accordance with Section 013000 – Shop Drawings, Submittals, and Samples, and in accordance with FDOT Standards.

   b. Shop drawing submittal and review. Refer to Section 013000 – Shop Drawings, Submittals, and Samples.

   c. Mobilization of equipment and personnel to the site.

   d. Construction of Inflow and Infiltration (I/I) rehabilitation of sanitary sewers and manholes.

e. Completion of final connections to existing mains.

f. Submittal of as-built drawings.

g. Complete site restoration and substantial completion walk through.

h. Complete punch list items and final project closeout.

4. The Contractor's schedule shall be reviewed and approved by the City prior to beginning construction. Any subsequent changes in the sequencing of work shall be made only after a revised schedule is submitted by the Contractor and approved by the City.

1.5 SUBSTANTIAL COMPLETION

A. The work, or any separable parts thereof, identified herein shall be deemed substantially completed at such time that all incidental requirements necessary to enable the City to continuously and successfully utilize the work or separable part thereof, for the purposes of which it is intended are completed.

B. The contract times of substantial completion for the work shall be as identified in the Contract/Agreement.

1.6 CONSTRUCTION AREAS

A. Work areas shall be limited by the property limits and easements shown on the Plans.

B. Contractor shall limit his use of the construction areas for work and for storage, to allow for:

1. Work by other contractors

2. City use

C. Coordinate use of work site with City.

D. Assume full responsibility for the protection and safekeeping of products under this contract, stored on the site. Assume full responsibility for adequacy of the materials and equipment.

E. The Contractor shall coordinate the work of all subcontractors.

1.7 PLANS AND SPECIFICATIONS

A. Specifications

1. The Technical Specifications consist of three parts: General, Products, and Execution. The General Section contains General Requirements which govern the work. Products and Execution modify and supplement these by detailed requirements of the work and shall always govern whenever there appears to be a conflict.

B. Intent

1. All work called for in the Specifications applicable to this contract, but not shown on the Plans in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Plans or in the Specifications but involved in carrying out their intent or in the complete and proper execution of the work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

2. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

3. The inclusion of the General Requirements (or work specified elsewhere) in the General part of the Specifications is only for the convenience of the Contractor and shall not be interpreted as a complete list of related Specification Sections.

1.8 NOISE ABATEMENT

A. This Project shall be executed in accordance with all Noise Ordinances of the City of North Port. All equipment and machinery shall be equipped with exhaust mufflers maintained in good working order to reduce operation noise to minimum levels. Operation of equipment and machinery will be limited to the hours between 7:00 AM and 3:30 PM during regular work days, unless permission is granted in advance by the City based on a critical need for the operation.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 011050

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

A. Description

1. The work to be done consists of the furnishing of all labor, materials and equipment, and the performance of all work included in this Contract. The summary of the work is presented in Section 011000.

B. Work Included

1. The Contractor shall furnish all labor, superintendence, quality control, materials, power, light, heat, fuel, water, tools, appliances, equipment, supplies, and other means of construction necessary or proper for performing and completing the work. He shall obtain and pay for all required permits except permits to be provided by City as specified in Section 016500. He shall perform and complete the work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the City, and in strict accordance with the Contract Documents. The Contractor shall clean up the work and maintain it during and after construction, until accepted, and shall do all work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the work at his own cost, risk, and as approved by the City.

2. The cost of incidental work described in these General Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.

3. The Contractor shall provide and maintain tools, and equipment as may be necessary, at the direction of the City, to perform in a satisfactory and acceptable manner all the work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his workmanship, materials and equipment, prior approval of the City notwithstanding.

4. The Contractor shall remove, demolish and dispose of all equipment, piping, asphalt, rock and appurtenances as shown on the Plans and required to complete the work. No additional payment will be made for additional demolition or disposal work, not specifically specified on the plans as required, to complete the work.

5. The Contractor shall perform all work in accordance with applicable local, state, and federal codes and regulations.

C. Public Utility Installations and Structures

1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, vaults, manholes, and all other appurtenances and facilities pertaining thereto whether owned or controlled by the City, other governmental bodies or privately owned, used to provide gas, electricity, telephone, sewerage, drainage, water or other public or private property which may be affected by the work shall be deemed included hereunder.

2. The Contract Documents contain data relative to existing public or private utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make his own investigations to inform himself fully of the character, condition and extent of all such installations and structures as may be encountered and as may affect the construction operations.

3. The Contractor shall protect all public or private utility installations and structures from damage during the work. Access across any buried installation or structure shall be made only in such locations and by means approved by the Utility Owner. The Contractor shall so arrange his operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing utilities damaged by the Contractor which are shown on the Plans or have been located in the field by the utility shall be repaired by the Contractor, at his expense, as directed by the Utility Owner. No separate payment shall be made for such protection or repairs to public utility installations or structures.

4. Public utility installations or structures owned or controlled by the City or other governmental body which are shown on the Plans to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as a part of the general cost of doing the work and shall be included in the prices bid for the various contract items. No separate payment shall be made therefor.

5. Where public utility installations or structures owned or controlled by the

City or other governmental body are encountered during the course of the work, and are not indicated on the Plans or in the Specifications or have been located in the field by the utility, and when, at the direction of the City, removal, relocation, replacement or rebuilding is necessary to complete the work under this Contract, such work shall be accomplished by the utility having jurisdiction, or such work may be approved, in writing by the City, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required. If such work is accomplished by the Contractor, it will be in accordance with the General Conditions. Damage to any utilities, whether shown on the Plans or not, which, in the opinion of the City, is caused by carelessness on the part of the Contractor shall be repaired at the Contractor's expense. Any delays ensuing from this damage will be considered inexcusable.

6. All City and other governmental utility departments and other owners of public utilities which may be affected by the work will be informed in writing by the Contractor within two weeks after the execution of the Contract or Contracts covering the work. Such notice will set out, in general, and direct attention to the responsibilities of the City and other governmental utility departments and other owners of public utilities for such installations and structures as may be affected by the work and will be accompanied by one set of Plans and Specifications covering the work under such Contract or Contracts.

7. In addition to the general notice given, the Contractor shall give written notice to City and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least one (1) week in advance of breaking ground in any area or on any unit of the work. This can be accomplished by making the appropriate contact with the Sunshine 811.

8. The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the utility owner at no additional cost.

9. Contractor to perform daily watering and use street sweepers daily to monitor and control dust during construction. Contractor to perform daily cleanup of entire project area and with no trash or debris left behind.

1.2 PLANS AND SPECIFICATIONS

A. Plans

1. The Plans referred to in the Contract Documents bear the general project name and number as shown in the Notice to Bidders (Advertisement).

2. When obtaining data and information from the Plans, figures shall be used in preference to scaled dimensions, and large-scale drawings in preference to small scale drawings.

B. Copies Furnished to Contractor

1. After the Contract has been executed, the Contractor will be furnished with an electronic copy of the contract documents. Hard/paper copies of the Plans and Specifications, when requested, may be furnished to the Contractor at cost of production.

2. The Contractor shall furnish each of the subcontractors, manufacturers, and material suppliers such copies of the Contract Documents as may be required for their work.

C. Supplementary Drawings

1. When, in the opinion of the City or Engineer, it becomes necessary to explain more fully the work to be done or to illustrate the work further or to show any changes which may be required, drawings known as Supplementary Drawings, with specifications pertaining thereto, will be prepared by the Engineer and electronic copies thereof will be given to the Contractor.

D. Contractor to Check Plans and Data

1. Contractor shall verify all dimensions, quantities and details shown on the Plans, Supplementary Drawings, Schedules, Specifications or other data received from the Engineer or City, and shall notify him of all errors, omissions, conflicts, and discrepancies found therein as soon as found and in a timely manner. Contractor shall get his own geotechnical information if he/she deems it necessary. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory work, faulty construction or improper operation resulting therefrom nor from rectifying such conditions at his own expense. He will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the City, should such errors or omissions be discovered.
2. All schedules are given for the convenience of the Engineer and the Contractor and are not guaranteed to be complete or final. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quality of materials and equipment included in work to be done under the Contract.

1.3 MATERIALS AND EQUIPMENT

A. Manufacturers

1. No manufacturer will be approved for any materials to be furnished under this Contract unless he shall be of good reputation and have a plant of ample capacity. He shall, upon the request of the City, be required to submit evidence that he has manufactured a similar product to the one specified and that it has been previously used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

2. All communications with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request, in writing to the City, that the Manufacturer or subcontractor deal directly with the City. Any such communications shall not in any way release the Contractor from his full responsibility under this Contract.

B. Delivery, Storage and Handling

1. The Contractor shall deliver materials in ample quantities to insure the most speedy and uninterrupted progress of the work to complete the work within the allotted time. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the work of any other contractor, subcontractor or the City.

2. The Contractor shall deliver materials and equipment in Manufacturer’s original unopened and undamaged containers with legible labeling. Materials and equipment shall be stored in such a manner as to prevent damage from environment and construction operations. Handling shall be in accordance with Manufacturer's requirements.

3. The Contractor shall store materials and equipment removed from the existing sanitary sewer, potable water & stormwater system in onsite locations designated by the City. Materials and equipment shall be stored in such a manner as to prevent damage from environment and construction operations. Handling shall be in accordance with Manufacturer’s requirements.

C. Tools and Accessories

1. Contractor shall have the Manufacturer, unless otherwise stated in the Contract Documents, furnish with each type, kind or size of equipment, one complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment. Special tools are defined as any tools specifically manufactured for use with the Manufacturer’s equipment. Such tools and appliances shall be furnished in approved painted steel cases,

properly labeled and equipped with good grade cylinder locks and duplicate keys.

2. Spare parts shall be furnished by the Contractor when specified in individual specification sections.

3. Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the Manufacturer's name, year of manufacture, serial number, weight and principal rating data.

D. Installation of Equipment

1. The Contractor shall have on hand proper equipment and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character.

2. Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Plans, unless approved otherwise by the City or Engineer during installation. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.

3. The Contractor shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be as approved by the City or Engineer and made of ample size and strength for the purpose intended. Substantial templates and working drawings for installation shall be furnished.

4. The Contractor shall, at his own expense, furnish all materials and labor for, and shall properly bed in non shrink grout, each piece of equipment on its supporting base that rests on masonry foundations. Grout shall completely fill the space between the equipment base and the foundation. All metal surfaces coming in contact with concrete or grout shall be coated.

E. Service of Manufacturer's Engineer

1. The Contract prices for materials and equipment furnished under this Contract shall include the cost of furnishing a competent and experienced Engineer or Superintendent (as required by equipment specifications sections) who shall represent the Manufacturer and shall assist the Contractor, when required, to install, adjust, test and place in operation the equipment in conformity with the Contract Documents. Prior to placing the equipment in operation, such Engineer or

Superintendent shall make all adjustments and tests required and specified by the City or Engineer to prove that such equipment is properly installed and in satisfactory operating condition, and shall instruct such personnel as may be designated by the City or Engineer in the proper operation and maintenance of such equipment. The Contractor shall provide O&M Manuals as applicable to the project.

1.4 INSPECTION AND TESTING

A. General

1. Inspection and testing of materials will be performed by the Contractor unless otherwise specified.

2. For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Certified electronic copies of the reports shall be submitted and authoritative certification thereof must be furnished to the City as a prerequisite for the acceptance of any material or equipment.

3. If, in the making of any test of any material or equipment, it is ascertained by the City that the material or equipment does not comply with the Contract, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the City.

4. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEEE, or as stated herein. The most stringent test will be used in case of any discrepancy.

5. The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the City formally takes over the operation thereof.

B. Costs

1. The costs of inspection and testing of materials furnished under this Contract shall be borne by the Contractor, unless otherwise expressly specified.

2. The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the

Contractor and such costs shall be deemed to be included in the Contract price.

3. Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the City for compliance. The Contractor shall reimburse the City for the expenditures incurred in making such tests on materials and equipment which are rejected for non-compliance.

C. Preliminary Field Tests of Equipment

1. As soon as conditions permit, the Contractor shall furnish all labor, materials, and instruments and shall make preliminary field tests of equipment. If the preliminary field tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to the acceptance tests, make all changes, adjustments and replacements required. The furnishing Contractor shall assist in the preliminary field tests as applicable.

D. Final Field Tests

1. Upon completion of the work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

2. The Contractor shall furnish labor, fuel, energy, water and all other materials, equipment and instruments necessary for all acceptance tests, at no additional cost to the City. The Furnishing Supplier shall assist in the final field tests as applicable.

1.5 TEMPORARY STRUCTURES

A. Responsibility for Temporary Structures

1. In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary structures or work and for any damage which may result from their failure or their improper construction, maintenance or operation and will indemnify and save harmless the City, and City's Sub-consultants from all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

B. Temporary Fences

1. If, during the course of the work, it is necessary to remove or disturb any

fence or part thereof, the Contractor shall, at his own expense, if so approved by the City, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced at the Contractor's cost and risk. The City shall approve the material to replace the permanent fence.

1.6 SAFETY

A. Accident Prevention

1. The Contractor shall be solely responsible for the condition of the project site, including safety of all persons and property during performance of the Work in accordance with the Contract Documents. Precautions shall be exercised for the protection of person and property. The safety provisions of applicable laws, building and construction codes shall be observed. The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91 596), and under Section 107 of the contract Work Hours and Safety Standards Act (PL 54), except where state and local safety standards exceed the federal requirements and except where state safety standards have been approved by the Secretary of Labor in accordance with provisions of the Occupational Safety and Health Act, shall be complied with.

B. First Aid

1. The Contractor shall keep upon the site, at each location where work is in progress, a completely equipped first aid kit and shall provide ready access thereto at all times when people are employed on the work.

1.7 LINES AND GRADES

A. Grade

1. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Plans, or as approved by the City. The full responsibility for keeping alignment and grade shall rest upon the Contractor.

B. Safeguarding Marks

1. The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of reestablishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.

2. The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

3. Stationing needs to be maintained at all times.

1.8 ADJACENT STRUCTURES AND LANDSCAPING

A. Responsibility

1. The Contractor shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the work, except as specifically described in the Plans and Specifications. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown on the Plans, and the removal, relocation and reconstruction of such items called for on the Plans or specified shall be included in the various Contract Items and no separate payments will be made therefor. Where such public and private property, structures of any kind and appurtenances thereto are not shown on the Plans and when, in the opinion to avoid interference with the work, payment therefor will be made as provided for in the General Conditions.

2. Contractor is expressly advised that the protection of buildings, structures, tunnels, tanks, pipelines, etc. and related work adjacent and in the vicinity of his operations, wherever they may be, is solely his responsibility. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the Contractor.

3. Contractor shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the City. This does not preclude the Contractor of conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be submitted to the City.

4. Prior to the beginning of any excavations, the Contractor shall advise the Engineer and City of all buildings or structures on which he intends to perform work or which performance of the project work will affect.

B. Protection of Trees

1. All trees and shrubs within the limits of clearing which are to be preserved shall be adequately protected by the Contractor in accordance with City of North Port regulations. No excavated materials shall be placed within the dripline of any tree or shrub, so as to injure such trees or shrubs. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced in accordance with City of North Port regulations by him with new stock of similar size and age, at proper season and at the sole expense of the Contractor, and maintained until established.

C. Restoration of Fences

1. Unless otherwise shown on the Drawings, any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the City. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific Item is provided therefore, as part of the overhead cost of the work, and no additional payment will be made therefore. Private fences removed from within the Right-of-Way shall be replaced as described above at the Right-of-Way line.

1.9 PROTECTION OF WORK AND PUBLIC

A. Barriers and Lights

1. During the prosecution of the work, the Contractor shall put up and maintain at all times such barriers and lights as will effectually prevent accidents. The Contractor shall provide suitable barricades, lights, "danger" or "caution" signs at all places where the work causes obstructions or constitutes in any way a hazard to the plant personnel in accordance with state and local requirements.

B. Smoke Prevention

1. A strict compliance with ordinances regulating the production and emission of smoke will be required. No open fires will be permitted.

C. Noise

1. The Contractor shall eliminate noise to as great an extent as practicable

at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

2. Except in the event of an emergency, work shall be done within the regular working hours specified in the General and Supplementary Conditions. If the proper and efficient prosecution of the work requires operations during the night, the written permission of the City shall be obtained before starting such items of the work.

3. Methods, Equipment, and Materials Description Plan: Prior to mobilization, the Contractor shall submit detailed description of methods, equipment, and materials to be used for the project.

4. Descriptions of equipment shall include Manufacturers' specifications, calibrations, appropriate drawing, photographs, and descriptions of any modifications since manufacture. This plan shall also include the Contractor's means for complying with all local noise ordinances and project specific noise requirements, including sound attenuation as necessary (City of North Port Administrative Code, Chapter 46, Article II, Division 2). The Contractor will not be allowed to mobilize until the Engineer and City approve the plan.

5. Once equipment is mobilized to the site and prior to start of work, the Contractor will be responsible for establishing a noise recording device at the closest property line to monitor noise levels and confirm that the noise levels established for the project are not exceeded. A copy of the noise ordinance is attached.

D. Access to Public Services

1. Neither the materials excavated nor the materials or plants used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes, or access required by emergency vehicles and/or personnel. During the project access to residences and mailboxes shall be maintained at all times, deliveries and medical supplies etc. shall not be obstructed.

E. Dust Prevention

1. The Contractor shall prevent dust nuisance from his operations or from traffic by keeping the roads and/or construction areas sprinkled with water at all times.

1.10 CUTTING AND PATCHING

A. The Contractor shall do all cutting, fitting or patching of his portion of the work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the City and in accordance with the Plans and Specifications. The work must be done by competent workmen skilled in the trade required by the restoration.

1.11 CLEANING

A. During Construction

1. During construction of the work, the Contractor shall keep the site of the work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the City, such material, debris, or rubbish constitutes a nuisance or is objectionable.

2. The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefor develops.

3. The Contractor shall be responsible and liable for all spillage and incur all associated costs including, but not limited to, costs related to repair and maintenance resulting from damages thereof.

B. Final Cleaning

1. At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.

2. The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver such materials and equipment undamaged in a bright, clean, polished and new operating condition.

1.12 MISCELLANEOUS

A. Handling of Salty Water, Drilling Fluids and Drill Cutting

1. Due precautions should be taken to prevent spills; any spillage of fluids shall be returned to the closed circulation system.

2. In the event of any incidents occurring during construction activities (e.g. on-site spills, large volumes of circulation losses, etc.) the Contractor shall inform the City within one (1) hour so that the FDEP and other applicable agencies may be notified.

B. Protection of Waters

1. The Contractor shall properly dispose of all surplus material, including soil, in accordance with Local, State and Federal regulations. Under no circumstances shall surplus material be disposed of in waters as defined by the Florida Department of Environmental Protection, Southwest Florida Water Management District, Environmental Protection Commission, or United States Army Corps of Engineers.

C. Existing Facilities

1. The work shall be so conducted to maintain existing facilities in operation insofar as is possible. Requirements and schedules of operations for maintaining existing facilities in service during construction shall be as described in these Specifications.

D. Use of Chemicals

1. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA, NSF or USDA.

E. Cooperation with Other Contractors and Forces

1. During progress of work under this Contract, it may be necessary for other contractors and persons employed by the City to work in or about the site. The City reserves the right to put such other contractors to work and to afford such access to the site of the work to be performed hereunder at such times as the City deems proper. The Contractor shall not impede or interfere with the work of such other contractors engaged in or about the work and shall so arrange and conduct his work that such other contractors may complete their work at the earliest date possible. Contractor shall allow access through the project site by other contractors employed by the City.

F. Temporary Utilities

1. Where water is required, purchase it from the City. A meter will be installed on a fire hydrant, location to be determined by the Contractor and coordinated with the City. The Contractor shall pay all fees and water usage charges.

2. Light and Power: Provide without additional cost to the City temporary lighting and power facilities required for the proper construction and inspection of the Work. If, in the City’s opinion, these facilities are inadequate, do NOT proceed with any portion of the Work affected

thereby. Maintain temporary lighting and power until the Work is accepted.

3. Sanitary Facilities: Provide sufficient sanitary facilities for construction personnel. Prohibit and prevent nuisances on the site of the Work or on adjoining property. Discharge any employee who violates this rule. Abide by all environmental regulations or laws applicable to the Work.

G. Valves

1. City will operate all valves for shutdowns (including emergency shut downs) for the duration of the project. Contractor must provide a schedule for valve operation and shut downs a minimum of ten (10) days prior to the request for the isolation and/or shut down.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01110

ENVIRONMENTAL PROTECTION PROCUEDURES

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of inspection, rehabilitation and/or construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to construction activity in that area.

D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Southwest Florida Water Management District, the Florida Department of Environmental Protection and the City of North Port. Prepare sedimentation and erosion control drawings meeting the requirements for approval by these agencies. Upon approval, furnish two copies of the approved Drawing to the Engineer and/or City.

1.2 APPLICABLE REGUATIONS

A. Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

1.3 NOTIFICATIONS

A. The Engineer and/or City will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer or City, of any non-compliance with State or local requirements. After receipt of such notice from the Engineer, City or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the City may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.4 IMPLEMENTATION

A. Prior to commencement of the work, meet with the Engineer and/or City to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer and/or City and incorporate permanent control features into the project at the earliest practicable time.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 EROSION CONTROL

A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.

3.2 PROTECTION OF STREAMS AND OTHER SURFACE WATERS

A. Take all precautions to prevent, or reduce to a minimum, any damage to any stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Divert such waters through a settling basin or filter before being directed into streams or surface waters.

B. Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. Take all preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action approved by the Florida Department of Environmental Protection.

3.3 PROTECTION OF LAND RESOURCES

A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer and/or City. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.

D. Trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The Engineer and/or City will decide the method of restoration to be

used and whether damaged trees shall be treated and healed or removed and disposed of.

1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than one (1”) inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer and/or City, shall be immediately removed and replaced.

E. The locations of the Contractor's storage and other construction buildings required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and approved by the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer and/or City.

F. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, they shall submit the following for approval at least ten days prior to scheduled start of such temporary work.

1. A layout of all temporary roads, excavations, embankments and drainage to be constructed within the work area.

2. Details of temporary road construction.

3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

4. A landscaping drawing showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The Drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or

embankment construction including disposal areas will be permitted.

G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer and/or City. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as described in Section 321030, or as approved by the Engineer and/or City.

H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.4 PROTECTION OF AIR QUALITY

A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control - Maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer and/or City.

3.5 NOISE CONTROL

A. Make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.

3.6 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

SECTION 012000

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 EXPLANATION AND DEFINITIONS

A. The following explanation of Measurement and Payment for the bid form items is made for information and guidance. The omission of reference to any item in this description shall not, however, alter the intent of the bid form or relieve the Contractor of the necessity of furnishing such as a part of the contract at no additional cost.

1.2 MEASUREMENT

A. The quantities set forth in the bid form are approximate and are given to establish a uniform basis for the comparison of bids. The City reserves the right to increase or decrease the quantity of any class or portion of the work during the progress of construction in accord with the terms of the Contract.

B. The lump sum price for mobilization/demobilization shall not exceed five percent (5%) of the total of all other items bid (excluding this item). The Contractor shall provide a breakdown of the lump sum bid for mobilization. The breakdown shall identify items of preparatory work and operations with the corresponding cost per item.

1.3 PAYMENT

A. Payment shall be made for the items listed on the Bid Form on the basis of the work actually performed, completed, and accepted by the City, such Work including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, cleanup, restoration of disturbed areas, and all other appurtenances to complete the construction and installation of the Work as shown on the Plans and described in these Technical Specifications.

B. Unit prices are used as a means of computing the final figures for bid and Contract purposes, for periodic payments for Work performed, for determining value of additions or deletions, and wherever else reasonable.

C. Measurement and payment for lump sum Bid Items will be made on a monthly basis based on a percentage of completion based on the Contractor's schedule of values.

D. Monthly payments shall be subject to retainage as stated in the Contract.

1.4 MEASUREMENT FOR PAYMENT

A. Methods for Measurement: Units for measurement shall be:

1. Each (EA).
2. Linear Feet (LF).
3. Lump Sum (LS).
4. Square Feet (SF).
5. Square Yards (SY).

B. Unit Price Contracts/Items:

1. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified. Pipe shall be measured along the centerline of the length of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves or fittings. Pipe included within the limits of lump sum items will not be measured.

2. Square Feet (SF) and Square Yards (SY) shall be measured as the amount of the material installed within the limits shown and specified in the Plans and these Technical Specifications. Slope angles and elevations shall be measured using land surveying equipment. The Contractor shall provide supporting documentation (i.e., drawings, delivery tickets, invoices, survey calculations, etc.) to verity the actual quantity installed.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 GENERAL

A. Payment shall be made on the basis of Work actually performed completing each item in the Bid Form, such Work including, but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, cleanup, and all other appurtenances to complete the construction and installation of the work to the configuration and extent as shown on the Construction Plans and described in these Technical Specifications.

B. Water used for flushing, pressure testing, and other activities shall be provided through a metered jumper. The cost of the City meter, fee for water used, and the necessary piping and appurtenances shall be included in the unit price for the Item in which the water is being used for.

C. No payment will be made for work outside the scope of work performed prior to approval of a change order.

D. No separate payment will be made for the following items and the cost of such Work shall be included in the applicable Bid Items:

1. Submittals.
2. Obtaining and maintaining areas for storage and staging.
3. Furnishing, installing, and maintaining erosion control and other environmental protection measures
4. Dust control.
5. Clearing and grubbing.
6. Removal and replacement of all obstructions located in the path of the work including but not limited to signs, fences, trees, ornamental vegetation, landscaping structures, sidewalk, curbing, culverts, storm sewers, etc., unless paid for under a separate bid item.
7. Stripping and stockpiling topsoil.
8. Holding/staying utility poles to facilitate construction.
9. Necessary pavement/slab removal, including but not limited to saw cutting and removing the entire thickness of the pavement/slab.
10. Replacement or restoration of paved or unpaved roadways and grass and shrubbery plots outside of established pay limits.
11. Restoration of shell and crushed stone drives unless paid for under a separate bid item.
12. Replacement or restoration of curbing, gutter, sidewalk, and site restoration of any areas damaged during construction activities.
13. Grading.
14. Sodding.
15. Removing/hauling and disposing of waste material due to construction.
16. Cleanup.
17. Maintaining the existing quality of service during construction.
18. Utility notification and location and exploratory excavations for locating existing utilities.
19. Protection of existing utilities during construction.
20. Repair of existing utilities damaged during construction.
21. Repair of utility service connections (including but not limited to sanitary sewer house laterals; potable water service lines; reclaimed water service lines; electric, cable, and telephone service lines) damaged during construction.
22. Repair of irrigation systems damaged during construction.

23. Repair and/or cleaning of storm sewers, inlets, and catch basins damaged or filled with sediment during construction.
24. Providing the services of an independent testing laboratory for materials and compaction testing.
25. Providing the services of a professional land surveyor, licensed in the State of Florida, to establish horizontal and vertical control, layout the work, and assist with the preparation of as-built drawings.
26. Complying with permit requirements, including submitting notifications, reporting, and closeout documentation.
27. As-built drawings.
28. Noise suppression measures.
29. Removing, relocating, and resetting existing street signage to facilitate construction.
30. Removing, relocating, and resetting mailboxes to facilitate construction.
31. Protection existing landscaping during construction.
32. Repairing and/or replacing existing landscaping damaged or repaired during construction with in kind landscaping.
33. Warranties.
34. All other appurtenant work as required for a complete and operable system.

3.2 BID ITEMS

See Bid Form

END OF SECTION

SECTION 012100

EXCAVATION – SUNSHINE 811

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall comply with all regulations and laws concerning excavation, demolition, and use of explosives in any public way, public utility company right-of-way or easement, or privately-owned land under which any public utility company maintains facilities.

1.2 REQUIREMENTS

A. Utility Underground Plant Damage Prevention Authority: Sunshine State One Call (Sunshine 811) is the Utility Underground Plant Damage Prevention Authority in Florida.

1. The Contractor shall be aware that not all utilities are members of Sunshine State One Call.

B. The telephone number for Sunshine State One Call is 811 or 800-432-4770.

C. The Contractor shall notify Sunshine State One Call of contemplated excavation, demolition, and use of explosives in public or private ways and in any utility company right of way or easement.

D. The Contractor shall also notify all non-members of Sunshine State One Call of contemplated excavation, demolition, and use of explosives in public or private ways and in any utility company right of way or easement.

E. Notification of Sunshine State One Call and non-members of Sunshine State One Call shall be made at least two full business days prior to the work for regular dig sites (10 full business days when digging underwater). Utilities contacted are required to respond to the notice within two business days for regular dig sites (10 business days for underwater sites) from the time said notice is received by designating at the specified site the location of pipes, mains, wires, or conduits.

F. The Contractor shall not commence Work until all utilities have responded as noted above. The Work shall then be performed in such a manner and with reasonable precautions taken to protect the locate

marks through the project and avoid damage to utilities under the surface in said areas of Work.

G. Any deviations that affect the Work shall be reported to the City and Engineer.

H. A Sunshine State One Call ticket is valid for 30 calendar days.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 012500

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Furnish and install products specified, under options and conditions for substitutions stated in this Section.

B. Whenever a product, material or item of equipment is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, followed by the phrase "or equal," the specific item mentioned shall be the basis upon which bids are to be prepared, and shall be understood as establishing the type, function, dimension, appearance and quality desired. Other manufacturer's or vendor's products not named will be considered as substitutions, provided the required information is submitted in the manner set forth in this Section and provided the substitution will not require substantial revision to the Contract Documents.

1.2 RELATED WORK

A. Delivery Storage and Handling is included in Section 016610.

1.3 SUBMITTAL OF LIST OF PROPOSED SUBSTITUTIONS

A. Bidders shall submit their list of proposed substitutions and the proposed monetary changes associated therewith to the City together with their bids.

1.4 CONTRACTOR’S OPTIONS

A. Products shall be in accordance with City of North Port Utilities Standards Specifications and Standard Details, unless otherwise specified.

B. For Products specified by naming several products or manufacturers, select any one of products and manufacturers named which complies with Specifications.

C. For products specified by naming one or more products or manufacturers and stating, "or equal," submit a request as for substitutions, for any product or manufacturer which is not specifically named.

D. For products specified by naming only one product and manufacturer, there is no option and no substitution will be allowed.

1.5 SUBSTITUTIONS

A. In order for substitutions to be considered, the Contractor shall submit, within 30 days of issuance of Notice to Proceed, complete data as set forth herein to permit complete analysis of all proposed substitutions noted on his substitutions list. No substitution shall be considered unless the Contractor provides the required data in accordance with the requirements of this Section within the 30-day period, unless agreed in writing by City & Contractor.

B. Submit separate request for each substitution. Support each request with:

1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents:

    a. Product identification, including manufacturer's name and address.

    b. Manufacturer's literature; identify:

        1) Product description.
        2) Reference standards.
        3) Performance and test data.
        4) Operation and maintenance data.

    c. Samples, as applicable.

    d. Name and address of similar projects on which product has been used, and date of each installation.

2. Itemized comparison of the proposed substitution with product specified. List significant variations. Substitution shall not change design intent and shall perform equal to that specified.

3. Data relating to impact on construction schedule occasioned by the proposed substitution. Substitutions shall not allow delay of substantial completion.

4. Any effect of substitution on separate contracts.

5. List of changes required in other work or products.

6. Accurate cost data comparing proposed substitution with product specified.

    a. Amount of any net change to Contract Sum.

7. Designation of required license fees or royalties.

8. Designation of availability of maintenance services, sources of replacement materials.

C. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on shop drawings or product data submittals without a formal request from Contractor.

2. They are requested directly by a subcontractor or supplier.

3. Acceptance will require substantial revision of Contract Documents.

D. Requests for substitutions submitted more than 30 days after NTP will not be considered unless evidence is submitted to the City and Engineer that all of the following circumstances exist:

1. The specified product is unavailable for reasons beyond the control of the Contractor. Such reasons shall consist of strikes, bankruptcy, discontinuance of manufacturer, or Force Majeure.

2. The Contractor placed, or attempted to place, orders for the specified products within 10 days after Notice of Award.

3. Request for substitution is made in writing to the City within 10 days of the date on which the Contractor ascertains that he cannot obtain the item specified.

4. Complete data as set forth herein to permit complete analysis of the proposed substitution is submitted with the request.

E. The City’s decision regarding evaluation of substitutions shall be considered final and binding. Requests for time extensions and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed.

1.6 CONTRACTOR’S REPRESENTATION

A. In making formal request for substitution, Contractor represents that:

1. He/she has investigated proposed product and has determined that it is

equal to or superior in all respects to that specified.

2. He/she will provide same warranties or bonds for substitution as for product specified.

3. He/she will coordinate installation of accepted substitution into the Work and will make such changes as may be required for the Work to be complete in all respects.

5. He/she waives claims for additional costs caused by substitution which may subsequently become apparent.

6. Cost data is complete and includes related costs under his/her Contract, but not:

   a. Costs under separate contracts.

   b. City’s costs for redesign or revision of Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 012613

REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. This Section specifies the general methods and requirements of Requests for Information (RFIs).

1.2 RELATED WORK

A. Additional requirements may be specified in the General Conditions.

B. Submittals are included in Section 013000.

C. Project Record Documents are included in Section 017839.

1.3 REQUESTS FOR INFORMATION

A. When the Contractor believes that additional information or clarification of a contract requirement is needed, it may initiate a Request for Information

B. RFIs may relate to Technical matters or Administrative matters. The RFI process shall be limited to the clarification of technical and/or administrative matters. While the response to an RFI might lead to a change in the contract scope, cost or time, RFIs are not a substitute to the notification requirements stipulated in the General Conditions.

C. A response to an RFI may authorize minor changes to the contract consistent with the terms of the contract related to the responsibilities and limitations of authority of the City.

D. A response to an RFI is not an authorization to perform any additional work that would require that change order or written amendment to the contract. If the Contractor believes the response to an RFI requires a change to the contract, Contractor shall promptly provide written notice to the City in accordance with the General Conditions.

E. RFIs are not a substitute for the Submittals process specified elsewhere.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 ORIGINATION

A. The Contactor shall originate RFIs.

1. RFIs numbering shall be sequential. In the event that an answered RFI results in a follow-up inquiry, the follow-up shall maintain the same number as the original, appended with a suffix.

2. Include Specification Section(s), Drawing(s), or detail(s) for which information is requested.

3. Attach drawings, sketches, photographs or other relevant information.

4. If the question concerns an interpretation of the Contract Documents, enter the Contractor's interpretation.

5. Indicate the date by which the Contractor requests a reply.

6. Sign the appropriate portion of the form.

B. RFIs may not be submitted by subcontractors or suppliers. When a subcontractor or supplier generates a request for information or clarification to the Contractor, the Contractor shall incorporate such requests into the required format.

C. Contractor shall maintain a log of all RFIs including the date originated, date delivered, and date answered.

3.2 PROCESSING

A. Contractor shall submit all RFIs to the City for processing via email. Engineer must be copied on RFI and the subject line must contain the project name and the letters “RFI”.

B. Technical RFIs will generally be reviewed and answered by the respective discipline Engineer or architect. The Engineer will forward the RFI response to the City and Contractor.

C. Administrative RFIs will generally be reviewed and answered by the Engineer in consultation with the City. The Engineer will then forward the RFI response to the City and Contractor.

D. The Engineer will generally respond to RFIs within seven calendar days of receipt – depending on the complexity of the inquiry.

3.3 RESPONSES

A. If the RFI contains sufficient clarity, the Engineer will insert a response in the lower portion of the RFI form, sign and date the response; and, return the completed form to the City and Contractor.

B. If the RFI does not contain sufficient clarity, the Engineer may request additional information, from the Contractor.

C. Engineer will distribute copies to the City and project files.

D. Engineer will maintain a log of all RFIs including the date received and date returned to Contractor.

3.4 RECORD INFORMATION

A. Contractor shall include all clarifications obtained through the RFI process into the record information in accordance with Section 017839.

END OF SECTION

SECTION 012663

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall promptly implement change order procedures:

1. Provide full written data required to evaluate the time and associated costs of changes.

2. Maintain detailed records of work done on a time-and-material basis.

3. Provide full documentation to the City.

1.2 DEFINITIONS

A. Change Order: A written order that is issued to modify or amend a contract or purchase order, which directs the Contractor to make changes to the contract price, contract time, or contract scope. In reference to construction contracts, it relates primarily to changes caused by unanticipated conditions encountered during construction not covered in the Contract Documents for the project.

1.3 PRELIMINARY PROCEDURES

A. The City may initiate changes by submitting a proposal request to the Contractor. Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress. Request will include:

1. Detailed description of the change, products, and location of the change in the project.

2. Supplementary or revised Plans or Technical Specifications.

3. The projected time span for making the change and whether overtime work is authorized.

4. A specific period of time during which the requested price will be considered valid.

B. The Contractor may initiate changes by submitting a written notice to

City, containing:

1. Description of the proposed changes.

2. Statement of the reason for making the changes.

3. Statement of the effect on the contract price and the contract time.

4. Statement of the effect on the work of subcontractors or other contractors.

5. Documentation supporting any change in contract price and/or contract time.

1.4 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. For each item for which a unit price has not previously been established, provide a lump sum proposal with sufficient substantiating data including labor, materials, equipment, and overhead and profit to allow the City to evaluate the quotation.

B. On request, provide additional data to support time and cost computations:

1. Labor required.

2. Equipment required.

3. Products required.
   a. Recommended source of purchase and unit cost.
   b. Quantities required.

4. Insurance and bonds.

5. Credit for work deleted from Contract, similarly detailed and documented.

6. Overhead and profit.

   a. The Contractor’s fee for overhead and profit shall be limited to:

      i. Direct payroll costs: Fifteen percent (15%).
      ii. Materials and equipment incorporated into the work: Fifteen percent (15%).
      iii. Subcontractors: Five percent (5%).
      iv. Rentals of construction equipment and machinery: Zero percent (0%).
      v. Special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and

accountants): Zero percent (0%).
vi. Transportation and maintenance of materials, supplies, equipment, machinery, tools, appliances, office, and temporary facilities: Zero percent (0%).
vii. Utilities: Zero percent (0%).
viii. Bonds and Insurance: Zero percent (0%).

7. Justification for any change in Contract Time. Justification shall include a revised project schedule identifying the impact of the change.

C. Support each claim for additional costs, and for work done on a time-and-material basis, with documentation as required for a lump-sum proposal, plus additional information:

1. Name of the City's authorized agent who ordered the work, and date of the order.

2. Dates and times work was performed, and by whom.

3. Time record, summary of hours worked, and hourly rates paid (Certified Payroll).

4. Receipts and invoices for:

a. Equipment used, listing dates and times of use, and hourly rates.
b. Products used, listing of quantities and receipted bills.
c. Subcontractors billings and description of work performed.

1.5 PREPARATION OF CHANGE ORDERS

A. The City will prepare each Change Order utilizing backup prepared by the Contractor.

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.

C. Change Order will provide an accounting of the adjustment in the contract price and/or contract time.

1.6 LUMP SUM OR FIXED PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. The City's proposal request and Contractor's responsive proposal as mutually agreed between the City and Contractor.

2. The Contractor's proposal for a change, as recommended by the City.

B. The Contractor shall sign and date the Change Order to indicate agreement with the terms therein.

C. The City will sign and date the Change Order as authorization for the Contractor to proceed with the changes.

1.7 UNIT PRICE CHANGE ORDERS

A. Content of Change Orders will be based on, either:

1. The City's definition of the scope of the required changes.

2. The Contractor's proposal for a change, as recommended by City.

3. Measurement of completed work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.

2. Those mutually agreed upon between the City and Contractor.

1.8 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. The Contractor shall revise the Schedule of Values and Request for Payment forms to record each change as a separate item of Work, and to record the adjusted contract price.

B. The Contractor shall revise the Construction Schedule to reflect each change in Contract Time. Subcontractor schedules shall also be revised to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, the Contractor shall record pertinent changes in the as-built drawings.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 012973

SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Procedures for preparation and submittal of schedule of values.

1.2 FORMAT

A. The cost breakdown shall generally be in the same format as the Technical Specifications, with major items of work listed individually and clearly correlated to bid items.

B. The cost breakdown shall include separate cost for any testing, startup, and training as required.

1.3 CONTENT

A. List estimated installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for Progress Payments.

B. For each major subcontract, list products and operations of that subcontract as separate line items.

C. Coordinate listed items with Progress Schedule.

D. For lump sum bid items, component listing shall each include a directly proportional amount of Contractor’s overhead, profit, and bonds and insurance costs.

E. For items on which payments will be requested for stored products, list sub-values for cost of stored products.

F. The sum of values for all items associated with a bid item shall equal the total cost of the bid item. The sum of values listed shall equal total Contract Price.

G. Unbalanced schedule of values will not be acceptable and, when discovered, will be returned for adjustment to reflect actual costs.

H. Contractor to assist the City to develop the retired asset’s value as

applicable to the project.

1.4 SUBSTANTIATING DATA

A. When the City or Engineer requires substantiating information, submit data justifying line items amounts in question. Only those line item amounts that the Contractor can justify to the satisfaction of the City and Engineer will be acceptable.

1.5 SUBMITTAL

A. Submit the preliminary schedule of values within 10 days of Notice to Proceed.

B. If activities are added or removed from the Contract, revise the schedule of values and resubmit.

C. No payment will be made to the Contractor prior to acceptance of the schedule of values by the City and Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 012983

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Submit Applications for Payment to the City in accordance with the schedule established by Conditions of the Contract and Agreement between City and the Contractor.

B. The accepted Schedule of Values, Section 012973 shall be used as the basis for the Contractor's Application for Payment.

1.2 FORMAT AND CONTENT

A. Contractor’s standard forms will be considered for approval by the City upon Contractor’s request.

1. The Schedule of Values shall provide a breakdown of the Contract value in sufficient detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items as necessary. The total shall equal the Contract value.

2. Show line items for indirect costs and margins on costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

    a. Temporary facilities and items that are not direct cost of work-in-place may be shown as separate line items if bid in that manner.

3. Update and resubmit the Schedule of Values when Change Orders change the Contract value.

1.3 APPLICATION FOR PAYMENT

A. Applications for Payment shall be consistent with previous applications and payments as certified and paid for by the City and/or Engineer.

B. Payment Application Times: Pay periods shall run through month end, unless otherwise stated. The City and Engineer shall review draft application and provide comments/corrections to the Contractor within 7

days of receipt of draft application. The City shall issue payment to the Contractor in accordance with the Florida Prompt Payment Act.

C. Payment Application Forms: Payment Application forms shall be prepared the Contractor and sent to the City for approval.

D. Application Preparation: Complete every entry, including notarization and execution by a person authorized to sign on behalf of the Contractor. The City will return incomplete applications without action.

E. Entries shall match data on the Schedule of Values and the Contractor's Progress Schedule. Use updated schedules if revisions were made.

F. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.

G. Monthly applications for payment shall be subject to retainage in accordance with the Prompt Payment Act and as stated in the Contract.

1.4 TRANSMITTAL

A. Submit certified electronic copies of each Application for Payment to the City within the timeframes set forth in Section 218.735 F.S. One copy shall be complete, including waivers of lien, updated project schedule, and surety company consent to progress payment.

1. Transmit each copy with a transmittal listing attachments and recording appropriate information related to the application.

1.5 INITIAL APPLICATION FOR PAYMENT

A. Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Progress Schedule (preliminary if not final).
5. Submittal Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. Copies of building permits (if applicable).

8. Copies of licenses from governing authorities.

9. Certificates of insurance and insurance policies.

10. Performance and payment bonds.

1.6 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

A. Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect Certificates of Partial Substantial Completion issued previously for City occupancy of designated portions of the Work.

1. Administrative actions and submittals that shall precede or coincide with this application include the following:

   a. Occupancy permits (if applicable).
   b. Warranties and maintenance agreements.
   c. Test/adjust/balance records.
   d. Maintenance instructions.
   e. Meter readings.
   f. Changeover information related to City's occupancy.
   g. Final cleaning.
   h. Application for reduction of retainage and consent of surety.

1.7 FINAL PAYMENT APPLICATION

A. Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:

1. Refer and comply with City contract requirements.

   a. Consent of Surety to Final Payment
   b. Warranty

2. Letter / Certificate of Completed Demonstration from the Contractor.

3. Transmittal of Project construction records to the City.

4. Record drawings certified by the Contractor’s Professional Surveyor.

5. Proof that taxes, fees and similar obligations were paid.

6. Removal of temporary facilities and services.

7. Change of gate locks to City's access (if applicable).

8. Final Release of Lien Form

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 013000

Shop Drawings, Submittals and Samples

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. This section includes the procedures for submittals.

B. The Contractor shall maintain an accurate, up-to-date submittal log. A copy of the Contractor's submittal log shall be submitted with each submittal. This log should include the following items:

1. Submittal description and number assigned.
2. Date submitted to City/Engineer.
3. Date returned from City/Engineer.
4. Status of Submittal (No Exceptions Taken, Reviewed as Modified, Revise and Resubmit, Not Reviewed/Rejected).
5. Date of resubmittal and return (as applicable).
6. Date material released (for fabrication or delivery, as applicable).
7. Projected date of fabrication (as applicable).
8. Projected date of delivery to site.
9. Projected date and required lead time so that product installation does not delay contact.
10. Status of O&M manuals submitted (as applicable).

1.2 SHOP DRAWINGS

A. Present in a clear and thorough manner. Title each drawing with project name and number, identify each element of drawings by reference to the NPU Technical Specification Section and paragraph, sheet number, detail, etc. Use and complete a cover page for each submittal. Failure to use a cover page will result in submittals being returned without review.

B. Identify field dimensions. Show relation to adjacent or critical features,

work, or products.

C. Shop drawings and submittals shall be transmitted electronically to the City and Engineer.

1.3 PRODUCT DATA

A. Submit only pages which are pertinent. Mark each copy of standard printed data to identify pertinent products, referenced to Technical Specification Section number. Show reference standards, performance characteristics, capacities, component parts, finishes, dimensions, required clearances, etc. in order to show compliance with the Plans and Technical Specifications.

B. Provide Safety Data Sheets (SDS) required by OSHA for all chemicals to be supplied under this contract.

C. Submittals made without the required transmittal form that clearly identifies the respective Technical Specification Section number for which the submittal is being made will be returned without review. It is the Contractor's responsibility to make clearly identified submittals.

D. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.

E. Provide manufacturer's preparation, assembly, delivery, storage, installation, startup, adjusting, and finishing instructions.

1.4 SAMPLES

A. Submit full range of manufacturer's standard finishes, except when more restrictive requirements are specified, indicating colors, textures, and patterns, for the City's selection.

B. Submit samples to illustrate functional characteristics of products, including parts and attachments.

C. Acceptable samples which may be used in the Work are indicated in the individual Technical Specification Section for the product or material.

D. Label each sample with identification required for transmittal letter.

E. Provide field samples of finishes for the project, as required by individual Technical Specification Sections. Install each sample complete and finished. Acceptable finishes in place may be retained in the completed

work.

F. Those provisions of Paragraph 1.3 of this Section that relate to submittal identification and completeness are applicable for sample submittal.

1.5 CONTRACTOR REVIEW

A. Review submittals prior to transmittal. Determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of the Contract Documents.

B. Coordinate submittals with requirements of the work and Contract Documents.

C. Sign and date each sheet of shop drawings and product data, and each sample label to certify compliance with requirements of the Contract Documents. Notify the City in writing at time of submittal of any deviations from requirements of the Contract Documents.

D. Do not purchase, fabricate, or ship products or begin work that requires submittals until return of submittal that the City and/or Engineer has reviewed.

E. The Contractor shall check and verify all field measurements and shall be responsible for prompt submission of all shop and working drawings so there shall be no delay in the work.

F. The Contractor shall be responsible for the delays and/or additional expenses that result from the Contractor's failure to submit a complete submittal and/or to identify portions of the submittal that do not conform to the Technical Specifications.

1.6 SUBMITTAL REQUIREMENTS

A. Shop drawings and product data submittals shall be prepared and transmitted electronically in PDF format unless otherwise specified.

B. Use a transmittal form for submittals to the City. Identify Project by title. Identify work and product by Technical Specification section and paragraph number.

C. Submittals shall be made in accordance with the Progress Schedule and in such sequence to avoid delay in the work.

D. Apply Contractor's electronic stamp, signed certifying to review, verification of products, field dimensions and field construction criteria,

and coordination of information with requirements of the work and Contract Documents.

E. Group submittals as listed in Paragraph 3.1. For submittals which are necessary but not listed in Paragraph 3.1, coordinate submittals into logical groupings to facilitate interrelation of the several items:

1. Finishes that involve the City's selection of colors, textures, or patterns.

2. Associated items that require correlation for efficient function or for installation.

F. Submit number of samples required by individual Technical Specification sections (where applicable).

1.7 RESUBMITTALS

A. Contractor shall make resubmittals under procedures specified for initial submittals. Changes made since previous submittal shall be identified.

B. Resubmittals shall supersede initial submittals.

1.8 CITY/ENGINEER REVIEW

A. Responses to thorough, clear, complete submittals will be provided to the Contractor with reasonable promptness (approximately two (2) weeks).

B. Submittals reviewed will be returned electronically stamped.

C. Incomplete, vague, non-stamped, and otherwise unacceptable submittals will be returned unreviewed.

1.9 DISTRIBUTION

A. The Contractor shall duplicate and distribute reproductions of shop drawings, copies of product data, and samples that have been approved, to the job site file, the record documents file, subcontractors, suppliers, other affected contractors, and other entities requiring information.

1.10 SCHEDULE OF SUBMITTALS

A. Shop drawings, product data, and sample submittals shall be made in a timely and logical fashion accounting for the work scheduling and job progress.

B. It is the Contractor's responsibility to prepare, coordinate, and review all

submittals prior to delivery to the City and Engineer. The City and/or Engineer will review each thorough, clear, complete submittal and resubmittals as applicable.

1.11 REVIEW QUALIFICATION

A. Regardless of corrections made or acceptance of such drawings by the City, the Contractor shall nevertheless be responsible for the accuracy of such drawings, their conformity to the Contract Documents, and suitability for the work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 CONTRACTOR SUBMITTALS

A. The following submittals shall be required from the Contractor. Additional submittals shall be provided as necessary.

*This table is to be filled in by the Engineer and tailored to the project.

SUBMITTAL	REQUIREMENTS	REFERENCE
Schedule of Values	Submit within 10 days of Notice to Proceed	Supplemental Technical Specifications Section 012973
Preliminary Progress Schedule	Submit prior to mobilizing equipment or material to the site.	Supplemental Technical Specifications Section 013200
Revised Progress Schedules	Submit with each pay request; accompany with a narrative report.	Supplemental Technical Specifications Section 013200
Warranties and Bonds	Submit one (1) binder within 10 days of Final Completion and prior to final application for payment.	Supplemental Technical Specifications Section 017836
Record Documents	Submit all project record documents and samples at Contract closeout.	Supplemental Technical Specifications Section 017839
As-Built Drawings	Submit two (2) CDs/DVDs with as-built drawings in PDF and AutoCAD formats and four (4) full-size hard copies signed and sealed by Registered Surveyor after completion of testing and prior to FDOH Certification.	Supplemental Technical Specifications Section 017839
Color Audio-Video Preconstruction Record	Submit three (3) complete DVDs accompanied by hard copy electronic media site recordings logs prior to mobilizing equipment or materials to the site	Supplemental Technical Specifications Section 018050
Maintenance of Traffic (MOT) Plan	Submit MOT Plan signed/sealed by Florida licensed professional engineer or prepared by someone who possesses FDOT MOT credentials	City of North Port Technical Specifications Section 14000
*continue list per project bid items		

END OF SECTION

SECTION 013119

PROJECT MEETINGS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The City shall schedule a pre-construction meeting, periodic progress meetings and specially called meetings throughout the progress of the work.

1.2 RELATED REQUIREMENTS

A. Construction Progress Schedules are included in Section 013200.

B. Shop Drawings, Submittals and Samples are included in Section 013000.

C. Project Record Documents are included in Section 017839.

1.3 QUALIFICATIONS OF MEETING PARTICIPANTS

A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.4 PRE-CONSTRUCTION MEETINGS

A. Preconstruction meeting should be scheduled no later than 20 days after date of Notice of Award.

B. Location: North Port City Hall: 4790 City Hall Blvd, North Port, FL 34286

C. Attendance

1. City’s representatives
2. City’s professional consultants
3. Contractor's Superintendent
4. Major Subcontractors
5. Major suppliers
6. Utilities
7. Others as appropriate

D. Suggested agenda and topics of discussion to include but are not limited to:

1. Distribution and discussion of the Contractor's list of major subcontractors and suppliers and the projected Construction Schedule.

2. Critical work sequencing.

3. Major equipment deliveries and priorities.

4. Project Coordination including the designation of responsible personnel.

5. Procedures and processing of requests for information, submittals, change orders, and Applications for Payment.

6. Procedures for maintaining Record Documents.

7. Staging and storage areas.

8. Temporary utilities.

9. Housekeeping procedures.

1.5 PROGRESS MEETINGS

A. General: Progress meetings shall be conducted as necessary and as determined by the City, Engineer and the Contractor. The frequency and location of these meetings may be altered upon the agreement of the City and Contractor.

B. The City shall make physical arrangements for the meetings. The City or Engineer shall prepare agendas, notify each anticipated participant, preside at the meetings, record minutes, and distribute copies of the minutes within seven (7) days of meeting to participants and interested parties.

C. Attendance: Contractor's superintendent, representatives of the City, the Engineer, subcontractors who are or are proximate to be actively involved in the Work, and others who are necessary to the agenda are required. Representatives of other utilities when the Work affects their interests shall be invited.

D. The Contractor shall submit at each meeting:

1. Construction schedule, regardless whether revisions have been made.

2. A written projected schedule for the next two weeks.

3. Written claims for additional compensation.

4. Written claims for rain days to extend the Contract.

5. Results of all testing and Value Engineering Proposals as applicable.

E. Tentative Agenda:

1. Review of Work progress and schedule.

   a. Actual start and finish dates of completed activities since last progress meeting.
   b. Durations and progress of activities not completed.
   c. Subcontractors' progress.
   d. Percentage of completion of items on Pay Request.
   e. Delivery schedules.
   f. Revisions to Schedule: Shall include reasons for required revisions and their effect on Contract Time and Contract Price.

1.4 PRE-INSTALLATION MEETINGS

A. General: The Contractor shall meet with manufacturers and/or installers (as appropriate and applicable to the nature of the project) of major units of construction that require coordination between the Contractor, the City, subcontractors, or others. Major units of construction that require pre-installation meetings include:

1. Piping tie-ins.
2. Any work requiring a shutdown or other interruptions.
3. Horizontal directional drills.

B. Meetings shall be conducted at the North Port Utilities Office located at 6644 West Price Blvd., North Port, FL 34291, or other mutually agreed upon place.

C. The Contractor shall schedule meetings at least seven (7) days in advance of installation. The Contractor shall prepare and distribute to each anticipated participant a written notice and agenda at least four (4) days before the meeting. The Contractor shall preside at the meetings, record minutes, and distribute copies of the minute within seven (7) days of meeting to participants and interested parties.

D. Attendance: Contractor's superintendent, appropriate manufacturers and/or installers of major units of constructions, affected subcontractors, and others affected. The City and Engineer shall be invited.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 013200

PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Procedures for preparation and submittal of construction progress schedules and periodic updating using a critical path method schedule.

B. A separate schedule of submittal dates for shop drawings, product data and samples, and dates reviewed submittals will be required by the City.

C. Construction under this contract must be coordinated with the City's personnel and accomplished in a logical order to maintain existing facilities and to allow construction to be completed within the time allowed by Contract Documents.

1.2 FORMAT

A. Prepare schedules as a horizontal bar chart or network with separate bar or node for each major portion of Work or operation, identifying first workday of each week and identifying each portion of the work that is critical to timely project completion.

B. Sequence of Listings: The chronological order of the start of each item of work.

C. Scale and Spacing: Provide space for notations and revisions.

D. Sheet Size: 11-inches x 17-inches maximum. Electronic copies are preferred.

1.3 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

1. At a minimum, each bid item from the Bid Form shall be included as an activity or an explanation why a bid item is not included as an activity.

2. Include arrows showing the dependencies between tasks.

3. Include the duration for each activity.

4. Indicate the total float.

B. Identify each item by major Technical Specification Section number.

C. Identify work of separate stages and other logically grouped activities.

D. Show accumulated percentage of completion of each item, and total percentage of the work completed, as of the last day of each month.

E. Coordinate content with requests for payment of completed work.

F. The Contractor shall not manipulate float time which results in a schedule that varies substantially from the contract time allowed in these Contract Documents.

1.4 CITY RECOGNIZED HOLIDAYS

A. Refer to Specification 011000 Summary of Work.

1.5 REVISIONS TO SCHEDULES

A. Indicate progress of each activity to date and indicate projected completion date of each activity.

B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

C. Provide narrative report, if requested by the City, to define problem areas, anticipated delays, and impacts on schedule. Report corrective action taken or proposed and its effect.

1.6 SUBMITTALS

A. Submit initial schedules within ten (10) days of the Notice to Proceed. After review, resubmit required revised data within ten (10) days.

B. Submit revised progress schedules for review with each pay request.

1.7 DISTRIBUTION

A. Contractor to distribute electronic copies of the schedules to the City, subcontractors, suppliers, and other concerned entities.

B. Instruct recipients to promptly report, in writing, problems anticipated by

projections shown in schedules.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 014000

PROJECT COORDINATON

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Coordination of Work required by the Contract Documents.

1.2 GENERAL REQUIREMENTS

A. The Contractor shall coordinate scheduling, submittals, and work of the various sections of these Technical Specifications to assure efficient and orderly sequence of installation of the construction elements, with provisions for accommodating items to be installed later.

1.3 MEETINGS

A. The Contractor shall hold frequent coordination meetings and pre-installation conferences, as applicable, with personnel and subcontractors to assure coordination of the work.

1.4 COORDINATION OF SUBMITTALS

A. The Contractor shall schedule and coordinate submittals as specified in Sections 013000 and 013200.

B. The Contractor shall coordinate the work of various sections having interdependent responsibilities for installing, connecting to, and placing improvements in service.

C. The Contractor shall coordinate requests for substitutions from all subcontractors to assure compatibility of space, of operating elements, and effect on the work of other sections.

1.5 COORDINATION WITH OTHER CONTRACTORS

A. The Contractor shall cooperate with other contractors working within the same site or on adjacent sites.

B. The Contractor shall coordinate the work of this Contract with other contractors so as not to interfere with or hinder the progress or completion of the work being performed by other contractors.

1.6 PRIVATE LAND

A. The Contractor shall not enter or occupy private land outside of easements, except by notarized permission of the landowner.

B. When necessary to notify the property owner or tenant of any impact of construction activity, entry onto the land shall only be made by a construction superintendent, or more senior person, of the Contractor. All construction superintendents, and those ranking above construction superintendent, must carry laminated, photo identification cards bearing their name, position, Contractor name, and local day time and after-hours phone number of the Contractor. This identification shall be produced, whether it is requested, anytime a construction superintendent, or more senior person enters private land to communicate with the property owner or tenant.

1.7 MAINTENANCE OF ACCESS

A. The work located in developed areas requiring the access by fire, police and other departments, at least one free lane shall always be available for traffic. Contractors are to arrange operations in these areas to meet these requirements and secure approval or operating procedures from the City.

1.8 MAINTENANCE OF TRAFFIC

A. Open pits, trenches, unpaved streets, debris, or other obstructions due to construction that will prevent the normal flow of traffic during an extended construction stoppage, for any reason, shall be minimized. In the event an extended construction stoppage is found to be necessary, Contractor shall, at his own expense, provide normal traffic flow during extended construction stoppage.

B. All excavated material shall be placed so that vehicular and pedestrian traffic is always maintained. If the Contractor's operations cause traffic hazards, he/she shall repair the road surface, provide temporary roadways, erect wheel guards or fences, or take other measures for safety satisfactory to the City.

C. Detours around construction areas will be subject to the approval of the City. Where detours are permitted, the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured the Contractor shall expedite construction operations.

D. The Contractor will be required to submit a Maintenance of Traffic Plan (MOT) that is signed/sealed by Florida licensed professional engineer or

prepared by someone who possesses FDOT MOT credentials. Submittal of the Maintenance of Traffic plan is in accordance with Section 013000 – Shop Drawings, Submittals, and Samples, and in accordance with FDOT Standards.

E. Contractor and/or NPU shall notify the North Port Police Department, North Port Fire & Rescue, North Port Public Works, North Port Solid Waste Division, and Sarasota School District regarding the scheduling of any road closures.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 014200

REFERENCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Reference Abbreviations

B. Abbreviations

C. Reference Standards

D. Definitions

1.2 RELATED SECTIONS

A. Information provided in this section is used where applicable in individual Specification Sections.

1.3 REFERENCE ABBREVIATIONS

A. Reference to a technical society, trade association or standards setting organization, may be made in the Specifications by abbreviations in accordance with the following list:

AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ADC	Air Diffusion Council
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	Association of Home Appliance Manufacturers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Movement and Control Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	American Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning

	Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Assoc
BHMA	Builders' Hardware Manufacturers Association
BIA	Brick Institute of American
CABO	Council of American Building Officials
CAGI	Compressed Air and Gas Institute
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CRD	U.S. Corps of Engineers Specifications
CRSI	Concrete Reinforcing Steel Institute
CTI	Cooling Tower Institute
DHI	Door and Hardware Institute
DOH	Department of Health
DOT	Department of Transportation
Fed. Spec.	Federal Specifications
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
HMI	Hoist Manufacturing Institute
HPMA	See HPVA
HPVA	Hardwood Plywood Veneer Association
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IFI	Industrial Fasteners Institute
MIL	Military Specifications
MSS	Manufacturer's Standardization Society
NAAMM	National Association of Architectural Metal Manufacturers
NACM	National Association of Chain Manufacturers
NBS	National Bureau of Standards, See NIST
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NFPA	National Fluid Power Association
NIST	National Institute of Standards and Technology
NLMA	National Lumber Manufacturers Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Act
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute

SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
STI	Steel Tank Institute
TCA	Tile Council of American
TIMA	Thermal Insulation Manufacturers' Association
UL	Underwriters' Laboratories, Inc.
USBR	U. S. Bureau of Reclamation
USBS	U. S. Bureau of Standards, See NIST

1.4 ABBREVIATIONS

A. Abbreviations which may be used in individual Specification Sections are as follows:

alternating current .....ac
American wire gauge .....AWG
ampere(s) .....amp
ampere-hour(s).....AH
annual.....ann
Ampere Interrupting
Capacity .....AIC
atmosphere(s) .....atm
average.....avg
biochemical oxygen demand….....BOD
Board Foot..... FBM
brake horsepower.....bhp
Brinell Hardness..... BH
British thermal unit(s).....Btu
calorie (s) .....cal
carbonaceous biochemical
oxygen demand.....CBOD
Celsius (centigrade) C
Center to Center .....C to C
centimeter(s) .....cm
chemical oxygen demand.....COD
coefficient, valve flow Cv
condensate return .....CR
cubic.....cu
cubic centimeter(s).....cc
cubic feet per day .....cfd
cubic feet per hour .....cfh
cubic feet per minute .....cfm
cubic feet per minute,
standard conditions ..... scfm

cubic feet per second.....cfs
cubic foot (feet) .....cu ft
cubic inch(es).....cu in
cubic yard(s) .....cu yd
decibels .....dB
decibels (A scale) .....dBa
degree(s) .....deg
dewpoint temperature .....dpt
diameter .....dia
direct current .....dc
dissolved oxygen .....DO
dissolved solids.....DS
dry-bulb temperature .....dbt
efficiency.....eff
elevation..... el
engineer of record…….....EOR
entering water temperature .....ewt
entering air temperature .....eat
equivalent direct radiation .....edr
face area.....fa
face to face .....f to f
Fahrenheit.....F
feet per day .....fpd
feet per hour .....fph
feet per minute .....fpm
feet per second .....fps
foot (feet).....ft
foot-candle.....fc
foot-pound .....ft-lb
foot-pounds per minute .....ft-lb/min
foot-pounds per second .....ft-lb/sec
formazin turbidity unit(s) .....FTU
frequency.....freq
fuel oil.....FO
fuel oil supply.....FOS
fuel oil return .....FOR
gallon(s) .....gal
gallons per day.....gpd
gallons per day per
cubic foot.....gpd/cu ft
gallons per day per
square foot .....gpd/sq ft
gallons per hour ..... gph
gallons per minute .....gpm
gallons per second.....gps
gas chromatography and
mass spectrometry.....GC-MS

gauge.....ga
grain(s) .....gr
gram(s).....g
grams per cubic centimeter .....gm/cc
Heat Transfer Coefficient .....U
height .....hgt
Hertz..... Hz
horsepower ..... hp
horsepower-hour .....hp-hr
hour(s) ..... hr
humidity, relative ..... rh
hydrogen ion concentration .....pH
inch(es) .....in
inches per second .....ips
inside diameter .....ID
Jackson turbidity unit(s) .....JTU
kelvin .....K
kiloamperes.....kA
kilogram(s) .....kg
kilometer(s) .....km
kilovar (kilovolt-amperes
reactive) .....kvar
kilovolt(s).....kV
kilovolt-ampere(s).....kVA
kilowatt(s) .....kW
kilowatt-hour(s) .....kWh
linear foot (feet) .....lin ft
liter(s) L
megavolt-ampere(s).....MVA
meter(s).....m
micrograms per liter ..... ug/L
miles per hour .....mph
milliampere(s)..... mA
milligram(s) ..... mg
milligrams per liter..... mg/L
milliliter(s) ..... mL
millimeter(s) ..... mm
million gallons..... MG
million gallons per day ..... mgd
millisecond(s)..... ms
millivolt(s) ..... mV
minute(s)..... min
mixed liquor suspended
solids .....MLSS
nephelometric turbidity
unit.....NTU
net positive suction head .....NPSH

noise criteria.....nc
noise reduction coefficient .....NRC
number.....no
ounce(s).....oz
outside air.....oa
outside diameter.....OD
parts per billion..... ppb
parts per million..... ppm
percent ..... pct
phase (electrical).....ph
pound(s)..... lb
pounds per cubic foot ..... pcf
pounds per cubic foot
per hour .....pcf/hr
pounds per day .....lbs/day
pounds per day per
cubic foot .....lbs/day/cu ft
pounds per day per
square foot.....lbs/day/sq ft
pounds per square foot..... psf
pounds per square foot
per hour .....psf/hr
pounds per square inch ..... psi
pounds per square inch
absolute .....psia
pounds per square inch
gauge.....psig
power factor .....PF
pressure drop or
difference.....dp
pressure, dynamic
(velocity).....vp
pressure, vapor.....vap pr
quart(s).....qt
Rankine ..... R
relative humidity .....rh
resistance..... res
return air .....ra
revolution(s) ..... rev
revolutions per minute .....rpm
revolutions per second ..... rps
Right of Way……..ROW
root mean squared..... rms
safety factor ..... sf
second(s)..... sec
shading coefficient..... SC
sludge density index..... SDI

Sound Transmission Coefficient..... STC
specific gravity ..... sp gr
specific volume ..... Sp Vol
sp ht at constant pressure ..... Cp
square .....sq
square centimeter(s) .....sq cm
square foot (feet).....sq ft
square inch (es) .....sq in
square meter(s).....sq m
square yard(s).....sq yd
standard.....std
static pressure .....st pr
supply air .....sa
suspended solids.....SS
temperature .....temp
temperature difference .....TD
temperature entering .....TE
temperature leaving .....TL
thousand Btu per hour..... Mbh
thousand circular mils ..... kcmil
thousand cubic feet .....Mcf
threshold limit value .....TLV
tons of refrigeration .....tons
torque.....TRQ
total dissolved solids .....TDS
total dynamic head .....TDH
total nitrogen .....TKN
total oxygen demand .....TOD
total pressure .....TP
total solids .....TS
total suspended solids .....TSS
total volatile solids .....TVS
vacuum.....vac
viscosity .....visc
volatile organic chemical .....VOC
volatile solids.....VS
volatile suspended solids.....VSS
volt(s)..... V
volts-ampere(s) .....VA
volume .....vol
watt(s) .....W
watthour(s).....Wh
watt-hour demand .....WHD
watt-hour demand meter.....WHDM
week(s).....wk
weight .....wt

wet-bulb .....WB
wet bulb temperature .....WBT
yard(s).....yd
year(s).....yr

1.5 REFERENCE PUBLICATIONS

The following publications are incorporated into this manual and are made a part of this Manual as if set out verbatim in this Manual. Violations of any provision of every such publication, as of the date of bidding this Contract, shall be a violation of City Ordinance.

A. Water Environment Federation, Manual of Practice No. 8, Wastewater Treatment Plant Design, W.E.F., 601 Wythe Street, Alexandria, VA, 22314-1994.

B. Water Environment Federation, Manual of Practice No. 9, Design and Construction of Sanitary and Storm Sewers, W.E.F., 601 Wythe Street, Alexandria, VA, 22314-1994.

C. Great Lakes/Upper Mississippi River Board of State Sanitary Engineers. Recommended Standards for Sewage Works, Health Education Service, Inc., P.O. Box 7283, Albany, New York, 12224.

D. Great Lakes/Upper Mississippi River Board of State Sanitary Engineers. Recommended Standards for Water Works, Health Education Service, Inc., P.O. Box 7283, Albany, New York,12224.

E. Florida Department of Environmental Protection for Water, Wastewater, and Reclaimed Water Systems, latest revisions of F.A.C. Chapters 62-550, 62-555, 62-600, 62-604, 62-610, 64E-6, and 64E-8, 3900 Commonwealth Boulevard M.S. 49, Tallahassee, Florida, 32399.

F. American Water Works Association, Inc., Water Treatment Plant Design, AWWA Standards and Applicable Manuals, 6666 West Quincy Avenue, Denver, Colorado, 80235.

G. Ductile Iron Pipe Research Association, Handbook, Ductile Iron Pipe/Cast Iron Pipe, Ductile Iron Pipe Research Association, 245 Riverchase Parkway East, Birmingham, Alabama, 35244.

H. Uni-Bell Plastic Pipe Association, Handbook of PVC Pipe, Uni-Bell Plastic Pipe Association, 2655 Villa Creek Drive, Suite 164, Dallas, Texas, 75234.

I. American National Standards Institute, latest revisions of applicable standards, 1819 L Street NW, Suite 600, Washington, D.C., 20036.

J. American Society for Testing and Materials, latest revisions of applicable standards, ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, 19428-2959.

K. National Water Research Institute, Treatment Technologies for Removal of MTBE. NWRI, 10500 Ellis Ave., P.O. Box 20865, Fountain Valley, CA, 92728.

L. National Water Research Institute, Valuing Ground Water: Economic Concepts/Approaches. NWRI, 10500 Ellis Ave., P.O. Box 20865, Fountain Valley, CA, 92728.7.3.14.

M. U.S. Environmental Protection Agency, Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability, Supplement to the Federal Guidelines for Design, Operation, and Maintenance of Wastewater Treatment Facilities, Technical Bulletin EPA-430-99-74-001, U.S. EPA, Office of Water Program Operations.

O. Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, Maps & Publications Sales, Mail Station 12, 605 Suwannee Street, Tallahassee, Florida 32399-0450.

P. Plastics Pipe Institute, Handbook of Polyethylene Pipe, 1825 Connecticut Ave., NW, Suite 680, Washington, DC 20009.

Q. National Fire Protection Association, 1995 Edition of NFPA 24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances, 1 Batterymarch Park, Quincy, MA 02169.

R. City of North Port Utilities Standards and Specifications Manual.

S. National Electrical Code, latest revisions of applicable requirements.

T. Metcalf and Eddy, Wastewater Engineering Treatment and Reuse, 4th Edition, McGraw-Hill, 2002.

U. Water Environment Federation, Manual of Practice No. 11, Operation of Municipal Wastewater Treatment Plants, 601 Wythe Street, Alexandria, VA 22314-1994.

V. American Petroleum Institute, 1801 K Street NW, Washington, DC 20006.

W. American Welding Society, 2501 NW 7th St, Miami, FL 33125.

X. Factory Mutual Research, 1151 Boston-Providence Turnpike, Norwood, MA 02062

Y. National Association of Corrosion Engineers, P.O. Box 218340, Houston, TX 77218.

Z.

AA. National Electrical Manufacturer's Association, 155 East 44th St., NY, NY 10017.

BB. Occupational Safety and Health Act, U.S. Dept. of Labor, Occupational Safety and Health Administration, 299E. Broward Blvd. – Rm 302, Ft. Lauderdale, FL 33301.

CC. Society of Automotive Engineers, 2 Pennsylvania Plaza, NY, NY 10001.

DD. Steel Structures Painting Council, 4400 Fifth Ave., Pittsburgh, PA 15213.

EE. Standard Specification for Public Works, Construction Building News, Inc., 3055 Overland Ave., Los Angeles, CA 90034.

FF. Uniform Building Code, published by ICBO.

GG. Underwriters Laboratories, Inc., 207 East Ohio Street, Chicago, IL 60611.

1.6 REFERENCE STANDARDS

A. Latest Edition: Construe references to furnishing materials or testing, which conform to the standards of a particular technical society, organization, or body, to meet the latest standard, code, or specification of that body, adopted and published as of the date of bidding this Contract. Standards referred to herein are made a part of these Specifications to the extent that is indicated or intended.

B. Precedence: The duties and responsibilities of the City, Contractor or Engineer, or any of their consultants, agents or employees are set forth in the Contract Documents, and are not changed or altered by any provision of any referenced standard specifications, manuals or code, whether such standard manual or code is or is not specifically incorporated by reference in the Contract Documents. Any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority, to undertake responsibility contrary to the powers of the City as set forth in the Contract Documents cannot be assigned to the City or any of the City's consultants, agents or employees.

1.7 DEFINITIONS

A. In these Contract Documents the words furnish, install, and provide are defined as follows:

1. Furnish (Materials): to supply and deliver to the project ready for installation and in operable condition.

2. Install (services or labor): to place in final position, complete, anchored, connected in operable condition.

3. Provide: to furnish and install complete. Includes the supply of specified services. When neither furnish, install, or provide is stated, provided is implied.

4. City: City of North Port, Florida, or authorized staff or representatives.

5. Engineer: The terms Design Professional, Design Engineer, Engineer, and Engineer of Record are interchangeably used throughout the Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 014500

QUALITY CONTROL

PART 1 - GENERAL

1.1 QUALITY CONTROL PLAN

A. General: The Contractor shall furnish for approval by the City and Engineer, a Contractor Quality Control (CQC) Plan within 10 calendar days after Notice to Proceed. The plan shall identify personnel, procedures, instructions, records, and any forms to be used.

1.2 QUALITY CONTROL ORGANIZATION

A. Contractor Quality Control (CQC) System Manager: CQC System Manager shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. This person shall demonstrate their ability to perform correctly the duties required to the satisfaction of the City and shall be physically at the Site whenever Work is in progress and will be in charge of the Contractor's Quality Control program for this project. All the Contractor’s submittals for approval shall be reviewed and modified or corrected as needed and approved correct prior to forwarding of such submittals to the City and Engineer.

B. Personnel: The personnel of the CQC staff shall be fully qualified by experience and technical training to perform their assigned responsibilities and shall be directly hired by and work for the Contractor.

1.3 SUBMITTALS

A. Submit in accordance with Section 013000 – Shop Drawings, Submittals and Samples. The CQC System Manager shall be responsible for certifying that all submittals comply with the contract requirements. Perform work using persons fully qualified to produce workmanship of specified quality.

B. The Contractor Quality Control Plan: This plan shall include as a minimum, the following:

1. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall report to the Project Manager or someone higher in the Contractor's

organization.

2. The name, qualifications, duties, responsibilities, and authorities of each person assigned a CQC function.

3. A copy of a statement signed by an authorized official of the Contractor's firm, which describes the responsibilities and delegates the authorities of the CQC System Manager.

4. Procedures for scheduling and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents.

5. Control testing procedures for each specific test.

6. Names of independent testing laboratories to perform required testing. (Testing laboratories must be approved by the City.)

7. Reporting procedures including proposed reporting formats.

8. Hazard Communication Program required under OSHA requirements.

C. Acceptance of CQC Plan: Acceptance of the plan by the City is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction.

D. Notification of Changes to CQC Plan: After acceptance of the CQC plan, notify the City in writing of any proposed change. Proposed changes are subject to acceptance by the City.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 CONTROL

A. Contractor Quality Control is the means by which the Contractor assures that his/her construction complies with the requirements of the Contract Documents. The controls shall be adequate to cover all construction operations, including both onsite and offsite operations and will be keyed to the proposed construction sequence. The controls shall include at least three phases of inspection for all definitive features of work as follows:

1. Preparatory Inspection: This shall be performed prior to beginning any definable feature of work. It shall include a review of contract requirements; a check to assure that all materials and/or equipment have been tested, submitted, and approved; a check to assure that

provisions have been made to provide required control testing; examination of the work area to ascertain that all preliminary work has been completed; and a physical examination of materials, equipment, and sample work to assure conformance with the Contract Documents and that all materials and/or equipment are on hand.

2. Initial Inspection: This shall be performed as soon as a representative portion of the particular feature of work has been accomplished and shall include examination of the quality of workmanship and a review of control testing for compliance with contract requirements, use of defective or damaged materials, omissions, and dimensional requirements.

3. Follow-up Inspection: These shall be performed daily to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. Such inspection shall be made a matter of record in the CQC documentation as required below. Final follow up inspections shall be conducted and deficiencies corrected prior to the addition of new features of work.

3.2 TESTS

A. Test Procedures: Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. Contractor shall procure the services of an industry recognized independent testing laboratory. A list of tests which the Contractor understands they are to perform shall be furnished as a part of the CQC Plan to the City. The list shall give the test name, specification paragraph containing the test requirements, and the personnel and laboratory responsible for each type of test.

B. Perform the following activities and record and provide the following data:

1. Verify that testing procedures comply with Contract requirements.

2. Verify that facilities and testing equipment are available and comply with testing standards.

3. Verify that test instrument calibration data are checked against certified standards.

4. Verify that recording forms, including the test documentation requirements, have been prepared.

3.3 COMPLETION INSPECTION

A. At the completion of all Work or any increment thereof established under this Contract, the CQC System Manager shall conduct a completion inspection of the Work and develop a "punch list" of items which do not conform to the Contract Documents. Such a list shall be included in the CQC documentation and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or their staff shall make a second completion inspection to ascertain that all deficiencies have been corrected and so notify the City and Engineer. The completion inspection and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire Work or any particular increment thereof if the project is divided into increments by separate completion dates.

3.4 DOCUMENTATION

A. Maintain current records of quality control operations, activities and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form and indicate a description of trades working on the project, the numbers of personnel working, the weather conditions encountered, any delays encountered, and acknowledgment of deficiencies noted along with the corrective actions taken on current and previous deficiencies. In addition, these records shall include factual evidence that required activities or tests have been performed, including but not limited to the following:

1. Type and number of control activities and tests involved.
2. Results of control activities or tests.
3. Nature of defects, causes for rejection, etc.
4. Proposed remedial action.
5. Corrective actions taken and results of retesting.

B. These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the Work comply with the requirements of the Contract. Legible copies of these records shall be furnished to the City.

3.5 NOTIFICATION OF NONCOMPLIANCE

A. The City will notify the Contractor of any noncompliance with the foregoing requirements. After receipt of such notice, the Contractor shall immediately take corrective action. Such notice, when delivered to the Contractor or their representative at the Site, shall be deemed

sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the City may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

END OF SECTION

SECTION 015000

MOBILIZATION

PART 1 - GENERAL

1.1 DEFINITION AND SCOPE

A. 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 Contractor's equipment required for the first month's operation.
2. Install silt fences around perimeter of Project Site and at locations where surface drainage discharges to existing stormwater inlets.
3. Install temporary construction power, wiring, and lighting facilities.
4. Establish a fire protection plan and safety program.
5. Secure construction water supply.
6. Provide on-site sanitary facilities and potable water facilities.
7. Arrange for and erect Contractor's work and storage yard and employee's parking facilities.
8. Submit all required insurance certificates and bonds in accordance with the Front End Documents.
9. Obtain all required permits.
10. Post all OSHA, FDEP, Department of Labor, and all other required notices.
11. Have Contractor's project manager and/or superintendent at the job site full time.
12. Submit a detailed progress schedule acceptable to the City and approved for baseline schedule.
13. Submit a finalized Schedule of Values of the Work in the City's approved format as provided in Section 012973 - Schedule of Values.

14. Submit a hurricane preparedness plan acceptable to the City.

15. Submit signed and sealed Maintenance of Traffic and Control Plan to the City.

16. Erect all required Project signs.

17. Submit Contractor's Health and Safety Plan.

18. Submit Contractor's Quality Control Plan.

1.2 PAYMENT FOR MOBILIZATION

A. The Contractor's attention is directed to the condition that no payment for mobilization, or any part thereof, will be approved for payment under the Agreement until all mobilization items listed above have been completed as specified.

B. Measurement and Payment for Mobilization shall be made per Section 012000 – Measurement and Payment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 016500

PERMITS AND FEES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Permits and licenses required to complete the project will be obtained and fees shall be paid for according to the Contract Agreement.

B. Schedule all inspections and obtain all written approvals of the agencies required by the permits and licenses.

C. Comply with all construction related conditions specified in each of the permits and licenses.

1.2 PERMITS

A. Contractor shall be responsible for preparation of a Stormwater Pollution Prevention Plan and shall obtain an FDEP permit for stormwater discharge from construction activities.

B. If dewatering discharges to waters of the State are proposed, the Contractor may be required to obtain an FDEP Generic Permit for the Discharge of Produced Groundwater from any Non-Contaminated Site Activity.

C. Contractor shall submit to and obtain approval for a Maintenance of Traffic (MOT) Plan from the City of North Port and Florida Department of Transportation (FDOT) as applicable, prior to commencement of construction.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 016610

DELIVERY, STORAGE, AND HANDLING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section specifies the general requirements for the delivery handling, storage, and protection for all items required in the performance of the Work. Specific requirements, if there are any, are specified with the related item in subsequent sections.

B. Maintaining and protecting products after installation and until Final Completion of the Work.

1.2 TRANSPORTATION AND DELIVERY

A. Store and protect products immediately on delivery. Store products in accordance with Manufacturers' instructions, with seals and labels intact and legible.

B. Store products subject to damage by elements in substantial weather tight enclosures.

1. Maintain temperatures within ranges required by manufacturers' instructions.

2. Provide humidity control for sensitive products as required by manufacturers' instructions.

3. Store unpacked products on shelves, in bins, or in neat piles accessible for inspection.

C. Exterior Storage:

1. Provide substantial platforms, blocking, or skids to support fabricated products above ground and to prevent soiling or staining. Cover products subject to discoloration or deterioration from exposure to the elements (including but not limited to PVC pipe, valves, and fittings) with impervious sheet coverings. Provide adequate ventilation to avoid condensation.

2. Piping, valves, fittings, and appurtenances shall be stored on pallets, blocking, or other supports above ground; do not place directly on the

ground surface. Store loose granular materials on solid surfaces such as paved areas or provide plywood or sheet materials to prevent mixing with foreign matter.

a. Provide surface drainage to prevent flow or ponding of rainwater.

b. Prevent mixing of refuse or chemically injurious materials or liquids.

D. Arrange storage in a manner to provide easy access for inspection.

E. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others, if any, perform inspection in the presence of the City. Notify City verbally and in writing of any problems.

F. If any item has been damaged, the damage item shall be replaced at no additional cost to the City.

1.3 STORAGE AND PROTECTION

A. Maintain periodic system of inspection of stored products on a scheduled basis to assure that:

1. State of storage facilities is adequate to provide required conditions.

2. Required environmental conditions are maintained on continuing basis.

3. Surfaces of products exposed to elements are not adversely affected.

B. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a weathertight building to prevent injury. The building may be a temporary structure on the Site or elsewhere, but it must be satisfactory to the City. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.

C. All paint and other coating products shall be stored in areas protected from the weather. Follow all storage requirements set forth by the paint and coating manufacturers.

1.4 PROTECTION AFTER INSTALLATION

A. Provide protection of installed products to prevent damage from subsequent operations. Remove protection when no longer needed, prior to completion of Work.

B. Control traffic to prevent damage to equipment and surfaces.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 017710

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall comply with requirements stated in the Contract and Specifications for administrative procedures in closing out the Work.

1.2 SUBSTANTIAL COMPLETION

A. When the Contractor considers the Work substantially complete, Contractor shall submit to the City:

1. A written notice that the Work, or designated portion thereof, is substantially complete.

2. A site inspection with the Engineer, City and Contractor will be scheduled. A punch list of items to be completed or corrected will be generated at this inspection.

B. Within a reasonable time, the City will make an inspection to determine the status of completion.

C. Should the City determine that the Work is not substantially complete:

1. The City will promptly notify the Contractor in writing, giving the reasons therefor.

2. The Contractor shall remedy the deficiencies in the Work and send a second written notice of substantial completion to the City.

3. The City will reinspect the Work.

D. When the City finds that the Work is substantially complete, the City will execute and deliver to the Contractor a Certificate of Substantial Completion with a revised punch list of items to be completed or corrected.

1.3 FINAL INSPECTION

A. When the Contractor considers the Work is complete, they 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 City and are operational.

5. Work, including punch list items, are completed and ready for final inspection.

B. The City will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the City consider that the Work is incomplete or defective:

1. The City will promptly notify the Contractor in writing, listing the incomplete or defective work.

2. The Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to the City that the Work is complete.

3. The City will reinspect the Work.

D. When the City finds that the Work is acceptable under the Contract Documents, they shall request that the Contractor make closeout submittals.

1.4 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER AND CITY

A. Evidence of compliance with requirements of governing and regulatory authorities.

B. Project Record Documents: Requirements of Section 017839 – Project Record Documents.

C. Warranties and Bonds: Requirements of General Conditions and Section 017836 – Warrantees and Bonds.

D. Keys and Keying Schedule.

E. Spare Parts and Maintenance Materials.

F. Evidence of Payment and Release of Liens: Requirements of General and Supplementary Conditions.

G. Certificate of Insurance for Products and Completed Operations: Requirements of General Conditions.

H. Consent of Surety to Final Payment.

I. Proof that taxes, fees, and similar obligations were paid.

1.5 FINAL ADJUSTMENTS OF ACCOUNTS

A. Submit a final statement of accounting to the City.

B. Statement shall reflect all adjustments to the Contractor Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

   a. Previous Change Orders.
   b. Unit Prices.
   c. Deductions for uncorrected Work.
   d. Deductions for liquidated damages.
   e. Other adjustments.

3. Total Contract Sum, as adjusted.

4. Previous payments.

5. Sum remaining due.

C. Contractor will prepare a final Change Order, reflecting approved adjustments to the Contract sum which were not previously made by Change Orders.

1.6 FINAL APPLICATION FOR PAYMENT

A. The Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

A. The Contractor shall furnish all necessary tools and labor required to allow the City to verify the status of completion. The tools shall include, but not be limited to the following (as applicable):

1. Vault Entry Equipment.
2. Shovel.
3. Lamps & Mirror(s).
4. Probe Rod.
5. Valve Key.
6. Manhole Hook.
7. All necessary labor to help on the test for completion.

END OF SECTION

SECTION 017836

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section specifies general administrative and procedural requirements for preparing and submitting warranties and bonds required by the General Conditions, including Manufacturer's standard warranties on products and special warranties.

1.2 RELATED WORK

A. The Contract Documents include, but are not limited to, the following related requirements:

1. Refer to General Conditions for the general requirements relating to warranties and bonds.

2. General closeout requirements are included in Section 017710 Project Closeout.

1.3 PREPARATION OF SUBMITTALS

A. Obtain warranties and bonds, executed in duplicate by responsible subcontractors, suppliers, and manufacturers within ten (10) days after completion of the applicable item of Work. Except for items put into use with the City's permission, leave date of beginning of time of warranty open until the date of substantial completion is determined. All warranty coverage shall be extended directly to the benefit of the City.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or Manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the City for approval prior to final execution.

1.4 TIME OF SUBMITTAL

A. For equipment or component parts of equipment put into service during construction with the City's permission, submit documents within ten (10) days after acceptance.

B. Make other submittals within 10 days after date of Final Completion, prior to the final application for payment.

1.5 FORM OF SUBMITTALS

A. Bind in new, commercial-quality, 8-1/2 inches X 11 inches, three-ring side binders with hardback, cleanable, plastic covers.

B. Label cover of each binder with typed or printed title "WARRANTIES AND BONDS," with title of Project; name, address and telephone number of Contractor; and name of responsible principal.

C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Contract Documents, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of the responsible principal.

E. Provide an electronic pdf copy of all warranties submitted.

1.6 WARRANTY REQUIREMENT

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the City has benefited from use of the Work through a portion of its anticipated useful service life.

D. City's Recourse: Written warranties made to the City are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods

be interpreted as limitations on time in which the City can enforce such other duties, obligations, rights, or remedies.

E. Rejection of Warranties: The City reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

F. The City reserves the right to refuse to accept Work for the project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, Manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.7 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual Manufacturers for particular products and are specifically endorsed by the Manufacturer to the City.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the City.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Maintaining and submitting project record documents and samples.

B. The Contractor shall maintain at the site for the City one (1) record copy of:

1. Construction Plans
2. Technical Specifications
3. Addenda
4. Change Orders and other Modifications to the Contract
5. Approved Shop Drawings, Product Data, and Samples for which samples are specified to be furnished
6. Field test records
7. Detailed Progress Schedule
8. Inspection certificates.
9. Manufacturers' certificates.
10. Manufacturers' operating and maintenance manuals.
11. Up to date project as-built red-lines.

C. At Contract closeout, deliver signed and sealed (as applicable) as-builts and other record documents and samples to the City for the City.

1.1 RELATED REQUIREMENTS

A. Section 013000: Shop Drawings, Submittals and Samples.

B. Section 017710: Contract Closeout.

1.2 RECORDING

A. Record information on a full-size set of Construction Plans.

B. Use separate colors for each major system for recording information.

C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

D. Measured locations shall be referenced to horizontal and vertical datums of the original Construction Plans.

E. Utility As-Built Drawings: The utility as-built drawings shall correctly and accurately show all utilities found during construction and shall reflect all new construction as it was built. These drawings shall be neat and legible, showing only the actual position of the utilities and not the proposed. The drawings shall show all elevations and horizontal control for all utilities encountered. They shall include but not limited to, the material used to construct the utilities and all structures, pipes, and fittings. At a minimum, comply with the following:

1. Identify all utility conflicts and crossings. Provide horizontal locations and elevations of each utility at conflicts and crossing. Identify the material, size, usage, etc., for each utility line.

2. Provide horizontal locations and elevations at top of pipe elevations at an interval not exceeding 100 LF. Finished grade elevations shall be recorded at each location.

3. Provide surveyed horizontal locations and elevations and swing ties on all underground appurtenances, including but not limited to:

    a. Ductile iron fittings
    b. Couplings
    c. Valves
    d. Provide top of nut elevations for valves and top of pipe elevations adjacent to valves.
    e. Service saddles
    f. Meters
    g. Air release assemblies
    h. End points of casings
    i. End points of pipe installed by horizontal directional drilling methods

4. For each underground appurtenance, provide three-point swing-ties (maximum distance of 200 feet). Swing ties shall be measured from permanent reference points (i.e., edge of power or telephone poles, center of manholes and storm inlet structures, building comers, fire

hydrant bonnets, and other objects not likely to be relocated at a later time). Unacceptable reference points shall include fence posts, street curbs, driveway comers, trees, signs, valve boxes, nails, survey marks, etc.

5. Identify limits of restrained joint pipe.

6. Identify locations for changes in pipe material.

7. Identify limits of utilities abandoned in place, if applicable.

8. Identify changes made by addenda or modifications.

9. Provide details not on the Plans.

10. As-built drawing information shall be provided to the City and Engineer in AutoCAD and pdf format. Hard copies of the as-builts shall be signed and sealed by Florida Licensed Surveyor.

F. Specifications: Legibly mark each item to record actual construction, including:

1. Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.

2. Changes made by addenda or modifications.

G. Other Required Record Documents:

1. Maintain manufacturers' certifications, inspection certifications, and field test records, required by individual Technical Specification Sections.

2. Provide bore logs for underground utilities installed using horizontal directional drilling methods. A minimum of one reading for each rod length of bore constructed shall be included. The bore log shall include horizontal and vertical locations for each point referenced to the horizontal and vertical datums used in preparing the Plans.

1.3 STORMWATER POLLUTION PREVENTION PLANS

A. In accordance with EPA Guidelines, prepare an National Pollutant Discharge Elimination System (NPDES) plan and maintain records on stormwater management controls and inspections. Prepare an inspection and maintenance plan that corresponds to the sequencing of major activities.

1. Reference Document: U.S. EPA Stormwater Management for

Construction Activities; Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92-005, September, 1992.

B. Provide for inspection of silt fencing and erosion control measures once every seven (7) days or after each rainfall event.

C. Keep a record of these inspections in the field office. Note any changes to best management practices shown in the Contract Documents.

1. Record the amount of rainfall on a daily basis.

2. Dates when major grading activities occur.

3. Dates when construction activities temporarily cease.

4. Dates when construction activities permanently cease.

5. Report any release of reportable quantities of oil or hazardous materials.

D. Update and change the Stormwater Pollution Prevention Plan as necessary to address any change in design or construction operation.

1.4 SUBMITTALS

A. At Contract closeout, the Contractor shall deliver all project record documents and samples specified herein to the City for use in the preparation of Project Record Drawings.

B. As-built drawings shall be submitted to the City in the following format:

1. One (1) CDs/DVDs or USB flash drive with as-built drawings in both PDF and AutoCAD formats.

   a. AutoCAD Format: Utilize the existing AutoCAD design as a base and add new information. New items shall be included on new, clearly identified layers.

2. One (1) full-size original and one (1) 11”X17” hard copies signed and sealed by a Florida Licensed Surveyor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 018050

COLOR AUDIO-VIDEO PRECONSTRUCTION RECORD

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Prior to commencing work, the Contractor shall have a detailed, continuous, color digital audio-video recording taken along the entire length of the Project to serve as a record of preconstruction conditions. All recordings and written video log records shall become property of the City.

1.2 SCHEDULE

A. The Contractor shall notify the City two (2) weeks prior to conducting electronic site recordings so the City can notify residents and/or prepare a press-release if necessary. This notification to the City shall include the name of the company performing recordings and a description of identification used (i.e., vehicle logo).

B. No construction shall begin prior to review and approval of the site recordings covering the construction area by the City.

1.3 VIDEOGRAPHERS

A. The Contractor shall employ a competent party or commercial firm known to be skilled and regularly engaged in the business of preconstruction color digital audio-video site documentation.

1. The City shall have the authority to reject all or any portion of a site recording not conforming to this Section and order that it be redone at no additional charge. The Contractor shall reschedule unacceptable coverage within five (5) calendar days after being notified. The City shall designate those areas, if any, to be omitted from or added to the audio-video coverage.

PART 2 – PRODUCTS

2.1 GENERAL

A. Each audio-video recording shall be saved on DVD media viewable on standard DVD players and computers. The DVD video recording shall

produce bright, sharp, clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection. All DVD video recordings shall display on the screen the time of day, the month, day, and year of the recording. This time and date information must be continuously and simultaneously generated with the actual recording. The audio portion of the recording shall produce the commentary of the camera operator with proper clarity and be free from distortion.

2.2 EQUIPMENT

A. Camera and Recorder: The video camera and recorder used in the electronic media site recordings shall be of industrial grade, consistent with current standards, and subject to approval by the City. The camera shall be a high-resolution, color digital recorder with optical stabilization and 20X minimum optical magnification. The camera shall also have a minimum NTSC 525 lines resolution/60 fields/30 frames per second.

B. Wheeled Vehicles: Clearly mark any vehicles used for recording purposes with company's name and telephone number. Vehicles shall incorporate signs, flaggers, and lights as needed for safety purposes.

C. Electronic Media: DVDs shall be original, previously unrecorded, blank media.

PART 3 – EXECUTION

3.1 COVERAGE

A. The recordings shall contain coverage of all surface features within and directly adjacent to the construction zone. These features shall include, but not be limited to, all roadways, pavement, retention ponds, railroad tracks, curbs, bridges, bridge abutments, driveways, sidewalks, culverts, headwalls, retaining walls, landscaping, signs, mailboxes, trees, and fences. Of concern, shall be the existence or non-existence of any faults, fractures, or defects. Coverage shall be limited to one side of the street at one time and shall include all surface conditions located within the zone of influence supported by appropriate audio description. Panning, zoom-in, and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.

3.2 AUDIO RECORDING

A. Accompanying the video recording of each electronic media presentation shall be a corresponding and simultaneously recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator 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 conversation between the Contractor, camera operator, and any other production technicians.

3.3 ELECTRONIC MEDIA INDEXING

A. All electronic media site recordings shall be permanently labeled and shall be properly identified by electronic media site recording number and project title.

B. Electronic Media Site Recordings Log: Each electronic media site recording shall have a log of that recording's contents. The log shall describe the various segments of coverage contained on that recording (e.g., the names of the streets, waterways, or easements; coverage beginning and end times; directions of coverage; video unit counter numbers; engineering stationing numbers, when possible; and the date of recording).

3.4 TIME OF EXECUTION

A. Visibility: All recording shall be performed during time of good visibility; no recording shall be done during periods of significant precipitation, mist, or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subject and to produce sharp, bright video recordings of those subjects.

3.5 CONTINUITY OF COVERAGE

A. In order to insure the continuity of coverage, the coverage shall consist of a single continuous unedited recording which begins at one end of a particular construction area. However, where coverage is required in areas not accessible by conventional wheeled vehicles and smooth transport of the recording system is not possible, such coverage shall consist of an organized interrelated sequence of recordings at various positions along that proposed construction area (e.g., a wooded easement area). Such coverage shall be obtained by walking or by a special conveyance approved by the City.

3.6 COVERAGE RATES

A. Rate of speed in the general direction of travel of the vehicle used during videoing shall not exceed 75 feet per minute. Panning, zoom-in, and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.

3.7 CAMERA OPERATION

A. Camera Height and Stability: 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 (10) feet. The camera shall be firmly mounted such that transport of the camera during the recording process will not cause an unsteady picture.

B. Camera Control: Camera pan, tilt, zoom-in, and zoom-out rate shall be sufficiently controlled such that recorded objects shall be clearly viewed during audio-video playback. In addition, all other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chroma, white balance, and electrical focus shall be properly controlled or adjusted to maximize picture quality.

C. Viewer Orientation Techniques: 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 electronic media viewer, highly visible yellow flags shall be placed, by the Contractor, in such a fashion as to clearly indicate the proposed center line of construction.

END OF SECTION

SECTION 311010

DEWATERING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Dewatering shall include all necessary control and disposal of groundwater on a continual basis during construction.

B. Dewatering shall include the lowering of the groundwater table to relieve any hydrostatic head that could cause a decrease in the stability of the excavated subgrade. It shall also include the intercepting of seepage which could otherwise emerge from the slope or sides of excavations which could cause a decrease in the stability of the excavated subgrade or the slopes or sides of the excavations.

1.2 ADDITIONAL PROVISIONS

A. Provide, operate, and maintain any dewatering system required to lower and control groundwater levels and groundwater hydrostatic pressure during the construction of the Work as required by this Section and the Contract Documents. The Contractor shall assume full responsibility and expense for the adequacy of the dewatering system with no additional time for performance.

B. The development, drilling, operation, and abandonment of all wells used in the dewatering system shall comply with regulations of the Florida Department of Environmental Protection and the Southwest Water Management District.

C. Remove and dispose of water resulting from activities described in this Section. Provide siltation settling basins for all discharges from dewatering systems. Submit plan of settling basins and discharge facilities for review by the City prior to dewatering system installation.

D. Remove dewatering systems and equipment when no longer required.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 EXECUTION

A. The dewatering system shall be capable of developing an excavated subgrade relieved of any hydrostatic pressure that could cause a decrease in the stability of the excavated subgrade and which will provide the necessary groundwater control for the proper performance required for completion of the Work.

B. The dewatering system shall not cause damage to newly constructed or existing properties, buildings, utilities, and other work due to the loss of support from incompletely drained soils or from removal of soil particles resulting from the dewatering system operation.

C. Dewatering facilities shall be located where they will not cause interference with work performed by others.

D. If the dewatering system utilized by the Contractor causes or threatens to cause damage to new or existing facilities, the dewatering system shall be modified at no additional cost to the City. The Contractor shall be responsible for and shall repair all damage caused by the dewatering system operation at no additional cost to the City and at no additional time for performance.

E. Dispose of subsurface water collected in a manner which conforms to all applicable local and state ordinances, statutes, and laws.

F. Maintain continual and complete effectiveness of the dewatering system operation to provide a firm, stable, excavated subgrade at all times as required for proper performance of the Work.

G. Provide dewatering necessary to maintain the groundwater table below the level of backfill as it is being placed.

3.2 JOB CONDITIONS

A. Erosion Control: Provide adequate protection from erosion from any of the dewatering operations utilized during the course of the construction. Any damage, disruption or interference to newly constructed work or existing properties, buildings, structures, utilities and/or other work resulting directly or indirectly from dewatering operations conducted under this Contract shall be remedied by the Contractor, at no cost to the City.

B. Treatment of Dewatering Operations Discharges: Provide such additional treatment devices as may be required to meet the provisions of the Contract. This may include the construction of sumps and/or

settling basins, stone rip-rap, silt fences or other requirements. The treatment devices shall be later removed and/or filled in with acceptable backfill material, and restored to original conditions once they are no longer needed, at no additional cost to the City.

C. Noise Control: All Work under this Section shall executed in accordance with all Noise Ordinances of the City of North Port.

END OF SECTION

SECTION 311020

TRENCHING, BACKFILLING AND COMPACTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and perform all trenching for pipelines and appurtenances, including drainage, filling, backfilling, disposal of surplus material and restoration of trench surfaces and easements.

B. Excavation shall extend to the width and depth shown on the Construction Plans or as specified herein and shall provide suitable room for installing pipe, structures and appurtenances.

C. Furnish and place all sheeting, bracing and supports and remove from the excavation all materials which the City or Engineer may deem unsuitable for backfilling. The bottom of the excavation shall be firm and dry and in all respects. If conditions warrant, deposit gravel for pipe bedding, or gravel refill for excavation below grade, directly on the bottom of the trench immediately after excavation has reached the proper depth and before the bottom of the trench has become softened or disturbed by any cause. The length of open trench shall be related closely to the rate of pipe laying. All excavation shall be made in open trenches.

D. All excavation, trenching and related sheeting, bracing, etc., shall conform to the requirements of the Florida "State Safety Act" (CS/SB 2626) which incorporates, by reference, OSHA's excavation safety standards, 29 CFR 1926 Subpart P.

E. Wherever the requirement for 95 or 98 percent compaction is referred to herein it shall mean "at least 95 or 98 percent of maximum density as determined by ASTM D1557, Method D".

F. Prior to the start of work submit the proposed method of backfilling and compaction to the Engineer and City for review.

G. All erosion and sediment control shall be in accordance with FDOT Standard Specifications for Road and Bridge Construction, latest edition.

1.2 RELATED WORK

A. Granular fill material is included in Section 311030.

1.3 DEWATERING

A. See Section 311010 Dewatering.

1.4 JOB CONDITIONS

A. The Contractor shall examine the site and review the available test borings or undertake his/her own soil borings prior to submitting his/her bid, taking into consideration all conditions that may affect his/her work. The City will not assume responsibility for variations of sub-soil quality or conditions at locations other than places shown and at the time the investigation was made. Boring log data and soil samples shall be examined if applicable.

B. Existing Utilities: Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, notify the City of such piping or utility immediately for direction.

2. Cooperate with the City and utility companies in keeping respective services and facilities in operation. Repair/replace damaged utilities to satisfaction of utility owner.

3. Demolish and completely remove from site existing underground utilities indicated on the Construction Plans to be removed.

C. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights and/or signs. Operate warning lights shall be used as recommended by authorities having jurisdiction.

1. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1.5 SUBMITTALS

A. Submit, in accordance with Section 013000, complete product data for materials specified in this Section.

B. For each material obtained from other than onsite sources, the Contractor shall notify the Engineer and the City of the source of the

material.

C. Furnish product data for all imported fill material to include:

1. Material Source: Submit name of imported material suppliers.

2. Supplier's Certificate: Certify that products meet or exceed specified requirements.

1.6 REFERENCED STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO M 288 - Geotextiles.

B. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

2. ASTM D 4355 / D 4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.

3. ASTM D 4533/ D 4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

4. ASTM D 4632/ D 4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

5. ASTM D 6241 - Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

6. ASTM D 4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile.

C. Florida "State Safety Act" (CS/SB 2626).

D. FDOT Standard Specifications for Road and Bridge Construction.

E. Occupational Safety and Health Administration (OSHA):

1. 29 CFR Part 1926 Subpart P.

F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Base, Fill, and Backfill:

1. Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M 145, soil classification Groups A-2 and A-3.

2. Unsatisfactory soil materials are those defined in AASHTO M 145 soil classification Groups A-1, A-24, A-25, A-26, A-27, A-4, A-5, A-6, and A-7 along with peat and other highly organic soils.

B. Structural Fill:

1. Well graded soil material consisting of coarse aggregate to medium to fine grain sized sand, free of organic, deleterious and/or compressible material.

    a. Shall not contain rock or stones exceeding three and one-half (3-1/2”) inches in diameter, hardpan, cobbles, or other similar materials.

C. Select Common Fill:

1. Soil material containing no more than 15 percent by weight finer than No. 200 mesh sieve.

    a. Shall be free from organic matter, muck, marl, rock exceeding three and one-half (3-1/2”) inches in diameter, broken concrete, masonry, rubble, or other similar materials.

2. Material falling within the above specification, encountered during the excavation, may be stored in segregated stockpiles for reuse. All material which, in the opinion of the Engineer or the City, is not suitable for reuse shall be spoiled as specified herein for disposal of unsuitable materials.

D. Bedding Rock:

1. Bedding rock shall be FDOT No. 57, gradation washed and graded lime rock or shell.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 3; AASHTO M 288.

2. Survivability: As follows:

   a. Grab Tensile Strength: 120 lbf (534 N); ASTM D 4632/ D 4632M.

   b. Tear Strength: 50 lbf (223 N); ASTM D 4533/D 4533 M.

   c. Puncture Strength: 310 lbf 1 N); ASTM D 6241.

3. Apparent Opening Size: No. 70 (0.212-mm) sieve, maximum; ASTM D 4751.

4. Permittivity: 0.1 per second, minimum; ASTM D 4751.

5. UV Stability: 70 percent after 500 hours' exposure; ASTM D 4355/D 4355M.

6. Product: Provide “Mirafi 140N,” by TenCate Geosynthetics – Nicolon Corporation, or approved equal.

PART 3 – EXECUTION

3.1 GENERAL

A. All excavation, backfill, and grading necessary to complete the work shall be made by the Contractor and the cost thereof shall be included in the contract price.

B. Material shall be furnished as required from off-site sources and hauled to the site.

C. The Contractor shall take all the necessary precautions to maintain the work area in a safe and workable condition.

D. The Contractor shall always protect his/her work by flagging, marking, lighting, and barricading. It shall also be the Contractor's responsibility to preserve and protect all above and underground structures, pipe lines, conduits, cables, drains or utilities which are existing at the time he/she encounters them. Failure of the Construction Plans to show the existence of these obstructions shall not relieve the Contractor from this

responsibility. The cost of repair of any damage which occurs to these obstructions during or as a result of construction shall be borne by the Contractor without any additional cost to the City.

3.2 TRENCH EXCAVATION

A. Trench excavation shall include material of every description and of whatever substance encountered, except rock and boulders. Pavement shall be cut with a saw, wheel or pneumatic chisel along straight lines before excavating.

B. Strip and stockpile topsoil from grassed areas crossed by trenches. At the Contractor's option, topsoil may be otherwise disposed of and replaced, when required, with approved topsoil of equal quality.

C. While excavating and backfilling is in progress, traffic shall be maintained, and all utilities and other property protected as provided in the General Conditions and General Requirements.

D. Excavation for all trenches required for the installation of pipes and electrical ducts shall be made to the depths indicated in the Construction Plans. Excavate in such manner and to such widths as will give suitable room for laying the pipe or installing the ducts within the trenches, for bracing and supporting and for pumping and drainage facilities. The trench width at the top of the pipe shall not exceed the allowable as determined by the depth of cut and indicated in the Construction Plans.

1. For water mains, excavate trench to provide a minimum of 36 inches of clear cover over the pipe bell unless otherwise noted in the Construction Plans or herein.

E. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. The trench may be excavated by machinery to, or just below the designated subgrade, provided that material remaining in the bottom of the trench is no more than slightly disturbed. Subgrade soils which become soft, loose, "quick", or otherwise unsatisfactory as a result of inadequate excavation, dewatering or other construction methods shall be removed and replaced by screened gravel fill as required by the Engineer at the Contractor's expense.

F. Clay and organic silt soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth-edge bucket to excavate the last one (1) foot of depth.

G. Rock shall be removed to a minimum four (4”) inches to six (6”) inches of clearance around the bottom and sides of all the pipe or ducts being

laid as shown in the Construction Plans.

H. The bottom of the excavations shall be firm and dry and, in all respects, acceptable to the City. Excavate unsatisfactory soil material from the bottom of the trench to a depth determined by the City and replace with rock or shell bedding.

I. Where pipe or ducts are to be laid in bedding or encased in concrete the trench may be excavated by machinery to, or just below, the designated subgrade provided that the material remaining in the bottom of the trench is no more than slightly disturbed.

J. Where the pipes or ducts are to be laid directly on the trench bottom the lower part of the trenches shall not be excavated to the trench bottom by machinery. The last of the material being excavated shall be done manually in such a manner that will give a flat bottom true to grade so that pipe or duct can be evenly and uniformly supported along its entire length on undisturbed material or bedding rock. Bell holes shall be made as required manually so that there is no bearing surface on the bells and pipes are supported along the barrel only.

3.3 PIPE INTERFERENCES AND ENCASEMENT

A. The Contractor shall abide by the following schedule of criteria concerning interferences with other utilities. In no case shall there be less than 0.3 feet between any two pipe lines or between pipe lines and structures. Concrete encasement shall be provided in accordance with the typical detail as shown in the Construction Plans.

3.4 BEDDING

A. Where select common bedding material is used for pipe support as shown in the Construction Plans, the trench bottom or bedding should be prepared in accordance with Paragraph 3.2.E of this Section and the top six (6”) inches shall be compacted using mechanical equipment to a minimum of 95 percent (or 98 percent if adjacent to a roadway) of the maximum dry density as determined by ASTM D1557, Method D.

B. Where rock or shell is used for pipe support, gravity sewer pipe shall have rock or shell bedding to six (6”) inches over top of pipe, and four (4”) inches to six (6”) inches below the invert. Pressure pipe shall have rock or shell bedding to springline of pipe, and four (4”) inches to six (6”) inches below the invert depending on the diameter as shown in the Construction Plans. Rock or shell bedding shall be placed in maximum lift thicknesses of four (4”) inches to six (6”) inches with each lift compacted using mechanical equipment.

C. Rock or shell bedding may be used under certain circumstances as a

drain for ground water control, subject to the approval of the City. The Contractor shall take all precautions necessary to maintain the shell or rock bedding in a compacted state and to prevent washing, erosion, or loosening of this bed.

3.5 SHEETING AND BRACING

A. Furnish, put in place and maintain sheeting and bracing required by Federal, State or local safety requirements to support the sides of the excavation and prevent loss of ground which could endanger personnel, damage or delay the work or endanger adjacent structures. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he/she may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his/her responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.

B. Where sheeting and bracing is required to support the sides of trenches, engage a professional engineer, registered in the State of Florida, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design and certification of this shall be provided by the professional engineer.

C. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the screened gravel backfill.

1. When installing rigid pipe (R.C., V.C., A.C., etc.), any portion of the box extending below mid diameter shall be raised above this point prior to moving the box ahead to install the next pipe. This is to prevent the separation of installed pipe joints due to movement of the box.

2. When installing flexible pipe (PVC, etc.), trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below mid-diameter of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, screened gravel shall be placed to fill any voids created and the screened gravel and backfill shall be re-compacted to provide uniform side support for the pipe.

D. Permission will be given to use steel sheeting in lieu of wood sheeting for the entire job wherever the use of sheeting is necessary. The cost for use of sheeting will be included in the bid items for pipe and shall include full compensation for driving, bracing and later removal of sheeting.

E. All sheeting and bracing shall be carefully removed in such manner as not to endanger the construction of other structures, utilities, or property, whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, by watering or otherwise as directed.

F. No payment will be given for sheeting, bracing, etc., during the progress of the work. No payment will be given for sheeting which has been left in the trench for the convenience of the Contractor.

G. Sheeting driven below mid-diameter of any pipe shall remain in place from the driven elevation to at least one (1') ft above the top of the pipe.

3.6 TEST PITS

A. Excavation of test pits may be required for the purpose of locating underground utilities or structures as an aid in establishing the precise location of new work.

B. Test pits shall be backfilled as soon as the desired information has been obtained. The backfilled surface shall be maintained in a satisfactory condition for travel until resurfaced as specified.

3.7 BACKFILLING

A. Backfilling over pipes shall begin as soon as practicable after the pipe has been laid, jointed, and inspected and the trench filled with suitable bedding material.

B. Backfilling over ducts shall begin not less than three (3) days after placing concrete encasement.

C. All backfilling shall be performed expeditiously and as detailed in the Construction Plans.

D. Any space remaining between the pipe and sides of the trench shall be packed full by hand shovel with selected earth, free from stones having a diameter greater than two (2") inches and thoroughly compacted with a tamper as fast as placed, up to a level of one (1') foot above the top of the pipe. The material shall be compacted to a minimum of 95 percent (or 98 percent if adjacent to a roadway) of the maximum dry density as determined by ASTM D1557, Method D in layers not to exceed four inches (4") up to the centerline of the pipe from the trench bottom and in layers not to exceed six (6") inches from the pipe centerline to twelve (12") inches above the pipe.

E. The filling shall be carried up evenly on both sides with at least one person tamping for each person shoveling material into the trench.

F. The remainder of the trench above the compacted backfill, as just described above, shall be filled and thoroughly compacted with select common fill with mechanical equipment. Compact select common fill in six (6”) inch layers to a minimum of 95 percent (or 98 percent if adjacent to a roadway) of the maximum dry density determined by ASTM D1557, Method D.

G. Where the pipes are laid in streets, the remainder of the trench up to a depth of twelve (12”) inches below the bottom of the specified permanent paving shall be backfilled with common fill material in layers not to exceed one (1’) foot and thoroughly compacted. The subbase layer for paving shall be of bank-run gravel thoroughly compacted in six (6”) inch layers.

H. In locations where pipes pass through building walls, the Contractor shall take the following precautions to consolidate the refill up to an elevation of at least one (1’) foot above the bottom of the pipes:

1. Place structural fill in such areas for not less than three (3’) feet either side of the center line of the pipe in level layers not exceeding six (6”) inches in depth.

2. Wet each layer to the extent requested and thoroughly compact each layer with a power tamper.

I. To prevent longitudinal movement of the pipe, dumping backfill material into the trench and then spreading will not be permitted until selected material or screened gravel has been placed and compacted to a level one (1’) foot over the pipe.

J. Backfill shall be brought up evenly on all sides. Each layer of backfill material shall be thoroughly compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping, to 92 percent compaction. If rolling is employed, it shall be by use of a suitable roller or tractor, being careful to compact the fill throughout the full width of the trench.

K. Compaction by puddling or water jetting shall not be permitted.

L. Compaction in confined areas shall be by use of hand or pneumatic ramming with tools weighing at least 20 lbs. The material shall be spread and compacted in layers not exceeding six (6”) inches thick, uncompacted loose measure thickness.

M. Backfill around structures shall be granular fill material as specified and as shown on the Drawings. All backfill shall be spread and compacted as specified, especially under and over pipes connected to the structures.

N. Bituminous paving shall not be placed in backfilling unless specifically permitted, in which case it shall be broken up as directed.

O. All road surfaces shall be broomed and hose-cleaned immediately after backfilling. Dust control measures shall always be employed.

P. The Contractor shall coordinate and pay for density tests to determine compaction of backfill spaced as required by the agencies having jurisdiction, or at a minimum of one in every 300 feet of trench cut per lift and shall include a test at the spring line of the pipe. The tests shall be sign and sealed by a Florida Licensed Engineer.

3.8 GRADING

A. Grading shall be performed at such places as are indicated in the Construction Plans, to the lines, grades, and elevations shown or as approved by the City and shall be made in such a manner that the requirements for formation of embankments can be followed. All unacceptable material encountered, of whatever nature within the limits indicated, shall be removed and disposed of as requested. During the process of excavation, the grade shall be maintained in such condition that it will always be well drained. Temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the prosecution or condition of the Work.

B. If at the time of excavation, it is not possible to place any material in its proper section of the permanent structure, it shall be stockpiled in approved areas for later use. No extras will be considered for the stockpiling or double handling of excavated material.

C. The right is reserved to make minute adjustments or revisions in lines or grades if found necessary as the work progresses, due to discrepancies in the Construction Plans or in order to obtain satisfactory construction.

D. Stones or rock fragments larger than one and one-half (1-1/2”) inches in their greatest dimensions will not be permitted in the top one (1’) foot of the subgrade line of all dikes, fills, or embankments.

E. All fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown in the Construction Plans, or as approved in writing by the City.

F. In cuts, all loose or protruding rocks on the back slopes shall be jarred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown in the Construction Plans or as approved in writing by the City.

G. No grading is to be done in areas where there are existing pipe lines that may be uncovered or damaged until such lines which must be maintained are relocated, or where lines are to be abandoned, all required valves are closed and drains plugged at manholes.

H. The Contractor shall replace all pavement cut or otherwise damaged during the progress of the Work as specified elsewhere herein.

3.9 RESTORING TRENCH SURFACE

A. Where the trench occurs adjacent to paved streets, in shoulders, sidewalks, or in cross-country areas, thoroughly consolidate the backfill and maintain the surface as the work progresses. If settlement takes place, immediately deposit additional fill to restore the level of the ground.

B. In streets and adjacent to streets, the twelve (12”) inches of trench backfill below the specified initial pavement shall consist of compacted bank-run gravel. Should the Contractor wish to use material excavated from the trench as gravel subbase for pavement replacement, the Contractor shall, at his/her own expense, have samples of the material tested by an independent testing laboratory at intervals not to exceed 500-ft, in order to establish its compliance with the specifications. Only material which has been tested and approved by the Engineer shall be allowed to be incorporated into the work.

C. The surface of any driveway or any other area which is disturbed by the trench excavation and which is not a part of the paved road shall be restored to a condition at least equal to that existing before work began.

D. In sections where the pipeline passes through grassed areas, the Contractor, shall at his/her own expense, remove and replace the sod, or loam and seed the surface to the satisfaction of the Engineer.

3.10 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. Excavated material shall be stacked without excessive surcharge on the trench bank or obstructing free access to hydrants and gate valves. Inconvenience to traffic and abutters shall be avoided as much as possible. Excavated material shall be segregated for use in backfilling as

specified below.

B. All surplus and/or unsuitable excavated material shall be disposed of in the following manner:

1. Transport from City's property and legally dispose the material. Any permit required for the hauling and disposing of this material beyond City's property shall be obtained prior to commencing hauling operations.

C. Suitable excavated material may be used for fill if it meets the Technical Specifications for select common fill and is approved by the Engineer and the City. Excavated material that has been approved may be neatly stockpiled at the site in a location designated by the City, provided there is an area available where it will not interfere with the operation of the facility nor inconvenience traffic or adjoining property owners.

END OF SECTION

SECTION 311050

CLEANING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor shall execute cleaning, during progress of the Work, and at completion of the Work.

1.2 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 DURING CONSTRUCTION

A. Execute daily cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide onsite containers for the collection of waste materials, debris and rubbish. All waste materials including containers, food debris and other miscellaneous materials must be disposed of daily in onsite containers.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.2 FINAL CLEANING

A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

B. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

C. Prior to final completion, or City occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire Work is clean.

END OF SECTION

SECTION 321010

PAVEMENT REPAIR AND RESTORATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, equipment, incidentals, obtain any required right of-way permits and remove and replace pavements over trenches excavated for installation of water or sewer lines and appurtenances as shown on the Construction Plans and standard detail drawings.

1.2 GENERAL

A. Trenching, Backfilling and Compaction is included in Section 311020.

1.3 SUBMITTALS

A. Submit, in accordance with Section 013000, complete product data for materials specified in this Section.

PART 2 - PRODUCTS

2.1 PAVEMENT SECTION

A. Performance / Design Criteria:

1. Superpave designs are defined for equivalent single axle loads (ESAL) ranging from 0.3 to 100 million over 20-year paving life. Consider rate of loading to avoid rutting damage that occurs in first few years of paving life. Estimating ESAL over 20 years for paving designed for shorter life span will affect paving design criteria.

2. Pavement Design: Superpave Type SP-9.5 or Type SP-12.5 as shown or specified and in accordance with Florida Department of Transportation Standard Specifications for Road and Bridge Construction or on the plans.

B. Asphalt Materials:

1. Use asphalt binder for superpave performance graded asphalt designs.

2. Provisional standard, AASHTO MP1a, includes requirements for low temperature testing procedures. Both standards use same performance

grades. Verify standard permitted by FDOT requirements.

3. Materials for asphalt paving shall comply with Florida Department of Transportation Standard Specifications for Road and Bridge Construction and the plans.

2.2 MIXES

A. Asphalt Paving Mixtures:

1. Asphalt Paving Mixtures shall comply with Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 017710 – Contract Closeout

B. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.

C. Verify compacted subbase is dry and ready to support paving and imposed loads.

1. Proof roll subbase with a vibratory roller weighing a minimum of eight (8) tons or a sheepsfoot roller, where appropriate, exerting a compression of at least 250 pounds psi on the tamper foot for at least five (5) passes in minimum two (2) perpendicular passes to identify soft spots.

2. Remove soft subbase and replace with compacted fill as specified in Section 311030.

D. Verify gradients and elevations of base are correct.

E. Verify manhole frames and drainage structures are installed in correct position and elevation.

3.2 PREPARATION

A. Prepare subbase in accordance with Florida Department of Transportation standards and the plans.

3.3 DEMOLITION

A. Saw cut and notch existing paving as indicted on plans.

B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.

C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

D. Remove demolished asphalt from Site and dispose of properly.

3.4 MILLING OF EXISTING ASPHALT PAVEMENT

A. Perform all milling operations in accordance with Florida Department of Transportation standards.

B. Remove existing raised pavement markers prior to milling.

C. Do not disfigure adjacent Work.

D. Provide a milling machine capable of maintaining a depth of cut and cross slope that will achieve the results specified in the Contract Documents.

1. Milling machine shall have a minimum overall length (out to out measurement excluding the conveyor) of eighteen (18) feet and a minimum cutting width of six (6) feet.

2. Milling machine shall be equipped with a built-in automatic grade control system that can control the transverse slope and the longitudinal profile to produce the specified results.

3. The City or Engineer will approve any commercially manufactured milling machine that meets the above requirements. If it becomes evident after starting milling that the milling machine cannot consistently produce the specified results, the City or Engineer will reject the milling machine for further use.

4. The Contractor may use a smaller milling machine when milling to lower the grade adjacent to existing curb or other areas where it is impractical to use the above described equipment.

5. Milling machine shall be equipped with means to effectively limit the amount of dust escaping during the removal operation.

6. For complete pavement removal, the Engineer may approve the use of alternate removal and crushing equipment.

E. Execute removal to depth not less than the depth(s) shown on the plans at each point across full width of surface without detrimental aggregate degradation.

F. Remove milled asphalt from project site and dispose of properly.

3.5 INSTALLATION

A. Subbase: Prepare subbase in accordance with Florida Department of Transportation Standards.

B. Prime Coat and Tack Coat: Install in accordance with Florida Department of Transportation Standards.

C. Single Course Asphalt Paving:

1. Install Work in accordance with Florida Department of Transportation Standards.

2. Place asphalt within 24 hours of applying primer or tack coat.

3. Place asphalt wearing course to thickness indicated on Plans/Details.

4. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.

5. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

D. Double Course Asphalt Paving:

1. Install Work in accordance with Florida Department of Transportation Standards.

2. Place asphalt binder course within 24 hours of applying primer or tack coat.

3. Place binder course to thickness indicated on Plans.

4. Coordinate times for placement to allow for inspection and testing of each course.

5. Place wearing course within 24 hours of placing and compacting binder course.

6. When binder course is placed more than 24 hours before placing

wearing course, clean surface and apply tack coat before placing wearing course.

7. Place wearing course to thickness indicated on plans.

8. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.

9. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

E. Asphalt Paving Overlay

1. Install Work in accordance with Florida Department of Transportation Standards.

2. Apply tack coat to existing paving surface at rate recommended by geotextile fabric manufacturer.

3. Place wearing course to thickness indicated on Plans.

4. Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.

5. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

F. Place asphalt mixture when temperature is not more than 15 degrees F less than initial mixing temperature.

G. Curbs

1. Install extruded asphalt curbs of profile as indicated on plans.

3.6 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 3/16 inch.

C. Variation from Indicated Elevation: Within 1/2 inch.

3.7 FIELD QUALITY CONTROL

A. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

B. Asphalt Paving Thickness: ASTM D3549; test one core sample from every 1,000 square yards compacted paving.

C. Asphalt Paving Density: Monitor the roadway density per FDOT standards with either 6-inch diameter roadway cores, a nuclear density gauge, or other density measuring device, at a minimum frequency of once per 1,500 feet of pavement.

3.8 PROTECTION

A. Immediately after placement, protect paving from mechanical injury until surface temperature is less than 160 degrees F.

B. Keep sections of newly compacted asphalt concrete, which are to be covered by additional courses, clean until the successive course is laid.

C. Do not dump embankment or base material directly on the pavement. Dress shoulders before placing the friction course on adjacent pavement.

END OF SECTION

SECTION 321028

TOPSOIL

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnishing all labor, materials, equipment, and incidentals necessary to furnish, prepare, and spread topsoil, fertilizer, lime, and mulch as specified herein.

B. Consideration shall be given to City of North Port Code of Ordinances, Chapter 22 Article II, Section 22-57, Timing of Application, Fertilizer and Landscape Management.

1.2 REFERENCE STANDARDS

A. Florida Department of Transportation (FDOT):

1. Standard Specifications for Road and Bridge Construction (Standard Specifications), latest edition.

2. FDOT FM 1-T 267 – Florida Method of Test of Determination of Organic Content in Soils by Loss on Ignition.

B. City of North Port:

1. City of North Port Code of Ordinances, Chapter 22 Article II, Section 22-57, Timing of Application, Fertilizer and Landscape Management.

1.3 SUBMITTALS

A. General: Submit all submittals to the City in accordance with Section 013000, Shop Drawings, Submittals, and Samples.

B. Required Submittals:

1. Product Data: Product literature showing compliance with the requirements herein and including source/supplier information (as required):

   a. Topsoil.
   b. Lime.

c. Fertilizer.
d. Mulch.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil shall comply with the requirements of Section 162 – Prepared Soil Layer of the FDOT Standard Specifications for “Finish Soil Layer” and those requirements herein.

B. Topsoil shall be reasonably free from subsoil, stumps, roots, brush, rock or stones exceeding two inches (2”) in diameter, clay lumps, trash, or other similar objects.

C. Topsoil shall have a pH between 4.5 and 8.5 and shall have an organic content of 2.5 to 10 percent in accordance with FDOT FM 1-T 267.

2.2 LIME

A. Lime shall be ground dolomite limestone, designated for agricultural use.

2.3 FERTILIZER

A. Fertilizer shall comply with the requirements of Section 982 – Fertilizer of the FDOT Standard Specifications and those requirements herein.

B. Fertilizer shall be a standard commercial fertilizer containing 12 percent nitrogen, 8 percent phosphoric acid, and 8 percent potassium.

C. Fertilizer shall comply with the requirements of applicable state and federal laws and Code of the City of North Port Chapter 22 – Environmental and Natural Resources, Article II – Fertilizer and Landscape Management.

2.4 MULCH

A. Mulch shall comply with the requirements of Section 981 – Turf Materials of the FDOT Standard Specifications.

PART 3 – EXECUTION

3.1 PREPARATION OF AREA

A. Clear stones larger than two inches (2”) in diameter, sticks, and other debris which might interfere with the establishment, growth, or maintenance of acceptable turf and roller the area before applying

fertilizer and limestone.

3.2 PLACING TOPSOIL

A. Evenly spread topsoil prepared area to a uniform depth of 4 inches, after compaction. Spreading shall not be done when the ground or topsoil is excessively wet or otherwise in a condition detrimental to the work. Spreading shall be carried on so that sodding operations can proceed with a minimum of soil preparation or tilling.

B. After spreading, any large stiff clods and hard lumps shall be broken with a pulverizer or by other effective means and any subsoil, stumps, roots, brush, rock or stones exceeding 2 inches in diameter, clay lumps, trash, or other similar objects shall be removed.

C. The final topsoil surface shall conform to the required lines, grades, and cross sections.

D. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

3.3 PLACING LIME, FERTILIZER, AND MULCH

A. The rate and method of application of lime, fertilizer, and mulch shall comply with the recommendations of the supplier and the requirements of Code of the City of North Port Chapter 22 – Environmental and Natural Resources, Article II – Fertilizer and Landscape Management

3.4 DISPOSAL OF WASTE MATERIALS

A. The Contractor shall dispose of all material and debris generated by hauling such material and debris away to an approved facility.

END OF SECTION

SECTION 321030

RESTORATION BY SEEDING OR SODDING

PART 1 - GENERAL

1.1 SCOPE

A. The work in this section consists of furnishing all labor, material and equipment to restore all areas disturbed during construction to match preconstruction conditions. Establish a stand of grass within the areas disturbed by furnishing and placing grass sod where required, or by seeding and mulching areas not requiring sod.

1.2 REFERENCES

A. Use materials conforming to the requirements of Florida Department of Transportation Standard Specifications for Road and Bridge Construction as follows:

1. Section 570 – Performance Turf
2. Section 981 – Turf Materials
3. Section 982 – Fertilizer
4. Section 983 – Water for Grassing

B. City of North Port Administrative Code, Chapter 22 Environmental and Natural Resources, Article II – Fertilizer and Landscape Management

1.3 SUBMITTALS

A. Submit certifications and identification labels for all seeding or sodding supplied in accordance with Division 01 General Requirements, Section 013000 Shop Drawings, Submittals and Samples.

PART 2 - PRODUCTS

2.1 SODDING

A. Types: Sod may be of either St. Augustine or Argentine Bahia grass or as that disturbed, as established prior to construction. Use well matted sod with roots. When replacing sod in areas that are already sodded, use sod of the same type as the existing sod.

B. Provide sod as required in accordance with Florida Department of Transportation Specifications. Furnish sod equal to and similar in type as that disturbed. Place and water in accordance with FDOT Specifications.

C. Use sod in commercial-size rectangles, preferably 12-inch by 24-inch or larger, except where 6-inch strip sodding is called for.

D. Use sod that is sufficiently thick to secure a dense stand of live grass. Use sod that is live, fresh and uninjured at the time of planting, having a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. It shall be reasonably free of weeds and other grasses. Plant sod as soon as possible after being dug, and shade and keep moist from the time it is dug until it is planted.

E. Handle sod in a manner to prevent breaking or other damage. Do not handle by dumping from trucks or other vehicles. Use care to retain the native soil on the roots of each sod roll during stripping and handling. Sod that has been damaged by handling during delivery, storage or installation will be rejected.

F. Swales: Place sod to the proper grade and cross section in all flow areas to ensure the design flow of water in the ditch. In excavating for the placement of sod, provide a minimum of 3 inches of undercut.

2.2 FERTILIZER

A. Supply chemical fertilizer in accordance with the City of North Port Administrative Code, Chapter 22 Environmental and Natural Resources, Article II – Fertilizer and Landscape Management.

2.3 EQUIPMENT

A. Spread fertilizer uniformly at the specified rate.

2.4 SEEDING

A. Seed all unpaved areas disturbed during construction that do not require sod. Complete all seeding in conformance with FDOT Specifications Sections 570 and 981. Mulch the grassed areas in accordance with FDOT Specifications. Fertilize the grassed areas in accordance with City of North Port Administrative Code.

B. Provide mulch material free of weeds. Mulch shall be oat straw or rye, Pangola, peanut, Coastal Bermuda, or Bahia grass hay.

C. All seeds must have been tested within 6 months of planting. Submit a seed bag tag with final payment requests from each type or mixture of seed used.

2.5 TOPSOIL

A. Topsoil stockpiled during excavation may be used. If additional topsoil is required to replace topsoil removed during construction, it shall be obtained off site at no additional cost to the City. Topsoil shall be fertile, natural surface soil, capable of producing all trees, plants, and grassing specified herein.

2.6 MULCH

A. Furnish small grain straw mulch. Apply mulch at a rate of 1.5 tons per acre, corresponding to a depth not less than 1-inch or more than 3-inches according to texture and moisture content of mulch material. Apply asphalt emulsion at a rate of 150 gallons per ton of straw to anchor the straw applied.

2.7 WATER

Where water is required, the Contractor shall purchase it from the City. A meter will be installed on a fire hydrant, location to be determined by the Contractor and coordinated with the City. The Contractor shall pay all fees and water usage charges. Water is required during seeding and sodding operations and through the maintenance period and until the work is accepted. The Contractor shall make any arrangements that may be necessary to ensure there is an adequate supply of water to meet the needs for the work. The Contractor shall furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required. Water shall be suitable for irrigation and free from ingredients harmful to plant life.

PART 3 – EXECUTION

3.1 SOD BED PREPARATION

A. Clear areas to be sodded and/or seeded of all rough grass, weeds, and debris, and bring soil to an even grade.

B. Thoroughly till soil to a minimum 4-inch depth.

C. Bring area to proper grade, free of sticks, stones, or other foreign matter over 1inch in diameter or dimension. The surface shall conform to finish grade, less the thickness of sod, free of water-retaining

depressions, the soil friable and of uniformly firm texture.

3.2 INSPECTION

A. Verify that any related preceding work has been completed.

B. Do not start work until conditions are satisfactory.

3.3 SOD HANDLING AND INSTALLATION

A. During delivery, prior to planting, and during the planting of sod areas, protect the sod panels from excessive drying and unnecessary exposure of the roots to the sun. Stack sod during construction and planting so it is not damaged by sweating or excessive heat and moisture.

B. After completion of preparation as specified above, lay sod panels tightly together to make a solid sodded lawn area. On mounds and other slopes, the long dimension of the sod shall be laid perpendicular to the slope. Immediately following sod laying, roll the lawn areas with a lawn roller customarily used for such purposes, and then thoroughly water.

C. Place sod at all areas where sod existed prior to construction, on slopes of 3 horizontal to 1 vertical (3:1) or greater, in areas where erosion of soils will occur, and as directed by the Engineer or Owner. On areas where the sod may slide, due to height and slope, the Engineer or Owner may direct that the sod be pegged, with pegs driven through the sod blocks into firm earth, at suitable intervals.

3.4 SOD MAINTENANCE

A. The sod shall produce a dense, well-established growth. Repair and re-sod all eroded or bare spots until project acceptance. Repair to sodding shall be accomplished as in the original work.

B. Perform sufficient watering to maintain adequate moisture for optimum development of the seeded and sodded areas, and no less than 1.5 inches of water per week for at least 2 weeks. Thereafter, apply water for a minimum of 60 days as needed until the sod takes root and starts to grow or until final acceptance, whichever is latest.

3.5 FERTILIZER RESTRICTIONS

A. Consideration shall be given to City of North Port Code of Ordinances, Chapter 22 Article II, Section 22-57, Timing of Application, Fertilizer and Landscape Management. City of North Port Resolution Number

2018-R-26 which encourages a voluntary non-use of fertilizer year-round shall also be considered.

3.6 GUARANTEE

A. Guarantee a live and vigorous stand of permanent grass at the time of acceptance of the work consisting of 80 percent minimum coverage for seeded grass areas with no bare spots greater than 5 square feet.

3.7 CLEANING

A. Remove debris and excess materials from the project site.

END OF SECTION

SECTION 336040

MANHOLES, RINGS AND COVERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing sanitary sewer manholes and all other appurtenances for a complete installation. Provide precast reinforced concrete manholes conforming to ASTM C478 in accordance with the Plans and NPU Standard Details.

B. See Related Work Specified in Other Division 33 Sections

1.2 REFERENCE

A. Codes and standards referred to in this Section are:

1. ASTM C 76 - Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.

2. ASTM C 478 - Specification for Precast Reinforced Concrete Manhole Sections

3. ASTM C 32 - Specification for Sewer and Manhole Brick (Made for Clay or Shale)

4. ASTM C 443 - Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets [Metric]

5. AASHTO - American Association of State Highway and Transportation Officials
   1. M306-10: Drainage, Sewer, Utility, and Related Castings
   a. Manufacture
   b. Proof Testing
   c. Inspection
   d. Certification
   e. Marking
   2. Standard Specification for Highway Bridges

6. ASTM G154 – Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

7. ASTM C 1028 – Standard Test Method for Determining the Static Coefficient of Friction

8. ASTM D256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics

9. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings of sewer manholes as specified in Section 013000.

B. Submit shop drawings for fabrication and installation of casting assemblies that are not included in the Plans or the NPU Standard Details. Include plans, elevations, sections and connection details. Show anchorage and accessory items. Include setting drawings for location and installation of castings and anchorage devices.

C. Quality Control: Submit shop and field test reports of concrete samples tested in an approved laboratory.

1.4 DELIVERY, STORAGE AND HANDLING

A. General: Take every precaution to prevent injury to the manhole sections during transportation and unloading. Unload manhole sections using skids, pipe hooks, rope slings, or suitable power equipment, if necessary, and always keep the sections under control. Do not allow the manhole sections to be dropped, dumped or dragged under any conditions. Follow applicable requirements specified in Division 1.

B. Damaged Section: If any manhole section is damaged in the process of transportation or handling (see Section 2.3.C below), contact the NPU for visual inspection. If NPU deems it necessary to reject the manhole section, reject and immediately remove such sections from the site, and replace the damaged manhole sections at no increase in Contract Amount.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Composite Access Products (CAP One), or an NPU approved equal, are acceptable for the sanitary sewer manhole frames and covers.

2.2 MATERIALS

A. Concrete, Steel Reinforcement and Aggregates: Provide reinforced

concrete, cementitious materials, aggregates and steel reinforcement conforming to the requirements of ASTM C 478, with 4,000 psi concrete, Grade 40 reinforcement bars, Type II cement, and a minimum wall thickness of eight (8”) inches.

B. Steel reinforced polymer concrete manholes may be furnished and installed instead of the Type II cement manholes described above. If provided, steel reinforced polymer concrete manholes shall not require interior and exterior protection as described in part 3.1 F and 3.1 G. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of five (5) years experience manufacturing polymer concrete. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

C. Manhole Rings and Covers:

1. Provide manhole rings and covers as shown on the Plans and NPU Standard Details. Manhole rings and covers shall be molded composite for application in wastewater collection systems and facilities. All composite moldings shall consist of a thermosetting resin matrix blended and/or combined with reinforcing fiber rovings, short fiber filaments, or equivalent nonmetallic reinforcing structure(s). The thermosetting resin matrix shall be a polyester, vinylester, or a blend of these. The moldings shall be true to pattern in form and dimension and free from cracks, pores, knit-lines, or other defects in locations affecting their strength and value for the service intended. The words SANITARY SEWER, as well as City of North Port shall be cast in all manhole covers except those owned by a private party. All manhole rings and covers shall be traffic bearing unless otherwise specified.

2. All rings and covers units shall be made from high strength nonmetallic fiber reinforced polymer/composite materials. The material shall be a resin thermoset matrix that can be reinforced with continuous filament engineered fabrics, fiber rovings, short fiber filaments, or equivalent nonmetallic reinforcing structure(s). Sealing gaskets shall be bonded to the frame continuously at the interface with the cover to reduce wear, shock, noise, and malodors.

3. Rings and covers intended for traffic service shall be capable of withstanding AASHTO M306: Proof Testing (includes items such as frames, covers etc.)

4. Fabricate rings and covers to conform to shapes, dimensions, and with wording or logos shown on the NPU Standard Details.

5. MOLDING PROCESS: Before the moldings are removed from the molding operation, they shall be thoroughly deflashed and cleaned at the parting lines, holes, notches and all exposed edges. If using a lock, or latch, these must be independent of the method used to open the cover to ensure the cover can be opened in the event of lock or latch failure. Covers and frames shall be compression molded under high pressures (>0.5 tons/sq. inch of x-y surface area) and high temperatures (>200 degrees F). Metal reinforcements or metal hinges molded within the composite shall not be permitted. Small non-stress bearing pieces of metal may be encapsulated or attached.

6. All rings and covers shall be molded and assembled in the United States in accordance with the requirements of AASHTO M306.

7. Covers shall be provided with a positive sealing mechanism by means of four (4) austenitic 316 stainless-steel one-half inch (1/2") nuts and bolts # 11 National Coarse Thread. Nuts shall be molded in or attached at pre-molded designated points of the frame and shall be Teflon Coated. For bolted manhole covers a thin film of an "Anti-Seize" lubricant, approved by the Engineer, or his/her designated representative shall be applied to all bolts. Bolts shall be threaded by hand prior to the use of wrenches. Other equivalent locking mechanisms must be approved by NPU.

8. Composite covers shall be detectable by metal detectors.

9. MARKINGS: Covers and Frames shall have the following molded into the substrate of the cover: Name (or abbreviation) of molder, country of origin (where transformed by molding process), molding date, indication that the material is non-metallic.

10. Composite frame and covers shall be Composite Access Products, L.P., McAllen, Texas or pre-approved equal as documented by NPU.

D. Preformed Joint Sealing Compound: Provide preformed joint sealing compound for joining manhole sections.

E. Concrete Protective Liner: Provide concrete protective liner approved by Engineer and NPU.

F. Pipeline Connections: Provide neoprene boots with type 316 stainless steel clamps of a design approved by the Engineer, NPU, or designee for joining wastewater collection piping to manhole riser sections. Fill the unfilled portion of the connection with mortar or concrete to guarantee a watertight seal.

G. Doghouse Manholes: Doghouse manholes over existing wastewater collection pipes are permitted. Provide a concrete base a minimum of eight (8") inches

thick, with proper reinforcing rods to prevent cracking. Pour concrete base upon a 12-inch base of gravel. Precast manhole rings may be set in the concrete over the existing pipe. Concrete should then be used to form both the bench and to seal the pipe entrances, both inside and especially outside. Once dry, remove the top of the pipe in the manhole.

H. Standard Manholes: The standard manhole shall be a minimum of four (4') feet in depth measured from the base of the cover frame to the top of the concrete footing and shall be of the concentric cone type, as shown in the NPU Standard Details. Manholes less than four (4') in depth, must be approved by NPU in writing prior to installation and shall be classified as a "Shallow Manhole" as specified below.

I. Shallow Manholes: The shallow manhole shall be four (4') feet or less in depth measured from the base of the cover frame to the top of the concrete footing and shall be of flat top construction, as shown in the NPU Standard Details.

J. Manhole Inverts: Form manhole inverts from concrete having a minimum 28-day compressive strength of 2,500 psi, and as shown on the NPU Standard Details. Inverts for "straight-through" manholes may be formed by laying the pipe straight through the manhole, pouring the concrete invert, and then cutting out the top half of the pipe. Construct curved inverts of concrete, as shown in the NPU Standard Details, and form a smooth, even, half pipe section. Precast inverts may be used, however, no large "bowls" shall be permitted in the center of the manhole. To alleviate this problem, grout the invert to form a smooth, uniform invert as shown in the NPU Standard Details. Maintain a 0.1-foot drop across the manhole.

K. Inflow Protectors: No inflow protectors shall be installed with composite manhole ring and covers. For other manhole ring and covers, and at the discretion of NPU, install an inflow protector manufactured from a high-quality 304 stainless steel with a consistent thickness of not less than 18-gage. The inflow protector shall have a deep-dish bowl design with no less than eight (8") inches in depth to allow easy and unobstructed removal of the manhole cover. The manhole inflow protector is to be manufactured with a one-piece rubber gasket installed at the factory for a tight, consistent fit. The rubber gasket is to be designed to securely wrap around the entire leading edge of the inflow protector at the point where it comes in contact with the manhole frame and cover. The wrap around rubber gasket is to be manufactured to a width of no less than 3/8 inches, consistent on top and bottom of the leading edge of the inflow protector. The gasket shall be no more than 3/32 inches thick. The insert removal handle shall be manufactured of a high-quality stainless steel for strength and durability. The handle is installed in such a way that it does not interfere with the installation or removal of the manhole lid. The insert handle will be manufactured to withstand a minimum pull force of 500 pounds before it fails or separates from the insert. The inscription "PROPERTY OF CITY OF NORTH PORT UTILITIES" shall be etched, at the base of the handle frame, to provide a long-lasting identification marker for the

City.

L. Chimney Seals: Install a minimum of two (2) precast concrete or HDPE riser rings with a chimney seal between manhole and frame.

2.3 SOURCE QUALITY CONTROL

A. If requested by NPU, Engineer, or designee, at least three cylinders shall be taken each day that manhole sections are cast, with batch samples to be designated by the laboratory representative. At least one set of cylinders will be taken from each nine (9) cubic yards of concrete used in manhole section construction. These samples will be tested for strength. If the samples fail to meet specified minimum concrete strength requirements, all manhole sections manufactured from the concrete from which the cylinders were made will be rejected.

B. NPU, Engineer, or designee reserves the right to core manholes either at the job site or point of delivery to validate strength of concrete and placement of steel. If cores fail to demonstrate the required strength or indicate incorrect placement of reinforcing steel, all sections not previously tested will be considered rejected until sufficient additional cores are tested, at no increase in Contract Amount, to substantiate conformance to these requirements.

C. Components of the manhole shall be free of fractures, cracks, and undue roughness. Concrete shall be free of defects, which indicate improper mixing or placing, and surface defects such as honeycomb or spalling. Cracks or broken ends due to improper handling will not be acceptable. No lift holes will be allowed except in rise and corbel sections. These holes shall not penetrate the wall and shall be filled with non-shrink grout after installation.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Lifting Holes: Grout lifting holes through the structure with non-shrink grout.

B. Precast Base: Provide a precast base of not less than eight (8”) inches in thickness with a minimum dimension across the precast base of 72 inches poured monolithically with the bottom section of the manhole walls, reinforced, with a minimum 28-day compressive strength of 4,000 psi.

C. Joining Manhole Sections: Join precast sections using plastic joint sealing compound and trimmed prior to grouting. The first construction joint shall be not less than two (2’) feet above the base slab. Use tongue and groove joints suitable for the flexible gasket. Use non-shrink grout inside and outside for sealing between manhole precast sections. Grout shall be of a type acceptable to the Engineer, NPU, or designee and designed for use in water. Seal all openings

and joints watertight.

D. Top Termination: Terminate manhole tops at such elevations as will permit laying up grade rings under the manhole frame to make allowances for future street grade adjustments.

E. Drop Connections: Manufacture drop connections, where required on precast manholes, with the manhole elements at the casting yard. Drop manholes shall be constructed per the NPU Standard Details.

F. Internal Protection:

1. Provide internal protection for all manholes. I.E.T Systems, Engineered Coating Solutions, Green Monster Liner (GML), and Raven 405 are approved by NPU. Note, internal protection is not required for steel reinforced polymer concrete manholes as described in 2.2 B. above.

2. Install the coating systems per manufacturer's recommendation and completely protect the structure from corrosion. The liner or coating systems must extend and seal onto manhole ring, seal onto and around pipe openings, and any other protrusions, and completely cover the bench and flow invert. Provide a ten (10)-year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the coating or liner system and shall protect the structure for at least five (5) years from all leaks and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide. Repair internal coating of existing manholes cored during tie-in of new wastewater collection system piping by applying approved coating material as listed above in accordance with the manufacturer's recommendations. If existing manhole has an internal coating other than that listed above, sandblast the interior of the existing manhole to remove existing coating(s) and expose the concrete substrate and apply an approved coating in accordance with the manufacturer's recommendations.

G. Coal Tar Epoxy: Coat all manhole, wet well, and valve vault exteriors with two (2) coats of coal tar epoxy to a minimum thickness of eight (8) dry mils (not required for steel reinforced polymer concrete manholes as described in 2.2 B. above).

H. Rings and Covers: Install composite frames and covers according to approved NPU Standard Details, shop drawings, and written instructions from the manufacturer. Set units accurately at required locations to proper alignment and elevation. Keep units plumb, level, true, and free of trash. Measure location accurately from established lines and grades. Brace or anchor frames temporarily in form work until permanently set.

END OF SECTION

SECTION 336060

TELEVISION INSPECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. After rehabilitation, each designated section shall be visually inspected during sealing operations by means of a closed-circuit television. The inspection will be done one section at a time and the section being inspected will be suitably isolated from the remainder of the sewer line as required.

B. Video recordings shall be made of the television inspections and both copies of the recordings and printed inspection logs shall be supplied to the Owner and Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be operative in 100 percent relative humidity conditions. The camera, television monitor and other components of the video system shall be capable of producing a minimum 500-line resolution video picture. Picture quality and definition shall be to the satisfaction of the Owner and Engineer. The lighting system shall minimize reflective glare.

PART 3 – EXECUTION

3.1 PERFORMANCE

A. The camera shall be moved through the line against the flow, at a uniform rate, stopping when necessary to insure proper documentation of the sewer's condition but in no case will the television camera be pulled at a speed greater than 30 fpm. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation the television camera will not pass through the entire manhole section, the Contractor shall re-set up his/her equipment

in a manner so that the inspection can be performed from the opposite manhole. If, again, the camera fails to pass through the entire section, the Contractor shall remove the obstruction by excavation and replacement of that section of pipe as specified herein.

B. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones, radios, or other suitable means of communication shall be set up between the two manholes of the section being inspected to ensure that good communications exist between members of the crew.

C. The accuracy of the measurements cannot be stressed too strongly. Measurement for location of defects shall be above ground by means of a meter device. Marking on cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Measurement meters will be accurate to two tenths of a foot over the length of the section being inspected. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape or other suitable device.

D. Documentation of the television results shall be as follows:

1. Television Inspection Logs

    a. Printed location records shall be kept by the Contractor and will clearly show the location, in relation to adjacent manholes, of each source of infiltration discovered. In addition, other data of significance including the locations of building and house service connections, along with an estimation of infiltration from such services, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion and other discernible features will be recorded and a copy of such records will be supplied to both the Owner and the Engineer.

2. Video recordings of the data on the television monitor shall be made by the Contractor copies of which, in digital format, shall be provided to the Owner.

END OF SECTION

SECTION 336065

GRAVITY SEWER SYSTEM SMOKE TESTING

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials, equipment and incidentals required and smoke test those sewers designated and submit all corresponding field data forms identifying potential sources of inflow discovered as a result of smoke testing.

B. Undertake a physical survey concurrent with smoke testing for the purpose of identifying sources of infiltration/inflow (I/I).

1.2 SUBMITTALS

A. SUBMIT THE FOLLOWING:

1. Schedule of smoke testing work as well as notifying the Engineer, City, and City's Fire Chief of the time and location of all smoke testing prior to commencing.

2. Manufacturer’s data sheets on the smoke candles and the blower to be used on the project.

3. Proposed field data gathering and observation forms prior to the start of the work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The "Smoke Candles" used in smoke testing shall be acceptable for both indoor and outdoor use, shall be non-contaminating and shall leave no residue to stain clothing or the interior of buildings.

2.2 EQUIPMENT

A. The air blower used to force smoke the into sewer pipe shall have a minimum capacity rating of 1,500 cfm and a maximum capacity rating not to exceed 3,750 cfm.

B. A metal basket shall be used to hold and retrieve the smoke candles.

PART 3 – EXECUTION

3.1 TESTING

A. Sewer sections shall be smoke tested by setting the blower at the up-stream manhole and blowing the smoke to the down-stream manhole.

B. Isolate the sewer line section to be tested by installing sewer plugs to shut off the flow completely in the sewer system up-stream of the sewer section to be tested.

C. Install an inflatable sewer plug in the down-stream sewer section and inflate the down-stream sewer plug after a heavy concentration of smoke arrives.

D. Testing Locations

1. Residential Areas

    a. Up to three reaches not exceeding a total of 500 linear feet of sewer line may be tested at one time based on the use of a blower with a maximum capacity rating of 1,500 cfm. Up to five reaches not exceeding a total of 1,200 linear feet of sewer line may be tested at one time based on the use of a blower with a maximum capacity rating of 3,750 cfm.

2. Industrial-Apartment Complex Areas

    a. Up to two reaches not exceeding a total of 400 linear feet of sewer line may be tested at one time based on the use of a blower with a maximum capacity rating of 1,500 cfm. Up to three reaches not exceeding a total of 900 linear feet of sewer line may be tested at one time based on the use of a blower with a maximum capacity rating of 3,750 cfm.

E. Candles

1. In Residential Areas a minimum of one three (3) minute smoke candle shall be simultaneously used for each reach of sewer in the sewer section tested.

2. In Industrial-Apartment Complex Areas a minimum of two three (3) minute smoke candles shall be simultaneously used for the first reach of sewer, increased by one three (3) minute smoke candle for each additional reach of sewer in the sewer section tested.

F. The metal basket used to hold and retrieve smoke candles shall be placed as close as possible to the sewer pipe invert during testing.

G. Testing shall not be done during rainy weather and testing shall be closely monitored on windy days. If smoke coming out of the ground is blown away so quickly as to escape accurate detection, testing will cease until such time that conditions permit.

H. Be solely responsible for the operations and for preventing sewer backups into area homes and causing sewage overflow.

I. Adequately notify residents/occupants, fire department and other affected by smoke testing as to time and place of the smoke testing.

J. Be solely responsible for the safety of their crews.

K. The Engineer, City, or his/her project representative reserves the right to observe field crews and evaluate effectiveness of identifying returns.

3.2 RECORDING OF FIELD OBSERVATIONS

A. Document observations regarding each leak identified on a smoke sketch log. The smoke sketch shall include manhole numbers, direction of sewer flow, direction of smoke, manhole condition, sewer length, date, mini-system number, test number per date, crew, weather condition, wind condition, smoke intensity, infiltration probability function, address and other comments.

B. Photograph using digital camera. Each photograph shall show the smoke escaping, at the source, in the foreground with the reference structure in the background. The photographs shall be attached to the field data gathering and observation form and provided electronically.

C. The address or house number shall be recorded under the sketch. A description of the leak, possible cause and recommended suggested rehabilitation method shall be recorded on the field data gathering and observation form.

D. The sketch shall provide a north arrow orientation. A sketch of the building and/or structure shall be drawn. A minimum of two tie measurements from permanent reference points to the smoke leak shall be shown, or identify the location of the smoke leak with GPS coordinates.

E. Document as part of the physical survey any aspect defect contributing to infiltration/inflow for the City to undertake further evaluation. The physical survey shall identify such suspected I/I sources as:

1. Leaking manhole bottoms
2. Leaking manhole riser
3. Manhole ponding area
4. Manhole frame not attached to manhole structure
5. Exposed brickwork not grouted
6. Leaking pipes at manhole

END OF SECTION

SECTION 336070

SEWER LINE AND MANHOLE CLEANING

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials, equipment and incidentals required to clean sewer pipe and fittings installed and/or rehabilitated, complete as shown on the Drawings and/or as specified herein.

B. Cleaning shall include proper high pressure water jetting, rodding, bucketing, brushing and flushing of sewers, pipeline rehabilitation or replacement, point repairs, manhole preparation, and testing operations. City staff will perform inspections by closed circuit television (CCTV)

C. Goal of cleaning is to remove debris, roots, intruding services, deposits, and other blockages to a minimum of 95 percent open. Contractor shall perform sewer cleaning work to an acceptable level as necessary to perform a thorough television inspection of sewer. Note that the television inspection will be performed by City staff, If pipe condition is such that cleaning may cause a potential collapse, then pipe shall be televised without attempting to clean it to 95 or 98 percent condition, pending approval by the Engineer and City.

1.2 RELATED WORK

A. Gravity Sewer System Smoke Testing in Section 336065

B. Manhole Rehabilitation in Section 336080

1.3 SUBMITTALS

A. Submit a safety plan prior to performing any on-site work that includes the following as a minimum:

1. Confined Space Entry.

2. Personal Protective Equipment.

B. Closeout Documents: Submit one complete set of documentation regarding inspections and work performed. Based on work scope, submit written reports, photographs taken, and USB flash drives that

incorporate color video recordings.

1.4 QUALITY ASSURANCE

Contractor shall have a minimum of five years' experience in sewer line and underground structure cleaning. Submit a list of at least three customers who have had similar work completed. Furnish trained and qualified technicians with proper experience operating equipment that is being used on this project.

1.5 SYSTEM DESCRIPTION

A. This project will provide construction services in accordance with the Inflow and Infiltration (I/I) rehabilitation of sanitary sewers and manholes.

1.6 PROJECT/SITE REQUIREMENTS

A. Recording of Field Observations.

B. Traffic Control: Coordinate traffic control required to perform work of this Section with the City.

1.7 DEFINITIONS

A. Light Cleaning: Small amounts of debris existing within sewer line and where sewer reaches do not require heavy cleaning, as defined below, and that produce little or no debris.

B. Heavy Cleaning: Large deposits of debris or heavy root growth existing within sewer line and where sewer reaches require debris removal of depths up to 25 percent of pipe height.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Hydraulic Sewer Cleaning Equipment:

1. Equipment used shall be of a movable dam type and be constructed so that a portion of the dam may be collapsed at any time during cleaning operation to protect against flooding of sewer. Movable dam shall be same diameter as pipe being cleaned and shall provide flexible scraper around outer periphery to ensure total removal of grease. If sewer cleaning balls or other such equipment which cannot be collapsed instantly are used, take special precautions against flooding of sewers and public or private property.

B. High Velocity Jet (Hydrocleaning) Equipment:

1. Have a minimum of 500 feet of high pressure hose.

2. Have a selection of two or more velocity nozzles that are capable of producing a scouring action from 15 to 45 degrees in all size lines to be cleaned. Also include a high velocity gun for washing and scouring manhole walls and floor.

3. Be capable of producing a minimum of 80 gallons per minute flows from a fine spray to a long distance solid stream and delivering up to 1,000 psi. Be able to carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. Locate controls so equipment can be operated above ground. Select flowrates and pressures as required for each size of sewer, type of debris, and amount of debris, and as recommended by nozzle manufacturers.

4. Have a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.

5. Have root cutting blades that are hydraulically spun.

C. Mechanical Cleaning Equipment:

1. Bucket machines shall be in pairs and with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe shall not be acceptable.

2. Power rodding machines shall be either sectional or continuous type capable of holding a minimum of 750 feet of rod. Rod shall be specifically treated steel. To ensure safe operation, machine shall have a fully enclosed body and an automatic safety release clutch or relief valve.

PART 3 – EXECUTION

3.1 GENERAL

A. Cleaning Precautions: During sewer cleaning operations, satisfactory precautions shall be taken in use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard flow in sewer line are used, precautions shall be taken to ensure that water pressure created does not damage or cause flooding of public or private property being served by sewer. When possible, flow of sewage in sewer shall be utilized to provide necessary pressure for hydraulic cleaning devices. When additional water from fire hydrants is necessary

to avoid delay in normal work procedures, water shall be conserved and not used unnecessarily.

B. No sewer cleaning shall take place in a particular sewer segment until upstream pipe segments have been cleaned. If cleaning is done in a downstream pipe segment to facilitate overall cleaning operations, segment shall be re-cleaned at no additional cost to City, after pipes upstream of that segment have been cleaned.

C. Sewer line walls shall be cleaned adequately to provide for proper operation of joint testing and sealing equipment or internal inspection to discern structural defects, misalignment and infiltration/inflow sources. Cleaning shall be performed immediately prior to joint testing and sealing and internal inspection to preclude build-up of debris from infiltration/inflow sources and discharges from upstream pipeline sections.

D. Designated sewer manhole sections shall be cleaned using hydraulically propelled, high velocity jet, or mechanically powered equipment. Selection of equipment used shall be based on conditions of lines at the time the work commences. Equipment and methods selected shall be satisfactory to the City. If cleaning of an entire section cannot be successfully performed from one manhole, equipment shall be set up on other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or equipment fails to traverse entire manhole section, it will be assumed that a major blockage exists and cleaning effort shall be repeated with other types of equipment. Immediately report any blockages to the Engineer or City.

E. Water for sewer cleaning shall be purchased by Contractor and obtained at locations in accordance with utility owner. If water is obtained from a potable supply, provide appropriate backflow prevention devices as required by authority having jurisdiction to protect potable system from cross connections and contamination. Contractor shall be solely responsible for preventing cross contamination of any public or private water systems used for this purpose.

3.2 PREPARATION

A. Selection of cleaning equipment shall be based on conditions of manhole and sewer lines at the time the work commences. Equipment and methods selected shall be acceptable to Engineer. Acceptance of proposed method of cleaning does not relieve Contractor of its responsibility to adequately remove dirt, grease, rocks, sand, and other materials and obstructions from sewer lines and manholes to allow performance of other work.

B. Take satisfactory precautions to protect sewer lines from damage that might be caused by improper use of cleaning equipment. Whenever using hydraulically propelled cleaning tools that depend upon water pressure to provide their cleaning force, or any tools that retard flow of water in sewer line, take precautions to ensure that water does not cause damage or flooding to public or private property.

C. No fire hydrant shall be obstructed in case of a fire in area served by hydrant.

D. Remove water meters, piping, and related equipment from fire hydrants at end of each work day.

3.3 PERFORMANCE

A. Selection of cleaning equipment shall be based on conditions of manholes and sewer lines at the time the work commences based on pre-construction CCTV inspection to be conducted by the City.

B. Contractor shall provide appropriate screening to stop passing of materials into downstream sewers. Sludge, dirt, sand, rocks, grease, and other solid or semisolid residue, debris, and material resulting from cleaning operations shall be removed at downstream manhole of section of sewer being cleaned. Passing material from manhole section to manhole section which could cause line stoppages, accumulations of sand in wet wells, or damage to pumping equipment shall not be permitted.

C. Debris, residue, and other materials resulting from cleaning operations shall become property of the Contractor and shall be removed from site at end of each workday and shall be disposed of in an approved and lawful manner. Under no circumstances will accumulation of debris, residue, and other matter be permitted on site beyond stated time, unless prior written authorization is given for storage in totally enclosed containers.

D. Light Cleaning: Use balls, scooters, and three (3) passes of high pressure water jetting equipment, brushes and swabs. Costs related to cleaning of such sewers shall be included in Contractor’s unit prices for Cleaning.

E. Heavy cleaning: Use bucket machines, scrapers, and augers with cleaning which requires more than three (3) passes with hydraulic cleaning equipment to achieve acceptance acceptable results. Heavy cleaning will be conducted only upon approval and direction of Engineer or the City. Refer to Section 012663 Change Order Procedures as applicable to a particular project. Costs related to

cleaning of such sewers shall be included in Contractor's unit prices for Heavy Cleaning. Compensation for heavy cleaning of a particular line will only be paid if:

1. Heavy cleaning was authorized by Engineer or the City prior to Contractor performance of the work.

2. Contractor proves that both significant time and effort was necessary to clean the line, i.e. time required to clean and inspect the line must have been at least twice the average time required to clean and inspect other sewers of comparable length and diameter in project area.

3. Adequate video proof of blockage, debris, grit or grease build-up, or other condition is provided by Contractor. Heavy Cleaning will be paid for on a lineal foot basis only for length required to be cleaned, i.e., from downstream manhole to approximate location of heavy cleaning. This may or may not include entire pipe section, unless otherwise approved by Engineer or City.

F. Obtain video proof of heavy cleaning by acquiring a 'before' video of accessible portions of obstructed reach; submit to Engineer and the City along with completed inspection.

1. A submerged camera does not justify a need for heavy cleaning; proof that submergence was due to a blockage or heavy debris and not a sag in the line will be required.

G. Pipes that contain roots or debris depths greater than 25 percent of pipe height may be paid on a time and material basis, upon approval by the Engineer or City. Engineer or City may determine any individual pipe be cleaned on a time and material basis.

H. Flushing of sanitary sewers to facilitate cleaning activities without the capture of solids and debris is expressly prohibited.

I. Retrieval of equipment lodged in pipes or a wet well is Contractor's responsibility and shall be performed at Contractor's expense.

NOTE: Bid item should be included for hourly rate for the excessive heavy cleaning described in Item G above.

3.4 FIELD QUALITY CONTROL

A. Acceptance of sewer line cleaning shall be contingent on satisfactory completion of the City's performed television inspection. If television inspection shows cleaning to be unsatisfactory, sewer line shall be re-cleaned and re-inspected until cleaning is shown to be satisfactory.

B. If internal joint testing and sealing is to follow cleaning, give particular attention to adequacy of cleaning to ensure that proper seating of sealing packer can be achieved.

C. Inspection of cleaning operations will be made on a daily basis by the Engineer or City.

3.5 CLEANING

A. Upon cleaning of underground sewer lines or structures, removal remove debris from finish grade and clean work areas so conditions at conclusion of the work are equal to or better than areas prior to work of this Section.

END OF SECTION

SECTION 336080

MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials, equipment, and incidentals required to rehabilitate manholes as noted on the plans and as specified herein.

B. Where indicated on the plans or as directed by the Engineer or NPU work may require, patching manhole exterior; stopping infiltration with chemical grout; rebuilding invert and benching; resetting or replacing manhole ring and cover assemblies; installing chimney seals, adjusting elevation of manhole frame and cover.

C. Eliminate active infiltration observed in the frame seal, chimney (corbel for brick manholes), cone, wall, bench, invert, holes, or pipe connections prior to applying the manhole lining system.

D. Reinstall existing manhole rings and covers removed to allow the completion of the rehabilitation work, unless otherwise specified in the Summary of Work or elsewhere in the Contract Documents. Restore the site to its pre-maintenance condition.

E. The Contractor shall provide a written report including photographs for each completed manhole. This report should include the general masonry condition after preparation, the amount of infiltration, how infiltration was rectified, and what type and how much product was used.

F. Maintain sanitary sewer flows as specified in Section 331030.

1.2 RELATED WORK

A. Contract Drawings show the manholes included in the work and indicate the work required for each manhole.

B. Cured-in-Place Pipe Liner is included in Section 336084.

C. Existing Sanitary Sewers are included in Section 33130.

D. Trenching, Backfilling and Compaction is included in Section 311020.

E. Pavement Repair and Restoration is included in Section 321010.

F. Monolithic Manhole Lining Systems is included in Section 336082.

G. Sewer Line and Manhole Cleaning is included in Section 336070.

J. Manholes, Rings and Covers are included in Section 336040.

1.3 SUBMITTALS

A. Staging Area Plan: Provide plan at scale of 1"= 50'. Identify the staging area for deployment of manhole repair equipment for each work area.

B. Submit to the Engineer and NPU in accordance with Section 013000, shop drawings and product data for all manhole rehabilitation materials specified in this Section for each manhole to be rehabilitated.

1. Information on the chemical grout and additives, cementitious compound, waterproofing, and corrosion control materials that will be used, the installation method, and equipment. For the materials that will be used, identify and furnish references for successful use of the materials in similar applications.

2. Method for sealing pipes at manholes.

C. The Contractor shall submit a report described in section 1.1 Scope of this specification.

1.4 REFERENCES

A. ASTM International (ASTM):

1. ASTM C 109 - Standard Testing Methods for Compressive Strength of Hydraulic Cement Mortars (Using 2-in Cube Specimens).

2. ASTM C 150 - Standard Specification for Portland Cement.

3. ASTM C 267 - Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes.

4. ASTM C 293 - Test Method for Flexural Strength of Concrete.

5. ASTM C 309 - Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete.

6. ASTM C 496 - Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.

7. ASTM C 579B - Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts and Monolithic Surfacing.

8. ASTM C 596 - Test Method for Drying Shrinkage of Mortar Containing Portland Cement.
9. ASTM C 666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.

10. ASTM C 1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.

11. ATSM F 2414 - Standard Practice for Rehabilitation of Sewers Using Chemical Grouting.

B. Occupational Safety and Health Administration (OSHA).

C. The revision of the above standards that is in effect at the time of bid opening will apply.

1.5 QUALITY ASSURANCE

A. The Contractor to perform the manhole rehabilitation and manhole lining shall be fully qualified, experienced, and equipped to complete the work in a timely and satisfactory manner. Submit the following information to the Engineer and NPU for review and approval before any work is performed.

1. Have a minimum of five (5) years' experience in performing this type of specialized work.

2. Have successfully installed the proposed lining system in a minimum of 500 manholes.

3. Name of the manufacturer and supplier for this work and previous work performed. The Contractor shall be certified by the manufacturer to install the monolithic lining system.

4. A list of all municipal installations performed by the manufacturer and Contractor over the past five (5) years along with the contact name, telephone number, and brief description of work performed.

5. Be capable of providing crews as needed to complete this work without undue delay.

6. The City reserves the right to disapprove the use of the Contractor based on the submitted qualifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Care shall be taken in shipping, handling and placing to avoid damaging the chemical grouts, cementitious materials, and other manhole rehabilitation products. Extra care may be necessary during cold weather construction. Any lining product or material damaged in shipment shall be replaced as directed by the Engineer or NPU.

B. Any materials showing deterioration, or which has been exposed to any other adverse storage condition that may have caused damage, even though no such damage can be seen, shall be marked as rejected and removed at once from the work.

C. While stored, the materials shall be adequately packaged and protected. The materials shall be stored in a manner as recommended by the manufacturer.

1.7 WARRANTY

A. All manhole rehabilitation work shall be warranted by the Contractor for a period of two (2) years from the date of substantial completion. During this period, all defects in the lining shall be repaired in a manner satisfactory to the Engineer or NPU, or the lining shall be reapplied at no cost to the City. At 21 months following substantial completion of the manhole rehabilitation work, the City or Engineer shall inspect this work to ensure proper performance. If any deficiencies are found during these inspections, the Contractor shall repair them at no additional cost to the City.

PART 2 - PRODUCTS

2.1 MATERIALS TO STOP ACTIVE LEAKS

A. To stop active leaks in the manhole, use any of the following materials and procedures to stop the active leaks prior to lining.

1. Premixed Fast-Setting, Volume-Stable Waterproof Cement Plug: Hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents, containing chlorides, gypsums, plasters, iron particles, aluminum powder or gas-forming agents, or promote the corrosion of steel it may come in contact with. The cement plug shall comply with the following minimum requirements:

Minimum Requirements		
Compressive Strength	ASTM C 109	>1000 psi, 1hr. >2500 psi, 24 hrs.

Sulfate Resistance	ASTM C 267	No weight loss after 15 cycles @ 2000 ppm
Freeze/Thaw	ASTM C 666 "Method A"	100 cycles
Pull Out Strength	ASTM C 234	14,000 lbs.
Set Time		<5.0 minutes

2. Chemical Grout: Repair work shall be in accordance with ASTM F 2414-04, and manufacturer's recommended installation methods. Use in accordance with the manufacturer's recommendations for the specific application.

   a. Drilling and injection method shall use a hydrophilic polyurethane chemical grout manufactured by Avanti or equal unless otherwise approved by the Engineer or NPU.

   b. Exterior chemical curtain grouting method shall use a hydrophobic polyurethane chemical grout manufactured by Avanti or equal unless otherwise approved by the Engineer or NPU.

   c. Expanded Gasket Procedure shall use Oil Free Oakum with hydrophilic polyurethane chemical grout manufactured by Avanti or equal used for sealing larger cracks and manhole joints, unless otherwise approved by the Engineer or NPU.

2.2 PATCHING, REPOINTING, FILLING, REPAIRING NO-LEAKING HOLES, CRACKS AND SPALLS IN THE CONCRETE AND MASONRY MANHOLES

A. Quick-Setting Cementitious Patching material shall comply with the following minimum requirements:

Physical Properties		
Compressive Strength	ASTM C 109	>1800 psi, 1 hr. >2600 psi, 24hr. >3000 psi, 28 days
Bond	ASTM C 882	>1600 psi, 28 days
Applied Density		105 lbs pcf ± 5 lbs
Shrinkage	ASTM C 596	0% at 90% R.H.
Placement Time		5 to 10 minutes
Set Time		15 to 30 minutes

B. The water used to mix product shall be clean and potable. No material (other than water) shall be used with or added to the patching product

without prior approval or recommendation from manufacturer.

2.3 COATINGS FOR ALL INVERTS

A. A quick-setting material that complies with the following minimum requirements:

Physical Properties		
Compressive Strength	ASTM C 109	>1800 psi, 1 hr. >2600 psi, 24hr. >3000 psi, 28 days
Bond	ASTM C 882	>1600 psi, 28 days
Applied Density		105 lbs pcf ± 5 lbs
Shrinkage	ASTM C 596	0% at 90% R.H.
Placement Time		5 to 10 minutes
Set Time		15 to 30 minutes

B. Water used to mix product shall be clean and potable. No material (other than water) shall be used with or added to the patching product without prior approval or recommendation from manufacturer.

2.4 INTERIOR FLEXIBLE CHIMNEY SEALS

A. Provide a flexible seal to provide corrosion protection and to prevent infiltration through the interior of the manhole frame and chimney area of the manhole.

B. Provide materials for interior flexible chimney seal to prevent leakage of water into the manhole though the frame joint area and the area above the manhole cone including all extensions to the chimney area. The seal shall remain flexible allowing for repeated vertical or horizontal movements of the frame due to ground movement or the thermal movement of pavement. The final liner material shall be made no less than 170 mils of corrosion resistant flexible urethane resin coating to be applied to the inside wall of the entire chimney area as described above. Mil thickness may vary depending on the local climate. The product shall have a minimum elongation of 800% and a Durometer hardness of 75. Final liner shall have a minimum tensile and adhesion strengths of 1150 psi and 175 lb. l/in. respectively. The manhole sealant shall conform to the physical requirements of ASTM D 412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension. Sealant shall equal or exceed “Flex-Seal” as manufactured by Sealing Systems, Inc., Loretto, MN.

2.5 MANHOLE RING AND COVERS

A. Refer to the Summary of Work, Contract Drawings and Technical Specification Section 336040 Manholes, Rings and Covers for manhole ring and cover requirements.

PART 3 – EXECUTION

3.1 GENERAL

A. Each manhole to be rehabilitated shall be thoroughly cleaned and then inspected for loose or missing bricks, loose mortar, or holes. Remove any protrusions or obstructions into the manhole. Observed leaks shall be eliminated prior to applying the manhole lining system.

B. Damage incurred to the manhole or pipe segments due to methods and equipment employed by the Contractor is the responsibility of the Contractor. Damage to public and private property from sewer surcharging that results from material or equipment left in the manhole or sewer or from any flow blockage is the responsibility of the Contractor. The cost to repair the manhole or pipe segments and expenses incurred by the City as a result of the damage shall be the responsibility of the Contractor.

3.2 SURFACE PREPARATION

A. Pre-Rehabilitation Surface Preparation: Areas to be repaired which requires bonding of new cementitious, epoxy, chemical or waterproofing material to existing cement or masonry shall be prepared as follows.

1. Clean the area with high velocity water cleaning equipment to remove all foreign matter, oil, grease, wax, and dirt, including removal of bitumastic coatings. Pressure shall not exceed that which may cause any permanent damage to the existing manhole walls or other parts of the structure.

2. Foreign material remaining after high velocity water blasting shall be removed from the manhole surface using an acid wash. The acid wash shall be muriatic acid (hydrochloric acid) at a ratio of 1-part acid (HCl) to ten (10) parts of water. The mixing, application and removal of the acid solution shall be in accordance with the manufacturer’s recommendations. The acid solution shall remain on the manhole surface until all foreign material have been removed and completely washed off with water.

3. Chip or chisel away all loose or defective material from the areas to be repaired. Furnish a firm mechanical key by undercutting whenever possible.

4. Allow interior surfaces of the manhole to dry before applying epoxy manhole lining systems.

5. Large voids including holes left by the manhole rung removal shall be filled with quick setting patching mix.

6. Remove protruding rubber gaskets between wall joints.

B. Sewer Line Protection: Place covers over the invert to prevent material from entering the sewer lines.

C. Drop Connections: Remove any interior drop connections anchored to manhole walls prior to installing the lining system. After installation and proper curing of the liner, reinstall interior drop connections to their original condition prior to removal. If the existing drop connection is already damaged and cannot be reused, Contractor shall request from the Engineer or NPU the best course of action.

D. Conduct a visual inspection of each manhole after it is cleaned. All active, hydrostatic infiltration leaks shall be plugged or sealed with an appropriate grout compatible with the lining. Remove all loose mortar and rubble of existing chimney (corbelling), cone, walls, benches, and inverts. Prepare manhole to receive cementitious lining as necessary by reshaping and repairing benches, inverts, cone, walls, and corbelling where required. All interior surfaces shall be prepared as recommended by the lining manufacturer. Minimum requirements are as listed below:

1. Repair cracks and other voids and fill with suitable non-shrinking cements, sealants, or grouts, including all voids between the existing sewer pipes and manhole walls. Patches shall be smooth and even with the manhole wall.

2. Suitably prepare surfaces for required bonding of lining as recommended by the manufacturer.

3.3 SEALING OF LEAKS IN INVERTS, BENCHES, WALLS, CONE, AND CORBELLING

A. Premixed Fast-Setting, Volume-Stable Waterproof Cement Plug: Seal unsealed lifting holes and voids larger than one-half (½”) inch in thickness with a waterproof, quick setting mortar. Place waterproof mortar according to manufacturer’s instructions.

B. Manhole Sealing by Chemical Grout Application: Chemical grouting shall include the following:

1. Transporting, delivering, and storing the chemical grout shall be according to the manufacturer's published directions and requirements.

2. Manhole Preparation: Repair the manhole frame and rings, and complete structural repairs before grouting the manhole. Cut roots and trim roots before grouting the manhole. Remove cracked or deteriorated material from the areas to be grouted.

3. Chemical Grout Formulation: Mix each batch of chemical grout according to the manufacturer's published directions and requirements.

4. Sealing Active Leaks: Use the Expanded Gasket Procedure, drilling and injection procedure and/or chemical curtain grouting to stop active leaks.

    a. Expanded Gasket Procedure (EGP): Perform per ASTM F 2414-04, and the chemical grout manufacturer's recommended installation methods. This is performed by soaking dry oil free oakum with hydrophilic polyurethane chemical grout. The resulting oakum/resin plug shall be forced into the opening until it sets. Perform the EGP to:

        1) Control flowing water in larger cracks, joints, or pipe to manhole boots.

        2) Seal drop or lateral connections, slip line terminal seals, and open joints in RCP manholes.

        3) Seal between the corbel and manhole rings.

        4) Seal between the manhole rings and manhole.

5. Drilling and Injection Procedure: Perform per ASTM F 2414-04 (2009 or latest edition) and the chemical grout manufacturer's recommended installation methods to seal the manhole with chemical grout. Drill injection holes through the manhole at locations recommended by the manufacturer. Inject the chemical grout through the holes under pressure. Injection pressure shall not cause damage to the manhole structure or surrounding surface features. Inject chemical grout through the lowest holes first. Repeat the procedure until the manhole is externally sealed. Grout travel shall be verified by observation of grout to defects or adjacent injection holes. Drill additional injection holes as necessary to ensure grout travel. Do not inject grout from the ground surface. After chemical grout injection is complete, clean injection holes

with a drill and patch with a waterproof, quick setting mortar for brick and concrete manholes. Perform the drilling and injection procedure to control flowing water in cracks.

6. Curtain Grouting: Perform per ASTM F 2414-04 (2009 or latest edition) and the chemical grout manufacturer's recommended installation methods. Perform the curtain grouting procedure when there are multiple active leaks and the drilling and injection procedure does not eliminate the active leaks.

3.4 INVERT CHANNEL COATING

NOTE: In general manhole inverts should be coated when a liner has been installed in the upstream/downstream pipes or when the invert needs repair. This will ensure a monolithic lining system for the manhole. However, when the invert is in excellent condition it may not be necessary to coat the invert.

A. Coat invert channels with a material compatible with the manhole lining system per the manhole lining manufacturer's recommendations to prevent infiltration and to build up the invert channel to the invert elevations of the new sewer main or cured-in-placed lined sewer and to form a smooth flow channel. The entire channel shall be coated. The coating shall be troweled uniformly onto the invert at a minimum one-half (½") inch in thickness or as recommended by the manufacturer. The coating shall extend out onto the bench of the manhole sufficiently to tie into the monolithic liner.

B. The material used for the invert channel shall be suitable for the intended purpose and shall be compatible with the materials used for the manhole lining system. The material for the invert channel shall be as recommended by the cementitious liner manufacturer and installed in accordance with the manufacturer's recommended installation instructions and procedures. Coating the invert may be waived when the invert is in excellent condition and upon approval by the City or Engineer.

3.5 LOCATING, RAISING, RESETTING, AND/OR REPLACING MANHOLE RING AND COVER ASSEMBLIES

NOTE: The following items A-E are often site- specific and can be altered based on City specifications.

A. Locate and uncover buried manhole ring and covers; remove existing manhole rings and covers; dispose of existing manhole rings and covers, if they are not being reused; and install new or reused manhole rings and covers as directed by the City and/or Engineer. Repair any damage to the manhole chimney or corbelling caused by the removal of the existing

manhole frame at no additional cost to the City.

B. Existing rings and covers to be reused shall be thoroughly cleaned before reinstallation.

C. If existing rings and covers are not to be reused, properly dispose of these materials in accordance with local laws and Engineer and NPU approval.

D. When resetting existing rings and covers, apply preformed flexible joint sealant Kent Seal No. 2 by Hamilton-Kent or Ram-Nek by K.T. Snyder Company or equal.

E. Install new or reused rings so that the tops of the covers are at the required grade. Utilize precast concrete grade rings to set the manhole frame and cover to the finished grade. Precast concrete grade rings shall be set in a bed of butyl mastic sealant.

3.6 CEMENT EXTERIOR

A. For raised manholes with damaged exterior, masonry manholes without an exterior cement coating, manholes where ring and cover assemblies are being replaced or reset, where noted on the Drawings, or as directed by Engineer, repair existing or install new cement exterior coating for manholes as follows:

1. Prepare exterior surface of manholes using procedures outlined in Section 3.2, A above.

2. Following surface preparation, spray or hand trowel the exterior from existing/finished grade to above the frame/chimney seal using the product specified in Section 336080 Paragraph 2.1 and in accordance with the manufacturer's installation instructions. Apply a minimum finished thickness of two (2") inches.

3. Apply a curing compound in accordance with ASTM C309-11 to the exterior cement.

3.7 FIELD TESTING AND ACCEPTANCE

A. The Engineer or City may enter the manholes to inspect the benching, invert channels, manhole wall/pipe connections, surface preparation, and other parts of the work. Provide forced air ventilation, gas monitors and detectors, harnesses, lights, etc. for the Engineer or City to enter the manhole and perform the inspection in complete accordance with OSHA requirements.

B. Contractor shall visually verify absence of leaks and perform a vacuum test. Vacuum test shall be performed as follows:

Vacuum Test: Test rehabilitated manholes using vacuum test method, following manufacturer's recommendations for proper and safe procedures. Vacuum testing of manholes and structures shall be performed after curing of linings. Vacuum testing will not be required on manholes with sewer lines greater than 16-inches in diameter due to safety concerns. Any visible leakage in manhole or structure, before, during, or after test shall be repaired regardless of test results. Vacuum test shall be performed in accordance with ASTM C 1244.

C. The manhole wall surfaces shall be sufficiently prepared for the manhole lining system as recommended by the lining manufacturer. The manhole wall surfaces shall be free from significant defects. Defects which will affect, in the foreseeable future, or warranty period, the integrity or strength of the manhole shall be repaired at the Contractor's expense, in a manner mutually agreed upon by the Engineer and the Contractor.

D. No active infiltration shall be observed in the manhole as confirmed by visual inspection of the City or Engineer. Infiltration found shall be repaired by the Contractor immediately.

E. The Contractor is responsible for coordinating inspection times with the Engineer and NPU.

F. The testing of each manhole lining system is described in Specification 336082.

GENERAL NOTE TO USER: Each type of manhole lining system will require a specific type of testing for approval and it is critical to have an experienced inspector or engineer onsite to observe the testing and approve the material was installed at the correct thickness and applied correctly. The specific tests performed are outlined in each section in 336082.

END OF SECTION

SECTION 336081

TEMPORARY BY-PASS PUMPING SYSTEMS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install, field test, and operate temporary by-pass pumping systems as proposed by the Contractor for the purpose of diverting flow around work areas as required.

B. The design, installation and operation of temporary by-pass pumping systems shall be the Contractor's responsibility. The Contractor shall provide the services of a professional bypass company who can demonstrate to the City and Engineer that the company specializes in the design and operation of temporary by-pass pumping systems. The by-pass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

C. Maintain temporary by-pass pumping systems so that they are completely functional throughout the required period of service.

D. Following the required period of service, remove temporary by-pass pumping systems from site.

E. Provide all maintenance including manufacturer recommended preventive maintenance and on-call repair services. Contractor shall provide repair services and/or replacement equipment 24 hours per day, seven days per week within 4 hours of being called.

F. Should the Contractor elect to use diesel fuel for temporary by-pass pumping, the total storage quantity of fuel allowable at the plant site to operate the temporary pumps shall not exceed the sum of the individual fuel tank capacities furnished with each pump's diesel engine drive. Provide a refueling service to maintain continuous 24-hours per day, 7 days per week pumping system operation.

1.02 RELATED WORK

A. Permits and Fees are specified in Section 016500.

B. Environmental Protection Procedures are specified in 011060.

1.03 SUBMITTALS

A. Submit, in accordance with Section 013000, the following:

1. A detailed description of each proposed temporary by-pass pumping system including pumps, pump drives, piping, hoses, valves, fittings, controls, wiring and any other related accessories required to provide a complete operating system in conformance with the requirements of this Section.

2. Detailed plans and sections showing the proposed pumping system layout including dimensions and elevations. Plan shall include but not be limited to the following:
   a. Staging area and access requirements for all pumps.
   b. Number, size, material, location and method of installation of suction piping.
   c. Number, size, material, location and method of installation of discharge piping.
   d. Pump size, capacity, number of units, diesel engine specifications, fuel tank capacity, fuel consumption requirements, and method of refueling.
   e. Calculations of static lift, pipe size selection, friction losses, flow velocity and pump selection.
   f. Pump curves showing pump operating range.
   g. Proposed method of freeze protection.
   h. Proposed method of noise control for each pump.
   i. Temporary pipe supports, anchorage, cover material and other accessories as required to stabilize the piping system.
   j. Installation schedule and maintenance schedule.
   k. Vendor phone number and pager number for 24-hour service.
   l. A minimum of five reference installations of projects with similar size in wastewater pumping applications. Include contact names and phone numbers.
   m. List of recommended spare parts to be stored on-site for emergency maintenance.

3. Provide information on the vendor's service staff capabilities and replacement parts inventory to show that the vendor has sufficient resources to provide emergency service and replacement equipment and/or parts to the Bucklin Point site within 4 hours of a service call.

4. A description of system operation and controls. Include a list of all alarm conditions and procedures for correcting problems including equipment replacement.

5. A description and schedule for the proposed procedures for startup and testing of the facilities to demonstrate compliance with specified automatic operation and maintenance of a constant discharge pressure.

6. A plan of operations for inclement weather including storms. The plan shall demonstrate the ability to maintain pumping system operations throughout inclement weather events.

7. A description and schedule for the proposed procedures for dismantling the system and restoring normal operations at the WWTP.

1.04 REFERENCE STANDARDS

A. Design, manufacturing and assembly of elements of the equipment specified herein shall be in accordance with the following:

1. American Institute of Steel Construction (AISC)

2. American Iron and Steel Institute (AISI)

3. American Society of Mechanical Engineers (ASME)

4. American National Standards Institute (ANSI)

5. American Society for Testing Materials (ASTM)

6. American Welding Society (AWS)

7. American Bearing Manufacturers Association (ABMA)

8. Institute of Electrical and Electronics Engineers (IEEE)

9. National Electrical Manufacturers Association (NEMA)

10. Occupational Safety and Health Administration (OSHA)

11. Underwriters Laboratories (UL)

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. The Contractor shall employ the services of a vendor who can demonstrate 5 years of recent and continuous specialization in

the design, installation, operation and removal of temporary by-pass pumping systems in wastewater applications. The complete system shall be furnished from a single vendor who shall be capable of providing service staff, repair parts and replacement of any deficient system component within 4 hours of a service call, twenty-four hours per day, seven days per week.

1.06 SYSTEM DESCRIPTION

A. Where proposed by the Contractor, temporary by-pass pumping systems shall comply with specified requirements with Design flows shall be as specified.

B. Pumping system control panels shall be NEMA 4 and include flow indication, a flow totalizer, indicator lamps showing which pumps are operating, selector switch for auto or manual start and stop for each pump and visual and audible alarms for indication of operation failure and alarm conditions.

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery, storage and handling of equipment shall be as specified in 016610.

1.08 MANUFACTURER'S SERVICES

A. Provide the services of the manufacturer's representative as specified herein.

B. Provide the services of the manufacturer's representative for physical checkout field testing and operation and maintenance instruction for a minimum of 1-person day per pumping system. See requirements in Part 3.

C. Provide the services of the manufacturer's representative or designated alternative, who shall be contactable 24-hours per day via telephone or pager and shall be available to be on site within 4 hours of being contacted at no additional cost to the City.

PART 2 PRODUCTS

2.01 GENERAL PUMPING EQUIPMENT

A. Furnish pumping units and all accessories from a single vendor. Each temporary by-pass pumping system shall be complete

including pumps, drives, piping, piping headers, valves, flow meter, controls and appurtenances as required for a complete system.

B. The pumps, drives and controls shall be designed and built for 24-hour continuous service at any and all points within the required range of operation, without overheating, without cavitation, and without excessive vibration or strain. All parts shall be so designed and proportioned as to have the strength, stability and stiffness and be constructed to meet the specified requirements. Methods shall be provided for inspection, repairs, and adjustment.

C. All necessary foundation bolts, nuts, and washers shall be furnished.

D. Each piece of equipment shall be furnished with a nameplate (with embossed data) securely mounted to the body of the equipment. As a minimum, the nameplate for the pumps shall include the manufacturer's name and model number, serial number, rated flow capacity, head, speed and all other pertinent data. As a minimum, nameplates for drives shall include the manufacturer's name and model number, serial number, horsepower, speed, input voltage, amps, number of cycles and power and service factors.

E. Refer to Section 011060 and local noise oridances for noise limitations for the equipment.

F. All equipment shall be suitable for outdoor operation under adverse weather conditions. Provide protection from freezing as required to maintain system operation.

G. Pumps shall be manufactured by Thompson Pump and Manufacturing Co., Port Orange FL, or equal.

2.02 CONDITIONS OF OPERATION

A. Pumps shall be identical in every respect with all parts interchangeable.

B. Each pump shall be designed for the conditions of service specified by the City. All pumps shall have a rising head capacity curve for stable pump operation from the minimum head operating point to the shut-off head.

1. Service: Temporary By-Pass

		Pumping
2.	Number of pumps:	As required by the Application
3.	Liquid:	Raw Wastewater
4.	Design capacity total peak (gpm):	As required by the Application
5.	Type of drive	Diesel engine or Electric

2.03 PUMPING SYSTEM COMPONENTS

A. All pumps shall be centrifugal, end suction, fully automatic self-priming units that do not require the use of foot-valves, vacuum pumps, diaphragm pumps, or isolation valves or float apparatus in the priming system.

B. Pump seals shall be high pressure, mechanical self-adjusting type with solid carbide faces capable of withstanding suction pressures to 100 psi without the pump running. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. The oil bath reservoir shall not come in contact with or leak into the pumped water. Each pump shall be capable of running dry, with no damage for extended periods of time. All pump seal metal parts shall be stainless steel. All elastomers shall be Viton.

C. Each pump shall be driven by a diesel engine or electric motor. Diesel engine shall be water cooled. If the Contractor uses electric motor driven pumps, power costs are the responsibility of the Contractor.

D. If using diesel driven pumps, each pump and diesel engine shall be skid mounted with integral fuel tank and skid lifting bracket.

E. Provide automatic start/stop controls for the pumping system to automatically maintain system flow within the flows specified. Controls shall be contained in a local control panel with provision to manually operate each pump, provide indication of pump operation, and indicate the total flow being pumped.

F. Provide all required suction and discharge pipe and fittings, discharge manifold pipe and fittings, shutoff valves, check valves, flow meter, pressure regulating valves, insulation,

freeze protection, and all required accessories. All pipe and fittings shall be steel with flanged or quick connect coupling connections, or high-density polyethylene pipe with fused joints. All joints must be 100 percent restrained. Suction piping shall be rated for 25-in Hg vacuum. Discharge piping, fittings, connections, valves, and other discharge piping accessories shall be rated for a minimum working pressure of 150 psi.

PART 3 EXECUTION

3.01 INSTALLATION AND PHYSICAL CHECKOUT

A. Installation shall be in accordance with the system supplier's recommendations and approved shop drawing submittals.

B. Noise shall meet the local noise ordinances and Section 011060.

C. Install pumping units on a firm level surface.

D. Furnish the services of the pump system supplier's representative for a minimum of one day per temporary by-pass system to assist equipment installation and physical checkout.

3.02 FIELD TESTING

A. Provide field in accordance with the approved shop drawing submittal. Field tests shall demonstrate conformance with system requirements.

B. The Contractor shall require that field testing be conducted by the pump system supplier's representative in the presence of the Engineer. Furnish the services of the pump system supplier's representative for a minimum of one day per temporary by-pass system to conduct required testing.

C. Field testing shall demonstrate a minimum of 24 hours of continuous operation. During the 24 hours of continuous operation, the system shall demonstrate the ability to automatically start and stop pumps in response to changing flow conditions.

D. Remove and replace any system component that fails to perform in accordance with specified requirements.

3.03 SYSTEM OPERATION

A. Perform all required maintenance on the equipment to maintain the system integrity and capacity as specified.

B. Provide clean-up and disposal of contaminated material and reporting for all product spills.

3.04 EQUIPMENT REMOVAL

A. At the completion of the period of service, disconnect all temporary piping and remove all system components from the site. Restore the work site to its original condition.

END OF SECTION

SECTION 336082

MONOLITHIC MANHOLE LINING SYSTEMS

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials, equipment, and incidentals required to install and test an Epoxy Manhole Monolithic Lining System as noted on engineering plans (if applicable) and as specified herein for the purpose of:

1. Eliminating infiltration and exfiltration.
2. Providing corrosion protection.
3. Repairing voids and restoration of the manhole structural integrity as a result of applying a monolithic liner to the wall and bench surfaces of brick, concrete, or any other masonry construction material.
4. Extending lining from invert to top of cone, as specified.

B. Accurately field measure and size each individual manhole. Contractor is reminded that each existing wastewater collection system manhole designated to receive monolithic lining may have a different configuration and varying field dimensions. Field measurements shall conform to requirements of monolithic lining manufacturer.

C. Do not install manhole lining until other manhole rehabilitation and procedures for manhole preparation and cleaning as specified on the Plans and in Section 336080 Manhole Rehabilitation work is complete.

D. Contractor is advised that presence or absence of leakage through manhole wall noted on manhole inspection reports and as seen in Contractor’s independent inspection of manholes prior to bidding is dependent upon ground water levels and conditions at time of inspections. High ground water levels in project area typically occur in summer months (June through October) but will vary with rainfall in any given year. Contractor shall reflect its assumptions and judgments on leakage through manhole walls based on this information in unit prices bid for lining manholes. Stop leakage prior to lining manholes. No additional payment will be made to Contractor for repairing leaks not visible prior to bidding or wastewater collection system rehabilitation.

1.2 RELATED WORK

A. Trenching, Backfilling and Compaction - Section 311020

B. Sewer Line and Manhole Cleaning – Section 336070

C. Manhole Rehabilitation – Section 336080

D. Cured-in-place Pipe Liner – Section 336084

1.3 ACRONYMS

A. EMMLM: Epoxy Manhole Monolithic Liner Material

B. EMMLS: Epoxy Manhole Monolithic Liner System

1.4 SUBMITTALS

A. Submit to the City and Engineer, in accordance with Division 01 of the Specifications, shop drawings, product data, and installation methods. Submittals shall include, but are not limited to the following:

1. Manufacturers' product data, including physical properties, surface preparation, repair, application, curing, and field quality control procedures.
2. Manufacturer and applicator qualifications as specified herein.
3. Type of monolithic lining system to be installed for each manhole.
4. Diameter, depth (rim to invert), and material for each manhole.
5. Design data and specification data sheets listing parameters used in EMMLS design and thickness calculations based on applicable provisions of ASTM Standards.
6. A list of municipal installations performed by the manufacturer and Contractor over past five (5) years along with contact name, telephone number, and brief description of work performed.

B. Submit to the City and Engineer, within 10 days of Effective Date of the Agreement, name of supplier (manufacturer), name of installer, and a list of materials to be furnished.

C. Submit a step-by-step description of methods, practices, intervals, etc. to be used in application and curing of monolithic lining system to meet

requirements of this specification Section.

D. Test Reports

1. Prior to each shipment of materials, submit certified test reports that materials for this Contract were manufactured and tested in accordance with ASTM Standards specified herein.

1.5 REFERENCED STANDARDS

A. ASTM International Standards:

1. ASTM C 267 - Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings.
2. ASTM C 722 - Standard Specification for Chemical Resistant Resin Monolithic Surfacings.
3. ASTM C 882 - Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete.
4. ASTM C 884 - Test Method for Thermal Compatibility Between Concrete and an Epoxy-Resin Overlay.
5. ASTM C 1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.
6. ASTM D 638-98 - Standard Test Method for Tensile Properties of Plastics.
7. ASTM D 695-96 - Standard Test Method for Compressive Properties of Rigid Plastics.
8. ASTM D 790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics.
9. ASTM D 870 - Practice for Testing Water Resistance of Coatings Using Water Immersion.
10. ASTM D 1763 - Standard Specifications for Epoxy Resins.
11. ASTM D 2240-97e1 - Standard Test Method for Rubber Property Durometer Hardness.
12. ASTM D 2247 - Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

13. ASTM D 4787-13 - Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates.
14. ASTM D 6132-08 - Standard Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an Ultrasonic Gage.
15. ASTM D 7234-12 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
16. ASTM F 1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
17. ATSM F 2414-04 (2009) - Standard Practice for Rehabilitation of Sewers Using Chemical Grouting.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.6 QUALIFICATIONS

A. Contractor performing the work shall be fully qualified, experienced, and equipped to complete this work expeditiously and in a satisfactory manner. Contractor shall submit the following information to the City and Engineer for review and approval before any work is performed:

1. Be certified by manufacturer to install monolithic lining system.

2. Have a minimum of five (5) years' experience or 500 manholes in performing this type of specialized work. This may be waived by the City through their product approval process with documented demonstration projects.

3. Be capable of providing crews as needed to complete this work without undue delay.

4. City reserves right to disapprove use of Contractor, based on insufficient qualifications.

1.7 QUALITY ASSURANCE

A. Supplier shall be responsible for provisions of test requirements specified in above referenced ASTM Standards as applicable. In

addition, monolithic lining products to be installed under this Contract may be inspected at plant for compliance with these specifications by an independent testing laboratory provided by the City. Contractor shall require manufacturer's cooperation in these inspections. Cost of plant inspection of lining products and materials approved for this Contract shall be borne by City.

B. Inspections of lining products and materials may also be made by Engineer or other representatives of City after delivery. Lining products and materials shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though samples may have been accepted as satisfactory at place of manufacture. Lining materials rejected after delivery shall be marked for identification and shall be immediately removed from job site.

C. Contractor shall furnish services of manhole liner manufacturer’s field service technician, who has complete knowledge of manhole rehabilitation, to advise and assist manhole lining installation and provide instruction to Contractor for rehabilitation of first five manholes. Field service technician shall be fully qualified and experienced in manhole rehabilitation work with epoxy manhole lining systems.

D. Provide monolithic epoxy lining from a single manufacturer. Supplier shall be responsible for provisions for test requirements specified in ASTM Standards C 722, C 882, C 884, D 870, D 1763, and D 2247 as applicable for monolithic lining.

E. Inspections of EMMLM may be made by Engineer or other representatives of City after delivery. EMMLM shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though sample EMMLM may have been accepted as satisfactory at place of manufacture. EMMLM rejected after delivery shall be marked for identification and shall be removed from the job at once.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Care shall be taken in shipping, handling, and placing to avoid damaging lining products. Extra care may be necessary during cold weather construction. Lining product or material damaged in shipment shall be replaced as directed by Engineer or the City.

B. Lining product showing deterioration, or which has been exposed to any other adverse storage condition that may have caused damage, even though no such damage can be seen, shall be marked as rejected and removed at once from the job site.

C. While stored, lining products shall be adequately packaged and protected. Lining products shall be stored in a manner as recommended by manufacturer.

D. Materials shall be stored, shipped, and handled according to their material safety data sheet and manufacturer's recommendations. EMMLM damaged in shipment shall be replaced as directed by Engineer at no additional cost to the City.

1.9 SAFETY AND SITE CONDITIONS

A. Comply with and enforce Federal, State, and Local safety regulations. Contractor's personnel shall be certified for confined space entry.

1.10 WARRANTY

A. Warranty monolithic lining placed by Contractor for a period of two (2) years from date of Substantial Completion. During this period, defects discovered in monolithic lining, as determined by the City or Engineer, shall be repaired, or replaced in a satisfactory manner at no cost to the City. Such repair or replacement shall include cost of removal and reinstallation. After 21 months following Substantial Completion of manhole lining, the City or Engineer will inspect the work to ensure proper performance. If deficiencies are found during these inspections, Contractor shall make necessary repairs at no additional cost to the City.

B. Contractor shall be responsible for stopping leaks prior to installation of monolithic lining system.

PART 2 – PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Design and install monolithic manhole lining system to protect concrete, brick and mortar, and other manhole surfaces from corrosion. Design products to stop infiltration, root intrusion, and further deterioration in manhole. Interior surfaces to be protected shall include walls, benches, inverts, pipe junctions and chimney (corbel).

2.2 EPOXY MONOLITHIC MANHOLE LINING SYSTEM (EMMLS) (HARSH SULIFDE CONDITIONS – SUBSTRATE SURFACE OF PH 1.0 OR HIGHER)

A. Note: Epoxy Liner is suitable for harsh hydrogen sulfide conditions, pH of 1.0 or higher, structures with very turbulent flow such as pump station wet wells and force main discharge structures.

B. EMMLS shall be a resin-filled system suitable for use as a trowel-, spray- or spin-applied monolithic lining in wastewater collection manholes. Resin shall be 100 percent epoxy resin. EMMLS shall conform to ASTM C 722. EMMLS materials shall be suitable for specified design conditions.

1. EMMLS shall provide a minimum service life of 25 years.

2. Cured EMMLS shall be continuously bonded to brick, mortar, concrete, chemical sealant, grout, pipe, and other surfaces inside wastewater collection system manhole. Provide bond strength data on cured EMMLS based on ASTM C882 test method.

3. Cured EMMLS shall provide a minimum total thickness of 0.10 inches (100 mils). Cured lining thickness shall be continuous with proper sealing connections to unsurfaced areas.

4. Chemical sealants or grouts used to seal active manhole leaks, to patch cracks, to fill voids and to otherwise prepare manhole surfaces shall be compatible with EMMLS.

C. When cured, EMMLS shall form a continuous, tight-fitting, hard, impermeable lining, which is suitable for wastewater collection system service and chemically resistant to any chemicals or vapors normally found in domestic wastewater.

D. EMMLS shall bond to wastewater collection system manhole being rehabilitated after being placed and cured. EMMLS shall cover complete interior of existing wastewater collection system manhole including benches (shelves), inverts (channels or troughs) and pipe connections. EMMLS shall provide a continuous watertight seal or barrier.

1. EMMLS shall effectively seal interior surfaces of wastewater collection system manhole and prevent any penetration or leakage of groundwater infiltration.

2. Provide water resistance data on EMMLS based on ASTM Standards D 870 and D 2247 test methods.

3. EMMLS shall be compatible with thermal condition of wastewater collection system manhole surfaces. Surface temperatures will range from 30 degrees F to 80 degrees F. Provide test data on EMMLS thermal compatibility based on ASTM C 884.

4. EMMLS shall be separated from manhole frame by a suitable joint. Joint shall be sealed with joint sealing tape.

E. EMMLS shall be as manufactured by Raven Lining Systems, Warren Environmental, Sauereisen, AP/M PermaForm, WBE Dorcas Inc., or an approved equal.

PART 3 – EXECUTION

3.1 PREPARATION

A. Notify property owners who discharge wastewater directly to manhole being surfaced that their service will be disrupted while lining is being placed, cured and active pipe and service connections reopened. Notify individual property owners at least 72 hours in advance, giving date, start time, and estimated completion time for the work being conducted. This notification shall be coordinated with distribution of door hangers.

B. When existing surfaces adjacent to areas where work of this Section is scheduled may be damaged or harmed, provide temporary materials to protect those existing surfaces. Contractor shall determine type and quantity of protective materials.

3.2 INSTALLATION – EPOXY MONOLITHIC MANHOLE LINING SYSTEM (EMMLS)

A. Notify property owners who discharge wastewater directly to manhole being surfaced that EMMLS is being placed and that bypass pumping of wastewater flows will be provided. Notify individual property owners at least 72 hours in advance, giving date, start time, and estimated completion time for the work being conducted.

B. Provide bypass pumping of wastewater flows where and when rehabilitation work is being performed.

C. Place EMMLS in manhole. Installation of EMMLS shall be in complete accordance with applicable provisions of ASTM C 722 and manufacturers' specifications. Manufacturer’s representative shall be present during actual installation.

1. Prior to placing EMMLS, manufacturer's representatives shall approve surface preparation work and installation conditions including temperatures.

2. Surfaces shall be sufficiently dry and even.

3. Bottom and horizontal surfaces including benches and channels shall have EMMLS applied to required thickness by hand troweling or spray on methods.

4. Side vertical surfaces shall have EMMLS applied to required thickness by manufacturer's recommended methodology.

5. Temperature limitations shall be handled as appropriate and as approved by the installer.

D. Cutting and sealing of EMMLS at manhole pipe and top connections shall provide watertight seals.

3.3 FIELD QUALITY CONTROL – GENERAL

A. The Engineer or the City may enter manholes to inspect benching, invert channels, manhole wall/pipe connections, surface preparation, and other parts of the work. Contractor shall provide forced air ventilation, gas monitors and detectors, harnesses, lights, etc. for Engineer or City to enter manhole and perform inspection in complete accordance with OSHA requirements at no additional cost to the City.

B. Finished manhole surface shall be continuous and as free as commercially practicable from significant defects. Defects which will affect, in foreseeable future or warranty period, the integrity or strength of manhole shall be repaired at Contractor's expense, in a manner mutually agreed upon by the City/Engineer and Contractor.

C. There shall be no cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination, or other type defects in liner. If any defects are discovered after liner has been installed, it shall be repaired or replaced in a satisfactory manner within 72 hours and at no additional cost to the City. This requirement shall apply for entire warranty period.

D. Active infiltration through lining system shall be zero.

E. Contractor is responsible for coordinating testing times with the City and Engineer.

3.4 FIELD QUALITY CONTROL – EPOXY MANHOLE MONOLITHIC LINING SYSTEM (EMMLS)

A. Field acceptance of EMMLS shall be based on the City/Engineer's evaluation of proper monolithic lining of manhole. Field acceptance shall

also be based on City/Engineer's evaluation of appropriate installation and curing test data along with review of manhole inspections.

B. EMMLS shall provide a continuous monolithic lining with uniform thickness throughout manhole interior. If thickness of EMMLS is not uniform or is less than specified, it shall be repaired or replaced at no additional cost to the City.

1. Engineer or the City will measure EMMLS cured thickness by physically cutting through lining (by drilling or coring) and making a direct measurement. Make a minimum of two thickness measurement locations in each EMMLS manhole. A suitable non-destructive type of thickness measurement may also be used.

2. EMMLS thickness measurement locations shall be repaired by Contractor in accordance with manufacturer's recommendations. These repairs shall be included in two-year EMMLS warranty.

3. Contractor shall also perform in-place testing in each manhole to verify adhesion of EMMLS to existing manhole substrate. Adhesion strength tests shall be in accordance with ASTM D 7234 and test area shall be isolated from remaining portion of manhole by coring through liner into substrate. Two tests shall be performed in each manhole at locations directed by the City or Engineer. Testing shall consist of a calibrated pull test. Equipment shall be provided by Contractor. Samples shall meet a minimum pressure resistance of 400 pounds per square inch (psi).

C. There shall be no cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination, or other type defects in EMMLS.

D. Contractor shall submit proposed method for testing for these defects. One of the following tests shall be performed by Contractor as directed by City or City’s Agent.

1. Vacuum Test: A vacuum test conforming to requirements of ASTM C 1244 shall be performed for every lined manhole or circular structure where practical.

2. Holiday Detection Test: A high voltage holiday detection system may be used to determine if any holidays (pinholes, voids, etc.) exist in lining. Set sensitivity control of holiday tester to accommodate thickness of applied lining (100-125 volts for each one (1) mil thickness). Follow guidelines of holiday testing equipment manufacturer for correct control settings. One such service is Tinker & Rasor Holiday Tester Model APW.

3. Should a holiday be detected, it shall be marked, and the lining installation Contractor shall repair void according to correct procedure determined by system manufacturer.

4. Ultrasonic Testing: Per ASTM D 6132.

3.5 CLEANING

A. Remove temporary protective materials at existing surfaces surrounding work of this Section.

B. Remove excess materials, installation equipment, and clean work areas around manholes. Properly remove trash and debris leaving work area in condition that existed prior to work performed under this Section.

END OF SECTION

SECTION 336084

CURE IN PLACE PIPE LINING

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all labor, materials, equipment, and incidentals required to install and test the cured in place pipe (CIPP) lining and appurtenances complete as shown on the Drawings and/or as specified herein, including, but not limited to services necessary for traffic control, bypass pumping and/or diversion of sewage flows, cleaning and television inspection of sewers to be lined, liner installation, reinstatement of service connections, quality control, providing samples for performance of required material tests, final television inspection, testing of lined pipe system and warranty work, all as specified herein.

B. Sewer cleaning, pre-rehabilitation and post-rehabilitation closed circuit television (CCTV) inspection of all pipes to be rehabilitated by CIPP lining methods are required per applicable Specifications as listed herein. Note that the City will be performing the closed-circuit television (CCTV) inspection of all pipes to be rehabilitated. The Contractor will perform all post-rehabilitation CCTV inspections.

C. Contractor shall remove obstructions and protruding service connections as required to complete the CIPP rehabilitation. Removal of all pipeline obstructions and protruding service connections required for sewer rehabilitation using cured in place pipe lining shall be completed prior to the pre-rehabilitation CCTV inspection.

Neither the CIPP system, nor its installation, shall cause adverse effects to any of the City's processes or facilities. The use of the product shall not result in the formation or production of any detrimental compounds or by-products in the system or at the wastewater treatment plant. Notify the City and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. Cleanup and restore existing surface conditions and structures, and repair any of the CIPP system determined to be defective. Conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses, and property owners or tenants.

D. The Contractor, or Contractor performing the Work, shall not change any material, design values or procedural matters stated or approved herein, without informing the City/Engineer and receiving written approval of the change. Such changes constitute a breach of contract and shall result in rejection and removal of work performed with the unapproved materials or processes at no cost to the City.

E. Maintenance and Protection of Traffic, confined space entry, and work site protection shall be the responsibility of the Contractor and costs of these items are included in the cost of the project. Notify Police, Fire, NPU, Ambulance agencies, and residents/businesses in advance of any and all road closures. Comply with applicable OSHA trench safety rules and confined space and sewer system entry.

1.2 RELATED WORK

A. Maintenance of flow in existing sewers and drains.

B. Sewer system smoke testing is included in Section 336065.

D. Sewer line cleaning is included in Section 336070.

1.3 SUBMITTALS

A. Submit to the City/Engineer, in accordance with Section 013000, shop drawings, product data, materials of construction, design calculations, and details of installation. The Contractor shall provide this information without delay or claim to any confidentiality. Contractor shall note that there are two different sets of submittals required with different time frames as shown below in Sections 1.3.B. and 1.3.C.

B. Submittals required with the bid shall include the following:

1. Letter to certify that the CIPP will conform to the project requirements as outlined in the Scope of Work and as delineated in these specifications and that the Contractor's personnel has had at least 5 (five) years active experience in the commercial installation of CIPP. In addition, the Contractor must have successfully installed at least 750,000 feet of a CIPP product in wastewater collection systems of a similar size, length and configuration as contained in this contract as documented by verifiable references. Submit name and experience of each lead individual performing work on this Contract. Personnel replaced by Contractor shall have similar verifiable experience as personnel originally submitted for project. Contractor's project managers must have

a minimum of two (2) years of CIPP installation experience and must be on-site during the installation of the CIPP products.

2. Submit information in following subparagraphs for review and approval before any CIPP lining work is performed.

    a. Number of years of Contractor's experience in installing CIPP lining.

    b. Documentation and a sufficient number of references to meet qualifications requirements as listed in Paragraph 1.5 Qualifications, of this Section.

    c. Names and product information of the CIPP felt tubes and resin materials to be utilized for this project and their suppliers.

    d. A certified statement from manufacturer that Contractor is an approved installer as certified and/or licensed by the CIPP liner manufacturer.

3. A list of a minimum of five (5) municipal clients that CIPP Contractor has performed this type of work for without defects or performance problems for a period of five (5) years after installation. The list shall contain the following:

    a. Names, addresses, and telephone numbers, and e-mails of persons to be called to verify previous satisfactory performance.

    b. A full description of the actual work performed.

    c. Name of CIPP lining manufacturer and supplier for each referenced project.

4. Five (5) reports from projects within past two (2) years from independent testing laboratory analysis of liner materials showing: Modulus of elasticity as determined by appropriate ASTM standard and flexural stress as determined by ASTM D790 standard. Lining shall be of same resin system and felt tube materials as proposed for this project.

C. Submittals required within 10 days after notice to proceed shall include the following:

1. Detailed information on the CIPP installation procedures (wet-out, heating, curing, and cool down, if applicable) and all tools and equipment required for a complete installation. Identify which tools and equipment will be redundant on job site in the event of equipment breakdown. Equipment to be furnished for the project, including proposed back-up equipment, shall be clearly described. Contractor shall outline the mitigation procedure to be implemented in the event of key equipment

failure during the installation process.

2. CIPP lining schedules including field-verified lengths and diameters of all CIPP lining and appurtenances required. Plans should include map(s) that show insertion points for all CIPP installations.

3. Shop drawings and product data to demonstrate compliance with these specifications and identify materials of construction (including resins, catalysts, felt, etc.), felt manufacturer, location of the felt manufacturing facility, location of the wet-out facility, etc., flexible membrane (coating) material (including recommended repair/patching procedure, if applicable).

4. Manufacturers' shipping, storage and handling recommendations for all components of the CIPP System.

5. MSDS sheets for all proposed products and materials to be furnished for the project.

6. Detailed sample collection, laboratory testing and quality control procedures, including schedule and shipping and storage requirements.

7. Written description and/or plan for odor control that will ensure that project specific odors such as styrene will be minimized at the project site and surrounding area.

8. The end seal material(s) and description of their installation.

9. Detailed written plan of the method of flow maintenance (Bypass Pumping plan) and noise prevention measures.

10. A detailed description of the Contractor's proposed procedures for removal of any existing blockages in the pipeline that may be encountered during the cleaning process.

11. A detailed written traffic-control plan that details every street that will be impacted and how impacts will be mitigated.

12. Data on the maximum allowable stresses and elongation of the tube during installation and the means in which the Contractor will monitor stress and elongation (i.e., ideal inversion head and maximum cold head, minimum inversion head, maximum hot head).

13. A detailed public notification plan shall be prepared and submitted including detailed staged notification to residences affected by the CIPP installation.

14. A complete description of the proposed wet-out procedure for the proposed technology.

15. A Safety Plan identifying all competent persons, a description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor's submitted Safety Plan.

16. A detailed quality control plan (QCP) that fully represents and conforms to the requirements of these specifications. At a minimum the QCP shall include the following:

    a. A detailed discussion of the proposed quality controls to be performed by the Contractor.

    b. Defined responsibilities of the Contractor's personnel for assuring that all quality requirements for this contract are met. These shall be assigned by the Contractor, to specific personnel.

    c. Proposed procedures for quality control including those pertaining to fit and finish, and product sampling and testing shall be defined and submitted as part of the plan.

    d. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form.

    e. A schedule for performance and product test result reviews between the Contractor and City/Engineer at a regularly scheduled job meeting.

    f. Inspection forms and guidelines for quality control inspections shall be prepared in accordance with the standards specified in this contract and submitted with the QCP.

17. Design data and specification data sheets listing all parameters used in the CIPP liner design and thickness calculations based on ASTM F 1216 for fully deteriorated gravity pipe conditions. Thickness of liners for oval and egg-shaped pipe shall be calculated in accordance with the "Sewerage Rehabilitation Manual" published by the Water Research Center (WRC). All calculations shall be prepared under the supervision of and stamped by a Professional Engineer registered in the State of Florida.

D. Submittals before, during and after CIPP installation work shall include the following:

1. Prior to each shipment of CIPP lining, submit certified test reports that the CIPP lining for this Contract was manufactured and tested in accordance with all ASTM Standards specified and referenced herein.

2. CIPP lining schedules including field-verified lengths and diameters of all CIPP lining and appurtenances required to show that the contractor has physically measured every pipe to be rehabilitated. Plans should include map(s) that show insertion points for all CIPP installations.

3. Detailed installation procedures and manufacturer's recommended cure method for each diameter and thickness of CIPP liner to be installed, including CIPP lining production schedule, acceptable inversion heads and pressures, inversion or winching procedures, curing and cool-down procedures detailing the curing rate of temperature increases and cool down and the method of application, and times for each stage of the process.

4. Wet-out forms/reports for each CIPP segment with detailed information including but not limited to: date and time of wet-out, wet-out facility address, volumes and/or weights of resin, length and diameter of CIPP liner (both wet-tube and dry-tube), roller gap settings, start times, finish times, resin used (product name and batch/shipment number) and quantity, gel times, resin injection locations, thickness of CIPP liner (dry and wet), catalyst(s) name and quantity used, and any other pertinent data documenting the wet-out for each section of CIPP liner manufactured. The wet-out forms shall be submitted prior to CIPP liner installation and shall be provided without delay or claim to any confidentiality. Wet out forms shall be submitted to the City/Engineer field representative on the day of delivery.

5. CIPP liner field curing reports documenting the liner installation for all sewer segments. The CIPP liner reports shall document all details of liner installation, including manhole numbers, street names/sewer location, project number, date, time, ambient temperature, heads used during the inversion process, pressures and/or heads (minimum inversion pressure, ideal head, maximum hot head and maximum cold head) used during curing (including cool down if applicable), curing temperature, curing time, rate of cool down, CIPP liner thickness, etc. A sample report shall be submitted to the City/Engineer for approval prior to the installation of any CIPP lining. The reports shall be submitted prior to requesting payment and shall be provided without delay or claim to any confidentiality.

   NOTE: The following item (#6) is for UV cured CIPP. Delete if not used.

6. For UV cured liners, record the curing and light train speed (feet per minute), light source (number of lamps, intensity and wattage), inner air

pressure (psi), exothermic (curing) temperatures per unit time over the length of the liner, and temperature of the internal liner surface. Include liner manufacturer recommended citations in the submittal.

7. Complete certified copies of the report(s) output(s) of the continuous temperature monitoring systems used in the control of the curing, printed and in electronic format. The reports shall be submitted prior to requesting payment and shall be provided without delay or claim to any confidentiality. Also provide the City/Engineer with access to the website where the secure reports can be obtained.

8. Samples of installed liner(s) for testing to be performed by an ASTM-certified independent testing laboratory, as described further herein.

9. Information on any grouts, epoxy, or cements the Contractor is proposing to use for sealing at manholes or for other uses.

10. Submittals shall be provided in three-ring binders and/or electronic format.

11. Submit daily production reports to the City/Engineer's Superintendent and/or field representative at the end of each workday.

12. A list of all service laterals (with distances and clock position) that were abandoned or reconnected as part of the work as further defined herein.

13. Some installations may result in the need to repair or replace a defective CIPP. Submit in writing, for review by the City/Engineer, specific repair or replacement procedures for potential defects that may occur in the installed CIPP. Repair/replacement procedures shall be as recommended by the CIPP system manufacturer and shall be submitted to also include the following:

    a. Defects in the installed CIPP that will not affect the operation and long-term life of the product shall be identified and defined.

    b. Repairable defects that may occur in the installed CIPP shall be specifically defined by the Contractor based on manufacturer's recommendations, including a detailed step-by-step repair procedure, resulting in a finished product meeting the requirements of these contract specifications. Repairable defects may include but are not limited to blisters, wrinkles, fins, pinholes, over- or under-cut lateral connections, and any voids found between liner and the host pipe.

    c. Un-repairable defects that may occur to the CIPP shall be clearly defined by the Contractor based on the manufacturer's

recommendations, including a recommended procedure for the removal and replacement of the CIPP. Un-repairable defects may include but are not limited to thickness below required minimum thickness, structural strength below required limits, lifts, shrinkage, folds, bulges, and delamination.

14. A list of all repair or replacement of CIPP defects that were executed by the contractor including identification of segment, location of the repair, and type of repair.

NOTE: The following item requires Contractor to provide NASSCO CIPP Inspector Training to City staff. Training of the City's inspectors by the CIPP system manufacturer is an alternative. If required, it should be scheduled during the first actual installation, so the inspector learns during actual field operations. The NASSCO Inspector training program (ITCP) is another alternative that provides training for the inspector specifically on Quality Assurance, inspection procedures and testing requirements based on industry standard principals. Leave or delete this item as appropriate.

a. Two days of inspector training, by the CIPP system manufacturer, for the City's inspectors shall be provided. This training shall be prior to liner installation, include both technical and field training and include all key aspects of visual inspection and sampling procedures for testing requirements. On smaller projects having an estimated duration of less than two weeks of lining work, system manufacturer shall furnish a check list containing key elements of the CIPP installation criteria that is are important for the City's inspector to ensure that quality control and testing requirements are performed in accordance with Contract Documents.

1.4 REFERENCED STANDARDS (LATEST REVISIONS)

A. ASTM International (ASTM):

1. ASTM D 543 - Standard and Practice for Evaluating the Resistance of Plastics to Chemical Reagents.

2. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.

3. ASTM D 790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

4. ASTM D 792 - Standard Test Methods for Density and Specific Gravity of Plastics by displacement.

5. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines

and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

6. ASTM F1336-15 - Standard Specification for Polyvinyl Chloride (PVC) Gasketed Sewer Fittings

7. ASTM F 1743 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).

8. ASTM F 2019 – 11 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)

9. ASTM D 2122-98(2004) - Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings.

10. ASTM D 2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

11. ASTM F 2561-11 - Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner.

12. F2599-11 - Standard Practice for Sectional Repair of Damaged Pipe by Means of an Inverted Cured-In-Place Liner.

13. ASTM D 2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.

14. ASTM D 5813 - Standard Specification for Cured-in-Place Thermosetting Resin Sewer Piping Systems.

    NOTE: The following items (15-17) are not necessary for standard CIPP. They apply only to fiberglass reinforced CIPP. Leave or delete this item as appropriate.

15. ASTM D 3567-97(2002) - Standard Practice for Determining Dimensions of Fiberglass (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fittings.

16. ASTM D 3681 - Standard Test Method for Chemical Resistance of “Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe in a Deflected Condition.

17. ASTM F 2019-03 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass

Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP).

B. National Association of Sewer Service Companies (NASSCO):

1. NASSCO Pipeline Assessment and Certification Program (PACP) Reference Manual, current edition, including addenda.

C. Water Research Centre, UK:

1. Sewerage Rehabilitation Manual, Type II Design, 4th edition (April 2001), WRC Publications.

D. Where reference is made to one of the above standards, the latest revision/update in effect at the time of bid opening shall apply.

1.5 QUALIFICATIONS

A. Contractor performing CIPP lining work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be certified and/or licensed as an installer by CIPP lining manufacturer. For a Contractor to be considered as considered qualified by the City, the Contractor must satisfy all insurance, financial, and bonding requirements of the City, and must have had at least 5 (five) years active experience in the commercial installation of CIPP. In addition, the Contractor must have successfully installed at least 750,000 feet of a CIPP product in wastewater collection systems of a similar size, length and configuration as contained in this contract as documented by verifiable references. Submit name and experience of each lead individual performing work on this Contract. Personnel replaced by Contractor shall have similar verifiable experience as personnel originally submitted for project. Contractor's project managers must have a minimum of two (2) years of CIPP installation experience and must be on-site during the installation of the CIPP products.

B. Full-time, on-site superintendent/foreman that will supervise CIPP lining installation has have a minimum five (5) years as a foreman/superintendent, documented by verifiable references, for a cured-in-place lining crew (installing actual product included with this project), and a minimum of 300,000 lineal feet of cured-in-place lining installed under his/her supervision. Such experience shall include the actual product, by trade name, CONTRACTOR proposes to install. Acceptable documentation of these minimum installations must be submitted to the City.

C. Lead personnel including superintendent, foreman and lead crew personnel each shall have a minimum of five (5) years of total experience with CIPP technology proposed and shall have demonstrated competency and experience to perform the scope of work as documented by verifiable references.

D. City and/or Engineer reserves the right to approve or disapprove Contractor, Superintendent, and/or manufacturer based on submitted qualifications and a follow-up interview.

E. Contractor shall self-perform a minimum of eighty (80%) percent of the CIPP in a given work authorization and the overall project.

F. CIPP felt and resin manufacturer(s) shall have successfully supplied a minimum of 500,000 feet of proposed liner and one million pounds of resin as documented by verifiable references.

G. The lateral cutter is required to have at least six (6) months of experience reinstating the connection between the sewer main and lateral lining as documented by verifiable references.

1.6 GUARANTEE

A. CIPP lining placed shall be guaranteed by Contractor and manufacturer for a period of five (5) years from date of Substantial Completion. During this period, serious defects discovered in CIPP lining, as determined by City and which may materially affect the integrity, strength, function and/or operation of pipe, shall be removed and replaced as recommended by the manufacturer in a satisfactory manner by Contractor at no cost to the City. The City may conduct an independent CCTV inspection, at its own expense, of CIPP lining work prior to completion of warranty period. Defects replaced at that time shall be fully warranted by Contractor and manufacturer for a period of two (2) years from date the defect was repaired. Wrinkles in flow stream, blisters that may affect the longevity of CIPP liner, dry spots where liner tube has no resin saturation, or other defects that may affect the integrity or strength of the CIPP or the flow capacity of the pipe, are unacceptable. Contractor shall be responsible to remove and repair, at Contractor's expense, all such defects in a manner that is satisfactory to City/Engineer. Defects also include but not limited to the following:

1. Leakage through the liner or between liner and pipe.

2. Reduction of liner thickness of more than ten percent (10%) of the thickness designed and/or required. Final liner thickness shall be delivered by Contractor based on installed product physical properties and as specified in Contract requirements.

3. Separation of liner from host pipe where an annular space is clearly noticed, shrinkages (longitudinal and/or circumferential), dry spots, delamination of liner, cured lifts, dry spots, bulges due to external loading, reverse curvatures, splits, cracks, lifts, breaks, folds, major wrinkles (as defined further herein), flats, pinholes, crazing and any other defects that in the CIPP lining will compromise the longevity of the installed product.

4. Circumferential defects (wrinkle, fin, bulge, etc.) in the invert of pipe between 4:00 and 8:00 o'clock shall not exceed three (3%) percent of the host pipe diameter or one half (1/2")-inches by visual measurement, whichever is smaller, at the discretion of the City.

5. Longitudinal wrinkles or fins shall not exceed maximum allowable height of five (5%) percent of equivalent host pipe diameter or one (1")-inch, whichever is smaller.

6. Structural strength below the required limits.

1.7 QUALITY ASSURANCE

A. CIPP linings shall follow the quality control plan submitted by Contractor.

B. CIPP linings shall be from a single manufacturer. Suppliers shall be responsible for provisions of all test requirements specified herein as applicable. In addition, CIPP lining to be installed under this Contract may be inspected at the plant for compliance with these specifications by an independent testing laboratory provided by the City. Contractor shall require manufacturer's cooperation with these inspections. Cost of plant inspection of all CIPP lining approved for this Contract will be the responsibility of the City.

C. Inspections of CIPP lining may also be made by Engineer or other representatives of City after delivery. CIPP lining shall be subject to rejection at any time on account of failure to meet any of the requirements specified, even though sample CIPP lining may have been accepted as satisfactory at the place of manufacture. CIPP lining rejected after delivery shall be marked for identification and shall be removed from the job site.

D. In the event that an installation is rejected based on review of the Contractor's post-rehabilitation CCTV inspection, the Contractor shall repair the sewer segment to the satisfaction of the City/Engineer at no additional cost to the City.

E. Along with the physical properties testing, the Contractor shall deliver a

certified copy of the curing report output from the temperature monitoring system used in the control of the curing process for pipes; or provide the City/Engineer with access to the website where the secure report can be obtained.

1.8 DELIVERY, STORAGE AND HANDLING

A. Care shall be taken in shipping, handling and laying to avoid damaging the CIPP liner. CIPP liner damaged beyond repair in shipment shall be replaced as directed by the City/Engineer.

B. Any CIPP liner showing a visible split, tear, or defect, at no additional cost to the City, shall be repaired per manufacturer's recommendations and to the satisfaction of the Engineer or, if not possible, shall be removed at once from the project site.

C. While stored, CIPP shall be adequately supported and protected in a manner as recommended by manufacturer.

D. CIPP liner shall be maintained at a proper temperature in refrigerated facilities to prevent premature curing at all times prior to installation. CIPP liner shall be protected from UV light. CIPP liner showing evidence of premature curing will be rejected for use and shall be immediately removed from the site.

PART 2 - PRODUCTS

2.1 CIPP FELT LINER AND RESIN

NOTE: For item B, normal recommended ratio of resin and felt by volume is 85% and 15% with some minor tolerances. The CIPP is based on the resin volume provided not the amount of felt carrier material. If the carrier material includes fiberglass or is all fiberglass, then the resin to fabric will be adjusted as recommended by the manufacturer. If there are missing pipe segments, this usually will require some additional reinforcement or a pre-liner to avoid overstretching of the liner.

A. CIPP liner shall be Granite Inliner by Granite Construction, Inc., Insituform by Insituform Technologies, Inc., National Liner by National EnviroTech Group LLC, SAK Liner by SAK Construction LLC, CIPP Corp., Sancon CIPP by Sancon Engineering Inc., Improved Technologies Group, or pre-approved equal.

B. CIPP liner shall be composed of tubing material consisting of one or more layers of a flexible non-woven polyester felt with or without additives such as woven fiberglass or other fibers and meet the requirements of ASTM F 1216, ASTM F 1743, and ASTM D 5813. Felt

content of CIPP liner shall be determined by Contractor, but shall not exceed 15 percent of the total impregnated liner volume. Fabric tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures and stretch to fit irregular pipe sections. Contractor shall submit certified information from felt manufacturer on normal void volume in the felt fabric that will be filled with resin.

C. CIPP liner tube may be made of single or multiple layer construction, with any layer not less than 1.5 mm thick, unless the tube is made of fiberglass material. Wet-out fabric tube shall have a uniform thickness and void space for resin distribution that when compressed at installation pressures will produce a predictable finished thickness that meets or exceeds the design thickness after cure.

D. No material shall be included in fabric tube that may cause de-lamination in cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between felt fabric and activated resin containing a colorant.

E. Wall color of interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. Hue of the color shall be dark enough to distinguish a contrast between fully resin saturated felt fabric and dry or resin lean areas.

F. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813.

G. The outside layer of the tube shall be coated with an impermeable material compatible with the resin and fabric.

H. Resin: Shall be a corrosion resistant polyester or vinyl ester resin and catalyst system or epoxy and hardener system manufactured specifically for sewer rehabilitation, that, and when properly cured within the tube composite, meets the requirements of ASTM F 1216, ASTM F 1743 or ASTM F 2019, the physical properties herein, and those, which are to be utilized in the design of CIPP for this project. Resin shall produce CIPP that will comply with or exceed structural and chemical resistance requirements of this specification. Liner material and resin shall be completely compatible. Generally, resin shall not contain fillers, except those required for viscosity control or fire retardance or increase strength, and with applications for which inert fillers would facilitate better heat transfer and retention during installation. Liner contractor may add up to five (5%) percent by mass, a thixotropic agent for viscosity control, which will not interfere with visual inspection.

I. Resins may contain pigments, dyes, or colorants, which shall not interfere with visual inspection of cured liner. Quantity of resin used for tube impregnation shall be sufficient to fill volume of air voids in tube with additional allowances for polymerization shrinkage and loss of resin through cracks and irregularities in original pipe wall. Use serial vacuum impregnation or pressure impregnation process (or equal) to provide maximum resin impregnation throughout the tube.

J. Prior to inversion, if applicable, outside and/or inside layer of tube (before inversion/pull-in as applicable) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of resin saturation during the resin impregnation (wet out) procedure.

K. Exterior of manufactured tube shall have distance markings along its length at regular intervals not to exceed five (5') feet. Use these marks as a gauge to measure elongation during insertion. Should overall elongation of a reach exceed five (5%) percent, liner tube shall be rejected and replaced.

L. Contractor shall identify the wet-out facility where all CIPP liner under this Contract will be manufactured. All CIPP liner shall be manufactured from this designated wet-out facility throughout entire Contract unless specifically approved otherwise by Engineer in writing. Multiple wet-out facilities shall not be allowed.

M. City and/or an agent of City may inspect CIPP liner during manufacturing and wet-out. City/Engineer shall be given an opportunity to witness manufacturing of all CIPP liner for this project. The City is responsible for costs associated with witnessing the manufacturing of CIPP liner.

N. If City/Engineer decides to inspect the manufacturing of CIPP liner, Contractor shall provide full access to witness wet-out process and shall provide any and all information related to the manufacturing as requested by City or City's agent without delay and without claims of confidentiality or product privacy.

O. Application of resin to felt tubing (wet-out) shall be conducted under factory conditions using vacuum impregnation and materials shall be fully protected against UV light, excessive heat and contamination at all times. If on-site wet out is required, Contractor shall be required to maintain ambient conditions similar to those encountered during factory wet outs.

P. Liners that are impregnated at the factory and transported to the project site in refrigerated trucks shall be installed as soon as possible and no more than two (2) weeks after the date of impregnation at the factory.

NOTE: If the sewer system contains traces of materials other than normal domestic sewage as defined in ASTM D 5813 then testing of the flow must be performed to verify that the proposed resin will be adequate. If not, then an alternative resin must be selected.

Q. When cured, CIPP liner shall form a continuous, tight-fitting, hard, impermeable liner that is chemically resistant to any chemicals normally found in domestic sewage per Table 2.1 in ASTM F 1216. CIPP liner shall be chemically resistant to trace amounts of gasoline and other oil products commonly found in municipal sewerage and soils adjacent to sewer pipe to be lined.

NOTE: For brick sewers and other irregular sewers, the circumference needs to be measured at a minimum every 50 feet to capture any variations in dimensions.

R. CIPP liner tube shall be manufactured or fabricated to a size that will tightly fit internal circumference of sewer being rehabilitated after being installed and cured. CIPP liner shall be capable of fitting into irregularly shaped pipe sections and through bends and dips within the pipeline. Allowance for longitudinal and circumferential expansion shall be taken into account when sizing and installing CIPP liner. Tube shall be properly sized to diameter of existing pipe and length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends. Contractor shall determine minimum tube length necessary to effectively span designated run between manholes. Contractor shall verify lengths in field prior to ordering and prior to impregnation of tube with resin, to ensure that tube will have sufficient length to extend entire length of the run, which is defined as the length of the existing host pipe measured from the interior walls of the manholes, and/or from the ends of the pipe when/if the pipe extends into the manholes. Contractor shall also measure inside diameter and circumference of existing pipelines at face of each manhole in field prior to ordering liner so that liner can be installed in a tight-fitted condition with little or no wrinkling.

S. Length of CIPP liner shall be as deemed necessary by Contractor to effectively carry out insertion of CIPP liner and sealing of CIPP liner at outlet and inlet manholes. Required diameter and length of each pipe segment shall be measured in advance of wet-out and a list of these measurements shall be submitted to Engineer at least one week prior to installation of each CIPP liner.

T. Contractor shall be responsible for ensuring that correct liner is installed in each sewer reach being rehabilitated.

U. All pipes of diameter 12-in and greater shall have a minimum finished thickness of six (6) millimeters or as designed, whichever is greater.

V. Contractor shall verify proposed CIPP liner thicknesses and submit associated calculations. Actual cured liner thickness shall be -5/+10 percent of approved design thickness and shall not include thickness of any non-structural membrane (inner/pre- liner). CIPP liner shall be designed in accordance with applicable provisions of ASTM F 1216 for “fully deteriorated gravity pipe conditions”, unless Engineer agrees, in writing, prior to installation that “partially deteriorated gravity pipe conditions” shall apply based upon review of CCTV video. CIPP liner shall meet following design conditions, unless Engineer agrees, in writing, of their change:

1. AASHTO H 20 Live Load.

2. Constrained soil modulus of native soil in the pipe zone of 1,000 psi.

3. Soil weight of 120 pounds per cubic foot and a coefficient of friction of Ku'=0.130r shall be used for the installed depths.

4. Long-term flexural modulus used in design calculations shall be estimated by multiplying lowest short-term flexural modulus used in design calculations by a retention factor of 0.50 (i.e., long-term retention of mechanical properties equal to 50 percent.)

5. Design safety factor of 2.0.

   NOTE: Groundwater depth shall be per the geotechnical report. In very conservative cases, groundwater depth can be considered to be at the ground surface.

6. Typical groundwater levels shall be estimated at one half (1/2) the distance between crown of pipe and ground surface. If actual groundwater depth information is available from USGS or other sources, it shall be utilized in calculations. Groundwater depth used in calculations shall be from estimated maximum groundwater level from surface to invert of interior pipe or at elevation specified for bidding purposes in Contract Documents.

7. Service temperature range shall be 40 to 100 degrees F.

8. Minimum ovality of host pipe of two (2) percent.

9. Long-term retention of mechanical properties equal to 50 percent.

10. Thickness to be used for CIPP liner shall be largest thickness as

determined by calculations for deflection, bending, buckling and minimum stiffness.

11. CIPP liner thickness for non-round pipes or circular pipes with greater than 10% ovality shall be designed on accordance with WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii.

12. Minimum liner thickness after installation and curing for all pipes 12-inches in diameter and larger shall be six (6) mm or as designed, whichever is greater. Thicknesses following installation and curing shall be based on design calculations provided by Contractor.

13. CIPP liner shall provide a minimum service life of 50 years and, for design purposes, shall have the following minimum initial and long-term properties:

Property	**Test Method**	**Initial (psi)**	**Long Term (psi)**
Flexural Strength	ASTM D790	4,500	2,250
Flexural Modulus of Elasticity	ASTM D790	350,000	175,000

14. The CIPP shall be designed to withstand all imposed loads, including dead and live loads and, if applicable, hydrostatic pressure. The liner shall have sufficient wall thickness to withstand all anticipated external pressures and loads that may be imposed after installation.

2.2 END SEALS

A. End seals shall be composed of hydrophilic rubber and molded as a one-piece, three-inch (3”) wide cylinder which when installed will form a 360-degree seal between the host pipe and the newly installed liner. Use of caulking, rope or band type of an end seal shall not be allowed. Acceptable end seals are Insignia™ End Seals by LMK Enterprises or approved equal.

NOTE: For projects in which manholes will also be rehabilitated, the following item (item B) should be deleted. For projects in which manholes are not being rehabilitated, the hydrophilic seals are sufficient enough to prevent any infiltration migrating to the manhole, and installing an additional seal at the manhole wall will add price and may also prevent an inspector to confirm that the hydrophilic seals have been installed by the contractor. If required to have the end of the pipe at the manhole wall covered, item B can be included.

B. Contractor shall install epoxy at the end of each lined pipe to cover any

piece of existing pipe that are exposed at the manhole wall. Acceptable epoxy resins are Sikadur 31 or approved equal.

2.3 SERVICE LATERAL SEALS

NOTE: If the sewer is located in groundwater table conditions, then hydrophilic rubber connections are required. If there is no groundwater present, chemical grouting is acceptable.

A. Service lateral connections shall be sealed. If the sewer is not under the phreatic surface, for the purposes of this specification anything deeper than five (5') feet from land surface is considered below the phreatic surface, seal service lateral connection by injecting a chemical hydrophilic grout into the space between the connection and the main line. If the sewer is under the phreatic surface, for the purposes of this specification, below five (5') deep, seal the service lateral connection by installing a hydrophilic rubber connection seal.

B. Chemical grouts shall conform to Section 336090.

C. Rubber connection seals shall be composed of a hat made of hydrophilic polymeric neoprene rubber designed with a specified wall thickness to provide a compression seal at connection of a lateral and a mainline pipe. Use of caulking, rope or band type of an end seal shall not be allowed.

D. Acceptable hydrophilic rubber seals are Insignia™ Hydrophilic Connection Hat by LMK Enterprises, or approved equal.

2.4 CIPP SPOT REPAIRS

A. Install a sectional CIPP spot repair for areas where longitudinal shrinkage of the installed CIPP liner near the manholes is three (3") inches or more, at no cost to the City/Engineer.

B. For any other longitudinal shrinkage observed within a pipe segment, install a sectional CIPP spot repair.

NOTE: Select either B or C as an approved spot repair. B refers to an air inverted Performance Liner sectional spot repair by LMK Technologies; C is an ambient cured fiberglass mat that cures at ambient temperature.

C. CIPP spot repair shall be accomplished using a liner tube of a particular length and a thermo-set resin with physical and chemical properties appropriate for the application. The tube positioned within a translucent inversion bladder is vacuum impregnated with the resin, then placed inside a protective launching device and winched through the sewer

pipe. The tube shall consist of one or more layers of flexible non-woven needled felt or a reinforced non-woven. The tube shall be continuous in length exhibiting a uniform minimum wall thickness based upon design calculations found in ASTM F1216 appendix XI. No overlapping sections shall be allowed in the circumference or the length of the liner. The tube shall include compressible material at each end forming a smooth transition to the host pipe. The liner shall be capable of conforming to offset joints, bells, and disfigured pipe sections. The resin shall be polyester, vinyl-ester or epoxy with proper catalysts as designed for the specific application. The cured-in-place pipe shall provide a smooth bore interior. Each installation shall have a design report documenting the design criteria for a fully deteriorated pipe section, or a partially deteriorated pipe in cases where the pipe has previously been lined. The installation procedure shall conform to ASTM F2599-11 “Standard Practice for Sectional Repair of Damaged Pipe by Means of an Inverted Cured-In-Place Liner”. The cured-in-place pipe shall meet or exceed the minimum test standards specified by the American Society for Testing Methods as described in the most current edition of ASTM F1216 standard, most current edition. Acceptable CIPP spot repairs are LMK Performance Liner or approved equal.

D. CIPP spot repairs shall be ambient cure and shall have a fiberglass mat consisting of two or more layers of 0/90 degrees bias woven fiberglass with a Trevara felt coating on one side and capable of carrying a two component, 100% solid epoxy or silicate base resin. Acceptable fiberglass CIPP spot repairs are Prime Line sectional lining spot repair or approved equal.

2.5 STYRENE REDUCING AGENT (IF APPLICABLE)

A. The styrene reducing agent shall be StyRedux by Integrated Chemical & Equipment Corporation, or approved equal.

B. The styrene reducing agent shall be a gelatin, water soluble, biodegradable, non-toxic, FDA approved powder and/or capsule. The styrene reducing agent shall be added in a calculated amount according to manufacturer’s recommendations into the down-tube for water curing or directly into the water holding tank for steam curing.

PART 3 – EXECUTION

3.1 PRE-INTSTALLATION

A. Examine the City’s CCTV video of each pipe segment before starting work.

B. Notify all property owners or businesses that discharge sewage directly to sewer being lined and whose service lateral will be affected by lining work, that their service will be temporarily interrupted during installation of CIPP liner. Deliver written notification to each such resident or business at least 72 hours in advance, giving the date, start time and estimated completion time for the work being conducted, and any restrictions on use of sewage system facilities including exact days and hours when sewer system cannot be used. Method of notification, and the text included in the notification, shall be approved by the City.

C. Clean each length of pipe to be lined and shall dispose of all resulting material offsite as specified in Section 336070.

D. The Contractor's project manager and/or superintendent shall review the City provided pre-rehabilitation inspection videos to confirm the quality of the videos, locations of lateral connections, and locations of point repairs to be performed. The City/Engineer will review pre-rehabilitation inspection videos to confirm locations of point repairs to be performed by Contractor. If an Inspector or Engineer is on site or immediately available, Contractor shall allow the Inspector or Engineer to view the pre-installation video to verify the pipe is ready for CIPP installation which includes proper cleaning, trimming protruding taps and mitigating and any significant infiltration.

E. If the data is available, the City/Engineer will provide Contractor information on location of known active laterals and cleanouts; however, this list may not be interpreted as all-inclusive. Contractor shall be responsible for verifying active customer service connection prior to rehabilitation. Contractor shall compare service connections from CCTV video and compare with above ground measurements at approximate location of center of each house or building. Any discrepancies between CCTV data and above ground measurements of laterals shall be brought to attention of the City/Engineer for a determination of lateral reinstatements. If Contractor discovers an error or addition to the list provided, Contractor shall immediately notify Engineer for additional investigation. Upon completion of rehabilitation work, a list of all service laterals abandoned or reconnected as part of the work shall be submitted to the City. Compiled list can be in the form of post-inspection installation inspection logs and shall include the following information:

1. Location of each service lateral based on CCTV inspection logs. Location shall include both accurate distance measured from centerline of starting manhole as well as a notation (by clock-reference) of where on circumference of pipe, the service lateral connects.

2. Status (Active or Inactive).

3. Address of each customer and associated active lateral location.

F. Prior to installation of CIPP lining, all service lateral connections protruding into main line by one half (1/2”)-inch or more shall be internally cut or ground down flush with pipe wall with a robotic cutter specifically designed for this purpose. Internal cutter shall be capable of cutting unreinforced concrete pipe (CP), cast iron pipe, PVC, vitrified clay pipe (VCP), ductile iron pipe, and Orangeburg pipe. All materials / cuttings shall be removed from sewer and properly disposed of.

G. Infiltration runners or gushers as defined by NASSCO PACP that are observed during the pre-rehabilitation CCTV shall be stopped by injecting a chemical hydrophilic grout as required in Section 336090 using a remote packer, unless otherwise approved by the City/Engineer. If the pipe is larger than 36”, man-entry with hand-applied fast-setting epoxy can be performed to stop the infiltration.

H. Maximum amount of time any home or business shall be without sanitary sewer service is 10 hours and not between 6:00 PM and 8:00 AM. Any service out longer than 10 hours shall be bypassed to a sanitary sewer at no cost to the City.

I. Provide bypass pumping of sewage flows in accordance with Section 336081. Service connection effluent may be plugged only after proper notification to affected residence and may not remain plugged overnight. Installation of liner shall not begin until Contractor has installed required plugs or a sewage by-pass system and all pumping facilities have been installed and tested under full operating conditions including bypass of mainline and side sewer flows. Once lining process has begun, existing sewage flows shall be maintained, until resin/felt tube composite is fully cured, cooled down, fully televised and CIPP ends finished.

J. Wastewater flows from existing sewers shall not be allowed to enter the new or rehabilitated facilities until the new or rehabilitated facilities have been cleaned and tested as required in the Contract Documents.

K. Provide CIPP liner in full length of sewer as shown on work orders. Installation of CIPP liner shall be in complete accordance with applicable provisions of ASTM F 1216 or ASTM F 1743 and manufacturer’s recommendations.

L. Install a hydrophilic end seals at face of each manhole at all manhole penetrations per Paragraph 2.2 prior to inverting or pulling in uncured CIPP liner.

M. If in the opinion of CIPP liner manufacturer and/or the City/Engineer, rate of infiltration in sewer segment is high enough to risk washout of resin, perform measures, as required, to minimize infiltration prior to installation,

including pre-liners, grouting, etc. If during pre-lining CCTV inspection, any infiltration runners or gushers (per NASSCO PACP®) are observed, Contractor shall submit, in writing for approval by the City/Engineer, methods and materials for mitigating any adverse impacts from the infiltration.

N. Pressure gauges for the ends shall be digital pressure/vacuum gauges with a pressure range of 0 to 50 psi and ±0.25% test gauge accuracy.

O. For pipes 18-in diameter and larger, install and use continuous temperature sensor strips. Provide the City's representative with access to the longitudinal temperature monitoring system data during the installation via digital data, web-based or other approved methodology and printed reports.

3.2 INTALLATION

A. CIPP liner shall be installed via inversion using hydrostatic head or air pressure in accordance with ASTM F 1216 or ASTM F 1743 and manufacturer's recommendations or inserted through a manhole by means and methods required by the manufacturer. Hydrostatic head and/or steam pressure used during installation process shall be sufficient to hold liner tight to pipe wall; producing dimples at all service connections, and flared ends at two access manholes. Contractor shall closely follow the requirements in the submitted liner field curing reports, including the minimum inversion pressure, ideal head, maximum hot head and maximum cold head for each installation.

B. If CIPP does not fit tightly against original pipe at its termination points, at no additional cost to the City, the full circumference of CIPP exiting host pipe shall be filled with a resin mixture compatible with CIPP, approved by CIPP manufacturer and the City/Engineer. There shall be no significant leakage of groundwater between existing pipe and CIPP at manhole connection or service lateral connections. Any leakage shall be removed and/or eliminated by Contractor at no additional cost to the City. Any infiltration found at manhole and/or service connections shall be eliminated by Contractor at no additional cost to the City. Any infiltration runners or gushers as defined by NASSCO PACP shall be stopped with chemical hydrophilic grouting as required in Section 336090.

C. Fit heat source with monitors to accurately gauge temperature of incoming and outgoing water or steam supply. Place another such gauge between CIPP liner and pipe invert at downstream end to determine temperature during curing process. Temperature in CIPP during curing process shall be as recommended by resin manufacturer. Length of time for allowing curing process to be completed shall be of

duration recommended by manufacturer, during which time Contractor shall maintain required temperature throughout CIPP. Provide a written temperature data chart/curing log to the City's Representative for review to ensure that curing temperatures for resin meet manufacturer's recommendations.

D. The full length from manhole to manhole of the installed resin-impregnated flexible felt tube CIPP liner shall be cured using circulating heated water or steam in accordance with ASTM F 1216 and manufacturer’s recommendations or with UV light sources to affect desired cure throughout length of the tube, extending full length from manhole to manhole(s). Resin shall be cured into a hard impermeable pipe with minimum specified thickness, providing a structurally sound, uniformly smooth interior and tight-fitting liner within existing pipe. Cool-down procedures shall be in accordance with ASTM F 1216 and manufacturer’s recommendations. The cool-down shall follow manufacturer’s guidelines, be measured digitally to allow inspector to inspect or record, be linear, and be gradual; no super cooled air shall be allowed to be injected. UV cured CIPP shall not be permitted without written approval from the City/Engineer and after documentation has been reviewed that liner is compatible with all specifications and other related work including any lateral lining systems.

E. For pull-in-place liners cured by UV light (ASTM F2019)

1. Fiberglass liner shall be cured with UV light sources at a constant inner pressure sufficient to maintain the liner tight against the existing wall of the pipe.

2. The time, the rate of travel of the ultraviolet light assembly, light sources and the internal pressures shall all be recorded and as specified by the liner manufacturer. This segment curing data shall be submitted to the City/Engineer, along with the manufacturer’s curing standards

F. Contractor may install CIPP lining in multiple sewer segments at one time where possible. When installing CIPP lining in multiple sewer segments at one time, the top one-half of CIPP liner in intermediate manhole shall be neatly removed, leaving the invert in place, and void between CIPP liner and existing channel shall be filled with non-shrink grout. Manhole bench shall be reconstructed as required to provide a smooth transition to new CIPP liner.

G. All cutting and sealing of CIPP liner at manhole connections shall provide watertight pipe and manhole seals. All cut edges of cured liner shall be thoroughly sealed with same resin as was used in liner. Catalyst or hardener used shall be compatible with resin/catalyst used

in liner previously, but shall not require an external heat source to begin exothermic reaction (curing). There shall be no leakage of groundwater into manhole between CIPP liner and existing sewer pipe and between existing sewer pipe and manhole wall.

H. Continuous temperature monitoring systems are required for all 18-inches or larger sewer or any sized sewer in locations with significant known groundwater infiltration or if pipe is within 50 feet of stream, river or lake for liners being cured by heated water or steam. This system shall be installed at the invert of pipe and be installed per manufacturers recommended procedures. Temperature sensors shall be placed at upstream and downstream ends of reach being lined to monitor pressurized fluid's (air or water) temperature during curing process. To monitor temperatures inside tube, wall and to verify proper curing, temperature sensors shall be placed between host pipe and liner in bottom of host pipe (invert) throughout the reach to record the heating and cooling that takes place on the outside of liner during processing. As a minimum, sensors shall be spaced apart at intervals no greater than 20-feet for pipe sizes up to 15-inches in diameter; and no greater than 10-feet for pipe sizes 18-inches and larger. Additionally, sensors shall be strategically placed at points where a significant heat sink is likely to be anticipated. Monitoring of these sensors shall be by a computer that can record temperatures at this interface throughout processing of CIPP utilizing a tamper-proof database. Temperature monitoring systems shall be Zia Systems or Vericure by Pipeline Renewal Technologies.

I. Prior to installing liner in host pipe, temperature monitoring system's proper functioning shall be confirmed by hooking it up to computer and seeing that sensors are reporting their ambient temperatures. No more than two sensors in sequence can be found faulty during this test. If three or more sensors in sequence are discovered faulty, a new sensor array shall be provided and installed at no extra cost to the City; and the new array shall be again tested for its proper functioning.

J. Curing of resin system shall be as per recommendations of CIPP system manufacturer of CIPP product. Temperatures achieved and duration of holding the liner at those temperatures shall be per System Manufacturer's established procedures. If any sensor or sensors along reach indicates that there is a localized issue with respect to achieving proper curing per written installation procedure, Contractor shall address the issue prior to acceptance of the liner. Sensor array's database required in above paragraph shall have an output report that identifies each sensor by its station in reach and shows maximum temperature achieved during processing of CIPP and time sustained at or above Manufacturer's required curing temperature at each sensor.

The temperature of the liner shall be recorded until the liner has completed the cool-down process.

K. If cool-down is to be accomplished by introduction of cool water into an inversion standpipe to replace water being drained from a small hole made in downstream end, the hardened liner shall be cooled down to a temperature below 100 degrees F (38 degrees C), or ambient temperature, whichever is lower, before relieving static head in inversion standpipe. Contractor shall take measures to ensure that, in release of static head, a vacuum will not be produced that could damage the newly installed CIPP liner.

L. Incorporate mitigation measures to control styrene odors during installation and curing of the liner. If any styrene odor complaints occur on the jobsite, the Contractor shall have means and methods to immediately mitigate the issue.

M. Vent and/or exhaust noxious fumes or odors generated during and remaining after curing process is completed. This process shall remain in place at all manholes, laterals, etc., until noxious odors have dissipated to an acceptable level in accordance with OSHA requirements for materials used and there is no more air pollution or potential health hazard left to general public or construction workers.

N. Coordinate with the City on where curing water can be discharged.

O. Provide piping, pumps, valves, and other equipment to discharge curing water.

P. After the installation of the first 1,000 linear feet of CIPP lining, no additional CIPP lining shall be installed until acceptance testing demonstrates that the product meets all thickness and strength properties specified herein. Once the City/Engineer has reviewed and approved the test results, the remainder of the lining installation may resume.

3.3 REINSTATEMENT OF SERVICES

A. After new CIPP has been cured and completely cooled down, if applicable, Contractor shall reconnect existing service laterals as designated by pre-installation television inspection report generated by Contractor. This shall be done without excavation but from interior of pipeline by means of a television camera and a remote cutting device that reestablishes service connection to not less than 90 percent or better of original diameter and to a maximum of 100 percent of original diameter; overcut connections are not acceptable. All openings shall be clean and neatly cut and the cut shall be buffed with a wire brush to

remove rough edges and provide a smooth finish. Bottom of openings shall be flush with bottom of lateral pipe and shall have smooth edges with no protruding material capable of hindering flow or catching debris. All service lateral connections shall be sealed per section 2.3 of this specification.

B. Coupons shall be removed from laterals by any means possible including entering homes to flush the material via access from cleanout.

C. Excess resin that builds up and hardens in and around the lateral connections(s) must be removed and/or ground down prior to acceptance of the re-instatement. Contractor will be required to supply an extended lateral cutter bit to reach resin buildup beyond standard length bits.

D. Inactive service laterals identified in Drawings and elsewhere in the Specifications will be abandoned by not reopening the service connection after installation of the cured-in-place pipe liner. If necessary, because of uncertainty of matching each tap in the sewer with each property, the Contractor shall dye test to verify if a service connection is active at the direction of the City/Engineer.

E. Service laterals that were determined to be inactive during CCTV inspection will be abandoned by not reopening service connection after installation of cured-in-place pipe liner. All lateral connections shall be identified as repaired or abandoned in post rehabilitation CCTV (to be performed by the Contractor). Contractor to provide image file for all lateral locations along a given pipe segment. Contractor to provide image file at location of lateral even if lateral connection has been abandoned.

F. Contractor shall not open abandoned/capped service connections except at the City's/Engineer's direction. If an abandoned service connection is opened without the City's/Engineer's approval, Contractor shall perform an internal spot repair to close connection, at no additional cost to the City.

G. Contractor shall provide a fully operational backup device for reinstating service laterals. If there is any doubt about live vs. dead service based upon above property comparison with pipe connections, then Contractor shall verify with dye testing. If for any reason remote cutting device fails during reinstatement of a service lateral, Contractor shall immediately deploy standby device to complete reinstatement. Backup equipment shall be onsite throughout reinstatement process.

H. For service lateral reconnections and/or renewals to be made by

excavation methods, InsertaTees may be used for solid wall pipes having a 0.36-inch or greater wall thickness. InsertaTees shall be "Fatboy" type with hub manufactured of SDR 26 PVC material incorporating a 360-degree integral stop on the hub surface and exceeding ASTM F1336 Section 10.3 Pipe Stop Load Support Test, or approved equal. Romac type saddles shall be used for pipes having a wall thickness thinner than 0.36-inches. Saddle connections shall be seated and sealed to new CIPP using grout or resin compatible with the CIPP. Other services shall be renewed by trenchless lateral lining.

I. All existing break-in and/or hammer-tap (break-in) laterals shall be cut and sealed per Paragraph 2.03 of this Section to provide a watertight connection between the lateral and the lined pipe. Contractor shall submit a method for cutting and sealing of each lateral.

3.4 FIELD TESTING AND ACCEPTANCE

A. Field acceptance of CIPP lining shall be based on the City's and Engineer's evaluation of installation, including a review of the CIPP liner curing data, review of post-rehabilitation CCTV inspection data (post-rehabilitation CCTV to be performed by the Contractor), and review of certified test data for installed CIPP liner, including air testing. All CIPP sample testing, and repairs to installed CIPP as applicable, shall be completed before final acceptance, meeting requirements of these specifications and documented in written form.

B. For every 1,000 linear feet of CIPP liner installed for the first 5,000 linear feet, the Contractor shall perform sampling and testing to determine the installed CIPP liner flexural properties and CIPP liner thickness. After the first five (5) test results have been collected and all have passed the minimum standards per the specification, the City may require collecting random samples up to one sample per 5,000 linear feet for testing. Frequency of testing may be reduced as approved by the City/Engineer after sufficient tests are performed to verify CIPP liner design, production and installation procedures. Likewise, frequency of testing may be increased by the City/Engineer and performed by Contractor at no additional cost to the City when required tests show that installed CIPP liner does not meet specifications. If a test is not passed, Contractor shall re-evaluate liner thickness design to determine if installed physical properties meet minimum design requirements; if it does not, liner shall be replaced or relined with approval from the City/Engineer at no additional cost to the City.

C. Testing shall be performed by an independent testing laboratory certified by the American Association for Laboratory Accreditation (A2LA). Contractor shall submit to the City/Engineer the name and location of independent testing laboratory, a certified statement from

laboratory indicating that they are independent from and not associated with Contractor in any way, and A2lA certification for independent testing laboratory.

NOTE: This testing to be paid by the Contractor.

D. All expenses for sampling and testing of installed liner shall be paid for by the Contractor. Chain of custody for test samples shall be through City's representative. Cost of all manufacturer's testing to qualify products furnished to project site shall be the responsibility of Contractor.

NOTE: Note that restrained samples may not be practical for pipes larger that 18-inches in diameter; in this case, plate samples are allowed.

E. Sampling and testing of the installed CIPP liner shall conform to ASTM F 1216 and the following requirements:

1. Remove one restrained sample of installed CIPP liner at least 18-inches in length. Sample shall be captured by installing CIPP liner through a section of PVC pipe (same diameter as existing sewer diameter) within the most downstream manhole of installation and at all intermediate manholes if multiple sewer segments are lined at same time. Contractor may elect to cut the sample longitudinally and provide 1/2 the sample to City's representative or inspector for direct shipping to laboratory and keep other half of sample for additional testing if necessary.

2. CIPP liner thickness shall be measured in accordance with ASTM D 5813. Flexural properties shall be determined in accordance with ASTM D 790. Contractor shall label and date all samples and provide to inspector or City's representative same day of installation for shipping to independent testing laboratory. The City/Engineer shall be copied on all transmittals to independent testing laboratory. Testing results shall be submitted to Engineer or City within 30 days after installation of CIPP liner or payment will be withheld.

   NOTE: For structural and thickness tests, if tests are within 90 percent of specification payment shall be 90 percent of bid price per item. If tests are between 75 percent and 89 percent, then 75 percent of price shall be paid. If below 75 percent, Contractor shall reline segment with a new liner that meets structural requirements.

3. After recalculations performed in accordance with Paragraph 3.4, B above, any CIPP lining that does not meet new calculated thickness requirements shall be corrected by Contractor in a manner approved by

the City/Engineer at no additional cost to the City. The City's decision on how to correct deficient CIPP liner installations shall be final. Options for correcting deficient CIPP liner installations that will be considered by the City include the following: removal of existing CIPP liner and re-lining the sewer, open-cut replacement of sewer from manhole to manhole, re-lining sewer with existing CIPP liner in place.

F. The Contractor shall perform a post-rehabilitation CCTV inspection of all sewers rehabilitated using CIPP lining methods. Post-rehabilitation CCTV inspection shall be performed following installation of CIPP liner and reinstatement of all active service laterals. The Contractor's project manager and/or superintendent shall review the post-rehabilitation inspection videos to confirm the quality of the videos and of the installed CIPP. If it is determined that any repairs are needed at any segment, a new CCTV inspection shall be performed of the entire segment(s) after the repairs have been completed.

G. Liner Installation Inspection - A visual inspection of the liner will be considered acceptable if liner shows no significant, wrinkles, lifts, ridges, splits, cracks, delaminations, flats, dry spots, pinholes, shrinkage, foreign inclusions, crazing, reverse curvatures, or other type of defects in the CIPP lining. Significant defects shall be defined as those listed in paragraph 1.6 of this section; and/or any defect that may create a maintenance issue in future such as inhibiting CCTV cameras or allowing solids to get caught on defect, and/or any defect that appears to reduce long-term structural strength or stability of pipeline. Longitudinal wrinkles/fins in height up to a maximum of five percent of inside diameter of host pipe or one (1")-inch, whichever is smaller, may be acceptable and shall be evaluated by Engineer for acceptance on a case by case basis. Defective lining shall be repaired or replaced at no additional cost to the City. If during removal process, the pipe is damaged, Contractor shall perform a point repair at Contractor's own expense.

H. The Contractor shall provide post CCTV Video Inspection and Submittals:

1. Removal of wrinkles or fins deemed significant at the discretion of the City, shall be removed using a milling head, relined or replaced by the Contractor as directed by the City at no additional cost. There shall be no evidence of other major defects in the CIPP lining.

2. Longitudinal shrinkage of the CIPP liner's length, of more than three (3") inches from the face of the manhole shall be repaired with a fiberglass reinforced CIPP spot repair per Paragraph 2.4 of this Section at no cost to the City.

3. Circular shrinkage shall be measured by the Contractor via man entry to try to insert a 1/16” thick ruler or similar into any gap more than eight (8”) inches past the MH wall. The Contractor shall document these measurements with digital photos that shall be submitted to the City/Engineer for approval. Circular shrinkage shall be repaired per manufacturer recommendations at no cost to the City.

I. The CIPP liner shall be watertight. Groundwater infiltration through the wall of the liner shall be zero.

NOTE: Epoxy sealing by hand may be allowed for pipes 30-inches in diameter or larger within the pipe and hand applied for any size sewer if within 2 feet of the manhole wall.

J. All service connections shall be opened to a minimum of 95 percent and a maximum of 100 percent of opening so that a new lateral or lateral lining can be installed properly. Any overcuts more than 105 percent shall be repaired with hydrophilic seal hat connection, CIPP liner or other approved method by the City/Engineer.

K. All coupons and excess resin shall be removed from reinstated service laterals prior to acceptance of CIPP lining.

L. All pipe-to-manhole connections shall be watertight and free of infiltration.

NOTE: Either an air test or hydrostatic test is required. Air tests are typically performed on steam cured liners and hydrostatic exfiltration test are typically performed on water installations. In the case of high groundwater installations, an infiltration test is acceptable. In the case of pipes larger that 36-inch diameter in no groundwater, it is very hard to perform an exfiltration or infiltration test. ASTM F 1216 (item 8.2) allows 50 gal/day/in diam./mile and 1 psi drop in time and also has an allowance for leakage. However, for larger CIPP installations that after the liner has cured it is recommended to use the downtube of the upstream CIPP inversion to monitor the water level before the downstream end is opened up to confirm that no water is being lost.

M. When CIPP is installed using pressurized air, Contractor shall perform an air-test per Section 336065 in presence of the City’s representative immediately following cool down and prior to lateral reinstatement. Otherwise, hydrostatic testing (exfiltration test) of completed liner shall be performed after liner curing and cool down in accordance with ASTM F 1216. Hydrostatic testing shall be performed prior to reinstatement of active services.

NOTE: For large diameter pipes (36 inches or greater), an exfiltration test may be allowed.

N. Installed CIPP shall be tested for water tightness using an exfiltration test. Maximum allowable leakage shall be 50 gallons per day per diameter inch of pipe per mile in accordance with ASTM F 1216.

NOTE: For projects in which manholes will also be rehabilitated, the following item (item O) should be deleted. For projects in which manholes are not being rehabilitated, the hydrophilic seals are sufficient enough to prevent any infiltration migrating to the manhole, and installing an additional seal at the manhole wall will add price and may also prevent an inspector to confirm that the hydrophilic seals have been installed by the contractor. The end of the pipe at the manhole wall may be required to be covered, in which case item O can be included.

O. After all installations are complete, inspected, post-construction CCTV has been reviewed and approved by the City/Engineer, and all work is satisfactory to the City/Engineer, contractor shall cut and trim the new liner at each manhole wall. Seal liner to manhole wall with a sealant material per Paragraph 2.2 of this Section.

3.5 MEASUREMENT AND PAYMENT

A. PAYMENT

1. Payment for CIPP pipe liner shall be made at Contract unit price per linear foot for each size as stated in the Bid, complete in place, in accordance with Contract Documents. Payment will be based on actual number of feet installed, as measured by Engineer. Pipe will be measured horizontally, on surface, from center-to-center of manholes to nearest 0.1-foot, unless another method is approved by the City/Engineer. Payment for service lateral reinstatement and service lateral sealing will be made at Contract unit price per lateral reinstated and/or sealed.

2. Price paid per linear foot for pipe liner shall include full compensation for furnishing labor, materials, tools, equipment and incidentals necessary to provide CIPP liner, manhole seals, traffic control, sewage bypassing, control of water, manhole connections, preconstruction inspection, cleaning, disposal of sewer cleaning materials, final inspection, perform leakage testing of the CIPP pipe liner, post-construction inspection, protection of existing utilities and adjacent property, and all required surface restoration work and traffic control, complete in place, as shown in Drawings and specified herein.

END OF SECTION

SECTION 336085

SEWER LINE JOINT TESTING

PART 1 - GENERAL

1.1 SCOPE

A. After cleaning and simultaneous with television inspection, joint testing shall be performed on all sewer joints. Joint testing shall be performed before and after sealing except where joints are found to have visible infiltration. Visible infiltration points shall be sealed without pre-testing and shall then be tested to ensure that the joint has been properly sealed.

B. Sewer line joint testing and sealing shall not be performed on any sewer line until other rehabilitation measures (if any) specified for that particular line have been completed. This requires that any pipe replacement and/or repair of low spots must be completed before the remainder of each line is tested and sealed.

C. Joint testing shall be accomplished by utilizing a void pressure monitoring system. Generally, this shall be accomplished by applying a positive pressure to each joint, allowing time for the system to stabilize and measuring the amount of pressure decay over a given length of time.

D. Use caution at all times so as to prevent potential contamination of the City of North Port’s Potable Water System. Cross connections will require a backflow preventer approved by the City of North Port.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The equipment used shall consist of a television camera and a hydrostatic joint testing device that can be pulled through the sewer lines. Testing shall be accomplished by isolating the joint or area to be tested with the testing device or devices and applying a positive hydrostatic pressure into the created, isolated void area. Pressure readings shall be displayed on an above ground gauge with a range of 0 to 10 psi.

PART 3 – EXECUTION

3.1 PERFORMANCE

A. Existing hydrostatic head shall be established by inserting a pipe probe into the backfill material at the crown of the pipe at the downstream manhole and applying pressure until equilibrium is attained. This is the back pressure that all test pressures for that section of line shall be increased by.

B. A precise pressure of four (4) psi above the existing hydrostatic head shall be applied to each joint. Once the pressure of four (4) psi above hydrostatic head at the joint has been recorded on the gauge above ground, the water flow shall be stopped and the pressure gauge observed for 30 seconds. Should the pressure on the joint drop 0.5 psi or more within 30 seconds, the joint will have failed the test. Joints that fail the test shall be sealed as specified herein and re-tested by the same procedure until the joints pass the pressure test.

END OF SECTION

SECTION 336086

CURED IN PLACE SPOT REPAIR

PART 1 - GENERAL

1.1 SCOPE

A. Furnish all materials, labor and equipment and perform all incidental work necessary to install and test cured-in-place spot repairs (CIPSR) as shown on the Drawings.

1.2 RELATED WORK

A. Television inspection is included in Section 336060.

B. Sewer line cleaning is included in Section 336070.

C. Cured-in-place pipe lining is included in Section 336084.

1.3 SUBMITTALS

A. Submit within 15 days of the Effective Date of the Agreement, the name of CIPSR supplier and a list of materials to be furnished.

B. Provide two submittals of certified test reports to confirm that CIPSR materials have been manufactured and tested in accordance with the ASTM Standards specified herein.

1. Within 15 days of the Effective Date of the Agreement, submit test reports for the materials to be used for this work. Test results shall be the manufacturer's standards for acceptance of field fabricated and installed CIPSR.

2. Prior to the installation of any CIPSR, make test specimens from the materials to be utilized for this work. Make sufficient number of specimens for conducting the referenced testing. Specimens shall be cut from the resin-impregnated patch prior to insertion into the pipe.

1.4 REFERENCED STANDARDS (LATEST REVISION)

A. ASTM International

1. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.

2. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

3. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

4. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

5. ASTM D2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.5 QUALITY ASSURANCE

A. The Contractor or subcontractor to furnish and install CIPSRs shall be fully qualified, experienced and equipped to complete the work in a timely and satisfactory manner. Submit the following information to the Engineer for review and approval before CIPSR work is performed.

1. The number of years of experience in performing this type of specialized work.

2. Name of the CIPSR manufacturer and supplier for this work and previous work performed. The Contractor shall be certified by the manufacturer to install the CIPSR patches.

3. A list of all municipal installations performed over the past 5 years along with the contact name, telephone number, and brief description of work performed.

4. The City reserves the right to disapprove the use of the CIPSR Contractor based on the submitted qualifications.

B. All CIPSR spot repairs, regardless of pipe size or length, shall be furnished, fabricated and installed by a single manufacturer.

C. As directed by the Engineer, replace all CIPSRs that utilized materials or methods of installation other than that approved. Remove and replace the CIPSR section or replace the affected pipe with new pipe at no cost to the City.

1.6 GUARANTEE

A. All CIP spot repairs shall be guaranteed by the Contractor for a period of

5 years from the date of acceptance. During this period, all defects in the CIPSR's shall be repaired in a manner satisfactory to the Engineer or the affected pipe shall be removed and replaced with new pipe at no additional cost to the City.

PART 2 - PRODUCTS

2.1 FIBERGLASS/POLYESTER FELT REPAIR MATERIAL

A. The CIPSR shall be a resin impregnated fiberglass/polyester felt sleeve which is wrapped around an inflatable packer and positioned in the sewer to be rehabilitated and cured in place by circulating hot water to cure the resin. Ambient curing shall not be allowed.

B. The CIPSR sleeve shall be fabricated from a minimum of two layers of fiberglass with a single layer of polyester felt sandwiched between the fiberglass layers. The material shall be sewn together with multiple polyester threads using zigzag stitching spaced evenly over the full width of the material. The three-layer composite reinforcement material shall have a minimum mass of 40.6 oz/sq. yd with a thickness not less than 0.24-in. Fiberglass alone shall not be acceptable.

C. The fiberglass shall be woven roving having a minimum weight of 24 oz/sq. yd and shall be made of "E" glass coated with a sizing compatible with the resin being used.

D. The polyester felt shall be needle punched and have a minimum weight of 16.5 oz/sq. yd.

E. The resin shall be a two-part epoxy type liquid thermosetting resin suitable for the intended use as well as the proposed curing method. The diluted epoxy resin shall contain at least 60 percent of bisphenol A, 10 to 20 percent of bisphenol F with the remainder of the mixture being a diluent. Epoxy resin shall be D.E.R. (R) 353 by the Dow Chemical Company; ME 948 by Micon or equal.

F. The epoxy resin shall be brought on site in the resin manufacturer's original containers. Each container shall be clearly labeled as to contents and product data. The resin shall be stored, mixed and applied in accordance with the manufacturer’s recommendations.

G. The CIPSR shall provide a service life of 25 years and shall have, as a minimum, the initial and long-term properties listed below.

MECHANICAL PROPERTY	INITIAL	LONG-TERM
Flexural Strength	8,000 psi	----------
Flexural Modulus of Elasticity	280,000 psi	140,000 psi
Tensile Strength	5,000 psi	----------
Tensile Modulus of Elasticity	280,000 psi	140,000 psi

H. When cured, the CIPSR shall form a continuous, tight-fitting, hard, impermeable liner which is chemically resistant to any chemicals normally found in domestic sewage. The CIPSR shall have a suitable membrane coating for protection of the interior surface and to provide a uniform, smooth flow surface. No membranes or plastic coating shall be allowed between the repair patch and the pipe wall.

I. The fiberglass/polyester felt sleeve shall be fabricated to a size that will tightly fit the sewer being rehabilitated after being installed and cured. The transition from the patch to the existing pipe must be smoothly tapered.

J. The CIPSR shall be by Avanti International of Webster, TX or equal.

K. Thickness of the cured liner shall be as recommended by the manufacturer but shall not exceed 1/4-in when cured unless authorized in writing by the Engineer.

L. Spot repairs shall have a minimum length of 3-ft and shall not exceed 30-ft in length. CIPSR lengths shall extend a minimum of 1-ft beyond the pipe defects at each end of the repaired section. Length of each required repair shall be verified in the field prior to installation.

M. CIP spot repairs shall not begin or end at a service connection or pipe joint.

N. All cured-in-place spot repairs shall be one piece. Separately fabricated or installed CIPSRs utilizing overlapped or "butted" ends shall not be acceptable.

PART 3 – EXECUTION

3.1 INTSTALLATION

A. Clean each length of pipe to be lined and dispose of all resulting material as specified in Section 336070.

B. All obstructions in the sewer which may impede the insertion of the

liner shall be removed by the Contractor. Contractor shall verify location of any obstruction.

C. Conduct a television inspection of each length of pipe after it is cleaned as specified in Section 336060. Document the location of all active service connections and verify the lengths of repairs. A copy of these videos shall be submitted to the Engineer and provided to the City.

D. Notify all property owners who discharge sewage directly to the sewer being repaired that their service will be interrupted while the CIPSR is being inserted, cured and active service connections reopened. Notify individual property owners at least 48 hours in advance, giving the date, start time and estimated completion time for the work being conducted.

E. Furnish bypass pumping of sewage flows where the rehabilitation work is being performed. Bypass pumping shall be conducted in conformance with the requirements of the technical specifications

F. The CIPSR material shall be measured, cut and impregnated with epoxy resin in the field to the measurements determined from the videotape inspections. The installation and curing of the CIPSRs shall be in complete accordance with the manufacturers' specifications and a representative of the manufacturer shall be present during the first day of installation.

G. The installed spot repair shall be cured by circulating hot water through the resin impregnated patch. Ambient curing shall not be allowed.

H. The inflatable element and hydrostatic pressure used during the installation process shall be sufficient to tightly hold the CIPSR to the existing pipe wall, producing dimples at all service connections and squeezing surplus resin into any cracks in the pipe. This pressure shall be great enough to overcome or prevent infiltration from entering the existing pipeline during the curing process.

I. The Contractor shall ensure that the shroud covering the packer is completely removed from the repaired pipe.

J. Where CIPSRs connect to existing manholes, the repair shall create a watertight seal at the pipe connection and into the trough. All cut edges of the cured liner shall be thoroughly sealed with the same resin as was used in the CIPSR materials.

K. Reestablish all the existing service connections on each length of sewer following patching. The service connections shall be reestablished per Section 336084 and opened from inside the sewer by

means of a cutting device controlled by a closed-circuit television camera. All cut out material shall be flushed out of the sewer, removed out of the sewer so as not to end up in a lift station.

L. Each service connection shall be cut completely open and shall have smooth edges with no protruding material capable of hindering flow or catching and holding solids contained in the flow stream.

M. Following installation of the spot repairs and reopening the active service connections, conduct a second video inspection of the completed work. This video, along with the video made in Paragraph 3.1C above shall become the property of the City.

3.2 FIELD TESTING AND ACCEPTANCE

A. Field acceptance of all CIP spot repairs shall be based on the Engineer's/City's evaluation of the installation and curing data along with review of the TV videos and manhole inspections.

B. Groundwater infiltration of CIPSR shall be zero.

C. All active service connections shall be open and clear.

D. There shall be no dry spots, voids, lifts, delamination or any other type defect in the CIPSR.

E. Defective CIPSRs shall be removed and replaced with new CIPSRs. If the replacement CIPSR is not satisfactory to the Engineer or City, then remove the entire section of pipe being rehabilitated and replace it with new PVC pipe at no additional cost to the City.

END OF SECTION

SECTION 336090

GROUTING LATERAL CONNECTIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to test, grout and retest all sewer services. Service connection cleaning, testing and grouting shall be as described in this Section. All equipment shall enter the service connections from within the main sewer.

B. The annular space between host pipe and liner as well as the first joint within 18 inches of the service connection point shall be sealed with chemical grout specified in this Section.

1.2 QUALITY ASSURANCE

A. Sealing shall be performed by a crew under the direct supervision of a superintendent who has a minimum of two years documented experience in the sealing procedures as specified herein and as considered standard in the sewer rehabilitation industry. Submit documentation of this experience with references for approval prior to the start of work.

PART 2 - PRODUCTS

2.1 DESCRIPTION OF WORK

A. Clean (including roots, etc.), grout and test each service connection as required. Furnish and use such equipment as is necessary to conduct all of the work specified in this Section (except protruding taps and broken pipe replacement) from inside each service connection. Access to each service connection shall be from within the main sewer from the nearest sewer manhole. No access allowed from private properties.

2.2 SEALING MATERIALS

A. General

1. Mixing, handling, and application of chemical sealing materials shall be in strict accordance with the manufacturer’s recommendations.

2. While being injected, the chemical sealant must be able to react/perform

in the presence of water.

3. The cured sealing material must prevent the passage of water through the pipe joint and the annular space to a distance of 18 inches into the lateral. The sealing material must withstand submergence in water without degradation, remain flexible after curing, and must be able to withstand freeze/thaw and wet/dry cycles without adversely affecting the seal.

4. The cured sealant must be chemically stable and resistant to acids, alkalis and organics normally found in sewage, and must not be biodegradable.

5. Residual sealing materials must be easily removable from the sewer line to prevent reduction or blockage of sewage flow.

6. Handling, formulation and storage of the sealing gel compound shall be in strict conformance with the manufacturer's recommendations. The uncured gel shall be delivered to the site in unopened containers, with the date of manufacture clearly indicated. No uncured gel manufactured more than six months prior to the date of application shall be utilized. Any uncured gel compound determined to be more than six months old shall be immediately removed from the site. Once a container of uncured gel has been opened it shall be used as soon as practically possible. If the container of gel is not used within 24 hours of being opened, ensure that the gel has not been contaminated. Any contaminated gel shall be removed from the site and disposed of.

B. Acrylic base gel chemical sealing material shall have the following characteristics:

1. A minimum of 10% acrylic base material by weight in the total sealant mix. A higher concentration (%) of acrylic base material may be used to increase strength of set during injection.

2. The ability to tolerate some dilution and react in moving water during injection.

3. A viscosity of approximately two (2) centipoise, which can be increased with additives.

4. A constant viscosity during the reaction period.

5. A controlled reaction time from five (5) seconds to six (6) hours.

6. The ability to increase mix viscosity, density, and gel strength by the use of additives.

7. Acrylic base gel chemical sealing material shall be Avanti AV-118 or equal.

C. Urethane base gel chemical sealing material shall have the following characteristics:

1. One part urethane prepolymer thoroughly mixes with between five (5) and ten (10) parts of water weight. The recommended mix ratio is one part urethane prepolymer to eight (8) parts of water (11% prepolymer).

2. A liquid prepolymer having a solids content of 77% to 83%, specific gravity of 1.04 (8.65 lbs./gal.) and a flash point of 20 degrees F.

3. A liquid prepolymer having a viscosity of 600 to 1200 centipoise at 70 degrees F that can be pumped through 500 feet of hose with a 1000 psi head at a flow rate of one (1) ounce per second.

4. Water used to react the prepolymer shall have a pH between 5 and 9.

5. A cure time of 80 seconds at 40 degrees F, 55 seconds at 60 degrees F, and 30 seconds at 80 degrees F, when one (1) part prepolymer is reacted with eight (8) parts of water only. Cure time shall be adjustable by the use of additives to the reaction water.

D. Icoset shall be added to all chemical grout installed under this contract. The application shall be in accordance with the manufacturer's recommendations.

E. Chemical grouts shall contain no acrylamide.

F. A representative of the grout manufacturer shall be on site for one day at the start of the project to assure that all requirements are met.

PART 3 – EXECUTION

3.1 GENERAL

A. Prior to sealing the connection, the Contractor shall thoroughly clean the interior of the lateral of debris and foreign matter. Cleaning is to be adequate for seating a lateral packer in the mainline and inserting and seating an inflatable sealing bladder in the lateral. The lateral shall be cleaned of obstructions and roots on the length to be sealed.

B. The Contractor shall be prepared to bypass pump the sewage flow as part of his operation where the sealing procedures require such diversion. Where the sealing equipment is designed to allow the passage

of flow, the flow shall be limited to that as recommended by the equipment manufacturer.

C. The service lateral testing and grouting shall be accomplished by first testing the service lateral joints followed by grouting of all service laterals. Each service lateral, which has been sealed, shall be retested to ensure the effectiveness of the work. Any service laterals, which fail, shall be resealed and retested until it passes the test before moving on to the next service lateral. Testing of joints which are visibly leaking infiltration will not be required.

D. The equipment shall consist of a closed-circuit television (CCTV) system and a sealing packer device along with the necessary chemical sealant containers, pumps, controls, regulators, valves, hoses, etc. The sealing packer shall be so constructed that it can straddle four (4”) to six (6”) inch diameter service connections in eight (8”) inch to ten (10”)-inch main sewer lines. When properly positioned and with the end elements inflated, an inflatable inversion sealing tube shall be extruded up the service lateral thereby isolating a portion of the service lateral containing one or more pipe joints for testing or sealing. The pumping unit, metering equipment, and the packer device shall be designed so that proportions and quantities of materials can be regulated in accordance with the type and size of the leak being sealed.

E. Testing shall be conducted by properly positioning the packer device in the main sewer line with the inversion tube extruded into the service lateral and performing an air test. This test shall be accomplished by applying a positive air pressure equal to one half pound per ft (1/2 lb/ft) of main sewer line depth into the created void area between the packer device and the extended end of the inversion tube, but not to exceed ten (10 psi) pounds per square inch. After the required test pressure has been displayed on the test meter above ground, the application of the air pressure shall be stopped and a 20 second test period shall commence. The test pressure meter shall be observed during the 20-second test period and should the pressure drop exceed 50 percent of the test pressure, the service lateral shall have failed the test and shall be sealed. Should it not be possible to develop the required air test pressure, then the service lateral shall also have failed the test and shall be sealed.

F. All lateral service lines shall be sealed internally by the use of the packer device. Either immediately following the air test or after the packer device has been properly positioned in the main line with the inversion tube extended into the service lateral, the lateral shall be sealed by the injection of the chemical sealant. The chemical sealant shall be injected through the packer device into the annular space between the inversion tube and the service lateral. The injection of chemical sealant shall continue until the chemical fluid back pressure is sufficient to ensure the

complete sealing of all the defects along the length of the inversion tube. However, when the effective quantity of grout pumped exceeds one (1) gallon per foot of sealing distance plus three (3) gallons it will be suspected that there is unseen voids outside of the pipe and the applicator shall try to build grout dams by repetitively pumping and curing the grout until the area is dammed off and the refusal pressure is met. The amount of chemical per pump stroke shall be measured from time to time and then the number of pump strokes can be used to measure the amount of chemical delivered to each lateral

G. Upon completion of the sealing operation, the service lateral shall be retested to ensure the effectiveness of the work. The retesting shall be accomplished using the same procedures previously described. Should the service lateral fail to pass the test, it shall be resealed and retested until the test requirements can be met.

H. After the service lateral has been successfully sealed and retested the following procedures shall be performed to ensure that the sealing operation did not block the service lateral.

1. The inversion tube shall be removed from the lateral.

2. The packer and elements shall remain inflated or be reinflated.

3. Air shall then be introduced into the service lateral line.

I. If during the injection of the air, no pressure build up is recorded on the pressure gauge, the service lateral shall be considered free flowing. However, should air pressure build up indicating a partial or total blockage of the lateral it shall then be cleaned to restore proper flow.

J. Residual sealing materials that extend into the pipe, reduce the pipe diameter, or restrict the flow shall be removed from the joint. The sealed joints shall be reasonably flush with the existing pipe surface. It is the responsibility of the Contractor to verify that the sealing of laterals did not restrain the flow and to remove any grout which would restrain flow. Lateral flow shall be verified after the sealing of each lateral. With the lateral being viewed with the pan and tilt camera, an attempt is made to obtain a water flush by the occupant. If the flow seems abnormal, it is assumed that the building sewer is blocked with grout and must be cleared

K. Extreme caution shall be utilized during the testing and sealing operations in order to avoid damaging the existing sewer. If any damage occurs, it shall be repaired to the satisfaction of the Engineer or City with no additional cost to the City.

L. After the work is completed, the Contractor shall perform a CCTV inspection of each lateral connection sealed and provide the City with a tape and written log and verification of each sealed connection test, retest and acceptance. The videos shall be provided on a portable hard drive device to be retained by the City.

END OF SECTION

EXHIBIT C TO CONTRACT NO. 2023-40.003

FEE SCHEDULE

	CURED-IN-PLACE LINER			
1	Cured in Place Liner - 6" Dia. (6 mm thick)		LF	$233.25
2	Cured in Place Liner - 8" Dia. (6 mm thick)		LF	$62.25
3	Cured in Place Liner - 10" Dia. (6 mm thick)		LF	$200.60
4	Cured in Place Liner - 12" Dia. (6 mm thick)		LF	$207.00
5	Reinstate Service Lateral Connection		EA	$207.30
6	Sealing Service Lateral Connection via Chemical Grouting		EA	$375.00
7	Sealing Service Lateral Connection via Hydrophillic Rubber Seal		EA	$4,937.50
	CURED-IN-PLACE SPOT REPAIR			
8	Cured-In-Place Spot Repair - 0-10' deep		LF	$1,000.00
9	Cured-In-Place Spot Repair - >10' deep		LF	$1,000.00
10	Reinstate Service Lateral Connection		EA	$207.30
11	Sealing Service Lateral Connection via Chemical Grouting		EA	$375.00
12	Sealing Service Lateral Connection via Hydrophillic Rubber Seal		EA	$4,937.50
	MANHOLE REHABILITATION			
13	MH Rehabilitation (48" Dia.) - 0-6' deep		EA	$4,396.00
14	MH Rehabilitation (48" Dia.) - 6-8' deep		EA	$5,652.00
15	MH Rehabilitation (48" Dia.) - 8-10' deep		EA	$6,908.00
16	MH Rehabilitation (48" Dia.) - 10-12' deep		EA	$8,164.00
17	MH Rehabilitation (48" Dia.) - >12' deep		EA	$9,414.00
	EPOXY MONOLITHIC MANHOLE LINING SYSTEM			
25	Epoxy MH Monolithic Lining (EMML) System (48" Dia.) - 0-6' deep		EA	$4,396.00
26	Epoxy MH Monolithic Lining (EMML) System (48" Dia.) - 6-8' deep		EA	$5,652.00
27	Epoxy MH Monolithic Lining (EMML) System (48" Dia.) - 8-10' deep		EA	$6,908.00
28	Epoxy MH Monolithic Lining (EMML) System (48" Dia.) - 10-12' deep		EA	$8,164.00
29	Epoxy MH Monolithic Lining (EMML) System (48" Dia.) - >12' deep		EA	$9,414.00

	EPOXY MONOLITHIC LIFT STATION LINING SYSTEM			
30	Epoxy Lift Station Monolithic Lining (EMML) System (6' Dia.) - 0-15' deep		EA	$15,072.00
31	Epoxy Lift Station Monolithic Lining (EMML) System (6' Dia.) - 15-20' deep		EA	$18,840.00
32	Epoxy Lift Station Monolithic Lining (EMML) System (6' Dia.) - >20' deep		EA	$23,550.00

33	Epoxy Lift Station Monolithic Lining (EMML) System (8' Dia.) - 0-15' deep		EA	$18,840.00
34	Epoxy Lift Station Monolithic Lining (EMML) System (8' Dia.) - 15-20' deep		EA	$25,120.00
35	Epoxy Lift Station Monolithic Lining (EMML) System (8' Dia.) - >20' deep		EA	$31,400.00
37	Epoxy Lift Station MH Monolithic Lining (EMML) System (10' Dia.) - 0-15' deep		EA	$23,550.00
38	Epoxy Lift Station Monolithic Lining (EMML) System (10' Dia.) - 15-20' deep		EA	$31,400.00
39	Epoxy Lift Station Monolithic Lining (EMML) System (10' Dia.) - >20 deep		EA	$39,250.00
40	Epoxy Monolithic Lining (EMML) System, not covered above		SQ FT	$50.00
	MANHOLE RING AND COVERS			
41	Install City supplied manhole ring and cover, paved area, includes restoration		EA	$1,750.00
42	Install City supplied manhole ring and cover, unpaved area		EA	$1,250.00

Note 1 Rehabilitation unit costs include mobilization, all work to construct, test and inspect (including but not limited maintenance of traffic, taking samples and having them tested at a lab, cleaning/preparing pipe and manholes, CCTV post inspections, by-pass pumping).

Note 2 Quantities shown are for illustrative purposes and to establish a unit price for each specific item and do not necessarily represent the quantities of any specific work assignment that might result from this solicitation.

EXHIBIT D TO CONTRACT NO. 2023-40.003
WORK ASSIGNMENT SAMPLE

City of North Port
PURCHASING
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@cityofnorthport.com

WORK ASSIGNMENT

CONSULTANT	
CONTINUING CONTRACT # & TITLE	

THIS WORK ASSIGNMENT

WORK ASSIGNMENT #	
SHORT TITLE *Attach justification and supporting documentation*	
DATE SUBMITTED	
AMOUNT (LUMP SUM)	
SCHEDULED COMPLETION	

CONTRACT AND BUDGET OVERVIEW

	DEPARTMENT	**CITYWIDE** (completed by Purchasing)
TOTAL OF PREVIOUS ASSIGNMENTS	$	$
THIS WORK ASSIGNMENT	$	$
TOTAL WORK ASSIGNMENTS	$	$
ACCOUNT NO/PROJECT NO		

All work assignments require City Manager approval. In presenting this work assignment, it is understood that:

1. Unless specified herein, work does not involve watercraft, boat piers and/or other activities requiring additional workers compensation endorsements.
2. Contact or involvement with hazardous materials is not anticipated, should hazardous materials be encountered, the City shall be informed.

SUBMITTED BY:

_____

CONSULTANT **DATE**

APPROVED BY:

DEPARTMENT DIRECTOR	**DATE**	**BUDGET ADMINISTRATOR**	
	DATE		
PURCHASING	**DATE**	**FINANCE DIRECTOR**	
	DATE		
ASSISTANT CITY MANAGER	**DATE**	**CITY MANAGER**	
	DATE		