City of St Pete Beach
Request for Bid

Wastewater System Pipe Lining

Bids due by November 3rd, 2016,
10:15 A.M. at City Hall, St. Pete Beach, FL

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I. CONTRACTOR'S BID SUBMITTAL

The company that is submitting a bid declares that he/she has extensive experience in underground utility construction and is also licensed to do so.

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Bid as principal or principals are named herein, and that no other person than herein mentioned has any interest in the Bid or in the Contract to be entered into; that this Bid or Contract is made without connection with any other person, company, or parties making a Bid; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he/she has examined the site of the work and informed himself/herself fully in regard to all conditions pertaining to the place where the work is to be done; that he/she has examined the RFB, Plans, and Specifications for the work and Contract Documents relative thereto, and has read all special provisions furnished prior to the opening of bids; and that he/she has satisfied himself/herself relative to the materials to supplied and work to be performed.

The bidder certifies that the information and responses provided within this bid are true, accurate, and complete. The City or its designated representatives may contact any entity or references listed in the response and investigate the company as defined in References & Qualifications to verify the bidder's abilities and quality of work. The contractor hereby grants permission for each entity or reference listed in the bidder's response may make any information concerning the Contractor available to the City.

The Bidder proposes and agrees, if the Bid is accepted, to contract with the City of St. Pete Beach, Florida, in the form of Contract/Agreement specified for: "*WASTEWATER SYSTEM PIPE LINING*"

In St. Pete Beach, Florida, in full and complete accordance with the shown, noted, described, and reasonably intended requirements of the RFP, Plans, Specifications, Contract Documents, and Addenda to the full and entire satisfaction of the City of St. Pete Beach, Florida, the Bidder proposes to furnish all materials, equipment, labor, and perform the work submitted in their bid schedule for the City of St. Pete Beach's project: "*WASTEWATER SYSTEM PIPE LINING*".

COMPANY: DATE:
ADDRESS: PHONE:

BY: _____
(SIGNATURE)

NAME: _____
(PRINT NAME & TITLE)

Sworn to and subscribed before me on this _____day of_____, 2016

_____
(Notary Public)

_____
(My Commission Expires)

SUBMIT BID ITEMIZATION WITH BID TO:
CITY OF ST. PETE BEACH

BID SCHEDULE

	Description	EST QTY	UNIT	UNIT RATE		TOTAL
1	MOT	150	DAY			
2	CIPP Main Liner 6" Diameter - 6.0 mm thickness	1100	LF			
3	CIPP Main Liner 8" Diameter - 6.0 mm thickness	72200	LF			
4	CIPP Main Liner 10" Diameter - 6.0 mm thickness	3600	LF			
5	CIPP Main Liner 12" Diameter - 6.0 mm thickness	2400	LF			
6	CIPP Main Liner 15" Diameter - 7.5 mm thickness	1500	LF			
7	CIPP Main Liner 18" Diameter - 9.0 mm thickness	1800	LF			
8	CIPP Main Liner 21" Diameter - 9.0 mm thickness	2900	LF			
9	CIPP Main Liner 24" Diameter - 10.5 mm thickness	3800	LF			
10	CIPP Main Liner 6" Diameter - Thickness Variance ± 1.5mm	300	LF			
11	CIPP Main Liner 8" Diameter - Thickness Variance ± 1.5mm	5000	LF			
12	CIPP Main Liner 10" Diameter - Thickness Variance ± 1.5mm	1000	LF			
13	CIPP Main Liner 12" Diameter - Thickness Variance ± 1.5mm	1000	LF			
14	CIPP Main Liner 15" Diameter - Thickness Variance ± 1.5mm	300	LF			
15	CIPP Main Liner 18" Diameter - Thickness Variance ± 1.5mm	300	LF			
16	CIPP Main Liner 21" Diameter - Thickness Variance ± 1.5mm	300	LF			
17	CIPP Main Liner 24" Diameter - Thickness Variance ± 1.5mm	300	LF			
18	Bypass Pumping Setup - 12" diameter and less	50	EA			
19	Bypass Pumping Setup - 15" to 21" diameter	20	EA			
20	Bypass Pumping Setup - 24" diameter	5	EA			
21	Bypass Pumping Operation - 12" diameter and less	100	DAY			
22	Bypass Pumping Operation - 15" to 21" diameter	40	DAY			
23	Bypass Pumping Operation - 24" diameter	10	DAY			
24	Normal Cleaning - 6" and 8" diameter	73300	LF			
25	Normal Cleaning - 10" and 12" diameter	6000	LF			
26	Normal Cleaning - 15" and 18" diameter	3300	LF			
27	Normal Cleaning - 21" and 24" diameter	6700	LF			
28	Specialty Cleaning - 6" and 8" diameter	1000	LF			
29	Specialty Cleaning - 10" and 12" diameter	100	LF			
30	Specialty Cleaning - 15" and 18" diameter	50	LF			
31	Specialty Cleaning - 21" and 24" diameter	100	LF			
32	Chemical Sealing of Host Pipe - 10" diameter and less	30	EA			
33	Chemical Sealing of Host Pipe - 12" and 15" diameter	10	EA			
34	Chemical Sealing of Host Pipe - 18" to 24" diameter	5	EA			
35	Chemical Sealing - Grout	100	GAL			
36	Removal & Sealing of Protruding Service	25	EA			
37	Additional Access Cost Main Liner	25	EA			
38	Service Reconnection	200	EA			
39	CIPP Liner Testing	5	EA			

GRAND TOTAL

II. GENERAL CONTRACT DOCUMENTS

REQUEST FOR BID
Wastewater System Pipe Lining

BID DOCUMENTS

I. Contractor's Bid Submittal & Bid Schedule
II General Contract Documents
III. References & Qualifications
IV. Certificate of Insurance
V. Contractor's Education & Training
VI. System Map & Technical Specifications

The City of St. Pete Beach is soliciting bids from qualified General or Underground Contractors for the Wastewater System Pipe Lining.

BID SUBMITTALS
Bid documents must include a signed bid, itemized bid description and fee schedule, project schedule, references, contractor's license and insurance certificates. Any major sub-contractor that will be hired by the contractor for this project must also submit references, contractor's license and insurance certificates. The contractor shall submit one original and two (2) copies of their bid documents with their sealed bid package.

BIDDER INFORMATION
All Contractors must contact the Project Manager, via e-mail, with their intention to bid, along with their company name and contact information. The City is not responsible for any Addendums or other supplementary information that is not received due to non-submittal of the aforementioned information. As always, it shall be the contractors' responsibility to refer back to the website (www.stpetebeach.org) for additional project information as it becomes available.

PRE-BID MEETING
A pre-bid meeting will be held on October 18th, 2016, at 10:00 AM. Meeting will be held at the Public Services Building located at 7581 Boca Ciega Dr., St. Pete Beach, FL, 33706. There will be no site tour. The pre-bid meeting will also include discussion regarding RFB's for Point Repairs and Manhole Rehabilitation.

BID PACKAGES
Sealed bids will be received until 10:15 AM on November 3rd, 2016, in the Office of the City Clerk, 155 Corey Avenue, St. Pete Beach Florida at which time they will be publicly opened and read. All bidders are invited to attend this bid opening, which will be held immediately following the closing time specified. Bids received after the deadline will not be accepted.

Bids should be addressed to: City of St. Pete Beach - City Clerk's Office
155 Corey Ave.
St. Pete Beach, FL 33706

Plainly marked as: ***"Wastewater System Pipe Lining"***

CONTACT INFORMATION

Ian Wade, P.E. - Project Manager
155 Corey Avenue
St. Pete Beach, Florida 33706
Office - (727) 363-9254 Fax - (727) 367-2736
E-mail (iwade@stpetebeach.org)

PROJECT BACKGROUND AND SCOPE OF WORK

Project Background

- The City of St. Pete Beach wastewater system consists of approximately 38 miles of gravity sewer pipe (primarily 8" VCP, also 10"-24" VCP and minimal CIP), 17 lift stations and approximately 826 manholes (mostly brick).
- As part of a Consent Order with the Florida Department of Environmental Protection, the City has retained Kimley-Horn to prepare a city-wide Inflow and Infiltration (I & I) Study.
- The City solicited bids for System Wide Inspection and Cleaning, which was awarded and recently completed by Underground Information Technologies, Inc. (UIT). These services included:
    - Pre-clean inspection and of all gravity sewer pipe according to the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP).
    - Various cleaning activities identified and approved during the pre-clean inspection
    - Final inspection of all pipe shown on the attached system map
    - Manhole Assessment Certification Program (MACP) Level 1 inspections for 100% of the system manholes

Scope of Work

- The City is soliciting proposals to perform the various repairs identified during the inspection by UIT, including point repairs, manhole rehabilitation, and pipe lining.
- For the sake of cost comparison and determination of lowest qualified bidder, the bid form presented above includes ***estimated*** quantities for each item requested. Since the cleaning and televising of the system was not complete as of the date of this solicitation, the City does not yet have a complete, final scope and quantities of repairs anticipated for this project.
- Upon completion of cleaning and televising and subsequent publication of Kimley-Horn's final report on Inflow & Infiltration, the City will establish the total quantities for each of the line items and will award Purchase Order(s) based on the unit rates presented in this bid. All work shall be made on an assignment-by-assignment basis, in the form of a Purchase Order authorized by the City. All work orders shall be issued during the initial two (2) year contract term or any extension thereof. Final work shall be completed no later than 120 days after the end of the term. The Contractor shall perform no work under this Contract without the City's written authorization to proceed for each Work Order. The Contractor hereby agrees to waive any claim for compensation for any work performed without authorization.
- This contract does not guarantee that work assignments requested will be typical start-to-finish projects. The Contractor may be asked to complete site restoration

following a repair or installation performed by the City, or pick up in the middle of an assignment. The Contractor shall be prepared to perform the work of any assignment from any point during a previous assignment.

- Prior to assignment of any Work Order, and based on mutual discussions between the City and the Contractor, the Contractor shall prepare a detailed work plan for each assignment, which shall include a work schedule and a not-to exceed budget amount.
- *To reiterate, the quantities included in the bid form presented above* ***are not*** *intended to accurately represent the actual, final scope of services. Therefore, the amount of the contract awarded will be determined upon completion of the I & I report using the unit rates submitted with this bid.*
- This RFB is for ***Pipe Lining***. Point Repairs and Manhole Rehabilitation are currently being solicited under separate RFB's. See City website for postings.

DETAILED SPECIFICATIONS

- **Refer to the Technical Specifications included in section VII of this RFB. Note that these specifications are taken from a past solicitation by the City of St. Petersburg. Therefore please disregard references which were specific to that solicitation, including the City, project number, and any items not listed in the bid form included with this solicitation. Furthermore, please disregard references to administrative procedures in the specifications, as these procedures are superseded by the City of St. Pete Beach's procedures outlined in this RFB.**
- Site and surrounding properties must be free of construction debris upon completion.
- Barricades, cones, and traffic control activities are the responsibility of the Contractor.
- Contractor is responsible for all utility locates through Sunshine One-Call.
- Contractor is responsible for field measurement and review of existing conditions.
- All work to be completed within the project limits or City Right-Of-Way.
- All work is to be done Monday through Friday unless approved by the City.
- Equipment left on site must be approved by Project Manager.
- Contractor will coordinate scheduling of work with Project Manager.
- Contractor is responsible for all cut and patch within the project limits as a direct result of work performed under this contract. All disturbed areas are to be patched back equal to or better than the existing.
- Contractor is responsible for all Stormwater BMPs. As per DEP's requirements for MS4's, please provide proof of Site Operator Training based on DEP's Stormwater, Erosion, and Sediment Inspector Training Class.

ADDITIONAL WORK DETAILS

Firms or persons wishing to bid on this project must be licensed, bondable and insured in accordance to the requirements of this bid package. Contractors and sub-contractors must be certified, registered and/or licensed by the proper construction licensing boards for the work being performed. The contractor will furnish all necessary labor, materials, tools, equipment and supplies to complete the scope of work. Bid must also include all costs for licenses, permits and any material disposal fees.

Bidders shall bring questions, discrepancies, omissions, conflicts or doubt as to meaning of any part of the attached project documents to attention of the City of St Pete Beach

Public Services Department at least five (5) days before due date for Bids. Clarification of intent of Contract Documents if necessary shall be made available to bidders in form of Addendum. Failure to request clarification of interpretation of Contract Documents shall not relieve bidders of their responsibilities to perform the work.

The City of St. Pete Beach reserves the right to reject any or all bids or parts of bids or accept any bid or part thereof deemed to be in the best interests to the City. The City of St. Pete Beach also reserves the right to award any bid or part thereof to multiple contractors.

STATEMENT OF WORK

The Contractor shall furnish and pay the cost, including sales tax and all other applicable taxes, licenses, permits and fees, of all the necessary materials not furnished by the City and shall furnish and pay for all the superintendence, labor, tools, equipment and transportation and perform all the work required for the execution of all services listed in the Bidder's Submittal and Bid Schedule attached hereto and in strict accordance with the Plans, Specifications, and requirements of the City of St. Pete Beach which are attached hereto and made a part hereof, and any amendments thereto and such supplemental Plans and Specifications which may hereafter be approved.

SCHEDULE

The Contractor shall, within ten (10) days after receipt of the Notice of Award and before commencement of any operations hereunder, execute the Contract. Additionally, the Contractor shall, within twenty (20) days after receipt of the Notice of Award, provide all required documentation to the City.

Each individual location contained in a Work Order assignment is to be considered an "individual project" such that all work, including cleanup, must be fully completed in a reasonable time frame, as determined by the Engineer. Unless otherwise approved by the Engineer, work on each work order must be commenced within 30 days of notice to proceed for the Work Order assignment. The project limits shown on the location maps and/or plans contained in each Work Order assignment are approximate; the Contractor shall verify exact limits with the Engineer prior to beginning construction. Construction shall be limited to a maximum of two (2) individual project locations at a time, unless otherwise approved by the Engineer.

Work shall not be performed on Saturdays, Sundays and all legal or City designated holidays, except for special operations that may be necessary in order to maintain, check, or protect work already performed. Work may be permitted on weekends or holidays with approval from the City Manager or designee. No work shall be done at night without prior approval of the City Manager or designee.

COMPLETION DATE

Individual work orders will be issued over the life of this contract, which shall have an initial term of two (2) years.

EXAMINATION OF SITE

Bidder shall carefully examine project site and be familiar with the work required for the project, investigate all site conditions that may affect execution of work as detailed in the

construction documents. Contact the City's Public Services Department or their designee for changes or alterations before proceeding.

ASSURANCES

The responding contractor shall provide a statement of assurance that the contractor is not presently in violation of any statutes or regulatory rules that might have an impact on the firms operations since submittal of the Statement of Qualifications to the City. All applicable laws and regulations of the State of Florida, and ordinances and regulations of the City of St. Pete Beach will apply.

TRAFFIC CONTROL AND STAGING AREA

Contractor shall include all costs associated with traffic control and maintenance during the project. Contractor shall be provided with a staging area but will be required to control the area with fencing or barricades.

ASSIGNMENT AND TRANSFER OF CONTRACT

The Contractor shall not assign or transfer this Contract or any part thereof or any interest therein without consent in writing of the City and the contractor's Surety, and any such assignment or transfer without such written consent shall be null and void.

SUBCONTRACTS

The Contractor shall not subcontract this Contract or any part thereof or any interest therein without consent in writing of the City and the contractor's Surety. Any Subcontractor approved by the City will be subject to the same standards and qualifications as stated in this Contract.

PERFORMANCE AND PAYMENT BOND

Contractor shall furnish the City with a performance and payment bond in a sum equal to the amount of the Contract price; conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions, and agreements of this Contract, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the Contract. The Contractor shall execute such bond and a corporate bonding company licensed to transact such business in the State of Florida and acceptable to the City.

The expense of this bond shall be borne by the Contractor. If at any time a Surety on such bond becomes irresponsible or loses its right to do business in the State of Florida, the City may require another Surety that the Contractor shall furnish within ten (10) calendar days after receipt of written notice to do so. Evidence of authority of an attorney in fact, acting for the corporate Surety must be provided in the form of a certificate as to his power of attorney and to the effect that it is not terminated and remains in effect on the date of the bond. The form of the bond shall be approved by the City.

LIQUIDATED DAMAGES

If the work embraced by this Contract is not completed on or before the date set for completion or any extension thereof, the actual damages for the delay will be impossible to determine and in lieu thereof, the Contractor shall pay to the City fixed, agreed and liquidated damages in the amount of Five-Hundred Dollars ($500) per day for each calendar day of delay until the work is satisfactorily completed.

PAYMENT

Payment shall be made to the Contractor for work performed under this Contract for the quantities of work as determined in accordance with Payments for Work Completed and Payments Withheld of this Contract. Payment for extra work will be made in accordance with the Changes in Work, Contract Amount, and Contract Time sections below.

CHANGES IN THE WORK

Without invalidating the Contract, the City may, at any time or from time to time, order additions, deletions or revisions in the work authorized by written Change Orders or directive. Upon receipt of a Change Order, the Contractor will proceed with the work involved. All such work shall be executed under the applicable conditions of the Contract documents. If any Change Order causes an increase or decrease in the Contract Amount or any extension or shortening of the Contract Time, an equitable adjustment will be made.

Additional Work performed by the Contractor without authorization of a Change Order will not entitle him/her to an increase in the Contract Amount or any extension of the Contract Time, except in the case of an emergency (subject to approval by City Manager or designee).

It is the Contractor's responsibility to notify his/her Surety of any changes affecting the general scope of the Work or change of the Contract Amount and the amount of the applicable bonds shall be adjusted accordingly, and an amended bond document furnished to the City. In the event the City directs the Contractor to make a change in the Work, and if the City and the Contractor do not arrive at a mutually acceptable increase or decrease in the Contract Amount, the contractor shall not use any such lack of mutual acceptance as a basis or cause to stop or otherwise delay the progress or the execution and completion of any of the work ordered, directed or required pursuant to the Contract Documents.

If the Contractor believes an event or situation has occurred which justifies a change in the Contract Amount or Contract Time, he shall deliver a written notice to the Project Manager. Each such written notice shall be delivered promptly, and in any event no later than fifteen (15) days after the Contractor first discovered the occurrence. The Contractor shall be deemed to have waived the right to collect any and all costs incurred more than fifteen (15) days prior to the date of delivery of the written notice, and shall be deemed to have waived the right to seek an extension of the Contract Time with respect to any delay in the Progress Schedule which accrued more than fifteen (15) days prior to the date of delivery of the written notice.

Any such notice shall include sufficient detail to explain the basis of entitlement to a claim for an adjustment to the Contract Amount of Contract Time. When requested by the City Manager, the Contractor shall furnish any additional information and details as may be required to determine the facts or allegations involved, which shall be provided within fifteen (15) days of the request unless a longer time period is allowed by the City Manager.

The Contractor shall prepare bids detailing proposed adjustments to Contract Amount and/or Contract Time and submit them to the City Manager within fifteen (15) days of the City's issuance of a proposed Change Order or the Contractor's submitting a written notice of a change or claim for an adjustment to the Contract Amount or Contract Time.

Contractor's bids shall be irrevocable for a period of at least sixty (60) days after receipt by the City. Any delay in the submittal of a complete, adequate and acceptable bid will not justify an increase in Contract Amount or Contract Time. Contractor agrees that it shall give the City access to any and all of Contractor's and Subcontractors' books, records and other materials relating to proposed Change Orders and other claims for adjustment to Contract Amount or Contract Time

CHANGE OF CONTRACT AMOUNT

The Contract Amount constitutes the total compensation payable to the Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the Contractor shall be at his expense without change in the Contract Amount. The Contract Amount may only be changed by written Change Order issued by the City. Any claim for an increase in the Contract Amount shall be in writing and delivered to the City Manager within fifteen (15) days of the occurrence of the event giving rise to the claim.

All claims for adjustment in the Contract Amount shall be determined by the City Manager. However, no claim for an adjustment to the Contract Amount will be considered for unforeseeable causes that were beyond the fault or negligence of the Contractor or his Subcontractors or supplier such as acts of God, floods, riots, etc. This restriction does not restrict submission of claims for additional Contract Time due to events of this nature. Any change in the Contract Amount shall be incorporated in a Change Order.

Contractor bids or claims shall cover all aspects of the Work involved and shall be fully documented and itemized as to all costs, quantities and charges for overhead and profit. Amounts for Subcontractors or Suppliers at any tier shall be similarly supported. When determining Subcontractors' costs, the methods to be used shall be those used for the Contractor's costs, except that the term "Subcontractor" shall replace the term "Contractor," context permitting.

Changes in Contract Amount for extensions in Contract Time shall exclude costs that are unaffected or do not relate to the extension in Contract Time, such as: (a) operating costs of construction equipment assigned to the Work on a continuing basis, (b) operating costs and owned/rental costs of construction equipment (crane used for specific lifts, concrete pump used for specific pours, etc.), and (c) fully paid site facilities, tools, etc.

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Amount where the Work involved is covered by unit prices contained in the Contract Documents shall be determined by application of unit prices to the quantities of the items involved. If the quantities originally contemplated are so changed in a proposed Change Order, that application of the Unit Prices to the quantities proposed will cause substantial inequity to the City or the Contractor, the applicable unit price(s) shall be equitably adjusted by mutual agreement.

If the value of work covered by a Change Order cannot be established or mutually agreed to utilizing previously established unit rates, the value shall be determined by the City on the basis of an estimate of the out-of-pocket cost and percentages that are acceptable to the City for overhead and profit. The out-of-pocket cost shall only include those direct costs which are needed to perform the work such as labor (including payroll taxes, fringe

benefits, labor burden and workers' insurance), materials, equipment, and other incidental out-of-pocket construction costs directly involved in the work, including but not limited to small tools, expendables and material costs but shall not include project management or project supervisory costs unless the Change Order includes an increase in the Contract time.

In such case, the Contractor will submit in the form prescribed by the City an itemized cost breakdown together with supporting data.

The amount of credit to be allowed by the Contractor to the City for any such change which results in a net decrease in cost, will be the amount of the actual net decrease as determined by the City. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

To be eligible for consideration, the Contractor's written claim for a change in the Contract price, including claim(s) from sub-contractors, shall include an itemized cost breakdown with supporting data as described below:

A. For labor: Provide written documentation from the Contractor and Subcontractors or others as appropriate in the form of a detailed breakdown by each labor classification involved indicating the number of hours of Work involved and the hourly payroll rate applicable to each to substantiate the basis and amount of the direct labor cost. The direct labor cost may be increased to provide an allowance for indirect payroll costs (labor burden), such as payroll taxes, fringe benefits, and workers insurance after all premium discounts, rebates and other appropriate reductions have been taken.

   Allowable labor costs shall be limited to craft labor (including foremen) in the direct employ of the Contractor (or Subcontractor) assigned to the site and engaged in furnishing and incorporating materials or equipment in the Work involved in the Change Order or Claim.

   When determining actual payroll costs, daily time sheets certified by the Contractor and verified by the City Manager along with certified payroll records shall be the valid records.

B. For material, supplies, equipment, furnishings, etc., to be installed or included in the Work: Provide written documentation from the Contractor and Subcontractors, suppliers, etc., to substantiate the basis and amount of the various cost items involved. Material costs shall reflect the Contractor's reasonably anticipated net actual cost after consideration of trade discounts and volume rebates.

C. For construction equipment: Provide written documentation in the form of a detailed breakdown by each construction equipment category indicating, the applicable unit rates (i.e., $'s per hour, $'s per day etc.,) and the number of hours, days, etc. to substantiate the basis and amount of the construction equipment out-of-pocket costs.

CHANGE OF CONTRACT TIME

The Contract Time may only be changed by written Change Order. Any claim for an extension in the Contract Time shall be in writing and include an analysis of the Progress Schedule as further described in the Specifications, and shall be delivered to the City Manager within fifteen (15) days of the occurrence of the event giving rise to the claim. All claims for adjustment in the Contract Time shall be determined by the City Manager. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order. The Contract Time may be extended for an amount equal to time lost due to unforeseeable causes beyond the control of the Contractor (and his Subcontractors and Suppliers) if he makes a claim therefore. Such delays shall include, but not be restricted to, acts or neglect by any separate Contractor employed by the City; fires; floods; labor disputes; epidemics or acts of God.

All time limits stated in the Contract Documents are of the essence to the Contract. The stated time limits are agreed to be adequate to complete the work, including the procurement, manufacture and delivery of all material and equipment required, and account for any and all potential impact, delays, disruptions and costs that may be expected.

PAYMENTS FOR WORK COMPLETED

Partial payments will be made as the work progresses at the end of each calendar month, or as soon thereafter as practicable on estimates made by the City Manager or designee and as approved by the City, provided that the Contractor is performing the overall job in a diligent manner. In making partial payments, there shall be retained ten percent (10%) on the amount of each estimate until final completion and acceptance of all work covered by the Contract. Upon completion and acceptance of the work, the City Manager or designee shall issue a certificate that the work has been completed and accepted by him under the conditions of this Contract, and shall make and approve the final estimate of the work. The entire balance found to be due the Contractor, including that retained by the City, should be paid to the Contractor. Such payment shall be conditioned, however, upon the submission by the Contractor of evidence satisfactory to the City that all claims for labor, material, and any other outstanding indebtedness in connection with this Contract have been paid. Such payment shall also be conditioned upon approval and acceptance of the construction and improvements by the City.

If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor and the City Manager or designee so certifies, the City shall upon the Certificate of the City Manager or designee, and without terminating the Contract make payment for the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claim If such delay occurs and payment is made under this clause, the Contractor shall nevertheless be prepared to complete the work in a timely manner upon the remedy or removal of such delay, and shall be bound under this Contract for the completion of such work unless this Contract is otherwise terminated.

PAYMENTS WITHHELD

The City Manager or designee may withhold, or, on account of subsequently discovered evidence, nullify the whole or part of any estimate to such extent as may be necessary to protect the City from loss on account of:

(a). Defective work not remedied
(b). Claims filed or reasonable evidence indicating probable filing of claims
(c). Failure of the Contractor to make payments properly to Subcontractors or for material or labor.
(d). A reasonable doubt that the Contract can be completed for the balance then unpaid.
(e). Damage to another Contractor.
(f). Failure of the Contractor to keep his/her work progressing in accordance with his/her time schedule.

FINAL PAYMENTS

Upon the completion and acceptance of the work, the City Manager or designee shall issue a certificate that designates that the whole work provided for in this Contract has been completed and accepted by him under the conditions and the terms thereof and shall make the final estimate of the work. After issuance of the certificate, the entire balance found to be due the Contractor, including said retained percentage by the City in accordance with existing state laws as may be retained lawfully by said City, shall pay excepting such sums to the Contractor. Before the approval of the final payment, the Contractor shall submit evidence satisfactory to the City that states that all payrolls, materials, bills and outstanding indebtedness in connection with this Contract have been paid.

LIENS

If at any time there shall be evidence of any lien or claim for which the City might become liable and which is chargeable to the Contractor, the City shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient for complete indemnification against such lien or claim. In the event the City has already paid to the Contractor all sums due under this contract or the balance remaining unpaid is insufficient to protect the City, the Contractor and his Surety shall be liable to the City for any loss so sustained.

RESPONSIBILITY OF THE CITY MANAGER OR DESIGNEE

The term "City Manager or designee" wherever used in the Contract shall be the City of St. Pete Beach or its duly authorized representative. Notices of any change in the City Manager or designee shall be given in writing by the City to the Contractor. The City Manager or designee shall have full authority to interpret the Plans and Specifications and shall determine the amount, quality, and acceptance of the work and supplies to be paid for under the Contract and every question relative to the fulfillment of the terms and provisions therein. It shall be the duty of the City Manager or designee to enforce the Plans and Specifications in a fair and unbiased manner.

If a variation from any requirements is allowed the City Manager or designee shall grant the same in writing with the reasons for his action outlined, and such action will not invalidate or change the Contract in any other manner.

INTENT OF PLANS AND SPECIFICATIONS

The Contractor shall keep on the job a copy of the Plans and Specifications and shall at any time give the City Manager or designee access thereto. Anything mentioned in the Specifications and not shown on the Plans or shown on the Plans and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both. The Contractor

shall not take advantage of any errors, discrepancies or omissions that may exist in the Plans and Specifications, but shall immediately call them to the attention of the City Manager or designee whose interpretation or correction thereof shall be conclusive. Should a conflict occur between the General Specifications and any Supplemental Specifications and/or Plans, the latter shall govern.

LICENSES AND PERMITS

The Contractor shall obtain and pay for all necessary City licenses and work permits and shall faithfully comply with all laws, ordinances and regulations, (Federal, State or local) which may be applicable to the operations to be conducted hereunder. Chapter II, Section II-4, "Registration of Licenses Obtained From Other Municipalities:" "Persons, partnerships, corporations, or other business entities doing business with the City who are not required to obtain a City occupational license, but who must have either a State or County or Municipal occupational license from another municipality, shall register such occupational license with St. Pete Beach Community Development Department. The City may charge a fee for such registration." The Contractor shall be responsible for obtaining all City, County, State and Federal permits required by those government agencies and must provide documentation of receipt of those permits prior to project commencement. This shall include a notice to commence work letter and the applicable fee, if required. Any sub-contractor hired by the contractor awarded the project, MUST also register their license with the City.

SUPERINTENDENCE

The Contractor shall constantly superintend all the work embraced in this Contract in person or by a responsible agent who shall have in writing, full authority to act for him/her and to carry out all the instructions given by the City Manager or designee.

LABOR PROVISIONS

The Contractor and his Subcontractors shall discharge, whenever ordered to do so by the City Manager or designee, any employee who is disorderly or whose conduct in the opinion of the City Manager or designee is detrimental to the prosecution of the work. No person whose age or physical condition is such as to make this employment dangerous to his/her health and safety or to the health and safety of others shall be employed on the work, and in no event shall any persons under the age of sixteen (16) years be employed.

LIABILITY INSURANCE

The Contractor shall procure and maintain at his/her own expense, during the life of the Contract, liability insurance as hereinafter specified. All such insurance shall be subject to the approval of the City for adequacy of protection, and shall include a provision preventing cancellation without twenty (20) days prior notice to the City in writing. The City shall be included as an additional insured on all liability insurance. The liability insurance required is as follows: Contractor's General Public Liability and Property Damage Insurance issued to the Contractor and protecting the Contractor from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under this Contract, whether such operations be by the Contractor or by any Subcontractor hired by the Contractor or anyone directly or indirectly employed by the Contractor or hired by the Contractor.

The successful Contractor shall supply and maintain insurance which defends, indemnifies and holds harmless the City of St. Pete Beach, its officers, employees and

agents from and against any and all liability, damage claims, demands, costs, judgments, fees, attorney's fees or loss arising directly out of acts or omissions hereunder by the contractor or third party under the direction or control of the contractor. Such general and excess liability coverage shall be primary to any other coverage carried by the City of St Pete Beach. Contractor must furnish the City with Certificate of Insurance prior to commencement of work. An approved Certificate of Insurance furnished by the contractor's carrier to guarantee the contractor being insured with the City of St Pete Beach must be named as a certificate holder for this contract. The following coverage:

Commercial Liability Insurance $1,000,000.00.
Comprehensive General Liability Insurance of $1,000,000.00 each occurrence.
Personal Injury for $1,000,000.00 each occurrence.
Automobile Liability $1,000,000.00.
General Workers Compensation Insurance as required by Florida law.
Builder's Risk Insurance.

PROTECTION OF WORK AND PROPERTY

The Contractor shall continuously maintain adequate protection of all his/her work and materials from damage or theft and shall protect the City's property and all adjacent property from injury or loss arising in connection with activities under his/her Contract. The Contractor shall make good any such damage, injury, or loss, except such as may be caused by agents or employees of the City.

The Contractor shall take, use, provide, and maintain all necessary precautions, safeguards, and protection to prevent accidents, or injury to persons or property on, about, or adjacent to the site of the work. Should the situation arise that physical security is needed the Contractor will provide security on off days and holidays. The Contractor shall be responsible for all charges incurred with such action.

The Contractor shall post danger signs warning against any hazards created by the work being done under his/her Contract. He/She shall designate a responsible member of his/her organization on the work, whose duty shall be the prevention of accidents, and the name of the person so designated shall be reported to the City Manager or designee and City in writing. In an emergency affecting the safety of life, or of the work or adjoining property, the Contractor, without special instruction or authorization from the City Manager or designee or City, is hereby permitted to act, at his/her own discretion, to prevent such threatened loss or injury, and he/she must take such action if so instructed or authorized by the City Manager or designee. The Contractor shall also protect adjacent property as required by law.

PARKING

Arrange with the City's Project Manager for temporary parking areas to accommodate construction personnel and equipment.

TRANSPORTATION, HANDLING and STORAGE

Transport, handle, protect and store products in accordance with manufacturer's instructions and all environmental regulatory agencies.

VEHICLES

Business vehicles shall be identified on both sides with the name of the company or firm operating the vehicle.

ENVIRONMENTAL PROTECTION

It shall be the Contractor's responsibility to implement construction methods, best management practices, and erosion control methods that avoid water pollution as required by the State of Florida Department of Environmental Protection, City of St. Pete Beach and Pinellas County. Any Contractors in violation of the City of St. Pete Beach Regulations, Pinellas County Regulations, Florida Department of Environmental Protection Regulations or any other regulatory agency regulations shall be the sole responsibility of the Contractor. The Contractor shall hold harmless the City of St. Pete Beach and the City Manager or designee from any fines and litigation resulting from the Contractor's actions. The Contractor shall pay all attorneys' fees, fines, penalties and any other such expenses resulting from the Contractor's actions. The Contractor shall provide all necessary measures to prevent any materials whatsoever from entering the waterway except for those materials, which are shown, on the plans as completed structures. The Contractor shall provide MSDS sheets to the City Manager or Designee on all applicable materials before applying those materials. The contractor shall secure the necessary education, certifications, licenses and permits required by state and local agencies to operate and manage a construction site. The contractor shall abide by all rules and regulations set forth and required by the City of St. Pete Beach's MS4 NPDES Permit.

TIMELY DEMAND FOR STAKES AND INSTRUCTIONS

The Contractor shall provide reasonable and necessary materials, opportunities and assistance for setting stakes and making measurements, including the furnishing of a rodman, or a chainman at intermittent times during the construction period. He /she shall not proceed until he/she has received such stakes and instructions as may be necessary as the work progresses. The work shall be done in strict conformity with such stakes and instructions. The Contractor shall carefully preserve bench marks, reference points and stakes, and in case of willful or careless destruction, he /she will be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

WORKMANSHIP

The Contractor acknowledges that he/she has satisfied himself/herself as to the nature and location of the work; the general and local conditions including but not restricted to those bearing upon transportation, disposal, handling and storage of materials; availability of labor, water, electric power, roads; and uncertainties of weather, surface conditions, subsurface conditions, tides or similar physical conditions at the site, the character of equipment and facilities required to prosecute the work. Any failure by the Contractor to acquaint himself/herself with any aspect of the work or with any of the applicable conditions shall not relieve the Contractor from the responsibility to successfully perform the work under the Contract Documents, nor shall it be considered the basis for any claim for additional time or compensation.

UTILITIES

The Contractor shall anticipate all underground obstructions such as water lines, gas lines, sewer lines, utility lines, or any other public or private facility concrete and debris. In all cases where existing utility lines may be interfered with by the work, the Contractor shall

give a minimum of thirty six (36) hours' notice to the owners of such utilities, to permit them to relocate the lines prior to construction. No extra payment shall be allowed for the removal, replacement, repair or possible increased cost caused by underground obstructions. The location of existing structures and utilities provided in the plans are approximate only. Any damage to existing structures to remain or work of any kind shall be repaired or restored promptly by, and at the expense of the Contractor.

The Contractor shall at all times protect all desirable trees, plants, curbs, sidewalks, irrigation components, and structures not requiring removal to accomplish the work, whether or not they are shown on the plans. The Contractor must contact the City to obtain tree removal permits for the removal of any tree.

In matters of restoration all materials, construction and workmanship shall be acceptable to the City of St. Pete Beach and the City Manager or designee. No changes in size, shape, configuration, location, materials or construction shall be made without prior written authorization from the City Manager or designee.

No interruption of ingress and egress to private property shall be made unless the Contractor has made prior arrangements acceptable to the owner of the affected property. At the direction of the City Manager or his designee the Contractor shall be required to notify affected residents/property owners of impending activity or inconvenience via door hanger.

The Contractor shall provide all traffic control devices utilized during construction and meet the requirements set forth in the Florida State Department of Transportation "Manual on Traffic Control and Safe Practices for Street and Highway Construction, Maintenance, and Utility Operations."

CLEANING UP

Upon completion or termination of the work the Contractor shall, as directed by the City Manager or designee, remove from the vicinity of the work all equipment and temporary structures, waste materials and rubbish resulting from his operations, leaving the premises in a neat and presentable condition. All debris generated by the Contractor will be removed before leaving the area. All areas will be raked to remove smaller debris. All surrounding sidewalks, parking lots and roadways will be cleared of any dust or debris generated by the Contractor. In the event of his/her failure to do so, the City at the expense of the Contractor may do the same, and his/her Surety shall be responsible therefore.

DEFECTIVE WORK OR MATERIAL

The Contractor shall promptly remove from the premises all work and materials condemned by the City Manager or designee as failing to conform to the Contract, whether incorporated or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

If the Contractor does not remove such condemned work or materials within a reasonable time after notice, the City may remove them and store the materials at the expense of the

Contractor. If the Contractor does not pay the expense of such removal within ten (10) days' time thereafter, the City may, upon thirty (30) days written notice sell such materials at auction or at private sale and shall account for the net proceeds thereof after deducting all the costs and expenses that should have been borne by the Contractor.

DISPUTE RESOLUTION

The Contract shall be construed under Florida law. The parties agree that all controversies, claims and other matters in question between the parties arising out of or relating to this Contract or its breach shall be resolved through mediation. Upon notice of any party to the Contract of a dispute, question or controversy, the parties shall agree to the appointment of a qualified mediator. A qualified mediator is a person who has received at least forty (40) hours of mediation training and has actual experience as a mediator in resolving contract disputes. If the dispute, question or controversy is not resolved through mediation within sixty (60) days of a notice of the dispute between the parties, the city reserves the right to seek resolution through court action.

INDEMNITY

The Contractor shall indemnify and save harmless the City, and the City's agents and employees, from and against all losses and all claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against them by reason of any action or omission of the said Contractor, his agents, or employees, in the execution of the work or in guarding the same.

GENERAL WARRANTY

Neither the final certificate nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the City shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting there from that shall appear within a period of eighteen (18) months from the date of final acceptance of the work, unless a longer period is specified. The City shall give notice of observed defects with reasonable promptness.

LAND OF CITY, USE OF, BY CONTRACTOR

The City shall provide the land upon which the work under this Contract is to be done, and will, so far as is convenient, permit the Contractor to use as much of the land as is required for the erection of temporary construction facilities and storage of materials, together with the right of access to same, but beyond this, the Contractor shall provide, at his/her cost and expense, any additional land required. It will be the responsibility of the Contractor to repair or restore to the satisfaction of the City, at their own expense, any damage to land used for the above stated activities or any other activities approved by the City.

OTHER WORK

Wherever work being done by the City or by other Contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the City Manager or designee to secure the completion of the various portions of the work in general harmony.

OTHER CONTRACTS

The City may award other Contracts. The Contractor shall fully cooperate with such other Contractors and carefully fit his/her own work to that provided under other Contracts, as may be with the performance of work by any other Contractor or City.

DELAYS AND EXTENSION OF TIME

If the Contractor should be delayed at any time in the progress of the work by an act or neglect of the city or the City Manager or designee, or of any employee of either, or by any separate Contractor employed by the City, or by changes ordered in the work, or by strike, lockouts, fire, unusual delay in transportation, unavoidable casualties, or any cases beyond the Contractor's control, or by delay authorized by the City Manager or designee, or by any cause which the City Manager or designee shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the City Manager or designee may decide. No such extension shall be made for a delay that occurs more than seven (7) days before a claim is made in writing to the City Manager or designee. In the case of a continued cause of delay, only one (1) claim is necessary. This section does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

CITY'S RIGHT TO TAKE OVER THE WORK

If the Contractor shall be adjudged bankrupt, or if he/she should make a general assignment for the benefit of his/her creditors, or if a receiver should be appointed to take over his/her affairs, or if he /she should fail to prosecute his/her work with due diligence and carry the work forward in accordance with his/her work schedule and the time limits set forth in the Contract Documents, or if he/she should fail to substantially perform one or more of the provisions of the Contact Documents to be performed by him, the City may serve written notice on the Contractor and the Surety on his/her performance bond, stating its intention to exercise one of the remedies hereinafter set forth and the grounds upon which the City bases its right to exercise such remedy. In any event, unless the matter complained of is satisfactorily cleared within ten (10) days after the service of such notice, the City may, without prejudice to any other right or remedy exercise one of such remedies at once; having first obtained a certificate from the City Manager or designee that such sufficient cause exists to justify such action.

(a) The City may terminate the services of the Contractor, which termination shall take effect immediately upon service of notice thereof on the Contractor and his Surety, whereupon the Surety shall have the right to take over and perform the Contract. If the Surety does not commence performance of the Contract within ten (10) ten days after service of the notice of termination, the City may itself take over the work, take possession of and use all materials, tools, equipment, and appliances on the premises and prosecute the work to completion by such means as it shall deem best. In the event of such termination of his service, the Contractor shall not be entitled to any further payment under his Contract until the work is completed and accepted. If the City takes over the work and if the unpaid balance of the Contract price when the City takes over the work exceeds the cost of completing the work, including compensation for damages or expenses incurred by the City through the default of the contractor, such excess shall be paid to the Contractor. In such event, if such cost, expenses, and damages shall exceed such unpaid balance of the Contract price, the Contract and his Surety shall pay the difference to the City. The City Manager or designee shall certify such cost, expenses, and damages.

(b) The City may take control of the work and either make good the deficiencies of the Contractor itself or direct the activities of the Contractor in doing so, employing such additional help as the City deems advisable. In such event, the City shall be entitled to collect from the Contractor and his Surety, or to deduct from any payment then or thereafter due the Contractor, the costs incurred by it through the default of the Contractor, provided the City Manager or designee approves the amount thus charged to the Contractor.

(c) The City may require the Surety on the Contractor's bond to take control of the work at once and see to it that all deficiencies of the Contractor are made good with due diligence. As between the City and the Surety, the cost of making good such deficiencies shall all be borne by the Surety. If the Surety takes over the work, either upon termination of the services of the Contractor or upon instructions from the City to do so, the provisions of the Contract Documents shall govern in respect to the work done by the Surety, the Surety being substituted for the Contractor as to such provisions, including provisions as to the payment for the work and provisions of this section as to the right of the City to do the work itself or to take control of the work.

RIGHT OF OCCUPANCY

The City shall have the right, if necessary, to take possession of and to use any completed or partially completed portions of the work, if such use be approved by the City Manager or designee even if the time for completing the entire work or such portions of the work has not expired and even if the work has not been finally accepted. Such possession and use shall not constitute an acceptance of such possession and use if it materially interferes with the Contractor's operations. The City shall also have the right to enter the premises with the Contractor for the purpose of doing work not covered by its Contract.

ACCEPTANCE

Final inspection and acceptance of the work shall be made for the City by the City Manager or designee. Such inspection shall be made as soon as practical after the Contractor has notified the City in writing that the work is ready for such inspection.

WAIVER

It is expressly understood and agreed that any waiver granted by the City Manager or designee of any term, provision or covenants of the Contract shall not constitute a precedent or breach of the same or any other terms, provisions, or covenants of the Contract. Neither the acceptance of the work by the City nor the payment of all or any part of the sum due the Contractor hereunder shall constitute a waiver by the City of any claim which the City may have against the Contractor/Surety under this Contract or otherwise.

INSPECTION

The City Manager or designee and his representative shall, at all times, have access to the work during its construction and shall be furnished with every reasonable facility for ascertaining that the stock and materials used and employed, and the workmanship, are in accordance with the requirements and intentions of the Plans. All work done and all materials furnished shall be subject to their inspection and approval by the City Manager or his designee. If any work should be covered up without approval or consent of City Manager or designee, it must, if required by the City Manager or designee, be uncovered for examination at the Contractor's expense.

The City Manager or designee may order re-examination of questioned work and if so ordered, the Contractor must uncover the work. If such work were found in accordance with the Contract Documents, the City shall pay the cost of re-examination and replacement. If such work be found not in accordance with the Contract Documents, the Contractor shall pay such cost unless he /she shall show that the defect in the work was caused by another Contractor, and in that event, the City shall pay such cost.

The inspection of the work shall not relieve the Contractor of any of his/her obligations to fulfill his/her Contract as prescribed, and defective work shall be made good and unsuitable materials shall be rejected, notwithstanding that such defective work and materials have been previously overlooked and accepted on estimates for payment. All work shall be tested to the satisfaction of the City Manager or designee before acceptance.

BID REVIEW AND CONTRACT AWARD

Failure to submit all documents requested at the time of bid may deem the contractor's bid ineligible for award. The City of St. Pete Beach reserves the right to reject any or all bids or parts of bids or accept any bid or part thereof deemed to be in the best interests to the City of St. Pete Beach. The City shall be the sole final judge of qualifications of the bidder to perform service and reserves the exclusive right to accept or reject any bids as it deems to be in the best interests of the City. The City may waive any informalities.

LOCAL, STATE AND FEDERAL COMPLAINCE REQUIREMENTS

The laws of the State of Florida do apply to any purchase made under this Request for Bid. Proposers shall comply with all local, state, and federal directives, orders and laws as applicable to their bid and subsequent contracts include but not limited to Equal Employment Opportunity, Minority Business Enterprise, and OSHA as applicable to this contract.

A PROVISION FOR OTHER AGENCIES

Unless otherwise stipulated by the proposer, the proposer agrees to make available to all Government agencies, departments, and municipalities the bid prices submitted in accordance with said bid terms and conditions therein, should any said governmental entity desire to buy under this bid. Eligible users shall meet all State of Florida agencies, the legislative and judicial branches, political subdivisions (counties, local district school boards, community colleges, municipalities, or other public agencies or authorities), which may desire to purchase under the terms and conditions of this contract.

BID BOND

This project will require a 5% bid bond to be submitted with the bid.

RESERVES THE RIGHT

The City reserves the right to accept or reject any and/or all bids, to waive irregularities and technicalities, and to request re-submission. If only one bid is received by the bid date and time listed, the bid may or may not be rejected by the City depending upon bid review and the needs of the City.

The City reserves the right to select a firm with or without additional interviews, and may decide to select any of the firms submitting bids. The City reserves the right to award the contract to a responsible proposer submitting a responsible bid, with a resulting negotiated agreement which is most advantageous and in the best interest of the City.

Proposers, bidders, their agents, and associates shall not contact or solicit any City Commission member, City employee, or official regarding this RFB during any phase of the bidding process. Failure to comply with the provision may result in disqualification of the bidder, at the option of the City. Only that individual listed, or an approved designee, as the contact person for this RFB shall be contacted.

Once bids are submitted to the City, they cannot be withdrawn.

III
REFERENCES & QUALIFICATIONS

Provide at least (3) three or more professional, business references with which you have contracted to provide similar services in the past (5) five years. Include the name of the person, their organization and telephone number, fax number, and e-mail address. Include any governmental agencies, with the same contact and descriptive information for which you have provided similar service within the past (5) five years.

Provide a brief description of the history and capabilities of the firm. Describe the types of projects or services the firm performs/has performed and the dollar value of each. Provide information regarding your firm's ability to complete this project. Demonstrate that the firm's personnel have experience with similar projects.

Identify all unresolved and ongoing claims and disputes against your firm in excess of $500,000. Include any claims against the principals of your firm or any claims your company may have against a third party. Provide a history of litigation, including the outcomes, for the past (5) five years.

The responding firm shall provide a statement of assurance that the firm is not presently in violations of any statutes or regulatory rules that might have an impact on the firms operations. All applicable laws and regulations of the State of Florida and ordinances and regulations of the City of St. Pete Beach will apply.

Provide the overall bonding capacity for the company and provide a history of any claims against the bidder's previous bonds for the past five years.

The City shall be the sole final judge of qualifications of bidder to perform service and reserves the exclusive right to accept or reject any bid as it deems to be in the best interests of the City. The City reserves the right to make such investigation, as it deems necessary, to determine the ability of any proposer to perform the work or service requested.

IV
CERTIFICATE OF INSURANCE

INSURANCE

Include in bid an approved Certificate of Insurance furnished by the contractor's carrier to guarantee the contractor is insured. **Some insurance coverage requirements may not be applicable to all RFB's and contracts.**

AWARD OF CONTRACT

The Contactor must file with the City of St Pete Beach certificates of insurance prior to commencement of work evidencing the City as a certificate holder with the following minimum coverage:

- Commercial Liability Insurance $1,000,000.00.
- Comprehensive General Liability Insurance of $1,000,000.00 each occurrence.
- Personal Injury for $1,000,000.00 each occurrence.
- Automobile Liability $1,000,000.00.
- General Workers Compensation Insurance as required by Florida law

V. Contractor Education & Training

City of St. Pete Beach
Public Services Department
155 Corey Avenue
St. Pete Beach, Florida 33706-1839
Phone: 727-363-9254 * Fax: 727-367-2736
www.stpetebeach.org

In concurrence with NPDES MS4 requirements, our staff has reviewed information and training materials on the topic of erosion and sediment control, illicit discharges, along with spill prevention and response as provided by the City of St. Pete Beach through the website and video links provided below.

Illicit Discharges:

Illicit Discharges Illicit Discharge Training Video - Part 1 Illicit Discharge Training Video - Part 2

Construction Activities & BMPs:

Discharges from Construction Activities Construction Site Stormwater Runoff Control
BMP Inspection and Maintenance Stormwater and the Construction Industry

Erosion and Sedimentation Control:

Erosion and Sedimentation Control

Spill Prevention and Control:

Spill Prevention and Control

Local Resources:

Pinellas County Watershed Management - Stormwater Runoff
Pinellas County Watershed Management City of St. Pete Beach Stormwater Fact Sheet
City of St. Pete Beach Public Services Department

Company Name: _____

Signature: _____

Name/Title: _____

Date: _____

All site inspectors and site operators must be certified through the Florida Stormwater, Erosion and Sedimentation Control Inspector Training and certification program or an equivalent program approved by FDEP. All certification documents and copies of licenses must be provided to the City.

VI.

SYSTEM MAP AND TECHNICAL SPECIFICATIONS

ST. PETE BEACH MODEL RESULTS
KEY SHEET
Legend
Page Number
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
1,600 800 0 1,600 Ft.
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmap Community
Kimley»Horn

ST. PETE BEACH MODEL RESULTS

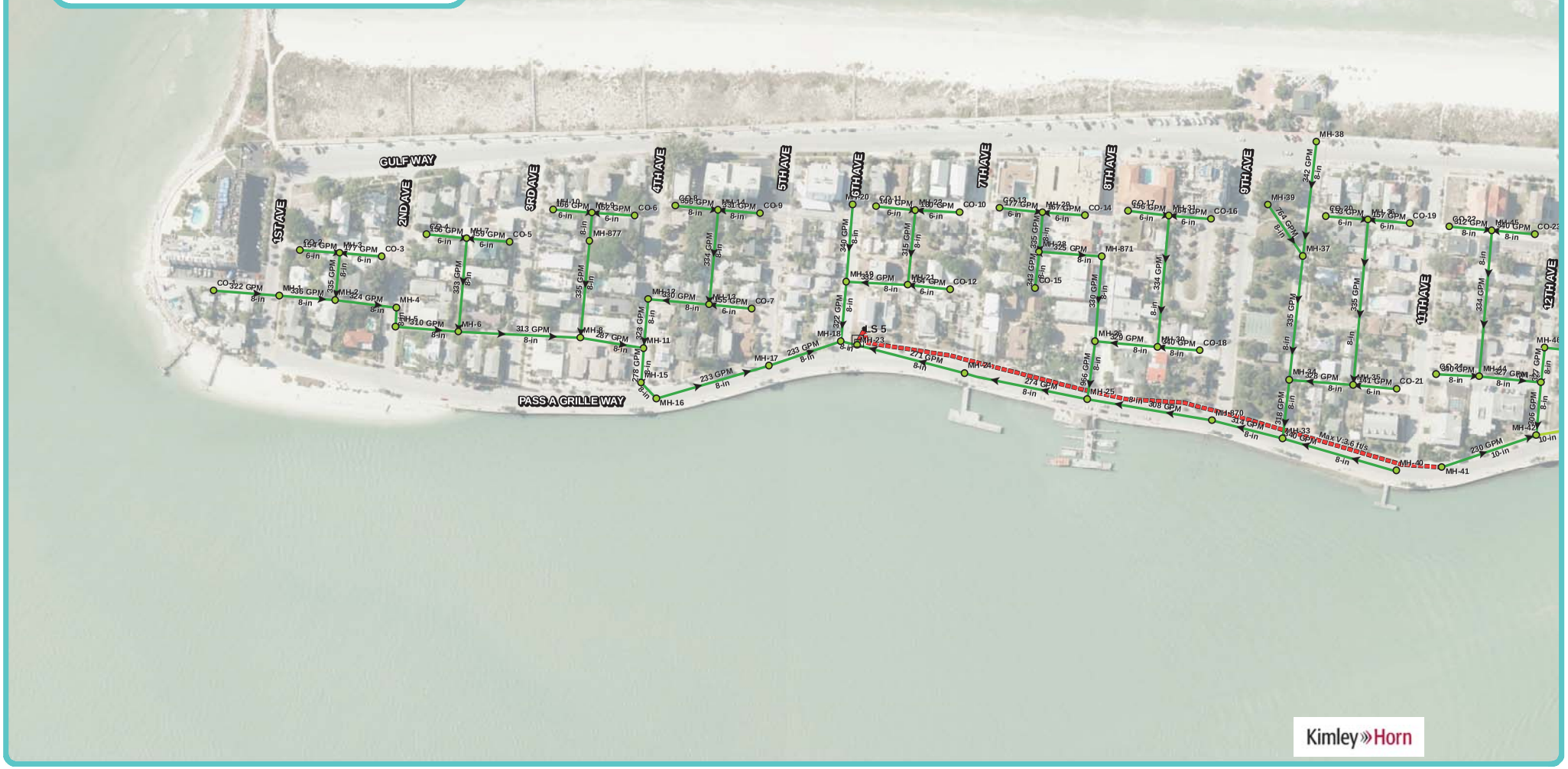
Service Area 5 - Page 1

Legend

Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE



ST. PETE BEACH MODEL RESULTS

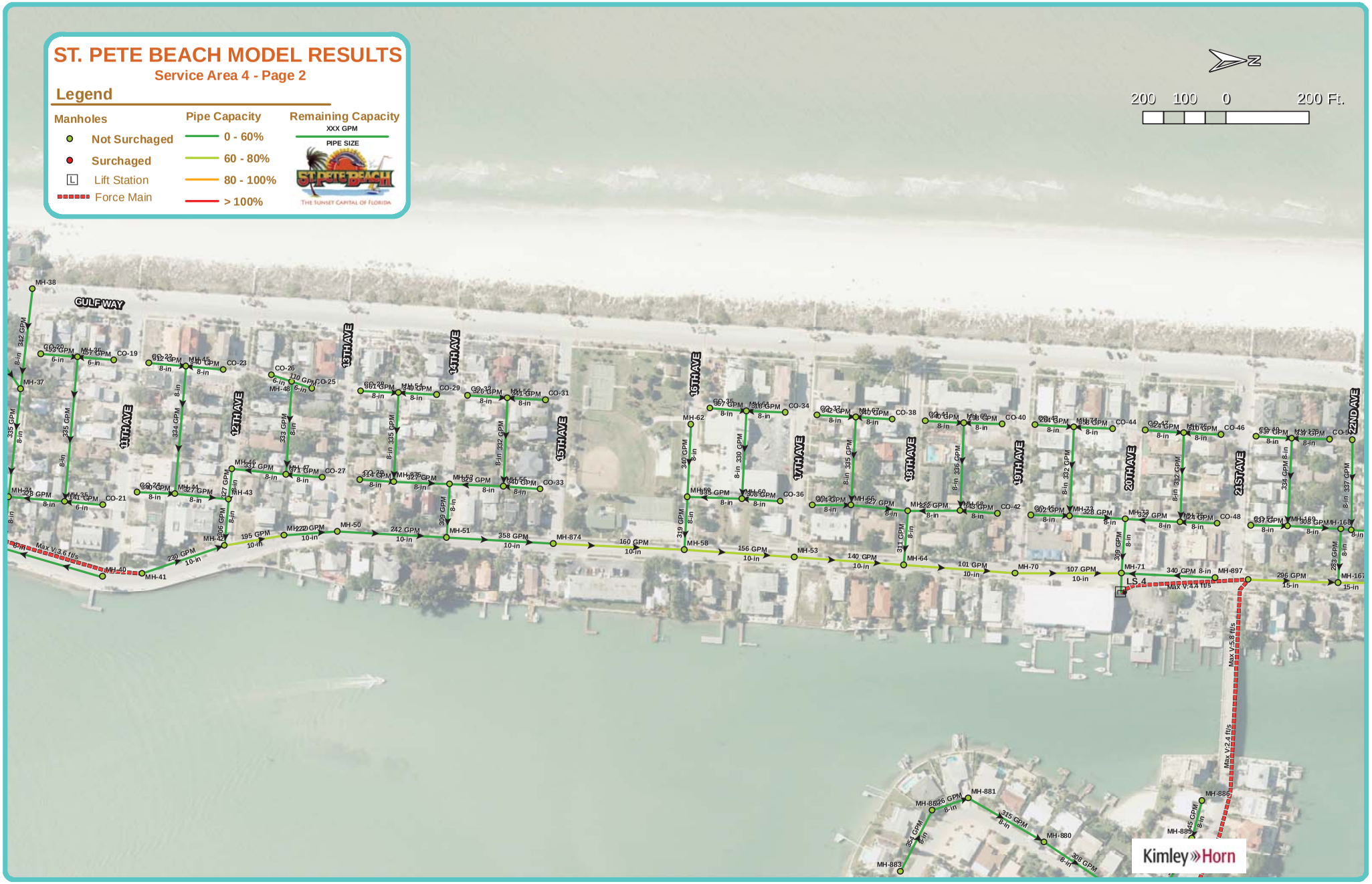
Service Area 4 - Page 2

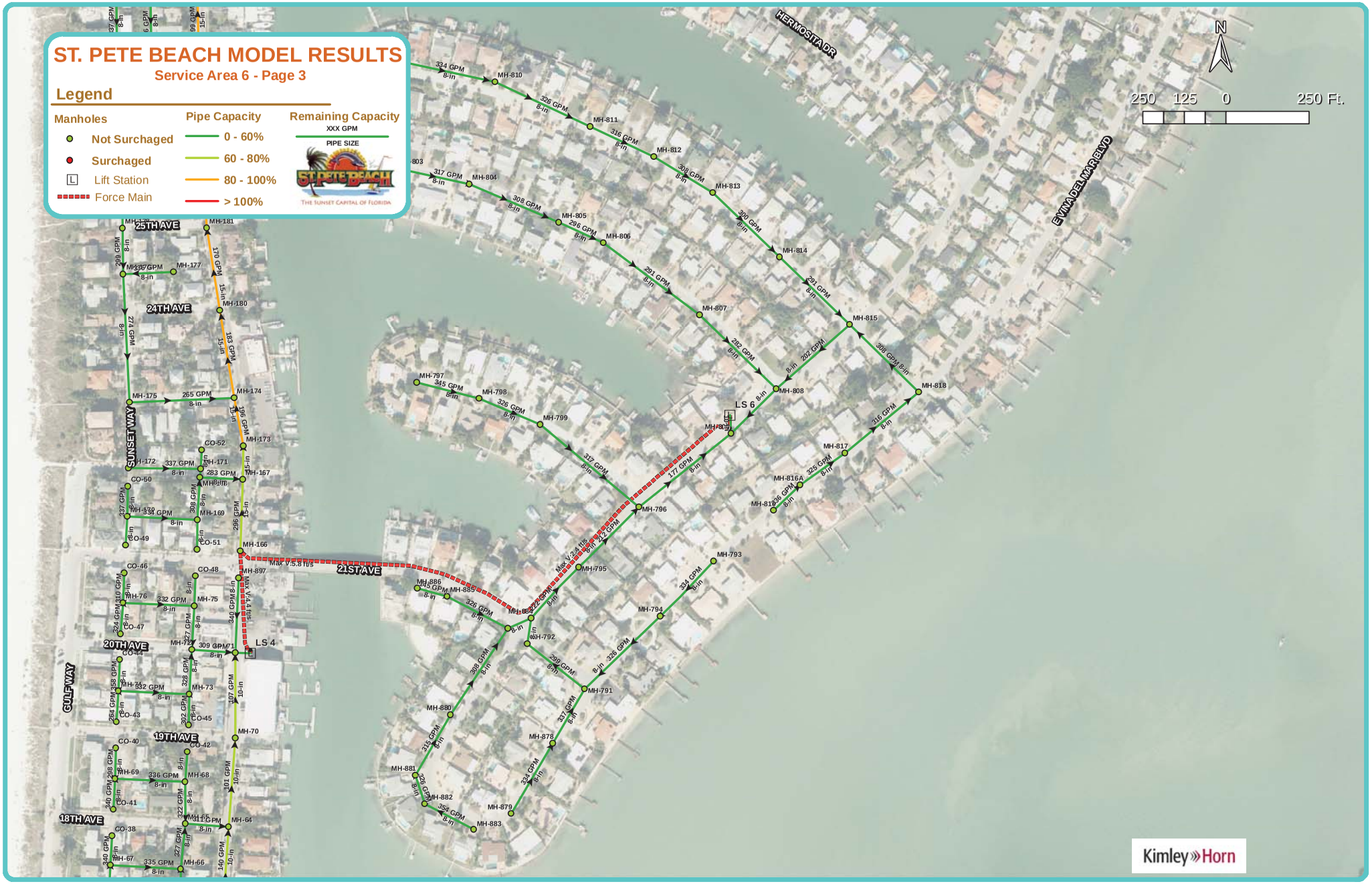
Legend

Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE




ST. PETE BEACH MODEL RESULTS
Service Area 6 - Page 3
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
250 125 0 250 Ft.
HERMOSITA DR
EVINA DEL MAR BLVD
25TH AVE
24TH AVE
SUNSET WAY
21ST AVE
20TH AVE
19TH AVE
18TH AVE
GULF WAY
LS 4
LS 6
Kimley»Horn

ST. PETE BEACH MODEL RESULTS

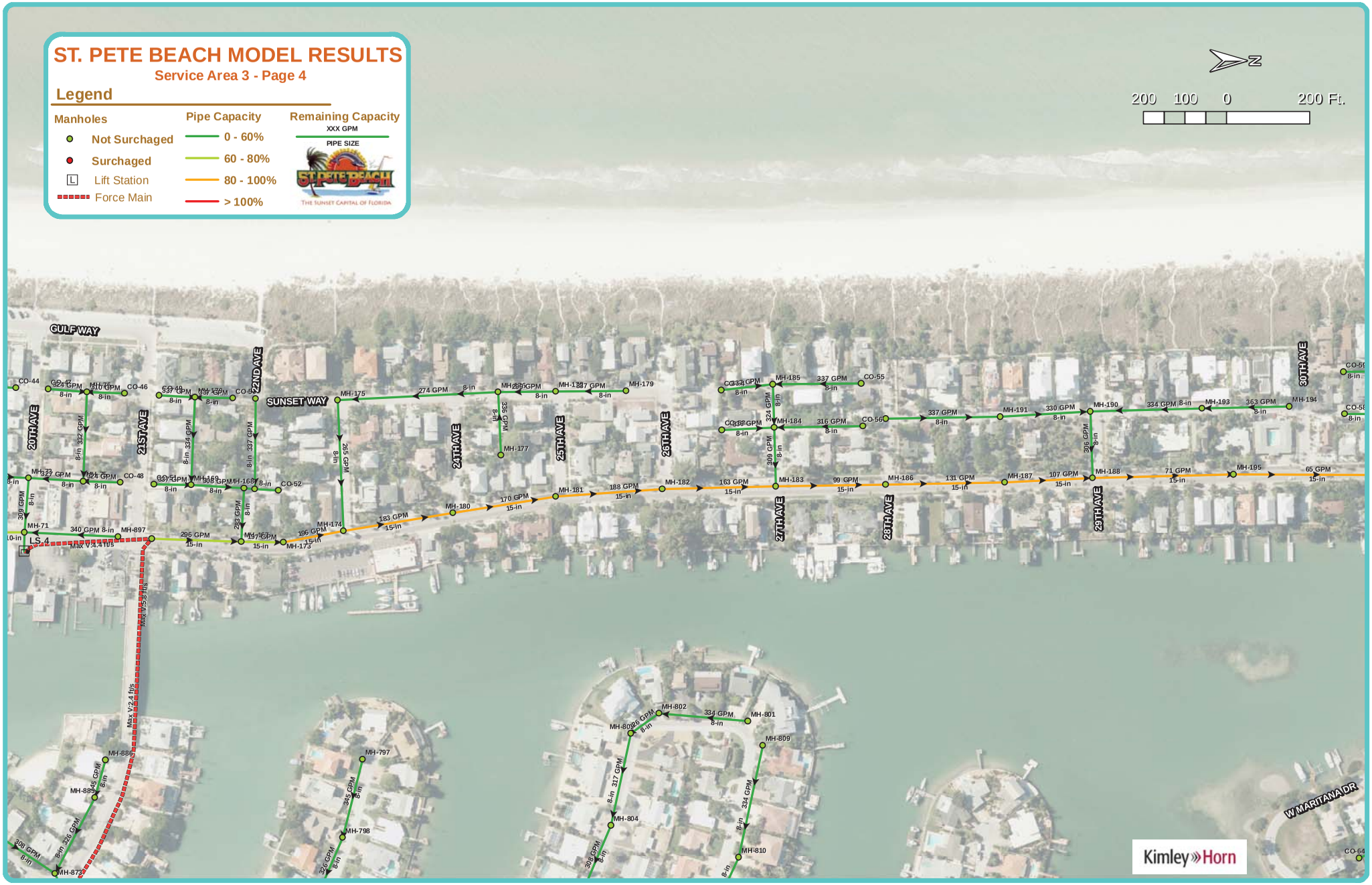
Service Area 3 - Page 4

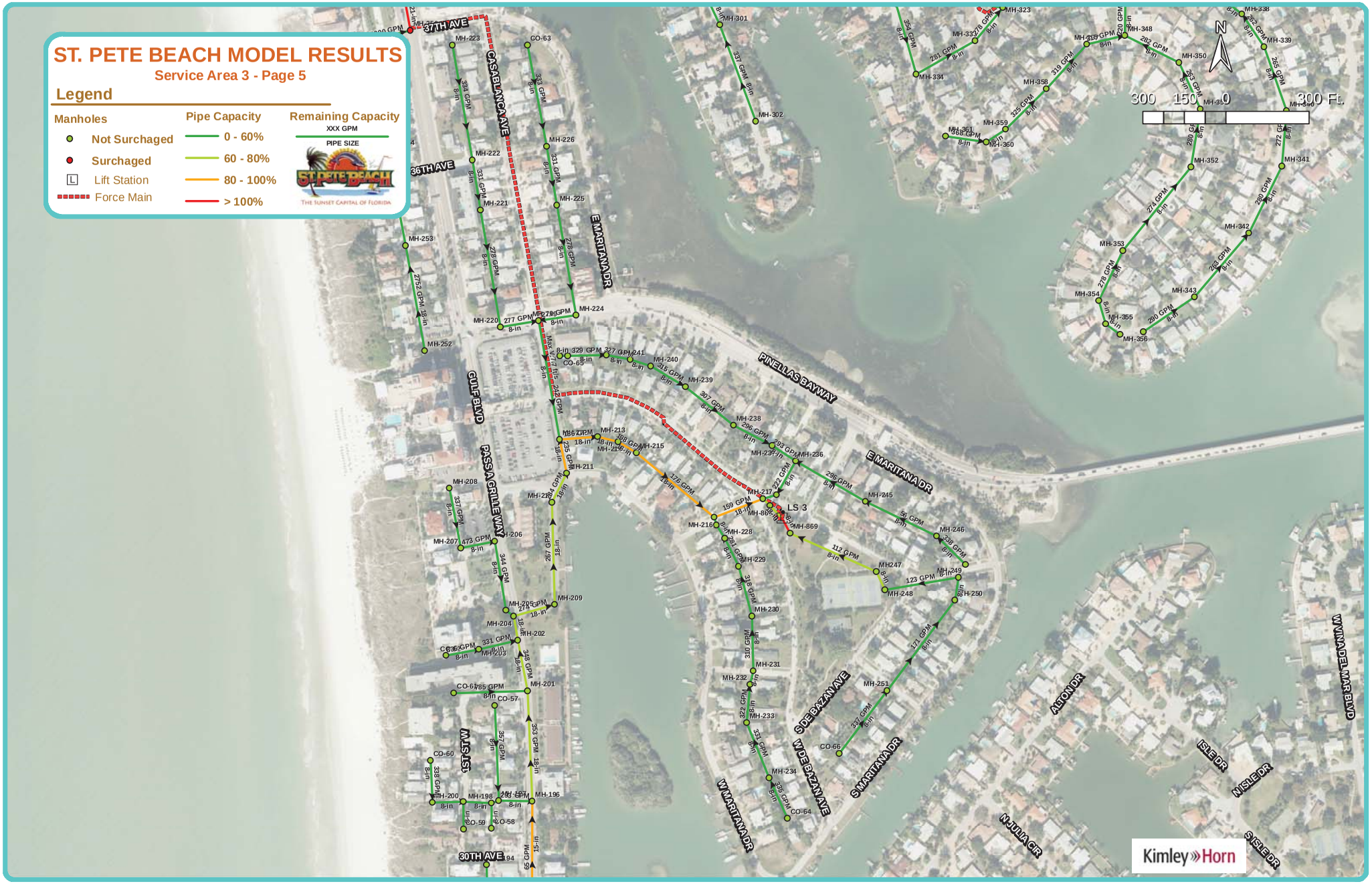
Legend

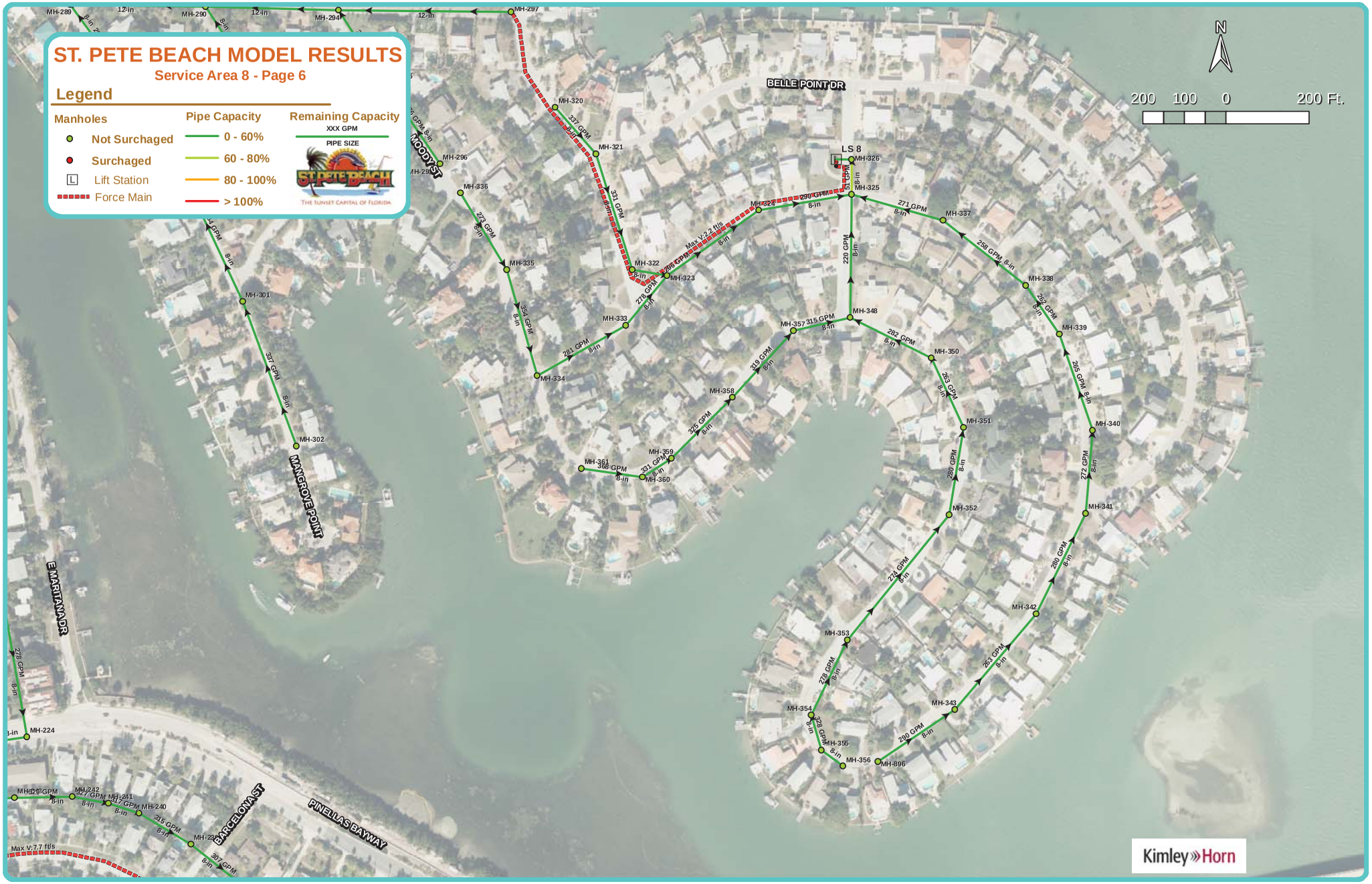
Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

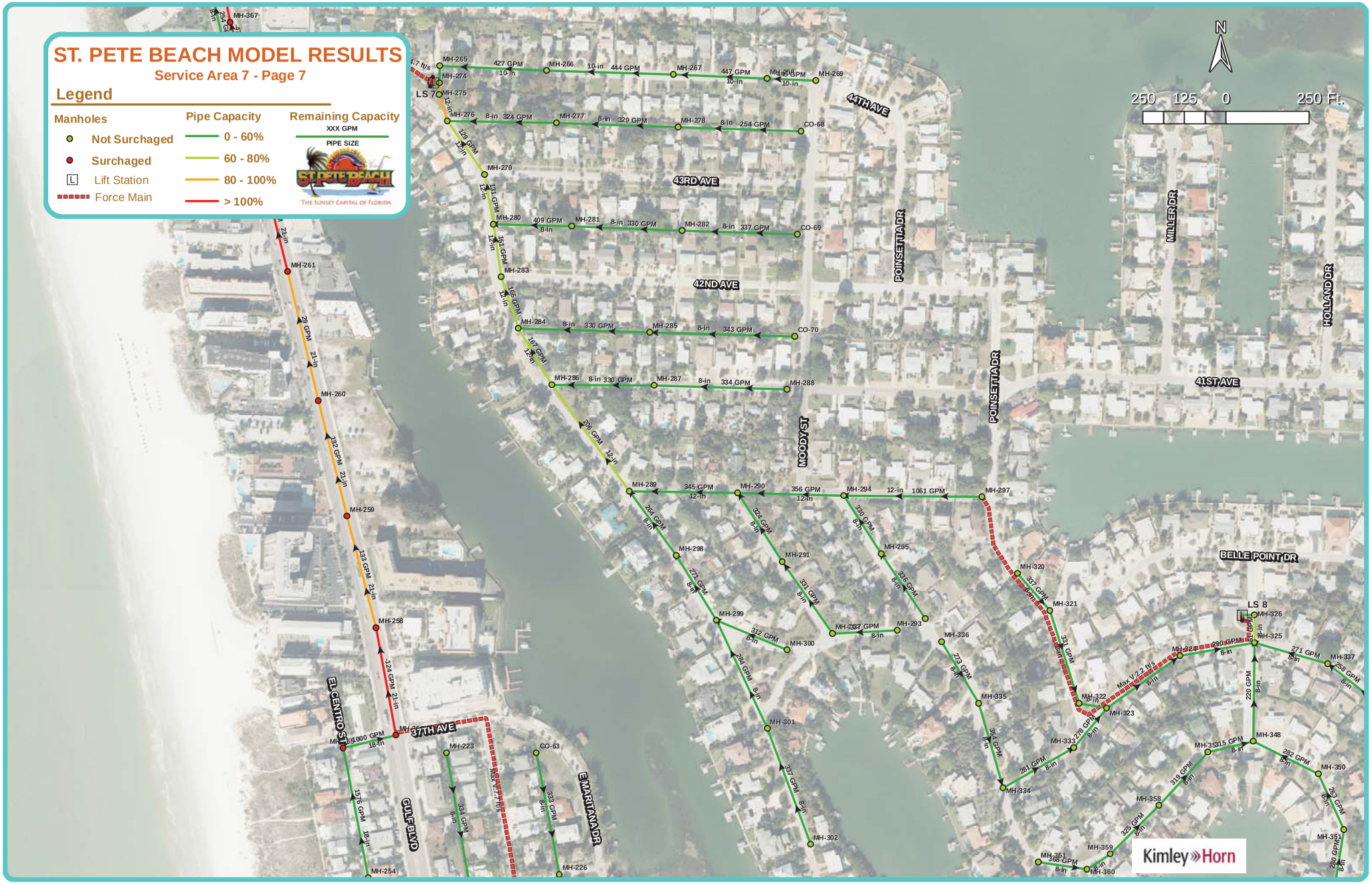
Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE




ST. PETE BEACH MODEL RESULTS
Service Area 3 - Page 5
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
300 150 0 300 Ft.
37TH AVE
36TH AVE
30TH AVE
CASABLANCA AVE
GULF BLVD
PASS A GRILLE WAY
1ST ST W
E MARITANA DR
PINELLAS BAYWAY
S DE BAZAN AVE
W DE BAZAN AVE
W MARITANA DR
S MARITANA DR
ALTON DR
N JULIA CIR
ISLE DR
N ISLE DR
S ISLE DR
W WADEL MAR BLVD
LS 3
Kimley»Horn


ST. PETE BEACH MODEL RESULTS
Service Area 8 - Page 6
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
200 100 0 200 Ft.
BELLE POINT DR
MOODY ST
MANGROVE POINT
E MARITANA DR
BARCELONA ST
PINELLAS BAYWAY
LS 8
Max V:2.2 ft/s
Max V:7.7 ft/s
Kimley»Horn


ST. PETE BEACH MODEL RESULTS
Service Area 7 - Page 7
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
250 125 0 250 Ft.
44TH AVE
43RD AVE
42ND AVE
41ST AVE
POINSETTIA DR
MILLER DR
HOLLAND DR
MOODY ST
BELLE POINT DR
EL CENTRO ST
GULF BLVD
37TH AVE
E MARITANA DR
LS 7
LS 8
Kimley»Horn

ST. PETE BEACH MODEL RESULTS
Service Area 9 - Page 8
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
200 100 0 200 Ft.
SILVER DR
PLAZA WAY
LS 9
MAX VAC LS
MH-383
MH-382
MH-385
MH-386
MH-387
MH-388
MH-389
MH-390
MH-391
MH-392
MH-393
MH-394
MH-395
MH-396
MH-397
MH-398
MH-399
MH-400
MH-401
MH-402
MH-403
MH-404
298 GPM
10-in
223 GPM
298 GPM
10-in
298 GPM
10-in
84 GPM
8-in
258 GPM
8-in
269 GPM
8-in
270 GPM
8-in
277 GPM
8-in
275 GPM
8-in
274 GPM
8-in
279 GPM
8-in
220 GPM
8-in
281 GPM
8-in
228 GPM
8-in
283 GPM
8-in
Kimley»Horn

ST. PETE BEACH MODEL RESULTS

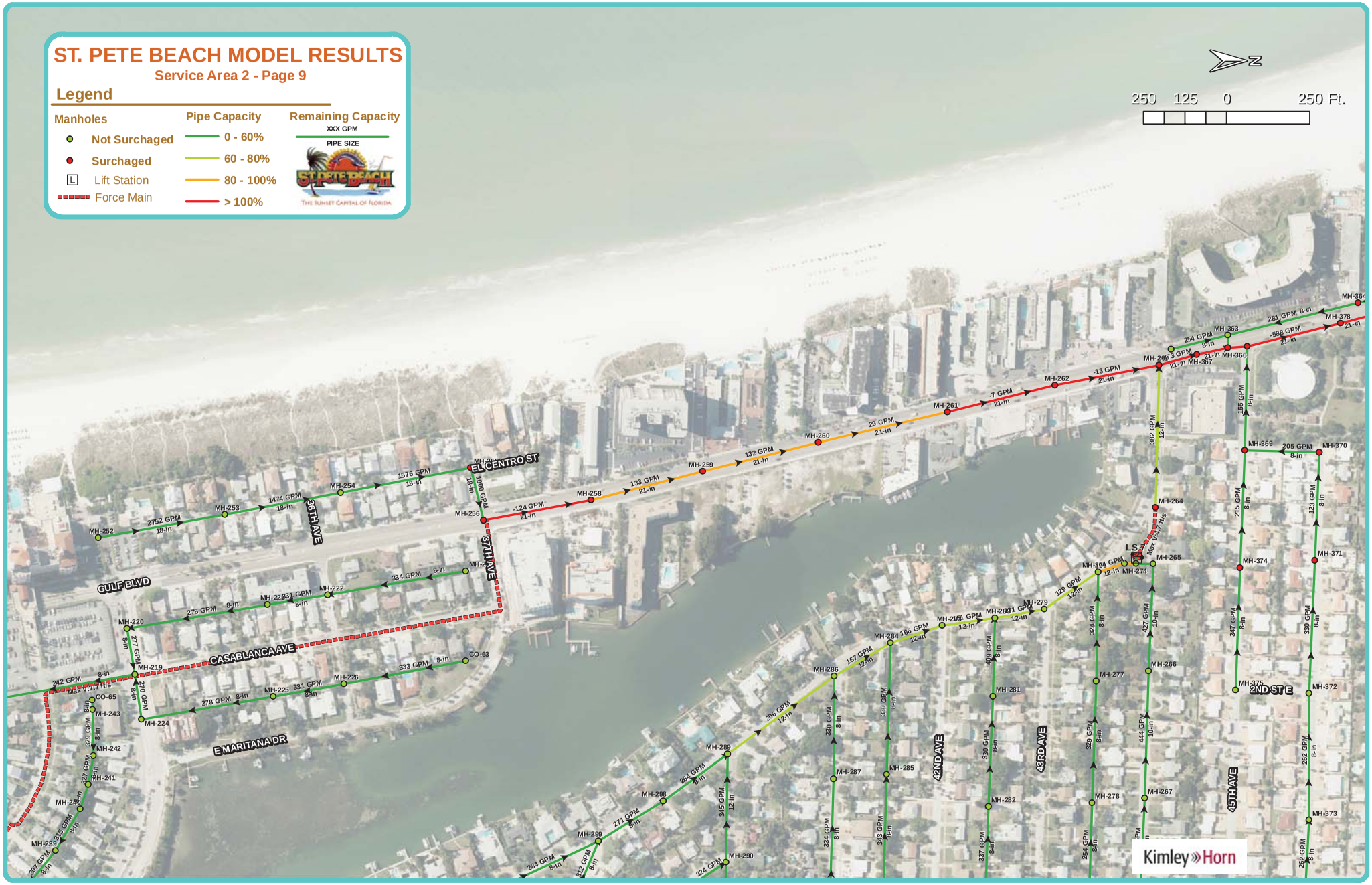
Service Area 2 - Page 9

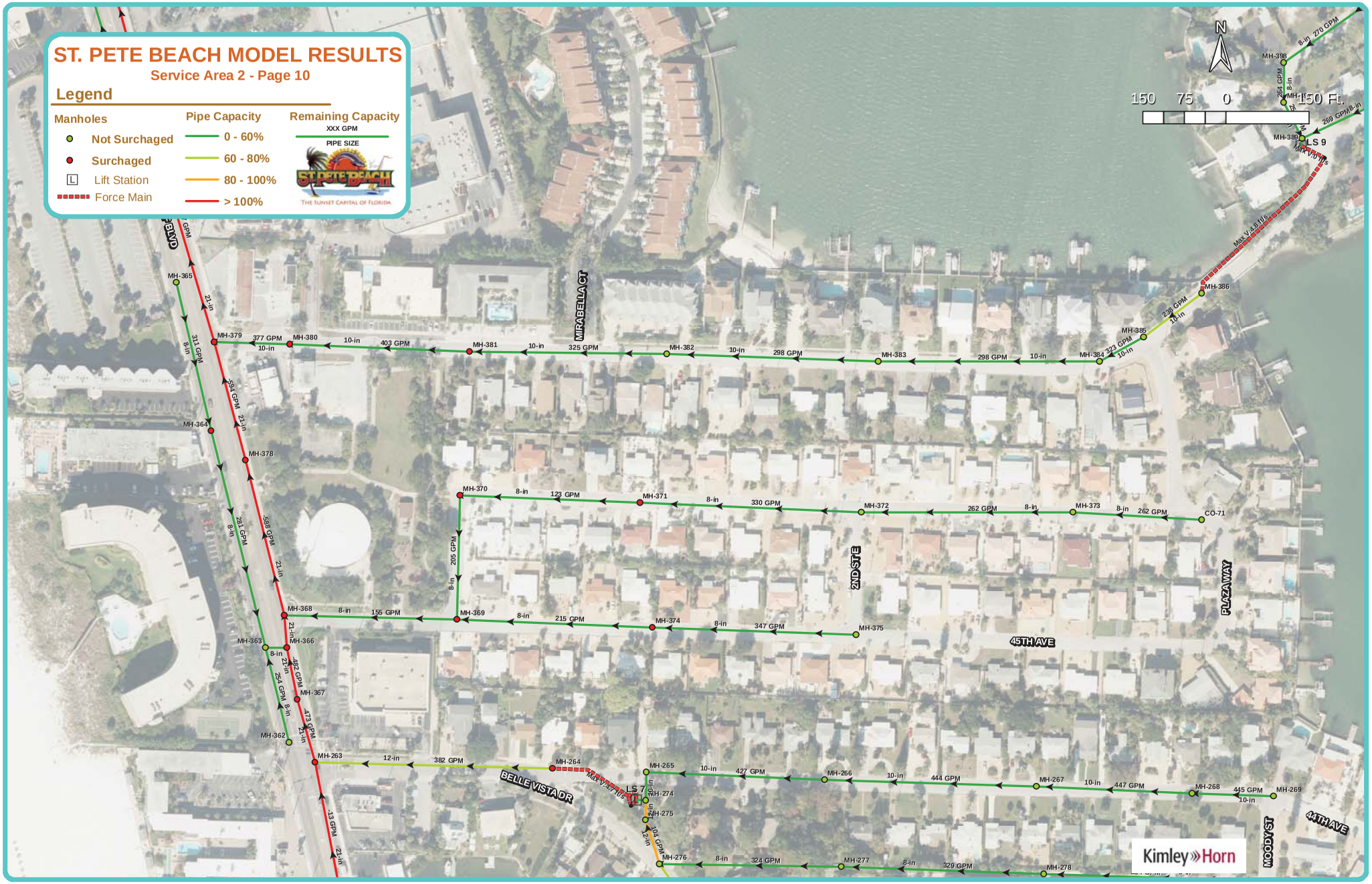
Legend

Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE




ST. PETE BEACH MODEL RESULTS
Service Area 2 - Page 10
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
150 75 0 150 Ft.
MIRABELLA CT
2ND ST E
PLAZA WAY
45TH AVE
BELLE VISTA DR
MOODY ST
44TH AVE
LS 7
LS 9
MH-365
MH-379
377 GPM
MH-380
10-in
403 GPM
MH-381
10-in
325 GPM
MH-382
10-in
298 GPM
MH-383
298 GPM
10-in
MH-384
323 GPM
10-in
MH-385
238 GPM
10-in
MH-386
MH-364
MH-378
MH-370
8-in
123 GPM
MH-371
8-in
330 GPM
MH-372
262 GPM
8-in
MH-373
8-in
262 GPM
CO-71
205 GPM
8-in
MH-368
8-in
155 GPM
MH-369
8-in
215 GPM
MH-374
8-in
347 GPM
MH-375
MH-363
MH-366
MH-367
MH-362
MH-263
12-in
382 GPM
MH-264
MH-265
10-in
427 GPM
MH-266
10-in
444 GPM
MH-267
10-in
447 GPM
MH-268
445 GPM
10-in
MH-269
MH-274
MH-275
MH-276
8-in
324 GPM
MH-277
8-in
329 GPM
MH-278
MH-398
8-in
270 GPM
MH-389
269 GPM
8-in
Kimley»Horn

ST. PETE BEACH MODEL RESULTS

Service Area 2 - Page 11

Legend

Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE

ST. PETE BEACH MODEL RESULTS
Service Area 1 & 2 - Page 12
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
250 125 0 250 Ft
SUNSET WAY
64TH AVE
65TH AVE
GULF BLVD
2ND ST E
55TH AVE
MEILANI DR
BIKINI WAY S
BIKINI WAY N
LS 2
LS 14
Kimley»Horn

ST. PETE BEACH MODEL RESULTS
Service Area 13 - Page 13
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
200 100 0 200 Ft.
MH-460
8-in
289 GPM
MH-459
8-in
281 GPM
MH-458
8-in
317 GPM
MH-457
8-in
262 GPM
MH-456
8-in
266 GPM
65TH AVE
8-in
MH-454
317 GPM
LS 13
MH-451
8-in
8-in
MH-450
8-in
128 GPM
MH-447
8-in
LEILANI DR
360 GPM
MH-452
PALI WAY
333 GPM
8-in
MH-453
Kimley»Horn

ST. PETE BEACH MODEL RESULTS
Service Area 14 - Page 14
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
200 100 0 200 Ft.
BAY ST
67TH AVE
64TH AVE
59TH AVE
LS 14
MH-534
MH-569
MH-570
MH-571
MH-572
MH-573
MH-514
MH-524
MH-526
MH-523
CO-80
MH-576
MH-895
MH-577
MH-578
MH-581
MH-580
MH-585
MH-588
MH-587
MH-582
MH-583
MH-589
MH-590
MH-591
MH-594
MH-593
MH-597
MH-595
MH-596
Kimley»Horn

ST. PETE BEACH MODEL RESULTS

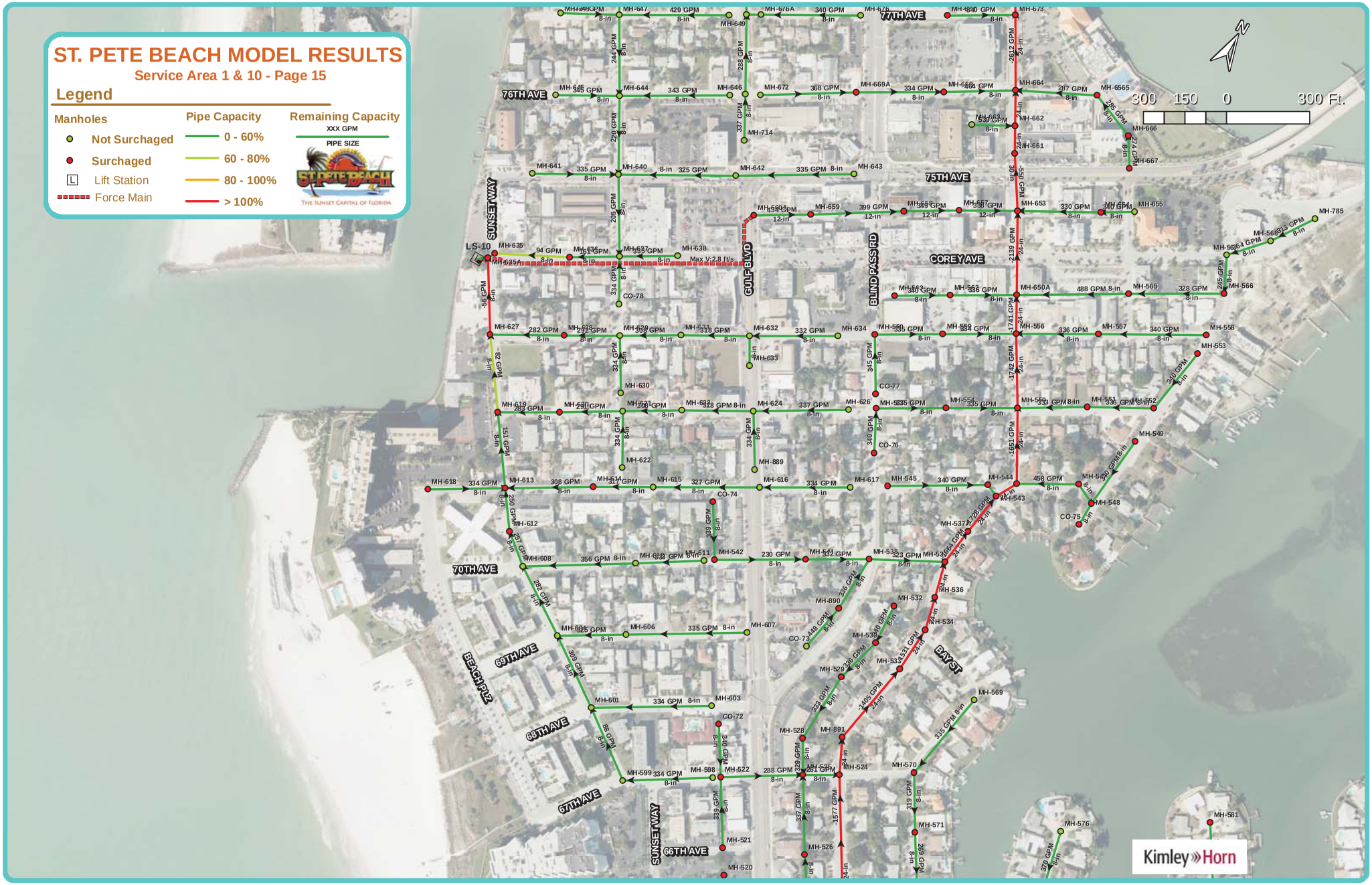
Service Area 1 & 10 - Page 15

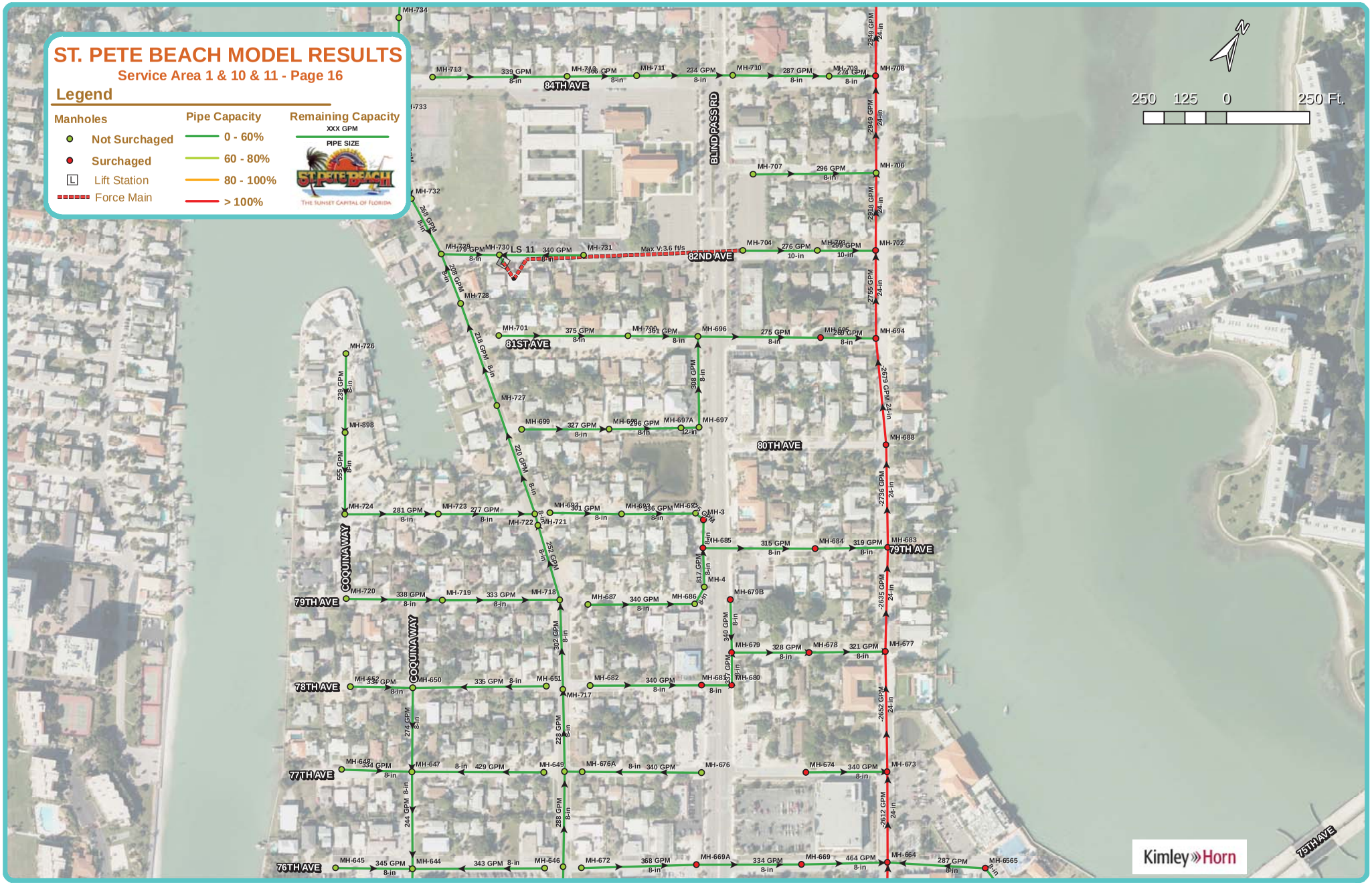
Legend

Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE




ST. PETE BEACH MODEL RESULTS
Service Area 1 & 10 & 11 - Page 16
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
250 125 0 250 Ft.
84TH AVE
BLIND PASS RD
82ND AVE
81ST AVE
80TH AVE
79TH AVE
78TH AVE
77TH AVE
76TH AVE
75TH AVE
COQUINA WAY
LS 11
Max V: 3.6 ft/s
Kimley»Horn

ST. PETE BEACH MODEL RESULTS

Service Area 1 & 10 & 11 - Page 17

Legend

Manholes
- Not Surchaged
- Surchaged
- Lift Station
- Force Main

Pipe Capacity
- 0 - 60%
- 60 - 80%
- 80 - 100%
- > 100%

Remaining Capacity
XXX GPM
PIPE SIZE

ST. PETE BEACH MODEL RESULTS
Service Area 12 - Page 18
Legend
Manholes
Not Surchaged
Surchaged
Lift Station
Force Main
Pipe Capacity
0 - 60%
60 - 80%
80 - 100%
> 100%
Remaining Capacity
XXX GPM
PIPE SIZE
ST. PETE BEACH
THE SUNSET CAPITAL OF FLORIDA
N
150 75 0 150 Ft.
MH-780
323 GPM
8-in
MH-779
302 GPM
8-in
MH-778
350 GPM
8-in
MH-776
8-in
MH-777
245 GPM
8-in
MH-775
226 GPM
8-in
MH-774
205 GPM
8-in
MH-773
LS-12
871 GPM
12-in
MH-768
264 GPM
8-in
MH-769
285 GPM
8-in
MH-770
8-in
MH-771
210 GPM
8-in
MH-772
323 GPM
8-in
GULF BLVD
MAX 1,31 Mile
CAPTIVA CIR
MH-765
206 GPM
10-in
Kimley»Horn

SECTION 1 - GENERAL

1.01 LOCATION OF THE WORK SITE AND ACCESS

The proposed Work for the Project will be within the limits of the City of St. Petersburg's wastewater service area, Pinellas County. Each asset to be rehabilitated and the type of rehabilitation will be identified in each individual Work Order with the location shown on corresponding wastewater Atlas/GIS maps.

Access to the Work site shall be over public streets and rights-of-way. Any damage to existing pavement or other surface improvements, attributable to the Contractor's activities, shall be restored to equal or better condition by the Contractor at the Contractor's expense.

1.02 SCOPE OF WORK

The essential portions of the proposed Work for the Project are summarized as follows:

The Contractor shall furnish all labor, material, equipment and services necessary for wastewater pipe rehabilitation using Cured-In-Place-Pipe (CIPP) lining. The Work shall be completed at various locations throughout the City of St. Petersburg's wastewater service area, as circumstances dictate, and shall include, but is not limited to, maintenance of traffic, pump around pumping and/or diversion of wastewater flows, cleaning, removal and disposal of all sand, rubble, deposits, and other accumulated debris, Closed Circuit Television Video (CCTV) inspection of pipe to be rehabilitated prior to rehabilitation, CIPP liner installation, reconnection of service laterals, final CCTV inspection after liner installation, testing of CIPP liners, Project site cleanup and restoration, and all other incidentals as required and directed by the Engineer to complete the Work.

The initial Contract period shall be for two hundred and forty (240) days. The Contract may be renewed as described in the Supplemental Instructions to Bidders.

The Bidder may review a list of anticipated Work locations at the Water Resources Department at 1650 3rd Avenue North or the Engineering Department at One 4th Street North. The list is not inclusive and may change as repairs are completed, damaged pipes are discovered, and the City's prioritization schedule changes; however, it may represent the kinds of repairs that are anticipated to be assigned under this Project.

Estimated quantities and Contract Pay Items are listed in the Proposal.

1.03 WORK ORDERS

Each individual asset (pipe segment) to be rehabilitated and the type/nature of rehabilitation will be authorized by the issuance of Work Orders. Work Orders may be issued through a Worklist as individual records (rows of data). A Worklist is an Excel spreadsheet table that will be issued by the Engineer to the Contractor in Excel format to authorize Work on groups of assets. Normally, a Worklist will be issued with 10 or more assets, sorted first by Work Order number(s) and then alphanumerically by wastewater Basin and/or upstream manhole name. Each Work Order record within the Worklist will contain the available pertinent information and directions for the asset to be rehabilitated. Along with the Worklist, corresponding Atlas/GIS map(s) will be issued to the Contractor showing the location of the assets. Other Work Order formats may be used as determined by the Engineer.

Each Work Order will generally include the asset's parameters such as Work Order number, the upstream and downstream manhole identification numbers, nominal host pipe diameter, approximate length of pipe, the upstream and downstream rim to invert depth (where available), and host pipe material (if known). Upon completion of the Work on an asset, the Contractor shall record the unit pay item quantities for the Work rendered per each asset/Work Order on the Worklist. The formulas, rows, columns, format and sorted order in each Worklist shall not be altered or deleted without the Engineer's approval. The completed monthly Worklist, in approved City format, shall be submitted in Excel file format and as a hard copy, formatted for printing, as back-up to the Contractor's monthly payment request. The Contractor shall also input or update the following Worklist fields upon completion of the Work: (1) status (change from APP to COMP) (2) liner thickness (only where using ranges outside of standard unit pay items), (3) completion date, and (4) rim to invert depth (where missing or different). The remaining fields on each Work Order will be supplied by the City or calculated based on formulas within the spreadsheet. Where changes in the Work, errors, or field discrepancies are found, the Contractor shall modify/update the appropriate fields to accurately reflect what was constructed. Other Work Order procedures may be required as determined by the Engineer.

An example completed Worklist (hard copy without unit quantities) that is acceptable for submittal with a payment request, is included in the Appendix of the Technical Specifications.

Work Orders for various lining tasks may require prioritization by the Engineer. The Contractor shall accomplish the Work in accordance with a specified chronological sequence, if given, and amend the sequence of outstanding Work Orders as the Engineer deems necessary. The Engineer shall notify the Contractor in writing of any such changes and unless notified otherwise, the Contractor shall proceed with the Work in the order in which it was issued. The schedule for beginning and completion of Work on each Work Order shall be in accordance with the article headed "Project Schedule" in this Section of the Technical Specifications.

1.04 ESTIMATED QUANTITIES

The estimated quantities listed in the Proposal for the various Contract Pay Items shall be used for the purposes of comparing Bids and determining amounts for which the Bid and Construction Bonds shall be furnished. Certain estimated quantities listed may be greater than the quantities required to complete the Work. These greater quantities may be for contingent work; compensation for contingent work will be made if required and approved by the Engineer in writing. The Engineer reserves the right to vary the estimated quantities or to delete the Work and the corresponding Contract Pay Items from the Contract. The Contractor will be compensated for Work actually performed as described in the Work Orders or authorized by the Engineer, all in accordance with the unit prices and lump sum prices contained in the Proposal. The Bidder shall quote in the Proposal a unit or lump sum price for which he will perform the Work for each of the Contract Pay Items.

1.05 SPECIFICATIONS

Technical Specifications Sections 1, 17, 18, 19, 20, 21, 22, and 24 have been prepared specifically for this Project. Other Technical Specifications Sections are City Standards and only the applicable portions of them govern the Work to be performed. Where the Standard Details and City Standard Technical Specifications are not in agreement, the Standard Details shall govern. Where a specifically prepared Technical Specification Section is not in agreement with City Standard Technical Specifications and/or Standard Details, the specifically prepared Section shall govern.

The Contractor shall furnish all labor, equipment, and materials to complete each Work Order and all miscellaneous and appurtenant work as specifically described and included under each Contract Pay Item as shown, specified, or directed by the Engineer in accordance with the obvious or expressed intent of the Contract. There are no Plans for the Work under Project No. 14008-111.

The Technical Specifications for the Project that reference FDOT-SSRBC (*Florida Department of Transportation - Standard Specifications for Road and Bridge Construction*) pertain to the 2013 Edition.

1.06 WASTEWATER ATLAS/GIS MAPS

The Contractor will be provided wastewater Atlas/GIS maps covering those areas associated with the Work Orders issued by the Engineer, and shall refer to them for additional information including, but not limited to, rights-of-way widths, easement widths and approximate location of manholes with respect to lot lines.

The Atlas/GIS maps are issued as a supplement to the Work Orders. They represent the best practical information available regarding the location and layout of the existing wastewater collection system. The accuracy of the information and dimensions on the Atlas/GIS maps is not guaranteed. The Contractor shall verify location and size of all existing utilities prior to starting the Work.

1.07 FIELD ENGINEERING

The Contractor shall establish and provide all vertical and horizontal control points for each Work Order including benchmarks. The Contractor shall provide the field layout surveying necessary to properly construct the Work.

1.08 SAFEGUARDING SURVEY MARKS

The Contractor shall safeguard all existing property monuments, benchmarks, and other survey marks adjacent to and within the Project limits, and shall bear the cost of re-establishing them if disturbed or destroyed.

1.09 INSPECTION AUTHORITY

The Engineer has ultimate responsibility for Contract administration and inspection for this Project which includes all Work Orders issued pursuant to the Contract. The Engineer may assign field inspection responsibilities to a Design Professional and/or City Inspector.

Each step of construction is subject to approval by the Engineer prior to proceeding with a subsequent step in accordance with the *General Conditions* article headed "Tests and Inspections" and as supplemented herein.

During the progress of the Work and up to the date of final acceptance, the Contractor shall at all times afford representatives of the City, the County, the State, the Department of Environmental Protection, the Department of Labor, or any other agency with jurisdiction, a reasonable, safe, and proper facility for observation of the Work done or being done at the site.

The Project line of authority will be presented at the Preconstruction Conference.

1.10 PROJECT SCHEDULE

The Contractor shall commence Work on each Worklist within 10 consecutive calendar days after it is received by the Contractor (unless such time is extended in writing by the Engineer). The Contractor shall pursue each Work Order with expeditious continuity until the Work is complete.

Following acceptance of the rehabilitated pipe by the Engineer, the Contractor will be required to begin restoration work (when applicable) within 2 working days and to complete restoration work within 10 consecutive calendar days.

The Engineer may order the Contractor to proceed with the Work at a faster rate or to add additional crew should a backlog of Work Orders develop.

If the Work does not progress at a satisfactory rate, is otherwise deemed unsatisfactory by the Engineer, or is not completed within the approved timeframe, the City in its sole discretion reserves the right to terminate the Contract and re-advertise the Work at any time. No additional compensation beyond the unit prices bid for Work completed will be allowed the Contractor because of such termination.

If the Engineer requests the Contractor to perform Work outside of normal working hours as defined during the Preconstruction Conference, the inspection fee will be waived and the Contractor compensated as provided under the *General Conditions* article headed "Changes in the Work."

1.11 STORM PREPAREDNESS PLAN

Within 15 days of the date of Notice to Proceed, the Contractor shall file with the Engineer a Storm Preparedness Plan. The plan shall outline the necessary measures the Contractor proposes to perform at no additional cost to the City upon the issuance of an official storm warning issued by the National Weather Service.

In the event of inclement weather, or at the Engineer's direction, the Contractor shall carefully protect the Work, private property affected by the Work, and stored materials against damage or injury from the weather. If, in the opinion of Engineer, any portion of the Work or materials is damaged or injured by reason of failure on the part of the Contractor to protect the Work, such Work and materials shall be removed and replaced at the Contractor's expense.

1.12 MATERIALS AND EQUIPMENT

All materials, appurtenances, and types of construction shall be in accordance with the Technical Specifications and shall in no event be less than that necessary to conform to the requirements of all applicable laws and regulations.

All materials and equipment to be incorporated into the Work shall be new, unused, and correctly designed. They shall be of standard first grade quality, produced by expert workmen, and be intended for the use for which they are offered. Materials or equipment which, in the opinion of the Engineer, are inferior or of a lower grade than indicated, specified, or required, will not be accepted.

Only "Asbestos-Free" materials shall be incorporated into the Work, unless the Technical Specifications specifically call for otherwise. Material suspected of being Regulated Asbestos Containing Material (RACM), includes but is not limited to: thermal and acoustic insulation, joint compound, mastic, adhesive, vinyl floor tile and sheeting, ceiling tile, plaster, wall board, roofing felt, and shingle. Shop drawings for material or equipment suspected of being RACM shall list all contents, shall be noted "Asbestos-Free," and shall be screened by the Contractor prior to submittal to confirm that it is "Asbestos-Free." All materials delivered to the Project site shall have been approved through the shop drawing procedure and shall be in their original labeled and unopened containers.

In the event that asbestos-containing material installed by the Contractor is discovered either during construction, following completion of construction, or following acceptance of the Contract Work by the City and closeout of the Contract, it will be the responsibility of the Contractor to pay all costs incurred to remove and replace those materials, including repair or replacement of all adjacent materials which are affected by the abatement process.

1.13 EQUIVALENT QUALITY

In the Contract Documents, whenever an article, material, apparatus, equipment, or process is called for by trade name or by name of a patentee, manufacturer, or dealer, or by reference to catalog of a manufacturer or dealer, it shall be understood as intending to mean and specify the article, material, apparatus, equipment, or process designated, or, upon approval of the Engineer, any equal thereto in quality, finish, design, efficiency, and durability, and equally serviceable for the purposes for which it is intended.

Whenever material or equipment is submitted for approval as being equal to that specified, the submittal shall include sufficient information and data to demonstrate that the material or equipment conforms to the Contract requirements. The decision as to whether or not such material or equipment is equal to that specified shall be made by the Engineer.

Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Contract, the Contractor shall immediately proceed to furnish the designated material or equipment.

Neither the approval by the Engineer of alternate material or equipment as being equivalent to that specified, nor the furnishing of the material or equipment specified, shall in any way relieve the Contractor of responsibility for failure of the material or equipment, due to faulty design, material, or workmanship, to perform the functions required of them by the Contract Documents.

1.14 MATERIAL AND EQUIPMENT DELIVERY AND STORAGE

In conformance with the *General Conditions* article headed "Material and Equipment Delivery", the Contractor shall deliver materials in ample quantities to ensure 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 related contractor. The Contractor shall provide space for storage of materials and equipment.

Pipe strung along roads and rights-of-way shall be placed in a manner that will not endanger or restrict pedestrian or vehicular traffic.

1.15 CONTAMINANTS CONTAINMENT/DISPOSITION

A. Prior to the installation of well points for dewatering, the Contractor shall visually inspect the Work area for indications of existing ground water monitoring, wells, or metal caps at grade. The Contractor shall review the Work area for monitoring wells or abandoned fuel tanks, and shall notify the Engineer in writing if any of the above items exist.

B. If during the dewatering activities the spoil water becomes odorous (excluding sulfur odor) or the spoil water is discolored (excluding tannic acid or iron), the Contractor shall stop the dewatering activities and shall notify the Engineer in writing of such, and request direction.

C. When Work activities encounter or expose any abnormal condition that may indicate the existence of a hazardous or toxic waste, Work activities shall stop in the vicinity of the abnormal condition and the Contractor shall notify the Engineer immediately. The presence of tanks or barrels; discolored earth, metal, wood, or groundwater; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal, may be signs of hazardous or toxic wastes and shall be treated with extraordinary caution.

   Every effort shall be made by the Contractor to minimize the spread of any hazardous or toxic waste into uncontaminated areas.

   The Contractor's operations shall not resume until directed in writing by the Engineer.

   Disposition of the hazardous or toxic waste will be made in accordance with the requirements and regulations of any City, County, State, or Federal agency having jurisdiction. Where the Contractor performs work necessary to dispose of hazardous or toxic waste, and the Contract does not include Pay Items for disposal, payment may be made as provided in the *General Conditions* article headed "Unforeseen Subsurface Conditions."

1.16 PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION

The Contractor shall be responsible for prevention, control, and abatement of erosion, siltation, and water pollution resulting from construction of the Project until final acceptance of the Project.

The Contractor shall implement all appropriate turbidity management practices at the point of discharge into a stormwater system, gutter, or other conveyance to ensure that state water quality standards are not violated at the point where the storm drain, gutter, or other conveyance discharges into a surface water.

All necessary provisions shall be taken to ensure compliance with the water quality standards of the State of Florida. Attention is called to Chapter 62-302, Florida Administrative Code, and in particular, the requirements that turbidity shall not exceed 29 NTUs above background level. Adequate silt containment procedures and equipment shall be used to control turbidity, at no additional cost to the City.

1.17 MAINTENANCE OF STORMWATER SYSTEM

The Contractor shall be responsible at all times to maintain the operation of existing stormwater facilities, or, when existing stormwater facilities are removed or taken out of service, to provide equivalent capacity alternate forms of stormwater removal adequate to prevent upstream or downstream flooding in excess of existing conditions. This responsibility shall include the installation of temporary connections, bypass pumping, or other temporary means necessary until the stormwater system is fully operational. All stormwater removed from the system shall be discharged back to the stormwater system.

1.18 PUMP AROUND PUMPING

A. General

The Contractor shall be responsible for the adequate and safe control of wastewater flows through the collection system where Work is being performed. Pump around pumping shall consist of furnishing, installing, and maintaining all power, primary and standby pumps, appurtenances and pump around piping required to maintain existing flows and services. Pump around pumping shall be done in such a manner as not to damage private or public property, or create a nuisance or public menace. The pumped wastewater shall be in an enclosed hose or pipe that is adequately protected from traffic, and shall be redirected into the wastewater collection system that has adequate capacity to accept the flow. Dumping or free flow of wastewater on private property, gutters, streets, sidewalks, or into the stormwater system is prohibited. No wastewater shall be allowed to leave the approved collection system. The Contractor shall locate his bypass piping to minimize any disturbance to existing utilities and shall obtain the approval of piping locations from the Engineer. Under no circumstances can portions of the system be removed from service for periods of time in excess of that approved by the Engineer.

B. Submittals

The Contractor shall submit pump around pumping and/or diversion plans for review and approval by the Engineer at least 14 days prior to the Work. In some cases verbal confirmation of the plan and approval with the Engineer or City Inspector may be used in lieu of a written plan. The Contractor shall notify the City Inspector assigned to the project a minimum of 48 hours prior to commencing with the pump around operation. Failure to receive approval by the Engineer or City Inspector may result in the Contractor's work being halted at no cost to the City. The submittal shall include the following information:

1. Drawing/Sketch indicating the location of temporary plugs and pump around discharge lines. (the sketch shall include street names and City manhole ID numbers)
2. Capacities of pumps, prime movers, and standby equipment
3. Design calculations (when required) proving adequacy of pump around system and selected equipment.
4. Corresponding traffic control plan (where applicable) in accordance with the article headed "Traffic Control" in this Section of the Technical Specifications.
5. Acoustical information of pumps to confirm compliance per the *General Conditions* article headed "Noise Abatement".
6. Emergency response plan in the event of failure of the pump around pumping system.

C. Job Conditions & Preparation

The Contractor shall be responsible to assess conditions and capacities of existing wastewater system in order to implement an acceptable pump around pumping plan at no additional cost to the City. The pump around pumping systems shall be of sufficient capacity to handle existing flows plus additional flows that may occur during periods of high tide or rainfall. The Contractor shall supply the necessary pumps, conduits, and other equipment to not only divert flow around the manhole or pipe section in which Work is to be performed, but also to transmit the flow into downstream wastewater system and/or pump stations without surcharge or overflow. Backup of wastewater in lateral connections within the areas of pipe being rehabilitated is prohibited.

D. Wastewater Pump Around Pumping

The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and pump around pumping systems. The Contractor shall retain full responsibility for adequately and safely pumping wastewater flow on a continuous basis. The Contractor shall take all necessary precautions including constant monitoring of pump around pumping to ensure that no wastewater backup or spill occurs.

Pumps shall be self-priming type or submersible electric, in good working order, with a working pressure gauge. All power must be supplied by the Contractor. All pumps used must be constructed to allow dry running for extended periods of time to accommodate the cyclical nature of wastewater flows. When pumping is in operation, all engines shall be equipped in a manner to keep the pump noise to a minimum and comply with the *General Conditions* article headed "Noise Abatement". Contractor shall provide stand-by pumps of adequate capacity and spare parts for pump(s) and piping shall be kept on site as required.

When pump around pumping operations are complete, piping shall be drained into the wastewater system prior to disassembly.

1.19 SPILL OR DISCHARGE OF WASTEWATER OR RECLAIMED WATER

The discharge of wastewater or effluent (reclaimed water) into waters of the State and/or into canals, ditches, and ponds that are connected to waters of the State is prohibited. Any spill or discharge of wastewater or reclaimed water shall be immediately reported to the Engineer, the City's Wastewater Collection System Manager (892-5612), and the City's Emergency Dispatch Center (893-7261). In the event of a spill or discharge, the Contractor shall immediately control, contain, and stop the spill or discharge and shall repair any damage to the City's facilities. The Contractor shall be responsible for any penalties and costs charged to the City by the FDEP and for all costs incurred by the City as a result of the Contractor's actions or as a result of the Contractor's negligence.

1.20 SEQUENCE OF OPERATION

A. General - Pipe Rehabilitation Work

It is the intent of the Engineer that all pipe rehabilitation work associated with the Project is installed to completion in a timely and orderly manner so as to minimize inconvenience to the Public.

The repair work for pipe segments and manholes may involve other Contractors. Therefore, the Contractor shall carefully coordinate its work activities and that of any subcontractors with the City Inspector so as to minimize disruption of service to the residents, to minimize pump around pumping, and to avoid scheduling conflicts between various disciplines of work. In that regard, the following general sequence of preparation and construction activities shall be adhered to unless the Contract or conditions warrant otherwise.

The Sequence of Work shall in general conform to the following order:

1. The Engineer will determine the Work required, and will issue the Contractor Work Orders authorizing the necessary rehabilitation work.
2. Upon receipt of the Work Orders from the Engineer and prior to commencing work, the Contractor shall develop and submit for approval a schedule for each of the pipe segment rehabilitation Work locations detailing plans for night operations, pump around pumping and traffic control. Those pipe segments requiring rehabilitation that are adjacent to each other shall be scheduled for rehabilitation at similar times to minimize the mobilization effort, pump around set-ups, and traffic control where feasible.
3. Store materials (when applicable) at locations and in a manner as approved by the Engineer. Lining equipment and materials shall not be stored or strung in residential areas more than 3 days in advance of lining installation unless otherwise approved in writing by the Engineer.
4. Perform neighborhood notification not less than 7 days prior to commencement of Work in the right-of-way, in accordance with the article headed "Neighborhood Notification" in this Section of the Technical Specifications.
5. Setup and maintain pump around pumping in accordance with the article headed "Pump Around Pumping" in this Section of the Technical Specifications.
6. Perform host pipe and access structure cleaning in accordance with the requirements of the Technical Specification Section headed "Cleaning of Wastewater System".
7. Perform pre-CCTV inspection of host pipe to be lined in accordance with the requirements of the Technical Specification Section headed "Closed Circuit Television Inspection".
8. Review pre-CCTV inspection reports and notify the Engineer of any host pipe condition and existing lateral locations which may prevent proper completion of lining.
9. Install CIPP liner in accordance with the requirements of the Technical Specifications Section headed "Cured-In-Place-Pipe (CIPP) Liners".
10. Reconnect laterals in accordance with the requirements of the Technical Specifications Section headed "Cured-In-Place-Pipe (CIPP) Liners".
11. Perform post-CCTV inspection and test the liner pipe, if required, in accordance with these Technical Specifications. Make repairs as necessary.
12. Remove pump around pumping setup.
13. Restore the ground surface (when applicable) in accordance with these Technical Specifications.

B. Utility Companies may be present on the Work site adjusting their facilities and installing new facilities. The Contractor's Work shall be scheduled in such a manner as to minimize conflicts with various utility companies.

C. The Contractor shall clean up the site of each Work location in accordance with the Contract Documents before proceeding to a new Work location, unless otherwise approved by the Engineer.

1.21 WORK IN STREETS AND HIGHWAYS

All Work within streets and highways shall be subject to the regulations and requirements of the appropriate agencies. Streets and highways are under the jurisdiction of the City of St. Petersburg, Pinellas County, and/or the Florida Department of Transportation for this Project.

Methods and materials of construction used in restoration within such streets and highways (when applicable) shall conform to the requirements, inspection, and approval of the duly authorized representatives of the appropriate agency having jurisdiction. Restoration Work shall include but not be limited to: removal and replacement of pavement, sidewalk, curb, and gutter; replacement of stormwater facilities; excavation and backfilling; and storage of materials and equipment.

1.22 WORK IN PRIVATE PROPERTY

In the event that, in the opinion of the Contractor, obtaining a temporary construction easement outside the limits of the right-of-way, of City-owned property, or of the easement(s) obtained by the City is necessary or desirable, it shall be the sole responsibility of the Contractor to obtain such temporary easement from the owner of the property. If such easement is obtained by the Contractor it shall contain provision to hold the City harmless from any operations of the Contractor within the easement limits. The Contractor shall not conduct construction operations on private property outside the limits of the public right-of-way, of City-owned property, or of the easement(s) obtained by the City unless a copy of the Temporary Construction Easement Agreement is filed with the City.

Upon completion of Work in easements, the Contractor shall restore the property, including all fences or other structures disturbed by his operations, to as good as or better than the condition in which he found it.

1.23 PERMITS

The Engineer will obtain City permits required for removal of trees that it removes via City forces. The Contractor shall obtain and pay for all other Federal, State, or County permits, or local licenses, and other authorizations required for the prosecution of the Work, including the cost of all Work performed in compliance with the terms and conditions of such permits, licenses, and authorizations, whether performed by the Contractor or sub-contractors.

1.24 FIELD OFFICE AND APPURTENANT STRUCTURES

Temporary field offices for the Contractor and/or Engineer will not be required.

1.25 PROJECT SIGNS

The Contractor shall prominently display sign(s) at each Work location, as required by the Engineer. The Engineer will provide the Contractor with approved City sign(s). The Contractor shall be responsible for any damage to the signs and shall return them to the Engineer upon completion of the Contract. No sign by the Contractor, any subcontractor, or any material supplier will be allowed on the Project site.

1.26 WATER PURCHASE

Water used in connection with this Project may be purchased from the Water Resources Department, 1650 Third Avenue North, in accordance with the provisions of applicable ordinances, procedures, and regulations.

1.27 TRAFFIC CONTROL

The Contractor shall provide required traffic controls under City observation. All traffic control devices required by Work under this Project shall be furnished and placed by the Contractor. The Contractor shall notify the Engineer and the Transportation Special Events Division of the Stormwater, Pavement & Traffic Operations Department by email a minimum of 2 working days prior to any Work affecting traffic flow. An email notification contact list will be provided to the Contractor's project representative by the Engineer. A Maintenance of Traffic Plan Drawing shall be submitted to the Engineer a minimum of 14 days prior to needed use for review and approval. All traffic control devices utilized during performance of the Work shall be provided by the Contractor and meet the requirements set forth in the latest revision of U.S. Department of Transportation Federal Highway Administration's "Manual on Uniform Traffic Control Devices for Streets and Highways" and the Florida State Department of Transportation's "Roadway and Traffic Design Standards."

Failure or refusal, on the part of the Contractor, to install, maintain and/or position traffic control devices promptly, fully, and in an acceptable manner, shall be sufficient cause for the Engineer, after 24-hour notice, to perform the traffic control with its own organization, or to contract with any other individual, firm, or corporation to perform the required traffic control. All costs and expenses incurred thereby shall be charged against the defaulting Contractor, and the amount thereof deducted from any money due, or which may become due him, or shall be charged against the Construction Bond. Any Work performed as described by this paragraph, shall not relieve the Contractor in any way of his responsibility for the Work performed by him.

The Contractor will conform to FDOT or Pinellas County regulations for scheduling when working in FDOT or Pinellas County roadways.

Failure of the Contractor to comply with any of the above traffic control requirements may result in issuance of a stop work order until the violation is corrected.

1.28 TREE PROTECTION

Particular care shall be taken by the Contractor to protect trees to prevent unnecessary damage to trunk and roots within the area of the dripline. The Contractor shall notify the City Inspector in advance of any tree pruning required to access the Work locations. Tree pruning shall be in accordance with American Forestry Association Standards. Roots over 2 inch diameter shall be preserved wherever possible. If root pruning is required, roots shall be cut cleanly. Payment for tree pruning is not a part of the Pay Items in the Proposal, and the cost will be negotiated with the Contractor on an as-needed basis.

1.29 UTILITIES

Prior to construction, the Contractor shall familiarize himself with the location of all existing utilities and facilities within the Work location and with the applicable provisions of the *General Conditions* article headed "Public Convenience and Safety."

The Contractor shall notify utility companies at least 48 hours, excluding Saturdays, Sundays, and legal holidays, prior to excavation. Utility companies shall be contacted by calling the utility notification center "Sunshine" at 1-800-432-4770.

The Engineer will furnish to the Contractor the available records of City utilities. The Contractor shall locate and mark all City utilities for his reference and for use by utility companies. The Contractor shall act as the City's agent for locating and marking City underground utilities within the Project limits, in accordance with the Florida Underground Facilities Damage Prevention and Safety Act (FS 556).

In all cases where existing utility lines may be interfered with by the Work, the Contractor shall give a minimum of 48 hours notice to the owners of such utilities to permit them to relocate the utility prior to construction. Existing City-owned utilities have been shown on the Atlas maps insofar as information is reasonably available. However, it will be the Contractor's responsibility to preserve all existing utilities whether shown on the Atlas maps or not.

1.30 NEIGHBORHOOD NOTIFICATION

Not less than 7 days prior to the commencement of Work in the right-of-way, the Contractor shall notify all residents and businesses affected by the construction with a printed door hanger notice indicating the scheduled date of construction, the type of construction, the Contractor's and Superintendent's name, address, and telephone number. The notice shall contain wording indicating that the property owner or business should remove from the right-of-way any bush, flower, planting, irrigation system, etc., that they wish to save. The door hanger text and a list of residents and businesses to which the notification has been delivered shall be compiled and submitted to the Engineer prior to the Contractor commencing Work in a particular block. After such notification, any such item remaining in the right-of-way and requiring removal shall be removed and disposed of by the Contractor. Restoration of such items will not be required of the Contractor, except for sodding of disturbed yard and parkway areas. However, the Contractor shall exercise reasonable caution in order to avoid damaging such items where possible.

1.31 SHOP, FIELD, AND LABORATORY TESTING

The Engineer may require testing by certified personnel of certain materials to be incorporated in the Work, such as: soils density, pavement, concrete pipe and appurtenances, and welds. In the event any such testing is required by the Engineer, a detailed description will be found in these Technical Specifications concerned with the specific item of Work.

Where reference is made in the DOT-SSRBC for design mixes, tests of materials, or work performed, or where in the opinion of the Engineer, tests are required to ascertain compliance with the Specifications, the Contractor shall have such tests made by an approved testing laboratory. No additional payment will be made for these tests.

1.32 AS-BUILT DRAWINGS

As-Built Drawings will not be required as part of this project. Accurate and complete Worklist and Work Orders are to be submitted and certified by the Contractor and shall constitute the record information for all elements of construction and physical parameters of each Work Order location.

The Contractor's submittal of this required information with the Payment Request shall be certification that all information contained therein is correct and reflects each assets characteristics and work performed by the Contractor, and each Work Order has been completed in accordance with the requirements of the Contract Documents.

SECTIONS 2 THROUGH 12 -- NOT USED

NO TEXT THIS PAGE

SECTION 13 - SURFACE RESTORATION

13.01 GENERAL

The Work in this section includes restoring and maintaining pavements and pavement bases, curbing, sidewalks, driveways, and grass surfaces that are disturbed, damaged, or destroyed during the course of the Work under this Contract.

The quality of workmanship and materials used in the restoration shall produce a surface equal to or better than the condition before the Work began.

Prior to restoration, the Contractor shall saw cut and remove all existing pavement within 2 feet of the edge of the excavation, or within such widths as may be ordered by the Engineer.

Compaction of soil and base materials shall be tested using the AASHTO T 180 method.

Surface restoration workmanship and materials shall conform to the applicable sections of the DOT-SSRBC.

All dirt areas disturbed shall be restored with sod, unless otherwise specified.

The City reserves the right to delete any or all of the restoration work.

13.02 ROADWAY RESTORATION

Where the installation of pipe or structures occurs within an existing roadway, the limits of excavation shall be saw cut leaving a straight and square edge. The upper portion of the trench backfill shall be replaced with a compacted shell, crushed (reclaimed) concrete, or limerock base as shown on the Plans, and paved to match the surrounding surface. Replacement base material shall be the same as the existing base. Roadway restoration shall conform to the detail for "Flexible Pavement Restoration."

13.03 TEMPORARY PAVEMENT

Immediately upon completion of backfilling, the pavement surfaces damaged or destroyed shall be temporarily restored by placing a shell (DOT-SSRBC Section 913), crushed (reclaimed) concrete (DOT-SSRBC Section 204 applicable sections), or limerock (DOT-SSRBC Section 911) base on the backfilled, compacted subgrade, and an adequate temporary asphaltic patch as shown or as approved by the Engineer. Shell, crushed (reclaimed) concrete, or limerock shall be used as a base for all bituminous pavements.

Temporary work shall be maintained in a suitable and safe condition for traffic until the permanent pavement is laid or until final acceptance of the Work.

13.04 SHELL BASE

Shell base shall be constructed on the prepared subgrade to not less than 98 percent of maximum density, in accordance with the requirements of DOT-SSRBC Section 250. The minimum compacted thickness of shell base shall conform to the detail for "Flexible Pavement Restoration."

13.05 LIMEROCK BASE

Limerock base shall be constructed on the prepared subgrade to not less than 98 percent of maximum density, in accordance with the requirements of DOT-SSRBC Section 200. The minimum compacted thickness of limerock base shall conform to the detail for "Flexible Pavement Restoration."

13.06 CRUSHED (RECLAIMED) CONCRETE BASE

Crushed (reclaimed) concrete base shall be constructed on the prepared subgrade to not less than 98 percent of maximum density, in accordance with the requirements of DOT-SSRBC Section 204. The minimum compacted thickness of crushed (reclaimed) concrete base shall conform to the detail for "Flexible Pavement Restoration."

The minimum limerock bearing ratio (LBR) value shall be 150.

13.07 ASPHALTIC CONCRETE PAVEMENT

A prime coat shall be applied to the prepared base in accordance with DOT-SSRBC Section 300 prior to permanent asphaltic concrete pavement.

Unless specified elsewhere, all permanent asphaltic concrete pavement replacement shall be Type SP-1 and shall be constructed in accordance with the requirements of DOT-SSRBC Sections 320, 330, and 331. Compacted thickness shall conform to the detail for "Flexible Pavement Restoration."

13.08 BRICK PAVEMENT

Construction of brick pavement shall follow the details as shown on the Plans and City standard practice using City standard paving brick or red clay brick conforming to ASTM C 32, Grade SS with City standard dimensions.

Streets with exposed brick surface shall be restored with brick. Brick pavers removed from streets that are not to be restored with brick shall remain the property of the City of St. Petersburg. Bricks not required for restoration, even those that have been overlaid with asphalt, shall be delivered by the Contractor to the City of St. Petersburg Maintenance Storage Yard, 3rd Avenue North and17th Street. Brick streets that are restored shall be restored to a condition of a new well-defined and contoured cross section with a surface appearance equal to or better than that which previously existed.

Bricks which are broken or damaged by the Contractor shall not be reused. Replacement bricks shall be purchased from the Maintenance Storage Yard. The Contractor shall obtain the current brick charge from the Stormwater, Pavement and Traffic Operations Department, Pavement Maintenance, phone 893-7260.

Brick street abutting asphalt pavement shall have a minimum 6-inch-wide flush Type A Header Curb.

13.09 CURB AND GUTTER

All permanent restoration of street curb, or curb and gutter, shall be of the same type and thickness as the curb, or curb and gutter, which abuts. The grade of the restored curb, or curb and gutter, shall conform to the grade of the existing adjacent curb, or curb and gutter, so that positive drainage is maintained.

13.10 CONCRETE SIDEWALK

The restoration and construction of concrete sidewalks shall conform to applicable requirements of DOT-SSRBC Section 522 and the Plans, and shall be constructed where shown on the Plans and directed by the City. Sidewalk expansion joints with bituminous filler shall be installed at a maximum of 50-foot intervals on center, and struck joints shall be spaced equidistant with walk width (joints wider than 6 feet shall be spaced as directed by the City). Where new construction is to be tied into existing facilities, the old material is to be removed back to the nearest construction joint, or sawcut to a straight line as directed by the Engineer. The soil under sidewalks and driveways shall be compacted to 98 percent of the maximum density.

New sidewalks shall be 4 inches thick. Concrete pour for walk construction shall be made only on dampened subgrade. A soft broom finish shall be given the walk surface as directed by the Engineer.

Sidewalks crossing driveways shall be constructed according to the Specifications for concrete driveways.

Curb ramps for physically handicapped shall be constructed at all locations where sidewalks cross the curb or where directed by the Engineer. Those existing sidewalks which are removed to accomplish associated work as a part of this Project shall be replaced with a curb ramp when the sidewalk crosses the curb. The cost of curb ramps shall be included in the appropriate proposal item for sidewalk restoration.

Where sidewalks are replaced, the replacement shall be the full width of the walk and the minimum length shall be 60 inches. Restoration of adjacent lawn is incidental to sidewalk replacement and no separate payment will be made therefore.

13.11 HEXAGON BLOCK SIDEWALK

The restoration and construction of hexagon block sidewalks shall conform to the details shown on the Plans and City standard practice using City standard hexagon blocks.

The soil under sidewalks and driveways shall be compacted to 98 percent of the maximum density. New hexagon block sidewalks shall be 2 inches thick.

Curb ramps for physically handicapped shall be constructed at all locations where sidewalks cross the curb, or where directed by the Engineer. Those existing sidewalks which are removed to accomplish associated work as a part of this Project shall be replaced with a curb ramp when the sidewalk crosses the curb. The cost of curb ramps shall be included in the appropriate Pay Item for sidewalk restoration.

Where sidewalks are replaced, the replacement shall be the full width of the walk. Restoration of adjacent grass is incidental to sidewalk replacement and no separate payment will be made therefore.

Hexagon block removed from a sidewalk that is not to be restored with hexagon block shall remain the property of the City of St. Petersburg. Hexagon block not required for restoration shall be delivered by the Contractor to the City of St. Petersburg Maintenance Storage Yard, 3rd Avenue North and 17th Street. Hexagon block that is broken or damaged by the Contractor shall not be reused. Replacement hexagon block may be purchased from the Maintenance Storage Yard. The Contractor shall obtain the current hexagon block charge from the Stormwater, Pavement and Traffic Operations Department, Pavement Maintenance, phone 893-7260.

13.12 DRIVEWAY AND PARKING LOT

Except as otherwise specified, all permanent restoration of base and surface of driveways, parking aprons, and sidewalks shall match the materials, thicknesses, elevations, lines, and grades of the existing construction, all to the Engineer's satisfaction. Patching of Portland cement driveway areas will not be allowed between joints or dummy joints.

For areas where streets are to be paved, or where more than 50 percent of the driveway apron is disturbed, concrete or brick driveways shall be replaced in kind. All other driveways, including shell and dirt, shall be restored with an asphalt concrete surface from the street to the property line or front of sidewalk, as directed by the Engineer.

All base compaction under driveways shall be to a minimum density of 98 percent of the maximum density.

13.13 DRIVEWAY - ASPHALT

Residential asphalt driveway restoration shall include 1-inch thick asphaltic concrete surface over 2 inches of compacted sand-asphalt hot mix base, or 5 inches of compacted limerock or shell base.

Commercial asphalt driveway restoration shall be constructed of 1-inch thick asphaltic concrete surface over 8 inches of limerock base compacted in 2 lifts.

13.14 DRIVEWAY - CONCRETE

The restoration and construction of concrete driveways shall conform to applicable requirements of DOT-SSRBC Section 522 and the Plans, and shall be constructed where shown on the Plans and directed by the Engineer.

Residential concrete driveway restoration shall be 5 inches thick and shall include placing a single layer of 6-inch by 6-inch wire mesh (WWF 6 x 6 - W1.4 x W1.4).

Commercial concrete driveways shall be 6 inches thick with a double layer of 6-inch by 6-inch wire mesh (WWF 6 x 6 - W1.4 x W1.4).

13.15 DRIVEWAY - PEAGRAVEL

Where less than 50 percent of the driveway apron is disturbed, peagravel driveways shall be restored to match the existing driveway. Peagravel driveway restoration shall include asphalt treated shell base 5 inches thick after compaction to a minimum density of 98 percent of the maximum.

13.16 DRIVEWAY - SHELL

Where less than 50 percent of the driveway apron is disturbed, shell driveways shall be restored to match the existing driveway. Shell driveway restoration shall be 5 inches thick after compaction to a minimum density of 98 percent.

13.17 GRASS

A. Seeding

Seed shall be sown as soon as practical after paving, pipeline, or other work has been completed.

Seeding where shown or ordered shall be accomplished in a manner satisfactory to the Engineer. All work and materials shall meet the applicable requirements DOT-SSRBC, Sections 570, 981, and 982. Prior to seeding, fertilizer shall be applied at a rate as recommended by the manufacturer.

The type grass seed to be sown shall be of the same variety as the grass removed or as is predominately adjacent, as approved by the Engineer. Seed sown in cooler months, which will not germinate until spring, shall be over seeded with Rye grass seed or other approved winter variety.

B. Sodding Within Street Rights-of-Way

Sod shall be planted as soon as practical after paving, pipeline, or other work has been completed.

All work and materials shall meet the applicable requirements DOT-SSRBC Section 575 (Sodding).

Sodding shall be done as directed by the Engineer, using only material which, in the opinion of the Engineer, is healthy and free of weeds, and (unless specified otherwise by the Engineer) of the same variety predominating at time of removal. Sod may be St. Augustine, Bahia, or other varieties as selected by the Engineer.

Sod shall be planted within 72 hours of being cut. Only moist, green sod having a virile root system may be planted. Sod shall be cut into adjacent sod to provide a smooth surface, and "top dressed" where necessary. Sod shall be rolled or tamped after planting to provide a uniform and consistent grade.

C. Grass Maintenance

The Contractor shall properly water and otherwise maintain all seeded and sodded areas for a minimum of 60 consecutive calendar days after completion of seeding or sodding operations. After the 60 days, and upon receipt of written request from the Contractor, the Engineer will inspect the areas for acceptance by the City. Any area that is washed or eroded, fails to show a uniform stand of healthy, vigorous grassing, or does not appear to be otherwise developing satisfactorily, shall be reseeded or re-sodded and maintained until suitable for acceptance by the Engineer.

In the event that the stand of grass is found to be contaminated by weeds or other undesirable growth, the Contractor will be required to effectively eliminate such undesirable growth at his own expense.

13.18 EXPANSION JOINT MATERIAL

Expansion joint material for concrete pavement surfaces, including sidewalks and driveways, shall be the bituminous strip type, 1/2-inch thick, and shall conform to applicable requirements of DOT-SSRBC Section 932.

SECTIONS 14 THROUGH 16 -- NOT USED

NO TEXT THIS PAGE

SECTION 17 - CURED-IN-PLACE-PIPE (CIPP) LINERS

17.01 GENERAL

The Work in this section includes furnishing and installing cured-in-place pipe (CIPP) liners. CIPP liners shall be defined as Main Liner, and shall be specified in the Work Order. A Main Liner typically is installed in wastewater gravity mains between two adjacent manholes or access structures, for the various diameters and thicknesses listed in the Proposal.

The Contractor shall furnish all materials, labor, equipment, and services necessary for liner installation including: traffic control, pump around pumping and/or diversion of wastewater flows, cleaning and closed circuit television video (CCTV) inspection of the pipe segment to be lined, service lateral reconnection, final CCTV inspection and testing of lined pipe system, surface restoration, and cleanup of the Work site.

The Contractor is advised that this Contract requires work in active wastewater collection systems and shall follow all federal, state and local requirements for safety in confined spaces. The Contractor shall conform to all guidelines by the Occupational Safety and Health Administration (OSHA) Federal Regulations; 29 CFR Ch. XVII, Section 1910.146 Confined Space Entry.

17.02 GOVERNING STANDARDS

The following references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail. The latest edition of the following references shall be used:

Reference	Title
ASTM D543	Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D903	Standard Test Method for Peel or Striping Strength of Adhesive Bonds
ASTM D1600	Standard Terminology for Abbreviated Terms Relating to Plastics
ASTM D2990	Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep Rupture of Plastics
ASTM D3839	Standard Practice for Underground Installation of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe
ASTM F412	Standard Terminology Relating to Plastic Piping Systems
ASTM F1216	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of Resin-Impregnated tube
ASTM F1743	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-In-Place Installation of Cured-In-Place Thermosetting Resin Pipe

ASTM F2019 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)

17.03 QUALIFICATIONS

A. The Contractor's qualifications are addressed under item 12 of the Proposal Questionnaire. Additionally, the Contractor shall be certified and/or licensed by the liner manufacturer(s) as an approved installer for the products referenced in this specification. The CIPP Main Liner Manufacturer/Assembler shall have supplied a minimum of 250,000 linear feet of successful wastewater collection system installations in North America of the product to be furnished for this Project. The Contractor shall provide a list of installation projects including the project name, contact information, and year installed.

17.04 PRODUCTS

A. All products used shall conform to the City's current Wastewater Approved Products List & Procedures at the time the project was Bid. A copy of this list and procedures are included in the Appendix to these Specifications.

1. Chemical grout designed for injection shall be: AV-100 chemical grout as manufactured by Avanti International, or approved equal.

17.05 WARRANTY

A. The Contractor shall warrant each lined pipe segment against any defects which will affect the integrity or strength of the product such as materials, surface preparation, lining application, and workmanship for a period of 2 years from the date of final acceptance of the Work. The Contractor shall, within 1 month of written notice thereof, propose an acceptable method and repair any defects that may develop during the warranty period in a manner acceptable to the Engineer and at no cost to the City.

Specific defects include, but are not limited to, evidence of visible leakage of groundwater through/around the CIPP system, foreign inclusions, dry spots, delamination of any portion of the CIPP system as visible from CCTV inspection, and wrinkles or separation of any part of the CIPP system from the host pipe to the extent that the CIPP system inside diameter in the area is 95 percent or less of the completed CIPP system inside diameter. No wrinkles in the CIPP liner will be allowed within 4 feet of liner terminations at manholes.

B. The Contractor shall warrant and save harmless the City and Engineer against claims for patent infringement and any loss thereof.

17.06 SUBMITTALS

A. The Contractor shall submit the following to the Engineer in accordance with the *General Conditions* article headed "Shop Drawings and Submittals":

1. Details on all lining materials and resins.
2. Name of resin supplier and liner fabric supplier.
3. Certification showing that the Contractor is currently licensed by the manufacturer(s) to install the product(s) referenced in this Specification.

4. Manufacturer's or Assembler's certification that the liner materials are in compliance with these Specifications, and the codes and standards referenced herein.
5. Contractor's procedures for sealing CIPP liners from groundwater infiltration/migration at manholes. Details of all component materials and construction details such as hydrophilic rubber seals.
6. Manufacturer's or Assembler's guidelines for storage procedures and temperature control, handling and inserting the liner, curing requirements and details, service connection methods, and trimming and finishing.
7. Manufacturer's or Assembler's guidelines for minimum and maximum pressures, temperatures, and time durations to be used during liner inversion, cure, and cool down.
8. Procedures for cool down and relieving static head after the CIPP liner is cured
9. Manufacturer's or Assembler's guidelines for factory and/or field (whichever applies) wet out procedures including: volume of resin per unit of liner, roller gap setting, mixing ratios and procedures for resin and catalyst/hardener, shelf life of resin, pot life of resin, and required wet out procedure to ensure full saturation.
10. The Contractor shall also provide field measurements and liner sizing calculations which demonstrate the liner wall thickness design for each pipe segment and that the liner has been properly undersized to avoid the creation of wrinkles or folds. Tabular liner wall thickness calculations shall be provided for each pipe diameter in no less than 1-foot increments from 1 foot to 6 feet cover depth and in 2-foot cover depth increments thereafter. The tabulated liner wall thickness for each pipe diameter/cover depth interval shall be the maximum wall thickness calculated over the cover depth interval. Special liner wall thickness calculations shall be submitted for installations with less than 3 feet of cover. The liner wall thickness shall be increased as required based on actual pipe ovality determined by the pre-installation CCTV inspection.

B. The Contractor shall submit pump around pumping and/or diversion plans to the Engineer a minimum of 14 days prior to the needed use for review and approval. In some cases verbal confirmation of the plan and approval with the Engineer or City Inspector may be used in lieu of a written plan. The Contractor shall notify the Engineer a minimum of 48 hours prior to commencement of the pump around operation. Failure to receive approval by the Engineer or City Inspector may result in the Contractor's Work being halted at no cost to the City.

   The Contractor shall submit drawings that identify the liner insertion, pump around pumping locations and methods with sufficient detail to assure that the Work can be accomplished without spill or discharge of wastewater. The pump around pumping plan shall include an emergency response plan to be followed in the event of a failure of the pumping system.

C. The Contractor shall submit a Maintenance of Traffic (MOT) plan to the Engineer a minimum of 14 days prior to the needed use for review and approval. The Contractor shall notify the Engineer or City Inspector 24 hours prior to commencing MOT operations.

17.07 MATERIALS

A. Liner Tube

1. The liner tube shall consist of one or more layers of flexible needled felt or an absorbent non-woven felt fabric that meets the standards referenced herein. The tube shall be constructed to withstand installation pressures and curing temperatures, and be compatible with the resin system used.

The liner shall be fabricated to a size that, when installed, will fit the internal circumference of the host pipe without any annular space between the liner and existing pipe wall, will have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.

2. The wet out tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the Design thickness.
3. The tube shall be sewn or flame bonded to a size that when installed will tightly fit the internal circumference and length of the host pipe. Allowance should be made for circumferential stretching during inversion. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.
4. The outside layer of the tube (before wet out) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet out) procedure.
5. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured liner. No dry or unsaturated layers shall be evident.
6. The wall color of the interior surface of the liner after installation shall be a light reflective color so that a clear, detailed examination with CCTV inspection equipment may be made.
7. Seams in the tube shall be stronger than the non-seamed felt.
8. The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 feet. Such markings shall include the manufacturer's name or identifying symbol. The tubes must be manufactured in the USA.
9. The liner shall be fabricated from materials which when cured, will be chemically resistant to withstand internal exposure to constituents normally present in domestic wastewater.
10. The minimum tube length shall be that deemed necessary by the Contractor to effectively span the distance from the inlet to the outlet of the respective manholes or access points, unless otherwise specified. The Contractor shall verify the lengths in the field before impregnation of the tube with resin. An individual tube insertion operation may be made over multiple contiguous pipe segments as determined in the field by the Contractor and reviewed by the Engineer.

B. **Resin**

1. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system compatible with the fabric liner material, host pipe and other products the resin may contact. The resin system, when properly cured within the tube composite, shall meet the standards and physical properties referenced herein, and those to be utilized in the Design of the CIPP liner for this Project. The resin shall produce CIPP liners complying with the structural and chemical resistance requirements of this Specification.
2. Resin shall not be subjected to ultraviolet light and shall form no excessive bubbling or wrinkling during lining.

17.08 STRUCTURAL REQUIREMENTS

A. The CIPP liner shall be designed as per ASTM F1216, Appendix X1. The CIPP liner design shall assume no bonding to the original host pipe wall.

B. The Contractor must have performed long-term testing for flexural creep of the CIPP liner material to be installed. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (tube and resin) and general workmanship of the installation and curing.

A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Values in excess of 50% will not be applied unless substantiated by qualified third party test data. The materials utilized for this Project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in design.

C. The layers of the cured CIPP liner shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the Work. Any reoccurrence may cause rejection of the Work.

D. The CIPP liner material shall conform to the structural properties, as listed below.

MINIMUM PHYSICAL PROPERTIES

Property	Test Method	Cured Composite min. per ASTM F1216
Flexural Modulus	ASTM D790	300,000 psi
Flexural Strength	ASTM D790	4,500 psi
Flexural Modulus	ASTM D2990 (long term)	150,000 psi

E. The required CIPP liner wall thickness shall be based, as a minimum, on the physical properties in Section 17.08D of this Specification, in accordance with the design equations in the Appendix of ASTM F1216, and the following design parameters:

Design Safety Factor	=	2
Retention Factor for Long-Term Flexural Modulus to be used in Design *(as determined by Long-Term tests described in Section 17.08B)*	=	1% - 50%
Ovality	=	5%
Groundwater Depth (above invert)	=	Assume at Existing Grade
Soil Depth (above crown)	=	Based on field measurements
Soil Modulus	=	700 psi
Soil Density	=	120 pcf
Live Load	=	AASHTO HS - 20
Design Condition	=	Fully Deteriorated
Enhancement Factor	=	7.0
Poisson's Ratio	=	0.3

F. The CIPP liner material shall conform to the minimum wall thicknesses, as listed below:

MINIMUM WALL THICKNESSES

CIPP	Thickness
4"-6"	3.0 mm
8"-12"	6.0 mm
15"	7.5 mm
18"-21"	9.0 mm
24"-27"	10.5 mm
30"-36"	12.0 mm
42"	13.5 mm
48"	15.0 mm

G. Any layers of the tube that are not saturated with resin prior to insertion into the host pipe shall not be included in the CIPP liner wall structural thickness computation.

17.09 PREPARATION

A. It shall be the responsibility of the Contractor to locate and designate all manhole access points, verify that they are open and accessible for the Work, and arrange access to these points. The Contractor shall notify the City Inspector of access points that cannot be opened due to obstruction by permanent structures. The Contractor shall be responsible to make all necessary provisions to ensure service conditions and structural conditions of the host pipe are suitable for installation and warranty of the liner. Provisions include, but are not limited to, temporary wastewater pump around pumping, temporary service interruption of service laterals, confirming the locations of all lateral service connections prior to installing and curing the CIPP liner, correction of obstructions/defects, and controlling excessive infiltration.

B. **Cleaning of Wastewater System**

The Contractor shall remove all debris from the pipe segments and manholes that will interfere with the CIPP liner installation. Cleaning shall conform to the requirements of Technical Specification Section headed "Cleaning of Wastewater System". The City shall provide a dump site for all debris removed from the wastewater system during the cleaning operation. Unless stated otherwise, it is assumed this site will be at or near the City's Water Reclamation Facility (WRF) to which the debris would have arrived in absence of the cleaning operation.

It shall be the responsibility of the Contractor to clear the pipe segment of obstructions such as solids, roots, iron scale, excessive joint sealant, and grease that will interfere with and prevent the insertion of the CIPP liner and a tight fit with the host pipe.

Specialty cleaning as defined under Technical Specification Section headed "Cleaning of Wastewater System" will be authorized by the Engineer. When specialty cleaning is specifically called for in a Work Order, the Contractor shall have the responsibility of coordinating the timing of specialty cleaning with the immediate installation of the CIPP liner within 24 hours. If desired, the Engineer may arrange for others to perform the specialty cleaning necessary and the Contractor shall notify the Engineer a minimum of 7 days in advance of their planned CIPP liner installation date so that the specialty cleaning can be accomplished prior to the planned CIPP lining installation.

Protruding laterals which are determined to interfere with the liner installation shall be removed by remote cutter in accordance with Technical Specification Section headed "Removal of Protruding Service Connections". This work shall be done in conjunction with wastewater system cleaning activities.

C. Pre-installation CCTV Inspection

The pre-installation CCTV Inspection of the main and service laterals shall be performed by experienced personnel trained in locating breaks, obstacles, obstructions and service connections in accordance with the requirements of the Technical Specification Section headed "Closed Circuit Television Inspection". The Contractor shall note locations of any conditions, which may prevent proper installation of the CIPP liner into the host pipe or cause defects in the final product so that these conditions can be corrected prior to the liner installation. If CCTV inspection reveals a condition such as a protruding service connection, dropped joint, pipe deformation, excessive infiltration or a collapse that may adversely impact inversion, installation, curing, or the final integrity of the CIPP liner, then the Contractor shall immediately inform the Engineer and allow same to view the defect during the inspection. Upon contact and approval of the Engineer, the Contractor and Engineer shall coordinate arrangements for correction of the defect by point repair. The Pre-installation CCTV video provided to the Engineer shall document the correction of any such condition and state of the host pipe prior to lining.

D. Point Repairs

Prior to CIPP liner installation, all conditions/defects such as dropped joints, pipe deformation, excessive infiltration or a collapse that may adversely impact inversion, installation, curing, or the final integrity of the CIPP liner shall be repaired as authorized by the Engineer. If conditions which can only be corrected by open-cut repair are encountered after the Contractor has set up preparations (pump around or traffic control) for the Work to progress, the Contractor shall leave these items in place as directed if the Engineer needs to schedule the completion of an open-cut repair and can do so within 5 business days. Otherwise, the Contractor shall demobilize if the Engineer must schedule the work at a later date.

1. Excessive infiltration shall be controlled using an approved chemical grout in accordance with manufacturer recommendations. Extraneous grout material which may come in contact with the CIPP liner shall be compatible with the resin system utilized. Extreme caution should be taken during leak sealing (pressure grouting) operations in order to avoid damaging the already weakened pipe. Excessive pumping of grout which might plug a service lateral shall be avoided. Any main or service laterals blocked by the grouting operation shall be cleared immediately by the Contractor. Host pipe damage caused by improper use of grouting equipment or operator error shall be repaired at the Contractor's expense.
2. Severe offsets/dropped joints, pipe deformations, grade defects or collapses shall be repaired by others by open-cut methods if they are discovered during the Post-Cleaning/Pre-installation Inspection.

E. Pump around of Wastewater

1. The Contractor shall provide pump around pumping and/or diversion when required for completion of preparatory work and CIPP liner installation. Pump around pumping of wastewater shall be performed in accordance with the requirements of the article "Pump Around Pumping" of the Technical Specification Section headed "General".

2. Contractor shall schedule the Work or otherwise provide wastewater collection service to allow businesses to maintain their normal hours of operation.

F. Public Notification

The Contractor shall make every effort to maintain service throughout the duration of the Project. In the event that a service connection will be out of service, the maximum amount of time of no service shall be 4 hours for any property served by the wastewater system. A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for contacting each home or business connected to the wastewater system and informing them of the Work to be conducted, and when wastewater service will be off-line. The Contractor shall also provide the following:

1. Written notice to be delivered to each home or business 2 days prior to the beginning of Work being conducted on the pipe segment. The notice shall include the Contractor's name, the date the Work will commence, the duration of the Work, the type of Work and a local telephone number of the Contractor's onsite representative they can contact to discuss the Project or any problems which could arise.
2. Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.

17.10 INSTALLATION

A. Resin Impregnation

1. The uncured resin in the original containers and the un-impregnated fiber-felt tube shall be thoroughly impregnated (by vacuum for Main Liner) prior to installation. The materials and 'wet-out' procedure shall be subject to inspection by the Engineer. A resin and catalyst system that is compatible with the requirements of the method shall be used.
2. The impregnated liner tube shall be transported to and stored at the site in such a manner that it will not be damaged, exposed to direct sunlight, or result in any public safety hazard. The impregnated liner tube shall be kept cool during shipment and storage. All materials shall be subject to inspection and review prior to installation.

B. Main Liner Installation

1. Contractor shall ensure that an Engineer approved procedure is followed for sealing the liner from all groundwater infiltration and migration at connections to and within all manholes. Hydrophilic sealing material shall be placed per the Manufacturer's recommended product guidelines and Contractor's/Manufacturer's approved procedures prior to liner installation.
2. The impregnated tube shall be inserted through an existing manhole or access structure by means of the manufacturer's recommended installation process in accordance with ASTM F1216. The application of hydrostatic head, compressed air, or other means shall fully extend the CIPP liner to the next designated manhole or termination point and inflate and firmly adhere the liner to the host pipe wall.
3. The liner tube shall be installed at a rate less than 10 feet per minute at all times.
4. If the CIPP liner installation fails, the Contractor shall be responsible for operating the pump around pumping equipment for the additional time required until the installation can be completed, at the Contractor's expense.

C. Curing

1. If a heat source is required after placement is completed, suitable heat source and distribution equipment shall be provided. The equipment shall be capable of circulating hot water, air, and/or steam throughout the section by means of a pre-strung hose which has been perforated in accordance with the manufacturer's recommendations or other methods acceptable by the Engineer to raise the temperature uniformly above the temperature required to affect a resin cure. This temperature shall be determined by the manufacturer based on the resin/catalyst system employed.
2. The heat source piping shall be fitted with continuous monitoring thermocouples to gauge the temperature of the incoming and outgoing water, steam, and/or air supply. Water, steam, or air temperature during the cure period shall meet the requirements of the resin manufacturer as measured at the heat source inflow and outflow return lines. The Contractor shall provide standby equipment to maintain the heat source supply. An additional continuous monitoring thermocouple shall be placed between the impregnated felt tube and the pipe invert at the remote manhole and at a point midway between the upstream and downstream manholes to determine the temperature during the cure. The temperature during the cure shall not be less than 130 degrees F at the boundary between the pipe wall and the liner unless otherwise required because of the resin system used.
3. The initial cure shall be deemed to be completed when inspection of the exposed portions of the liner appears hard and sound and the remote temperature sensors indicate that an exotherm has occurred. The cure period shall be of duration and temperature recommended by the resin manufacturer during which time the recirculation of the water, steam, and/or air and cycling of the heat exchanger continuously maintain the required temperature.
4. A data logger shall be used for Main Liners to continuously record temperature, pressure and time during heating, cure and cool down of the liner at the insertion, intermediate and termination manholes. Where requested, this data shall be provided to the Engineer for each pipe segment.

D. Cool Down

1. The cured liner shall be cooled to a temperature below 100 degrees F before relieving the static head or pressure in the lined pipe and returning normal flow back into the system. The cool down may be accomplished by introducing cool water or air into the lined pipe. Care shall be taken in the release of the static head or pressure so that a vacuum will not develop which could damage the newly installed liner. Water for cooling shall be supplied by the Contractor.
2. The finished liner shall be continuous over the length of the host pipe and be free from defects such as dry spots, delamination and lifts. All materials other than the cured liner should be removed from the pipe by the Contractor.

E. CIPP Main Liner Termination and Connection in Manholes

1. **Liner Termination:** The liner shall achieve a watertight seal through the manhole channel/invert and at the host pipe(s) where it enters/exits any manhole. The use of fiber felt and a suitable resin system, hydrophilic rubber waterstops, injection grouting, or other Engineer approved methods compatible with the liner shall be used to ensure a watertight CIPP liner system. CIPP liner entries at manholes shall be smooth and free of irregularities. The top half of the CIPP liner shall be neatly cut at least 4-inches away from the wall.

The channel in the manhole shall be a smooth continuation of the pipe(s) and shall be merged with other pipes or channels. All manholes shall be individually inspected for liner cut off, benches and sealing Work. Any visible leaks through or around the CIPP liner shall be corrected by an approved method at the Contractor's expense. It is anticipated that some pipe to manhole connections will require supplementary efforts to affect an acceptable watertight seal.

2. **Manhole Rehabilitation:** The channel in the manhole shall be a smooth continuation of the liner and pipe(s) and shall be merged with other channels. Inverts and/or benches shall be resurfaced/repaired (or constructed where necessary as directed by the Engineer) to provide a smooth flow channel. The Engineer may also require that the manhole floor and base section receive an approved monolithic coating which is chemically compatible with the CIPP liner, and any chemical/cementitious grout or repair material used in the manhole.

17.11 SERVICE RECONNECTION

A. The Contractor shall be responsible for internally reopening the service connections to the lined pipe using a pivot-head CCTV inspection camera and a remote cutting tool. The Contractor shall locate the service connections from inside the lined pipe, cut a hole matching the connection diameter, and grout the area where the service connection enters the lined pipe to produce a water tight seal approved by the Engineer. Grouting of service connections shall be accomplished using a "Logiball" type lateral packer to seal the first 18 inches of the service connection in accordance with the manufacturer's instructions and the Technical Specification Section headed "Chemical Sealing of Service Connections." The Contractor shall provide a nearly full-diameter hole, free from burrs, loose or abraded material, hanging fibers or projections, and with a neat, smooth and crack-free edge. The hole shall be 95 percent minimum and 100 percent maximum of the original service connection diameter. The invert of the service connection shall match the bottom of the reinstated service opening. The Contractor shall certify he has a minimum of 2 complete working cutters plus spare key components on the site before each installation. All cuttings shall be collected and disposed of properly.

B. All service connections shall be reopened including those that go to unoccupied or abandoned buildings or vacant lots, unless directed otherwise by the Engineer. Begin reconnection of services within four hours after liner insertion. The Contractor shall initially reopen each connection in an expeditious manner with a less than a full size opening to release wastewater temporarily stored in the service lateral. The Contractor shall then complete reconnection of all services within 24 hours. The Contractor shall immediately reopen any missed connections and repair any holes drilled in error. Faulty cuts shall be repaired by methods approved by the Engineer at no additional cost to the City.

C. It is the intent of these Specifications that service connections be reopened without excavation. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

17.12 INSPECTION AND TESTING

A. **Material**

1. All material testing shall be performed and certified by a registered independent, third-party laboratory.

2. Wall thickness of samples shall be determined as described in ASTM F1216, Section 8 or ASTM F1743, Section 8. The minimum wall thickness at any point shall not be less than 87.5% of the design thickness as calculated in Section 17.08 of this Specification.
3. The Contractor shall obtain, prepare and store appropriate samples for all liners installed under this Contract. The Contractor shall provide samples of the cured lining material from the actual installed liner at a minimum of one set per each liner insertion setup. The preparation and testing of these samples shall be in accordance ASTM F1216, Section 8. The Contractor shall coordinate the required testing of the samples with the laboratory, and the City will pay for the initial testing of these samples in accordance with the pay item. The Contractor shall pay for the cost of retests made necessary by the failure of the samples to meet the specified requirements.
4. The cured liner shall be sampled and tested for flexural strength and flexural modulus (short term). Flexural strength and modulus shall be tested in accordance with the requirements of ASTM D790. The liner shall be in compliance with the physical properties stated in Section 17.08D of this Specification.
5. Corrosion resistance requirements shall be as stated in ASTM F1216, Section X2, Chemical Resistance Tests.

B. **Field**

1. Up to 10 percent of the installed CIPP Main Liners may be tested for exfiltration in accordance with ASTM F1216, Section 8.2 prior to service lateral reconnections. Testing shall exclude maximum pressure limitation (4.3 psi) at lowest end. Leakage testing shall be performed after all dry and non-bondable hoses and tubes are completely removed from the liner. If the liner fails the test, Contractor shall repair or replace liner as required until the tested segment passes.
2. After completion of the installation of Main Liners, service reconnections, and finish work at the manholes, the lined pipe and adjacent manholes shall be televised by the Contractor at his expense, with a color CCTV inspection tilt-head camera recorded in digital format, as required by these Specifications.
3 Pre-installation and post-rehabilitation inspections shall either be recorded on the same media or shall be referenced, if recorded on separate media. Acceptance of the Work shall be based on Engineer's review of the CCTV inspection. Post-rehabilitation CCTV inspection shall not be performed in conjunction with cleaning operations and the liner wall shall be as dry as practical during this inspection (no dripping or splashing). All CCTV inspections delivered to the City shall be in accordance with the Technical Specification Section headed "Closed Circuit Television Inspection."

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SECTION 18 - CLEANING OF WASTEWATER SYSTEM

18.01 GENERAL

The Work in this section includes furnishing all labor, materials, tools, and equipment for the cleaning of the interior of wastewater pipe and public laterals. The pipe shall be cleaned by the Contractor prior to inspection as specified in the Technical Specification Section headed "Closed Circuit Television Inspection". The Work includes, but is not limited to, the following:

A. Field locating all manholes along the pipe segments to be cleaned;

B. Maintaining and protecting both vehicular and pedestrian traffic, and meeting all requirements of the City and all other governmental agencies having jurisdiction;

C. Cleaning of wastewater pipe segments and public laterals, as hereinafter specified, to permit proper Closed Circuit Television (CCTV) inspection and rehabilitation;

D. Disposal of waste and sediment as specified herein;

E. Removal of roots and other materials that require the use of specialty equipment defined as specialty cleaning as specified herein;

F. Clean up as the work progresses and after the completion of all work activities; and

G. All other work required for the satisfactory cleaning of wastewater pipes and manholes.

The Contractor is advised that this Contract requires work in active wastewater collection systems and shall follow all Federal, State and local requirements for safety when in confined spaces. The Contractor shall conform to all guidelines by the Occupational Safety and Health Administration (OSHA) Federal Regulations; 29 CFR Ch. XVII, Section 1910.146 Confined Space Entry.

18.02 QUALIFICATIONS

The Contractor shall have experience in the cleaning of vitrified clay pipe, concrete pipe, and other pipe materials typically found in wastewater collection systems. Documentation of experience shall be furnished to the Engineer upon request. Refer to item no. 12 in the Proposal Questionnaire for minimum qualifications.

18.03 SUBMITTALS

The Contractor shall submit the cleaning equipment product data to the Engineer in accordance with the *General Conditions* article headed "Shop Drawings and Submittals".

18.04 PRODUCTS

A. Cleaning Equipment

1. The wastewater system shall be cleaned with industry standard truck-mounted high velocity hydro-cleaning equipment. No mechanical bucket machinery will be acceptable for the cleaning process. The equipment shall be provided with a minimum of 500 ft of one-inch ID high-pressure hose with a selection of high velocity nozzles, as required for the cleaning and heavy cleaning operations. The equipment shall have a minimum usable water capacity of 1000 gal. The pumps shall be capable of delivering a minimum 60 gpm at 3000 psi. Pressure to the nozzle shall be regulated by a relief valve, adjustable from 0 to 1,500 psi minimum. The nozzles shall produce a scouring action from 15 to 45 degrees in all size pipes to be cleaned. The equipment shall carry its own 1,000 gal water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, engines and pumps, and a hydraulically-driven hose reel. The equipment shall also include a high velocity washing hose for ancillary cleaning of the walls and floor of manholes. The hose shall have an adjustable nozzle capable of producing flow from a fine spray to a solid stream. All controls shall be located so that the equipment can be operated above ground. During hydro-cleaning, the Contractor shall restrict the flow level in the pipe to a maximum of 50 percent of the pipe diameter. Particular care should be taken to avoid flooding house connections during hydro-cleaning operations.
2. The Contractor shall provide equipment capable of removing all sand, dirt, rocks and other debris from the pipe segment to allow unobstructed remote CCTV inspection of all internal pipe surfaces.
3. The Contractor shall certify that backup cleaning equipment, including machines, devices, tools, etc, is available and can be delivered to the site within 24 hours.
4. Any blockages of building service connections resulting from the cleaning or other items of work shall be removed by cleaning of the building connection by the Contractor, at his own expense. Any damage caused by flooding of building service connections shall be corrected by the Contractor, at his own expense.
5. The Contractor shall provide specialty equipment capable of mechanically removing all attached, hardened and/or cemented debris including, but not limited to, roots, grease, calcification, tuberculation, joint sealant, other hardened or tightly adherent deposits, etc. which cannot be removed by the use of industry standard high velocity hydro-cleaning equipment alone. Specialty equipment shall include, but is not limited to, a root saw, spring blade root cutter chuck or approved equal.

18.05 EXECUTION

A. Cleaning

1. After determining the preliminary requirements and the feasibility of effective CCTV inspection, the Contractor shall thoroughly clean all required pipe segments as required to permit an unrestricted inspection by industry standard CCTV inspection equipment. Particular emphasis shall be afforded the removal of accumulated grease, roots, sand, rocks, bricks, sludge and other debris so that the CCTV inspection will clearly show all portions of the pipe being inspected. Acceptance of pipe segment cleaning shall be made upon the successful completion of the CCTV inspection and shall be defined as removing sufficient material to permit an unrestricted view of the pipe internal surfaces and to ensure an effective rehabilitation of the pipe segment, all to the satisfaction of the Engineer.

If CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to repeat the cleaning and CCTV inspection of the pipe segment at no additional cost to the City.

2. Except during drought conditions, water required for the cleaning will be provided by the City at locations to be specified by the City. The City shall furnish and install water meters at all points where water is drawn from the City's supply. The City will charge a fee for the water used. A backflow prevention device shall be used to prevent contamination of the potable water system. The Contractor is responsible for any damage resulting from improper operation of hydrants. Do not use or obstruct a fire hydrant when there is a fire in the area.
3. The Contractor shall not waste water from the public water supply because of improper connections or from hydrants left open.
4. The Contractor shall remove all bricks, rocks, debris, sludge, dirt, sand, grease, roots and other materials from the pipe segment ordered to be cleaned, and collect and remove the resulting debris from the downstream manhole of the pipe segment. Passing waste material between manholes, causing accumulations of sand, system stoppages, or damage to the pumping equipment shall not be permitted. When necessary, a dam trap or weir and screen shall be temporarily installed in the downstream manhole in such manner that debris and solids shall be trapped and retained for subsequent removal.
5. Waste and debris cleaned from the pipe segment shall be removed at the downstream manhole by pumps or other means. The discharge and drainage stream shall be returned downstream to the wastewater collection system for disposal. Under no circumstances shall wastewater or solids be dumped onto the ground surface, street, or into ditches, catch basins or storm drains. All solid and semi-solid debris resulting from the cleaning operations shall be removed from the site and taken to the wastewater treatment facility to which the debris would have arrived in the absence of the cleaning operation, unless directed otherwise. The City's wastewater treatment facilities are Northeast Water Reclamation Facility, 1160 62nd Avenue NE, Northwest Water Reclamation Facility, 7500 26th Avenue N, Southwest Water Reclamation Facility, 3800 54th Avenue S, and the Albert Whitted Water Reclamation Facility, 601 8th Avenue SE. The Contractor is responsible for transporting the debris and must remove and properly dispose of excess water from the debris prior to disposal at the City's wastewater treatment facilities.
6. Where access to manholes in easements and rights-of-way is required, the Contractor shall obtain permission from the homeowner for equipment access. Refer to the Technical Specification Section headed "General" for more information on Work in Private Property.
7. Barricades and warning signs shall be used in work areas and around open manholes. The Contractor shall furnish and maintain traffic controls and safety devices as required.
8. Normal Cleaning includes the removal of sludge, sand, silt, rocks, gravel and other loose and non-adhering debris regardless of the amount in an unlimited number of passes, and requires a minimum of two passes with the high velocity hydro-cleaning equipment. The first pass shall be restricted to 800 psi at the nozzle head. The second and subsequent passes shall be at 1200 psi.
9. Specialty Cleaning includes Normal Cleaning criteria and also consists of removal of all attached, hardened and/or cemented debris including, but not limited to, roots, grease, calcification, tuberculation, joint sealant, other hardened or tightly adherent deposits, etc. which cannot be removed by the use of industry standard high velocity hydro-cleaning equipment alone. Specialty Cleaning consists of an unlimited number of passes using specialty cleaning equipment in conjunction with high velocity hydro-cleaning equipment. All pipes shall be restored to at least 95 percent of their nominal diameter. Joint sealant shall be removed to within ¼ inch of the pipe wall.

Specialty Cleaning only for the removal of excessive joint sealant will generally not be required until just prior to lining of the pipe segment (if necessary), unless the joint sealant prevents the passage of the CCTV inspection equipment. Specialty Cleaning shall only be undertaken when specifically authorized by the City.

10. Employ satisfactory precautions to protect the pipe and manholes from damage that might be inflicted by improper selection of the cleaning process or improper use of the equipment. Immediately notify Engineer if fresh soil, pieces of pipe, or other visible signs of potential problems occur during cleaning operation. When using hydraulically propelled devices, take precautions to ensure that the water pressure created does not cause damage or flooding to public or private property. Do not surcharge the wastewater beyond the elevation that could cause overflow of wastewater into area waterways or buildings, or onto the ground.
11. The Contractor shall clean upstream reaches of the system before the downstream reaches are cleaned. Hydro-cleaning equipment shall be inserted in the downstream manhole of the pipe segment, and the cleaning work shall proceed from upstream to downstream. Winching equipment used shall not damage the pipe or manholes.

B. **Final Acceptance of Pipe Cleaning**

Acceptance of pipe segment cleaning shall be made upon the successful review of the CCTV inspection by the Engineer. If the CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to repeat the cleaning and CCTV inspection of the pipe segment until the cleaning is shown to be satisfactory. Such repeat cleaning and CCTV inspection shall be made at the Contractor's expense.

SECTION 19 - CLOSED CIRCUIT TELEVISION INSPECTION

19.01 GENERAL

The Work in this section includes furnishing all labor, materials, tools, and equipment for the closed circuit television (CCTV) inspection of the interior of wastewater collection system pipes. The pipes shall be cleaned by the Contractor prior to CCTV inspection as specified in the Technical Specification Section headed "Cleaning of Wastewater System".

Post-cleaning CCTV inspection shall be video inspection by the Contractor of the interior of pipe following cleaning, and prior to any rehabilitation work. Post-cleaning CCTV inspections shall verify that the pipe segment is clean and allow an evaluation of the condition of the pipe. Post-cleaning/Pre-rehabilitation CCTV inspection shall identify the location of service connections and pipe segment defects that may require rehabilitation. Post-rehabilitation CCTV inspection shall be video inspection to determine that rehabilitation of a pipe segment has been completed according to Specifications. The inspections shall be done one pipe segment (i.e. manhole to manhole) at a time.

The Contractor is advised that this Contract requires work in active wastewater collection systems and shall follow all federal, state and local requirements for safety in confined spaces. The Contractor shall conform to all guidelines by the Occupational Safety and Health Administration (OSHA) Federal Regulations; 29 CFR Ch. XVII, Section 1910.146 Confined Space Entry.

19.02 QUALIFICATIONS

CCTV inspections shall be in compliance with the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) standards and performed by NASSCO PACP certified inspectors. The Contractor shall have experience in the CCTV inspection of vitrified clay pipe, concrete pipe, and other pipe materials typically found in wastewater collection systems. Refer to item no. 12 in the Proposal Questionnaire for minimum qualifications.

19.03 SUBMITTALS

A. Submitted CCTV inspections become the property of the City. The Contractor shall maintain a master copy of all CCTV inspection data until final acceptance of the project. The CCTV inspection video shall not be edited. The Contractor shall submit the following to the Engineer in accordance with the *General Conditions* article headed "Shop Drawings and Submittals":

   1. The equipment manufacturer's guidelines.
   2. Video and data from CCTV inspection surveys on a portable Universal Serial Bus (USB) hard drive along with hard copy reports of inspection surveys. The labeled digital media and hard copies of the inspection reports shall be assembled in an orderly manner and submitted together in a binder. All final data for each completed pipe segment Work Order where payment is being requested shall be submitted in a single, up-to-date NASSCO PACP Data Exchange Format database.
   3. Prior to the beginning of any work, a sample PACP database and video demonstrating compliance with the requirements above shall be submitted to the Engineer.

19.04 PRODUCTS

A. Equipment

1. **CCTV Equipment**: Select and use CCTV equipment that shall produce a high quality color video.
2. **Pipe Inspection Camera**: Produce a video using a pan-and-tilt, radial viewing, pipe inspection camera that pans ± 275 degrees and rotates 360 degrees. Use a camera with an accurate footage counter, which displays on the monitor the exact distance of the camera from the centerline of the starting manhole. Use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter in the pipe being televised. Only self propelled cameras shall be used to provide an unobstructed view of the pipe. Provide a lighting system that allows the features and condition of the pipe to be clearly seen. A reflector in front of the camera may be required to enhance lighting in dark or large diameter pipe. The camera shall be operative in 100 percent humidity conditions. The camera, television monitor and other components of the video system shall be capable of producing a minimum 500-line resolution colored video picture. Picture quality and definition shall be to the satisfaction of the Engineer, if unsatisfactory, equipment shall be removed and no payment made for an unsatisfactory inspection.
3. **Video**: Video shall be recorded on a portable USB hard drive or other acceptable digital media, as required by the Engineer.

    a. Only one pipe segment inspection shall be permitted in each video file. The Contractor shall not be permitted to start a portion of a televised segment on one video file and finish on another. Reverse inspections shall be included in the same video file or may be in a separate video file.

    b. Media identification labels are required. A label shall be attached to the USB hard drive with the following information:

    c. Identification Label:

        1) Project Name, Project Number and City Work Order Number
        2) Contractor's name
        3) Inspection Type: Post-cleaning/Pre-rehabilitation, and Post-rehabilitation
        4) Wastewater Basin
        5) Video Filenames
        6) Date Submitted

4. The Contractor shall provide with each video a, up-to-date PACP compliant report that shall include the header data, pipe defects, service connections, and PACP Condition Grading System ratings for the structural and operational & maintenance defects.
5. The Contractor shall provide a detailed header at the beginning of each video file and log sheet. At a minimum the header shall include:

    a. Project Name, Project Number and City Work Order Number
    b. Contractor's Name
    c. Operator's Name and PACP Certification Number
    d. Inspection Type: Post-cleaning/Pre-rehabilitation, or Post-rehabilitation
    e. Inspection Date
    f. Wastewater Basin Number

g. Upstream and Downstream manhole numbers
h. Street Name and Number
i. Upstream and Downstream Rim to Pipe Invert Depth
j. Upstream and Downstream Grade to Pipe Invert Depth
k. Survey Direction
l. Method of Flow Control
m. Pipe Shape and Size
n. Pipe Total Length
o. Pipe Surveyed Length
p. Pipe Joint Length
q. Pipe Material

6. The Contractor shall superimpose a footage counter on the screen that runs continuously during the course of each video file.

19.05 EXECUTION

A. Televising

1. After completion of cleaning and prior to rehabilitation, conduct CCTV inspection of the pipe segment to document the condition of the pipe segment and to locate existing service connections. The CCTV inspections shall be of sufficient quality for the Engineer to evaluate the condition of the pipe, locate the service connections, and verify cleaning. Immediately after rehabilitation, televise the pipe segment to document completion of rehabilitation work and quality. Notify the City Inspector 24 hours in advance of any CCTV inspection so that the Engineer may observe inspection operations.
2. Perform CCTV inspection of pipe segments as follows:

   a. Perform Post-cleaning/Pre-rehabilitation CCTV inspection immediately after pipe cleaning and before pipe rehabilitation work. Verify that the pipe is clean and ready for rehabilitation.
   b. Collect post-cleaning inspection video at each service connection for an extended period to better understand the flow from each service connection. The camera shall be positioned at each service connection for a sufficient duration to determine the nature of flow and condition of the connection (minimum of 30-seconds). If a service connection is in use, the Contractor shall pause the inspection until domestic flow has ceased. Any service connection inspection deemed unacceptable by the Engineer shall be re-televised by the Contractor at no additional cost to the City.
   c. Perform post-rehabilitation CCTV inspection to confirm completion of rehabilitation work, including removal and replacement. Verify that the rehabilitation work conforms to the requirements of the Specifications. Provide a video showing the completed work, including the condition of restored service connections. The video shall be taken with dry or damp pipe walls (no dripping or splashing). Prepare and submit a report providing location of service connections along with the location of any discrepancies.
   d. Videos shall pan beginning and ending manholes including pipe connection area to demonstrate that all debris has been removed. Camera operator shall slowly pan each service connection, significant defects, clamped joints, and pipe material transitions.

e. The accuracy of the measurements for location of defects, service connections, etc. cannot be stressed too strongly. Marking on cable, or the like, which would require interpolation for depth of manhole, shall not be allowed. The footage measurement device shall be accurate to one-tenth of a foot over the entire length of the pipe segment being inspected. Prior to recording the location of a defect, service connection, etc., slack in the cable of the CCTV inspection camera shall be taken up to assure the measuring device is designating proper footage. Accuracy of the measurement device shall be checked daily by use of a walking meter, roll-a-tape, or other suitable means.

f. Camera distortions, inadequate lighting, dirty lens, blurred/hazy picture, or excessive water depth shall be cause for rejection of the CCTV inspection for that pipe segment. Any pipe segment CCTV inspection deemed unacceptable by the Engineer shall be re-televised and a new video and report provided by the Contractor at no additional cost to the City. Payment for CCTV inspection and subsequent rehabilitation shall not be made until the Engineer approves the quality of the video and logs.

3. CCTV inspection video shall be continuous for a pipe segment between manholes. Do not leave gaps in the video of a segment between manholes and do not show a single segment on more than one video, unless specifically allowed by the Engineer.
4. Where access to manholes in easements and rights-of-way is required, the Contractor shall obtain permission from the homeowner for equipment access. Refer to the Technical Specification Section headed "General" for more information on Work in Private Property.

B. Flow Control

1. Perform CCTV inspection of one pipe segment at a time. Adequately control the flow in the segment being televised. The Contractor shall use pipe plugs in the upstream manhole to control the depth of flow where feasible. Do not exceed the depth of flow as follows:

Pipe Diameter (Inches)	Depth of Flow (Percent of Pipe Diameter)
6 - 10	10
12 - 24	15
>24	20

2. If the wastewater flow depth exceeds the maximum allowable during the CCTV inspection of a pipe segment, reduce the flow depth to an acceptable level by performing the CCTV inspection during minimum flow hours, by "Pump Around Pumping", by high-velocity jet nozzle or other acceptable dewatering means. Video made while floating the camera is not acceptable. Additionally, post-rehabilitation CCTV inspection shall be performed with the added requirement that the pipe walls are damp or dry (no dripping or splashing).

C. Passage of CCTV Camera

1. Do not propel the television camera through the pipe segment at a speed greater than 30 feet per minute and no slower than 15 feet per minute unless the inspection is stopped for service connection or defect viewing.
2. If the camera is unable to pass an obstruction during CCTV inspection of a pipe segment, televise the segment from the other direction (reverse setup) in order to obtain a complete CCTV inspection of the segment.

a. When the camera is proceeding in the opposite direction in order to survey on either side of an obstruction and a second obstruction is encountered away from the first obstruction, the inspection may be terminated and the Contractor shall be paid for the length of the pipe segment inspected.

b. The Engineer makes no guarantee that pipe segments specified for CCTV inspection are clear for the passage of the Contractor's cleaning and CCTV equipment. Select the appropriate equipment, tools, and methods for securing safe passage of the equipment. The Contractor shall be responsible for all costs associated with the retrieval of cleaning and CCTV inspection equipment that become stuck in the system. These costs include, but are not limited to, "Pump Around Pumping" and any resultant restoration, all in accordance with City standards. The City reserves the right to remove the Contractors stuck equipment from the system if the Contractor fails to do so in a timely manner. All costs incurred by the City to remove the Contractor's stuck equipment from the wastewater system shall paid by the Contractor.

3. The Post-cleaning/Pre-rehabilitation CCTV inspection shall document that the pipe is ready to rehabilitate. Report any variations between previous reported (existing data) conditions and the actual conditions encountered to the Engineer.
4. The post-rehabilitation CCTV inspection shall document completion of the rehabilitation work and conformance to the Specifications. Provide a full 360-degree view of pipe, joints and service connections. Conduct post-rehabilitation CCTV inspection separately from cleaning operations in order to provide a clear view unobstructed by splashing or dripping.

D. CCTV Inspection Data Requirements

1. For each CCTV inspection survey (manhole to manhole), provide the data/video in electronic format and a hard copy report. Electronic inspection data shall be submitted in a database compatible with current NASSCO PACP Data Exchange format. A single database shall be submitted with Payment Request for completed work orders. The single database as well as multiple pipe segment video files from the same Work List can be included on the same USB hard drive provided they fit. The video files and database included on all digital media shall be labeled per City approved format. The hard copy inspection report shall include header information and provide a log of all pipe defects, service connections and other conditions indexed to the footage counter using current PACP format.
2. CCTV inspection video and data shall be captured in digital format and collected with current PACP certified software. The software shall be capable of exporting the most current version of PACP data exchange files. The software shall capture the inspection data in the PACP defect coding mode.
3. All CCTV inspections shall be performed referencing the City's wastewater asset naming standards. The Engineer will provide the wastewater asset naming standards and master list to the Contractor. The Contractor may not alter or edit the City's asset master list without prior approval from the Engineer. All CCTV inspections shall be created referencing the City's wastewater basin as the drainage area. All asset names shall be created using the City's wastewater asset master list.
4. The CCTV inspection video files shall be encoded using MPEG1 or MPEG2 standards, and shall provide at least VHS quality at a minimum of 352 x 240 pixels resolution, 30 frames per second, and bitrate of 1.5 megabit per second. Extraneous video coverage before and after the completion of the pipe segment CCTV inspection shall be edited out by the Contractor to minimize the size of the associated digital video file.

5. Video filenames shall be created using a format of "Upstream MH ID (space) Downstream MH ID (space) Inspection Date (YYYYMMDD) followed by file extension".

   Example for the initial inspection: N020-M125 N020-M130 20060705.mpg

   Example for a reverse inspection: N020-M125 N020-M130 20060705R.mpg

   In the event an unknown manhole is discovered during an inspection, the unknown manhole between upstream N020-M125 and downstream N020-M130 shall receive a temporary designation of N020-A125. A 2nd manhole found between the above manholes would be designated as N020-B125. A new inspection shall be started for each pipe segment. The City will assign a permanent number at a later date.

E. **Field Quality Control**

1. Contractor shall not allow wastewater or solids to be released from the wastewater system onto streets or into ditches, catch basins, stormwater drains, stormwater manholes, etc.
2. Acceptance of pipe cleaning and rehabilitation work is contingent upon the successful completion of the CCTV inspection. If the CCTV inspection video is not acceptable or shows that debris, solids, sand, grease, or grit remains in the pipe, the CCTV inspection and/or cleaning shall be considered unsatisfactory. The cleaning and CCTV inspection of the pipe segment shall be repeated at the Contractor's expense until it is satisfactory.

SECTION 20 - PAY ITEM DESCRIPTIONS

20.01 INTRODUCTION

It is the intent of the Engineer to itemize major construction associated with the Project as Pay Items in the Proposal, and specify method of measurement and payment for all listed Pay Items. As may be noted below, incidental work which may be associated with a specific Pay Item is to be included in the cost proposed by the bidding Contractor for that Pay Item. It is not the intent of the City to allow for additional compensation beyond those Pay Items included in the Proposal. It is therefore important that all Bidders fully acquaint themselves with all Specifications, City Standard Details, and other details pertaining to the Work.

Work not shown or called out in Specifications, but necessary in carrying out the intent of the Project 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. No additional compensation will be considered for this associated and necessary Work.

The Contractor shall not use contingency Pay Items without written approval from the Engineer.

Pay Items have a prefix to assist the City in charging the Work to the proper accounting code and to assist in describing the Scope of Work. If no Pay Item exists for Work within a prefix class for that type Work, a similar Pay Item in another prefix may be used, as approved by the Engineer.

Prefixes used are:

G - General
S - Sanitary Sewer
M - Miscellaneous

20.02 GENERAL - G

Pay Item G-2.1 Traffic Control

Payment for Traffic Control will be made per day for a lining location. Measurement will be for the actual number of days, or fraction thereof, for Traffic Control rounded to the nearest tenth of a day (Example: 9 hrs of operation = 9/24 = 0.4 days). Time for setup and take down will not be included. Traffic Control shall be in accordance with the requirements of DOT-SSRBC Section 102. A lining location shall be limited to the Traffic Control setup for Work to be performed between two access manholes regardless of the length or number of pipe segments included. Payment shall include all materials, labor, equipment, and supplies necessary to setup, maintain, and take down the Traffic Control setup in and around a lining location, and specifically includes, but is not limited to, all signs, barricades, warning lights, markers, flagmen, restoration, and all other appurtenant work as specified to control traffic on typical four lane urban roads. This includes roadways designated by the City as Collectors and Arterials, and Pinellas County and FDOT roadways. Traffic Control for lining locations other than as described in this Pay Item is considered customary traffic control and no separate payment will be made for Traffic Control at those locations.

Payment for Traffic Control will be excluded when the Contractor is not actively pursuing the completion of the Work (including correction of deficient Work) under the various Pay Items in this Section. Variable message boards, crash cushions, barrier walls, off-duty police, striping, and ramps are not included in the Work under this Pay Item.

20.03 SANITARY SEWER - S

Work not specified 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.

Pay Item	**S-11.1**	**CIPP Main Liner 8" Dia. – 6.0 mm Thick**
	S-11.2	**CIPP Main Liner 10" Dia. – 6.0 mm Thick**
	S-11.3	**CIPP Main Liner 12" Dia. – 6.0 mm Thick**
	S-11.4	**CIPP Main Liner 15" Dia. – 7.5 mm Thick**
	S-11.5	**CIPP Main Liner 18" Dia. – 9.0 mm Thick**
	S-11.6	**CIPP Main Liner 24" Dia. – 10.5 mm Thick**
	S-11.7	**CIPP Main Liner 30" Dia. – 12.0 mm Thick**
	S-11.8	**CIPP Main Liner 36" Dia. – 12.0 mm Thick**
	S-11.9	**CIPP Main Liner 48" Dia. – 15.0 mm Thick**

Payment for the installation of CIPP Main Liner will be made per linear foot for the applicable pipe diameters and minimum thickness listed in the Proposal, regardless of the depth or overall length. Measurement will be from the upstream manhole to the downstream manhole centerlines. Payment shall include all materials, labor, equipment, and supplies necessary for the CIPP Main Liner installation, and specifically includes, but is not limited to, pre-rehabilitation CCTV inspection, liner sampling and storage of samples for testing, sealing liner connections at manholes, matching existing manhole lining to the CIPP liner, matching existing flow channels and surfacing to the liner to minimize turbulence, cleaning, removal and disposal of all sand, rubble, deposits, and other accumulated debris after liner installation, post-rehabilitation CCTV inspection video and log, restoration, and all other appurtenant work as specified. Payment also includes mobilization, demobilization, and customary traffic control.

Pay Item	**S-12.1**	**CIPP Main Liner 8" Dia. Thickness Variance ± 1.5 mm**
	S-12.2	**CIPP Main Liner 10" Dia. Thickness Variance ± 1.5 mm**
	S-12.3	**CIPP Main Liner 12" Dia. Thickness Variance ± 1.5 mm**
	S-12.4	**CIPP Main Liner 15" Dia. Thickness Variance ± 1.5 mm**
	S-12.5	**CIPP Main Liner 18" Dia. Thickness Variance ± 1.5 mm**
	S-12.6	**CIPP Main Liner 24" Dia. Thickness Variance ± 1.5 mm**
	S-12.7	**CIPP Main Liner 30" Dia. Thickness Variance ± 1.5 mm**
	S-12.8	**CIPP Main Liner 36" Dia. Thickness Variance ± 1.5 mm**
	S-12.9	**CIPP Main Liner 48" Dia. Thickness Variance ± 1.5 mm**

Payment for CIPP Main Liner Thickness Variance will be made per linear foot for the applicable pipe diameters listed in the Proposal, regardless of depth or overall length. Liner thickness may be varied due to field conditions requiring a change in the specified minimum thickness.

The per linear foot price for CIPP Main Liner Thickness Variance will be added to, or deducted from, the per linear foot price of the Main Liner for the applicable pipe diameter listed in the Proposal (Pay Items S-11.1 through S-11.9). The Main Liner per linear foot price will be adjusted for each 1.5 mm thickness variance increment. Liner thickness shall be in accordance with Technical Specification Section headed "Cured-In-Place-Pipe (CIPP) Liners" unless otherwise approved by the Engineer in writing.

Pay Item S-14.1 Pump-Around Pumping Setup – 12" Dia. and Less
S-14.2 Pump-Around Pumping Setup – 14" to 21" Dia.
S-14.3 Pump-Around Pumping Setup – 22" to 30" Dia.
S-14.4 Pump-Around Pumping Setup – 32" to 48" Dia.

Payment for Pump-Around Pumping Setup will be made per each setup for the applicable pipe diameters listed in the Proposal. Measurement will be for each setup regardless of the length of pump-around or number of pipe segments included. Payment shall include all materials, labor, equipment and supplies necessary for the Pump-Around Pumping Setup, and specifically includes, but is not limited to, pumping and backup equipment, fittings, connectors, adapters, temporary piping, restoration, and all other appurtenant work as specified in accordance with the Technical Specifications Section headed "General" to set up and take down the pump-around system. Payment also includes mobilization, demobilization, and customary traffic control.

Pump-Around Pumping shall be defined as the removal of wastewater from the wastewater collection system, pumping it around the upstream manhole and pipe segment(s), and returning it to the wastewater collection system downstream of the downstream manhole and pipe segment(s) being lined. A separate Pay Item is provided for Pump-Around Pumping Operation.

Pay Item S-15.1 Pump-Around Pumping Operation – 12" Dia. and Less
S-15.2 Pump-Around Pumping Operation – 14" to 21" Dia.
S-15.3 Pump-Around Pumping Operation – 22" to 30" Dia.
S-15.4 Pump-Around Pumping Operation – 32" to 48" Dia.

Payment for Pump-Around Pumping Operation will be made per day for the applicable pipe diameters listed in the Proposal. Measurement will be for the actual number of days, or fraction thereof, of operation rounded to the nearest tenth of a day for the various pipe diameters listed in the Proposal (Example: 9 hrs of operation = 9/24 = 0.4 days). Time for setup and take down will not be included. Payment shall include all materials, labor, equipment and supplies necessary for the Pump-Around Pumping Operation. Payment for Pump-Around Pumping Operation will be excluded when the Contractor is not actively pursuing the completion of the Work (including correction of deficient Work) under the various Pay Items in this Section.

Pay Item S-16.1 Normal Cleaning – 8" Dia. and Less
S-16.2 Normal Cleaning – 10" to 12" Dia.
S-16.3 Normal Cleaning – 14" to 18" Dia.
S-16.4 Normal Cleaning – 20" to 27" Dia.
S-16.5 Normal Cleaning – 30" Dia. and Greater

Payment for Normal Cleaning will be made per linear foot for the applicable pipe diameters listed in the Proposal, regardless of depth or overall length. Measurement will be from the upstream manhole to the downstream manhole centerlines, and based on the average debris depth.

Payment shall include all materials, labor, equipment, and supplies necessary for Normal Cleaning, and specifically includes, but is not limited to, the complete removal and disposal of all accumulated debris within the pipe including sludge, dirt, rocks, sand, rubble, and other materials and obstructions, restoration, and all other appurtenant work as specified. Payment also includes mobilization, demobilization, and customary traffic control.

Separate Pay Items are provided for Specialty Cleaning.

Pay Item S-16.6 Specialty Cleaning – 8" Dia. and Less
S-16.7 Specialty Cleaning – 10" to 12" Dia.
S-16.8 Specialty Cleaning – 14" to 18" Dia.
S-16.9 Specialty Cleaning – 20" to 27" Dia.
S-16.10 Specialty Cleaning – 30" Dia. or Greater

Payment for Specialty Cleaning will be made per linear foot for the applicable pipe diameters listed in the Proposal, regardless of depth or overall length. Measurement will be based on a minimum of 50 linear feet of pipe, or the actual length of the Specialty Cleaning performed, but not necessarily for the entire pipe segment length. Specialty Cleaning of only joints within a pipe segment, or portion thereof, shall count as 2.5 feet of equivalent pipe length (For Example: 400 feet of 8" pipe with 5 ft joints, clean all joints = 80 joints x 2.5 ft = 200 feet of specialty cleaning). Equivalent joint length shall not be counted in addition to the length of a pipe segment, or portion thereof, where continuous Specialty Cleaning has been performed. Payment shall include all materials, labor, equipment, and supplies necessary for Specialty Cleaning of wastewater pipe, and specifically includes, but is not limited to, the complete removal and disposal of all accumulated debris within the pipe including grease, roots, joint sealant, tuberculation, and other adherent deposits through the use of special equipment, restoration, and all other appurtenant work as specified. Specialty Cleaning is in addition to Light Cleaning as described in Pay Items S-16.1 through S-16.10. Payment also includes mobilization, demobilization, and customary traffic control.

Pay Item S-19.1 Chemical Sealing of Host Pipe – 10" Dia. and Less
S-19.2 Chemical Sealing of Host Pipe – 12" to 15" Dia.
S-19.3 Chemical Sealing of Host Pipe – 18" to 24" Dia.
S-19.4 Chemical Sealing of Host Pipe – 27" Dia. and Greater

Payment for Chemical Sealing of Host Pipe will be made per each host pipe for the applicable pipe diameters listed in the Proposal, regardless of depth, overall length, or the number of infiltration points sealed. Measurement will be for a host pipe between manholes. Payment shall include all materials, labor, equipment and supplies necessary for the Chemical Sealing of Host Pipe, and specifically includes, but is not limited to, sealing excessive infiltration at pipe joints and other defects, disposal of debris, post-rehabilitation CCTV inspection video and log, restoration, and all other appurtenant work as specified. Payment shall include mobilization, demobilization, and customary traffic control. A separate Pay Item is provided Chemical Sealing - Grout material.

No separate payment will be made for Traffic Control and Pump-Around Pumping when associated with installation of CIPP liners under this Contract.

Pay Item S-19.5 Chemical Sealing - Grout

Payment for Chemical Sealing – Grout will be made per gallon. This Pay item is applicable only in conjunction with Pay Items S-19.1 through S-19.4. Payment shall include all materials, equipment and labor for chemically sealing excessive infiltration at pipe joints and other defects at specified locations for Chemical Sealing of Host Pipe prior to CIPP liner installation.

Pay Item S-20 Removal & Sealing of Protruding Service Connections

Payment for Removal & Sealing of Protruding Service Connections will be made per each service regardless of the connection diameter or main pipe diameter.

Payment shall include all materials, labor, equipment and supplies necessary for the Removal & Sealing of Protruding Connections, and specifically includes, but is not limited to, removing protruding lateral by internal cutting or other remote methods, grouting the main/lateral connection, disposal of debris, post-rehabilitation CCTV inspection video and log, restoration, and all other appurtenant work as specified. Payment shall include mobilization, demobilization, and customary traffic control.

No separate payment will be made for Traffic Control and Pump-Around Pumping when associated with installation of CIPP liners under this Contract.

Pay Item S-21 Additional Access Cost Main Liner

Payment for Additional Access Cost Main Liner will be made per each access. Measurement will be for a liner installation where both the upstream and downstream manhole are not readily accessible by standard equipment, e.g., when located in rear easements. Payment shall include all additional labor, equipment, materials and supplies to complete the CIPP Main Liner installation in locations with limited access. The Contractor shall attempt to schedule and stage the Work to permit the lining of multiple, contiguous pipe segments from an accessible manhole where feasible.

Pay Item S-22 Service Reconnection

Payment for Service Reconnection will be made per each service regardless of the connection diameter or host pipe diameter, and regardless of depth or overall length of the host pipe. Payment shall include all materials, labor, equipment, and supplies necessary for the service reconnection, and specifically includes, but is not limited to, reconnecting service lateral by internal cutting or other remote methods, grouting the annular space between the liner and host pipe at the lateral connection and the first 18-inches of the service lateral, post-rehabilitation CCTV inspection video and log, disposal of debris, restoration, and all other appurtenant work as specified. Payment shall include mobilization, demobilization, and traffic control. No additional payment will be made for service reconnections made by excavation.

Pay Item S-23 CIPP Liner Testing

Payment for CIPP Liner Testing will be made per each test. Measurement will be for a set of tests completed for a liner installation and accepted by the Engineer. Payment shall include all materials, labor, equipment, supplies, and expenses necessary for CIPP Liner Testing, and specifically includes, but is not limited to, preparing samples, coordinating with the Independent Laboratory, submitting the results to the Engineer, and all other appurtenant work as specified. The cost to obtain and store samples for testing, and any retesting of samples is not included in this Pay Item.

20.04 MISCELLANEOUS - M

The Pay Item(s) described under this classification of Work will be full compensation for all labor, equipment, material, and services necessary to construct or install items, structures, and other miscellaneous Work complete which are required of the Project.

Pay Item M-13 Allowance for Contract Amendment

The proposal includes an allowance for various extra work contingencies. Extra work and/or alterations to the proposed Work charged to the allowance shall be fully documented and authorized by the Engineer as follows:

A. The Contractor shall include in the Contract Total Price the allowance so named in the Proposal Form.

B. The Contractor shall not proceed on any additional Work to be covered by the allowance until authorized in writing by the Engineer.

C. The Contractor shall cause the Work so covered to be done by such subcontractors or suppliers, and for such sum within the limit of the allowance as authorized by the Engineer.

D. Prior to Final Completion, an appropriate change order will be issued as recommended by the Engineer to reflect actual amounts due to the Contractor on account of Work covered by the allowance, and the Contract Total Price shall be correspondingly adjusted.

E. The allowance shall not be used for incidental work shown on the Plans or specified in the Contract Documents, or for other work required to render the Project complete.

SECTION 21 - CHEMICAL SEALING OF HOST PIPE

21.01 GENERAL

The Work in this section includes furnishing all labor, materials, tools, and equipment for reducing infiltration within the host pipe to an acceptable level prior to liner installation to insure that placement and curing is not adversely affected by the presence of excessive infiltration. Accordingly, the Engineer will base acceptance of this portion of the Work on the reduction of infiltration at host pipe joints and other defects to a level that will insure completion liner installation in accordance with these specifications.

Contractor shall furnish all labor, materials, equipment and incidentals to seal active infiltration at host pipe joints and other defects as directed. Sealing shall be from inside the host pipe using a device equipped with a pan and tilt camera and inflatable packer as described herein.

21.02 PRODUCTS

A. Sealing Materials

1. The sealing compound shall be Acrylic base gel – Avanti AV-100, AV-118, Urethane base gel – Avanti AV-350 or Acrylate base gel- Deneff AC-400 or approved equal, and shall be suitable for use in domestic wastewater collection systems. 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. Residual sealing materials shall be removed from the wastewater collection system after injection to insure no flow reductions, restriction or blockage occur.
2. Icoset additive shall be added to the sealing compound for gel strengthening. The quantity of Icoset additive will be according to the manufacturer recommendation. The sealing compound admixture shall be adjusted to meet specified viscosity and reaction time.

21.03 SUBMITTALS

A. The Contractor shall submit the following to the Engineer in accordance with the *General Conditions* article headed "Shop Drawings and Submittals":

1. Gel compounds
2. Installation equipment

21.04 EQUIPMENT

A. General

1. Sealing equipment shall consist of two separate pumping systems capable of supplying an uninterrupted flow of sealing materials to completely fill the voids. Pumps, fittings and hoses shall be designed to transport a high viscosity material and shall not be affected by acetone or ketone solvents.
2. Sealing materials shall pass from the pumping system through instant reading, controlled flow meters and then through a dual hose system into the sealing device. The device (referred to hereafter as a packer) shall be a cylindrical case of a size less than pipe size, with the cables at either end used to pull it through the host pipe.

3. Generally, the equipment shall be capable of performing the specified operations in pipes where flows do not exceed 25 percent without resorting to any method of flow control.
4. Air impervious inflatable sleeves shall be mounted over the cylinder with the ends of the sleeve sealed to the ends of the casting. The sleeves shall be so constructed that they can be pneumatically expanded from the center to both ends. The center portion of the sleeve shall be sealed to the casing by a broad confining band. When the packer is inflated, two widely spaced annular bladders shall be formed, each having an elongated shape and producing an annular void around the confined portion of the sleeve. No sealing device which is expanded mechanically nor where the expansion sleeve is not continuous will be allowed in order to prevent damage to the pipe from excessive amounts of sealing pressures or air leakage in the center area of such sealing device. The sleeve shall be a low void packer.

21.05 EXECUTION

A. General

Sealing shall be by the pressure grout method. Generally, this shall be accomplished by forcing chemical sealing gel materials through a system of pumps and hoses into and through the joints and other defects of the host pipe from the packer within the pipe. Jetting or driving pipes from the surface that could damage or cause undermining of the wastewater system shall not be allowed.

B. Grout Mixing

1. The Contractor shall mix all grout at the job site in the presence of the Engineer. No grout will be used on the job which has been mixed off site and is in the Contractor's tank when the truck drives on site. The Contractor's personnel shall follow the manufacturer's recommendations for the mixing and safety procedures to protect personnel from any adverse effects of the grouting compounds. Powder and additives shall be added and mixed at rates, which will minimize the formation of lumps within grout tanks solutions. All additives will be thoroughly mixed in the grouting component tanks.
2. Prior to application of grout for seal purposes, a pump test will be performed to determine if equal quantities of grout are being pumped from the grout component tanks. Separate containers shall be used to capture the discharges from the grout component tanks. One gallon of grout shall be pumped and the pump strokes shall be counted. If unequal quantities are being pumped, the Contractor shall take corrective action. The pump test shall be repeated until equal quantities are pumped from the grout tanks.
3. During the grouting process, the Contractor shall monitor the grout component tanks to make sure that equal quantities are being pumped. If unequal levels are noted in the tanks, the pump test shall be repeated as described above. At the beginning of each day, when new batches of grout are mixed and when grout additives are modified to change gel times, a test shall be performed with quantities of grout to determine the grout mixture gel time. The Contractor shall have accurate scale(s) which shall be used to weigh the various non water grout solution components.

C. Host Pipe Sealing by Pressure Grout Method

1. The packer shall be positioned over the area of infiltration by means of a measuring device at the surface and the closed circuit television camera in the pipe.

Accurate measurement of the location of the defect to be sealed shall be made, using a portion of the packer as a "Datum" of measurement point or target. Such measurement, target or point shall also be used to obtain necessary measurement for positioning injection area of packer over the area to be sealed.

2. The packer sleeves shall then be pneumatically expanded and shall seal against the inside periphery of the pipe to form a void area at the joint or defect now completely isolated from the remainder of the pipe segment.
3. Into this isolated area sealant materials shall be pumped through the hose system at controlled pressures, which are in excess of groundwater pressures. The pumping, metering and packer shall be integrated so that proportions and quantities of materials and pressures for materials and sealing gel can be instantly monitored and regulated in accordance with the type and size of the leak, percentage of voids being filled, type of soil surrounding the pipe and the rate of flow of the sealing gel solution in relation to the back pressures. These parameters should follow the manufacturer's specifications and guidelines.
4. Upon completion of the injection, the television camera shall be moved to a position to observe and inspect the results of the injection. If inspection shows the seal was not effective, the process shall be repeated until infiltration has been reduced to an acceptable level for liner installation.
5. The packer shall be moved forward, wiping away the excess grout. The excess sealing material removed from the joint by the grouting equipment shall be flushed or pushed forward to the next downstream manhole, removed from the wastewater system and disposed of by the Contractor as specified by disposal of debris resulting from cleaning operations. In no case shall excess grout material be allowed to accumulate and be flushed down the system.
6. It is intended that chemical sealing shall be performed on host pipe immediately prior to the installation of the liner unless otherwise authorized by the Engineer. The Contractor shall notify the City Inspector a minimum of 48 hours prior to commencing Chemical sealing operation. The quantity of grout used shall be verified by the City Inspector.
7. Any part of the wastewater system damaged as a result of the Contractor's operations shall be promptly repaired by, and at the expense of, the Contractor.
8. All activities shall be video inspected during the sealing operation. The video shall be submitted to the Engineer for review and for permanent record. The video inspection shall comply with the requirements of the Technical Specification Section headed "Closed Circuit Television Inspection".

D. Cleanup

Residual sealing materials that extend into the pipe, reduce the pipe diameter, or restrict the flow shall be removed and disposed of by the Contractor at an approved site. Sealed joints shall be left reasonably "flush" with the existing pipe surface. Excessive residual sealing materials in the system shall be cleaned to remove the residual materials.

E. Disposal

Furnish equipment for collection of cleaning solvents used in the cleaning of the sealing equipment. Collected solvents shall be disposed of by an approved solvent recovery process. Disposal of cleaning solvents into the wastewater system or into natural watercourses will be strictly prohibited.

F. Wastewater Flow Controls

When wastewater flows are above the minimum requirements or inspection of the complete periphery of the pipe is necessary to effectively conduct the inspection and sealing operations, one or more of the following methods of flow control shall be used.

1. A plug shall be inserted into the pipe at a manhole upstream from the section to be inspected and/or sealed. The plug shall be so designed that all or any portion of the wastewater flows can be released. During the inspection portion of the operation, flows shall be shut off or substantially reduced in order to properly inspect the pipe at the invert. After the inspection is complete, flows shall be restored to normal or not more than 1/4 of the pipe diameter during the sealing operation. The Contractor will be responsible for preventing backups and overflows.
2. Where pumping is required, in the opinion of the Engineer, to assure completion of the inspection and sealing work, the Contractor will be required to furnish pumping and bypassing equipment. Refer to the requirements of article "Pump Around Pumping" of the Technical Specification Section headed "General".

SECTION 22 - CHEMICAL SEALING OF SERVICE CONNECTIONS

22.01 GENERAL

The Work in this section includes furnishing all labor, materials, tools, and equipment for reducing infiltration within service laterals and to seal annular space between liners and host pipes at service lateral connections. Accordingly, the Engineer will base acceptance of this portion of the work on retesting of the joints sealed and inspection of the joints using remote television inspection.

Contractor shall furnish all labor, materials, equipment and incidentals to seal active service connections in those pipe segments having liners installed, as specified and as directed by the Engineer. Sealing shall be from within the main pipe using a device equipped with a pan and tilt camera and inversion tube.

22.02 PRODUCTS

A. Sealing Materials

1. The sealing compound shall be Acrylic base gel – Avanti AV-100, AV-118, Urethane base gel – Avanti AV-350 or Acrylate base gel- Deneff AC-400 or approved equal, and shall be suitable for use in domestic wastewater collection systems. 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. Residual sealing materials shall be removed from the wastewater collection system after injection to insure no flow reductions, restriction or blockage occur.
2. Icoset additive shall be added to the sealing compound for gel strengthening. The quantity of Icoset additive will be according to the manufacturer recommendation. The sealing compound admixture shall be adjusted to meet specified viscosity and reaction time.

22.03 SUBMITTALS

A. The Contractor shall submit the following to the Engineer in accordance with the *General Conditions* article headed "Shop Drawings and Submittals":

1. Gel compounds
2. Installation equipment

22.04 EQUIPMENT

A. General

1. Sealing equipment shall consist of two separate pumping systems capable of supplying an uninterrupted flow of sealing materials to completely fill the voids. Pumps, fittings and hoses shall be designed to transport a high viscosity material and shall not be affected by acetone or ketone solvents.
2. Sealing materials shall pass from the pumping system through instant reading, controlled flow meters and then through a dual hose system into the sealing device. The device (referred to hereafter as a packer) shall be a cylindrical case of a size less than pipe size, with the cables at either end used to pull it through the main pipe.

3. Generally, the equipment shall be capable of performing the specified operations in pipes where flows do not exceed 25 percent without resorting to any method of flow control.
4. Air impervious inflatable sleeves shall be mounted over the cylinder with the ends of the sleeve sealed to the ends of the casting. The sleeves shall be so constructed that they can be pneumatically expanded from the center to both ends. The center portion of the sleeve shall be sealed to the casing by a broad confining band. When the packer is inflated, two widely spaced annular bladders shall be formed, each having an elongated shape and producing an annular void around the confined portion of the sleeve. No sealing device which is expanded mechanically nor where the expansion sleeve is not continuous will be allowed in order to prevent damage to the pipe from excessive amounts of sealing pressures or air leakage in the center area of such sealing device. The sleeve shall be a low void packer.
5. Lateral service sealing is accomplished with a "Logiball" lateral packer. The objective of the lateral service packer is to seal the lateral service connection to the main pipe and the first 18-inches of the service lateral.

22.05 EXECUTION

A. General

Sealing shall be by the pressure grout method. Generally, this shall be accomplished by forcing chemical sealing gel materials through a system of pumps and hoses into and through the joints and other defects of the lateral pipe from the packer within the main pipe. Jetting or driving pipes from the surface that could damage or cause underrmining of the wastewater system shall not be allowed.

B. Grout Mixing

1. The Contractor shall mix all grout at the job site in the presence of the Engineer. No grout will be used on the job which has been mixed off site and is in the Contractor's tank when the truck drives on site. The Contractor's personnel shall follow the manufacturer's recommendations for the mixing and safety procedures to protect personnel from any adverse effects of the grouting compounds. Powder and additives shall be added and mixed at rates, which will minimize the formation of lumps within grout tanks solutions. All additives will be thoroughly mixed in the grouting component tanks.
2. Prior to application of grout for seal purposes, a pump test will be performed to determine if equal quantities of grout are being pumped from the grout component tanks. Separate containers shall be used to capture the discharges from the grout component tanks. One gallon of grout shall be pumped and the pump strokes shall be counted. If unequal quantities are being pumped, the Contractor shall take corrective action. The pump test shall be repeated until equal quantities are pumped from the grout tanks.
3. During the grouting process, the Contractor shall monitor the grout component tanks to make sure that equal quantities are being pumped. If unequal levels are noted in the tanks, the pump test shall be repeated as described above. At the beginning of each day, when new batches of grout are mixed and when grout additives are modified to change gel times, a test shall be performed with quantities of grout to determine the grout mixture gel time. The Contractor shall have accurate scale(s) which shall be used to weigh the various non water grout solution components.

C. Lateral Service Sealing by Pressure Grout Method

1. Air testing laterals shall be accomplished by isolating the area to be tested with the lateral service packer and by applying positive pressure into the isolated void area. A pan and tilt camera shall be used prior to positioning the lateral packer. A sensing unit shall be used for continuous monitoring of the void pressure. This sensing unit shall be located within the void area and will accurately transmit continuous pressure readout to the control panel.
2. Joint testing and grouting for laterals will utilize a "Logiball" type system. The packer ends (end elements, sleeves) shall be expanded using controlled air pressure. The expanded ends shall seal against the inside periphery of the pipe to form a void area at the lateral, now completely isolated from the remainder of the pipe segment. Into this isolated area, sealant materials shall be pumped through the hose system at controlled pressures that are in excess of groundwater pressures. The pressure device shall accurately show psi to the nearest one tenth (0.1) pound and shall instantly respond to and record any change in the void pressure. The joint shall be tested with a gauge pressure of one-half psi per foot of depth of lateral pipe as measured by the deeper of the two manholes between which the lateral is located, or a minimum of 4 psi, whichever is larger. The pumping unit, metering equipment, and the packer device shall be designated so that proportions and quantities of materials can be regulated in accordance with the type and size of the leak being tested or sealed, percentage of voids being filled, type of soil surrounding the pipe and the rate of flow of the sealing gel solution in relation to the back pressures. These parameters should follow the manufacturer's specifications and guidelines and be reviewed with the Engineer prior to the beginning of any grouting activities.
3. The test procedure will consist of applying air pressure into each isolated void area. To isolate a void, a lateral sealing packer shall be positioned straddling the lateral. The operator shall insert an inflatable inversion tube and inflate the packer ends to isolate the lateral. Once the designated pressure in the isolated void is displayed on the meter of the control panel, the application of air pressure will be stopped and a thirty-second waiting period will commence. The void pressure will be observed during this period. If the void pressure drop is greater than that allowed in the following Air Test Table, the lateral shall be considered to have failed the air test and shall be grouted as specified herein.

AIR TEST TABLE

Initial Void Pressure (psi)	Void Pressure After 30 Seconds
12 - 11	4.8 - 4.4
11 - 10	4.4 - 4.0
10 - 8	4.0 - 3.6
9 - 8	3.6 - 3.2
8 - 7	3.2 - 2.8
7 - 8	2.8 - 2.4
6 - 5	2.4 - 2.0

4. After completing the air test for each individual lateral specified herein, the lateral packer shall be deflated, with the void pressure meter continuing to display void pressure. If the void pressure does not drop to approximately zero, the equipment shall be adjusted to provide a zero void pressure reading at the monitor.
5. An air pre-test is not required for lateral sealing of service connections in main pipes that have been lined, as lateral sealing is required regardless of air test results. Pre and post-tests, and quantity of grout pumped shall be logged.

6. Lateral sealing begins if the lateral does not pass the air test as described above. The lateral packer shall remain in position, thus maintaining the isolated void. Chemical grout sealant will be pressure injected through the lateral packer into the annular space between the inversion tube and the lateral pipe. Under pressure, the grout material shall be then forced out into the soil through leaking joints and pipe defects. The amount of chemical grout pumped is based on the number of pump strokes delivered to each lateral. The number shall be recorded on the sealing log.
7. Upon completion of the lateral sealing procedure, the lateral shall be air tested to verify the sealing of the connection. The air test will be the same as outlined above. If the sealed lateral fails the air test, the grouting procedure shall be repeated at no additional cost to the City. This sequence of air testing, grouting and subsequent air testing shall be repeated until either the lateral is sealed or it is determined that the grout consumption is too high and may result in the blockage of the lateral pipe. The final determination to stop subsequent attempts to seal a lateral will be made jointly between the Engineer and the Contractor.
8. The Contractor shall verify lateral flow after the successful sealing of each lateral. With the lateral packer in position, the inversion tube shall be retracted and air pressure injected into the lateral. Should a pressure build in the lateral and not drop to zero in a few seconds, the packer will be moved off the connection and the connection shall be viewed with a television camera. With the camera viewing the connection point, an attempt will be made to obtain a water flush by the occupant. If no water is viewed during this procedure, it shall be assumed that the building service connection is blocked with grout and the responsibility to clear the lateral will be the Contractor's at no additional cost to the City.
9. The Contractor shall attach a notification form to the door of each home or building for which laterals have been grouted. This notification to the occupant shall state the following:

   The lateral service connection to (address)_____ was grouted on (date) _____.

   If any blockage of wastewater flow occurs, please call (emergency number) _____.

   Any blockages that occur as a result of the lateral sealing operations will be cleared by the Contractor.

10. All activities shall be video inspected during both the air testing and sealing operation. The video shall be submitted to the Engineer for review and for permanent record. The video shall display at a minimum the date, manhole numbers, footage to the lateral, and void pressure readout. In addition, the data obtained during this operation shall be recorded on a lateral testing and sealing log provided by the Contractor. The log shall specify conditions of each service lateral sealed, break-in-service connection, lined pipe, etc.

D. Cleanup

Residual sealing materials that extend into the pipe, reduce the pipe diameter, or restrict the flow shall be removed from the joint and disposed of by the Contractor at an approved site. The sealed joints shall be left reasonably "flush" with the existing pipe surface. If excessive residual sealing materials accumulate in the system (and/or if directed by the Engineer), the section shall be cleaned to remove the residual materials.

E. Disposal

Furnish equipment for collection of cleaning solvents used in the cleaning of the sealing equipment. Collected solvents shall be disposed of by an approved solvent recovery process. Disposal of cleaning solvents into the wastewater system or into natural watercourses will be strictly prohibited.

F. Wastewater Flow Controls

When wastewater flows are above the minimum requirements or inspection of the complete periphery of the pipe is necessary to effectively conduct the inspection and sealing operations, one or more of the following methods of flow control shall be used.

1. A plug shall be inserted into the pipe at a manhole upstream from the section to be inspected, tested and/or sealed. The plug shall be so designed that all or any portion of the wastewater flows can be released. During the inspection portion of the operation, flows shall be shut off or substantially reduced in order to properly inspect the pipe at the invert. After the inspection is complete, flows shall be restored to normal or not more than 1/4 of the pipe diameter during the joint testing and joint sealing operation. The Contractor will be responsible for preventing backups and overflows.
2. Where pumping is required, in the opinion of the Engineer, to assure completion of the inspection and sealing work, the Contractor will be required to furnish pumping and bypassing equipment. Refer to the requirements of article "Pump Around Pumping" of the Technical Specification Section headed "General".

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SECTION 23 - REMOVAL OF PROTRUDING SERVICE CONNECTIONS

23.01 GENERAL

The Work in this section includes furnishing all labor, materials, tools, and equipment for internally removing and sealing protruding service connection taps and excess mortar in wastewater pipe segments scheduled to be rehabilitated.

Remove only those taps that protrude sufficiently as specified herein which are determined to interfere with the pipe rehabilitation. The intent is to remove the minimum number of protruding taps necessary to allow the entire pipe segment to be rehabilitated.

The Contractor shall maintain wastewater flows, including pump around pumping, as required at all times during the performance of this work.

The Contractor shall remove all dirt and debris caused by tap removal. Excess material will not be allowed to enter the wastewater system and carried to downstream reaches.

The Contractor is advised that this Contract requires work in active wastewater collection systems and shall follow all federal, state and local requirements for safety in confined spaces. The Contractor shall conform to all guidelines by the Occupational Safety and Health Administration (OSHA) Federal Regulations; 29 CR Ch. XVII, Section 1910.146 Confined Space Entry.

23.02 PRODUCTS

A. Equipment

1. Protruding taps shall be removed using an internal, remote-controlled intruding pipe remover. Excavation and replacement of protruding taps will not be allowed except under special situations authorized in writing by the Engineer.
2. The equipment shall consist of a main body containing a rotating head assembly equipped with carbide cutting edges. The rotating cutting head shall be driven by air or by electricity and shall be capable of cutting concrete, vitrified clay pipe or other materials commonly used for pipe construction with the exception of cast iron or steel.
3. The equipment shall be self propelled or pulled through the pipe using winches and a cable set up between adjacent manholes.
4. The equipment shall be positioned using a TV camera in conjunction with the cutter assembly.

23.03 EXECUTION

A. Performance

1. The Contractor shall remove all service taps specified herein that inhibit pipe segment rehabilitation methods. The Contractor is required to remove protruding taps to the point where they are flush with the inside wall of the pipe.
2. The Contractor shall maintain a complete record of all taps that were removed, and furnish two (2) copies of this record at the completion of this work.

    a. The list shall show the Work Order Number, date, street, and pipe segment (by manhole numbers), station and location (left, right and top) of each tap removed.

b. The list shall also show similar data for any taps that were not successfully removed, as well as the reason why removal was unsuccessful.

3. The Contractor shall protect existing main pipe and service laterals from damage caused by improper use of the equipment. Damage to a main pipe or service lateral caused by removal of a tap shall be repaired immediately, as directed by the Engineer, at the Contractor's expense. Any increase in infiltration at the service connection caused by the Contractor's removal of the protruding tap shall be chemically sealed by the Contractor at no additional cost to the City, in accordance with the Technical Specification Section headed "Chemical Sealing of Service Connections".
4. The Contractor shall remove all dirt and debris from the wastewater system following completion of tap removal.

B. Inspection

1. Contractor shall televise protruding service connection tap prior to removal, recording location and footage to service connection. Following successful completion of removal, Contractor shall perform post-construction television inspection.
2. Post-cleaning and post-rehabilitation television inspections shall be recorded on the same video as specified in the Technical Specifications Section headed "Closed Circuit Television Inspection." Video and data shall be submitted to the Engineer. Video and data shall become the property of the City.