TOWN OF MEDLEY

Emergency Repair Sanitary Sewer Project

Bid Form (Short version)

Town of Medley
Capital Projects and Economic Development Department
9/16/2019

Project No. WS-0142

ITB 2019-014

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PART 2

BID FORM
(ITB 2019-014)

Emergency Repair Sanitary Sewer Project
Project No. WS-0142

Date: October 10th, 2019

Honorable Roberto Martell
Mayor
Town of Medley
7777 N.W. 72nd Avenue
Medley, FL 33166

Mr. Martell,

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to execute a Purchase Order to be issued by Town to perform all Work as specified in the Proposal Documents for the price(s) and within the time indicated in this Bid, and in accordance with the terms and conditions of the Bid Documents.

2. Bidder accepts and hereby incorporates by reference in this Bid Form all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those pertaining to the disposition of Bid Security.

3. Bidder has examined the site of the Project and has become fully informed concerning the local conditions, and nature and extent of Work. Bidder has examined the indemnification and liquidated damages provisions, if any, and the Bond and insurance requirements of the Bid, and accepts and agrees to abide by those terms and conditions without exception or limitation of any kind.

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

5. Bidder further represents that from personal knowledge and experience, or that he has made sufficient observations of the conditions of the Project or that to satisfy himself that such site is a correct and suitable one for this Work and he assumes full responsibility therefore, that he has examined the Proposal Documents and from his own experience or from professional advice that the Documents are sufficient for the work to be done.

6. Bidder proposes and agrees, if this Proposal is accepted, to contract with the Town, in the form of contract specified, to furnish all necessary materials, all necessary equipment, all necessary machinery, tools, apparatus, means of transportation, and labor necessary to complete the work specified in the Proposal Documents, and called for by the Drawings, General Notes, Technical Specifications as provided in this document or as specified by the Town of Medley.

7. Bidder further proposes and agrees to comply in all respects with the time limits for commencement and completion of the work as stated in the Contract.

8. Bidder has given the Town written notice of all conflicts, errors or discrepancies that it has discovered in the Proposal Documents and the written resolution thereof by the Town or its representative is acceptable to Bidder.

9. Bidder further agrees to execute a Contract (Purchase Order) and furnish satisfactory Performance and Payment Bonds each in the amount of one-hundred percent (100%) of the Contract price, within ten (10) consecutive calendar days after written notice being given by the Town of the award of the Contract, and the undersigned agrees that in case of failure on his part to execute the said Contract and Performance and Payment Bonds within the ten (10) consecutive calendar days after the award of the Contract, the cashier's check or Bid Bond which sum represents five percent (5%) of the Total Bid Price of the Contract accompanying this bid and the money payable thereon shall be paid to the Town as liquidation of damages sustained by the Town; otherwise, the check accompanying the Bid shall be returned to the undersigned after the Contract is signed and the Performance and Payment Bonds are filed. (Note: should the tenth (10^{th}) consecutive calendar day fall on a Saturday, Sunday or legal holiday observed by the Town or Bidder, then the final day to execute a contact and furnish satisfactory Performance and Payment Bonds shall be extended to the next immediately following business day).

10. The undersigned agrees to accept in full compensation therefore the total of the lump sum prices for the items named in the Bid Proposal, based on the quantities actually constructed as determined by the applicable measurement and payment portion of the Technical Specifications.

Bidder's Certificate of Competency No. _____

Bidders Occupational License No._____

Acknowledgement is hereby made of the following Addenda (identified by number) received since issuance of the Invitation to Bid:

Addendum #	**Date**

Attached hereto is (check one) a:

_____ Cashier's check for the sum of $_____ U.S. Dollars or

_____ Bid Bond for the Sum of $_____ U.S. Dollars

Made payable to the Town of Medley, Florida.

Submitted by:

_____

(Name of Bidder) (Affix Seal)

_____

Signature of Officer

_____

(Title of Officer)

PLEASE HAVE YOUR INSURANCE REPRESENTATIVE CAREFULLY REVIEW THE INSURANCE COVERAGE REQUIREMENTS CONTAINED IN THE INSTRUCTIONS TO BIDDERS PRIOR TO SUBMITTING YOUR BID TO ENSURE COMPLIANCE WITH ALL INSURANCE REQUIREMENTS.

Communications concerning this Bid shall be addressed to:

Name:	
Title:	
Street Address:	
City, State & Zip:	
Email address:	

SCOPE OF WORK

The Work to be performed under this Contract shall consist of providing equipment, materials, supplies, and manufactured articles; and for furnishing transportation and services, including fuel, power, water, and essential communications; and for the performance of labor, work, or other operations in strict accordance with this document.

Wherever this document addresses a third party, i.e., subcontractor, manufacturer, vendor, etc., it is to be considered as the Contractor through the third party. Wherever a reference to number of days is noted, it shall mean calendar days.

Following receipt of Notice to Proceed with the Work, the Contractor shall notify the Town at least 5-days before he is ready to start actual construction to allow the Town time to make arrangements for inspection of the Work. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to residents.

The Work to be performed under this Contract includes the following activities:

1. Lateral Lining -Top Hat liners =Total of 8 units of Six (6") inch laterals – see Sketches 2-5
2. Pipe Replacement in 3 Phases of 120 LF each – Eight (8") inch = Total of 360 LF – see Sketch 6
3. Point Repair – Eight (8") inch = Total of 10 LF – see Sketch 7
4. Point Repair - Six (6") inch lateral = Total of 10 LF – see Sketch 8

SAFETY

The Successful Bidder shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The Successful Bidder shall comply with the rules and regulations of the Florida Department of Commerce regarding industrial safety (Fla Statutes Section 440.56) and with the standards set forth in the Occupational Safety and Health Act of 1970 (OSHA) and its Amendments.

The Successful Bidder shall take all reasonable precautions for the safety of and shall provide all reasonable protection to prevent damage, injury or loss to:

A. All employees on the Work site and all other persons who may be affected thereby.
B. The Work and all materials and equipment incorporated therein.
C. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, structures and utilities not designated for removal, relocation or replacement in the course of the Work.

All open excavations made in the earth shall be performed in compliance with the State of Florida Trench Safety Act, OSHA 29 CFR 1926.650, Subpart P (Chapter 90-96, Laws of Florida). The Contractor shall appoint a **competent person**, in accordance with Subpart P, who shall be present at the jobsite. **Competent person** shall mean one who is capable of identifying existing and predictable hazards, the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

All open excavations made in the earth or other materials/locations shall be safely covered by the end of

each work shift.

LOCATION OF UTILITIES.

The Successful Bidder and Contractor shall be responsible for determining the location, character and depth of all utilities. Within two (2) days before digging, if applicable, Contractor shall notify Sunshine Once Call: (800) 432-4770 to find out where buried utilities (electric, gas, telephone, cable, water, sewer facilities) are located within the Town as required by Chapter 556, Florida Statutes. At points where the Contractor's operations are adjacent to utility facilities which if damaged, might result in expense, loss and disruption of service or other undue inconvenience to the public or to the owner, Work shall not be commenced until all arrangements necessary for the protection thereof have been made by the Contractor. The Contractor shall not repair or attempt to repair utility damage but shall immediately contact the utility owner. The Contractor shall obtain the name, address and telephone number of each utility company to contact. The Contractor shall be solely and directly responsible to the owner and operators of such utilities for any damage, injury, expense, loss, inconvenience or delay caused by the Contractor's operations.

USE OF PREMISES

Contractor shall confine construction equipment, the storage of materials and equipment and the operations of Workers to the Project site and areas identified in and permitted by the Contract Documents and other land and areas permitted by laws and regulations. Public rights-of-way shall not be unreasonably encumbered with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the Town or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against the Town or EOR by any such party or occupant because of the performance of the Work, Contractor shall promptly attempt to settle with such other party by Contract or otherwise resolve the claim.

WORK IN THE PUBLIC RIGHT OF WAY

For projects being conducted in the Public Right of Way, the Maintenance of Traffic (MOT) and Construction Time Schedule are required and they must be sent by the contractor to the Utilities Department and Police Department for review and approval.

- On major roadways the contractor is to notify and submit the MOT with project location to the Utilities Department 1 week prior to start for review and comment and after approval to the police department dispatch. In addition, a construction time schedule shall be provided.
- On side roadways the contractor is to notify and submit the MOT with project location to the Utilities Department 48 hrs. prior to start for review and comment and after approval to the police department dispatch. In addition, a construction time schedule shall be provided.

DEWATERING

Dewatering using point well dewatering is allowed for the construction activities under this contract. All point repairs will be performed under wet conditions and if performed, pipe is only to be placed by certified divers.

Point repairs and main line replacement shall be performed in accordance with the Sewer Point Repairs Technical Specification included in this proposal document. Sanitary Sewer flow must always be maintained.

The following documents are attached to and made as a condition to this Bid:

(a) Attachment 1: Proposal Documents

(b) Attachment 2: Bid Proposal

(c) Attachment 3: Notice to all Bidders

(d) Attachment 4: List of Sub-Contractors

(e) Attachment 5: General Information Required of Bidder

(f) Attachment 6: Solicitation, Giving, and Acceptance of Gift Policy

(g) Attachment 7: Drug-Free Workplace Program

(h) Attachment 8: Bidder's Certification

(i) Attachment 9: Certificate(s) of Insurance

(j) Attachment 10: Non-Collusion Affidavit

(h) Attachment 11: Conformance with OSHA Standards

(i) Attachment 12: Trench Safety Act Compliance

(ITB 2019-014)

Emergency Repair Sanitary Sewer Project
Project No. WS-0142

Bid prices stated in the proposal include all costs and expenses for MOT, labor, equipment, materials, contractor's overhead, one-year material warrantee, bonds and profit. Payment for this project will be based upon completion of the entire project as a unit price contract, in accordance with the Contract Documents and Construction Sketches. Contractor shall notify Sunshine Once Call: (800) 432-4770 to find out where buried utilities are located within the Town.

Item No.	Map Page No.	Repair ID	Address	Break Location	Description of Work Per Pump Station	Unit	Quantity	Unit Price	Amount
1	N/A	N/A	N/A	N/A	Mobilization & demobilization of all work.	Lump Sum	1 (one)	Lump Sum	
Pump Station 300 - Town of Medley									
2.	2	LL1-300-4 LL2-300-4	NW 89th Ave & NW 100th Ter.	MH 304 to MH 303	Two (2) 6" diameter sewer lateral connection repairs with Top Hat pipe lining. One at 122 ft. and the other at 151 ft. from MH 304. Mainline is 10" diameter. MOT Included.	EA	2 (two)	$_____	$_____
Pump Station MCC - Town of Medley									
3.	5	LL3-MCC-1-2-D LL2-MCC-1-2-D LL1-MCC-1-2-D	NW 95th Ave. & NW 101st St.	MH MCC-22-1-2-D to MH MCC-22-1-1	Three (3) 6" diameter sewer lateral connection repairs with Top Hat pipe lining at 57 ft., 123 ft. and at 221 ft. from manhole MCC-22-1-2-D. Mainline is 8" diameter. MOT Included.	EA	3 (three)	$_____	$_____

Item No.	Map Page No.	Repair ID	Address	Break Location	Description of Work Per Pump Station	Unit	Quantity	Unit Price	Amount
4.	6	PR-MCC-1-1	NW 95th Ave. & NW 101st St.	MH MCC-22-1-1 to MH MCC 22-1	8" diameter mainline pipe replacement (MH to MH). Repair to be conducted in three (3) phases (120 LF EA). Re-establishment of laterals. Dewatering allowed for repair and or excavation. To include Type I pavement full lane repair and restoration. MOT Included.	LF	360 (Three Hundred Sixty)	$_____	$_____
Pump Station FEC-1 - Town of Medley									
5.	3	LL1-FEC-1-4-1	NW 116th Way & NW 100th Rd.	FEC-1-4-1 and FEC-1-1-1	One (1) 6" diameter sewer lateral connection repair with Top Hat pipe lining at 175 ft. from MH-FEC-1-4-1. Mainline is 8" diameter. MOT Included.	EA	1 (one)	$_____	$_____
Pump Station FEC-2 - Town of Medley									
6.	4	LL1-FEC-2-3-1 LL2-FEC-2-1-3	NW 116th Way & NW 106th Ter.	MH FEC-2-3-1 & MH FEC-2-1-2-D	One (1) 6" diameter sewer lateral connection repair with Top Hat pipe lining at ~2.5 ft. from MH FEC-2-3-1. One (1) 6" diameter sewer lateral connection repair with Top Hat pipe lining at ~0.5 ft. from MH FEC-2-1-2-D. Mainline is 8" diameter. MOT Included.	EA	1 (one)	$_____	$_____

Item No.	Map Page No.	Repair ID	Address	Break Location	Description of Work Per Pump Station	Unit	Quantity	Unit Price	Amount
7.	8	PR-FEC-2-2-5	NW 118th Way & NW 102nd Rd.	MH FEC 2-2-5 to MH FEC-2-2-4	6" diameter lateral is located at 62 ft. from FEC-2-2-5. Lateral Break is located at ~ 86 ft from the cleanout towards the mainline. No dewatering, only wet condition repair and excavation. To include Type I pavement full lane repair and restoration. Mainline is 8" diameter. MOT Included.	LF	10 (ten)	$_____	$_____
Pump Station 703 - Town of Medley									
8.	7	PR-703-5	NW 122nd St. & Sysco Way.	MH 703-5 to MH 703-4	8" diameter mainline point repair at ~74 ft. from MH 703-5. Dewatering allowed for repair and or excavation. To include Type I pavement full lane repair and restoration. MOT Included.	LF	10 (ten)	$_____	$_____
					Total Bid Amount:				**$_____**

Written Bid Amount:

_____

_____

The total contract time is 90 calendar days for Substantial Completion plus an additional 15 days for final completion.

_____ _____

Name of Bidder Signature of Bidder

NOTICE TO ALL BIDDERS

THE TOWN OF MEDLEY RESERVES THE RIGHT TO WAIVE ANY INFORMALITY IN ANY BID, TO REJECT ANY AND ALL BIDS, AND TO DELETE ANY PART OF ANY OF ABOVE ITEMS.

AMOUNTS SHALL BE SHOWN IN BOTH WORDS AND FIGURES. IN CASE OF DISCREPANCIES, THE AMOUNT SHOWN IN WORDS SHALL GOVERN FOR EACH BID ITEM.

The Bidder further proposes and agrees to begin work with an adequate force and with sufficient equipment and facilities on the date stated in the written Notice issued and served upon him by the Owner and to complete the work included in this Proposal within the time stipulated in the Agreement, including delivery time for materials and equipment, installation, start-up and inspections.

LIST OF SUB-CONTRACTORS

Bidders are required to list with the Proposal, on this attached sheet all sub-contractors included for the prosecution of the work. Failure to complete the list may be cause for declaring the Proposal irregular.

The successful bidder shall employ the sub-contractors listed hereunder for the class of work indicated, which list shall not be modified in any way without the written consent of the Town of Medley.

The Bidder expressly agrees that:

1. If awarded a contract as a result of this Proposal, the major sub-contractors used in the prosecution of the work shall be those listed below.

2. The Bidder represents that the sub-contractors listed below are financially responsible and are qualified to do the work required.

CONTRACTOR_____

Name Under Which Subcontractor is Licensed	License No.	Address of Office, Mill, or Shop	Percent of Total Contract	Specific Description of Subcontract

GENERAL INFORMATION REQUIRED OF BIDDER

The Bidder shall furnish the following information. Failure to comply with this requirement will render the Bid Proposal informal and may cause its rejection. Additional sheets shall be attached as required.

(1) Contractor's name and address:

_____

_____

_____

(2) Contractor's telephone: _____ Fax: _____

(3) Primary E-mail Address: _____

(4) Contractor's license: Primary classification: _____

Dade County License No.: _____

Supplemental classifications held, if any: _____

(5) Number of years as a Contractor in construction work of type: _____

(6) Name of person who inspected site of proposed work for your firm:

_____

Date of inspection: _____

(7) Three projects of this type and complexity recently constructed by bidder:

Contract Amount	Type of Project	Date Completed	Owner's Name & Address

NOTE: If requested by the Owner, the Bidder shall furnish a notarized financial statement, references, and other information, sufficiently comprehensive to permit an appraisal of his current financial condition.

SOLICITATION, GIVING, AND ACCEPTANCE OF GIFTS POLICY

Florida Statute 112.313 prohibits the solicitation or acceptance of Gifts. -"No public officer, employee of an agency, or candidate for nomination or election shall solicit or accept anything of value to the recipient, including a gift, loan, reward, promise of future employment, favor, or service, based upon any understanding that the vote, official action, or judgment of the public officer, employee, or candidate would be influenced thereby." "... the term 'public officer' includes any person elected or appointed to hold office in any agency, including any person serving on an advisory body."

The Town of Medley policy prohibits all public officers, elected or appointed, all employees, and their families from accepting gifts of any value, either directly or indirectly, from any contractor, vendor, consultant, or business with whom the Town does business. Only advertising office stationery or supplies of small value are exempt from this policy - e.g. calendars, note pads, pencils.

The State of Florida definition of "gifts" includes the following:

- Real property, or its use.
- Tangible or intangible personal property, or its use.
- A preferential rate or terms on a debt, loan, goods, or services.
- Forgiveness of indebtedness.
- Transportation, lodging, or parking.
- Membership dues.
- Entrance fees, admission fees, or tickets to events, performances, or facilities.
- Plants, flowers, or floral arrangements.
- Services provided by persons pursuant to a professional license or certificate.
- Other personal services for which a fee is normally charged by the person providing the services.
- Any other similar service or thing having an attributable value not already provided for in this section.

To this list, the Town of Medley has added food, meals, beverages, and candy.

Any contractor, vendor, consultant, or business found to have given a gift to a public officer or employee, or his/her family, will be subject to dismissal or revocation of contract.

As the person authorized to sign the statement, I certify that this firm will comply fully with this statute and policy.

_____	_____
Signature	Company Name
_____	_____
Print Name / Title	Date

DRUG-FREE WORKPLACE PROGRAM

IDENTICAL BIDS - Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in Paragraph 1.

4. In the statement specified in Paragraph 1, notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo-contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

_____	_____
Signature	Company Name
_____	_____
Print Name / Title	Date

BIDDER'S CERTIFICATION

WHEN BIDDER IS AN INDIVIDUAL

In witness whereof, the Bidder has executed this Bid Form this ___day of _____, 20____.

By: _____

Signature of Individual/Title

_____

Witness: _____

ACKNOWLEDGEMENT:

STATE OF FLORIDA }
} SS
COUNTY OFMIAMI-DADE }

The foregoing instrument was acknowledged before me this _____ day of_____, 2019,

by _____ who is personally known to me or who has produced

_____ as identification and who did (did not) take an oath.

WITNESS my hand and official seal.

_____
NOTARY PUBLIC

_____
Name of Notary Public:
Print, Stamp, or type as Commissioned

BIDDER'S CERTIFICATION

WHEN BIDDER IS A CORPORATION, PARTNERSHIP OR FIRM

In witness whereof, the Bidder has executed this Bid Form this _____ day of _____, 2019.

_____

Printed Name of Corporation, Partnership, Firm

_____ _____

Signature of Authorized Officer Witness

Business Address:

Street Address: _____

Town/State/Zip: _____

Business Phone No.: _____ Email: _____

ACKNOWLEDGEMENT

Signed, sealed and delivered in the presence of:

By: _____

Printed Name: _____

STATE OF FLORIDA }
} SS:
COUNTY OFMIAMI-DADE }

The foregoing instrument was acknowledged before me this day _____of _____, 20____ , by _____ of _____ who is personally known to one or who has produced _____ as identification and who did (did not) take an oath.

WITNESS my hand and official seal.

_____

NOTARY PUBLIC

_____

Name of Notary Public:

Print, Stamp, or type as Commissioned

CERTIFICATE OF INSURANCE

1. INSURANCE

1.1. Bidders should submit copies of their current certificate(s) of insurance together with the Bid. Failure to do so may cause rejection of the Bid.

1.1.1. AT THE TIME OF EXECUTION OF THE CONTRACT, THE SUCCESSFUL BIDDER SHALL SUBMIT A CURRENT CERTIFICATE OF INSURANCE EVIDENCING THE REQUIRED COVERAGES AND SPECIFICALLY PROVIDING THAT THE TOWN OF MEDLEY IS AN ADDITIONAL NAMED INSURED WITH RESPECT TO THE REQUIRED COVERAGE AND THE OPERATIONS OF THE SUCCESSFUL BIDDER UNDER THE CONTRACT. Insurance Companies selected must be acceptable to the Town. All of the policies of insurance so required to be purchased and maintained shall include the interests of the Town, the Successful Bidder and all subcontractors at the work site (all of whom are to be listed as insured or additional insured parties) and contain a provision or endorsement that the coverage afforded shall not be canceled, materially changed or renewal refused until at least thirty (30) days written notice has been given to the Town by certified mail.

1.1.2. The Successful Bidder shall procure and maintain at its own expense and keep in effect during the full term of the Contract a policy or policies of insurance that must include the following coverage and minimum limits of liability:

1.1.2.1. Worker's Compensation Insurance for statutory Obligations imposed by Worker's Compensation or Occupational Disease Laws, including, where applicable, the United States Longshoremen's and Harbor Worker's Act, the Federal Employer's Liability Act and the Homes Act. Employer's Liability Insurance shall be provided with a minimum of One Hundred Thousand Dollars ($100,000.00) per accident. Successful Bidder shall agree to be responsible for the employment, conduct and control of its employees and for any injury sustained by such employees in the course of their employment.

1.1.2.2. Comprehensive Automobile Liability Insurance for all owned, non-owned and hired automobiles and other vehicles used by the Successful Bidder in the performance of the Work with the following minimum limits of liability:

$1,000,000 Combined Single Limit, Bodily injury and Property Damage Liability per occurrence

1.2. Comprehensive General Liability with the following minimum limits of liability:

$2,000,000 Combined Single Limit, Bodily Injury and Property Damage Liability per occurrence

Coverage shall specifically include the following with minimum limits not less than those required for Bodily Injury Liability and Property Damage:

1. Premises and Operations;
2. Independent Contractors;
3. Product and Completed Operations Liability;
4. Broad Form Property Damage;
5. Broad Form Contractual Coverage applicable to the Contract and specifically confirming the indemnification and hold harmless agreement in the Contract; and
6. Personal Injury coverage with employment contractual exclusions removed and deleted.
7. Builder's Risk, if applicable.

1.3. The required insurance coverage shall be issued by an insurance company authorized and licensed to do business in the State of Florida, with the following minimum qualifications in accordance with the latest edition of A.M. Best's Insurance Guide, Financial Stability B+ -A+.

1.4. The Successful Bidder shall require each of its Sub-Contractors of any tier to maintain the insurance required herein (except as respects limits of coverage for employers and public liability insurance which may not be less than One Million ($1,000,000) Dollars for each category), and the Successful Bidder shall provide verification thereof to the Town upon request of the Town.

1.5. The Bidders liability insurance policies shall be endorsed to add the Town of Medley as an additional insured. The Bidder's liability insurance shall be primary to any liability insurance policies carried by the Town. The bidder shall be responsible for all deductibles and self-insured retentions on Bidder's liability insurance policies. All of the policies of insurance so required to be purchased and maintained shall contain a provision or endorsement that the coverage afforded shall not be cancelled, materially changed or renewal refused until at least thirty (30) calendar days written notice has been given to the Town by certified mail. The Town reserves the right to make any changes additions to any insurance requirements as may be appropriate during the course of the contract.

ATTACH A COPY OF YOUR CERTIFICATE OF INSURANCE

NON-COLLUSIVE AFFIDAVIT

STATE OF FLORIDA

COUNTY OF MIAMI-DADE

_____ being first duly sworn, deposes and says that:

(1) He/she is the _____,(Partner, Officer, Representative or Agent) of _____ the Bidder that has submitted the attached Bid;

(2) He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, Town's agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Work for which the attached Bid has been submitted; or to refrain from bidding in connection with such Work; or have in any manner, directly or indirectly, sought by Contract or collusion, or communication, or conference with any Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost elements of the Bid price or the Bid price of any other Bidder, or to secure trough any collusion, conspiracy, connivance, or unlawful Contract any advantage against (Recipient), or any person interested in the proposed Work; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of the Bidder or any other of its agents, representatives, Towns, employees or parties in interest, including this affiant.

ACKNOWLEDGEMENT

Signed, sealed and delivered in the presence of:

By: _____

Printed Name: _____

Signature: _____

ACKNOWLEDGMENT OF CONFORMANCE WITH OSHA STANDARDS

TO THE TOWN OF MEDLEY:

We, _____, hereby acknowledge and agree that as Contractors for the construction of:

(ITB 2019-014)
Emergency Repair Sanitary Sewer Project
Project No. WS-0142

within the limits of the Town of Medley, Florida, that we have the sole responsibility for compliance with all requirements of the Federal Occupational Safety and Health Act of 1970, and all State and Local Safety and Health regulations, and agree to indemnify and hold harmless the Town of Medley, Florida, and its Consulting Engineers against any and all legal liability or loss the Town or its Consulting Engineers may incur due to _____ failure to comply with such act.

_____ _____
ATTEST CONTRACTOR

By: _____
NAME

_____ _____
ATTEST DATE

TRENCH SAFETY ACT COMPLIANCE

Bidder acknowledges that the Florida Trench Safety Act, Section 553.60 et. seq. which became effective October 1, 1990, shall be in effect during the period of construction of the project. The Bidder, by signing and submitting the bids, in writing, assuring that it will perform any trench excavation in accordance with applicable trench safety standards. The Bidder further identifies the following separate item of costs of compliance with the applicable trench safety standards as well as the methods of compliance:

Methods of Compliance

_____

_____

_____

(Fill in methods)

Total $_____

Bidder acknowledges that this cost is included in the applicable items of the Proposal and in the Grand Total Bid Price. Failure to complete the above will result in the bid being declared non-responsive.

The Bidder is, and the Town, EOR and CEI are not, responsible to review or assess Bidder's safety precautions, programs or costs, or the means, methods, techniques or technique adequacy, reasonableness of cost, sequences or procedures of any safety precaution, program or cost, including but not limited to, compliance with any and all requirements of Florida Statute Section 553.60 et. seq. cited as the "Trench Safety Act". Bidder is, and the Town, CEI and EOR are not, responsible to determine if any safety or safety related standards apply to the project, including but not limited to, the "Trench Safety Act".

_____
Signature of Authorized Representative (Manual)

_____
Name of Authorized Representative (Typed or Printed)

Sworn to and subscribed before me in the State and County first mentioned above on the _____day of _____, 2019.

_____ (affix seal)
Notary Public

_____
My Commission Expires

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SECTION 01750

MAINTENANCE OF TRAFFIC AND PUBLIC STREETS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall be responsible for providing the Engineer with Maintenance of Traffic (M.O.T.) plans for lane closures and/or detours for approval. These M.O.T. plans shall be produced by an individual employed by the Contractor and certified as "Work Zone Traffic Safety Supervisor" by the American Traffic Safety Service Association, ATSSA.

B. The Contractor shall be responsible for the maintenance of public streets and traffic control for the duration of the project. The cost of Traffic Control including the cost of any required off duty police officers shall be included under the appropriate bid item in the Proposal. If no bid item for this is included, said costs shall be included in other appropriate items of the bid and no extra compensation will be allowed.

1.02 REGULATIONS

A. As used herein, any reference to Miami-Dade County, its departments, or its published regulations, permits and data, shall be synonymous and interchangeable with other recognized governing bodies over particular areas or streets, or their departments, published regulations, permits or data. The Contractor shall abide by all applicable laws, regulations, and codes thereof pertaining to maintenance of public streets, detour of traffic, traffic control and other provisions as may be required for this Project.

1.03 MAINTENANCE OF TRAFFIC (M.O.T.)

A. The Contractor shall be fully responsible for the maintenance of public streets, detour of traffic (including furnishing and maintaining regulatory and informative signs along the detour route), traffic control, and other provisions throughout the Project as required by the MDCDTPW, Traffic Engineering Division (Traffic Division), FDOT or other governing agency. Traffic shall be maintained according to corresponding typical traffic control details as outlined in the MDCDTPW Manual. No street shall be completely blocked, nor blocked more than one-half at any time, keeping the other one-half open for traffic, without specific approval.

B. If required by the Traffic Division, the Contractor shall make arrangements for the employment of uniformed off-duty policemen to maintain and regulate the flow of traffic through the construction area. The number of men required and the number of hours on duty necessary for the maintenance and regulation of the traffic flow shall be subject to their approval. The cost of such off-duty policemen shall be paid from the Quotation Item established for this purpose. If required by traffic control permits or agencies, the Contractor shall work, odd or night hours, as required for traffic control reasons, and the cost of such work shall be considered as incidental to construction and no extra compensation will be

allowed.

C. The Contractor shall provide all barricades with warning lights, necessary arrow boards and signs, to warn motorists of the work throughout the Project. Adequate approved devices shall be erected and maintained by the Contractor to detour traffic.

D. Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic safety at all times. The Contractor shall provide necessary access to all adjacent property during construction.

E. The Contractor shall be responsible for the provision, installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the MDCDTPW Manual. In addition, the Contractor shall be responsible for the resetting of all traffic control and information signing removed during the construction period.

F. Where excavations are to be made in the vicinity of signalized intersections, the Contractor is alerted that vehicle loop detectors may have been embedded in the pavement. Every effort has been made to show the approximate locations on the Plans; however, the Contractor shall verify these locations by inspecting the site of the work and by contacting the Traffic Division. Any loop detector which is damaged by the Contractor, whether shown on the Plans or not, shall be repaired or replaced by the Contractor, at his expense, and to the satisfaction of the Traffic Division.

G. Where applicable, the Contractor shall notify the Traffic Division 24 hours in advance of the construction date or 48 hours in advance of construction within any signalized intersection.

H. Temporary pavement will be required over all cuts in pavement areas, and also where traffic is to be routed over swale or median areas. When the temporary pavement for routing traffic is no longer necessary, it shall be removed and the swale or median areas restored to their previous condition.

I. Pavement markings damaged during construction shall be remarked, as required by the Traffic Division.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 02260

STEEL SHEET PILING

PART 1 - GENERAL

1.01 SCOPE

The Contractor shall furnish and install steel sheet piling as shown in the plans or as required for a complete and satisfactory installation.

PART 2 - PRODUCTS

2.01 STEEL SHEET PILING

A. Steel sheet piling shall conform to the requirements of "High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality", ASTM A572/A572M-94b (AASHTO No. M223).

B. The Contractor will be responsible for design and selection. Structural plans for the sheet steel piling installation and the calculations for the required Section Modulus and the Sheet Piling Designation shall be prepared by a Professional Engineer registered in the State of Florida. Sealed plans shall be submitted to the Engineer of Record for approval prior to installation of the piling system.

B. Structural steel shall meet the requirements of ASTM Standard A36/A36M-94 "Structural Steel".

PART 3 - EXECUTION

3.01 The Contractor will be responsible for removing the temporary sheet piling and structural steel at the completion of the Project, such material will remain the property of the Contractor.

END OF SECTION

SECTION 02745

PAVEMENT REMOVAL AND REPLACEMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Work included under this Section covers the furnishing of all labor, equipment and material required for cutting, removing, protecting, constructing, replacing or stabilizing all existing roadways, driveways and pavements.

B. All existing utility castings, including valves boxes, junction boxes, manholes, handholes, pull boxes, inlets and similar structures in the areas of trench restoration, pavement replacement and pavement overlay shall be adjusted by the Contractor to bring them flush with the surface of the finished work.

1.02 QUALITY CONTROL

The phrase "DOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition. The DOT Specifications, are referred to herein and are hereby made a part of this Contract to the extent of such references, and shall be as binding upon the Contract as through reproduced herein in their entirety.

1.03 DAMAGE BY CONTRACTOR

A. The Contractor shall protect from damage by construction operations, all pavements, including all base courses and surface courses, within the work area.

B. Any base course or surface course beyond those limits, damaged as a result of the Contractor's operation, shall be restored in accordance with the applicable requirements of these Specifications, to the satisfaction of the Department, and to the satisfaction of the governing authority having jurisdiction over the work area.

C. Any damage to adjacent lanes of pavement will require the Contractor to resurface the entire lane width for a length, as approved by the Department. When the damage amounts to 25 percent or more in any one block (approximately 600 feet), the Contractor shall resurface the entire width of the lane in which the damage occurred for the entire block.

D. The Contractor is hereby notified that wherever the line for repaving for trenches extends one foot into the edge of the existing paving, he shall repave to this edge only. Full lane paving will not be required. Damage to the pavement beyond this line by the Contractor will require that he repave the full width.

E. In order to protect himself from being held liable for any existing damaged pavement, including detour routes, the Contractor is advised to notify in writing the authority having jurisdiction over the street where such defective pavement exists prior to proceeding with any work in the vicinity. A copy of all such notices shall be forwarded to the Department.

PART 2 - PRODUCTS

2.01 MATERIAL, GENERAL

A. Limerock Base: The limerock base shall consist of either one or two courses limerock obtained from local sources where the overburden was removed from the pits prior to mining operations. The limerock shall comply with the requirements of DOT Specifications, Section 200 and Section 911 for Miami Oolite limerock, with a maximum size of the aggregate to be 1-1/2 inches.

B. Prime Coat and Tack Coat shall be as specified Section 02741.

C. Asphaltic Concrete: The materials and construction of the asphaltic concrete patch and surface courses shall be Type S-1 Asphaltic Concrete conforming to Sections 330, 331 and 916 of the DOT Specifications.

D. Sand cover material shall be clean and non-plastic, and shall be composed of hard durable grains, free from loam, roots, silt, clay, or rock particles and other deleterious substances. Local sand meeting such requirements may be used. Sand shall be subject to approval by the Department.

E. 1:10 Mix: Sand-cement mix for backfill within state roads shall be a 1:10 mix of Type I or II Portland Cement and Sand that shall produce a slump of 4 to 6 inches.

F. Flowable fill: Flowable fill, as specified in Section 03375, shall be used as backfill only when indicated per FDOT permit requirement or as directed by the Engineer of Record. It shall be used for trenches, support for pipe structures, culverts, utility cuts and other works where cavities exist and where firm support is needed for pavements and structural elements.

2.02 BITUMINOUS PAVING MATERIAL

Asphalt cement for asphaltic concrete mixes shall be Viscosity Grade AC-20, homogeneous, free from water and shall meet the requirements of D.O.T Specifications, Section 916-1. Unless otherwise specified, all test samples required shall be supplied by the Contractor. For friction courses, in addition to meeting the above requirements, the bituminous material shall contain 0.5% of a heat-stable, anti-stripping additive from an approved source.

A. Asphaltic Concrete - Type S-I Mix shall meet the requirements of D.O.T. Specifications for Type S-I Asphaltic Concrete, Sections 330, 331 and 916 of D.O.T Specifications.

B. Asphaltic Concrete - Type I Mix shall meet the requirements of Dade County Public Works Department Specifications for Type I Asphaltic Concrete Surface Course, Section 133 of the Public Works Manual.

C. Asphaltic Concrete - Type III Mix for asphaltic concrete wearing surface overlay, both machine laid and standard (skin patch), shall meet the requirements of D.O.T. Specifications for Type III Asphaltic Concrete, Section 333-1 through Section 333-6.

D. Type V paving repairs shall consist of a machine-laid asphaltic concrete wearing surface overlay, which shall be a nominal one-inch thick asphaltic concrete, meeting the material requirements of Type I repairs. See subsection 3.07, below.

E. Asphaltic Concrete - Type FC-1, FC-2, FC-3 and FC-4 shall meet the requirements of D.O.T Specifications for Friction Courses, Sections 337-1 through Section 337-7.

F. Emulsified Asphalt for Slurry Seal Coat shall be of the slow-setting, mixing type and shall be homogeneous, meeting the requirements of the Asphalt Institute, Grade SS-1 or SS-1h.

G. Liquid Asphalt for Prime and Tack Coat: See Section 02741.

H. Liquid Asphalt for Sand and Asphalt Paving shall be asphalt cement, viscosity Grade AC-5 or emulsified asphalt, Grade RS-2 (anionic) conforming to the requirements of D.O.T. Specifications, Section 916-1 and 916-4, respectively.

I. Mineral Aggregate for Slurry Seal Coat shall consist of screened sand or limestone screenings or gray granite screenings or a mixture of sand and screenings plus not less than 3%, by weight, of Type I or Type II Portland cement.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Permanent pavement repair shall be in accordance with the details shown in the Standard Details herein, with edges straight and parallel and patches rectangular in plan. Replace any paving, beyond the limits shown in the details and as called for in the Specifications, as required. Where trenches are located out of the existing pavement and damage occurs to the pavement, that pavement shall also be replaced by the Contractor.

B. Pavement markings removed or obliterated by the Contractor's operations shall be promptly replaced, in kind, to the satisfaction of the Miami-Dade County Department of Public Works, Traffic Engineering Division, or other authority having jurisdiction over the work area.

C. All equipment necessary for construction shall be on the job site in first class working condition. Spilling or dropping of petroleum products is prohibited and all defective equipment shall be removed or replaced immediately. The Contractor shall be subject to all DERM (Department of Environmental Resources Management) regulations and clean up requirements.

D. The percentages of maximum density for subgrade and limerock base specified herein are minimum. Greater percentages of maximum density shall be obtained, if so required, by the governing authority having jurisdiction over the work location.

E. Asphaltic concrete mixtures shall be obtained only from plants which comply with the requirements of D.O.T. Specifications, Section 320 as applicable, using materials specified herein, and producing the specified mixture. General construction requirements for all hot bituminous mixtures specified herein shall conform to D.O.T. Specifications, Section 330, as applicable.

F. Asphaltic concrete shall be laid only where the surface to be covered is intact, firm, cured and dry, and only when weather conditions are suitable. The temperature of the mixture at the time of spreading shall be within limits of Florida D.O.T. specifications or within 25 degrees of the temperature set by the Department. No mixture shall be spread when the air temperature is less than 40 degrees Fahrenheit.

G. Any mixture caught in transit by a sudden rain may be laid at the Contractor's risk, if the base is in suitable condition. Under no circumstances shall asphaltic material be placed while rain is falling, or when there is water on the area to be paved.

H. Subgrade: Roadway subgrades shall be stabilized to the minimum depth shown on the Drawings to a Limerock Bearing Ratio of not less than 40. Stabilizing shall be Type B as defined in Section 160 of the DOT Specifications. Stabilization may require the addition and thorough mixing in of crushed limerock, course limerock screenings, or any other stabilizing material acceptable to the Department. The stabilizing material shall be applied in such quantity that, after mixing and blending, the subgrade will have a LBR of not less than 40. Stabilizing material shall be mixed or blended in the subgrade material by plowing, scarifying, disking, harrowing, blading and mixing with rotary tillers until the mixed materials are of uniform bearing value throughout the width and depth of the layer being processed.

I. At least three density determinations shall be made on each day's final compaction operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the Department.

J. Limerock Base: The limerock base shall be constructed in accordance with Sections 200 and 911 of the DOT Specifications, to the thickness and width indicated on the Drawings.

K. After spreading of the base material is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction. For double course base, this scarifying shall extend a depth sufficient to penetrate slightly the surface of the first course. The maximum depth of each lift shall be 8-inches.

L. When the material does not have the proper moisture content to insure the required density, wetting or drying shall be required. If the material is deficient in moisture, water will be added and uniformly mixed in by disking the base course to its full depth. If the material contains an excess of moisture, it shall be allowed to dry before being compacted. As soon as proper conditions of moisture are attained, the material shall be compacted to an average density not less than 98 percent maximum density as determined in more than one course, the density shall be obtained in each lift of the base.

M. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density determination on the finished base.

N. Unless otherwise directed by the Engineer of Record, the surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the thin glaze or cemented surface and to allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

O. If cracks or checks appear in the base, either before or after priming, which in the opinion of the Department, would impair the structural efficiency of the base course, the CONTRACTOR shall remove such cracks or checks by rescarifying, reshaping, adding base material where necessary and recompacting.

P. Mixing Base and Subgrade: If at any time the subgrade material shall become mixed with the base course material, the CONTRACTOR shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.

Q. Asphaltic Concrete: The spreading, compacting and jointing the wearing surface shall be in accordance with Sections 330 and 331 of the DOT Specifications to the thickness indicated on the Drawings.

3.02 TEMPORARY PAVING

A. Prior to commencing excavation, the asphalt surface shall be saw-cut within the limits of the allowable trench width. Temporary paving will be required along the entire route where the original paved surface is removed. Unless otherwise approved by the Department, temporary paving shall be placed the same day the trench is backfilled. The trench shall be backfilled up to a level 1 inch below the existing pavement surface and a temporary, cold mixed sand/asphalt pavement shall be constructed up to the level of the existing pavement surface. The liquid asphalt shall be Grade RC-70, conforming to the requirements of D.O.T. Specifications, Section 916-2. The sand shall conform to the requirements of D.O.T. Specifications, Section 902 for fine aggregate.

B. The cold mix is to be installed one block at a time, not crossing any intersection, or a maximum of 1,200 feet shall be completed before the Contractor may move forward with his excavation work. Backfill, compaction and temporary paving is to keep pace with the pipe installation. Written permission must be obtained from the Department and the municipal agency permitting the work to allow greater lengths than 1,200 feet. Permitting agencies may reduce the allowable limits in their permit, or for other unforeseen right-of-way conditions.

C. Prior to completion of the work and within a maximum of 30 calendar days, the Contractor shall remove the 1 inch of cold mix and surplus backfill. He shall replace it with the specified compacted limerock base course and asphaltic within the specified working limits. Municipal agencies permitting this work may accelerate the time for removal of the cold mix, at their discretion.

D. The temporary pavement shall be maintained by the Contractor in a condition satisfactory to the Department until its removal. Removal shall include any surplus backfill material. Replacement of the temporary pavement with permanent pavement shall be made within 30

days. In replacing the temporary paving with permanent pavement, all work shall be completed in sections compatible with specified traffic maintenance procedures.

E. The Contractor may elect to install a suitable temporary hot mix asphaltic pavement, to be left in-place, in lieu of cold mix, when the hot mix asphalt is left in-place and installed over properly compacted limerock base course. This temporary pavement shall be incorporated into the specified permanent pavement restoration as part of Type I paving restoration.

F. Sand seal on the limerock base course will not be permitted in lieu of temporary paving.

G. Unless otherwise approved by the Department, temporary paving, shall be placed within twenty-four hours following the completion of backfilling.

3.03 TYPE I PAVING REPAIR (Limerock Base - Asphaltic Concrete Surface)

A. Type I paving repairs shall be made with an 8-inch thick compacted limerock base and a minimum 1-inch thick asphaltic concrete surface, as detailed in the Standard Details. On Public Works roads asphaltic concrete shall have a compacted thickness of 2-inch, placed in a minimum of two (2) compacted 1-inch lifts.

B. The backfill previously placed and compacted shall be excavated to the required depth below the existing road surface and the existing paving shall be cut back beyond all excavations, using an abrasive disc saw to trim the edges to straight and true lines, minimum width for the limerock base shall be equal to the trench width plus 2 feet. Eight inches of limerock base shall be placed in two layers, each layer compacted to not less than ninety-eight percent (98%) density in accordance with Section 200 of D.O.T. Specifications. During rolling, the base shall be wetted down, as necessary, to secure the greatest possible compaction. After rolling, the entire surface of the base shall be thoroughly scarified to a depth of not less than 3 inches and shaped to conform to and be parallel with the existing surface, then watered and rolled again. Rolling and watering shall continue until the entire depth of the base is bonded and compacted into an unyielding mass.

C. If at any time the subgrade material becomes mixed with the limerock base course materials, the Contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean rock which shall be watered and rolled until satisfactorily compacted.

D. After the limerock base course has been properly prepared and is dry and ready to receive the wearing surface, a tack coat of emulsified asphalt, in accordance with Section 02741, shall be applied at a rate of 0.10 gallon per square yard, immediately followed by the asphaltic concrete. The tack coat shall be applied to the entire limerock base uniformly, and shall thoroughly coat all surfaced. Care shall be taken to tack coat and bond the edge of surrounding pavement.

E. The asphaltic concrete shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming the either the State of Florida Department of Transportation Specifications, Type S-1 Asphaltic Concrete, Sections 330, 331 and 916 of D.O.T Specifications, or Dade County Public Works Type I, as ordered by the Engineer of Record.

F. Where the width of the repair permits, the asphaltic concrete plant mix material shall be placed by means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than one inch in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed. The minimum width of the wearing surface shall be the same as the base.

3.04 TYPE II PAVING REPAIR (Special Limerock Base - Asphaltic Concrete Surface)

A. Type II repairs shall be used only when the restoration work falls within the limits of a State Road and shall be performed in accordance with the latest Florida Department of Transportation Standard Specifications for Road and Bridge Construction. Type II repairs shall be similar to Type I paving repairs except for the dimensions of the limerock base and the asphaltic concrete surface course.

B. The dimensions shall be as shown in the Department's Standard Detail or 1:10 mix to within 3 inches of grade as required by the Florida D.O.T., except that the limerock base course shall be a minimum of 18 inches and the asphaltic concrete surface course shall be 3 inches. Minimum width for the base shall be equal to the trench width plus 3 feet.

C. The compacted limerock base shall be primed at the rate of 0.10 gallons per square yard and the topped with a compacted 3-inch thick wearing surface of Type S-I asphaltic concrete. Minimum width for surface replacement shall be equal to the trench width plus 4-feet.

D. A friction type surface course may be required in addition to the standard repair. Friction courses shall be constructed using the type and thickness of asphaltic concrete specified by permit, and in accordance with the applicable provisions for Type V paving repairs.

3.05 TYPE III PAVING REPAIR (Concrete Base - Asphaltic Concrete Surface)

A. This type of repair shall be made only on Florida Department of Transportation roadways when the original pavement is composed of a concrete base and an asphaltic concrete wearing surface. The use of Type III repairs is usually confined to restoration of pavement over trenches cut across existing pavement (and traffic flow), and short trenches cut parallel to the roadway center line. A trench cut 200 feet or less in length shall be considered a "short trench".

B. Type III paving repairs shall be made with a 6-inch thick reinforced concrete base and a minimum 1-inch thick asphaltic concrete wearing surface, in accordance with the Standard Detail. Minimum width for the concrete base shall be equal to the trench width plus 2 feet.

C. The existing pavement shall be saw cut in straight lines, to form a shoulder of the required width on each side of the trench, as outlined by the Department at the location of the replacement. The pavement shall be removed and the fill shall be mechanically compacted to 98% of the maximum density obtainable as determined by AASHTO Standard T-180.

D. The fill material in the trench and shoulders shall be brought to the depth of the pavement or nine inches, whichever is greater. The fill disturbed by the removal of this material shall be recompacted, as specified above. A layer of six gauge, 6-inch X 6-inch roadway reinforcing mesh, supported on chairs or bricks, shall be placed 2-inch above the bottom of the slab. The subgrade shall then be wet down and filled to within one inch of the existing pavement surface, unless otherwise required by the Governing Municipality, with Type III High Early Strength concrete. The concrete shall be placed using a vibrator to insure a uniform density.

E. Concrete base shall be cured to comply with the requirements of D.O.T. Specifications Section 350-13.3 or other approved non-chemical method. When the concrete base has become at least 24 hours old a tack coat shall be applied at the rate of 0.10 gal. per square yard and then topped with a minimum 1-inch thick wearing surface of Type S-I asphaltic concrete, or as ordered by the Engineer, unless otherwise required by the Governing Municipality. Minimum width of the wearing surface shall be the same as the base.

F. Should the repaired area be six feet or more in width and have a length of one city block or more, the asphaltic concrete shall be placed with a finishing machine and rolled with an 8-ton tandem roller to conform to the grade of the existing pavement. For smaller repairs, the asphaltic concrete shall be spread by hand and struck off with a straight edge sufficiently high so that when it is compacted with an 8-ton roller it will conform to the grade of the existing pavement.

3.06 TYPE IV PAVING REPAIRS (Concrete Slab - Rigid Pavement)

A. Type IV repairs will be used when the restoration work falls within the limits of existing rigid pavement.

B. Paving repairs shall be similar to Type III paving repairs except that No. 4 reinforcing steel bars spaced 12 inches on centers both ways shall be substituted for the mesh reinforcement, and the slab shall be 8 inches thick instead of 6 inches, with the top of the concrete matching the elevation and finish of the existing pavement. The asphaltic concrete surface course is not required.

3.07 TYPE V PAVING REPAIRS (Asphaltic Concrete Wearing Surface Overlay)

A. Type V paving repairs shall be made where noted on the Plans and/or as ordered by the Engineer or Record. Type V paving repairs shall consist of a machine-laid asphaltic concrete wearing surface overlay, which shall be a nominal one-inch thick asphaltic concrete, meeting the material requirements of Type I repairs, as specified hereinabove. As used herein, "overlay" shall mean Type V paving repairs. A special wearing surface may be substituted, if required.

B. In general, the overlay shall be applied in a full lane width or widths, after the permanent paving repairs over the trench have been made. Type V is usually in addition to required Type I and Type II paving repairs. Since the quantity of Type V repairs that may be required is usually unknown until pavement restoration work begins, Type V repairs may be established in the Proposal on a contingent basis.

C. All longitudinal and transverse asphalt replacement overlay wearing surfaces shall butt into adjacent existing asphalt wearing surfaces in full lane asphaltic pavement restoration. The finish elevation of the new full lane overlay shall meet existing elevations adjacent to the new work.

D. The existing asphaltic concrete surface shall be saw cut for its full depth or 1-inch minimum, and then stripped back for at least 2 feet into the area to be overlaid to a second cut which shall also be in clean straight lines. The second, or interior, cut edge shall be rolled with a tandem roller weighing not less than 8 tons before the overlay is applied. The stripped area shall be used to provide a smooth transition or "feather" area between the overlay and the existing pavement. Before placing the overlay, all cut edges and the surface of the stripped area shall be tack coated with emulsified asphalt as specified hereinbelow.

E. If the Contractor requests in writing to "feather" the longitudinal edge, and if written permission is granted to "feather" the asphalt by the Department and the local municipality, a sanded mix of 70-30 type shall be used. "Feathering" shall begin 18 inches from the tapered edge.

F. Prior to installing a full lane width overlay over existing asphaltic pavement the trench and shoulders over the pipe shall be sawcut and filled with asphaltic concrete to the required depth, terminating flush with the existing adjacent asphalt in accordance with the municipality having jurisdiction over the work for Types I, II or M. Type V overlay will be installed as detailed above.

G. When a minor amount of asphalt surface will remain, generally with large pipe installations, after the pipe has been installed and the required longitudinal saw cutting of the asphaltic pavement completed, the Contractor may request permission to remove all the asphalt in the lane, by saw cutting the asphalt adjacent to the existing lane, then placing the Type V overlay flush with the adjacent asphalt. This would require that the Type I, II or M finish elevation be lowered 1 inch to allow for the Type V overlay.

H. Before the overlay is applied, existing surfaces shall be swept clean of all dirt and debris, using a power driven broom if warranted by the size of the location to be overlaid and/or as ordered by the Department. Pavement edges shall be cleared of all encroaching vegetation, loose sand, rock and all other foreign matter. When the existing surface is thoroughly clean, a tack coat of Emulsified Asphalt Grade RS-2 (anionic) shall be applied at the rate of approximately 0.10 gallon per square yard, in accordance with Section 02741, immediately followed by the asphaltic concrete overlay.

I. Machine-laid overlay shall be placed by means of an approved mechanical spreader and finisher, and the mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than 8 tons.

J. The compacted overlay shall be thicker as required to produce a smooth uniform surface free of any irregularities, but shall not be less than one inch in thickness. Existing depressed areas in the asphaltic pavement, which could collect water after a rainfall shall be corrected before placing the asphaltic overlay. Rolling shall proceed as close behind the spreading of the asphaltic overlay as possible, and all materials shall be completely compacted the same day it is placed.

3.08 TYPE VI PAVING REPAIRS (Limerock Base - Sand Seal Surface)

A. The use of Type VI repairs is usually confined to the restoration of excavations in existing sand-seal surface areas or streets.

B. Repairs for restoration of excavations in existing sand-seal areas or roads shall consist of an 8-inch thick limerock base over the excavation and forming a shoulder 12 inches wide on each side, with the surface level with the existing grade, and a sand-seal surface course over the prepared base and complete width of the existing area or street where such existing sand-seal surface exists, for the full length of the cut.

C. Limerock base courses over excavations shall be as specified under Type I paving repairs. After the bonded base has dried sufficiently, the entire surface shall be swept to break the glaze and remove all traces of loose dirt, sand and other debris.

D. A bituminous surface treatment shall then be applied consisting of emulsified asphalt, Grade RS-2 (anionic) at a rate of approximately 0.10 gallon per square yard. The surface treatment shall immediately be covered with clean approved sand, spread by mechanical device at a rate sufficient to insure against bleeding through the sand cover, rolled and then opened to traffic and permitted to cure. During the curing period, additional sand shall be applied, if required, to prevent possible pickup of the new surface by traffic. Excess sand cover shall be swept away and removed.

3.09 TYPE M PAVING REPAIRS (Limerock Base - Asphaltic Concrete Surface)

A. Type M paving repairs shall be made where noted on the Plans and will be used only when the restoration work falls within the limits of the City of Miami. Repairs shall be similar to Type I paving repairs except for the dimensions of the limerock base and the asphaltic concrete surface course.

B. Type M paving repairs shall be made with a 12-inch thick compacted limerock base and a minimum 1½-inch thick asphaltic concrete surface as detailed in the Standard Details. Minimum width for the base shall be equal to the trench width plus one foot.

C. The backfill previously placed and compacted shall be excavated to the required depth below the existing road surface and the existing paving shall be cut back beyond all excavations, using an abrasive disc saw to trim the edges to straight and true lines. Twelve inches of limerock base shall be placed in two layers, each layer compacted to not less than 98 percent density. During rolling, it shall be wet down as necessary to secure the greatest possible compaction. After rolling, the entire surface shall be thoroughly scarified to a depth of not less than 3 inches and shaped to conform to the existing surface, then watered and rolled again. Rolling and watering shall continue until the entire depth of the base is bonded and compacted into an unyielding mass.

D. The asphaltic concrete shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming to either the State of Florida Department of Transportation Specifications, Type S-1 Asphaltic Concrete, Section 331-1 through 331-5, or, City of Miami Public Works Type M, as ordered by the Department. Where the width of the repair permits, the material shall be placed by

means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than 1½-inch in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed.

E. The asphaltic concrete wearing surface shall match the thickness of the adjacent roadway, but not greater than 3 inch nor less than 1-1/2 inches as specified in the Standard Details. Minimum width for the wearing surface shall be equal to the trench width plus two feet.

3.09 SLURRY SEAL COAT

A. When pavement restoration work falls within the City of Coral Gables, the existing pavement may have to be slurry-sealed as specified in Coral Gables Ordinance No. 1779. Slurry-seal repairs shall be made where ordered by the Engineer of Record or the Department.

B. Before any material is laid, the existing surface shall be cleaned with brooms or power blowers. Vegetation which has overgrown the edges shall be removed. All cracks, potholes and depressions shall be brought up to grade with bituminous concrete skin patching.

C. A tack coat, if required, shall consist of emulsified asphalt SS-1h, diluted with 3 parts of water, sprayed and squeegeed or broomed at a rate of 0.1 to 0.2 gallons per square yard.

D. A minimum thickness of 1/8-inch to a maximum of 1/4-inch of slurry mix shall be spread by a drag distributor at a maximum rate of 180 feet per minute. Any ridges or surplus material shall be smoothed by hand squeegee. The pavement shall be kept damp with a fog spray just ahead of the machine.

E. A second coat shall not be applied to, nor traffic permitted to drive upon, the first application until it has thoroughly dried. (A dry condition is such that an automobile tire track does not show after driving on the surface).

3.10 ASPHALT COLD MILLING

A. The Contractor shall perform asphalt cold milling where called for on the Plans or as required for a complete installation, when approved or requested by the Department. Cold milling shall be done using an automated pavement planer capable of maintaining an accurate depth. Cold milling equipment shall meet the approval of the Department and governing agency having jurisdiction at the location of the pavement milling operation. All charges for maintenance of traffic, transportation of personnel, equipment and other mobilization charges shall be considered as incidental to the cold milling operation.

B. Cold asphalt milling shall be provided to improve the rideability of the finished pavement, lower the finished grade adjacent to an existing curb prior to resurfacing or to completely remove existing pavement. The overall length of the milling machine (excluding the conveyor) shall be a minimum of 18 feet, and having a minimum cutting width of six feet. The milling operation shall be operated to effectively minimize the amount of dust being emitted

from the machine. Prewetting of the pavement may be required. In areas where milling is to be performed around Department utility structures such as manholes, valve boxes etc., proper caution shall be taken as not to damage any of the structures. Saw-cutting of the concrete surrounding the structure and using a pick or other means so as not to disturb the structure shall be employed to prevent any damage. Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a power broom or other approved equipment to remove to the greatest extent practicable, the fine material which will dust under traffic. This operation shall be conducted in a manner so as to minimize the potential for creating a traffic hazard and to minimize air pollution.

C. The milling operation shall be continuous so as to complete each site without any delays. All milling operations shall be coordinated by the Department Inspector.

D. Traffic maintenance charges shall include the installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the Dade County Public Works Manual. In addition, the Contractor shall provide all barricades, flashing warning lights and/or arrow boards necessary to maintain safety and warn motorists of the construction.

3.11 REPAIR OF DAMAGE PAVEMENT

A. All damage to pavement by the Contractor as a result of Work under this project shall comply with "DAMAGE BY CONTRACTOR", above, and shall be repaired in a manner satisfactory to the Department. The repair shall include the preparation of the subgrade, the placing and compacting of the limerock base, the priming of the base, the placing and maintaining of the surface treatment, all as specified herein.

B. The width of all repairs within the work area shall extend at least 12 inches beyond the limit of the damage. The edge of the pavement to be left in place shall be cut to a true edge with a saw or other acceptable method so as to provide a clean edge to abut the repair. The line of the repair shall be uniform with no irregularities. Repair of damage by the Contractor beyond the work area shall be approved by the governing agencies having jurisdiction over the work prior to commencing the work.

3.12 CONCRETE PAVEMENT REPAIR

A. This type of repair shall be made only on Florida Department of Transportation roadways when the original pavement is concrete.

B. The existing pavement shall be saw cut in straight lines as outlined by the Department at the location of the replacement. The pavement shall be removed and the fill shall be mechanically compacted to 98% of the maximum density obtainable as determined by AASHTO Standard T-180. The fill in the trench and shoulders shall be brought to a depth equal to the thickness of the existing concrete pavement, but not less than 8 inches in any case. The opening thus formed, shall be filled with concrete having a design strength of 5,000 psi and made with High Early Strength Cement. The concrete slab shall be reinforced with ½ inch steel reinforcing rods, 12 inches on center each way, placed 2 inches above the bottom of the slab. The surface of the slab shall be struck off with a screed and finished with a wood float and brush to conform to the grade and finish of the existing pavement.

Apply liquid curing compound after initial set. The Contractor shall provide adequate means to protect the slab until it has cured sufficiently to withstand vehicular traffic without spalling or breaking apart. Construction joints and expansion joints in the original pavement shall be reproduced in the repair with matching materials.

3.13 STATE ROAD PAVEMENT RESTORATION (1:10 Mix / Flowable Fill Backfill and Base and Asphaltic Concrete Surface)

A. General

1. All work performed within the right-of-way of the Florida Department of Transportation (DOT) shall comply with the requirements and conditions of the DOT, including the requirements and conditions of the DOT permits and with all requirements and conditions of these specifications.

2. The installation shall be coordinated with the DOT, the Department and the Contractor. The existing pavement shall be saw cut in straight lines, as outlined by the Department at the location of the restoration. The Contractor shall not begin work until he has received permission from them to do so.

3. State Road pavement restoration, where required and where specifically authorized by the Engineer in writing, shall be made with a backfill and base of "1:10 cement/sand concrete mix" or "flowable fill", as specified in Section 03375, a 3-inch thick asphaltic concrete course, machine-laid in two equal layers, and a 1-inch thick asphaltic concrete wearing surface (for full lane width).

B. Installation of Sand/Cement Mix

1. Installation of 1:10 Mix: In all cases, regardless of water-table location, the 1:10 mix shall be placed from a plane 12 inches above the top of the pipe to an elevation 3 inches below the adjacent asphaltic surface.

2. Installation of "Flowable Fill" Mix:

See Section 03375, "Flowable Fill".

C. Installation of Asphaltic Concrete Course

1. A 3-inch thick asphaltic concrete course shall be machine-laid in two equal layers. Then as required by the Florida D.O.T., the Contractor may be directed to cold-mill one inch, as described in Article 3.10, herein, and replace with one inch of material.

2. After the base surface has been properly prepared and is dry and ready to receive the wearing surface, a tack coat of emulsified asphalt (Grade RS-2) shall be applied at a rate of 0.10 gallon per square yard, immediately followed by the asphaltic concrete. The tack coat shall be applied to the entire base uniformly, and shall thoroughly coat all surfaces. Care shall be taken to tack coat and bond the edges of surrounding pavement.

3. The 3-inch asphaltic concrete course shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming to the State of Florida Department of Transportation Specifications, Type S-1 Asphaltic Concrete, Section 331-1 through 331-5. Where the width of the repair permits, the material shall be placed by means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than three inches in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed.

D. Installation of Friction Courses

1. This type of repair shall be made only on Florida Department of Transportation roadways to replace damaged existing friction courses. The particular friction course to be used at any repair location shall be as designated by the D.O.T. for that location.

2. There are 4 mixes designated by the D.O.T. as Friction courses, FC-1, FC-2, FC-3 and FC-4. Each is specified in D.O.T. Specifications, Section 337. The basic ingredients are also covered above in "Bituminous Paving Materials".

3. Methods of application are similar to those of Type S-I asphaltic concrete as specified above for Type III repairs, except that friction courses shall have a nominal thickness of 5/8 inch. The 5/8-inch nominal friction course may be placed over the 3-inches of newly placed Type S-1 asphaltic concrete or the existing asphalt concrete pavement may be milled to a nominal depth of 5/8-inch to allow for the placement of the FC-2 over the existing asphaltic concrete, as approved by the Department. Additional depth of milling of asphaltic concrete may be required by the Department for Type S-1 asphaltic concrete.
4. If the friction course is laid the same day that the underlying course was laid, no tack coat or primer is required, but if the underlying course is old enough to have cured, a tack coat of emulsified asphalt shall be applied at the rate of 0.10 gallons per square yard and topped with a 5/8-inch thick, machine-laid friction course.

3.14 STATE ROAD PAVEMENT RESTORATION (Rock Base and Asphaltic Surface Pavement)

A. These types of repairs shall be made only on Florida Department of Transportation roadways when the original pavement is other than concrete.

B. The existing pavement shall be saw cut in straight lines, as outlined by the Department at the location of the replacement, for the new asphaltic concrete. The pavement and fill in the trench and shoulders shall be removed for a varied depth of between 3 inches at the sides of the repair, and 21 inches over the trench and recompacted, if necessary. The opening thus formed shall be filled to a point 3-inches below the pavement surface with a base course of new limerock placed in layers, each 4-inches thick. The top 6-inches of sub-base and each 4-inch layer of new limerock shall be mechanically compacted to 98 percent of the maximum obtainable density but need not be water-bonded.

C. The compacted limerock base shall be primed at the rate of 0.10 gal. per square yard and then topped with a 3-inch thick wearing surface of Type S-I asphaltic concrete, or a 2-inch thickness of Type S-I and a 1-inch thickness of wearing surface. The asphaltic concrete shall be placed and finished as specified above.

END OF SECTION

C. General mix quantities are as follows:

Components	Pounds per Cubic Yard
Cement	50-100*
Fly Ash or Granulated Blast Furnace Slag	0-600
Fine Sand	2,750 (adjust to yield one cubic yard of flowable fill)
Water	500 (Maximum)

* The percentage of cement may be increased above these limits only when early strength is required and future removal is unlikely.

D. Weights for fine aggregate and water shall be adjusted according to cementious content. The mix proportions shall be adjusted for removability, pumpability and flowability. If required, strength test data shall be provided prior to batching.

E. If required by the Engineer of Record, the flowability can be measured by afflux time determined in accordance with ASTM C 939 and shall be 30 seconds ± 5 seconds as measured on mortar passing the No. 4 sieve. The equipment required to perform this test shall be provided by the Contractor.

2.03 APPROVED MIXES OF "EXCAVATABLE FLOWABLE FILL"

FDOT - Approved Design Mixes for Dade County

Plant	Mix Number
Tarmac	04-FF-65
Rinker Materials Corp.	04-FF-52
Central Concrete Supermix Inc.	06-FF-41
Cemex	06-FF-48

PART 3 - EXECUTION

3.01 PRODUCTION AND PLACING

Flowable fill shall be produced and delivered using concrete construction equipment. Placing flowable fill shall be done by chute, pumping or other methods approved by the Engineer of Record.

3.02 CONSTRUCTION REQUIREMENTS

The flowable fill shall be placed to the designated fill line without vibration or other means of compaction. Placement shall be avoided during inclement weather, e.g. rain or ambient temperatures below 40 degrees F. The Contractor shall take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Also, necessary means to confine the material within the designated space shall be provided by the Contractor.

3.03 ACCEPTANCE

A. The flowable fill shall be proportioned and placed as specified herein. In general, the strength desired is the maximum hardness that can be excavated at a later dated using conventional excavating equipment. No curing protection is required.

B. The fill shall be left undisturbed until material obtains sufficient strength. Sufficient strength is 250 psi penetration resistance as measured using a hand held penetrometer. The penetrometer shall be provided by the Contractor.

C. All flowable fill areas subject to traffic loads must have a durable riding surface.

D. An approved type of accelerator may be approved for the placement of "Flowable Fill" in traffic areas when submitted to the Department for D.O.T. approval.

END OF SECTION

SECTION 03375

FLOWABLE FILL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section specifies the requirements for flowable fill used for trenches, support for pipe structures, culverts, utility cuts and other works where cavities exist and where firm support is needed for pavements and structural elements. Flowable fill may also be used to fill water and sewer lines, and fuel tanks placed out of service, and at other locations approved by the Engineer of Record.

PART 2 - PRODUCTS

2.01 MATERIALS

The materials used shall conform with the requirements specified in Division III of the F.D.O.T. Standard Specifications for Road and Bridge Construction, latest edition, and herein. Specific references are as follows:

A. Portland Cement (Types I, II or III).....Section 921.

B. Fly Ash, Slag and other Pozzolanic Materials for Portland Cement Concrete .....Section 929.

C. Fine Aggregate (Sand)* .....Section 902.

D. Water .....Section 923.

*Any clean sand with 100% passing 3/8" sieve and not more than 10% passing with 200 mesh may be used.

2.02 MIX PROPORTIONS

A. The Contractor shall be responsible for producing a flowable mixture using these guidelines and by adjusting his mixture design as called for by circumstances or as may be directed by the Engineer of Record.

B. Excavatable flowable fill material shall be proportioned to produce a 28-day compressive strength of 100 psi.

Installation Specifications
Cured in-Place Sectional Lining
(NOT MDWASD)

1. INTENT
It is the intent of this specification to provide for the reconstruction of a particular section of sewer pipe without excavation.

2. GENERAL
The reconstruction will be accomplished using a 10-feet non-woven fabric tube of and a thermo-set resin with physical and chemical properties appropriate for the application. The tube within a translucent inversion bladder is vacuum impregnated with the resin then placed inside a protective carrying device and winched into the existing sewer. When the carrying device is properly positioned, the end is opened and the resin-saturated tube is inverted through the damaged section using air or water pressure by the action of the inversion bladder. Once the tube/resin composite is cured, the inversion bladder and the carrying device are removed.

3. MATERIAL
The tube will consist of one or more layers of flexible needled felt or an equivalent non-woven material. The tube will be continuous in length exhibiting a uniform minimum wall thickness based upon design calculations found in ASTM F1216 appendix XI. No overlapping sections shall be allowed in the circumference or the length of the liner. The tube will be capable of conforming to offset joints, bells, and disfigured pipe sections. The resin will be polyester or vinyl ester with proper catalysts as designed for the specific application. The cured-in-place pipe shall provide a smooth bore interior. Each installation shall have a design report documenting the design criteria for a fully deteriorated pipe section, relative to the hydrostatic pressures, depth of soil cover, and type of soil.

The composite of the materials above will, upon installation inside the host pipe, exceed the minimum test standards specified by the American Society for Testing Methods.

<u>Test Standards for CIPP</u>

FLEXURAL STRENGTH (ASTM D-790)---------- 4,500 PSI
FLEXURAL MODULUS (ASTM D-790) ---------- 250,000 PSI

4. INSTALLATION PROCEDURE (ASTM F 2599-06) Standard Practice for Sectional Repair of Damaged Pipe by Means of an Inverted Cured-In-Place Liner. The center of the 10-feet sectional liner shall be installed at the location of the sewer pipe break as shown on the Trenchless Repair Maps.

4.1 When required, the flow shall be by-passed. The pumping system will be

sufficiently sized for normal to peak flow conditions. The up stream manhole is monitored at all times and an emergency deflate system will be incorporated so that the plugs may be removed at any time without requiring confined space entry.

4.2 Installer will clean and inspect the line immediately prior to lining utilizing a pan/tilt camera capable of verifying active or inactive service connections and the overall structural condition of the pipeline. All roots, debris, and protruding service connections will be removed prior to reconstruction. The current condition of the pipe will be compared to the original designed condition to verify that design parameters have not changed. See Item 6, Deviations.

4.3 The tube is inspected for tears and frayed sections. The tube, in good condition, will be vacuum impregnated with the thermo-set resin. The resin will be introduced into the tube creating a slug of resin at the beginning of the tube. A set of calibration rollers will assist the resin slug to move throughout the tube. All air in the tube shall be removed by vacuum allowing the resin to thoroughly impregnate the tube. All resin shall be contained to ensure no public property or persons are exposed to the liquid resin. A resin-impregnated sample (wick), shall be retained by the installer to provide verification of the curing process taking place in the host pipe.

4.4 The saturated tube along with the inversion bladder will be inserted into the carrying device. The entire carrying device is pulled into the pipe using a cable winch. The pull is complete when the end of the launching device is aligned with the beginning of the section being reconstructed. The resin and tube are completely protected during the pull. No resin shall be lost by contact with manhole walls or the pipe during the pull. The resin should not be contaminated or diluted by exposure to dirt, debris, or water during the pull. The resin that provides a structural seal shall not contact the pipe until positioned at the point of repair.

4.5 The installer shall be capable of viewing the beginning of the liner contacting the host pipe verifying the exact placement of the liner. The liner must be installed at low pressure (not to exceed 10-PSI) to prevent damage or further damage to the host pipe.

4.6 The tube will be inverted out of the carrying device by controlled air or water pressure. The installer shall be capable of viewing the entire liner contacting the host pipe from the beginning to the end of the liner verifying the liner has covered the entire damaged section. The tube is held tightly in place against the wall of the host pipe by the pressure until the cure is complete.

4.7 When the curing process is complete, the pressure will be released. The inflation bladder and launching device shall be removed from the host pipe with the winch. No barriers, coatings, or any material other than the cured tube/resin composite, specifically designed for desirable physical and chemical resistance properties, should ever be left in the host pipe. Any materials used in the installation other than the cured tube/resin composite is to be removed from the pipe by installer.

4.8 Any service lateral connections covered by the sectional repair are to be opened using a hydraulic powered robotic cutting device specifically designed for cutting cured-in-place pipe made from these materials.

4.9 A second CCTV inspection is performed to verify the proper cure of the material, the proper opening of service laterals, and the integrity of the seamless pipe. The Engineer of Record will receive a video and report documenting the inspection.

5. The by-pass pumping system is removed and the sewer flows restored to normal flow conditions.

6. DEVIATIONS

Should the pre-installation inspection reveal conditions in the sewer to be substantially different than those used in the design of wall thickness, tube construction, tube length, and resin system; the installer is required to request appropriate changes, supporting such requests with video of existing conditions and design data. The deviation, if approved, will be reflected by an appropriate addition or deduction in the original proposal price for the scope of work.

7. CLEAN-UP

The site will always be left clean and the property restored to conditions equal to site conditions prior to the pipeline reconstruction project undisturbed.

8. FINAL ACCEPTANCE

Upon completion, the installer will deliver the video and report to the Engineer of Record. The Engineer of Record should review the documentation and the site to determine that the scope of work is complete, and the work is satisfactory.

9. PAYMENT

Payment includes Pre-Lining cleaning and reaming intruding taps, Pre-Lining CCTV inspection, Post-Lining CCTV inspection, bypass pumping, permanent restoration, labor, materials and equipment necessary to install liner as specified.

STANDARD CONSTRUCTION SPECIFICATION
(NOT MDWASD)

1. SERVICE LATERAL CONNECTION SEALING (TOP HAT)

1.1. GENERAL

This section specifies various Service Lateral Connection (SLC) sealing systems which are commonly referred to as "top hat" sealing. The type of sealing systems and methods to be used shall be shown and approved on the Sewer Use and Drainage Permit or Public Works Permit. Service lateral connections may be a combination of tees or wyes of varying angles and could be in line connections or saddles.

1.2. MATERIALS

SLC sealing systems shall consist of either a cured-in-place resin saturated felt or fiberglass lining material and tube installed in an existing mainline and cured. Dry or unsaturated areas are not acceptable.

The structural performance of the finished pipe shall be adequate to accommodate all anticipated loads throughout its design life. No cured-in-place pipe rehabilitation technology will be allowed that requires bonding to the existing pipe for any part of its structural strength.

The lining material and tube shall be sized such that when they are properly aligned are tight fitting and without wrinkles. SLC sealing systems shall be manufactured so as to provided smooth and tapered edges after curing. The curing method and schedule shall be shown and approved on the Sewer Use and Drainage Permit or Public Works Permit.

The finished SLC product shall be fabricated from materials which when cured will be chemically resistant to withstand internal exposure to domestic sewage and shall meet the chemical resistance requirements of section 210-2.3.3 of the Greenbook Standard Specifications for Public Works Construction (Chemical Resistance Test, "Pickle Jar Test").

The structural performance of the finished pipe must be adequate to accommodate all anticipated loads throughout its design life. The cured SLC shall conform to the minimum structural standards as listed below:

Final SLC	ASTM Standard	Result
Flexural Stress	ASTM 0790	3,500 PSI
Flexural Modulus of Elasticity	ASTM 0790	250,000 PSI

The minimum length necessary shall be 18 inches into the service lateral or approximately 6" past the first joint. Pre-video inspection shall identify the length required to extend into the lateral and the City Main, both which shall be noted in the permit application.

1.3. INSTALLATION PREPARATION

Prior to the installation of the SLC product, the area around the lateral sealing surface in both the mainline and the lateral, shall be cleaned by using high pressure water jetting or a robotic cleaner when necessary. Additionally, the bypassing of sewage around the section of mainline pipe where the service lateral designated for the SLC repair is located shall be proposed by the contactor, approved by the City prior to installation, and operated and maintained by the contractor as necessary.

1.4. TESTING AND INSPECTION

Initial application for a Sewer Use and Drainage Permit or Public Works Permit for a SLC sealing system shall include a pre-video inspection to be approved prior to start of operations. The video shall be of the tap from the main and of the entire service lateral. Roots and debris may need to be removed to clearly show the tap and lateral in the video. During construction, a city inspection is required to confirm means, methods, and materials. Installation of the connection liner shall not, in anyway, damage or adversely affect the main line (or liner of the mainline) in any way. If a pump around is required during construction, a plan shall be submitted to and approved by the City Inspector. Frayed ends of the SLC repair shall be removed prior to acceptance. A post construction video of the repair in the lateral and in the main is required prior to a passing inspection. If the post construction video fails, a new tap will be required at the discretion of the inspector.

END OF SPECIFICATION

STANDARD SPECIFICATIONS
SEWER MAINS AND LATERAL REHABILITATION BY LINING
(NOT MDWASD)

PART 1 GENERAL

1.1 DESCRIPTION

A. Section includes requirements for reconstruction of sewer mains and laterals by Cured in Place Pipe (CIPP) lining and installation of a resin-impregnated flexile tube.

1.2 DEFINITIONS

A. Mainline: Sewer main.

B. Lateral: Service pipe from property line to mainline.

C. Lateral-Mainline Interface: Lateral connection to mainline.

D. Lateral-Mainline Interface Seal: Watertight seal between lateral and mainline.

E. Re-instate Lateral-Mainline Interface: Cutting open or trimming opening in mainline liner to allow flow from lateral to enter main.

1.3 QUALITY ASSURANCE

A. Follow national standards and as specified herein.

B. Personnel Involved in Installation of Pipe Liner: Certified by liner manufacturer successfully completed training in handling, insertion, trimming, reinstatement of laterals and finishing pipe liner.

C. Engineer:
   1. May inspect and test liner or its materials at factory, before delivery to site or while in storage.
   2. May inspect factory materials, wet-out procedure, and loading.

D. Internally inspect host pipe prior to lining and post-lining.

1.4 SUBMITTALS

A. Submit following Section.
   1. Catalog data showing manufacturer's clarifications and updates, ASTM references, material composition, specifications, physical properties and chemical resistance of liner.

2. Manufacturer's recommended procedures for handling, storing, repairing, and installing materials selected.
3. Method of construction.
    a. Access manholes and site locations.
    b. Work dimensions.
    c. Existing utilities.
    d. Size of working area.
    e. Impacted portions of existing sewer.
    f. Site access points.
    g. Bypass pumping plan:
4. Emergency plan detailing procedures followed in event of health and safety emergency, pump failures, sewer overflows, service backups, and sewage spillage. Maintain copy on site for duration of project.
    a. Address dangers associated with sewer rehabilitation work (i.e. working with large boiler trucks).
    b. Identify Health and Safety officer (i.e. crew chief)
    c. Designated Health and Safety officer:
        1) Responsible for providing health and safety oversight of personnel participating on project team.
        2) Perform and document routine work area inspections, conduct safety meetings, and provide safety orientations for team members.
        3) Have in easily accessible place following contact information;
            a) Non emergency number.
            b) Contractor's health and safety representative name and number.
            c) Occupational health clinic number(s).
    d. Submit for review the following;
        1) List of critical rehabilitation equipment, including boiler truck equipment, to be inspected on daily basis.
        2) Recently completed (previous month) monthly maintenance log.
        3) Annual third-party certified inspection for boiler truck(s) to be used on project.
        4) Certification of training for boiler truck operator.
5. Method of reinstatement and sealing of lateral-mainline interface including, but not limited to internal inspection equipment, and equipment used for reinstatement and sealing of lateral-mainline interface.
    a. Air testing not required for lateral-mainline interface seal installed utilizing the Janssen resin injection system or a full wrap profile, i.e., LMK T-Liner that extends from sewer main to sewer house connection cleanout.
6. Infrared spectrograph chemical fingerprint and Certificates of Analysis for each lot of resins:
    a. Lot number.
    b. Product name.
    c. Manufacturer.
    d. Brookfield Viscosity.
    e. Thix Index.
    f. Gel time at cure temperature.
    g. Peak temperature for failure.
    h. Percent of non-volatile solids.

i. Specific Gravity.
j. Catalyzed Stability time at optimum temperature.
k. Catalyst to resin ratio.
l. Analysis signature.
m. Date tested.
n. Batch ticket for each resin-catalyst-colorant batch made up and impregnated into felt liner material.

7. Stock sheets, order forms, delivery forms, invoices, and Hazardous Material forms for material used.
8. Shipping manifest with;
   a. Date shipped.
   b. Origination and delivery locations.
   c. Shipping method and carrier.
   d. Shipping order number.
   e. Purchase order number.
   f. Shipped item.
   g. Stock number.
   h. Lot number.
   i. Manufacturer.
   j. Any shipping, storage, or safety requirements.
   k. Received by, and date.
   l. Signature of receiver.

B. Submit specified herein. Mark submittals with mainline pipe identification number, work order number, Contract number, Contractor's name, operator's name, and date of readings.
   1. Certified statement from manufacturer approved installer of their system.
      a. Include certificates of training for each crewmember involved in installation process.
   2. Documentation for Products and Installers: Engineer's approval required before installation of liner.
   3. ASTM certified lab test results for field installations in United States of same resin system and tube materials as proposed for actual installation.
      a. Test results must verify (CIPP) physical properties specified herein have been achieved in previous field applications.
      b. Third party is defined as ASTM or equivalent accredited materials testing firm with no financial or directorial link to manufacturer or Contractor.
   4. Television inspection reports, color videos, CD-ROMs, and electronic CIMS 2000 downloads made before and following mainline CIPP, and original copies of digitally recorded inspections furnished to Engineer within 10 days.
   5. Curing logs: Include liner manufacturer recommended curing citations for each submittal. Store electronically on data logger. Submit printed copy with Post CCTV.
      a. Heat cured liners.
         1) Record temperature (degrees Fahrenheit) and pressure (psi) readings per unit of time collected during liner installation and curing.
      b. UV cured liners.
         1) Record the curing speed (feet per minute), light source (number of

lamps, intensity and wattage), inner air pressure (psi), and curing temperatures (degrees Fahrenheit) per unit time over length of liner.

6. Weiring Logs: Show beginning and final rehab weir readings.
7. Materials delivery and storage: Record date, time and temperature readings at 15 minute intervals, minimum. Include sewer pipe material's stock identification number.
8. Tabulation of time versus temperature by liner manufacturer with lengths of time exposed portions of liner will endure without self-initiated cure or other deterioration.
    a. Tabulate at 5 degrees F. increments, ranging from 70 degrees F. to 100 degrees F.
    b. Include analysis of progressive effects of such self-initiated cure on insertion and cured properties of liner.
9. Provide to Engineer for review within 30 days prior to beginning work;
    a. Description of methods for avoiding liner stoppage due to conflict and friction with such points as manhole entrance and bend into pipe entrance.
    b. Plans for dealing with liner stopped by snagging within pipe.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect, store, and handle materials during transportation and delivery, while stored on-site, and during installation following manufacturer's recommendations.

B. Continuously monitor liner materials during transport and storage with temperature recorder and data storage or strip printer.
    1. Furnish Engineer with recorder readings before installation.
    2. Material exposed to temperatures outside of manufacturer's limits: Rejected.

C. Material found to be defective or damaged due to manufacture or shipment:
    1. When Engineer deems repairable: Repair following manufacturer's recommendations.
    2. When Engineer deems not repairable: Rejected, removed from Contract site, and replaced under Engineer's direction.
    3. Repair or replacement of defective or damaged material will be at no additional cost to the Town of Medley.

PART 2 PRODUCTS

2.1 MATERIALS

A. Mainline (CIPP): Follow ASTM F1216, ASTM F1743 and ASTM F2019 as appropriate to insertion method, liner tube material and resin material proposed for fully deteriorated pipe condition.
    1. Wet-out liner material in controlled factory environment.
    2. Resin-Catalyst-Colorant-Additive Mixture:
        a. Tested to certify liner material follows design standards before wet out.
        b. Quantity of resin used for tube impregnation: Sufficient to fill volume of air voids in felt tube with additional 10 to 15 percent allowances for polymerization shrinkage and loss of resin through cracks and irregularities

in original pipe wall.

1) Heat cured liners, required amount of resin mixture: Vacuumed into felt liner material.
    a) Point of vacuum: No further than 25 feet from point of initial resin introduction to ensure thorough resin saturation throughout length of felt tube.
    b) Vacuum point: No further than 75 feet from leading edge of resin after vacuum in tube is established.
2) UV cured liners, fiberglass liner: Saturated with appropriate resin using resin bath to minimize air entrapment and delivered to site ready for installation.
    a) Vacuum methods: Not permitted for introducing resin in UV cured fiberglass liners.
3) Leading edge of resin slug:
    a) As near to perpendicular as possible.
    b) Wet-out liner is fed onto conveyor system and through roller gap set following design (minimum 2.3 x lining thickness in mm).
        (1) Ensure uniform distribution of resin throughout pre-cured liner.
        (2) Pack pre-cured liner on ice within automatically monitored refrigerated truck with ice bags between pre-cured liner folds.
    c) Alternate resin impregnation method: Proven, inspected, and with Engineer's or representative approval.
    d) Colorant: Dark yellow.
4) Add to catalyst before mixing catalyst with resin.
5) Pigmentation: Produces color that is clearly distinguishable from dry felt.
6) Wall color of interior pipe surface of CIPP after installation: Light reflective color to allow clear detailed examination with closed circuit television inspection equipment.

3. Additives for resin enhancement, viscosity control, safety, chemical resistance, physical resistance, or extending shelf life are permitted with Engineer's or representative approval.
4. Liner Tube.
    a. Felt Tubes.
        1) Seams as described herein.
            a) Liner to run continuously from manhole to manhole.
            b) Does not use overlapping section of liner felt tube or longitudinal seams that cause lumps in final product.
        2) Impermeable, flexible membrane outside layer that will contain resin and monitor resin saturation at factory during resin impregnation procedure.
    b. Fiberglass Tubes.
        1) Consist of seamless, spirally wound fiberglass flexible up to 10 percent expansion.
            a) Longitudinal stitched. Stitch free weld or bond or stitch free overlap is not permitted.
        2) Fiberglass tube: Include exterior and interior film that contains resin in tube, are impervious to airborne styrene and serves as ultraviolet blocking material.
    c. Chemically resistant to internal exposure to sewage containing small

quantities of hydrogen sulfide, carbon dioxide, methane, mercaptans, kerosene, moisture, and diluted sulfuric acid.

d. Chemically and physically resistant to external exposure of soil bacteria, moisture, roots, and chemical attack, that may be due to material in surrounding ground.

5. Approved Manufacturers:
   a. Inliner Technologies, LLC.
   b. Insituform Technologies Inc.
   c. National Liner.
   d. Novapipe.
   e. Premier Pipe.
   f. Reline America Blue-Tek Liner.
   g. Saertex Multicom
   h. Or equal.

B. Lateral CIPP Renewal Processes:
   1. ASTM F2561-06 or ASTM F1216 following mainline CIPP wet-out requirements.

C. Lateral-Mainline Interface Seal:
   1. ASTM F2561-06 following mainline CIPP wet-out requirements.
      a. T Liner.
         1) Approved manufacturers.
            a) LMK Enterprises Inc.
            b) Or equal.
   2. Resin injection process following manufacturer's recommendations.
      a. Injected resin.
         1) Approved manufacturers:
            a) Janssen Process Company.
            b) Or Equal.

D. Miscellaneous Materials.
   1. Finishing material for transitioning, filling, and sealing liners entering manholes.
      a. Chemically inert, non shrinking, and able to cure in presence of water.
      b. Material: Quickset H_2S resistant, epoxy resin or mortar.
      c. Design mix: Minimum 500-psi compressive strength in 28 days.
         1) Additives may be added to improve flow properties when minimum compressive strength requirements are met, with Engineer's approval.
      d. Pre-lining lateral installations: Use PVC Tees with full circle seal couplers on either side of PVC Tee.
         1) PVC Tee: Stainless steel sleeve inside lateral tap to protect tap during reinstatement.
      e. Pre-lining external point repairs: Use PVC pipe with non-shear seal couplers on either side of PVC pipe.
      f. Non-shear couplings: Capable of maintaining mainline alignment during mainline lining.
      g. Epoxy resin used to seal liner to manhole drop line: Compatible with liner.

E. CIPP Liner Calculations.
1. Layers of cured CIPP: Uniformly bonded.
a. Structural Properties: Use deteriorated design condition, following design equations in appendix of ASTM F1216. If equation is less than minimum liner thickness noted on table below use minimum as noted.
1) Design Assumptions.
a) Water table: At manhole rim
b) Buckling resistance: AWWA M45, Appendix A
c) Design Safety Factor: 2.0
d) Ovality: 2 percent
e) Live Load: H20 Highway

Felt Liner and Ambient Temperature, Steam or Hot Water Cured CIPP	
Host Pipe Diameter	Minimum Liner Thickness
8” diameter	6 mm
10” diameter	6 mm
12” diameter	8 mm
15” diameter	10 mm
18” diameter	12 mm

Fiberglass Felt and Ultraviolet Cured CIPP	
Host Pipe Diameter	Minimum Liner Thickness
8” diameter	4 mm
10” diameter	4 mm
12” diameter	6 mm
15” diameter	6 mm
18” diameter	8 mm

2.2 SOURCE QUALITY CONTROL

A. Mainline Cured-In-Place Pipe (CIPP)
1. Document installation procedure following ASTM F1216, ASTM F1743 or ASTM F2019, as appropriate to insertion method, liner tube material, resin material, curing method and installation procedures, as specified herein, for Engineer’s or representative approval.

2. Perform Post-inspection CCTV recording.
a. The acceptability of lateral liner defects will be at Engineers or representative discretion. Defect locations will factor into Engineers decision on acceptability.
b. Liner Approved:
1) Free of wrinkles.
2) Continuous liner over length of reconstructed pipe.
3) No visible leaks.
4) Free of obstructions.

c. Rejected: Correct deficiencies at no additional cost to the Town of Medley.

B. Lateral Renewal Process.
   1. Lateral Renewals by CIPP:
      a. Document installation procedure following manufacturer's recommendation, ASTM standards F1216 or F2561-06 and as specified herein for Engineer's or representative approval.
   2. Rehabilitation of lateral-mainline interface by resin injection seal.
      a. Record and document installer's certificate of training number and manufacturer's batch identification number.
      b. Mark identification number on corresponding resin sample (5 to 6 ounce cubes) poured at start of each new batch at beginning of each day.
      c. Record resin injection process with CCTV for Engineer's or representative approval.
      d. Cure: Follow manufacturer's recommendation.
      e. Clearly see resin ring at lateral-mainline interface.
   3. Perform Post-inspection CCTV recording.
      a. Acceptability of lateral liner defects: Engineers or representative discretion. Defect locations will factor into Engineers decision on acceptability.
      b. Approved:
         1) Free of wrinkles.
         2) Continuous liner over length of reconstructed pipe.
         3) No visible leaks.
         4) Free of obstructions.
      c. Rejected: Correct deficiencies at no additional cost to the Town of Medley.

C. Lateral-Mainline Interface.
   1. Rehabilitation of lateral-mainline interface by lining specified herein.
      a. Follow Mainline CIPP for sample submissions, reviews, results, and corrections.
   2. Rehabilitation of lateral-mainline interface by resin injection seal.
      a. Record and document installer's certificate of training number and manufacturer's batch identification number.
      b. Mark identification number on corresponding resin sample (5 to 6 ounce cubes) poured at start of each new batch at beginning of each day.
         1) If half of samples fail, additional 10 percent may be required to be tested.
      c. Record resin injection process with CCTV for Engineer's approval.
      d. Cure: Follow manufacturer's recommendations.
      e. Clearly see resin ring at lateral-mainline interface.
   3. Follow Mainline CIPP for review and correction process.

PART 3 EXECUTION

3.1 PUBLIC NOTIFICATION

A. Follow Maintenance of Traffic, Section 01750.

3.2 TESTING

A. Post Installation Test:
   1. Ensure materials installed follow specifications and test site is safe, accessible, ventilated and well lighted.

3.3 MAINLINE PREPARATION

A. Access: Through existing manholes.

B. CCTV Internal Inspection.
   1. Perform after cleaning sewer:
      a. Pre-lining recordings: Indicate mainline is ready for lining.
   2. Pre-Lining internal intruding tap and offset joint removal.
      a. Remove, by internal process, intruding taps and offset joints that reduce internal diameter of liner by 10 percent or more.
   3. Pre-Lining Mandrel.
      a. Insert and pull mandrel through mainline to be lined to demonstrate that mainline can accept liner.
      b. Repair areas where mandrel cannot pass before lining is performed.
      c. Remove sags and flow constrictions that reduce cross-sectional area of mainline more than 10 percent.
      d. Remove trapped debris that jetting cannot remove.
      e. Clear mainline of dropped joints, crushed or collapsed pipe, and other obstructions that interfere with installation, causes damage to inverted tube, or reduces capacity of sewer.

C. Infiltration Leakage Measurement and Control.
   1. Immediately before lining mainline and after by-pass has been established, measure infiltration in isolated mainline using a weir.
   2. Stabilize flow through weir for 10 minutes before taking measurement.
   3. Repeat weir measurement immediately after lining while bypass is still in place.
   4. Report pre-lining and post lining measurements to Engineer upon completion of lining operation.

3.4 MAINLINE LINER INSTALLATION.

A. Set up bypass pumping, if necessary, or turn off water to building with the Engineer's or representative approval.
   1. Water service shutdown will be reviewed by Engineer on case by case basis.

B. Method of Lining.
   1. Invert tube by inversion: Follow ASTM F1216
      a. Erect scaffold or elevated platform at upstream or downstream access point.
      b. Invert pre-cured tube using inversion elbow at bottom of manhole or inversion ring above ground with water pressure.
         1) Ensure tube is;
            a) Fully extended to termination point and expanded to inside pipe

diameter with no annular space between liner and host pipe.

b) Dimpled to show locations of service laterals needing restoration.

2. Pull-In Place: Follow ASTM 1743, F2019.
   a. Install slip sheet on bottom half of pipe prior to liner insertion. Pull liner into place with constant tension winch capable of recording strain used during insertion.
   b. Use end plugs to cap each end of liner. Both plugs and liner restrained during pressurization of line.
   c. Measure laterals for reinstatement.
3. Use hydrophilic water stop around exterior of liner material at liner termination in each manhole to prevent passage of groundwater infiltration past liner termination, regardless of insertion methodology used.
4. Other methods of installation of CIPP lining or curing are acceptable, provided manufacturer and installer demonstrate they meet Quality Assurance requirements specified herein and obtain Engineers or representative approval.

C. Install and cure resin impregnated tube into liner: Follow manufacturer's recommendations and specified herein.
   1. Protect tube and lining material from damage during installation.
   2. Insert tube without twisting, cutting, tearing, separating, kinking, gouging, overstressing, resin loss, or double-ups.
   3. If tube is damaged during removal, repair tube to Engineer's approval or replace damaged tube with new tube at no cost to the Town of Medley.

D. Loss or discharge of resin, other lining materials, or by-products downstream is not permitted.
   1. Stop, collect, and remove at next downstream manhole.
   2. Transport and dispose debris.

E. Notify Engineer of any construction delay, problems, or contract deviations taking place during insertion before curing operations.
   1. Sample test failures or lack of immediate notification of delay may result in rejection of that portion of work.
   2. Engineer has option to require removal of liner tube and reinstallation.
   3. If tube is damaged during removal, repair tube to Engineer's or representative approval or replace damaged tube with new tube at no cost to the Town of Medley.

F. Cure.
   1. Liners cured with hot water or steam: Follow ASTM F1216 or ASTM F1743 as specified.
      a. Recirculation Equipment: Capable of uniformly raising temperature of re-circulated water, and maintaining recommended cure temperature for duration to produce cured resin.
      b. Water/Steam Temperature in Tube during Cure Period: Follow manufacturer's guidelines and specified herein.
         1) Follow minimum and maximum standards for curing CIPP including temperature requirements determined by resin/catalyst system employed.
         2) Bring temperature up slowly through stages until exothermic reaction is

achieved and then maintain.

a) Evidence of exothermic reaction: When inspection of exposed portions of CIPP appear hard and sound and sensor indicates.

2. Fiberglass Liners cured with UV: Follow ASTM F2019.
   a. Cure with UV light sources at constant inner pressure sufficient to maintain liner tight against existing wall of pipe.
   b. Record time, rate of travel of ultraviolet light assembly, light sources and internal pressures as specified by liner manufacturer.
   c. Submit segment curing data to Engineer or representative along with manufacturer's curing standards.

G. Process Monitoring Sensors.
   1. Use to monitor and maintain curing temperature and internal pressure throughout length of liner following manufacturer's recommendations.
   2. Heat Source: Fitted with suitable monitors to gauge temperature of incoming and outgoing heat exchanger circulating water.
   3. Placement: Between tube and host pipe in downstream manhole at or near bottom.
      a. Extra temperature gauges: Inside tube at invert level of each end.
   4. Electronically record continuous or specified pressure and temperature reading on printout.
      a. Start time.
      b. Gradual build up to curing period with maximum temperature and pressure.
      c. Time of gradual dropping of curing temperature.
      d. Cool down duration along with relaxing temperature and pressure.
      e. Start time of gradual release of curing pressure.
      f. Ending time.
   5. If electronic recording fails, record temperature and pressure readings on log every 10 minutes starting before pressure is added to liner and ending 20 minutes after pressure is relieved.
   6. Provide digital thermometer or other means of accurately and quickly checking temperature of exposed portions of liner.

H. Cooling and Relaxation of Liners:
   1. Cool finished CIPP to temperature within 10 degrees of ambient temperature before relieving static head in inversion standpipe.
   2. Cool-down may be accomplished by introduction of cool water into standpipe to replace water/steam being drained or vented from downstream end.
   3. Caution is advised in release of static head so vacuum will not be developed with potential to damage newly installed liner.
   4. After liner has cooled and relaxed, except for manhole indicated as line-through, cut cured liner flush with inside wall of manholes.
   5. Fill voids between manhole channel, bench, or wall and liner with quick setting, H2S resistant, epoxy mortar to form watertight seal.
   6. Trowel grout to form smooth transition between manhole base or channel and liner to ensure sewage flow with no collection points for solids.

I. Finish liner.
    1. Ensure liner is continuous over length of reconstructed pipe and follows material requirements specified herein.
    2. Repair leaks at interface of manhole and liner.

J. Return mainlines to service with approval of Engineer.

3.5 MAINLINE DROP CONNECTIONS AT MANHOLES

A. Replace existing exterior drops with inside drop connections.
    1. Line through drop and open up extended liner into manhole enough to clamp inside drop fittings, using mold to maintain pipe outside form and diameter.

3.6 RE-INSTATEMENT OF LATERAL-MAINLINE INTERFACE

A. Identify and locate lateral-mainline interface.

B. Re-instate active services and services to buldings after pipe liner has cured.
    1. Perform from interior of pipeline without excavation using internal inspection camera with robotic cutter head.
    2. Re-instatement cut through liner: Neat, smooth, and to diameter of existing lateral-mainline interface in order to prevent blockages.
    3. Do not damage existing laterals.
    4. Coupons and cuttings.
        a. Collect at downstream manhole and remove.
        b. Mark whole captured coupons with component number and make available for testing and reporting liner thickness.

C. Abandoned Laterals.
    1. Open at Engineer's directions.
    2. If abandoned lateral is opened without Engineer's approval, perform an internal spot repair to close lateral at no cost to the Town of Medley.

D. Lateral-Mainline Interface Reinstatement Problems.
    1. Respond within 2 hours of Engineer's notification of potential backup.

3.7 PREPARATION FOR LATERAL LINING

A. Access: Through mainline connection or cleanout.

B. Lateral lining ability inspection.

1. Rate connecting laterals by inspection between main and cleanout or beyond property line.
2. Do not line laterals with less than 2 percent grade, deep sags, offsets, heavy grease, un-removable roots, over 2 multiple bends, capped end, un-sealable leaks,

PVC material, crushed/collapsed lateral pipe, and without manufacturer's recommendation.

3. Submit to Engineer, documentation and video for laterals that cannot be lined.

C. Lateral Cleaning and Surface.
   1. Internally remove any obstructions, roots, debris, and grease that will impact lining lateral.
   2. Remove tuberculation from ductile iron laterals.
   3. Do not back-up or blow-back water into building.
   4. Laterals, mainlines, or property damaged as result of improper use of cleaning and preparation equipment to be repaired at no cost to the Town of Medley.

D. Inspection and Recommendation to Engineer.
   1. Inspect laterals from mainline or cleanout pit.
   2. Identify laterals ready for lining.
   3. Install lateral lining only after pre-lining CCTV inspections following Engineer's review and approval.

E. Setup bypass pumping, if necessary, or turn off water to building with Engineer's approval.
   1. Water service shutdown will be reviewed by Engineer on case by case basis.

F. Perform manufacturers and industry standard required preparation work to alleviate lateral lining problems.

3.8 LATERAL LINING INSTALLATION

A. Follow procedures for Mainline Liner Installation, specified herein.

B. Invert tube from process launcher by controlled means, assuring even feed of tube into lateral with installation pressure not exceeding 10 to 15 psi.

C. Place lateral liner no greater than 6 inches from lateral-mainline interface.

D. Place lateral liner over all defects or within 12 inches from cleanout.

E. Use multiple CCTV cameras to ensure proper installation and alignment of lateral liner.

F. When curing is completed, gradually reduce pressure and remove inflation bladder including any leftover pieces.

G. Ensure liner is continuous over length of reconstructed pipe and meets or exceeds material requirements specified herein.

H. Inspection.
   1. Materials and processes: Reasonably available for pre-installation, installation and post-installation inspections.

2. Areas that require inspection include, but are not limited to product materials exhibiting sufficient transparency to visually verify quality of resin impregnation.

3.9 LATERAL-MAINLINE INTERFACE SEAL

A. After mainline lining is completed, install watertight lateral-mainline interface seal and extend minimum of 18 inches into lateral to create water tight seal ensuring interface is smooth and does not impede flow from lateral.

B. Perform manufacturer's required and industry standard preparation work to alleviate lateral-mainline interface seal problems and as specified herein.
   1. As necessary for access of equipment, contour manhole bench and channel by saw cutting.
   2. Internally remove any obstructions, roots, debris, or grease that impact lateral-mainline interface seal.
   3. Remove tuberculation on ductile iron lateral.
   4. Do not back-up or blow-back waste into property owners' building.
   5. Lateral, mainline, or property damaged as result of improper use of equipment: Repaired at no cost to the Town of Medley.

C. Setup bypass pumping, if necessary, or turn off water to building with Engineer's approval.

3.10 POST INSPECTION OF MAIN, LATERAL, AND LATERAL-MAINLINE INTERFACE

A. Verify system is sealed and free of leaks.
   1. Show liner at manhole wall is sealed with no leakage.
   2. Show main, lateral, and lateral-mainline interface seal are installed properly.

3.11 ACCEPTANCE

A. Inspect sewer main, lateral, and lateral-mainline system by CCTV inspection.

B. Infiltration of groundwater: None.

C. Laterals: Reinstated and unobstructed.

D. Defects When Engineer Deems Repairable: Repair defect, replace liner, install new service, or replace lateral-mainline interface at no additional cost to the Town of Medley.

3.12 ADDITIONAL WORK ORDERS

A. Additional Work Orders may be issued and may be designated as emergency.

B. Commence emergency work within 24 hours of issuance.

PART 4 MEASUREMENT AND PAYMENT

4.1 MAINLINE PIPE LINER

A. Measurement: By linear foot measured horizontally along centerline of mainline lined.

B. Payment: At unit price for each size listed in table of Quantities for Trenchless Repairs.
   1. Payment includes Pre-Lining cleaning and reaming intruding taps, Pre-Lining CCTV inspection, Post-Lining CCTV inspection, bypass pumping, permanent restoration, labor, materials and equipment necessary to install liner as specified.

4.2 LATERAL PIPE LINER

A. Measurement: By linear foot measured horizontally along centerline of lateral lined from cleanout to lateral-mainline interface.

B. Payment: At unit price listed in Bid Schedule.
   1. Payment includes Pre-Lining cleaning and CCTV inspections, Post-Lining CCTV inspection, Pre-Lining leakage control, bypass pumping, lateral mainline interface seal, permanent restoration, permanent repair of manhole bench and channel, labor, materials and equipment necessary to install liner specified herein.

POINT REPAIRS TO SANITARY SEWERS

(NOT MDWASD)

1. GENERAL

1.1. SECTION INCLUDES

A. Repairs to existing sewer lines by replacing short lengths of failed pipe.

1.2. UNIT PRICES

A. Measurement for point repairs is on a unit price basis for each repair performed on each material type and diameter within depth ranges listed in the following table. Depth shall be measured from natural ground level to flow line of sanitary sewer main at point of repair. All excavation, diversion pumping, material, surface restoration and televising is incidental.

B. Measurement for extra length repair is on a linear foot basis for each material type and diameter in excess of replacement lengths.

C. Measurement for hand excavation is on a cubic yard basis when authorized by the Owner's Representative in locations where excavation by machine is not suitable.

D. If point repair is abandoned, payment will be made on a cubic yard basis for excavation required to expose existing pipe. Separate measurement will be made for machine excavation and hand excavation.

E. Diversion pumping, if required, is incidental to the cost of the point repair.

1.3. PERFORMANCE REQUIREMENTS

A. Locate and replace small lengths of one or more pipe sections where isolated line failure has occurred due to settlement, corrosion, crushing or separation of joints.

B. Owner's Representative may identify potential locations for point repair, but Contractor is responsible for verifying locations.

C. Owner's Representative will authorize each point repair after failed points are located. Do not make point repairs without prior approval of Owner Representative.

D. Replace carrier pipe for all point repairs unless otherwise directed by Owner Representative.

E. Minimum length of pipe to be replaced shall be determined by the Owner's Representative.

1.4. SUBMITTALS

A. Submittals shall conform to requirements of all sections and provisions of these specifications.

B. Submit product data for each pipe product, fittings, and jointing material.

C. Submit certified test results prepared by manufacturer for jointing material integrity.

D. Submit alternative lining systems for ductile iron pipe for approval.

1.5. SEQUENCING

A. Complete point repairs before rehabilitating sewer between adjacent manholes.
B. Clean line and make closed-circuit television inspection for each point repair.

2. P R O D U C T S

2.1. MATERIALS

A. Materials for point repairs, other than those specified, may be considered for use in rehabilitation of existing sewers.
B. For consideration of other materials, submit complete manufacturer's data including material, sizes, flow carrying capacity, installation procedures and history of similar installations to Owner Representative for evaluation.

2.2. PVC PIPE

A. PVC sewer pipe and joints: 6 inch through 18-inch pipe conforming requirements of Section 02620.

2.3. DUCTILE IRON PIPE

A. Ductile iron pipe: 4 inch thorough 48 inch, conforming to requirements of Section 02610.
B. Fittings: Push-on end joint fittings with bell-and-spigot ends, with bell modified for push-on joint, conforming to requirements of Section 02610.
C. Interior Coating: Conform to requirements of Section 02610 for sanitary sewers.
D. Exterior coating: 8-mil polyethylene tubular material conforming to requirements of Section 02630.

2.4. REINFORCED CONCRETE PIPE

A. Reinforced concrete pipe and joints: Conform to requirements of Section 02615. Reinforced concrete pipe may be used for sewers 24-inches in diameter and larger.

2.5. JOINTING MATERIALS

A. Use Fernco adapters secured with 1/2-inch stainless steel bands, or approved equal.

3. E X E C U T I O N

3.1. PROTECTION

A. Provide barricades and warning lights and signs, for excavations created by point repairs.
B. Do not allow sand, debris or runoff to enter sewer system.

3.2. EXCAVATION

A. Excavate trenches in accordance with Section 02314.
B. All excavations shall conform with South Florida Building Codes, the State of Florida Trench Safety Act, OSHA requirements.
C. Excavations shall be executed in accordance with all applicable requirements of Section 01016, including notification of Sunshine State One-Call Center (1-800-432-4770) 48 hours prior to any excavation.

3.3. DIVERSION PUMPING

A. Install and operate diversion pumping equipment to maintain sewage flow and to prevent backup or overflow. Obtain approval for diversion pumping equipment and procedures from Owner Representative.
B. Design all piping, joints and accessories to withstand twice the maximum system pressure or 50 psi, whichever is greater.
C. In the event of accidental spill or overflow, immediately stop the overflow and take action to clean up and disinfect spillage. Promptly notify Owner Representative so that required reporting can be made to Environmental Protection Agency.

3.4. TYPICAL SEQUENCE OF POINT REPAIR

A. Survey, clean and televise to verify the location of point repair.
B. Excavate to the minimum length of existing pipe to be replaced.
C. Prior to replacing pipe, determine condition of the existing line on both sides of point repair by lamping the line a minimum of 10 feet in each direction. Determine whether additional lengths of line beyond "minimum length" criteria, need replacement. Report need for additional replacement to Owner Representative and obtain approval before proceeding.
D. Remove and replace failed pipe and connect to existing pipe using couplings. If joints cannot be made watertight using adapters, place waterstop gaskets on each joint and encase in a reinforced concrete collar. Reconnect affected service connections or stacks.
E. Establish proper grade for the pipe being replaced using methods acceptable to Owner Representative.
F. After completion of point repair, but prior to backfill, perform a smoke test in the presence of Owner Representative. Repair and retest sections that fail.
G. Backfill the excavation as specified in Section 02314.
H. Replace pavement or sidewalks removed or damaged by excavation in accordance with Section 02745.
I. Perform a post-completion TV inspection. Point repairs that have offset joints, non-uniform grade or alignment, or other unsatisfactory conditions, shall be rejected. Replace pipe and bedding as required when work is rejected.

3.5. ABANDONMENT OF POINT REPAIR

A. If a pipe is exposed and found in good condition, not requiring a point repair, notify Owner Representative who will record abandonment of point repair.

B. Backfill the excavation, replace pavement or sidewalk and repair and seed or sod unpaved areas, as specified in Section 02314.

END OF SPECIFICATION

POINT REPAIRS TO SANITARY SEWERS

(NOT MDWASD)

1. GENERAL

1.1. SECTION INCLUDES

A. Repairs to existing sewer lines by replacing short lengths of failed pipe.

1.2. UNIT PRICES

A. Measurement for point repairs is on a unit price basis for each repair performed on each material type and diameter within depth ranges listed in the following table. Depth shall be measured from natural ground level to flow line of sanitary sewer main at point of repair. All excavation, diversion pumping, material, surface restoration and televising is incidental.

B. Measurement for extra length repair is on a linear foot basis for each material type and diameter in excess of replacement lengths.

C. Measurement for hand excavation is on a cubic yard basis when authorized by the Owner's Representative in locations where excavation by machine is not suitable.

D. If point repair is abandoned, payment will be made on a cubic yard basis for excavation required to expose existing pipe. Separate measurement will be made for machine excavation and hand excavation.

E. Diversion pumping, if required, is incidental to the cost of the point repair.

1.3. PERFORMANCE REQUIREMENTS

A. Locate and replace small lengths of one or more pipe sections where isolated line failure has occurred due to settlement, corrosion, crushing or separation of joints.

B. Owner's Representative may identify potential locations for point repair, but Contractor is responsible for verifying locations.

C. Owner's Representative will authorize each point repair after failed points are located. Do not make point repairs without prior approval of Owner Representative.

D. Replace carrier pipe for all point repairs unless otherwise directed by Owner Representative.

E. Minimum length of pipe to be replaced shall be determined by the Owner's Representative.

1.4. SUBMITTALS

A. Submittals shall conform to requirements of all sections and provisions of these specifications.

B. Submit product data for each pipe product, fittings, and jointing material.

C. Submit certified test results prepared by manufacturer for jointing material integrity.

D. Submit alternative lining systems for ductile iron pipe for approval.

1.5. SEQUENCING

A. Complete point repairs before rehabilitating sewer between adjacent manholes.
B. Clean line and make closed-circuit television inspection for each point repair.

2. P R O D U C T S

2.1. MATERIALS

A. Materials for point repairs, other than those specified, may be considered for use in rehabilitation of existing sewers.
B. For consideration of other materials, submit complete manufacturer's data including material, sizes, flow carrying capacity, installation procedures and history of similar installations to Owner Representative for evaluation.

2.2. PVC PIPE

A. PVC sewer pipe and joints: 6 inch through 18-inch pipe conforming requirements of Section 02620.

2.3. DUCTILE IRON PIPE

A. Ductile iron pipe: 4 inch thorough 48 inch, conforming to requirements of Section 02610.
B. Fittings: Push-on end joint fittings with bell-and-spigot ends, with bell modified for push-on joint, conforming to requirements of Section 02610.
C. Interior Coating: Conform to requirements of Section 02610 for sanitary sewers.
D. Exterior coating: 8-mil polyethylene tubular material conforming to requirements of Section 02630.

2.4. REINFORCED CONCRETE PIPE

A. Reinforced concrete pipe and joints: Conform to requirements of Section 02615. Reinforced concrete pipe may be used for sewers 24-inches in diameter and larger.

2.5. JOINTING MATERIALS

A. Use Fernco adapters secured with 1/2-inch stainless steel bands, or approved equal.

3. E X E C U T I O N

3.1. PROTECTION

A. Provide barricades and warning lights and signs, for excavations created by point repairs.
B. Do not allow sand, debris or runoff to enter sewer system.

3.2. EXCAVATION

A. Excavate trenches in accordance with Section 02314.
B. All excavations shall conform with South Florida Building Codes, the State of Florida Trench Safety Act, OSHA requirements.
C. Excavations shall be executed in accordance with all applicable requirements of Section 01016, including notification of Sunshine State One-Call Center (1-800-432-4770) 48 hours prior to any excavation.

3.3. DIVERSION PUMPING

A. Install and operate diversion pumping equipment to maintain sewage flow and to prevent backup or overflow. Obtain approval for diversion pumping equipment and procedures from Owner Representative.
B. Design all piping, joints and accessories to withstand twice the maximum system pressure or 50 psi, whichever is greater.
C. In the event of accidental spill or overflow, immediately stop the overflow and take action to clean up and disinfect spillage. Promptly notify Owner Representative so that required reporting can be made to Environmental Protection Agency.

3.4. TYPICAL SEQUENCE OF POINT REPAIR

A. Survey, clean and televise to verify the location of point repair.
B. Excavate to the minimum length of existing pipe to be replaced.
C. Prior to replacing pipe, determine condition of the existing line on both sides of point repair by lamping the line a minimum of 10 feet in each direction. Determine whether additional lengths of line beyond "minimum length" criteria, need replacement. Report need for additional replacement to Owner Representative and obtain approval before proceeding.
D. Remove and replace failed pipe and connect to existing pipe using couplings. If joints cannot be made watertight using adapters, place waterstop gaskets on each joint and encase in a reinforced concrete collar. Reconnect affected service connections or stacks.
E. Establish proper grade for the pipe being replaced using methods acceptable to Owner Representative.
F. After completion of point repair, but prior to backfill, perform a smoke test in the presence of Owner Representative. Repair and retest sections that fail.
G. Backfill the excavation as specified in Section 02314.
H. Replace pavement or sidewalks removed or damaged by excavation in accordance with Section 02745.
I. Perform a post-completion TV inspection. Point repairs that have offset joints, non-uniform grade or alignment, or other unsatisfactory conditions, shall be rejected. Replace pipe and bedding as required when work is rejected.

3.5. ABANDONMENT OF POINT REPAIR

A. If a pipe is exposed and found in good condition, not requiring a point repair, notify Owner Representative who will record abandonment of point repair.

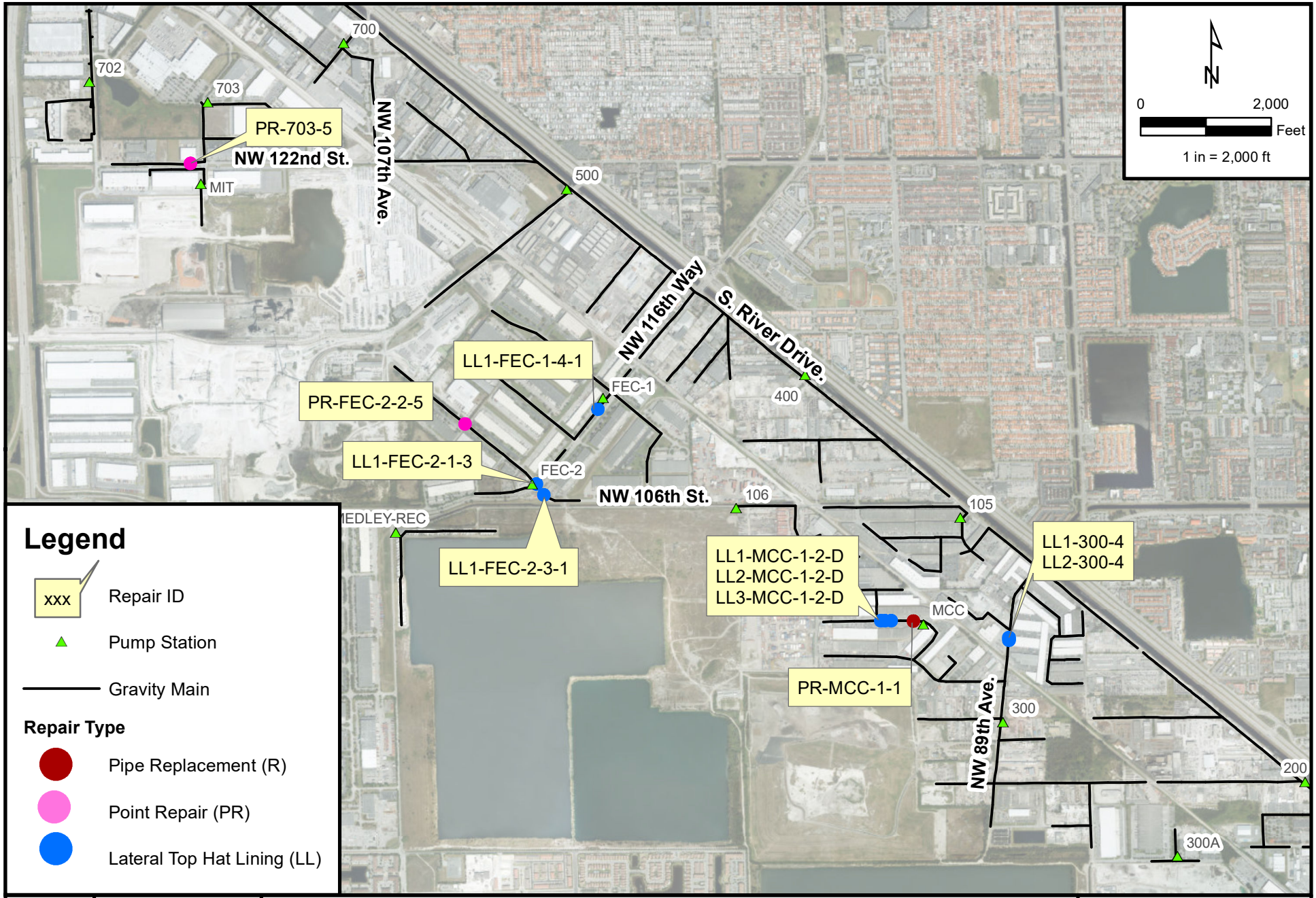
B. Backfill the excavation, replace pavement or sidewalk and repair and seed or sod unpaved areas, as specified in Section 02314.

END OF SPECIFICATION

Table of Contents

Part 4

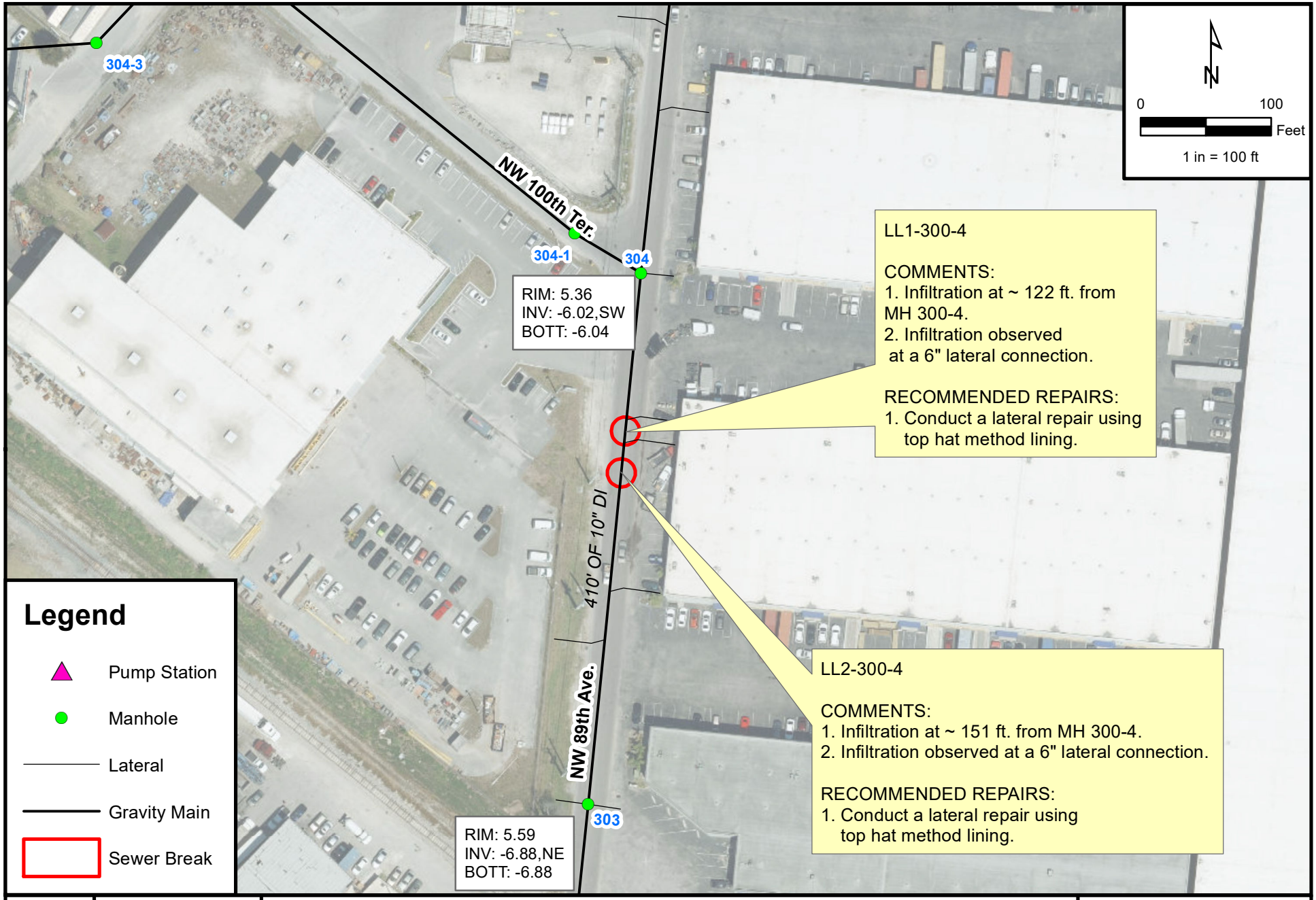
EMERGENCY REPAIR SANITARY SEWER PROJECT SKETCHES



TOWN OF MEDLEY SEWER SYSTEM

2019 Sanitary Sewer System Repairs

Date: 8/28/2019



LATERAL LINING (LL1-300-4) and (LL2-300-4)

2019 Sanitary Sewer System Repairs

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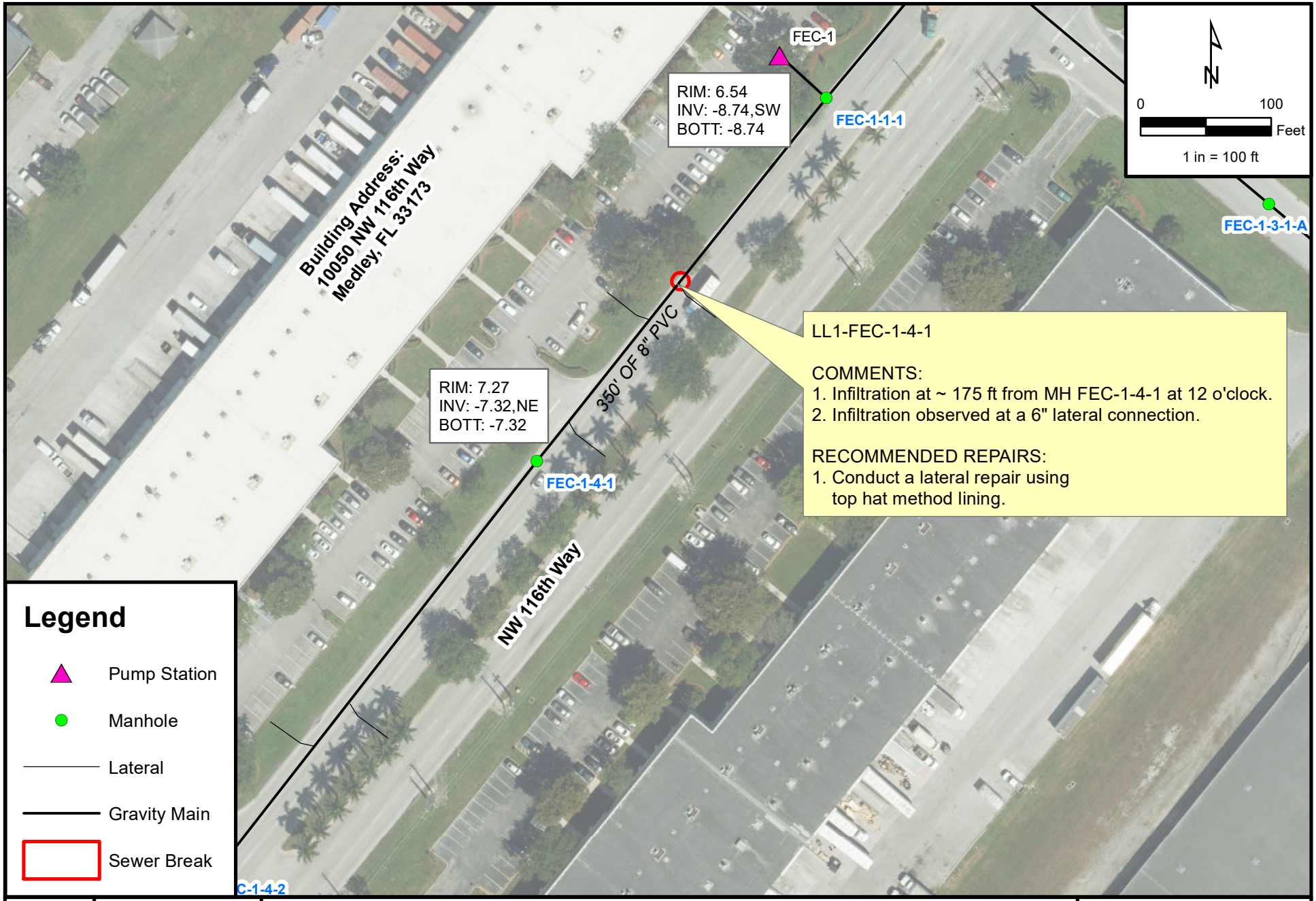

LATERAL LINING (LL1-FEC-1-4-1)

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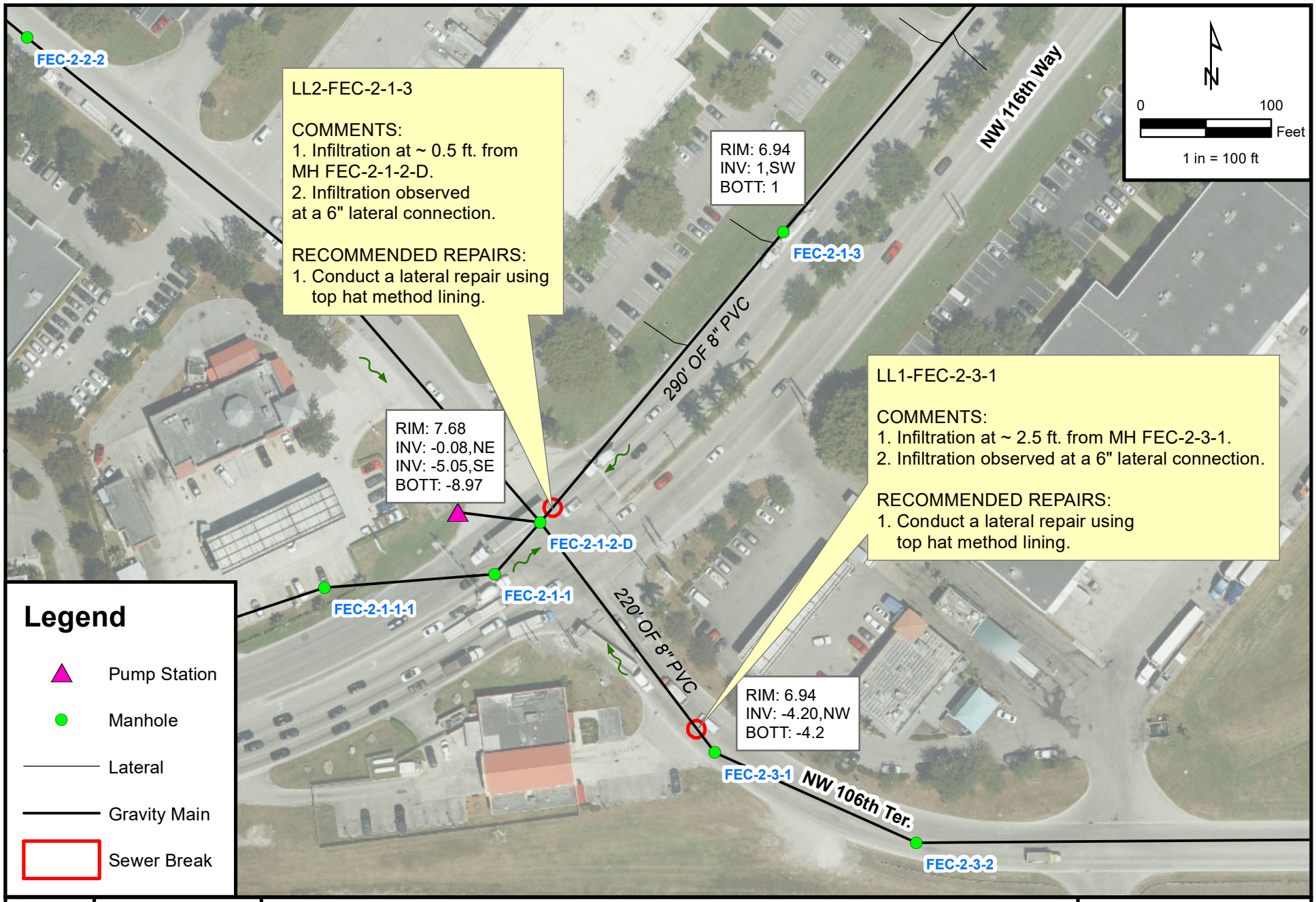

LATERAL LINING (LL1-LL2 FEC-2)

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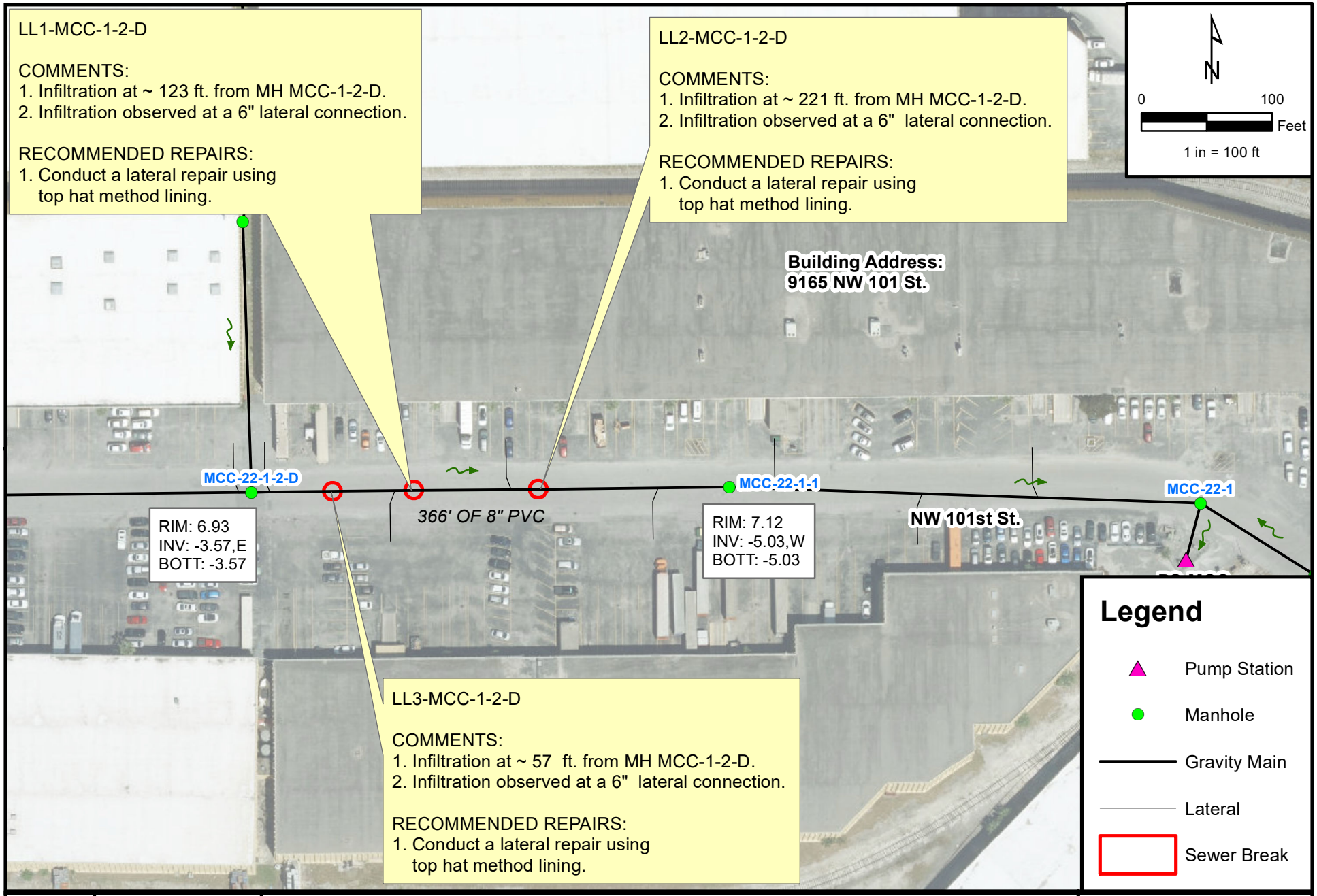

LATERAL LINING (LL1-LL3 MCC-1-2-D)

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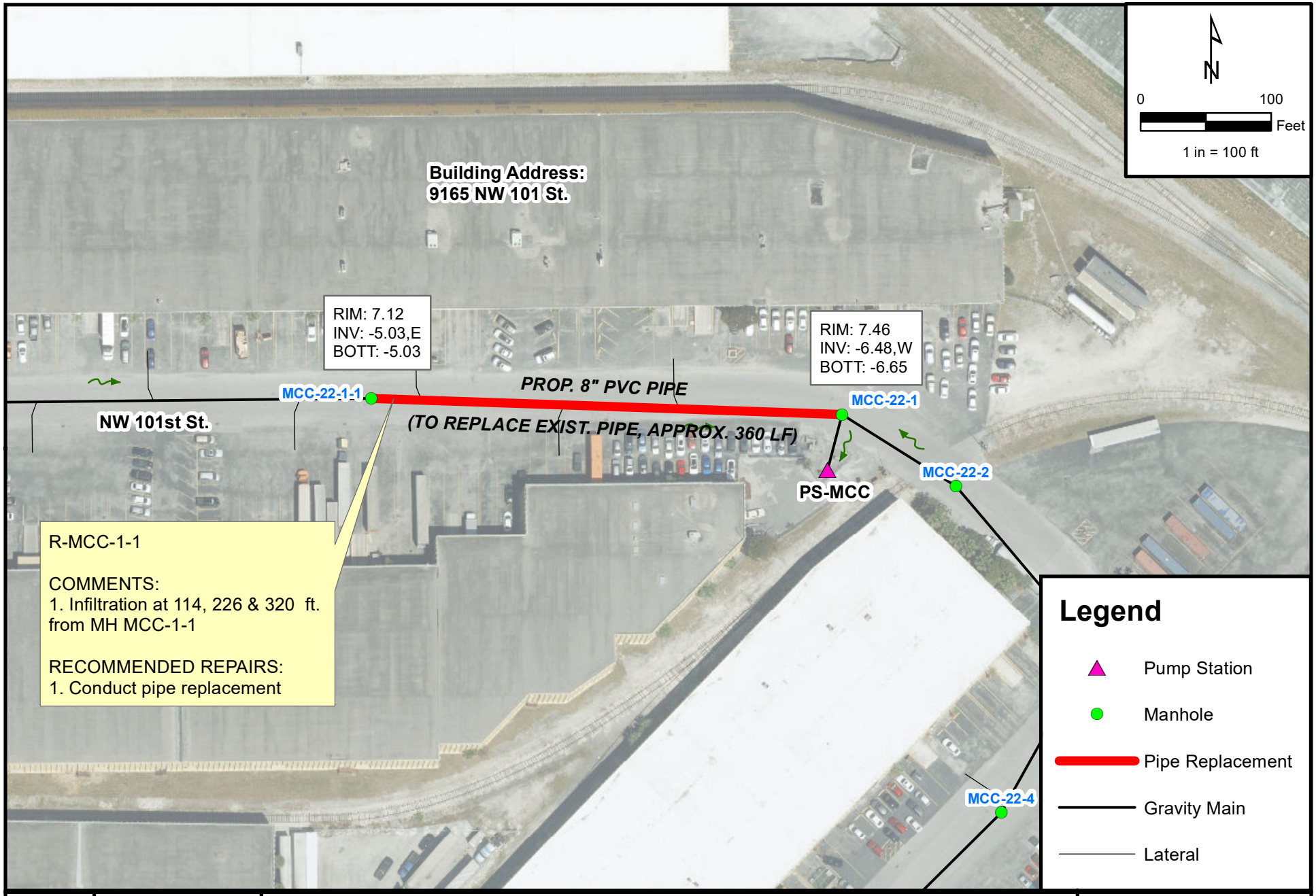

PIPE REPLACEMENT (PR-MCC-1-1)

2019 Sanitary Sewer System Repairs

Date: 8/28/2019

POINT REPAIR (PR-703-5)

2019 Sanitary Sewer System Repairs

Date: 8/28/2019

POINT REPAIR (PR-FEC-2-2-5)

2019 Sanitary Sewer System Repairs

Date: 8/28/2019