

MUSKEGON



West Michigan's Shoreline City

S 682

EVANSTON & Oak Grove SEWER LINING

*Engineering Department
Public Services Building
1350 E. Keating, Muskegon 49442*

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INTRODUCTION – PRE-BID

INVITATION FOR BIDS

Project: S 682 Evanston & Oak Grove Sewer Lining

The City of Muskegon, Michigan will receive sealed bids until 2:00 p.m. local time on Tuesday, October 2, 2018, at the City Clerk's Office, City Hall, 933 Terrace Street, Muskegon, Michigan, at which time and place all bids will be publicly opened and read aloud for the following items of work to include:

1,450 lineal feet of 10" sanitary cured-in-place pipe lining and pressure grouting of joints. Sewer cleaning and televising, maintenance of traffic, maintenance of sewer system flows, testing and inspection.

Electronic copies of Plans and Specifications may be obtained on or after Friday, September 7, 2018 from the City of Muskegon website, or by request to the Engineering Department via phone or email; 231.724.6707 or engineering@shorelinecity.com. Printed copies can be obtained by request from the Engineering Department located at 1350 E. Keating Ave, Muskegon MI, 49442 for a cost of \$40.

An amount equal to five percent (5%) of the Bid must be submitted with each Bid Proposal in one of three forms acceptable to the City of Muskegon. Contract documents may be examined at the following locations:

Contract documents may be examined at the following locations:

- Public Services Building, 1350 E. Keating Ave., Muskegon MI 49442
- City of Muskegon website: www.shorelinecity.com
- Grand Rapids Builders Exchange

Attention is called to the fact that the City requires: the Contractor consider hiring local work force insofar as possible, not less than the salaries and wages set forth in the Specifications must be paid, 14% minority and 6.9% female are the goals established for participation in each trade, the Contractor must ensure employees and applicants for employment are not discriminated against based upon their race, creed, color, religion, sex, national origin, handicapped condition nor veteran background, and all pertinent regulations must be complied with. Bids may not be withdrawn within sixty (60) days after bid opening. The City of Muskegon reserves the right to reject any or all bids or to waive any informalities or irregularities in the bidding.

Pre-Bid Inquiries

Inquiries in regards to this project will only be accepted via email to leo.evans@shorelinecity.com through Monday September 24, 2018 by 4:30pm local time. All inquiries will be assembled and answered in a signed document and distributed on Wednesday September 26, 2018.

CITY OF MUSKEGON, MICHIGAN
By: Ann Meisch, City Clerk

PUBLISH: 9/7/2018

ADA POLICY

The City will provide necessary appropriate auxiliary aids services, for example, signers for the hearing impaired, audio tapes for the visually impaired, etc., for disabled persons who want to attend the meeting, upon twenty-four hour notice to the City.
Contact:

Ann Meisch, City Clerk
City of Muskegon, City Hall
933 Terrace Street, Muskegon, MI 49440
(231) 724-6705 or TDD (231) 724-6773

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION

Executive Order 11246

1. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Adopted Equal Employment Specifications" set forth in Part 3, Section II, of these Documents.
2. The goals and the timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

GOALS FOR PARTICIPATION IN EACH TRADE

TRADE	MINORITY	FEMALE
ALL	14%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally-assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.
4. As used in this Notice, and in the Contract resulting from this solicitation, the "covered area" is the City of Muskegon, County of Muskegon, and State of Michigan.

DEFINITIONS

Whenever used anywhere in these Documents, the following meanings shall be given to the terms defined:

ADDENDA or ADDENDUM – Any changes, revisions, additions or clarifications of or to the Contract Documents which have been duly issued by the City to Bidders prior to the time of awarding or executing the Contract Agreement.

AUTHORIZED REPRESENTATIVE – Any person or persons authorized to represent the City of Muskegon by its governing body for the purpose of directing or having in charge the work embraced in this Contract, acting directly or indirectly through the responsible party having general charge of this work, and/or for monitoring, coordinating and inspecting the work and activities involved.

BID or BID PROPOSAL – The written offer of the Bidder, on the form furnished by the City, for the work proposed.

BID BOND/GUARANTY – The security required in these Documents and furnished by the Bidder as a guaranty of good faith to enter into a contract for the work proposed.

BIDDER or PRIME BIDDER – That individual, corporation or firm submitting a proposal for consideration by the City to perform the work proposed in these Documents.

CITY – CITY OF MUSKEGON - The City of Muskegon and/or its authorized representative(s); also may be referred to in portions of these Documents as owner, grantee, local public agency, or local government.

CITY COMMISSION – The governing body of the City of Muskegon which retains the right of final approval of all contractors, subcontractors, contracts and payments under any contracts.

CONTRACT – The Agreement executed by the City and the Contractor, of which this section is a part.

CONTRACT DOCUMENTS – Means and shall include the executed Agreement, any Addenda, Invitation for Bids, Instructions to Bidders, signed Bid Proposal, all Parts and Sections of the General, Technical and/or Special Specifications, any drawings, maps, plans, etc., and any forms or formats and documents included within the book forming these Documents.

CONTRACT PERFORMANCE – The act of complying with these Contract Documents to the successful completion of the Project by performing the work necessary to do so.

CONTRACT PRICE – That figure agreed upon through the bidding procedure as acceptable to the City and indicated as such in the Agreement executed by the Contractor and the City.

CONTRACT TIME – The date for completion or length of time until completion, of the work embraced in this Contract as stipulated in the Agreement executed by the Contractor and the City.

CONTRACTOR or SUCCESSFUL BIDDER – The person, corporation or firm whose bid was accepted by the City, resulting in the execution of the Agreement to perform the work under the terms of these Documents.

DRAWINGS/PLANS – Approved drawings or reproduction of drawings pertinent to the construction or details of the work covered by this Contract.

DEFINITIONS (continued)

LABORATORY – The testing laboratory of the City or any other laboratory which may be designated by the City for the purpose of inspecting, examining and determining the suitability of materials and the quality of the products used in the performance of this Contract.

LETTERS OF RECOMMENDATION – IN LIEU OF PERFORMANCE BOND – Those statements presented by the Bidder to the City for consideration in lieu of a performance bond where applicable and in strict accordance with Part 1, Section I, paragraph 17(e), and the instructions in these Documents.

PERFORMANCE/LABOR AND MATERIALMEN'S BONDS – The statutory bonds, executed by the Contractor and a surety, guaranteeing the performance of the Contract and the payment of all lawful indebtedness pertaining thereto.

PREVAILING WAGE DECISION - That document, received from the U.S. Department of Housing and Urban Development or the State of Michigan Department of Labor as requested by the City, detailing the current wage rates which, if included in this Contract, are binding upon the Contractor and all subcontractors as the minimum wages to be paid during the life of this Contract.

SITE – Also referred to as **PROJECT SITE** or **PROJECT AREA**, indicating the location of the Project as generally described in these Documents.

SUBCONTRACT – An agreement executed by the Contractor with another individual, corporation or firm for work or a portion of the work embraced in this Contract. (An asterisk (*) in the right-hand margin indicates subcontract language or requirements throughout Parts 1, 2 and 3 of these Documents.)

SUBCONTRACTOR – A person, corporation or firm supplying labor and/or materials for work at the Site of this Project for the Contractor under a Subcontract.

SURETY – The corporate body which is bound with and for the Contractor for the performance of this contract and for the payment of all lawful indebtedness pertaining thereto.

SPECIFICATIONS – GENERAL – Refers to specifications pertinent to the performance of any City Project anticipated to exceed \$2,000, as provided in Parts 1, 2 and 3 of these Documents.

SPECIFICATIONS – TECHNICAL – Refers to those Specifications pertinent to this Project and includes information regarding materials, products, etc., as provided in PART 4 of these Documents.

SPECIFICATIONS – SPECIAL – Refers to special information items pertinent to only this Project and includes Project Description, location, measurements, maps, drawings, etc.

SPECIFICATIONS – (without particular included as above) Refers to General Specifications, Technical Specifications and/or Special Specifications outlined in this Document.

WORK ON (OR AT) THE PROJECT or PROJECT SITE – Work to be performed under this Contract at the location of this Project, including transportation of materials and supplies to or from the Site by employees of the Contractor and/or Subcontractors.

PART 1 - BIDS

SECTION 1 – INSTRUCTIONS TO BIDDERS

1.0 INSTRUCTIONS TO BIDDERS

1.0.1 BIDS

- a. Bidding documents to be submitted must remain attached within this Contract Document.
- b. All bids submitted shall be on forms provided without alterations or interlineations and shall be subject to all requirements of these Instructions to Bidders and all the forms and Documents immediately following these Instructions in Section 2, Bid Proposal.
- c. All Bid Proposals submitted for consideration shall be enclosed in a sealed envelope which is clearly labeled "Bid Documents" with the Project name and/or number, the name of Bidder, the date and time of Bid Opening written on the envelope to prevent premature opening.
- d. If unit prices are requested, the Unit Price for each of the several items in the Bidder's proposal shall include its pro rata share of overhead so that the sum of the products obtained by multiplying the quantity for each item by the unit price represents the total bid. Should conditions make it necessary to revise the quantities, a limit will then be fixed for such increased or decreased quantities. Should the net monetary value of all such changes increase or decrease the original price by more than twenty-five percent (25%) negotiated price change shall be allowed, if warranted. Any bid not conforming to this requirement may be rejected.

1.0.2 BID GUARANTY

- a. No Bid will be considered unless it is accompanied by a Bid Guaranty of not less than five percent (5%) of the amount of the Bid to ensure the execution of the Contract and the furnishing of surety bond or bonds by the successful Bidder, as required by the Contract Documents. Cash deposits will not be accepted. Negotiable U.S. Government Bonds (at par value) and certified checks or bank drafts, made payable to the **City of Muskegon**, may be used, or a bid bond in the format provided which shall be secured by a guaranty or a surety company listed in the latest issue of U.S. Treasury Circular 570, and shall be within the maximum amount specified for such company in said Circular.
- b. Revised Bids submitted before the opening of Bids, whether forwarded by mail or telegraphic communication, if representing an increase in excess of two percent (2%) of the original bid, must have the Bid Guaranty adjusted accordingly; otherwise the Bid will not be considered.
- c. The Bid Guaranty of unsuccessful Bidders, or the amount thereof, will be returned as soon as practicable after the awarding of the contract. The Bid Guaranty of any Bidder withdrawing his/her Bid in accordance with the conditions set forth in Paragraph 13 hereof will be returned promptly.
- d. When telegraphic modifications of Bids are received as provided above, Bidders are cautioned that such modifications shall make the Bid as modified or amended subject to rejection if not explicit and/or in any sense are subject to misinterpretation.

1.0.3 ALTERNATIVE BIDS

No alternative bids will be considered unless alternative bids are specifically requested.

1.0.4 INTERPRETATIONS AND/OR ADDENDA

- a. No oral interpretation will be made to any Bidder as to the meaning of the Documents or any part thereof. A request for any interpretation will be in writing to the City of Muskegon, and any such request received seven (7) or more days before the scheduled Bid Opening will be considered.
- b. Every interpretation made will be in writing in the form of an Addendum to the Contract itself and, when issued, will be on file in the City Clerk's office at least five (5) days prior to the Bid Opening for each Bidder's review.

1.0.5 BIDDER'S RESPONSIBILITIES

- a. Site Inspection. Each Bidder will assume the responsibility for visiting the site of the proposed work and for fully acquainting himself/herself with the conditions existing there relating to construction and labor, and should fully inform himself/herself as to the facilities involved, the difficulties and restrictions attending the performance of the Contract.
- b. Knowledge of Bid and Contract Documents. The Bidder is responsible for thoroughly examining and familiarizing himself/herself with the Bid and Contract Documents, any Drawings, Specifications and Addenda.
- c. Addenda to Contract Documents. All Bidders will assume the responsibility to make inquiry as to the Addenda issued, knowing that all such Addenda become part of the Contract. All Bidders shall be bound by any Addenda whether or not it was received or reviewed.
- d. Claims on Basis of Failure to Receive or Review Information. A successful Bidder, through the execution of this Contract, shall in no way be relieved of any obligation due to his/her failure to receive or examine any form or legal instrument, or due to the failure to visit the site and acquaint himself/herself with the existing conditions.
The City Commission will be justified in rejecting any claims submitted on the basis of 5.a, b, or c above.

1.0.6 EQUAL OPPORTUNITY EMPLOYMENT REQUIREMENT - The attention of Bidders is particularly called to the requirement for ensuring that employees and applicants for employment are not discriminated against because of their race, color, religion, sex or national origin, nor because the employee or applicant is a disabled or Viet Nam era veteran or otherwise handicapped, as outlined in Part 3, Section 2 of these Documents.

1.0.7 EMPLOYMENT AND PREVAILING WAGE AND SALARY REQUIREMENTS - The attention of Bidders is particularly called to the requirements covered in Part 3, Section 4 of these Documents concerning the payment of not less than the prevailing wage and salary rates specified, and in regard to the conditions of employment with respect to certain categories and classifications of employees. These rates of pay are the minimums to be paid during the life of this Contract.

The City of Muskegon requires that the Contractor must hire local trades and labor employees from the City of Muskegon, County of Muskegon and/or this SMSA (Standard Metropolitan Statistical Area) for the duration of this Project, insofar as these are available to perform the necessary work. Supervisory and/or technical staff officials are exempt from this requirement.

It is therefore the responsibility of the Bidder to inform himself/herself as to local labor conditions, labor supply, overtime compensation, health and welfare contributions, and prospective changes or adjustments of rates.

1.0.8 SUBCONTRACTORS* - Any Bidder submitting a Bid shall include a list of proposed subcontractors on the form provided in Part 1, Section 2 of these Documents.

The attention of Bidders is called to the Contractor's liability for all subcontractors as provided in the various sections and paragraphs on these Documents, generally indicated by an asterisk (*) in the right-hand margin.

1.0.9 NON-COLLUSION AFFIDAVIT

- a. Each Bidder submitting a bid for work, or any portion thereof, covered by these Documents, shall execute an Affidavit to the effect that he/she has not colluded with any other person, firm or

corporation in regard to any Bid submitted, in the same or similar format as provided in Part 1 Section 2 of these Documents.

- b. The successful Bidder shall secure an Affidavit to the same effect from any proposed subcontractor, before executing any subcontract, in the same or similar format as provided in Part 1, Section 2 of these Documents.

1.0.10 SECTION 3 CLAUSE (135.38) FOR FEDERALLY FUNDED PROJECTS

- a. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income person, particularly persons who are recipients of HUD assistance for housing.
- b. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.
- c. The contractor agrees to send to each labor organization or representative or worker with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each of the positions; and the anticipated date the work shall begin.
- d. The contractor agrees to include the section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in the section 3 clause, upon the finding that the subcontractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.
- e. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with person other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under the 24 CFR part 135.
- f. Noncompliance with HUD's regulations in 24 CFR, part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.
- g. With respect to work performed in connections with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not derogation of compliance with section 7(b).

Examples:

1. Who are Section 3 residents? – Residents of public housing and low income person who live in the area in which a HUD-assisted project is located.
2. What is a Section 3 business? – A business that is owned by Section 3 residents; or employs Section 3 residents in full-time positions; or subcontracts with businesses which provide economic opportunities to low income persons. (CDBG)
3. What types of economic opportunities are available under Section 3? – a. Administrative/Management: accounting, bookkeeping, payroll, purchasing, research, word processing b. Services: appliance repair, carpet installation, catering computer/information, florists, janitorial, landscaping, manufacturing, marketing, photography, printing, transportation C. Construction: architecture, bricklaying, carpentry, cement/masonry, demolition, drywall, electrical, elevator construction, engineering, fencing, heating, iron works, machine operation, painting, plastering, plumbing, surveying, tile setting.
4. Who will award the economic opportunities? – Recipients of HUD financial assistance and their contractors and subcontractors are required to provide economic opportunities to the greatest extent feasible, consistent with existing Federal, State and local laws and regulations.
5. Who receives priority under Section 3? – a. For training and employment: persons in public and assisted housing; person in the neighborhood; participants in HUD Youthbuild programs; homeless person b. For contracting: business which fit the definition of a Section 3 business.
6. How can businesses find Section 3 residents to work for them? - By recruiting in the neighborhood and public housing developments to tell them about available training and job opportunities. Distributing flyers, posting signs, placing ads, and contacting resident organizations and local community development and employment agencies to find potential workers are a few effective ways of getting jobs and people together.
7. How can businesses & low income people find out more about Section 3? Contact the Fair Housing and Equal Opportunity representative at your nearest HUD office.
8. What if it appears an entity is not complying with Section 3? - There is a complaint process. Section 3 residents and business concerns may file complaints if they think a violation of Section 3 requirements has occurred where HUD-funded project is planned or underway. Complaints will be investigated; if appropriate, voluntary resolutions will be sought. A complaint that cannot be resolved voluntarily can result in an administrative hearing.
9. Will HUD require compliance? – Yes. HUD investigates complaints and monitors the performance of recipients and contractors. HUD examines employment and contract records for evidence of actions taken to train and employ Section 3 residents and train and employ Section 3 residents and to award contracts to Section 3 businesses.
10. How can Section 3 businesses or residents complain about a violation of Section 3 requirements? – They can file a complaint in writing to the local HUD Office or to: The Assistant Secretary for Fair Housing and Equal Opportunity, U.S. Department of Housing and Urban Development 451 Seventh Street, SW, Rm. 5100 Washington, DC 20410-2000. A written complaint should contain:
 - a. Name and address of the person filing the complaint;
 - b. Name and address of subject of complaint (HUD recipient contractor);
 - c. Description of acts or omissions in alleged violation of section 3;
 - d. Statement of corrective action sought.

1.0.11 STATEMENT OF BIDDER’S QUALIFICATIONS; ADDITIONAL INFORMATION

- a. Upon request, each Bidder shall submit a Statement of Bidder’s Qualifications in accordance with the information requested in Part 1, Section 2, and, when specifically requested by the City, shall submit a detailed Financial Statement, particularly in lieu of a Performance Bond.

- b. Any Bidder shall furnish any data and information requested by the City Commission in its attempt to determine the ability of the Bidder to perform his/her obligations under the Contract.

1.0.12 TIME FOR RECEIVED BIDS - Bids received prior to the advertised hour of opening will be kept securely sealed. The official whose duty it is to open the Bids will decide when the specified time has arrived, and no Bid received thereafter will be considered.

1.0.13 WITHDRAWAL OF BIDS - Bids may be withdrawn on written or telegraphic request dispatched by the Bidder in time for delivery in the normal course of business prior to the time fixed for opening; provided that written confirmation of any telegraphic withdrawal over the signature of the Bidder is placed in the mail and post-marked prior to the time set for Bid opening.

1.0.14 OPENING OF BIDS - At the time and place fixed for the opening of Bids, the City Clerk will cause to be opened and publicly read aloud every Bid received within the time set for receiving Bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present in person or by representative.

1.0.15 AWARD OF CONTRACT - If the Contract is awarded, it will be awarded to the responsible Bidder submitting the lowest Bid complying with the conditions set forth in these Documents. The successful Bidder will be notified at the earliest possible date.

1.0.16 REJECTION OF BIDS; CITY'S RIGHTS

- a. The City Commission reserves the right to reject any and all Bids, and to waive any informality in Bids received, whenever such rejection or waiver is in its own best interest.
- b. The City Commission may consider as irregular and reject any Bid on which there is an alteration.
- c. The City Commission shall have the right to take such steps as it deems necessary to determine the ability of the Bidder to perform his/her obligations under the Contract.
- d. The right is reserved to reject any Bid where an investigation of the available evidence and/or information provided does not satisfy the City Commission of the Bidder's capacity to carry out the terms of the Contract.

1.0.17 EXECUTION OF CONTRACT AGREEMENT; PERFORMANCE AND PAYMENT BONDS

- a. Subsequent to the award and within ten (10) days after the Documents have been presented for signature, the successful Bidder shall execute the Agreement and deliver the requested number of copies to the City of Muskegon.
- b. Execution of the Agreement will require completion of the work in accordance with the Contract in its entirety.
- c. Upon delivery of the executed Contract Documents, the successful Bidder shall furnish the requisite bonds, in the penal sum not less than the amount of the Contract as awarded, as security for the faithful performance of the Contract and of the payment of all persons, firms or corporations to whom the Bidder as Contractor may become legally indebted, except as provided in paragraph (e) below.
- d. Such bonds shall be completed in accordance with the Instructions in Part 1 Section 2, and shall bear the same date as, or a date subsequent to, that of the Agreement. The surety bond shall be signed by a guaranty or the surety company listed in the latest issue of the U.S. Treasury Circ. 570, and the penal sum shall be within the maximum specified for such company in said Circular.
- e. In cases where this Contract is \$50,000 OR LESS and the successful Bidder is unable to, or chooses not to, provide the appropriate Performance Bonds, the Bidder may submit four letters of

sincere recommendation as to his/her prior performance to the City Manager for consideration in lieu of a Performance Bond, in basically the form described in Part 2 of these Documents. This action must be taken prior to the execution of the Contract Agreement and the four letters must be accompanied by a statement from the Bidder, which contains the minimum requirements indicated for "Statement of Bidder's Qualifications". Upon City Manager and/or City Commission acceptance of the letters in lieu of the Performance Bond, the Contract Agreement shall be so executed.

f. Failure of the successful Bidder to execute such number of Contract Documents as requested, to supply the required bonds or letters of recommendation with the Bidder's statement, and/or to meet the prescribed time limits, shall constitute a default.

g. Upon such default, the City Commission may either award the Contract to the next lowest responsible bidder or re-advertise for bids.

The Commission may further charge against the defaulting Bidder the difference between the amount of his/her Bid and the amount for which a Contract for the work is subsequently executed, irrespective of whether the amount then exceeds the amount of the Bid Bond.

If a more favorable bid is received by re-advertising, the defaulting Bidder shall have no claim against the City of Muskegon.

1.0.18 COMMENCEMENT NOTICE TO PROCEED

The Contractor shall commence work only upon delivery of a Notice to Proceed from the City. In the event the said notice is not delivered within ten (10) days of the date of this agreement, then the dates for completion and any other performance dates shall be adjusted without further agreement so that the performance and completion dates shall be delayed the number of days in excess of ten (10) after the execution of the contract during which the City did not deliver the notice.

SECTION 2 - BID PROPOSAL

1.1 CONTRACT BIDDER'S CHECKLIST

THIS FORM IS A REFERENCE TOOL FOR BIDDING CONTRACTORS

The following forms ***MUST*** be completed:

Form	Completed?	
	Yes	No
1. Transmittal Letter for Bid Proposal (must acknowledge addenda received)		
2. Bidder Certification and Agreement		
3. Bid Tabulation		
4. Bid Bond Proposal (must be 5% of total bid)		
5. Non-Collusion Affidavit of Prime Bidder		
6. List of Proposed Sub-Contractors		
7. Disadvantaged Contractor Affidavit (if applicable)		

Actual Completion of All Required Forms is the **Sole Responsibility of the Bidder**

FAILURE TO COMPLETE THE NECESSARY FORMS MAY RESULT IN BID REJECTION.

1.2 TRANSMITTAL LETTER FOR BID PROPOSAL

Bidder/Company Name _____

Name & Title of Head of Company _____

Street Address _____

City, State, ZIP _____

Date _____

**CITY OF MUSKEGON, MICHIGAN
933 TERRACE ST.
MUSKEGON, MI 49443-0536**

RE: Project No. S 682

Project Title: Evanston & Oak Grove Sewer Lining

Dear Awarding Agent,

Having examined the Bid Specifications and Contract Documents, including all forms and instructions, and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, and having received and reviewed the following Addenda:

N/A

I/We hereby propose to furnish all labor, materials and supplies, and to construct the project in accordance with the Contract Documents and at the prices indicated in the attached Bid Proposal. Submitted prices are to cover all expenses incurred in performing the work required under the Contract Document, of which this letter and attached Proposal are a part.

In accordance with the Instructions to Bidders, all appropriate documents, forms, etc., have been properly completed and are attached hereto, along with the Bidder Certification and Agreement, List of Subcontractors, Non-Collusion Affidavits, and the proper Bid Guaranty.

I/We hereby respectfully submit the attached Bid Proposal for consideration by the City of Muskegon on the above-referenced Project.

Signature of Bidder/Representative

Printed Name and Title

1.3 BIDDER CERTIFICATION AND AGREEMENT

PART I. The Undersigned hereby agrees:

That he/she has examined the Bid Specifications/Contract Documents, including specifications, forms and instructions;

That he/she has received and reviewed the following Addenda:

N/A

That he/she has examined the Site of the proposed work and is familiar with all of the conditions surrounding the construction of the proposed project and the availability of materials and labor.

PART II. The Undersigned hereby agrees:

That he/she will enter into a contract to furnish the labor, materials, tools and construction equipment necessary for the full and complete execution of the work at and for the prices indicated in his/her official Bid Proposal, if said Proposal is accepted by the City;

That, at the time of execution of said Contract, he/she will furnish requisite bonds with such sureties (or letters of recommendation accompanied by a Bidder's Statement) for the faithful performance of the Contract, for the payment of all materials used therein, and for all labor expended thereon in accordance with the forms and instructions provided;

That he/she will construct the project in accordance with the Contract Documents within the specified time.

PART III. The Undersigned hereby agrees:

To commence work within 10 days after the date of a "Notice of Award" from the City.

To complete the work on, before or within ten (10) weeks from "Notice to Proceed" To comply with all applicable Adopted Guidelines and requirements, wage rates, labor standards, equal opportunity requirements, subcontract (or) requirements, and any other specifications indicated or referred to within these Contract Documents.

The Undersigned herewith attaches an Affidavit in proof that he/she has not entered into a collusive agreement with any person in respect to this Bid or any other bid, or the submitting of bids for the Contract for which this Bid is submitted.

The Undersigned is prepared to submit a Statement of Bidder's Qualifications, a financial statement, and/or any information requested by the City.

However, once work has commenced the project shall be completed without interruption of normal working days unless authorized in writing by the Engineer.

PART IV

In regard to non-segregated facilities, the Undersigned certifies:

That he/she does not maintain or provide for any employees any segregated facilities at any of his/her establishments;

That he/she does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained;

That he/she will not maintain or provide for employees any segregated facilities at any of his/her establishments, and that he/she will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained.

The Undersigned hereby agrees:

That a breach of this section of the Bidders Certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid.

That he/she will obtain identical certification from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause (unless already obtained for specific time periods), and that he/she will retain such certifications on file.

[As used in this section of this Bidder Certification, the term “segregated facilities” means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of habit, local custom, or otherwise.]

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

SIGNED: _____ DATED: _____

(Printed name)

(Title)

(Company/Bidder)

(Company/Bidder Street Address)

(Company/Bidder City, State Zip)

1.4 PRE BID MEETING ADDEDUM NO I

N/A

1.5 BID TABULATION

Project Engineer: Dave Baker

Project Number: S 682

Project description: Evanston & Oak Grove Sewer Lining

Bids opened: 9/25/2018

						Contractor Estimate	
Line Item	Pay Code	Description	Units	Quantity	Unit Price	Total	
1		Project Mobilization	1	LS			
2		Traffic Control	1	LS			
3		Construction Bypass Operation	1	LS			
4		Sewer Cleaning and Televising (pre and post inspection)	1	LS			
5		10" Sanitary Sewer, CIPP	1,450	LF			
6		Service Lateral Reinstatement	50	EA			
7		Pressure Grouting Mobilization	1	LS			
8		Pressure Grouting 10-inch sewer joints	30	EA			
9		Restoration	1	LS			

TOTAL BID AMOUNT:

\$0.00

1.6 BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned,

_____ as PRINCIPAL, and
(Name of Principal)

_____ as SURETY are held and firmly bound unto
(Name of Surety)

The City of Muskegon, Michigan, in the penal sum of _____

_____ dollars, (\$ _____) lawful money
of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our
heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has

submitted the Accompanying Bid, dated _____, 20____,

for _____.

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified for
withdrawal; and shall within ten (10) days after the prescribed forms are presented for signature enter into
a written Contract with the City of Muskegon in accordance with the Bid as accepted, and give bond with
good and sufficient surety or sureties, as may be required for the faithful performance and proper
fulfillment of such Contract; or

In the event of the withdrawal of said Bid within the period specified for withdrawal, or the failure to
enter into such contract and give such bond within the time specified; and if the Principal shall pay the
City of Muskegon the difference between the amount specified in said Bid and the amount for which the
City of Muskegon may procure the required work or supplies or both, if the latter be in excess of the
former.

THEN the above obligation shall be void and of no effect; otherwise shall remain in full force and virtue

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument

Under their several seals this _____ day of _____, 20____
the name and corporate seal of each corporate party being hereto affixed and these presents signed by its
undersigned representative, pursuant to authority of its governing body.

In presence of

_____ (SEAL)
(Individual Principal)

Business Address including Zip Code

Partnership

Business Address including Zip Code Attest:

By: _____

(SEAL)

Corporate Principal

Business Address including Zip Code Attest:

By: _____

Affix
Corporate
Seal

Countersigned

By

Attorney-in-fact, State of _____

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____, Secretary of the Corporation named as Principal in the within Bond; that

_____, who signed the said Bond on behalf of the

Principal was then _____ of said Corporation; that I know his/her signature, and his/her signature thereto is genuine; and that said bond was duly signed, sealed, and attested to for and in behalf of said Corporation by authority of this governing body.

Affix
Corporate
Seal

By: _____

Title: _____

1.7 NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)
County of _____) ss.

_____, being first duly sworn,
deposes and says that:

1. He/She is _____
(owner, partner, officer, representative, agent)

of _____, the Bidder that has submitted the attached Bid to the
City of Muskegon;

2. He/She is fully informed respecting the preparation and contents of the attached Bid
and of all pertinent circumstances thereto;

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

4. Neither said Bidder nor any of his/her officers, partners, owners, agents,
representatives, employees or parties in interest, including this affiant, has 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 Contract for which the attached Bid has
been submitted, or to refrain from bidding in connection with such Contract; nor has in any
manner, directly or indirectly, sought by agreement, collusion, communication or conference with
any other Bidder, firm or person to fix the price or prices in the attached Bid or any other bid; nor
to fix any overhead, profit or cost element of the Bid price or the bid price of any other bidder;
nor to secure through any collusion, conspiracy, connivance or unlawful agreement any
advantage against the City of Muskegon or any person interested in the proposed Contract; 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 agreement on the part of the Bidder or any
part of its agents, representatives, owners, employees or parties in interest, including this affiant.

Signature

Printed Name and Title

Subscribed and sworn to before me

This _____ day of _____, 20____

Title

My Commission expires _____

1.8 LIST OF PROPOSED SUBCONTRACTORS

Project Number: _____

Project Name: _____

To be submitted by each Bidder with Bid Proposal in accordance with Para. 8, Part 1, Section 1. Before a subcontract is executed by the successful Bidder, the subcontractor must be approved by the City of Muskegon and the required documents executed in accordance with the Contract Documents.

1. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

2. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

3. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

4. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

5. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

6. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

7. NAME OF FIRM _____
- FIRM ADDRESS _____
- _____

1.9 DISADVANTAGED CONTRACTOR AFFIDAVIT

Project Number: _____

Project Name: _____

Please provide the name(s) of all Disadvantaged subcontractors from whom you solicited bids for this project and additional information below.

Disadvantaged Contractor:	Contact Person:	Contact Method/Date:	Decision (Yes or No):
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Of the Disadvantaged Contractors listed above, please indicate why they will not be used on this project.

Disadvantage Contractor:	Decision/Reason:
1. _____	_____ _____
2. _____	_____ _____
3. _____	_____ _____
4. _____	_____ _____

1.10 STATEMENT OF BIDDER'S QUALIFICATIONS

(To be submitted by the Bidder upon specific request of City of Muskegon unless in connection with Letters of Recommendation in lieu of Performance Bond as provided in Section 1. The Statement of Bidder's Qualifications as follows must accompany the four Letters.)

1.10.1 SUMMARY OF BIDDER'S INFORMATION TO BE PROVIDED:

Each of the following items must be responded to in writing, and the information provided thereby must be clear and understandable. Upon completion, the Statement must be signed by the Bidder in front of a Notary Public and notarized. The Bidder may supply such additional information as desired after responding to each of these items:

1. NAME OF BIDDER (Company, individual, etc.)
2. PERMANENT MAIN OFFICE ADDRESS OF BUSINESS INCLUDING ZIP CODE.
3. DATE BUSINESS WAS ESTABLISHED.
4. IF A CORPORATION, WHERE WAS IT INCORPORATED?
5. NUMBER OF YEARS ENGAGED IN CONTRACTING BUSINESS UNDER PRESENT NAME? FIRM OR TRADE NAME? UNDER A PREVIOUS NAME?
6. SCHEDULE OF OUTSTANDING CONTRACTS, showing amount of each contract and the anticipated completion date of each.
7. GENERAL CHARACTER OF WORK PERFORMED BY YOUR COMPANY.
8. HAS THIS COMPANY EVER FAILED TO COMPLETE ANY WORK AWARDED IT?
If so, WHERE AND WHY?
9. HAS THIS COMPANY EVER DEFAULTED ON A CONTRACT?
If so, WHERE ANY WHY?
10. LIST THE PROJECTS RECENTLY COMPLETED BY YOUR COMPANY, stating approximate cost of each and the month/year completed. Indicate which, if any, have provided your company with a Letter of Recommendation.
11. INDICATE EXPERIENCE IN CONSTRUCTION WORK SIMILAR TO THIS PROJECT.
12. LIST YOUR MAJOR EQUIPMENT AVAILABLE FOR THIS CONTRACT.
13. INDICATE BACKGROUND AND EXPERIENCE OF THE PRINCIPAL MEMBERS OF YOUR ORGANIZATION, INCLUDING OFFICERS.
14. INDICATE CREDIT AVAILABLE TO YOUR COMPANY.
15. LIST BANK REFERENCES. If a detailed financial statement is available attach it to this statement.

16. ARE YOU WILLING TO COMPLETE A DETAILED FINANCIAL STATEMENT AND FURNISH ANY OTHER INFORMATION REQUIRED AND REQUESTED BY THE CITY OF MUSKEGON?
17. INCLUDE THE FOLLOWING STATEMENT: “The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the City of Muskegon in verification of the recitals comprising this Statement of Bidder’s Qualifications.”
18. INCLUDE THE FOLLOWING AT THE END OF YOUR STATEMENT:
- Dated this _____ day of _____, 20____.
- COMPANY/BIDDER NAME
- SIGNATURE
- PRINTED NAME AND TITLE OF PERSON SIGNING
19. INCLUDE OFFICIAL NAME AND DATA FOR NOTARY PUBLIC TO NOTARIZE DOCUMENT.

1.11 DBE/MBE/WBE PROCUREMENT POLICY

1.11.1 POLICY STATEMENT: 2014-31 (e)

It is the policy of the City of Muskegon to assure that small disadvantaged business enterprises (DBE), minority business enterprises (MBE), and woman-owned business enterprises (WBE) are given the opportunity to participate in contracting and procurement for supplies, construction, equipment and services under federal contracts and collaborations.

This policy applies to all contracts/procurement for supplies, construction equipment and services under any federally contracted grant or cooperative agreement. The purpose is to ensure nondiscrimination in the solicitation, either by competitive bidding or negotiation, and award and administration of federally assisted contracts and collaborations.

Entities contracting or sub-contracting with the City of Muskegon shall comply with regulations relative to nondiscrimination in Federally-assisted programs as amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

During the performance of any contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the “contractor”) agrees, as follows:

1.11.2 STATEMENT OF NON-DISCRIMINATION

The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection, retention, and treatment of subcontractors, including procurements of supplies, construction, equipment and services.

1.11.3 FAIR SHARE GOALS

All methods of solicitation shall include the following language to meet “Good Faith Effort” requirements as stated in the general provisions of EPA’s 40 CFR 33 of the Federal Regulation:

This contract is subject to the Environmental Protection Agency’s (EPA) “fair share policy,” which includes EPA-approved “fair share goals” for Disadvantaged Business Enterprise (DBE), Minority Business Enterprise (MBE) and Woman Business Enterprise (WBE) firms in the Construction, Supplies, Equipment, and Services procurement categories. EPA’s policy requires that applicants and prime contractors make a good faith effort to award a fair share of contracts, subcontracts and procurements to Minority Business Enterprise and Women-Owned Business Enterprise firms. Although EPA’s policy does not mandate that the fair share goals be achieved, it does require applicants and prime contractors to demonstrate use of the six affirmative steps, and adhere to the current fair share goals for the State of Michigan.

1.11.4 GOOD FAITH EFFORTS

(1) The City of Muskegon shall ensure DBE/MBE/WBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities by maintaining a solicitation list of DBE/MBE/WBE businesses and notifying them whenever they are potential sources.

- (a) Maintain and update a listing of qualified DBE/MBE/WBEs that can be solicited for construction, equipment, services and/or supplies on the City of Muskegon website.
- (b) Provide listings to all interested parties who request copies of the bidding or proposing documents.
- (c) Contact appropriate sources within our geographic area to identify DBE/MBE/WBEs for placement on our business listings.
- (d) Utilize other DBE/MBE/WBE listings such as those of the States Minority Business Office, the Small Business Administration, Minority Business Development Agency (MBDA) of the Department of Commerce, EPA OSDBU, DOJ, HUD, DOT and Department of Homeland Security.
- (e) Solicitation lists are available for review at all times via the city website.

(2) The City of Muskegon shall make information of forthcoming opportunities available to DBE/MBE/WBEs and arrange time for viewing of contracts and establish delivery schedules, where requirements permit, in a way that encourages and facilitates participation by DBEs, MBEs, and WBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days(federal projects) and 10 calendar days(local projects), before the bid or proposal closing date.

- (a) Develop realistic delivery schedules which may provide for greater DBE/MBE/WBE participation.
- (b) Advertise through the minority media in order to facilitate DBE/MBE/WBE utilization. Such advertisements may include, but are not limited to, contracting and subcontracting opportunities, hiring and employment, or any other matter related to the project.
- (c) Advertise in general circulation publications, trade publications, State agency publications and minority and women's business focused media concerning contracting opportunities on our projects. Maintain a list of minority and/or women's business-focused publications that may be utilized to solicit DBE/MBE/WBEs.

(3) The City of Muskegon will consider in the contracting process whether firms competing for large contracts could subcontract with DBE/MBE/WBEs. The City of Muskegon will divide total requirements when economically feasible and practical into smaller tasks or quantities in order to increase opportunities for participation by DBE/MBE/WBEs in the competitive process.

- (a) Perform an analysis to identify portions of work that can be divided and performed by qualified DBE/MBE/WBEs.
- (b) Scrutinize the elements of the total project to develop economical units of work that are within the bonding range of DBE/MBE/WBEs.
- (c) Conduct meetings, conferences, and follow-ups with DBE/MBE/WBE associations and minority media to inform these groups of opportunities to provide construction, equipment, services and supplies.

- (4) The City of Muskegon will consider and encourage contracting with a consortium of DBE/MBE/WBEs when a contract is too large for one of these firms to handle individually.
- (a) Notify DBE/MBE/WBEs of future procurement opportunities so they may establish bidding solicitations and procurement plans.
 - (b) Provide DBE/MBE/WBEs trade organizations with succinct summaries of solicitations.
 - (c) Provide interested DBE/MBE/WBEs with adequate information about plans, specifications, timing and other requirements of the proposed projects.
- (5) Use the services and assistance of the Small Business Administration (SBA) and the Minority Business Development Agency (MBDA).
- (a) Use the services of outreach programs sponsored by the MBDA and/or the SBA to recruit bona fide firms for placement on DBE/MBE/WBE bidders lists to assist these firms in the development of bid packaging.
 - (b) Seek out Minority Business Development Centers (MBDCs) to assist recipients and prime contractors in identifying DBE/MBE/WBEs for potential work opportunities on projects
- (6) If the prime contractor awards subcontractors, the prime contractor is required to take the steps in subparagraphs (1)-(5) of this section.

1.11.5 DOCUMENTATION/REPORTING

The contractor shall provide all information and reports required by the Regulations, or directives issues pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the appropriate federal agency to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the appropriate State or Federal Agency, as appropriate, and shall set forth what efforts it has made to obtain the information.

1.11.6 NON – COMPLIANCE

Contractors, sub-contractors, and other associated entities failing to comply with the federal regulations legally required under contracts associated with Environmental Protection Agency (EPA), Housing and Urban Development (HUD), Department of Justice (DOJ), Department Of Transportation (DOT), or Department of Homeland Security (DHS) that have been granted to the City of Muskegon, may result in delayed closings, withholding the release of funds, or commitment cancellation.

PART 2 - AGREEMENT

2.0 AGREEMENT

THIS AGREEMENT, made this * day of 20 * by the City of Muskegon

And between

{a corporation organized and existing under the laws of the state of MICHIGAN};

or [a partnership consisting of_____];

or {an individual trading as_____};

Hereinafter called the “Contractor”, and the CITY OF MUSKEGON, MICHIGAN:

WITNESSETH, that the Contractor and the City of Muskegon, for the consideration stated herein, mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment, and services, including utility and transportation services, and perform and complete all work required for the construction of the improvements embraced in this Contract, NAMELY:

and required supplemental work for the completion of this Project, all in strict accordance with the Contract, including all Addenda.

ARTICLE 2. The Contract Price. The City of Muskegon will pay the Contractor for the performance of this Contract and the completion of the work covered therein an amount in current funds not to exceed \$

Article 3. Contract. The executed contract shall consist of, but not be limited to, the following:

Invitation for Bids

Part 1- Bids

Section 1 – Instruction to Bidders

Section 2 – Bid Proposal

Part 2 – Agreement

Part 3 – General Specifications

Section 1 – Project Performance

Section 2 – Affirmative Action

Section 3 – Labor Standards/EEOC/Anti-Kickback Act

Part 4 – Engineering Specifications

Part 5 – Project Special Specifications

Part 6 – MDOT Specifications

Part 7 – Appendices

This Agreement, together with other documents enumerated in this Article 3, which said other documents are as fully part of the Contract as if attached hereto or repeated herein, form the Contract between the parties hereto.

In the event any provision in any component part of this Contract conflicts with any provision of any other component part, the Contractor shall contact the City immediately in writing for a determination, interpretation and/or clarification of conflicting parts and priority of same. Said determination from the City shall be in writing and shall become an Addendum to this Contract

*Date contract awarded by the City Commission

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed in

Five (5) original counterparts on the day and year first written above.

ATTEST:

CONTRACTOR

Signature

Signature

Printed Name and Title

ATTEST:

CITY OF MUSKEGON

Signature

Mayor Signature

City Clerk Signature

(SEAL)

CERTIFICATION (if applicable)

I, _____, certify that I am the _____ of the Corporation named as the Contractor herein;

That _____, who signed this Agreement on behalf of the

Contractor, was then _____ of said Corporation;

That said Agreement was duly signed for and in behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

Signature

(CORPORATE SEAL)

Printed Name and Title

2.1 PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____, _____ as
Principal, and

_____,
as Surety, are held and firmly bound unto the City of Muskegon, its certain attorney, successors or assigns (hereinafter called the Obligee), in the full and just sum of _____
dollars (\$ _____) lawful money
of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents:

WHEREAS, said Principal has entered into a certain contract with Obligee,

dated _____, 20____*, (hereinafter called the Contract) for: _____

and the specifications for said work shall be deemed a part hereof as fully
as if set out herein:

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

- (a) If the Principal shall faithfully perform the Contract on his/her part, as of the time and in the manner therein provided; shall satisfy all claims and demands incurred in or for the same, or growing out of the same, or for injury or damages to persons or property in the performance thereof; shall fully indemnify and save harmless said Obligee from any and all cost and damage which the Obligee may suffer by reason of the Principal's failure to do so; and shall fully reimburse and par the Obligee any and all outlay and expense which it may occur by reason of such default; and
- (b) If, after completion and acceptance of the work by the Obligee, the Principal shall promptly remedy any defects in the work due to faulty materials or workmanship which shall appear within the period of one year from the date of completion and final acceptance of the work, and pay for any damage to said Obligee, to the State of Michigan, or to any municipal subdivision or local authority thereof to which the rights and privileges of said Obligee have passed or been assigned, then this obligation shall be null and void; otherwise it shall remain in full force and virtue.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract to the work to be performed thereunder, or to the specifications accompanying the same, shall in any wise affect its obligations on this Bond; and it does thereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work or specifications.

It is hereby further stipulated and agreed that, if the Principal is a non-Michigan Corporation, neither the Principal nor the Surety shall be discharged from liability on this Bond, nor the bond surrendered, until such Principal files with the Obligee a certificate from the Michigan Department of Revenue evidencing the payment in full of all taxes, penalties and/or interest, and a certificate from the Unemployment Compensation Commission evidencing the payment of all unemployment compensation contributions, penalties and/or interest, due the State of Michigan from said Principal, or any non-Michigan corporation, subcontractor thereunder, or for which liability has accrued but the time for payment has not arrived.

SIGNED, SEALED AND DELIVERED IN _____ 3 _____ ORIGINAL COUNTERPARTS

THIS _____ DAY OF _____, 20 ____.

Individual Principals Sign Here:

In the Presence of:

_____ (SEAL)

_____ (SEAL)

_____ (SEAL)

Corporate Principals Sign Here:

Attest:

(Printed Name and Title)

Surety Sign Here:

Attest:

(Printed Name and Title)

The rate of premium charge is \$ _____ per thousand.

The total amount of premium charged is \$ _____
(to be filled in by the Corporate Surety).

2.2 LABOR & MATERIALMAN'S BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____
_____,
as Principal, and

_____,
as Surety, are held and firmly bound unto the City of Muskegon, its certain attorney, successors or assigns (hereinafter called the Obligee) in the penal sum of _____
_____ dollars (\$ _____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents:

WHEREAS, said Principal has entered into a certain contract with said Obligee, dated _____
_____, 20____, (hereinafter called the Contract) for: _____

_____ and the specifications for said work shall be deemed a part hereof as fully as if set out herein:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that, if said Principal, all subcontractors to whom any portion of the work provided for in said Contract is sublet, and all assignees of said Principal and of such subcontractors, shall promptly make payment for all material furnished, labor supplied or performed, rental for equipment employed and services rendered by public utilities in or in connection with the prosecution of the work, whether or not said material, labor, equipment or services entered into become component parts of the work or improvement contemplated in said Contract, in any amendment, extension of, or addition to said Contract, then the above obligation shall be void; otherwise, it shall remain in full force and effect; PROVIDED, HOWEVER, that this Bond is subject to the following conditions and limitations:

- (a) All persons who have performed labor, rendered services or furnished materials or equipment, shall have a direct right of action against the Principal and Surety on this Bond, which right of action shall be asserted in proceedings instituted in the State in which such labor was performed, services rendered or materials furnished (or where labor has been performed, services rendered or materials furnished under said Contract in more than one state, then in any such states). Insofar as permitted by the laws of such State, such right of action shall be asserted in a proceeding instituted in the name of the Obligee to the use and benefit of the persons instituting such action and any or all other persons having claims hereunder; and any other person having a claim hereunder shall have the right to be made a party to such proceedings, but not later than one year after the complete performance of said Contract and final settlement thereof, and to have such claim adjudicated in such action and judgment rendered thereon; PROVIDED HOWEVER, that the Obligee shall not be liable for the payment of any costs or expenses of any such suit.
- (b) The Surety shall not be liable hereunder for any damages or compensation recoverable under any workmen's compensation or employer's liability statute.
- (c) In no event shall the Surety be liable for a greater sum than the penalty of this Bond, or subject to any suit, action or proceeding thereon, that is instituted later than one year after the complete performance of said Contract and final settlement thereof.
- (d) As used herein: The term "Person" refers to any individual, firm or corporation which has furnished materials, equipment or public utility services to be used on or incorporated in the work, or the prosecution thereof, provided for in said Contract or any amendment, extension of, or addition to said Contract; and/or to any person engaged in the prosecution of the work provided for in said Contract or any, extensions of, or addition to said Contract, who is an agent, servant or employee of the Principal or of any subcontractor, or any assignee of said Principal or any subcontractor; and also anyone so engaged who performs the work of a laborer or mechanic, regardless of any contractual relationship between the Principal or any subcontractor, or any

assignee of said Principal or subcontractor and such laborer or mechanic; BUT shall not include office employees not regularly stationed at the site of the work.

- (e) It is hereby further stipulated and agreed that, if the Principal is a non-Michigan corporation, neither the Principal nor the Surety shall be discharged from liability on this Bond, nor the Bond surrendered, until such Principal files with the Obligee a certificate from the Michigan Department of Revenue evidencing the payment in full of all taxes, penalties and/or interest due the State of Michigan from the Principal, or any non-Michigan corporation, subcontractor thereunder, or for which liability has accrued but the time for payment has not arrived.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, to the work to be performed thereunder, or to the specifications accompanying the same, shall in any wise affect the obligations of this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, the work thereunder, or the specifications.

SIGNED, SEALED AND DELIVERED IN _____ ORIGINAL COUNTERPARTS

THIS _____ DAY OF _____, 20_____.

In the Presence of:

Individual Principals Sign Here:

(Printed Name and Address)

(Printed Name and Address)

(Printed Name and Address)

ATTEST:

Corporate Principal Sign Here:

(Printed Name)

(Printed Name and Title)

(SEAL)

Surety Sign Here:

(Printed Name)

(Printed Name and Title)

DIRECTIONS FOR PREPARATION
2.3 PERFORMANCE, LABOR & MATERIALMEN'S BONDS

1. Individual sureties, partnerships, or corporations not in the surety business will not be acceptable.
2. The name of the Principal shall be shown exactly as it appears in the Contract.
3. The penal sum shall not be less than that required by the Specifications.
4. If the Principals are partners, or joint ventures, each member shall execute the bond as an individual, with his/her place of residence shown.
5. If the Principal is a corporation, the bond shall be executed under its corporate seal. If the corporation has no corporate seal, the fact shall be stated, in which case a scroll or adhesive seal shall be affixed following the corporate name.
6. The official character and authority of the person(s) executing the bond for the Principal, if a corporation, shall be certified by the Secretary or Assistant Secretary thereof under the corporate seal; OR
There may be attached copies of such corporation records as will evidence the official character and authority of the officer signing, duly certified by the Secretary or Assistant Secretary of the corporation, under the corporate seal, to be true copies.
7. The current Power-of-Attorney of the person signing for the surety company must be attached to the bond.
8. The date of the bond **MUST NOT BE PRIOR TO THE DATE OF THE CONTRACT.**
9. The following information must be placed on the bond by the surety company:
 - a. The rate of premium in dollars per thousand; and
 - b. The total dollar amount of the premium charged.
10. The signature of a witness shall appear in the appropriate place, attesting to the signature of each party to the bond.
11. Type or print the name underneath EACH SIGNATURE appearing on the bond.
12. An executed copy of the bond must be attached to each copy of the Contract (original counterpart) intended for signing.

2.4 LETTERS OF RECOMMENDATION IN LIEU OF PERFORMANCE BOND

In accordance with Section 1, four letters of sincere recommendation may be presented to the City Manager in lieu of a performance bond when this Contract is under the amount of \$50,000 and the successful Bidder cannot produce the appropriate performance bond.

To use letters of recommendation for this purpose, your intention to do so must be disclosed as part of your bid, so that a decision on acceptability can be made prior to the contract award.

The four letters are to be presented prior to the execution of the Contract Agreement and must be accompanied by the Statement of Bidder's Qualifications as outlined (Part 1, Section 2, Bid Proposal). Each of the four letters should contain no less than the following information:

<p>THE LETTER OF RECOMMENDATION PACKAGE IS SUBJECT TO CITY MANAGER AND/OR CITY COMMISSION APPROVAL PRIOR TO LETTING THE BID OR EXECUTING THE AGREEMENT.</p>

SUMMARY OF INFORMATION TO BE INCLUDED IN EACH LETTER OF RECOMMENDATION

1. On letterhead of the recommending company, including name, address and phone number of the recommending company.
2. Include reference to the name of the company being recommended.
3. Include a brief description of the type of each of the projects the recommended company performed, the total dollars contracted for each, and the date of construction start and completion under each contract.
4. Include a statement indicating how the company being recommended performed the work involved under the contracts, whether the recommended company accomplished the work satisfactorily and within the appropriate time limits of the contracts.
5. Indicate if there was any default on the part of or litigation as a result of the recommended company.
6. Indicate if, to the best of knowledge, all subcontractors and/or suppliers of labor or materials on each project were properly compensated by the company being recommended.
7. Include a statement the same as, or similar to the following:

"I, on behalf of my organization (or company by name) recommend this company (or the name of the company being recommended) as responsible and competent, and I believe they can capably perform construction work similar to that described in this letter in a timely and satisfactory manner."

PART 3 – GENERAL SPECIFICATIONS

SECTION 1

GENERAL SPECIFICATIONS
3.0 FOR PROJECT PERFORMANCE

3.0.1 ASSIGNMENT OR NOVATION

- a. The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities or responsibilities under this Contract without the written consent of the City of Muskegon; provided, however, that assignments to banks, trust companies or other financial institutions may be made without said consent.
- b. No assignment or novation of this Contract shall be valid unless it expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools and equipment supplied for the performance of the work under this Contract in favor of all persons, firms or corporations rendering such labor or services, or supplying such materials, tools or equipment.

3.0.2 CONFLICT OF INTEREST

- a. No official of the City of Muskegon who is authorized in such capacity and on behalf of the City to negotiate, make, accept or approve, or to take part in negotiating, making, accepting or approving, any engineering, inspection, construction or material supply contract, or any subcontract, in connection with the construction of this Project shall become directly or indirectly interested personally in this Contract or in any part hereof.
- b. No officer, employee, architect, attorney, engineer or inspector of or for the City who is authorized in such capacity, and on behalf of the City, to exercise any legislative, executive, supervisory or other similar function in connection with the construction of this Project, shall become directly or indirectly interested personally in this Contract or in any part hereof, any material supply contract, any subcontract, any insurance contract, or any other contract pertaining to this Project.

3.0.3 CITY'S AUTHORITY

- a. The City of Muskegon shall designate and identify its Authorized Representative(s) and Inspectors.
- b. The Authorized Representative will be responsible for the execution of the work under this Contract. The Authorized Representative will determine the amount, quality, acceptability of materials, and fitness of the work to be paid for under this Contract. That Representative will decide all questions which may arise in relation to said work and the construction thereof. The City's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided.
- c. Inspectors will work under the direct supervision of the Authorized Representative. Inspectors will not be authorized to revoke, alter, enlarge or relax any of these specifications nor to change the plans in any particular. The Inspector on the work will inform the Authorized Representative as to the progress of the work, the manner in which it is being done, and the quality of the materials being used. He/She will also call to the attention of the Contractor any failure to follow the plans and specifications that may be observed. He/She shall have the authority to prevent any material from being used, and to stop any work from being done, which he/she believes does not conform to the plans and specifications, until the Authorized Representative has an opportunity to inspect the material or work. In no instance shall any action or omission on the part of the Inspector relieve the Contractor of the responsibility of completing the work in accordance with the plans and specifications.
- d. In case any question shall arise between the parties hereto relative to said Contract, the determination or decision of the City shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this Contract affected in any manner, or to any extent, by such question.
- e. The City shall decide the meaning and intent of any portion of this Contract or any specifications therein where the same may be found obscure or in dispute. Any differences or conflicts in regard to the work which may arise between the Contractor under this Contract and other contractors performing work for the City shall be adjusted and determined by the City.

3.0.4 OTHER CONTRACTS - The City may award, or may have awarded, other contracts for additional work in the vicinity of this Project; and the Contractor shall cooperate fully with such other contractors by scheduling his/her own work with that to be performed under other contracts as may be directed by the City. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor as scheduled.

3.0.5 TERMINATION OF CONTRACT

- a. If the Contractor refuses or fails to prosecute the work with such diligence as will ensure its completion within the time specified, or as amended, in these Contract Documents, the City may, by written notice, terminate the Contractor's right to proceed with the work.
- b. Upon such termination, the City of Muskegon may take over the work and prosecute same to completion, by contract or otherwise, and may take possession of, and utilize in completing the work, such materials, tools, equipment and plant as may be on the site of the work and necessary to the completion thereof.
- c. The Contractor and the sureties to the Contract shall be liable to the City for any additional cost incurred by the City in its completion of the work, and shall further be liable for the liquidated damages for any delay in completion of work as provided by this Contract.

3.0.6 REVIEW BY AUTHORIZED REPRESENTATIVES - The City of Muskegon, its authorized representative(s) and/or agents shall at all times have access to, and be permitted to observe and review, all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, however, that all instructions and approval with respect to the work will be given to the Contractor by the City of Muskegon through its Authorized Representative.

3.0.7 GENERAL GUARANTY

- a. Final acceptance of the work will be acknowledged in writing to the Contractor by the City of Muskegon. Neither the final certificate of payment, any provision in the Contract, nor partial or entire use of the improvements embraced in this Contract by the City or the public shall constitute an acceptance of work not done in accordance with the Contract; nor shall such certificate, provision or use relieve the Contractor of liability in respect to any express warranties or responsibilities for faulty materials or workmanship.
- b. The period of guarantee shall not begin until the date of final written acceptance by the City of all work required. The Contractor shall promptly remedy any defects in the work and pay for the damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the date of final acceptance of the work.

3.0.8 WARRANTY OF TITLE

- a. No material, supplies or equipment for the work shall be purchased subject to any chattel mortgage or under conditional sale or other agreement by which an interest therein, or in any part thereof, is retained by the seller or supplier.
- b. The Contractor shall warrant good title to all materials, supplies and equipment installed or incorporated in the work and, upon completion of all work, shall deliver the same, together with all improvements and appurtenances constructed or placed thereon by him/her, to the City of Muskegon free from any claims, liens or charges.
- c. Neither the Contractor nor any person, firm or corporation furnishing any material and/or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon.
- d. Nothing contained in this paragraph, however, shall impair:
 - i. The right of persons furnishing materials or labor to recover funds owed them under any bond given by the Contractor for their protection;
 - ii. Any rights under any law permitting such persons to look to funds due the Contractor yet in the hands of the City.

- e. The provisions of this Subsection 5 shall be inserted in all Subcontracts and material contracts; and notice of its provisions shall be given to all persons furnishing materials for the Project when no formal contract is entered into for such materials.

3.0.9 PATENTS - The Contractor shall hold and save the City of Muskegon, its officers and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any patented or unpatented invention, process article, or appliance manufactured or used in the performance of the Contract, including its use by the City of Muskegon.

3.0.10 PAYROLLS AND BASIC RECORDS

- a. The Contractor will submit weekly a copy of all payrolls, basic records relating thereto, and completed forms as requested, to the City's Affirmative Action Department accompanied by a "Weekly Statement of Compliance". The prime Contractor shall be responsible for the submission of copies of payrolls of all Subcontractors. *
- b. The Contractor shall submit to the City such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the City may request from time to time concerning the work performed under this Contract.
- c. The Contractor shall withhold Muskegon City Income Taxes from each and every employee who is subject to same, and shall pay Contractor's Income Tax due, if any. Contractor shall further require the same of each Subcontractor, consultant or other pay with whom the contractor works or from whom contractor obtains goods or services for the project. Payroll submissions required by this agreement shall include full information showing said withholding. The City may withhold payments otherwise due to the contractor to assure compliance with this agreement or cure noncompliance.

3.0.11 SIGNS AS REQUIRED

- a. The signs that may be required for this project by the Department of HUD, the National Historic Preservation organizations, or other pertinent funding agencies which may require significant posting on the job site, will be provided and erected by the Contractor as incidental to the Contract.
- b. The Contractor shall maintain these signs in good condition throughout the life of this contract.

3.0.12 NATIONAL HISTORIC PRESERVATION ACT OF 1966 - The Contractor agrees to contribute to the preservation and enhancement of structures and objects of historical, architectural or archaeological significance when such items are found and/or unearthed during the course of the project, and to consult with the State Historic Preservation Officer for recovery of the items: [Reference: National Historic Preservation Act of 1966 (80 Stat 915, 16 USC 470) and Executive Order No. 11593 of May 31, 1971] AND to assure Subcontractor's compliance as well.

3.0.13 CLEAN AIR ACT - The Contractor shall comply and shall require each of its Subcontractors employed in the completion of this project to comply with all applicable provisions of the Clean Air Act as amended by Public Law 91-604.*

3.0.14 SOIL EROSION AND SEDIMENT CONTROL ACTS

- a. Public Acts 346 and 347 as amended shall be observed and enforced while working under these documents. Necessary permits for both Acts shall be obtained by the City of Muskegon. Enforcement for Act 346 shall be by the Michigan Department of Natural Resources, and the enforcing agent for Act 347 shall be the City of Muskegon.
- b. The Contractor shall conduct his/her work in such a manner that soil, fuels, oil, bituminous materials, chemicals, sanitary sewage and other harmful materials resulting from the execution of this project are confined within project limits and prevented from entering watercourses, rivers, lakes or reservoirs. All applicable regulations of fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied with during the performance of this contract. Operations shall be conducted in such a manner as to reduce erosion to the practicable minimum to prevent damaging sedimentation of watercourses, streams or lakes.*

- c. The Contractor shall be responsible for utilizing various measures of control in his/her own work and that of Subcontractors to prevent erosion and sediment damage. When applicable, these measures and requirements will be identified and provided on the plans or in the Special Specifications. They are, however, not to be considered all-inclusive, as additional protective measures may be required as the work progresses. No payment will be allowed for this work.

3.0.15 SOIL REMOVAL AND DUMPING ORDINANCE - Under City ordinance, a permit must be obtained from, and a \$150 fee paid to, the City of Muskegon Building Inspection Department IF excavated or excess soil materials become the property of the Contractor AND those materials are to be deposited as fill within the corporate limits of the City of Muskegon; OTHERWISE, no permit will be required of the Contractor while working on the Project covered by this Contract.

3.0.16 PERMITS AND CODES

- a. The Contractor shall give all notices required by and comply with all applicable laws, ordinances and codes of the local government. All construction work and/or utility installations shall comply with all applicable ordinances and codes including all written waivers. Before installing any work, the Contractor shall examine the drawings and the Specifications for compliance with applicable ordinances and codes, and shall immediately report any discrepancy to the City.
- b. Where the requirements of the drawings and Specifications fail to comply with such applicable ordinances and codes, the City will adjust the Contract by Change Order to conform to such ordinances or codes (unless waivers in writing covering the difference have been granted by the governing body or department) and make appropriate adjustment in the Contract Price or stipulated Unit Prices.
- c. Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or install any utility at variance with any applicable ordinance or code, including any written waivers (notwithstanding the fact that such installation is in compliance with drawings, Technical or Special Specifications), the Contractor shall remove such work without cost to the City, but a Change Order may be issued to cover only the excess cost the Contractor would have been entitled to receive if the change had been made before he/she commenced work on the items involved.
- d. The Contractor shall at his/her own expense secure and pay for all necessary permits to execute the work from each involved governmental unit, whether it be the City of Muskegon, townships, County or State of Michigan. In some cases, certain permits will be obtained by the owner and will be so identified within the Special Specifications. All other permits are the responsibility of the Contractor.
- e. The Contractor shall comply with applicable local and state laws and ordinances governing the disposal of surplus excavation materials, debris and rubbish on or off the Project Site and commit to trespass on any public or private property in any operation due to or connected with the improvements embraced in this Contract.

3.0.17 TRAFFIC CONTROL - The Contractor shall at all time so conduct his/her work as to ensure the least possible obstruction to traffic. The safety and convenience of the general public and the residents in or adjacent to the Project Site and the protection of persons and property shall be provided for by the Contractor. The Contractor shall provide and maintain adequate barricades, signs, lights and flags to warn and guide the public, and shall provide flagmen and watchmen when needed or when so ordered by the City in full accordance with the MICHIGAN MANUAL OF UNIFORM TRAFFIC ONTROL DEVICES, published and revised from time to time by the Michigan Department of Transportation. The Contractor shall be responsible for compliance with this Item by all Subcontractors as well.*

3.0.18 REQUIRED PROVISIONS DEEMED INSERTED - Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein; and, if through error or otherwise, any such provision is not inserted, or is incorrectly inserted, then upon the application of either party to this Contract, the Contract shall forthwith be physically amended to make such insertion or correction. This clause shall be included in all Subcontracts.*

3.0.19 COMMUNICATIONS

- a. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.
- b. Any notice to or demand upon the Contractor from the City relative to any part of this Contract shall be sufficiently considered given, and the service thereof completed, when said notice is posted, by certified or registered mail, to the Contractor at his/her last given address; or when said notice is delivered in person to the Contractor or authorized representative on the Project Site, at the office of the Contractor, or to any telegraph company for transmission with charges prepaid, in each case addressed to such office.
- c. All papers required to be delivered to the City of Muskegon shall be delivered to the Muskegon City Hall, to the attention of the Authorized Representative on this Project, and any notice to or demand upon the City shall be sufficiently given if so delivered, or if posted, by certified or registered mail, to 933 Terrace Street, Muskegon, Michigan 49443, or to any telegraph company for transmission with charges prepaid, in each case to the same address. Any such notice shall be deemed to have been given as of the time of the actual delivery or at the time of actual receipt, as the case may be.

3.0.20 REQUEST FOR SUPPLEMENTARY INFORMATION - It shall be the responsibility of the Contractor to make timely requests of the City for any additional information not already in his/her possession which should be furnished by the City under the terms of this Contract, and which he/she will require in the planning and execution of the work. Such requests may be submitted from time to time as the need arises, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, listing the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after the Contract award, and shall be as complete as possible at that time. The Contractor shall, upon request, furnish promptly any assistance and information the City may require in responding to these requests. The Contractor shall be fully responsible for any delay in his/her work or to others arising from his/her failure to comply fully with the provision of this Article.

3.0.21 PROGRESS SCHEDULE AND NOTIFICATION REQUIREMENTS

- a. Immediately after execution of the Agreement, the Contractor shall submit for approval a carefully prepared Progress Schedule showing the proposed dates of starting and completing each of the various sections of work. The work which the Contractor is required to perform under this Contract shall commence at the time stipulated by the City in its Notice to Proceed and shall be fully completed by the dates indicated in the Contract Agreement.
- b. The Contractor shall notify the City's Authorized Representative as to the exact time at which he/she proposes to begin any part of the work at least 48 hours in advance of any such start so that line and grade can be established and inspections provided.
- c. When work is to be done by City forces, in coordination with City forces, or if City of Muskegon utilities need to be located and/or marked, the Contractor shall provide at least 48 hours' advance notice to the City Department from which the work is requested.
- d. The Contractor shall notify "Miss Dig" 48 hours in advance of any work start to allow sufficient time for utility identification and location. The City of Muskegon is NOT a part of the "Miss Dig" program.
- e. Before permission can be granted by the Authorized Representative for street closures, it shall be the Contractor's responsibility to notify the police and fire departments and the Department of Public Works and Utilities.

3.0.22 PAYMENTS BY THE CONTRACTOR

- a. The Contractor shall provide and pay for all materials, labor, tools, equipment, water, lights, heat, power, transportation, superintendence, temporary construction of every nature, charges, levies, fees or other expenses, and all other services and facilities of every nature necessary for the performance of this Contract and delivery of all improvements embraced therein within the specified time.
- b. The Contractor shall pay for all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered.

- c. The Contractor shall pay for all materials, tools, and other expendable equipment to the extent of 90% of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools and equipment are delivered at the Project Site, and the balance of cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used.
- d. The Contractor shall pay to each of his/her Subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed him/her on account of the work performed by the Subcontractors to the extent of each Subcontractor's interest therein.

3.0.23 SUBCONTRACTS

- a. The Contractor shall not execute an agreement with any Subcontractor or permit any subcontractor to perform any work included in this Contract until he/she has submitted a non-collusive affidavit from the subcontractor and received written approval of such subcontractor from the City of Muskegon.
- b. The Contractor shall be as fully responsible to the City of Muskegon for the acts and omissions of his/her Subcontractors, and of persons either directly or indirectly employed by them, as he/she is for the acts and omissions of persons directly employed by the Contractor.
- c. The Contractor shall cause appropriate provisions to be inserted in all Sub-contracts relative to compliance by each Sub- contractor with the provisions of this Contract.
- d. No proposed Subcontractor shall be disapproved by the City of Muskegon except for cause. Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the City of Muskegon.

3.0.24 INSURANCE AND INDEMNITY

- a. Hold Harmless Agreements. To the fullest extent permitted by law, Contractor and Subcontractors agree to defend, pay in behalf of, indemnify, and hold harmless the CITY OF MUSKEGON, all elected and appointed officials, all employees and volunteers, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof working on behalf of the CITY OF MUSKEGON against any and all claims, demands, suits, or loss, including all costs connected therewith, and for any damages which may be asserted, claimed or recovered against or from the CITY OF MUSKEGON and their elected and appointed officials, employees, volunteers, or others working on behalf of the CITY OF MUSKEGON by reason of personal injury, including bodily injury and death, property damage, including loss of use thereof, and/or the effects of or release of toxic and/or hazardous material which arises out of or is any way connected or associated with this contract. The obligation to defend and hold harmless extends to Contractor's employees, agents, subcontractors, assigns and successors.
- b. The contractor, or any of their subcontractors, shall not commence work under this contract until they have obtained the insurance required under this paragraph, and shall keep such insurance in force during the entire life of this contract. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and acceptable to the CITY OF MUSKEGON. The requirements below should not be interpreted to limit the liability of the Contractor. All deductibles and SIR's are the responsibility of the Contractor.
- c. **The Contractor shall procure and maintain the following insurance coverage:**
 - i. Workers' Compensation Insurance- The Contractor and Subcontractor shall procure and maintain during the life of this contract, Workers' Compensation Insurance, including Employers Liability Coverage in accordance with all applicable Statutes of the State of Michigan.
 - ii. Commercial General Liability Insurance - The Contractor shall procure and maintain during the life of this contract, Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than \$1,000,000.00 per occurrence and aggregate combined. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent, if not already included. Personal Injury, Bodily Injury and Property Damage coverage's shall be included (E) Deletion of all

- explosion, collapse and underground (SCU) exclusions, if applicable. The said insurance shall cover liability caused by the activities of any subcontractor.
- iii. Automotive Liability - The Contractor shall procure and maintain during the life of this contract Automotive Liability Insurance, including Michigan No-Fault Coverage's, with limits of liability for third party claims of not less than \$1,000,000.00 per occurrence or combined single limit Bodily Injury and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The said insurance shall cover liability caused by the activities of any subcontractor.
 - iv. Additional Insured- Commercial General Liability and Automotive Liability Insurance, as described above, shall include an endorsement stating the following shall be "Additional Insureds" using the following language: "The CITY OF MUSKEGON and all elected and appointed officials, all employees and volunteers, all boards, commissions and/or authorities and board members, including employees and volunteers thereof. It is understood and agreed by naming The CITY OF MUSKEGON as additional insured, coverage afforded is considered to be primary and any other insurance The City of Muskegon may have in effect shall be considered secondary and/or excess.
 - v. Cancellation Notice- All policies as described above, shall include an endorsement stating that it is understood and agreed Thirty (30) days, Ten (10) days for non-payment of premium, Advance Written Notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: CITY OF MUSKEGON ENGINEERING DEPARTMENT", PO Box 0536, Muskegon, MI 49443-0536
- d. Owner's and Contractor's Protective Liability- The Contractor shall procure and maintain during the life of this contract Owner's and Contractor's Protective Liability with limits of liability not less than \$1,000,000.00 per occurrence and/or aggregate, combined single limit. Personal injury, Bodily injury and Property Damage coverage's shall be included. The CITY OF MUSKEGON shall be "Named Insured" on this coverage. Thirty (30) day notice of cancellation to the CITY OF MUSKEGON shall be required. Said insurance shall cover liability caused by the activities of any subcontractor(s) either by means of a rider attached to the Prime Contractor's Certificate of Insurance indicating this coverage for subcontractors; or the subcontractor(s) shall submit their own Certificate of Insurance.
 - e. Proof of Insurance Coverage - The Contractor and Subcontractors shall provide the CITY OF MUSKEGON at the time the contracts are returned by him/her for execution, a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, if applicable, a copy of the policy sections where coverage is provided for additional insured and cancellation notice would be acceptable. Copies or certified copies of all policies mentioned above shall be furnished. Certificates and policies endorsing the City of Muskegon as additional insured as listed below:
 - i. Two (2) copies of Certificate of Insurance for
 - ii. Workers' Compensation Insurance;
 - iii. Two (2) copies of Certificate of Insurance for Commercial General Liability Insurance;
 - iv. Two (2) copies of Certificate of Insurance for Automotive Liability Insurance;
 - v. Original Policy, or original Binder pending issuance of policy, for Owner's and Contractor's Protective Liability Insurance;
 - vi. If so requested, Certified Copies of all policies mentioned above will be furnished.
 - f. If any of the above coverage's expires during the term of this contract, the Contractor and Subcontractors shall deliver renewal certificates and/or policies to CITY OF MUSKEGON at least ten (10) days prior to the expiration date.

3.0.25 MATERIALS AND WORKMANSHIP

- a. Unless otherwise specifically provided for in the Technical or Special Specifications, all workmanship, equipment, materials and articles the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles or workmanship are referred to as "equal to" any particular standard, the City of Muskegon will decide the question of equality.

- b. The City of Muskegon may require the Contractor to dismiss from this Project such employee(s) as the City of Muskegon may deem incompetent, careless, and/or insubordinate.

3.0.26 SUPERINTENDENCE BY CONTRACTOR

- a. Except where the Contractor is an individual and gives his/her personal superintendence to the work, the Contractor shall provide a competent superintendent, satisfactory to the City of Muskegon, on the work at all times during working hours with full authority to act for the Contractor. The Contractor shall also provide adequate staff for the proper coordination and expediting of the work.
- b. The Contractor shall lay out his/her own work, and shall be responsible for all work executed by him/her under this Contract. He/She shall verify all figures and elevations before proceeding with the work and will be held responsible for any error resulting from his/her failure to do so.
- c.

3.0.27 FITTING AND COORDINATION OF THE WORK - The Contractor shall be responsible for the proper fitting of all work, and for the coordination of the operations of all trades, subcontractors, or materialmen engaged upon this Contract. He/She shall be prepared to guarantee to each of his/her Subcontractors the locations and measurements which they may require for the fitting of their work to all surrounding work.

3.0.28 MUTUAL RESPONSIBILITY OF CONTRACTORS

- a. If, through acts or neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other contractor or subcontractor by agreement or arbitration, if such other contractor or subcontractor will so settle.
- b. If such other contractor or subcontractor shall assert any claim against the City of Muskegon on account of any damage alleged to have been so sustained, the City will notify the Contractor, who shall defend at his/her own expense any suit based upon such claim, and, if any judgment or claim against the City is allowed, the Contractor shall pay all costs and expenses in connection therewith.

3.0.29 CARE OF THE WORK

- a. The Contractor shall be responsible for all damages to person or property that occur as a result of his/her fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or part by payments made by the City.
- b. The Contractor shall provide sufficient competent watchmen, both day and night, including Saturdays, Sundays and holidays, from the time the work commences until final completion and acceptance, as needed.
- c. In an emergency affecting the safety of life, limb or property, including adjoining property, the Contractor, without special instructions or authorization from the City, is authorized to act at his/her own discretion to prevent such threatened loss or injury, and he/she shall so act. He/She shall likewise act if instructed to do so by the City. Any compensation claimed by the Contractor on account of such emergency work will be determined by the City as provided in this Contract regarding Change Orders.
- d. The Contractor shall avoid damage as a result of his/her operation to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he/she shall at his/her own expense completely repair any damage thereto caused by his/her operation.
- e. The Contractor shall shore up, brace, underpin, secure and protect, as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of, the Site which may be in any way affected by the excavations or other operations connected with the execution of this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before commencement of any work. The Contractor shall indemnify and save harmless the City of Muskegon from the damages on account of settlements or the loss of lateral support of adjoining property and from all

loss or expense and all damages for which the City may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

3.0.30 SURVEY MONUMENTS

- a. Survey monuments relative to governmental surveys such as a U.S. Coast and Geodetic and the City of Muskegon datum plane reference are to be preserved and left undisturbed by the Contractor. Land survey monuments such as Section corners, 1/4 and 1/8 corners, or other alignment points of reference, including property corners of individual parcels of land, are to be respected and left undisturbed. When found in conflict with proposed work, the Contractor shall immediately notify the Authorized Representative in charge of work, whereupon instructions shall be given to the Contractor for preservation of the Survey Point. If housings or boxes for protection are required, the City shall furnish to the Contractor at no cost the necessary materials. The Contractor, in turn, will install the materials at no cost to the City.
- b. If the Contractor damages or destroys known Survey Points of reference, the Contractor shall be responsible for replacement of the monument. The work must be accomplished by a registered land surveyor in accordance with accepted procedures for such work. The Contractor shall be responsible for all incurred costs.

3.0.31 SANITARY FACILITIES - The Contractor shall furnish, install and maintain ample sanitary facilities for the workers. As the needs arise, a sufficient number of enclosed temporary toilets shall be conveniently placed as required by the sanitary codes for the state and local government. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single-service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in accordance with existing and governing health regulations.

3.0.32 USE OF CITY WATER - Upon request and approval, the Contractor may obtain a water supply from the City of Muskegon fire hydrants at no cost, provided that the following conditions are met and exercised:

- a. The Contractor's superintendent shall obtain from the Water Department Superintendent a proper connection, including a meter to monitor usage.
- b. The Contractor shall only use hydrant wrenches to open and close hydrants; pipe wrenches will not be allowed.
- c. The hydrant shall be fully opened when used; volume shall be controlled by an independent hand valve.
- d. The Contractor's release shall not be granted until the hydrant connection has been returned to the Water Department and such receipt acknowledged.

3.0.33 USE OF PREMISES

- a. The Contractor shall comply with all instructions of the City of Muskegon and the ordinances and codes of the local government regarding signs, advertising, traffic, fires, explosives, danger signals and barricades.
- b. The Contractor shall confine his/her equipment, storage of materials, and construction/demolition operations to the Contract limits as shown on the drawings and as prescribed by ordinances or permits, or as may be directed by the City, and shall not unreasonably encumber the Site or public rights-of-way with his/her materials and equipment.
- c. The Contractor and his/her Subcontractors may maintain such office and storage facilities on the Site as are necessary for the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the Site. The City shall be consulted with regard to locations.
- d. The Contractor may furnish and maintain, during the execution of this Project, adequate facilities on the Site or adjacent thereto for the use of the City's representatives.
- e. Upon completion of the Project, or as directed by the City, the Contractor shall remove all such temporary structures and facilities as have been placed on the Site, these to become his/her property, and leave the Project Site in the condition required by the Contract.

3.0.34 PARTIAL USE OF SITE IMPROVEMENTS BY THE CITY - The City of Muskegon, at its election, may give notice to the Contractor and place in use those sections of improvements which have been completed, inspected and can be accepted as complying with the Contract, if each such section is reasonably safe, fit and convenient, in the City's opinion, for the use and accommodation for which it was intended, PROVIDED THAT:

- a. The use of such sections in no way shall impede the completion of the remainder of the work by the Contractor;
- b. The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections;
- c. The use of such sections shall in no way relieve the Contractor of his/her liability due to having used defective materials or due to poor workmanship.

3.0.35 REMOVAL OF DEBRIS, CLEANING, ETC. - The Contractor shall periodically, or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the Project Site and public rights of way reasonably clear. Upon completion of the work, he/she shall remove all temporary construction facilities, debris and unused materials provided for the work, and put the whole Site of the work and public rights of way in a neat and clean condition. Trash burning on the Site will be subject to prior approval of the City of Muskegon and existing state and local regulations.

3.0.36 ACCIDENT PREVENTION

- a. The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the Site, which occur as a result of his/her prosecution of the work. The safety provisions of applicable laws and building, construction or demolition codes shall be observed, and the Contractor shall take, or cause to be taken, such additional safety and health measures as the City may determine to be reasonably necessary.
- b. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention of Construction", published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws.
- c. The Contractor shall maintain an accurate record of all cases of death, occupational disease and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under this Contract. The Contractor shall promptly furnish the City with reports concerning these matters.
- d. The Contractor shall indemnify and save harmless the City of Muskegon from any claims for damages resulting from personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this Contract.

3.0.37 SPECIFICATIONS AND DRAWINGS

- a. The City of Muskegon will furnish the Contractor without charge one (1) copy of the Contract Documents, including General, Technical and Special Specifications complete with plans, drawings, maps, etc. Additional copies requested by the Contractor will be furnished at cost.
- b. In case of discrepancy, figured dimensions shall govern over scaled dimensions; Bid Proposal over plans; plans over Special Specifications; and Special Specifications over General and Technical Specifications.
- c. When discrepancies are found in drawings or Specifications, the matter shall be immediately submitted to the City, without whose decision said discrepancy shall not be adjusted by the Contractor except at his/her own risk and expense.

3.0.38 SHOP DRAWINGS FROM THE CONTRACTOR

- a. All required shop drawings, machinery details, layout drawings, etc., shall be submitted to the City in three (3) copies for approval sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting and rechecking, if necessary.
- b. The Contractor may proceed, only at his/her own risk, with manufacture or installation of any equipment or work covered by said Shop Drawings, etc., until they are approved. No claim by the

Contractor for extension of the Contract Time will be granted by reason of the Contractor's failure in this respect.

- c. Any drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him/her for proper resubmission. If any drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his/her letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of Contract Price and/or Time; otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the drawings have been approved.
- d. If a shop drawing is in accord with the Contract or indicates only a minor adjustment, in the interest of the City, without involving a change in Contract Price and/or Time, the City may approve the drawing. Such approval shall be general, shall not relieve the Contractor from his/her responsibility for adherence to the Contract or for any error in the drawing, and shall contain substantially the following language:
- e. "The modification shown on the attached drawing is approved in the interest of the City of Muskegon to effect an improvement for the Project and is ordered with the understanding that it does not involve any change in the Contract Price or Time; that it is subject generally to all Contract stipulations and covenants; and that it is without prejudice to any and all rights of the City of Muskegon under the Contract and surety bond or bonds."

3.0.39 SAMPLES, CERTIFICATES AND TESTS

- a. The Contractor shall submit all equipment samples, certificates, affidavits, etc., as called for, or as required by the City, promptly after award of the Contract and acceptance of the Contractor's bond.
- b. The Contractor shall furnish promptly all materials reasonably necessary for any tests which may be required.
- c. No such material or equipment shall be manufactured or delivered to the Site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the City.
- d. Machinery, mechanical or other equipment, materials or articles installed or used without such prior City approval shall be at the risk of subsequent rejection.
- e. Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the Project for which it is intended, and the name of the producer. Each shall be accompanied by a certificate or letter from the Contractor which shall
 - i. State that the sample complies with the Contract requirements;
 - ii. Give the name and brand of the product and its place of origin;
 - iii. Give the name and address of the producer;
 - iv. Include or be accompanied by all specifications or other detailed information which will assist the City in determining the acceptability of the sample promptly;
 - v. Include the statement that all materials or equipment furnished for use in the Project will comply with the samples and/or certified statements.
- f. Where machinery, mechanical or other special equipment is to be installed under this Contract, the Contractor shall furnish each manufacturer's detailed specifications to the City for approval together with full information in regard to proposed installations.
- g. Materials specified by reference to the number or symbol of a specific standard, such as an A.S.T.M. Standard, a Federal specification or other similar standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in such reference. The Standards referred to shall have full force and effect as though printed herein.
- h. Approval of any materials shall be general only, and shall not constitute a waiver of the City's right to demand full compliance with Contract requirements. With regard to a general approval, the City may reject materials, equipment and accessories for cause after actual delivery to the City and such check tests have been made as deemed necessary in each instance, even though such materials and articles have been given general approval.

- i. The City's Authorized Representative may test such materials as deemed advisable on the Project Site.
- j. All tests by the City will be performed in such manner as not to delay the work unnecessarily, and shall be made in accordance with the provisions of the Specifications.
- k. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the Contract Time.
- l. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the City will have the right to cause their removal and replacement by proper materials, or to demand and secure such reparation by the Contractor as is equitable.
- m. Except as otherwise specifically stated in this Contract, the costs of sampling and testing will be divided as follows:
 - i. The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes;
 - ii. The Contractor shall assume all costs of re-testing materials which fail to meet Contract requirements;
 - iii. The Contractor shall assume all costs of testing materials offered in substitution for those found deficient; and
 - iv. The City of Muskegon will pay all other expenses for testing.
- n. Certificates of Compliance: In lieu of test samples and upon request of the City, the Contractor shall provide, upon delivery and through his/her supplier, a witnessed, notarized and signed certification complete with documented test results that the material meets or exceeds the desired specifications. The signer of the certification must be titled officer of the material company, and the documented test results must be obtained through an independent testing laboratory. Costs for such documentation shall be borne by the Contractor.

3.0.40 INSPECTION BY THE CITY

- a. All materials and workmanship shall be subject to inspection, examination, and/or test by the City of Muskegon at any and all time during manufacture or construction and at any and all places where such manufacture or construction is carried on. The inspection of materials as a whole, or in part, will generally be made at the Project Site, subject to the provisions of paragraph b following.
- b. Inspection of materials and appurtenances to be incorporated in the improvements embraced in this Contract may be made at the place of production, manufacture or shipment whenever the quantity justifies it. Such inspection and acceptance, unless otherwise stated, shall be final, except in regard to (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud.
- c. The City shall have the right to reject defective material and workmanship or require its correction. Unacceptable workmanship shall be satisfactorily corrected. Rejected material shall be promptly segregated and removed from the Project Site and replaced with material of specified quality without charge therefor.
- d. If the Contractor fails to proceed at once with the correction of rejected workmanship or defective material, the City may, by contract or otherwise, have the defects remedied, or rejected materials removed from the project area, and charge the cost of the same against the monies which may be due the Contractor without prejudice to any other rights or remedies of the City.
- e. The Contractor shall notify the City sufficiently in advance of back-filling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the City, the Contractor shall uncover for inspection, and recover, such facilities all at his/her own expense, when so requested by the City of Muskegon.
- f. Should it be considered necessary or deemed advisable by the City at any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the Contractor shall, on request, promptly furnish all necessary facilities, labor and/or material.
- g. If such work is found to be defective in any important or essential respect due to the fault of the Contractor or the fault of his/her Subcontractors, the Contractor shall defray all the expenses of such examination and or satisfactory reconstruction.

- i. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus 15% of such costs to cover superintendence, general expenses and profit, shall be allowed the Contractor; and he/she shall be granted in addition a suitable extension of time if completion of the work under the entire Contract has been delayed on account of the additional work involved by such request.
 - ii. A semi-final inspection will be scheduled by the City when all construction has been completed.
 - iii. When the City has accomplished its semi-final inspection, determined all deficiencies (if any) have been corrected, and the project is completed and functional, a final inspection will be scheduled.
- h. Neither inspection, testing, approval nor acceptance of the work in whole or in part by the City or its agents shall relieve the Contractor or his/her sureties of full responsibility for materials furnished or work performed not in strict accordance with the Contract.

3.0.41 CHANGES IN THE WORK

- a. Except for the purpose of affording protection against any emergency endangering life or property, the Contractor shall make no change in the materials used; in the specified manner of constructing and/or installing the Improvements; nor supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless pursuant to a written order from the City authorizing the Contractor to proceed with the change. No claim for an adjustment of the contract price will be valid unless so ordered.
- b. The City may make changes in the scope of the work required to be performed by the Contractor under the Contract; make additions thereto; or omit work therefrom without invalidating the Contract; without relieving or releasing the Contractor from any of his/her obligations under the Contract or any guarantee given by him/her pursuant to the Contract; without affecting the validity of the guaranty bonds; and without relieving or releasing the surety or sureties of said bonds.
- c. All such changes in work shall be executed under the terms of the original Contract as expressly provided for.
- d. In the case where unit prices ARE contained in the Agreement, the City may order the Contractor to proceed with desired changes in the work with the value of such changes being determined by the measured quantities involved and the applicable unit prices specified in the Contract, unless said changes increase or decrease the total contract price more than twenty-five percent (25%).

3.0.42 CHANGE ORDERS

- a. Change Orders shall be executed:
 - i. If applicable unit prices ARE NOT contained in the Proposal;
 - ii. If the total net change ordered by the City increases or decreases the contract price more than twenty-five percent (25%);
 - iii. If it becomes necessary to revise the completion date due to causes which are not the fault of the Contractor;
 - iv. Upon successful completion of the Project and after final quantities are in confirmation, a Change Order Balance shall be made out by the Authorized Representative and executed by both parties. This quantity balance shall identify the total project cost and allow the Contractor to present the written Request for Final Payment.
- b. Acceptable Methods for Cost Determination:**
 - i. Unit Price Method – The City shall request and the Contractor shall submit a written proposal describing each individual unit of work and the unit price for each item.
 - ii. Lump Sum Method – The City shall request and the Contractor shall submit a written proposal describing the work and the lump-sum price for the described work.
 - iii. Cost-Plus, Limited Basis Method – If other methods are not acceptable and prompt agreement between the parties cannot be reached, the City may order the Contractor to proceed with the work on a cost-plus, limited basis. A Cost-Plus, Limited Basis is defined as the net cost of the Contractor's labor, materials and equipment plus 15% of said net cost to cover overhead and profit. The total cost not to exceed an amount to be specified.

1. Costs not eligible to be included in the Cost-Plus, Limited Basis are: Insurances, bonds, payroll costs for the Contractor's officers or executives, managers, engineers, lawyers or administrative personnel. These typical costs are to be considered a part of the overhead factor.
- iv. City of Muskegon Credit Method – If the City deems it not expedient to require the Contractor to correct work not done in accordance with the Contract, the City may issue a Credit Change Order to create an equitable deduction from the Contract Price. Said deduction will be made by agreement between the Contractor and the City of Muskegon and subject to settlement, in case of dispute, as provided in these Documents.
- c. Change Order Procedure – After the Contractor's proposal has been reviewed and found acceptable by both parties, the City will prepare a Change Order in accordance therewith for execution by the Contractor on the appropriate form required by the funding agency or by using the City of Muskegon change order form.
- d. **Change Order Procedure Documentation shall include:**
 - i. A detailed reason for and description of the work, its location, quantity, rate and method of payment as described above.
 - ii. A definite statement as to the resulting change in the Contract Price and/or time.
 - iii. The statement that all work involved in the change shall be performed in accordance with the Contract requirements except as modified by this Change Order.

3.0.43 DISPUTES AND CLAIMS

- a. All disputes arising under this Contract or its interpretation, except those disputes covered by Federal Labor Provisions, whether involving law or fact, or both, or extra work, and all claims for alleged breach of Contract shall be presented by the Contractor to the City for decision within ten (10) days of commencement of dispute.
- b. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim but shall state the facts surrounding the claim in sufficient detail to identify and prove the claim, together with its character and scope. In the meantime, the Contractor shall proceed with the work as directed.
- c. Any claim not presented within the time limit specified in Paragraph (a) above shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within then (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt by the City of notice thereof.
- d. After review of the claim, the City will decide upon action to be taken. Each decision by the governing body of the City of Muskegon will be in writing and will be mailed to the Contractor by registered mail, return receipt requested, directed to his/her last known address.
- e. If the Contractor does not agree with any decision of the City, he/she shall in no case allow the dispute to delay the work but shall notify the City promptly that he/she is proceeding with the work under protest, and he/she may then except the matter in question from the final release upon Request for Final Payment in substantially.

3.0.44 CLAIMS FOR EXTRA COST

- a. If the Contractor claims that any instructions by drawings or otherwise involve extra cost or extension of time, he/she shall, within ten (10) days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his/her protest thereto in writing to the City stating clearly and in detail the basis of this objection. No such claim will be considered unless so made.
- b. Claims for additional compensation for extra work due to alleged errors in ground elevations, contour lines, or bench marks will not be recognized unless accompanied by certified survey data made prior to the time the original ground was disturbed, which clearly shows that errors exist which resulted, or would result, in handling more material or performing more work than would be reasonably estimated from the drawings and maps issued.
- c. Any discrepancies which may be discovered between actual conditions and those represented by the drawings and maps shall at once be reported to the City, and work shall not proceed except at the Contractor's risk until written instructions have been received by him/her from the City.

- d. If, on the basis of the available evidence, the City determines that an adjustment of the Contract Price and/or Contract Time is justifiable, the procedure shall be as provided in Item 39 (Part 3, Section I), Change Orders.

3.0.45 DELAYS AND LIQUIDATED DAMAGES

- a. Liquidated Damages for Delays. If the work is not completed within the time stipulated in this Contract, including any extensions of time for excusable delays as provided, the Contractor and/or his sureties shall be liable for and shall pay to the City of Muskegon sum of three hundred dollars (\$300.00) for each calendar day of delay as fixed, agreed and liquidated damages (it being impossible to determine the actual damages occasioned by the delay), commencing from the time stipulated for completion until such work is satisfactorily completed and accepted.
- b. Excusable Delays. The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work DUE TO:
 - i. Any acts of government, including controls or restrictions upon or requisitioning of materials, equipment, tools or labor by reason of war, national defense or any other national emergency;
 - ii. Any acts of the City of Muskegon;
 - iii. Causes not reasonably foreseeable by the parties to this Contract at the time of the execution of the Contract which are beyond the control and without the fault or negligence of the Contractor including, but not restricted to: Acts of God or of the public enemy; acts of another contractor in the performance of some other contract with the City; fires; floods; epidemics; quarantine; restrictions; strikes; freight embargoes; and weather of unusual severity such as hurricanes, tornadoes, cyclones and other extreme weather conditions; and
 - iv. Any delay of any Subcontractor occasioned by any of the causes specified in subparagraphs 1, 2 and 3 above.

PROVIDED, HOWEVER, that the Contractor promptly notify the City within ten (10) days in writing of the cause of the delay.

- c. Upon receipt of such written notification, the City shall ascertain the facts and the cause and extent of the delay. If, upon the basis of the facts and in compliance with the terms of this Contract, the delay is properly excusable, the City shall extend the time for completing the work for a period of time commensurate with the period of excusable delay through the execution of a written Change Order.

3.0.46 PAYMENTS TO THE CONTRACTOR

- a. Partial Payments
 - i. Partial payments will be made as specified herein for work completed and for fabricated or processed non-perishable materials delivered for the use on the project. Processing of payments will be completed as soon as practicable; however, no claim will be considered for late payment of estimates.
 - ii. Partial payments will be issued on the second Friday of each month on the basis of the value of the work completed during the estimate period, less the percentage retained as specified herein, provided the written orders of the Engineer have been or are being fulfilled, provided the time for completion has not elapsed, and provided that at least one-half of the contract amount or \$1,000 has been earned during the estimate period. Said payments will be based upon estimates prepared by the Engineer of the value of the work performed, and estimates of the Engineer are subject to final balancing at the time of the final estimate. In the event that the prepared estimate is not submitted with sufficient time to process payment on the second Friday of the month, payment of the estimate will be processed for payment on the fourth Friday of the month. As a result, the Engineer's estimates may not be relied upon by a Contractor as a basis to make payment to a Subcontractor.
 - iii. Before each payment by the City to the Contractor under this contract, the Contractor shall furnish the City with a certificate in duplicate, substantially to the effect that the Contractor and each

- Subcontractor has complied with the wage and other labor standards provisions of this contract. The Form of certificate to be used will be furnished by the City.
- iv. Before making any partial payment, the City may require the Contractor to present a verified written statement showing the amounts he/she owes for labor performed and materials furnished along with the names and addresses of the persons to whom which sums are due.
 - v. In case the Contractor shall have sublet a part of the work, the statement shall also show the sum owed to the Subcontractor showing names and addresses of persons performing labor or furnishing material under that subcontract along with the respective amounts due such persons.
 - vi. The City must pay the amounts due directly to the creditors of the Contractor or Subcontractor so listed, deducting the amount from that due the Contractor or Subcontractor.
 - vii. Partial payments made by the City to the Contractor are monies advanced for the purpose of assisting the Contractor to expedite the work under this contract. The Contractor shall be responsible for the care and protection of all materials and work upon which payments have been made until final acceptance of such work and materials by the City.
 - viii. Any such partial payments shall not constitute a waiver of the right of the City to require the fulfillment of all terms of the contract, and the delivery of all improvements embraced therein, complete and satisfactory in all details.
- b. Withholding Payments
- i. The City may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the City of Muskegon.
 - ii. The City may also elect to withhold any amounts the Contractor owes to any subcontractor or materials dealer for work performed or materials furnished by them.
 - iii. Any amount due to the City of Muskegon for liquidated damaged, or other purposes as provided under the terms of this contract, shall be deducted from the final payment due the Contractor.
 - iv. The foregoing provisions shall be construed solely for the benefit of
 - v. the City of Muskegon and will not require the City Commission to determine or adjust any claims or disputes between the Contractor and his/her Subcontractors or materials dealers, or to withhold any monies for their protection unless the City Commission elects to do so.
 - vi. The failure or refusal of the City to withhold any monies from the
 - vii. Contractor shall in nowise impair the obligations of any surety or sureties under any bond or bonds furnished under this contract.
 - viii. Right of Setoff. The City is entitled by this agreement to set off and retain from any payment to the Contractor or any Subcontractor or material supplier, all amounts which are due and owing to the City of Muskegon from said Contractor, Subcontractor, or material supplier for any reason,. The said right or setoff also applies to any unpaid taxes to be collected by the City. This right of setoff shall be subject only to the right of a surety providing bonds or guarantees for the project be due and owing to a Subcontractor or material supplier, and which are required to be paid by the surety. If no claim against any such surety has been made, then this right of setoff shall be invoked.
 - ix. This right to setoff shall not apply in the case of non-management individuals employed by a Contractor or Subcontractor who have claims solely for wages earned in the performance of labor in this project. In the event there remain outstanding such claims for labor, the right of setoff shall be subordinate to such claims even though no claim against a surety has been made.
- c. Final Payment
- i. Final payment to the Contractor shall be made subject to the furnishing of a satisfactory release of all claims against the City arising under and by virtue of this contract, other than such claims as may be specifically excepted by the Contractor from the operation of release as provided under "Disputes and Claims".
 - ii. The Contractor shall prepare his/her Requisition for Final Payment after final inspection and acceptance by the City for all work under the contract.
 - iii. The Contractor shall additionally secure the consent of his/her surety in regard to Final Payments as well as the retainage withheld by the City.

- iv. Requisition for Final Payment can be based upon the total project dollar amount as described in the required Balancing Change Order. The total amount of the final payment will be that amount agreed upon by the parties hereto MINUS all previous payments.
- v. Before making final payment, the City may require the Contractor to furnish releases or receipts from all Subcontractors having performed any work and from all persons having supplied materials, equipment installed on the project, and services to the Contractor.
- vi. If the City deems it advisable to make payment in part or full to the Contractor without requiring the furnishing of such releases or receipts, any payments so made shall in nowise impair the obligations or any surety or sureties furnished under this contract.

3.1 TIME CHANGE ORDER

Project No.: _____

Contract No.: _____

Contractor Information:

Company Name: _____

Street Address: _____

City, State Zip: _____

Contact Name: _____

Requested Time Change Order Date: _____

In connection with the above referenced Contract, dated: _____,
for the Project entitled: _____,

The following change is ordered, subject to conditions hereinafter set forth:

The Contract Time is extended _____ calendar days from the original

Contract Completion Date of: _____ to: _____.

The City of Muskegon has duly determined that:

- The delay was due to unforeseeable causes beyond your control and without your fault or negligence:
- Notice of the cause of the delay was given within the time and in the manner prescribed by the Contract.
- The causes of delay justify and require an extension of the time as herein provided as a matter of legal right without the assertion of a claim by the owner for (actual) (liquidated) damages because of the Contractor's failure to complete the work within the number of days specified by the Contract.

The aforementioned changes, and work affected thereby, are subject to all contract stipulation and covenants.

The Rights of the city of Muskegon are not prejudiced.

All claims against the City of Muskegon which are identical to or as a consequence of the aforementioned change are satisfied

Contractor Approval

City of Muskegon Approval

Authorized Representative Signature Date

Authorized Representative Signature Date

Printed Name Title

Printed Name Title

Prepared By Date

3.2 CONTRACT CHANGE ORDER

CONTRACTOR		CONTRACT						DATE	11/10/2017
								CHANGE ORDER	
								No.	1
ITEM OF WORK	UNIT	QUANTITY	QUANTITY	QUANTITY	QUANTITY	UNIT	AMOUNT	AMOUNT	
DESCRIPTION, REASON, LOCATION OF CHANGE	OF MEASURE	PROPOSAL	AS BUILT	INCREASE +	DECREASE -	COST	INCREASE	DECREASE	
1							\$0.00	\$0.00	
2							\$0.00	\$0.00	
3							\$0.00	\$0.00	
							TOTALS	\$0.00	\$0.00
CHANGE REQUEST EFFECIVE DATE:									
							ORIGINAL CONTRACT PRICE:	\$0.00	
							NET +/-	\$0.00	
							REVISED CONTRACT PRICE:	\$0.00	
ENGINEERING DEPARTMENT		CONTRACTOR APPROVAL				CITY OF MUSKEGON APPROVAL			
		AUTHORIZED REPRESENTATIVE AND DATE				AUTHORIZED REPRESENTATIVE AND DATE			
PREPARED BY		DATE		PRINTED NAME AND TITLE			PRINTED NAME AND TITLE		

3.3 CONTRACTOR'S CERTIFICATE & RELEASE REQUEST FOR FINAL PAYMENT

FROM: (Name of Contractor)

TO: The City of Muskegon

RE: **Contract No.**

ENTERED INTO THE _____ DAY OF _____ BETWEEN THE CITY OF MUSKEGON,
933 Terrace Street, Muskegon, Michigan 49443, AND

(Contractor)

(City)

(State)

(ZIP)

FOR THE: RESURFACING OF MONROE AVE., FROM FOURTH ST. TO FIFTH ST.

(Name of Operations to be performed)

UNDER THE CONTRACT ENTITLED:

**PROJECT NO.
MICHIGAN;**

-LOCATED IN THE CITY OF MUSKEGON,

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned hereby certifies that there is due from and payable by the CITY OF MUSKEGON to the CONTRACTOR under the Contract and duly approved Change Orders and modifications THE BALANCE OF \$ _____ .
2. The undersigned further certifies that in addition to the amount set forth in Paragraph 1, there are outstanding and unsettled the following items which the Contractor claims are just and due and owing by the City of Muskegon to the Contractor:
 - a. _____
 - b. _____
 - c. _____
 - d. _____

(Itemize claims and amounts due; if none, so state)
3. The undersigned further certifies that all work required under this Contract, including work required under Change Orders Nos. _____, has been performed in accordance with the terms thereof, and that there are no unpaid claims for materials, supplies or equipment and no claims of laborers or mechanics for unpaid wages arising out of the performance of this Contract, and that the wage rates paid by the Contractor and all Subcontractors were in conformity with the Contract provisions relating to said wage rates.
4. Except for the amounts stated under Paragraphs 1 and 2 hereof, the undersigned has received from the CITY OF MUSKEGON all sums of money payable to the undersigned under or pursuant to the above-mentioned Contract or any modification or change thereof.

*Date contract awarded by the City commission

(CONTRACTOR'S CERTIFICATE AND RELEASE – Continued)

5. That in consideration of the payment of the amount stated in Paragraph 1 hereof, the undersigned does hereby release the CITY OF MUSKEGON from any and all claims arising under or by virtue of this Contract, except the amount listed in Paragraph 2 hereof; provided, however, that if for any reason the City of Muskegon does not pay in full the amount stated in Paragraph 1 hereof, said deduction shall not affect the validity of this release, but the amount so deducted shall be automatically included under Paragraph 2 as an amount which the Contractor has not released but will release upon payment thereof.

The Contractor further certifies that upon the payment of the amount listen in Paragraph 2 hereof, and of any amount which may be deducted from Paragraph 1 hereof, the Contractor will release the City of Muskegon from any and all claims of any nature whatsoever arising out of said Contract or modification thereof, and will execute such further releases or assurances as the City may request.

IN WITNESS WHEREOF, the undersigned has signed and sealed this instrument this _____ day of _____, 20 _____ .

CONTRACTOR: _____

(SEAL)

BY _____

(Printed name and title of signer)

_____, the affiant signing this instrument, being first duly sworn on oath, deposes and says: First, that he/she is the

_____ (title) of the _____
(name of company)

Second, that he/she has read the foregoing certificate by him/her subscribed as _____ (title) of the _____.

Affiant further states that the matters and things stated are, to the best of his/her knowledge and belief, true.

Affiant: _____

Subscribed and sworn to before me this _____ day of _____, 20 _____

Notary

My commission expires _____

3.4 CONTRACTOR AFFIDAVIT - SURETY RELEASE

State of Michigan)
) ss
County of Muskegon)

_____(Contractor)

Being duly sworn, deposes and says that he/she entered into a contract with the City of Muskegon on the ____ day of _____ for the construction of the City of Muskegon.

Project No.

PROJECT TITLE:

Deponent further says that the work under the terms of the said contract has been completed and all indebtedness incurred by him/her to subcontractors, material suppliers, and persons in his/her employ has been paid in full.

Deponent further says this affidavit is furnished before final payment, or before the ten percent (10%) withheld in accordance with the contract may be reduced.

Deponent further says this affidavit is made pursuant to provisions of Public Act 179 of 1891, section 4, as amended.

Witnesses:

SIGNED

Subscribed and sworn to before me this _____ day of _____, 20

Notary Public

Commission expires _____

3.5 CONSENT OF SURETY

We, as surety on the above described contract, hereby give our consent to the payment to the Contractor as indicated above.

Date: _____

Signed: _____
(Attorney-in-fact)

NOTE: Two completed copies of this or similar form MUST BE SUBMITTED to and accepted by the City of Muskegon BEFORE REDUCTION OF 10% RETAINAGE AND FINAL PAYMENT WILL BE MADE.

***Date contract awarded by the city commission**

SECTION 2

3.6 AFFIRMATIVE ACTION

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO INSURE EQUAL EMPLOYMENT OPPORTUNITY AND PROHIBITING DISCRIMINATION IN EMPLOYMENT

(Federal Executive Order 11243)

Michigan: Elliot-Larson Civil Rights Act

The attention of bidders is particularly called to the requirements for ensuring that employees and applicants for employment are not discriminated against.

During the performance of this contract, the contractor agrees as follows:

The contractor will not discriminate against any employee or applicant for employment because of religion, race, color, national origin, age, sex, height, weight, familial status, marital status, disability, sexual orientation or gender identity, or status as a Vietnam Era Veteran. The contractor will take affirmative action to ensure that applicants are employed and that employees are treated fairly during employment, without regard to their religion, race, color, national origin, age, sex, height, weight, familial status, marital status, disability, sexual orientation or gender identity, or veteran background. Such action shall include, but not be limited to, the following: employment, promotion, demotion, or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; selection for training, including apprenticeship.

LOCAL EMPLOYMENT EFFORT

The City of Muskegon requires that the contractor must hire local trades and labor employees from the City of Muskegon, County of Muskegon and/or this SMSA (Standard Metropolitan Statistical Area) for the duration of this project, insofar as these are available to perform the necessary work. Supervisory and/or technical staff officials are exempt from this requirement.

LABOR STANDARDS PROVISION EMPLOYMENT AND PREVAILING WAGE AND SALARY REQUIREMENTS

The attention of bidders is particularly called to the requirements covered in these documents concerning the payment of not less than the prevailing wage and salary rates specified, and in regard to conditions of employment with respect to certain categories and classifications of employees.

All laborers and mechanics employed by this contract shall be paid unconditionally and not less than once each week, and without subsequent deduction or the rebate on any account (except such payroll deductions as are permitted by the applicable regulations issued by the City of Muskegon).

SECTION 3

3.7 ADOPTED LABOR STANDARDS PROVISIONS

The following clause is applicable unless this contract is exempt under the rules and regulations of the Secretary of Labor issued pursuant to Executive Order No. 11246 of September 24, 1965 (30FR 12319), as amended. During the performance of this contract, the contractor agrees as follows:

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or natural origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous place, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
- (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- (3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (5) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with the procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (7) The contractor will include the provision of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance. Provide, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction. The contractor may request the United States to enter into such litigation to protect the interests of the United States.

3.8 EQUAL EMPLOYMENT OPPORTUNITY CLAUSE
(Incorporated by Reference)

The Equal Employment Opportunity Clause required under Executive Order 11246, the affirmative action commitment for disabled veterans and veterans of the Vietnam era, set forth in 41 CFR 60-250.4 the affirmative action clause for handicapped workers, set forth in 40 CFR 60-741.4 and the related regulations of the Secretary of Labor. 40 CFR Chapter 60, are incorporated by reference in this purchase order. By accepting this purchase order, vendor certifies that it complies with the authorities cited above, and that it does not maintain segregated facilities or permit its employees to perform services at locations where segregated facilities are maintained, as required by 41 CFR 60-1.8

3.9 ANTI-KICKBACK ACT

NOTICE TO CONTRACTORS: The Contractor shall comply with the applicable regulations of the Secretary of Labor, United States Department of Labor, made pursuant to the Copeland AntiKickback Act (Title 40 U.S.C., Section 276c), and any amendment or modifications thereof, shall cause appropriate provisions to be inserted in subcontracts to insure compliance therewith by all subcontractors subject thereto, and shall be responsible for the submission of affidavits required by subcontractor thereunder, except as said Secretary of Labor may specifically provide for reasonable limitations, variations, tolerance, and exemptions from the requirements thereof.

Copeland “Anti-Kickback” Act Policy

The Copeland “Anti-Kickback” Act prohibits contractors or subcontractors engaged in building construction or repair from persuading an employee to give up any part of the compensation to which he or she is entitled under his or her employment contract.

NOTICE TO MUNICIPAL EMPLOYEES: *Any employee who offers or approves the offer of a business consideration must ensure that it is ethical and proper in all respects. The offer of a business consideration cannot reasonably be interpreted as an attempt to gain an unfair business advantage or otherwise reflect negatively on the reputation of the City of Muskegon and/or the recipient. The business consideration shall not violate this anti-kickback policy.*

The City of Muskegon’s (Muskegon) staff, representatives, and contractors are prohibited from receiving unreasonable compensation from grantors, grantees, contractors, applicants, or any other person or individual for the purpose of receiving preferential treatment of any kind. The guidelines below define Muskegon’s policy toward kickbacks and the penalties for offering kickbacks to Muskegon employees, representatives or contractors.

Definition: “Kickback” for the purposes of this policy (excluding de minimis gifts), means substantial money, fees, commission, gifts, gratuity, object of value, or offer of employment, which is provided or offered, directly or indirectly, to any City of Muskegon employee, contractor or contracted employee, vendor or vendor employee, or consultant for the purpose of improperly obtaining or rewarding favorable treatment in connection with a City of Muskegon project or contract.

This policy prohibits any person or organization from:

Providing or attempting to provide or offering to provide kickbacks;
Soliciting, accepting or attempting to accept kickbacks; or
Including, directly or indirectly, the amount of kickbacks in any contract awarded by City of Muskegon, contractors, or subcontractors.

Any employee found to be in violation of this policy will be subject to an investigation by the City of Muskegon’s Compliance Officer to determine if the policy was infringed upon. Depending on the results of the investigation, appropriate discipline will be determined. The employee may be subject to civil or criminal penalties as provided under U.S. law.

Any applicant, grantee, contractor, consultant, or vendor in violation of this policy will be prohibited from participation in any City of Muskegon project, contract, or activity and may be subject to additional civil or criminal penalties as provided under U.S. law (Title 40 U.S.C., Section 276c).

Muskegon reserves the right to recover damages from any person who knowingly engages in such prohibited conduct and from any person whose employee, contractor, or subcontracted employee provides, accepts, or charges a kickback.

PART 4 – PROJECT SPECIFICATIONS

Project Specifications

Owner: City of Muskegon, Muskegon County, Michigan

Project Title: 2018 CIPP Lining

Project #: 2170624

I. GENERAL

1. Specifications

Work under this Contract shall be completed in accordance with the General and Supplementary Conditions, the Project Specifications and the following Standard Specifications contained in Appendix A:

Section 2: Specifications for Excavating, Trenching and Backfilling for Utilities

Section 3: Specifications for Surface Restoration

Section 6: Specifications for Sanitary Sewer

Where a standard construction method or contract procedure is not specifically covered by the Contract Documents or shown on the plan, the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction shall apply.

The following project specifications shall supersede the above mentioned specifications.

2. Scope of Work

The work specified herein can generally be described as the following:

Approximately, 1450 lineal feet of 10" sanitary cured-in-place pipe lining and pressure grouting of joints, sewer cleaning and televising, maintenance of traffic, maintenance of sewer system flows, testing, and inspection.

The locations are shown on the figures in Appendix B.

The Contractor shall furnish adequate material, equipment, labor, and supervision to complete the work as specified herein.

3. Closed Circuit Television Videos

Televising of the sanitary sewer was completed in 2016. The PACP reports are provided in Appendix C. The videos are available online with the following links:

From MH	To MH	Approx. Length (ft)	Link
MH03507	MH03510	300	https://youtu.be/6U01ITCRyR4
MH03510	MH03514	150	https://youtu.be/dZvteh_svO8
MH02761	MH03532	400	https://youtu.be/cCg5XHFRZ7Q
MH03532	MH03533	330	https://youtu.be/rpeJxBjvnT8
MH03533	MH03531	270	https://youtu.be/MTx7s_sHmrw

Available record plans are provided in Appendix D. All pipe is 10-inch vitrified clay.

4. Project Management

A. Coordination

The contractor shall coordinate with the Owner prior to mobilizing to the site. Contractor shall cooperate and coordinate the work with other parties performing work in the area. No additional time or compensation will be approved for claims arising from work by other parties.

B. Project Schedule

Contractor shall provide a detailed construction schedule to the Owner. Contractor shall be responsible for coordination of all work activities. Contractor shall complete work by December 21, 2018.

C. Project Meetings

Project meetings will be scheduled, as needed, throughout the project. Meetings will be scheduled at the request of the Owner.

D. Shop Drawings

Contractor shall submit descriptive information regarding the sanitary sewer cured-in-place pipe (CIPP). Specific submittal content requirements shall be coordinated with the Engineer.

Descriptive information shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information necessary to illustrate conformance with the Contract Documents. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall ensure that the material, equipment or method of work implemented is as described in the submittal. The Contractor shall initial and sign each submittal, certifying their review of the submittal and its compliance with the Contract Documents.

1. Transmittal Procedure

Submittals shall be submitted electronically via the Prein&Newhof Plan Room.

Submittals shall include clear identification of the material, equipment or method of

work for which the submittal has been prepared, and any variations from the Contract Documents. A unique number, sequentially arranged, shall be noted on the transmittal form accompanying each item's submittal.

Submittals shall have the following naming format: Submittal Number – Specification Section – Description.pdf (Example: 001-III.3.-Water Main Valves.pdf). Resubmittals shall follow the same general format with a sequential letter following the submittal number, i.e. A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively (Example: 001A-III.3.-Water Main Valves.pdf.) Contractor shall be given a Login ID and Password to the Prein&Newhof Plan room. The website for the Prein&Newhof Plan Room is <http://www.preinnewhof.com/plan-room/>. Upon logging into the website, Contractor will have access to a project folder labeled with the name of the Owner and Project. This folder will only be accessible to the Contractor, Owner, and Engineer.

Login and password will not be provided to subcontractors. If the Contractor provides their login information to their subcontractors, Contractor assumes responsibility for the subcontractor's actions.

Within the "Project Folder" there will be a "To Be Reviewed" folder and a "Reviewed" Folder. Contractor shall upload submittals in PDF format to the "To Be Reviewed" subfolder. The time and date of the upload will be logged and automatic email notifications will be sent.

Within 15 calendar days, reviewed submittals will be posted in the "Reviewed" folder. Automatic email notifications of the upload will be sent.

The Engineer will update the "Shop Drawing Status Log" and post it in the Project Folder as submittals are received and reviewed, where it will be accessible by the Owner, Contractor, and Engineer.

Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

2. Review Procedure

If the review indicates that the material, equipment or work method is in general conformance with the design concept and complies with the Drawings and Specifications, submittal copies will be marked "NO EXCEPTIONS TAKEN". In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.

If the review indicates limited corrections are required, submitted copies will be marked "FURNISH AS CORRECTED". Contractor may begin implementing the work method by the submittal in accordance with the noted corrections.

If the review reveals that the submittal is insufficient or contains incorrect data, submitted copies will be marked "REVISE AND RESUBMIT". If the review indicates that the material, equipment or work method is not in general conformance

with the Contract Documents, copies of the submittal will be marked "REJECTED". Submittals with deviations which have not been identified clearly may be rejected.

Except at its own risk, the Contractor shall not undertake work covered by submittals marked "REVISE AND RESUBMIT" or "REJECTED" until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "FURNISH AS CORRECTED".

If the review indicates "ACKNOWLEDGED RECEIPT", the submittal under review has been appropriately noted and filed. No further action is required for a submittal so noted.

3. Effect of Review of Contractor's Submittal

Review of Drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of its responsibility for errors therein and shall not be regarded as an assumption of risks or liabilities by the Engineer or Owner, or by an officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed.

Review of Drawings also shall not relieve the Contractor of responsibility for the proper fitting and construction of the work nor for the furnishing of materials or work required by the Contract and not indicated on the Drawings.

A mark of "NO EXCEPTIONS TAKEN" or "FURNISH AS CORRECTED" shall mean that the Owner has no objection to the Contractor, upon its own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

E. Construction Observation

Work will be observed by the Owner and/or Engineer.

Contractor shall provide a minimum 72 hour written notice (email is acceptable), exclusive of weekends and holidays, to the Engineer and Owner prior to conducting any on-site work.

F. Material Testing

Owner reserves the right to sample and test any of the materials required for the proposed construction, either before or after delivery to the project, and to reject any material represented by any sample which fails to comply with the minimum requirements specified. Contractor shall furnish all materials reasonably required for sampling, testing and analysis necessary for the testing of materials as required by these specifications.

Unless otherwise specified, the cost of the testing described above will be paid for by the Owner. If any material fails to meet the specified requirements, all material represented

by the sample shall be rejected unless the Contractor can demonstrate through additional tests, at the Contractor's own expense, that the remainder of the material is satisfactory.

5. Permits

The Contractor shall obtain a permit from the City of for the public rights-of-way work. There is no charge for this permit.

The Owner will give the contractor a meter and designate a hydrant to be used as a water source. There will be no charge for this water use.

The Contractor shall comply with all permits and shall be responsible for any fines that may be incurred due to failure to meet any of the conditions of the permits.

The Contractor shall obtain all other permits necessary for completion of this project. The Contractor shall pay all associated costs, including any required charges or bonds by agencies for permits, inspections, or similar charges. Costs associated with permitting and all costs associated with meeting all permit requirements shall be considered part of the major items of construction.

6. Existing Utilities

Contractor shall cooperate with the utility companies in any repair, relocation or other work to be performed on the utility.

Contractor shall refer to Section 5.05 of the Supplementary Conditions as to the responsibilities of the Contractor regarding underground facilities. No claim for additional compensation will be allowed based on the work of the utility companies to replace, relocate, or repair their utility in the project area whether noted on the drawings or in the specifications or if deemed necessary during construction.

7. Community Relations and Protection of Adjacent Property

The Contractor shall be entirely responsible for all damage to water pipes, electric conduits or cables, drains, sewers, gas mains, poles, telephone and telegraph lines, railroad bridges and tracks, streets, pavements, sidewalks, curbs, fences, street and highway bridges and culverts, building foundations, retaining walls or other structures of any kind met with during the progress of the work, and shall be liable for damages to public or private property resulting therefrom.

The Contractor shall shore, brace, install sheeting, and/or then take all precautions necessary to protect against damage to existing structures due to dewatering, excavation, backfilling or other construction at the site. The Contractor shall minimize the amount of excavation and site disturbance and shall save existing structures and landscaping where possible.

8. Mobilization

Payment for Mobilization shall be per Table 150-1 of the 2012 MDOT Standard Specifications for Construction.

9. Traffic Control

Contractor shall prepare and implement all traffic control plans needed to complete the work specified herein and comply with permit requirements.

Traffic control shall be in accordance with the requirements of the MDOT 2012 Standard Specifications for Construction, the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), and as specified herein.

Contractor shall coordinate work within the right-of-way with MDOT and CCRC. Work shall be performed in accordance with the permit requirements of the appropriate agency.

Contractor shall also inform the local police, ambulance service, fire department, public school system, and local businesses in advance of any planned closures.

A. Maintaining Traffic

Contractor shall limit disruption to the area by sequencing events. Traffic shall be maintained at all times. Emergency vehicle access shall be maintained at all times. Access to fire hydrants, water and gas valves, and driveways shall be maintained at all times. Contractor may for no reason leave equipment on driveways overnight.

B. Existing Signs

Existing regulatory, warning, and guide signs shall be maintained by the Contractor. This includes all labor, materials and equipment necessary to temporarily relocate or cover existing signs.

C. Temporary Signs

All temporary construction signs in accordance with the applicable requirements of the 2011 MMUTCD shall be in place prior to construction in any area.

D. Payment

The "Traffic Control" pay item shall include all costs associated with completing the traffic control items as specified herein, including developing traffic control plans, maintaining traffic, relocating existing signs, and providing temporary traffic control signage.

10. Site Maintenance

The construction site shall be maintained in a neat and orderly manner on a daily basis. Litter, debris, construction material, and other items shall be properly handled to the Owner's requirements. Construction materials and debris shall not be disposed of in any excavation.

Protection and maintenance of public safety is of critical concern. Trenches left open shall be properly fenced. No trenches shall be left open more than 24 hours. Manholes shall not be left open.

A. Right-of-Way

Contractor shall confine the work to the rights-of-way as shown on the plans. Any other area used for equipment or material storage, or for construction operation shall be the responsibility of the Contractor.

Damage to adjacent properties (including, but not limited to trees, driveways, fences, etc.) not located within the right-of-way or easements is the responsibility of the Contractor. If damage occurs to any adjacent property, the Contractor must notify the Engineer before the end of the working day.

B. Mail Service/Refuse Removal

The contractor shall temporarily relocate mail boxes that interfere with construction to a location easily accessible to the U.S. Post Office. Mail boxes shall be replaced in a condition, elevation and location equal to that existing prior to construction. If the mailbox to be replaced was not in accordance with U.S Post Office requirements prior to construction, the Contractor shall install the mailbox in such a way that it is as similar to pre-construction condition as possible while also being in compliance with the U.S. Post Office requirements.

Contractor shall coordinate activities with waste haulers to allow continued service to the area under construction. This will require access to the individual properties or a central location for pick up. The Contractor will be responsible for transporting waste containers to a centralized location and returning them to their respective properties following trash pickup.

Contractor must provide residents with 24-hours notification of temporary mailbox relocation or refuse removal. The relocation of mail boxes and the facilitation of refuse removal shall be incidental to the major items of construction.

C. Noise Control

Contractor shall exercise reasonable care to minimize noise generated by construction operations, bypass pumping, dewatering (if necessary), and all other activities. The Contractor shall work with the Owner or Engineer to address all complaints from property owners.

D. Dust Control

All haul roads, detour roads and other public and private roads (including backfilled trenches), driveways and parking lots used by the Contractor must be maintained in a dust free condition during the life of this Contract. The control of dust shall be accomplished by sweeping and/or application of dust control materials, and shall be done

as often as is necessary to control the dust, or within 6 hours, including weekends, after notification to do so by the Owner or Engineer.

The cost of providing dust control shall be included in the major items of work. Should the Contractor be negligent in his duties in providing dust control, the Owner will take the necessary steps to perform such work and will charge the Contractor for all costs.

E. Protection of Natural Resources

Contractor shall take all necessary steps to prevent damage to fish and game habitats and to preserve the natural resources of the State. Excavation and backfill shall be carried out so as to minimize discharge of damaging material to any stream, lake, or reservoir. Contractor shall exercise caution in the discharge of waters from pumps, deep wells, or well point systems, in order that such discharges do not cause erosion, siltation, soil depositions, etc., in sewers, streams or other water courses or drainage structures.

Contractor shall not permit any sand or debris of any kind to enter ditches, streams, storm sewers or culverts.

The rules and regulations of all work shall comply with Part 31 (Water Resources Protection), Part 301 (Inland Lakes and Streams Act), Part 91 (Soil Erosion), and Part 303 (Wetland Protection) of P.A. No. 451 (Natural Resources and Environmental Protections Act of 1994).

F. Soil Erosion and Sedimentation Control

All work shall comply with the rules and regulations of Part 91 of P.A. No. 451.

Contractor shall place silt bags in all catch basins directly affected by construction. Silt fence shall be installed as necessary to prevent sediment transport onto properties adjacent to the construction area. Staked mulch blanket shall be installed on all slopes exceeding a 1V:3H slope and as directed by the Engineer. Mulch blanket shall be NAG SC-150.

If total land disturbance at any one time exceeds five (5) acres, the Contractor shall file a Notice of Coverage, along with the requisite fee, with the MDEQ to comply with the National Pollutant Discharge Elimination System (NPDES) Phase II regulations.

G. Protection of Work

Contractor shall protect the work until it is accepted by the Engineer. Any part of the completed work that is damaged prior to acceptance by the Engineer shall be replaced at the expense of the Contractor.

11. Payment

Payment shall be made for the proposal items only. All of the work specified herein and indicated on the contract drawings shall be considered to be included in the unit prices shown in the proposal.

II. EXCAVATING, TRENCHING, & BACKFILLING FOR UTILITIES

1. Clearing, Brushing and Tree Removal

It is not anticipated that tree removal will be necessary. If tree removal is necessary, Contractor shall obtain permission from the adjoining property owner and bear all costs associated with the removal and disposal.

Wood generated from tree removal will become the property of the adjoining property owner, or the property owner when in an easement. If the property owner does not want the wood, Contractor shall dispose of the materials in a proper manner. Burning or burying of wood will not be permitted.

Stumps encountered during construction shall be removed unless otherwise noted on the project plans. Stumps shall be removed completely. Stump grinding is not permitted unless otherwise specified.

Removal of bushes, trees and all stumps shall be included in the major items of construction.

2. Removal of Surface Improvements

If surface improvements such as sidewalks, improved lawns, drives, curb and gutter, and all types of pavement are removed as part of this project, they shall be removed to the nearest joint adjacent to the removal area, unless otherwise specified by the Engineer. Payment for this work shall be included in the major items of construction.

3. Existing Underground Structures and Utilities

Existing wells, septic tanks, tile fields or other facilities disturbed or damaged by Contractor shall be repaired and restored to working condition before the end of that working day. Under no circumstances will such interruptions be extended overnight. Contractor shall take necessary precautions to not allow any discharge from the above facilities to enter any lake, stream, or canal along the line of work. Costs for required repairs and/or temporary service shall be at Contractor's expense and no claims for extra work will be allowed.

4. Dewatering

When dewatering of groundwater is required, the Contractor shall limit the dewatering operation to the minimum time and depth required for construction. The Contractor will not be required to furnish temporary water service to property owners whose well may be affected by the dewatering operations. However, the Contractor will be required to cooperate with the City in providing temporary water service, if necessary. Payment for dewatering, if necessary, shall be included in the major items of construction.

III. CONSTRUCTION BYPASS OPERATION

1. Performance Requirements

Performance of the wastewater collection system shall not be interrupted. Contractor shall convey all wastewater flows through or around the project area.

Contractor shall design all temporary systems and operations, which may include temporary pumping and piping systems (bypass pumping), transporting wastewater by container (pump and haul), or other means and methods for conveying wastewater. Contractor shall determine the design capacity of all temporary systems and operations, and appropriate safety factors to ensure adequate capacity for peak flows, inflow and infiltration, and simultaneous operation of any upstream lift stations.

Contractor shall determine the available system capacity downstream of any temporary discharge location and ensure that the downstream system does not receive peak flow rates exceeding the system capacity with the temporary discharge.

2. System Flow Information

Actual flow rates shall be determined by the Contractor, however, the following *estimated* average flow rates, based on number of users are provided for information only.

Oak Grove Street -15,000 gallons per day

Evanston Avenue 35,000 gallons per day

Forest Lift Station Design Capacity - 450 gallons per minute

3. Required Submittals

Contractor shall submit to the Owner and Engineer, a Bypass Operation Plan and a Spill Plan, a minimum of one (1) week prior to commencement of construction. The Bypass Operation Plan should, at a minimum, include the normal bypass operation, 24 hour contact personnel, a listing of equipment to be used, including backup equipment, a list of materials, locations of ramps/other approved means for traffic control and a drawing or sketch of the operation. The Spill Plan should, at a minimum include procedures for containment, procedures for cleanup and a 24 hour contact. A copy of all changes to either plan must be promptly submitted to the Owner.

4. Payment

The "Construction Bypass Operation" pay item includes all bypass plans, operations, labor, materials and equipment necessary to complete all parts of this project. No additional payment will be made for work during the night or on weekends, bypassing of individual laterals, or access. Contractor shall be responsible for any costs associated with clean up, repair and property damage, insurance deductibles or uninsured losses, and fines as a result of interruptions in the performance of the wastewater collection system.

Contractor shall indemnify the Owner and Engineer from any liability from claims resulting from failure of the bypass operation.

IV. CURED-IN-PLACE PIPE

1. Description of Work

This work includes rehabilitating gravity flow sanitary sewers with cured-in-place pipe systems, including cleaning, televising, pressure grouting, lining, and testing. The sanitary sewer to be rehabilitated as part of the project can be found on the Figures, Record Plans, and Schedules found in Appendix A.

All work shall be completed in accordance with applicable and most current ASTM Standards.

2. Materials

The tube shall consist of one or more layers of absorbent fabric capable of carrying resin, and capable of withstanding installation pressures and curing temperatures. Resin shall be polyester or vinyl ester based material. The tube shall be compatible with the resin system used. Any seams in the tube shall be stronger than the non-seamed material. The tube material shall be able to stretch to fit irregular pipe sections, diameter transitions, and negotiate bends. The outside layer of the tube shall be plastic coated with a material that is compatible with the resin system used. The tube should be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the existing pipe. Allowance should be made for circumferential stretch during installation. The final product shall be free of "lumps" caused by overlapped layers of felt. The outside of the tube shall be marked along its full length at regular intervals not to exceed five (5) feet and the tube shall be of light reflective color.

All manhole penetrations shall be sealed water tight using hydrophilic sealing materials, such as Insignia End Seal Sleeve by LMK Technologies, or Engineer approved equal.

All diameter information provided in the Bidding Documents is given in nominal sizes, unless stated otherwise. The actual inside diameter of the sewer may vary with pipe material, wall thickness classification, and pipe condition. Contractor shall take all necessary measurements and determine the tube size. No additional payment will be made for variations in tube size.

Contractor shall submit calculations for the design tube thickness for each run of sewer. The design shall conform to ASTM F1216 and assume at minimum a fully deteriorated pipe with no bonding to the original pipe wall, full height groundwater, highway or railroad traffic loading, and provide a safety factor not less than 2.0. The calculations shall be based on actual site conditions including depth to invert, groundwater, soil density, soil modulus, pipe ovality, and live loading. The basis of design shall be provided to the Engineer and the Owner. The design intent shall be for a minimum of a 50 year life of the tube. Tube thickness shall be governed by calculations or the following minimum thicknesses, whichever are greater:

Nominal Pipe Size (inch)	Minimum Tube Thickness (mm)	Nominal Pipe Size (inch)	Minimum Tube Thickness (mm)
8	4.5	24	12.0
10	6.0	27	13.5
12	6.0	28	15.0
14	7.5	30	18.0
15	7.5	32	18.0
16	9.0	36	19.5
18	9.0	40	21.0
20	10.5	42	21.0
21	10.5	48	24.0

The resin used shall be a thermoset resin system that is compatible with the cured-in-place pipe installation. The resin shall be able to cure in the presence of water and the initiation temperature for cure shall be less than 180°F.

CIPP Field Samples - To verify physical properties, the Manufacturer shall submit a minimum of 15 test results from previous field installations of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified have been achieved in previous field applications.

3. Cleaning and Televising

A. Sewer Cleaning

All internal scale, deposits, debris, roots, hanging gaskets, protruding joint sealing material, protruding service connections, and other obstructions shall be removed from the original pipeline before installation of the tube. The pipeline shall be cleaned with hydraulically powered equipment, high-velocity jet cleaners, or mechanically powered equipment as needed to ensure proper cleaning (see NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.) All hanging gaskets shall be cut from the pipe prior to lining. No gaskets will be permitted in the flow channel.

All material removed from the sewer shall be properly disposed of according to all Local, State, and Federal regulations. Solid waste from the project may be disposed at Muskegon County Wastewater Management System, 8301 White Road, Muskegon, MI at contractor's expense. Costs are to be included in the payment item noted.

B. Sewer Televising

All closed-circuit television (CCTV) inspection shall be performed by a PACP-certified televising technician. All types of PACP observations shall be noted on the inspection log for all CCTV inspections. A copy of each inspection video and PACP log shall be submitted to the Engineer.

All videos shall be provided in MPEG format. All PACP logs shall be provided in PDF format. The final PACP database shall be provided in MDB format. All CCTV files shall be named according to the following file naming convention:

Mainline Sewer files: “USMH_DSMH_Main_Type_Date”

USMH = upstream manhole number

DSMH = downstream manhole number

Date = date of CCTV

Type = type of CCTV work (*pre cleaning, dye testing, grouting, final pre lining, post lining)

**the types of CCTV work listed above are examples to illustrate the file naming convention, not necessarily a complete list of videos needed for the project*

1. Pre-lining CCTV inspection

Before installing the tube, the final condition of the sewer shall be confirmed through post-cleaning CCTV inspection. The pipe interior shall be carefully inspected to confirm that cleaning requirements have been fulfilled and to identify any conditions which cannot be cleaned such as dropped joints, crushed or collapsed pipe, and reductions in ovality of more than 10%. Contractor shall evaluate the inspection and notify the Engineer of any conditions which may hinder the proper installation of the tube or the successful rehabilitation of the pipeline.

Contractor shall provide 72 hours notice to Owner and Engineer prior to making the final pre-lining inspection and shall allow Owner and Engineer access to observe the final pre-lining inspection. If Contractor fails to provide 72 hours notice and allow access to observe the inspection, Contractor shall submit videos of the complete inspection and allow 72 hours for Owner and Engineer to review and comment on the videos before proceeding with liner installation.

The inspection shall be made with the wastewater bypass operation in service. If for any reason the wastewater flow through the sewer is restored before installation of the tube, the sewer shall be re-cleaned and re-inspected according to the same requirements.

2. Post-lining CCTV inspection

After reinstating service lateral connections, the completed CIPP shall be confirmed through CCTV inspection. The pipe interior shall be carefully inspected to identify any dry spots, lifts, delaminations, wrinkles, infiltration, or other deficiencies. If any work is performed in the sewer after the inspection, including corrective work to the CIPP or any other work included in the contract that would be visible on the video, a final video inspection of the entire sewer segment meeting the above requirements shall be made.

3. Final CCTV Submittal

Contractor shall submit to the Owner and Engineer a final submittal of inspection records after all CCTV inspections have been reviewed by Engineer and Owner. The final submittal shall include, for every sewer, the final inspection only, including the video, the PACP log, and a PACP database export. The PACP database shall be a single database for the project.

C. Payment

The “Sewer Cleaning and Televising” pay item shall include all costs associated with cleaning and televising the sewer as specified.

4. Sewer Repair before Liner Installation

Conditions such as dropped joints, crushed or collapsed pipe, and reductions in ovality of more than 10% which require excavation and sewer repair to allow the proper installation of the tube, must be repaired before installing the tube. The work of such point repair excavations may be paid for separately based on the contract provisions for extra work, at the Owner’s discretion. The Owner reserves the right to contract with others for performance of such work.

No additional payment will be made for delays due to point repair work.

5. Pressure Grouting

All active water infiltration (including those observations classified under NASSCO’s PACP as gushers, runners, drippers, and weepers) shall be sealed by pressure grouting to prevent infiltration during the curing process. Grout shall be completed such that there is a smooth transition. Grout shall be acrylamide chemical grout or Engineer approved equal. Pressure grouting shall be per ASTM F-2304-F.

Payment for pressure grouting shall be per the “Pressure Grouting Mobilization” and “Pressure Grouting 10" Sewer Joints” pay items. A maximum of one pressure grouting mobilization will be paid for the project, regardless of the number of attempts, trips, or other variations in Contractor operations.

6. Liner Installation

A. Safety

Safety shall be the sole responsibility of the Contractor.

B. Resin Impregnation

The tube shall be impregnated with resin (wet-out) under controlled conditions. The volume of resin used shall be sufficient to fill all voids in the tube material at nominal thickness and diameter. The volume shall be adjusted by adding excess resin for the

change in resin volume due to polymerization and to allow for any migration of resin into the cracks and joints in the original pipe.

The Contractor shall designate a location where the CIPP will be vacuum- impregnated prior to installation. The Contractor shall allow the Owner's representative to inspect the materials and procedures used to vacuum- impregnate the tube.

C. Installation

Before installing the tube, the Contractor shall confirm that pipe interior satisfies all cleaning requirements and that all conditions which may affect the proper installation of the tube or the successful rehabilitation of the pipeline have been corrected.

End seals shall be installed in the original sewer at each manhole connection before installing the tube. End seals should be visually monitored during tube installation to ensure proper fit.

The wet out tube shall be inserted through an existing manhole or approved access point by means of an inversion process and the application of a hydrostatic head sufficient to extend it to the next designated manhole or termination point. Pulled into place installation will not be permitted.

Tube installation forces or pressures shall be limited so as not to stretch the tube longitudinally by more than 5% of the original length.

Before the installation begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the installation has started, the pressure shall be maintained between the minimum and maximum pressures until the installation has been completed.

Lubricant should be used during inversion in accordance with manufacturers installation instructions. The lubricant used should be a nontoxic, oil-based product that has no detrimental effects on the liner system, will not support the growth of bacteria, and will not adversely affect the fluid to be transported.

D. Curing

After installation is completed, a suitable heat source and water recirculation equipment are required to circulate heated water throughout the pipe. The equipment should be capable of delivering hot water throughout the section to uniformly raise the water temperature above the temperature required to affect a cure of the resin. Water temperature in the line during the cure period should be as recommended by the resin manufacturer.

The heat source should be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water supply. Another such gauge should be placed between the impregnated tube and the pipe invert at the termination to determine the temperatures during cure.

Initial cure will occur during temperature heat-up and is completed when exposed portions of the new pipe appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm or cure in the resin. After initial cure is reached, the temperature should be raised to the post-cure temperature recommended by the resin manufacturer. The post-cure temperature should be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the boiler to maintain the temperature continues. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil).

Contractor shall maintain a curing log for each CIPP, recording all temperatures readings at time intervals not exceeding 15 minutes or as recommended by the manufacturer. Curing logs shall show the manufacturers recommendations for curing temperatures and times. All curing logs shall be submitted to Engineer.

E. Cool-Down

The CIPP should be cooled in accordance with the resin manufacturer's specifications. Cool-down may be accomplished by the introduction of cool water into the CIPP to replace water being drained from a small hole made in the downstream end. Care should be taken in the release of the static head so that a vacuum will not be developed that could damage the newly installed pipe.

F. Workmanship

The finished pipe shall be continuous over the entire length of an installation run and be free of dry spots, lifts, delaminations, and significant wrinkles. If these conditions are present, remove and replace the CIPP.

If the CIPP does not fit tightly against the original pipe at each manhole connection, or if any infiltration at the manhole connection is present, the space between the pipes shall be sealed and infiltration stopped by filling with a resin mixture compatible with the CIPP and any manhole rehabilitation products.

G. Service Lateral Connections

Prior to installing the CIPP, Contractor shall confirm the location of all service lateral connections and determine whether each connection is capped, disconnected, or in service. Contractor shall provide record drawings to the Engineer indicating location and status of all service lateral connections. Contractor shall request written direction from the Owner for any laterals to be abandoned not less than two weeks prior to installing the CIPP. Contractor shall not proceed with installing the CIPP without first receiving written direction from Owner for any laterals to be abandoned.

Service interruptions shall be minimized. Contractor shall be responsible for contacting every home or business connected to the sanitary sewer and informing them of work to be conducted and about interruptions to their service. This shall be done by written notice that includes a description of the work, schedule, how it affects each property owner, and

the Contractor's phone number. This written notice shall be personally delivered the day prior to the beginning of the work in the area.

Within 8 hours after the new pipe has been cured in place (or unless otherwise approved by the Owner), the existing active service connections must be reconnected. This should generally be done without excavation, and in the case of non-man entry pipes, from the interior of the pipeline by means of a television camera and a remote-control cutting device.

Payment will be made for each lateral reconnected per the "Service Lateral Reinstatement" pay item. No additional payment will be made for excavations for the purpose of reopening service connections and Contractor will be responsible for all costs associated with such excavation and restoration work. Coordination with residents and business owners shall be done by Contractor the day before service disruption.

Contractor shall remove all debris material from the sewer, generated during lateral reinstatement activities.

H. Acceptance Tests

1. Leakage Tests

Leakage testing of the CIPP shall be conducted during cure while under hydrostatic pressure via an exfiltration test. For CIPP products in which the pipe wall is cured while not in direct contact with the pressurizing fluid, (e.g. a removable inflation bladder is used) the CIPP must be leakage tested in accordance with ASTM F1417.

Leakage testing shall be conducted in accordance with section 6.10 of the "Specifications for Sanitary Sewer".

2. Third Party Testing

For each inversion length one CIPP sample shall be cut from the material taken from the tube and the resin/catalyst system used and cured in a clamped mold and placed in a downtube when circulating heated water. Under no circumstances shall a flat coupon test sample be allowed.

The sample should be large enough to provide a minimum of three specimens and a recommended five specimens for flexural testing and also for tensile testing, if applicable. The full CIPP sample wall thickness shall be tested, whenever possible. If the sample is irregular, distorted, or of such thickness that proper testing is inhibited, then the wall thickness shall be machined away from the inside pipe face of the sample only. Thus, the test specimen shall be cut from the outside pipe face of the CIPP sample. For specimens greater than 1/2 inch (12.70 mm) depth, the width-to-depth ratio of the specimen shall be increased to a minimum of 1:1 and shall not exceed 4:1. Test specimens shall be oriented on the testing machine with the interior surface of the CIPP in tension. The following test procedures should be followed after the sample is cured and removed.

Flexural (Bending) Properties - The initial tangent flexural modulus of elasticity and flexural stress should be measured for gravity and pressure pipe applications in accordance with Test Method D 790, Test Method I Procedure A, and shall meet the requirements 400,000 and 4,500 psi, respectively.

Tensile Properties - The tensile strength shall be measured for pressure pipe applications in accordance with Test Method D 638 and must meet the requirements of 3,000 psi.

An approved independent third party laboratory shall perform all testing.

3. Payment

Payment for leakage testing and third party testing shall be included in the major items of construction.

I. Warranty

Manufacturer and Contractor shall warrant all work against defects in materials and workmanship for a period of one (1) year from the date of final acceptance of the project. A one-time inspection shall be completed by Contractor, one year from the date of project acceptance. Contractor shall, upon written notice, repair defects in materials or workmanship which may develop during said one year period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the Owner.

7. Payment

Unless otherwise specified, the completed work as measured for CIPP lining will be paid for at the contract unit price for the "10" Sanitary Sewer, CIPP" pay item, which includes all material, equipment and labor to complete the work.

Measurement of the length of the CIPP will be in lineal feet along the centerline of the sewer from center of manhole to center of manhole. Distances shown on CCTV videos will not be used as the basis for payment.

V. SURFACE RESTORATION

1. General

The "Restoration" pay item shall include payment for all restoration work. No additional payment will be made for unanticipated restoration resulting from Contractors operations.

2. Restoration (Topsoil, Fertilizer, Seed and Mulch)

Existing lawn surfaces, ornamental shrubs, bushes, trees, plants, and irrigation systems which are disturbed by the construction shall be replaced in like kind and condition.

Lawns that have been disturbed shall be replaced with 4 inches of new screened topsoil, MDOT TUF seed mixture, MDOT Class A fertilizer, and hydromulch. The finished surface shall match the existing lawn surface as close as possible and shall produce a smooth uniform surface.

Disturbed areas which are neither lawns nor landscaping shall be covered with 4" of topsoil, MDOT roadside seeding, fertilizer and mulch.

Areas shall be repaired and reseeded as often as necessary in order to produce a close stand of weed free grass.

3. Surface Improvements

Any road, drive, parking area, or other improvements disturbed shall be replaced with new like materials including concrete, asphalt, aggregate surface, aggregate base, subbase, pavement markings, guardrails, fences, signs, mailboxes, and miscellaneous appurtenances. This work shall be completed in conformance with MDOT standard specifications and the requirements of the owner of the improvements.

Appendix A

Standard Specifications

Section 2: Specifications for Excavating, Trenching and Backfilling for Utilities

Section 3: Specifications for Surface Restoration

Section 6: Specifications for Sanitary Sewer

SECTION 2

SPECIFICATIONS FOR EXCAVATING, TRENCHING, & BACKFILLING FOR UTILITIES

2.01 DESCRIPTION OF WORK

The work shall consist of furnishing all materials, equipment, and labor for excavating, trenching, and backfilling for utilities. The work also shall include the necessary clearing, sheeting and shoring, boring and jacking, dewatering, pipe embedment, and other appurtenant work.

The work shall be performed in accordance with the specifications and drawings, the MDOT 2012 Standard Specifications for Construction and the following specifications.

2.02 CLEARING, BRUSHING & TREE REMOVAL

2.02.01 General

The Contractor shall perform all clearing, brushing, and tree removal required for the proposed construction. Where indicated on the drawings for a specific area, that area shall be completely cleared in accordance with Sections 201 and 202 of the MDOT 2012 Standard Specifications for Construction. The Contractor shall notify the Engineer 48 hours (two working days) prior to commencement of clearing, brushing and tree removal. Clearing and brushing shall be confined to the limits of the right-of-way or easements unless otherwise directed and shall be kept to a practicable minimum.

Trees marked "Remove" on the drawings shall be taken down and removed from the right-of-way in a manner that does not endanger the adjoining property or persons or traffic using the right-of-way. Unless approved otherwise by the Engineer, stumps of trees are to be removed. All stump removal, shall be considered included in the major items of work to the project.

Selective pruning of trees will be permitted to allow operation of the Contractor's equipment. Trees shall be pruned neatly, and the scars from pruning or other damage by the Contractor's equipment shall be covered with a preservative.

2.02.02 Preservation of Trees

Because of the special concern for preservation of trees, all trees six (6) inches in diameter and larger, measured at a point 4 1/2' above the ground line at the base of the tree, which are to be removed have been marked on the drawings. Where there is more than one tree that has grown from a common stump, each tree is measured as a separate tree. All other trees are to be preserved unless written permission for

removal is obtained from the Owner and/or the Engineer. Where tunneling is necessary to preserve a tree, it shall be included in the major items of work. Trees that may have to be tunneled may or may not be specified on the drawings. Where tunneling is necessary, excavation may have to be done by hand to prevent damage to the tree or to its roots. When tunneling or excavating is done close to a tree to be preserved, every effort shall be made to preserve the main roots.

2.02.03 Disposal of Debris

All trees, brush, and stumps from clearing and brushing operations shall be disposed of by the Contractor by hauling from the site, or other suitable means approved by the Engineer. Burning of debris will be allowed if approved by the Engineer and Owner. The Contractor shall obtain the necessary burning permits and shall comply with the safety regulations required.

2.02.04 Measurement & Payment

The cost of all clearing, brushing, tunneling, and protection of trees which are left standing shall be considered included in the major items of work unless specific items have been provided in the Proposal in which case the prices shall be payment in full for performing this work as specified herein. All tree preservation shall be included in the major items of work to the project. Trees will be measured at a point 4-1/2' above the ground line at the base of the tree. Where more than one tree has grown from a common stump, each tree is measured as a separate tree. Trees six (6) inches in diameter and smaller will not be considered pay items.

2.03 REMOVAL OF SURFACE IMPROVEMENTS

Surface improvements such as sidewalks, improved lawns, drives, curb and gutter, and all types of pavement shall be removed just prior to excavating or trenching operations. All improvements shall be cut at the expected trench width prior to excavating using suitable equipment which does not damage the improvement outside of the trench area.

Concrete and bituminous pavement and drives shall be cut with a pavement cutting saw. The depth of the cut shall be the full depth of the pavement. Pavement crushers or breakers of any type are prohibited unless specifically authorized by the Engineer. Pavement which is removed shall not become mixed with backfill material. Power equipment may be used for pavement removal, provided that damage is not caused to improvements which are to remain.

Removal of surface improvements shall be included in the major items of work and no specific payment will be made therefore unless specific Proposal items are provided, in which case the prices bid shall be payment in full for performing this work as specified herein.

2.04 EXISTING SOIL / SUBSURFACE CONDITIONS

Where provided, soil borings are shown on the drawings only as information for use by the Engineer in preparing the contract documents. The Contractor is solely responsible for confirming actual soil conditions and depth of the water table.

2.05 EXISTING UNDERGROUND UTILITIES & STRUCTURES

2.05.01 Location

No less than three (3) working days prior to excavating, the Contractor is to call "MISS DIG" at 1-800-482-7171 or 811. Existing utilities are shown only at their approximate locations. The Contractor shall be responsible for determining their exact elevations and location in the field. The Contractor shall notify the owners of all underground utilities before starting any work. House sewer connections, water and gas services, and other utility lines may not be indicated on the drawings. However, the Contractor shall make every effort to locate all underground utilities from information obtained from the utility owner or by prospecting in advance of trench excavation.

2.05.02 Replacement

Certain underground utilities such as sewers may require removal and subsequent replacement in lieu of supporting or bracing during the proposed construction, or the Contractor may elect this option when temporary provisions to maintain essential services have been previously approved by the Engineer.

Unless otherwise specified, any utilities removed during the proposed construction shall be replaced by the Contractor. Materials and installation shall be equal to or better than original construction in every way. Salvaged materials may be reused when they are in good condition, and a satisfactory installation can be accomplished in the judgment of the Engineer.

Replacement of existing utilities shall be considered included in the major items of work unless specific items have been provided in the Proposal, in which case the prices bid shall be payment in full for performing this work as specified herein.

2.05.03 Relocation

Should any pipe or other existing utility require raising or lowering or moving to another location because of interference with the pipe or structure being constructed under these specifications, such changes which in the opinion of the Engineer are necessary shall be made by the Contractor unless otherwise specified. Relocation of existing utilities shall be included in the major items of work unless specific items are provided in the Proposal.

2.05.04 Reconnection

Where lateral services, house connections, or other pipe lines require reconnection to the proposed utility, as is the case when an existing utility is being reconstructed, the Contractor shall make these connections as specified or as shown on the drawings. All costs for making these connections, including provisions for maintaining flows and providing temporary service during the proposed construction, shall be included in the major items of work unless specific items are provided in the Proposal.

2.05.05 Utilities to be Abandoned

When pipes, conduits, sewers, or other structures are removed from the trench leaving dead ends in the ground, such ends shall be fully plugged or sealed with brick and mortar by the Contractor. Abandoned structures such as manholes or chambers shall be entirely removed unless otherwise specified or shown on the drawings.

All materials from abandoned utilities which can be readily salvaged shall be removed from the excavation by the Contractor and stored on the site or loaded on the Owner's truck as directed by the Engineer. Owner shall have first claim to salvageable materials. The Contractor is responsible to dispose of salvageable materials not desired to be kept by the Owner.

All costs for abandoning utilities and for removing and salvaging materials, when required, shall be considered included in the major items of work unless specific items have been provided in the Proposal, in which case the prices bid shall be payment in full for performing this work as specified herein.

2.06 EXCAVATING & TRENCHING

2.06.01 General

Excavating and trenching operations shall at all times be conducted in a safe, orderly manner using methods and equipment designed and suited to the intended use by personnel experienced in the work being performed.

None of the requirements or provisions specified herein or shown on the drawings shall nullify or restrict any safety provisions required by any regulation or law governing the protection and/or safety of persons or property.

2.06.02 Width of Trench

The width of the trench shall be ample to permit the pipe to be laid and joined properly and the pipe embedment material and backfill to be placed and compacted as specified. Trenches shall be of sufficient extra width when required as will permit the convenient placing of trench supports, sheeting, and bracing.

2.06.02.01 Width of Trench for Rigid Pipe

In order to limit excessive loads on rigid pipe, the maximum width of trench for pipe 36 inches and larger in diameter shall not be more than twice the nominal diameter. For smaller sizes of pipe, the maximum width of trench shall be not more than 3 feet greater than the nominal diameter of the pipe except as otherwise specified or directed. The above limiting restrictions on trench width apply from outside bottom of pipe to outside top of pipe.

Where the width of trench within these limits exceeds the maximum limit specified, the Contractor shall install a heavier class of pipe or use other means to provide additional load-carrying capacity at no additional cost to the Owner. Any changes in class of pipe or other variation shall be approved in writing by the Engineer before the work progresses.

When the trench width above the top of the pipe is appreciably greater than that which is reasonably required by project conditions in the judgment of the Engineer, any additional cost for backfill material, surface restoration, or other items that are the result of such excess width shall be borne by the Contractor.

2.06.02.02 Width of Trench for Flexible Pipe

Unless otherwise specified or approved by the Engineer, a minimum trench width of at least two (2) feet on each side of the pipe for placement of select embedment material will be required.

2.06.03 Excavating to Grade

The trench shall be excavated to a depth required for the proper installation of the pipe and placing of the pipe embedment material as specified.

Any part of the bottom of the trench excavated below the specified subgrade shall be refilled with approved materials compacted to 95% of maximum unit weight in accordance with MDOT procedures at no additional cost to the Owner. If additional excavation is required to correct unstable foundation conditions, payment will be made as specified in Section 2.08.

2.06.04 Sheeting, Shoring, Bracing, & Shelving

2.06.04.01 General

The Contractor shall brace or slope back the sides of all excavations in accordance with current MIOSHA regulations. The Contractor shall be responsible for compliance to such regulations and for the design, installation, and maintenance of all excavation safety measures.

2.06.04.02 Measurement & Payment

Unless otherwise specified in the Proposal, the costs incurred in the installation of bracing, sheeting, shoring, and shelving shall be included in the unit price bid for the work being performed.

Payment for sheeting left in place where directed by the Engineer shall be negotiated with the Contractor in accordance with the contract provisions for extra work unless specific items have been provided in the Proposal.

2.06.05 Rock Excavation

2.06.05.01 General

Wherever the word rock is used in these specifications, it shall mean boulders, solid ledge rock, and other minerals geologically placed and of a hardness when first exposed of 3 or greater in scales of mineral hardness, which in the opinion of the Engineer requires continuous use of drilling and blasting or special power equipment for its removal.

Soft disintegrated rock which can be removed with a power-operated excavator or with hand tools and loose, shaken, or previously blasted rock and broken stone in rock fillings shall not be classified as rock, nor will it be included in measurements for payment.

2.06.05.02 Hardness

The Engineer will determine the hardness of the material or minerals in question. The following accepted hardness will be used as a guide in the field for specific situations:

- Gypsum - hardness of 2
- Fingernail - hardness of approximately 2-1/2
- Calcite - hardness of 3
- Copper Coin - hardness of approximately 3
- Brass Pin - hardness of approximately 3

A mineral with a hardness of 3 will scratch a copper coin and can be scratched with a brass pin. Determinations of hardness which cannot readily be determined in the field shall be resolved by laboratory analysis of the material in question.

2.06.05.03 Blasting

Where blasting is necessary, the Contractor shall obtain the required permits and licenses at his own expense. This work shall be done with due regard to the safety of workmen, other people, and public and private property. The method of covering blasts, amounts of charges used, and the general procedure for doing this work shall

conform to the standard practice and shall meet all requirements of local ordinances and other regulations and shall be subject to the approval of the Engineer.

2.06.05.04 Clearance

Rock shall be removed to provide a clearance for all pipes, appurtenances, or structures of at least eight (8) inches below, and a minimum of eight (8) inches on each side of the pipe, appurtenance, or structure.

The specified minimum clearances are the minimum clear distance which will be permitted between any part of the pipe or appurtenances being laid and any part, point, or projection of the rock.

2.06.05.05 Measurement

Only boulders of 1 cubic yard or greater in volume that cannot be removed with power excavating equipment or rock as defined herein will be measured for payment. Measurements of rock will be made by the Engineer after rock is removed from the excavation by measuring the trench before the pipe is installed.

The cross sectional area will be measured at 25 foot intervals or closer if required to accurately measure the trench. The maximum depth which will be measured for payment shall be from the top of the rock formation to the specified subgrade for the pipe embedment material. The maximum width of trench to be considered for payment shall be as follows:

1. Below outside top of pipe, maximum width shall be the outside diameter of the pipe bell plus 12 inches but not less than 30 inches.
2. From outside top of pipe to top of rock formation, maximum width shall be computed based on a 5 on 1 slope vertically for the sides of the trench.

The volume will be computed by the Engineer using the method of average end areas based on measurements of rock actually removed subject to the maximum limits specified.

2.06.05.06 Basis of Payment

Rock excavation shall be paid for at the contract price per cubic yard, which price shall be payment in full for completing all work as specified herein including removal and disposal of the rock.

If a unit price has not been established in the Proposal, payment to the Contractor will be based on the contract provisions for extra work.

2.06.06 Dewatering

The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water including water or sewage from exposed sewers or water mains, from all excavations and trenches, or other parts of the work. Each excavation shall be kept dry during the preparation of the subgrade and continually thereafter until the structure to be built or the installation of the pipe line is completed to such extent that no damage from hydrostatic pressure, flotation, or other cause will result.

Where work is in soil containing an excessive amount of water, the Contractor shall provide, install, and maintain suitable well points or wells connected to manifolds or reliable pumping equipment, or other suitable dewatering methods, and shall so operate the dewatering system to insure proper construction of the work. If the Contractor elects to use a trench underdrain or similar dewatering system, he shall receive prior approval of the Engineer as to location and installation methods for this type of system. The Contractor shall make every effort to prevent sand, sediment, or debris from entering any existing pipe line or conduit which he may use for drainage purposes. The repair or cleaning of drainage structures made necessary by the Contractor's operations shall be performed by and at the expense of the Contractor. Arrangements for discharge of ground water into any public sewer shall be previously approved by the Engineer and Owner of the receiving sewer.

Dewatering including the use of stone or gravel for dewatering purposes when required will not be paid for separately but shall be included in the contract price for the major items of work.

The Contractor shall limit his dewatering operation to the minimum time and depth required for construction. The Contractor will be required to furnish temporary water service and/or provide potable water at the direction of the Engineer to property owners whose wells are affected by the dewatering operations.

2.07 **BORING & JACKING**

2.07.01 General

Where so specified on the drawings, railroad tracks, streets, or other obstructions to be crossed by utilities shall be bored and/or jacked as hereinafter specified. These specifications describe the general method of conducting the boring and jacking operations and set forth minimum conditions. The location and details of the proposed installation will be shown on the Drawings.

Unless otherwise specified, the Contractor shall be responsible for obtaining any permits required for the work under the right-of-way, or other facility to be crossed, and shall carry out the details of his work in a manner that will fully meet the requirements of the authority having jurisdiction over the facility affected. No interruption of traffic will be permitted, and the Contractor shall take all precautions to that effect.

2.07.02 Casing Method

When the casing method is specified, a casing pipe shall be jacked into place and a carrier pipe shall then be installed in the casing pipe. The casing pipe shall be jacked into place by approved methods that will provide accurate alignment and grade and that will allow the carrier pipe to be installed within the casing at the specified alignment and grade.

The carrier pipe shall be joined together to form a continuous run through the casing. It shall be supported on wooden shoes or blocks which shall be securely fastened to each end of each piece of pipe or as recommended by the pipe manufacturer. The carrier pipe shall then be drawn or shoved through the casing. Junction with pipes of other materials at each end shall be made as shown on the Drawings. After the pipe has been inspected and accepted, the annular space between the pipe and the casing shall be filled with materials approved by the Owner, such as, peastone or flowable fill. After the casing has been filled, the ends of the casing shall be sealed as shown on the Drawings or in the Specifications.

2.07.03 Jacking Pipe Method

When specified or indicated on the Drawings, the pipe to be jacked shall also be utilized as the carrier pipe. The pipe shall be jacked into place by approved methods that will provide accurate alignment and grade. Excavation shall be performed ahead of the pipe by working inside the pipe or shall be performed by boring with approved equipment suitable for the intended use.

2.07.04 Measurement & Payment

The length of pipe to be measured for payment shall be the actual length of casing or jacking pipe actually jacked or pushed into place. When additional casing is specified or authorized, but is not actually jacked in place, the cost for furnishing and placing such additional casing will be paid for separately. If a unit price has not been established in the Proposal, payment will be based on the contract provisions for extra work. No additional payment will be made where the Contractor jacks or installs additional casing not shown on the Drawings or authorized by the Engineer.

The contract price per lineal foot for furnishing and jacking the pipe, or casing, where the casing method is used shall be payment in full for completing the work as specified herein including the necessary jacking pits and connections to pipes of other materials.

The carrier pipe shall be paid at the contract price for watermain, storm sewer, sanitary sewer, or force main per unit prices shown on the proposal and shall be payment in full for furnishing and installing the carrier pipe inside the casing.

2.08 SUBGRADE

The subgrade for pipe and/or structures shall be firm, dense, and thoroughly compacted and consolidated, free from mud and muck, and sufficiently stable to remain firm and intact under the feet of the workmen.

2.08.01 Unstable Foundation

When the soil beneath the normal pipe embedment area is soft or unstable, even with adequate dewatering, or in the opinion of the Engineer cannot support the pipe or utility, further depth shall be excavated and refilled to the proposed grade with MDOT Class II granular material (for plastic pipe the material must comply with ASTM D2321) compacted in twelve (12) inch layers as specified in Section 2.09.05, or other approved means shall be employed to assure a firm foundation for the utility. The volume of unstable foundation removed and replaced with approved materials for which payment will be allowed shall be determined in cubic yards unless otherwise specified on the Drawing or in the proposal. Said volume to be computed by assuming that the cross section area of the unstable foundation takes the form of a trapezoid as shown on the Standard Detail for Unstable Soil Removal for Utility.

Payment for removal and replacement of unstable foundation will be paid under the contract provisions for extra work, unless specific Proposal items have been provided, in which case, the unit price bid shall be payment in full for performing the work as specified. If the soil in the bottom of trench is soft due to excessive amounts of ground water, and/or the Contractor's method of operation, stabilization of the trench bottom shall be at the Contractor's expense.

2.08.02 Special Foundations

Where the subgrade at the bottom of the excavation consists of soil which is unstable or yielding to such a degree that, in the opinion of the Engineer, it cannot properly support the pipe or structure, the Contractor shall construct such additional foundation or reinforcement of the subgrade as may be specified, such as timber piling, geotextiles, or other means as approved by the Engineer to provide a proper foundation.

The construction of special foundations will be paid for separately based on the contract provisions for extra work, unless specific Proposal items have been provided, in which case the unit price bid shall be payment in full for performing the work as specified.

2.09 PIPE EMBEDMENT

2.09.01 General

Pipe embedment shall include the furnishing and placing of approved materials as specified or as directed from 4 inches under the outside bottom of the pipe to 12

inches over the outside top of the pipe. Various classes of pipe embedment may be specified or shown on the Drawings or Standard details in which case the limits of the various types will also be specified.

2.09.02 Flexible Pipe Embedment

Flexible pipe is any pipe having a pipe stiffness of less than 60 psi. as defined under the requirements of ASTM Designation D2412 (this includes all plastic pipe except Composite (Truss) pipe, and may include corrugated metal pipe, ductile iron pipe, and steel pipe, depending on pipe diameter and wall thickness).

Pipe embedment for flexible pipe shall be Class B as shown in the attached standard details. For pipes less than fifteen (15) inches in diameter, bedding material meeting the requirements of Section 902.07 of the MDOT 2012 Standard Specifications for Construction for granular materials Class II, modified to 100% passing a 1" sieve shall be used. If stone is used for bedding, it shall meet the requirements of ASTM D2321 (Table 1 – Embedment Classes for Plastic Pipe) for Class 1A crushed stone. An Engineer approved geotextile filter fabric shall be placed around all areas where Class 1A crushed stone pipe embedment is used as shown on the standard details. Transition zones between crushed stone and sand embedment shall be separated by a geotextile fabric. For pipes fifteen (15) inches in diameter and larger, bedding material meeting the requirements of Section 902.07 of the MDOT 2012 Standard Specifications for Construction for granular materials Class II, modified to 100% passing a 1 sieve shall be used.

2.09.03 Class B Pipe Embedment

Unless otherwise specified or shown on the Drawings, all pipe embedment shall be Class B pipe embedment as shown on the Standard details. When the soil in the bottom of the trench at pipe subgrade meets all the requirements for Granular Material Class II as specified in the MDOT 2012 Standard Specifications for Construction, Section 902.07 and in the opinion of the Engineer will provide suitable bedding for the pipe, such soil may be utilized as bedding material and prepared to receive the pipe as specified without undercutting and subsequent replacement.

Plastic pipe embedment shall comply with ASTM D2321.

2.09.04 Special Pipe Embedment

Various types of special pipe embedment may be specified or shown on the Drawings in locations where special conditions require their use. The Contractor shall perform all the work of constructing special pipe embedment where specified.

2.09.05 Placing Pipe Embedment Material

Pipe embedment material shall be placed in the bottom of the trench and shaped by hand to provide a firm and uniform bearing for the barrel of the pipe with additional shaping to accommodate the bells on bell and spigot pipe. After each pipe has been

graded, aligned, and placed in final position on the bedding material and jointing is complete, additional embedment material shall be carefully placed and compacted under and around each side of the pipe and over the pipe until it is completely covered by 12 inches of embedment material. Said material shall be distributed along both sides of the pipe uniformly and simultaneously to prevent lateral displacement of the pipe. All granular embedment material shall be compacted to 95% of maximum unit weight in accordance with MDOT procedures.

All the work of placing pipe embedment shall be considered an integral part of installing the pipe and shall be completed immediately after the pipe is laid to the correct alignment and grade.

2.09.06 Basis of Payment

All the work of furnishing and/or placing pipe embedment material as specified shall be included in the contract items for the proposed work as follows:

2.09.06.01 Class B Pipe Embedment

When a contract item has been provided in the proposal for special backfill, payment will be made under this item as specified in Paragraph 2.10 for approved granular material obtained off the site. When no specific item for special backfill has been provided, this work shall be included in the major work items.

2.09.06.02 Special Pipe Embedment

When one or more contract items have been provided in the Proposal for special pipe embedment, payment to the Contractor will be based on the prices bid for the respective items. When no specific items have been provided in the Proposal, the cost for completing this work as specified shall be included in the major work items except for authorized extra work in which case the contract provisions for extra work shall apply.

2.10 BACKFILLING ABOVE PIPE EMBEDMENT

2.10.01 General

All backfill material shall be free from cinders, ashes, refuse, sod, organic material, boulders, or rocks larger than 3 inches in diameter, frozen material or other material which in the opinion of the Engineer is unsuitable. The soil excavated from the trenches shall be used for backfilling when it is classified as suitable by the Engineer. If all or a portion of the excavated material is classified as unsuitable for backfilling, the Contractor shall remove and dispose of the unsuitable material and shall furnish and place granular material meeting the requirements of Section 902.07 of the MDOT 2012 Standard Specifications for Construction for Granular Material Class II.

All backfilling and compaction shall be performed by the Contractor using methods and equipment approved by the Engineer.

2.10.02 Trenches Requiring Compacted Granular Backfill

Trenches and excavations in the following locations shall be backfilled with approved granular material meeting the requirements of Section 902.07 of the MDOT 2012 Standard Specifications for Construction for Granular Material Class II:

- a. Improved areas, including drives, sidewalks, parking areas, around structures, etc.
- b. Within the limits of the roadway (within a 1 on 1 slope beginning two (2) feet from the edge of pavement or back of curb towards the right-of-way line).
- c. Within the limits of future improvements (shown on Drawings).
- d. Within limits specified on Drawings.
- e. All sanitary sewer lateral trenches within the limits of the right-of-way.

All backfill within these areas shall be placed in layers not exceeding twelve (12) inches thick, and shall be compacted to 95% of maximum unit weight in accordance with MDOT procedures. Tests for compaction will be made by the Engineer or other representative designated by the Engineer at no cost to the Contractor. When tests indicate a density which is less than that required, the methods or equipment being used shall be modified to obtain the density specified, and the section in question shall be recompacted until the required density is obtained. The cost of retesting shall be borne by the Contractor.

2.10.03 Trenches Not Requiring Compacted Granular Backfill

Where not otherwise specified or directed, backfilling above the pipe embedment shall be made with material which is originally excavated, which is suitable. Backfill materials shall be consolidated by mechanical equipment working longitudinally in the trench, or by other approved methods, so as to be free of large voids with any excess material mounded over the trench or removed as directed by the Engineer. The trench shall be graded to a reasonable uniformity and left in a neat condition.

2.10.04 Basis of Payment

Payment for backfilling including compaction shall be made as follows:

- a. When a contract item has been provided in the Proposal for special backfill, payment will be made under this item as specified in Paragraph 2.11 for approved granular material obtained off the site.

- b. When no specific item for special backfill has been provided in the Proposal, this work shall be included in the major items of work.

2.11 SPECIAL BACKFILL - MEASUREMENT AND PAYMENT

2.11.01 Measurement

When an item has been provided in the Proposal for special backfill, approved granular material obtained off the site which is required by these specifications or authorized by the Engineer shall be included in this item. Special backfill shall be measured compacted in place. The Contractor shall furnish a delivery ticket for each truck load at the time the material is delivered to the project. The delivery ticket shall be prepared at least in duplicate, one copy of which shall be furnished to the Engineer or his representative, the other copy to be retained in the Contractor's file. No payment shall be made for special backfill unless the individual truck delivery tickets are furnished in this manner. The Engineer will use the delivery tickets when calculating the compacted in place quantity.

2.11.02 Payment

The Proposal unit price per cubic yard for special backfill shall be payment in full for furnishing, placing, and compacting the special backfill and for disposing of the material excavated from the trench as directed and in accordance with the Drawings and Specifications.

Stone used specifically for dewatering procedures shall not be classified as special backfill and no specific payment will be made therefor.

2.12 DISPOSAL OF EXCESS EXCAVATION

All excavated material in excess of that needed for backfill or that material classified as unsuitable by the Engineer shall be disposed of by the Contractor. However, the Engineer reserves the right to direct the Contractor to haul all or a portion of the material not required for backfilling to an area designated by the Engineer which is not more than 1,000 feet outside the project and which is reasonably accessible. This work, when directed, shall be performed at no additional cost to the Owner.

2.13 LIMITATIONS ON OPERATIONS

The Contractor shall at all times conduct his work so that there is a minimum of inconvenience to the residents and businesses in the vicinity of this project. To this end, he shall complete his backfill and remove all debris and unsuitable backfill to a point as close to the actual pipe installation as is practical and keep the area where the pipe construction and backfill has been completed in a neat condition. Open excavations shall be protected by signs, lights, barricades, and/or fence at all times when work is not actually taking place at that excavation. The placement of excavated earth along the line of the trench shall be controlled by the public's use of the street or right-of-way and shall always be confined to approved limits.

Not more than 300 consecutive feet of street shall be closed at one time, and vehicular traffic through any street shall not be stopped for a period longer than two weeks without the written permission of the Engineer. Not more than one cross street shall be closed to vehicular traffic at the same time except by permission of the Engineer. Contractor shall maintain access for emergency vehicles at all times.

2.14 SOIL EROSION AND SEDIMENTATION CONTROL

The Contractor shall conduct his operations in such a manner that all soil is confined within the project limits and prevented from entering storm sewers, water courses, rivers, lakes, reservoirs, or wetlands.

The Contractor shall place a filter or barrier composed of straw, stone or other approved material around all catch basins or other inlets to the storm sewer or drainage courses to prevent sedimentation in these structures. After the construction operations are completed, the Contractor shall remove these filters and clean all the sediment and debris from the catch basins, ditches or other storm sewer structures.

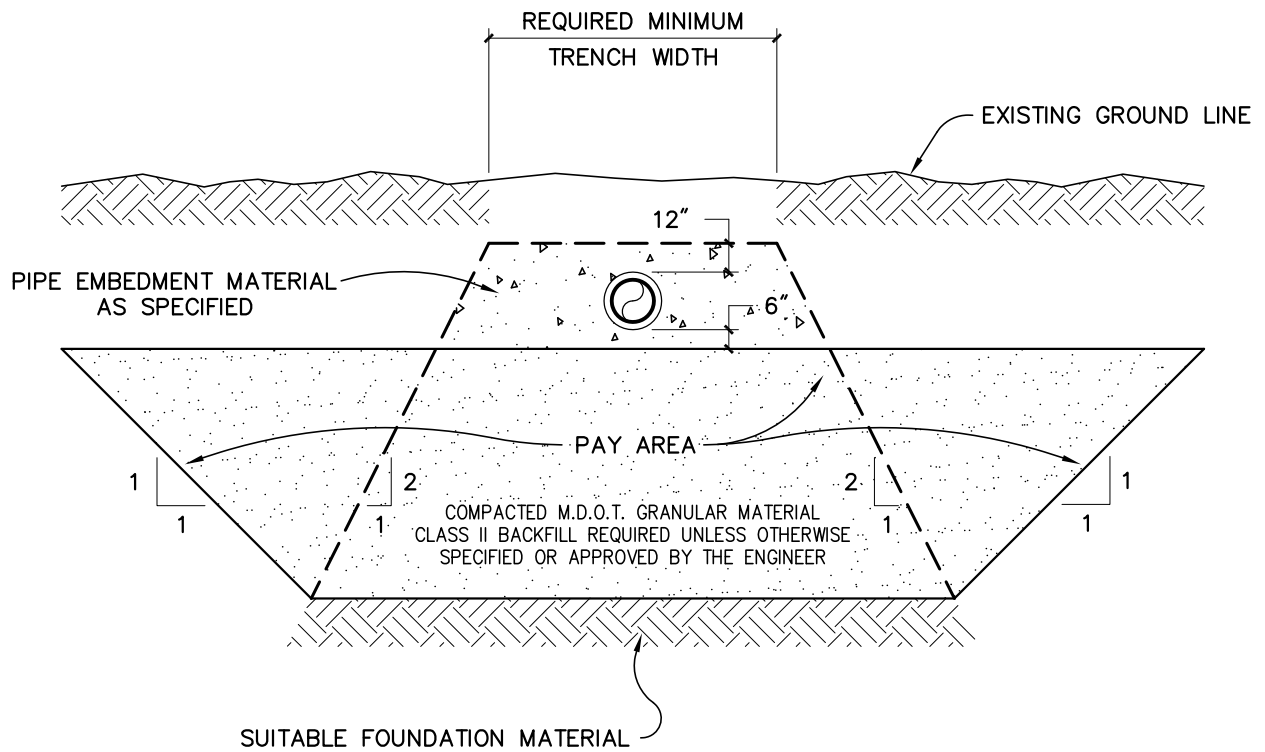
Soil erosion and sedimentation control measures if indicated on the Drawings are considered as minimum requirements and are not to be considered as complete and all-inclusive. Additional control measures as may be required due to circumstances or conditions at the time of construction or as directed by the Engineer, or the designated Soil Erosion Control agency, shall be placed as required to insure conformance with the Part 91 of PA 451 of 1994. Deviations from or additions to the erosion control measures shown on the Drawings shall be subject to the approval of the Engineer or enforcing agency.

The Contractor is responsible to have a certified storm water operator and complete all such reports as required by regulatory agencies as it relates to storm water and soil erosion and sedimentation control.

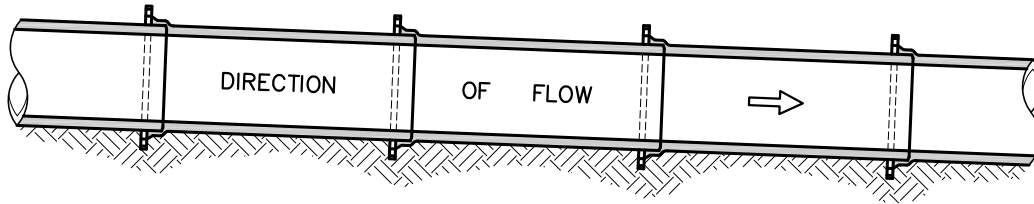
The cost of this work and other control measures which may be required or directed by the Engineer shall be included in the major work items to the cost of the project unless specific items have been provided in the proposal.

2.15 STREAM CROSSING

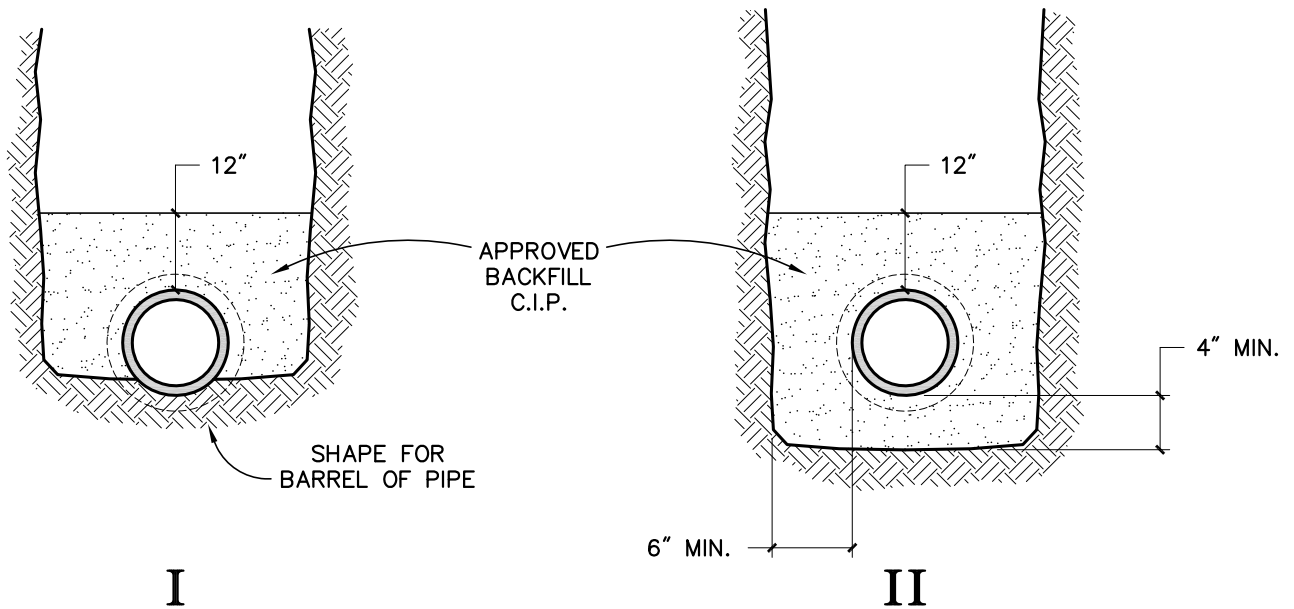
The rules and regulations of Act 451, shall govern all streams, wetland and river crossings.



UNSTABLE SOIL REMOVAL FOR UTILITY



EXCAVATION FOR BELLS



CLASS B PIPE EMBEDMENT

NOTES

1. ALL BACKFILL INDICATED SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH M.D.O.T. PROCEDURES.
2. METHOD I SHALL BE USED IN AREAS OF UNCONSOLIDATED SOILS. (e.g. SAND, GRAVEL)
3. METHOD II SHALL BE USED IN AREAS OF CONSOLIDATED SOILS (e.g. CLAY, HARDPAN, ROCK)

SECTION 3

SPECIFICATIONS FOR SURFACE RESTORATION

3.01 DESCRIPTION OF WORK

All areas disturbed by construction operations shall be restored to the original condition thereof as determined by the Engineer using information from drawings, surveys, and photographs or video tapes when available.

The work shall be performed in accordance with the specifications and drawings, the MDOT 2012 Standard Specifications for Construction and the following specifications.

3.02 GRADING

All streets, walks, and other improved surfaces disturbed by construction operations shall be replaced to uniform lines and grades established by the Engineer. The finish grade line will be established within three (3) inches of the existing ground profile shown on the drawings unless a proposed grade is shown which indicates otherwise.

The Contractor shall perform all grading, compacting, shaping, and related work required to prepare the subgrade to the satisfaction of the Engineer. The cost for preparing the subgrade as specified herein shall be incidental to the cost of the project, and no specific payment will be made therefor.

3.03 REPLACEMENT OF AGGREGATE STREETS AND DRIVEWAYS

Aggregate streets shall be constructed in accordance with the typical section shown on the drawings and shall consist of a minimum of six (6) inches of aggregate surface course as specified below.

3.03.01 Materials

Aggregate surface course shall meet the requirements specified in Section 306 of the MDOT 2012 Standard Specifications for Construction. All material shall be taken from stockpiles that have recently been tested by the county road commission, MDOT, or an independent laboratory.

Aggregate material that is removed from roadways and driveways shall not be reused but shall be replaced with an equivalent depth of newly compacted aggregate conforming to MDOT 22A.

3.03.02 Construction Methods

Placement of aggregate surface course shall be in accordance with the applicable portions of Section 306 of the MDOT 2012 Standard Specifications for Construction.

3.03.03 Aggregate Driveways and Field Drives

Aggregate driveways and field drives shall be replaced with a minimum of six (6) inches of MDOT 22A aggregate compacted in place.

3.03.04 Culverts

Culverts that are removed may be reused, if they are in sound condition. If damaged, the culverts shall be replaced with ASTM C76 Class III concrete pipe or equivalent pipe. The cost of removing and replacing the culverts shall be considered part of the major items of work found in the Proposal unless otherwise specified.

3.03.05 Measurement & Payment

Except as specified in Section 3.04, all replacement of aggregate streets and driveways shall be measured in lineal feet along the centerline of the main line utility being constructed and shall include all final grading and shaping required. The width of gravel replacement will not be considered for payment unless specific items to that end have been provided in the Proposal.

3.04 REPLACEMENT OF SURFACE AGGREGATE IN SPECIFIED AREAS

The Contractor shall furnish and place additional aggregate conforming to MDOT Specifications in locations determined by the Engineer for the replacement of aggregate shoulders, drives, and streets where linear measurement (as specified in Section 3.03.05) is impractical, where only part of an existing aggregate surface requires replacement, or where field conditions require replacement of the aggregate to a greater or lesser thickness than six (6) inches as determined by the Engineer.

Aggregate shoulders disturbed by the Contractor's operations shall be restored or replaced to their original width and thickness with aggregate conforming to the requirements of Section 902 of the MDOT 2012 Standard Specifications for Construction for 22A or 23A aggregate as specified.

3.04.01 Measurement & Payment

Surface aggregate shall be measured in tons or cubic yards or as specified in the Proposal. The Contractor shall furnish a truck delivery ticket for each load when it is delivered to the project which clearly states the quantity in tons or cubic yards, date of delivery, and the specific location used on the project. The price per ton or

cubic yard as bid in the Proposal shall be payment in full for furnishing, placing, compacting, and grading the surface aggregate as directed by the Engineer.

Measurement of shoulder restoration shall be in lineal feet along the centerline of the main line utility being constructed directly below the shoulder or in square yards according to the Proposal Item. If there is no Proposal Item for shoulder restoration, it shall be considered incidental to the project, and no separate payment shall be made therefor.

3.05 REPLACEMENT OF HOT MIX ASPHALT (HMA) STREETS

Hot Mix Asphalt (HMA) streets shall be constructed in accordance with the typical section shown on the drawings and, unless otherwise specified, shall meet the requirements of 13A in Section 501 of the MDOT 2012 Standard Specifications for Construction placed at 330 lbs./sq.yd. minimum (165 lbs./sq. yd. leveling, 165 lbs./sq. yd. surface) over six (6) inches of compacted 22A aggregate.

3.05.01 Materials

Aggregate base for HMA streets shall meet the requirements of 22A in Section 902 of the MDOT 2012 Standard Specifications for Construction. HMA for base, leveling, and surface courses shall be as specified, and shall conform to the requirements of Section 501 of the MDOT 2012 Standard Specifications for Construction. Materials for bond coat shall be as specified in Section 501 of the MDOT 2012 Standard Specifications for Construction.

3.05.02 Construction Methods

Aggregate base for HMA streets shall be placed in accordance with Section 302 of the MDOT 2012 Standard Specifications for Construction.

HMA mixtures shall be placed in accordance with the applicable portions of Section 501 of the MDOT 2012 Standard Specifications for Construction. For replacement of valley gutters, pavers shall be equipped with an extension to the vibrating screed adjustable to fit the typical section shown on the drawings.

The Contractor shall not place the aggregate base course until the subgrade has been approved by the Engineer. The Contractor shall not place the first HMA course and each successive HMA course until the underlying aggregate or HMA course has been approved by the Engineer.

3.05.03 Saw Cutting

HMA street, driveway and spillway replacement shall include saw cutting the asphalt pavement at the edge of the trench for the full depth of the pavement. Payment for saw cutting shall be included in the pay items for street replacement and driveway replacement unless otherwise specified.

3.05.04 Measurement & Payment

HMA street replacement shall be measured in lineal feet along the centerline of the main line utility being constructed. The width of the street replaced will not be considered for payment, and payment will not be made for any length of street replaced beyond that which is directly above the pipe installed. HMA street replacement may also be measured in square yards or tons as specified in the Proposal.

Aggregate base for HMA shall be considered part of the HMA items, and no separate payment will be made therefor unless a specific Pay Item for aggregate base is listed in the Proposal.

The cost of HMA bond coat shall be considered part of the bituminous paving.

3.06 REPLACEMENT OF AGGREGATE SURFACE OR HOT MIX ASPHALT (HMA) PAVED AREAS (PATCHING)

When the drawings and specifications do not require that the Contractor replace an entire street, the surface that is disturbed shall be replaced as specified herein.

3.06.01 Materials

Surfacing aggregate and aggregate base for HMA pavement shall conform to the requirements for 22A aggregate in Section 902 of the MDOT 2012 Standard Specifications for Construction.

Unless otherwise specified on the drawings or in the specifications, HMA 13A, conforming to the requirements in Section 501 of the MDOT 2012 Standard Specifications for Construction, shall be used for HMA patches. When existing seal coat pavement is disturbed, a HMA patch shall be placed.

3.06.02 Construction Methods

When an aggregate surface is disturbed by the Contractor's operations, the edges of the existing aggregate surface shall be trimmed and shall be free of all foreign material before the new aggregate is placed. The subgrade shall be graded and compacted to the proper lines and grades to match the adjacent surface. The aggregate shall be placed in layers not to exceed six (6) inches and shall be compacted to 98% of its maximum unit weight in accordance with MDOT procedures.

When a HMA surface is disturbed by the Contractor's operations, that surface shall be replaced at a thickness equal to the thickness of the existing pavement adjacent to the trench but not less than one and one-half (1-1/2) inches thick. If existing pavement is greater than two (2) inches in thickness, the replacement pavement shall be placed in two or more layers. Aggregate base shall be replaced at a thickness equal to the adjacent aggregate base (minimum six inches) as specified

for aggregate patches above. After placement of the aggregate base but prior to its final shaping and compaction, the edges of the existing pavement shall be trimmed to straight lines a minimum of one (1) foot from the edge of the trench to permit a straight and uniform surface between the existing and new aggregate base. Trimming of the existing pavement shall be by sawcutting or other suitable means approved by the Engineer.

All bituminous valley gutter located in disturbed HMA surface areas shall be replaced by the Contractor. Replacement of valley gutter in disturbed HMA areas shall be considered part of the HMA replacement.

3.06.03 Measurement & Payment

Replacement of aggregate surface shall be measured in lineal feet along the centerline of the main utility line being constructed. HMA paved areas (patching) shall be measured in square feet or square yards of actual aggregate surface and HMA patching replaced. Payment shall be made according to the Proposal Item for the type of surface to be replaced and shall include all trimming, removal, shaping, compacting, aggregate base, and HMA or aggregate surface.

3.07 REPLACEMENT OF CONCRETE IMPROVEMENTS

The Contractor shall replace all concrete sidewalk, drives, curb and gutter, and pavement removed during the installation of the utility or broken by the Contractor.

3.07.01 Materials

Concrete shall meet the requirements for Grade S2 Concrete as specified in Section 701 of the MDOT 2012 Standard Specifications for Construction. Other materials shall meet the requirements of the applicable portions of the MDOT 2012 Standard Specifications for Construction.

3.07.02 Construction Methods

The thickness of the concrete shall be the same as the concrete adjacent to the trench but shall not be less than four (4) inches. The alignment and grade and the contour and finish of the surface shall be the same as the concrete adjacent to the trench unless otherwise directed by the Engineer.

Pavements, walks, and drives shall be sawcut at the edges of the trench or removed to existing joints. The depth of the saw cut shall not be less than the full depth of the concrete.

The forms and joints and the methods of placing, curing, and protection shall be consistent with standard practice and shall meet all the requirements of the MDOT 2012 Standard Specifications for Construction for the various items.

3.07.03 Concrete Curb & Gutter (Header Curb, 18 inch, 24 inch, and 30 inch)

Concrete curb and gutter shall match the existing curb and contain two No. 4 steel reinforcing bars. Concrete grade shall be S2. Payment shall be made in lineal feet of curb and gutter replaced. All joints shall be saw cut. Curb and gutter shall be placed in accordance with Section 802 of the MDOT 2012 Standard Specifications for Construction.

3.07.04 Sidewalk and Concrete Driveways

Sidewalk and concrete driveways shall be placed in accordance with Section 801 & 803 of the MDOT 2012 Standard Specifications for Construction. Concrete shall be air entrained. All 6-inch thick concrete sidewalks shall include 6x6-W2.9xW2.9 woven wire steel mesh.

3.07.05 Measurement & Payment

Concrete walks, pavement, and drives will be measured in square feet or square yards of actual concrete surface replaced. Concrete curb and gutter shall be considered part of the construction of the utility line unless a specific item is provided in the Proposal for its replacement. If so specified, the concrete curb and gutter or valley gutter replacement shall be paid for in lineal feet measured along the face of a header curb or along the flow line of gutter when constructed as part of the curb. Concrete that has been broken by the Contractor outside the limits of the trench will not be considered for payment unless otherwise specified.

3.08 REPLACEMENT OF LAWN IMPROVEMENTS

3.08.01 Underground Sprinkling Equipment

Underground sprinkling lines, valves & heads, and water system curb stops and boxes are specifically excluded from the pay items. The Contractor shall take the necessary precautions to preserve this equipment during construction. Any underground sprinkling equipment disturbed by the Contractor shall be replaced at the Contractor's expense.

All underground sprinkling equipment shall be replaced in a timely fashion so as to minimize damage to the lawn areas. The Contractor will be responsible for any lawn damage caused by delayed replacement of the sprinkling equipment.

3.08.02 Fences

Fences, which are removed for construction, shall be replaced with equal or better type and size. The cost of removing and replacing the fences shall be considered part of the major items of work found in the Proposal unless otherwise specified.

3.08.03 Ornamental Shrubbery and Bushes

Ornamental shrubbery and bushes that are removed during construction shall be replaced in kind and size in a vigorous growing condition. Replacement costs shall be considered part of the major items of work found in the Proposal unless otherwise specified. All shrubs and bushes replaced shall be insured by a one-(1) year warranty commencing from the date of installation.

3.09 TURF RESTORATION

All areas of established turf shall be replaced as nearly as possible to their original condition.

3.09.01 Topsoil

Topsoil shall be placed at a minimum depth of four (4) inches over all areas disturbed by the Contractor's operations. The subgrade shall be graded to conform to the adjacent contours and shall be approved by the Engineer before placing topsoil. The topsoil shall then be placed in accordance with Section 816 of the MDOT 2012 Standard Specifications for Construction.

The soil shall be dark, organic natural surface soil, exclusive of muck or peat, suitable for the establishment of grass or other vegetable growth.

3.09.02 Fertilizer

After the topsoil has been placed, it shall be fertilized with a starter fertilizer at the rate of two (2) pounds per 1,000 square feet, in proportions of 16% nitrogen, 32% phosphoric acid, and 3% potash, or as directed by the Engineer. Fertilizer shall be applied just before the placing of the seed to retain its full benefit before unfavorable weather can cause deterioration.

3.09.03 Seeding

All previously seeded lawn areas shall be reseeded with Class A seed. Other areas disturbed by the Contractor's operations shall be seeded with Roadside seed. Temporary seed shall be placed for erosion control or temporary soil stabilization of stockpile areas. Seed mixtures, application rates, and methods shall be in accordance with Section 816 of the MDOT 2012 Standard Specifications for Construction.

Seasonal limitations on seeding in Section 816 of the MDOT 2012 Standard Specifications for Construction are waived. The Contractor shall repeat the seeding procedure as often as necessary to produce a close stand of weed-free grass.

3.09.04 Mulching

All seeded areas shall be mulched immediately following the seeding. Mulching shall be applied to all newly seeded areas at a rate of two (2) tons per acre in accordance with the requirements of Section 816 of the MDOT 2012 Standard Specifications for Construction, or as directed by the Engineer. Separate loose straw mulch is prohibited on residential lawn areas.

3.09.05 Hydro Application

All fertilizing, seeding and mulching shall be applied by an approved Hydro seeding and mulching process unless separate applications as heretofore described are approved by the Engineer.

3.09.06 Erosion Control

All erosion control measures shall be installed and maintained in accordance with the Soil Erosion and Sedimentation Control plan and permit. Unless otherwise specified, mulch blanket and high velocity blanket shall be placed in accordance with Section 816 of the MDOT 2012 Standard Specifications for Construction.

3.09.07 Sod

Sod shall be placed only where directed by the Engineer or as noted on the drawings or specifications.

All sod shall be nursery grown, conforming to MDOT requirements for Class A. Sod shall be approved by the Engineer before placing and shall be placed in accordance with the requirements of Section 816 of the MDOT 2012 Standard Specifications for Construction. The base on which the sod is to be laid shall consist of a minimum of four (4) inches of topsoil placed, watered and fertilized in the same manner required for seeding.

3.09.08 Measurement & Payment

Turf restoration will be measured in lineal feet along the centerline of the main utility line being constructed. Payment will be made according to the appropriate item for seeding or sod. Topsoil, fertilizer, mulch and erosion control shall be incidental to these items unless specific proposal items are provided. Any area disturbed by the Contractor's operations outside of the limits of the trench shall be restored by the Contractor to its original condition but will not be considered for payment.

3.10 SCHEDULING OF RESTORATION WORK

Initial restoration (rough grading, temporary aggregate if necessary, removal of excess excavated material and debris) shall be done each day to the extent necessary to allow the movement of local traffic and permit access to all properties

for emergency vehicles. Maintenance of streets, drives, sidewalks, etc. shall be the responsibility of the Contractor (including dust control, grading, stabilization, etc.) until the restoration is complete and has been accepted by the Engineer.

Restoration of each street or section of utility line shall follow the construction in a timely fashion so as to minimize inconvenience to the adjacent property owners and the general public. The manner in which this restoration is done by the Contractor will be a determining factor in the approval by the Engineer of staking requests and partial payment requests.

3.11 LIMITS FOR MEASUREMENT & PAYMENT FOR SURFACE RESTORATION

All work necessary to return the area of construction operations to its original condition, other than the items listed in the Proposal, shall be considered incidental to the construction, and no specific payment will be made therefor.

For surface restoration items measured in lineal feet, payment will be based upon the type of surface that is directly above the utility. Only one surface restoration item shall be paid for each lineal foot of utility. Additional restoration on either side of the utility to the limits of construction will be done by the Contractor at no additional cost to the Owner. For example, when the utility is directly under the bituminous street, only the item of bituminous street restoration will be paid. Topsoil, seed, fertilizer and mulch required to restore the area adjacent to the street will not be paid for separately.

Payment will be made for the proposal items only. All of the work specified above and indicated on the drawings will be considered included in the unit prices.

SECTION 6

SPECIFICATIONS FOR SANITARY SEWER

6.01 DESCRIPTION OF WORK

The work shall consist of furnishing and installing sanitary sewer pipe of the specified size or sizes in a trench and shall include the construction of manholes, lateral connections to the abutting property and other appurtenant work. Excavating, trenching and backfilling shall be as specified in Section 2.

The work shall be performed in accordance with the specifications and drawings, the MDOT 2012 Standard Specifications for Construction and the following specifications.

6.02 MATERIALS

All materials furnished by the Contractor shall conform to the specifications which follow. Where reference specifications are used, they shall be considered as referring to the current edition or latest issue. Certified test reports for strength from the manufacturer shall be submitted to the Engineer when the pipe is delivered to the site.

6.02.01 Sewer Pipe

All sewer pipe shall be of the materials and strengths shown on the drawings or as specified.

6.02.01.01 Clay Sewer Pipe

Clay sewer pipe may be used only when specifically approved by the Owner and Engineer. If approved, clay sewer pipe shall meet the following:

Extra strength clay sewer pipe shall conform to the requirements of ASTM Designation C700.

Joints for clay sewer pipe shall be of resilient materials conforming to the requirements of ASTM Designation C425.

6.02.01.02 Concrete Sewer Pipe (12" Diameter and Larger Only)

Concrete sewer pipe may be used only when specifically approved by the Owner and Engineer. If approved, concrete sewer pipe shall meet the following:

Non-reinforced concrete pipe, fittings, and accessories shall conform to the requirements of ASTM Designation C14, Class 3.

Reinforced concrete sewer pipe shall conform to the requirements of the current specifications of the ASTM for reinforced concrete culvert, storm drain and sewer pipe, Designation C76 for the various classes specified.

Joints for concrete sewer pipe shall be premium rubber joints conforming to the requirements of ASTM Designation C443, except the infiltration and exfiltration allowance shall be as specified herein.

6.02.01.03 Polyvinyl Chloride (PVC) Solid-Wall Pipe

Polyvinyl chloride (PVC) solid-wall pipe less than 18 inches in diameter shall conform to the requirements of ASTM Designation D3034, with a standard dimension ratio of 35 (SDR-35).

Polyvinyl chloride (PVC) solid-wall pipe 18 inches in diameter and larger shall conform to the requirements of ASTM Designation F679, with a standard dimension ratio of 35 (SDR-35).

Extra strength pipe shall conform to the requirements of ASTM Designation D3034, with a standard dimension ratio of 26 (SDR-26). Extra strength pipe shall be required for installations over 18 feet deep based on the average depth of the manholes for each section of pipe.

Joints shall be flexible elastomeric sealed type joint in accordance with ASTM D3212.

6.02.01.04 Polyvinyl Chloride (PVC) Composite (Truss) Pipe

Polyvinyl Chloride (PVC) Composite (Truss) Pipe shall conform to the requirements of ASTM Designation D2680.

Joints shall be flexible elastomeric sealed type joint in accordance with ASTM D3212.

6.02.01.05 Profile Polyvinyl Chloride (PVC) Pipe

Profile polyvinyl chloride (PVC) pipe shall conform to the requirements of ASTM Designation D794. Pipe shall have a minimum pipe stiffness designation of "PS-46" or greater. If no specific pipe is specified in project specification, the Contractor shall use a closed profile pipe. All profile PVC pipe shall conform to the ASTM requirements specific for the specified pipe.

Joints shall be flexible elastomeric sealed type joint in accordance with ASTM D3212.

6.02.01.06 Ductile Iron Pipe

Ductile iron pipe shall conform to the requirements of AWWA C151 (ANSI

A21.51), and shall be Class 53, unless otherwise specified. All pipe and fittings shall have a cement mortar lining conforming to the requirements of AWWA C104 (ANSI A21.4), unless otherwise specified. Epoxy lining may be used when approved by the Engineer.

Joints shall be rubber gasket joints conforming to the requirements of AWWA C111 (ANSI A21.11). Joints on fittings shall be bolted mechanical joints.

When laying ductile iron pipe in corrosive type soils, the pipe shall be encased in a seamless polyethylene tube in accordance with AWWA C105 (ANSI A21.5) of eight (8) mills minimum thickness. The ends of adjacent sections of polyethylene tubing shall be overlapped a minimum of one (1) foot, and the joint taped or otherwise secured to prevent displacement during backfill operations.

6.02.02 Sanitary Sewer Laterals

All sewer laterals shall be extra strength pipe, and unless otherwise specified, may be of any material specified in Paragraph 6.02.01. Any specified bends or curves shall be smooth, long-radius type curves. No mitered or segmental type bends will be approved.

6.02.03 Wyes and Tees

Wyes and Tees may be cast fittings of the same material and joints as the main sewer, or may be an approved fabricated special fitting which provides a suitable connection for the lateral to the main sewer.

Details of special fittings and/or adapters for connecting laterals of a material different from the main sewer shall be approved by the Engineer before they are manufactured.

Wyes and Tees will be required as follows:

- 6" Wyes on main sewer of 8" or 10" diameter
- 6" Wyes or Tees on main sewer of 12" diameter or larger
- 6" Inserta-Tee, or approved equal, on main sewer of 24" diameter or larger.

6.02.04 Plugs and Stoppers

Plugs, stoppers or glued caps for plugging the ends of laterals or risers which are not extended shall make a water tight seal and shall be of such a design that they can be readily removed without damage to the pipe.

Plugs, stoppers or glued caps shall be installed at the connection point(s) to the existing sewer system to protect existing sewer lines from contamination. The plugs, stoppers or caps shall not be removed until the new system is approved by the Owner.

6.02.05 Cement Mortar

Mortar shall consist of one part Air Entraining Portland Cement, and two parts masonry sand. These proportions shall be measured by volume.

The sand and cement shall be mixed dry in a clean tight box until a mixture of uniform color is produced, after which water shall be added until the required consistency is obtained. Mortar shall be mixed only in such quantities as needed for immediate use. The retempering of mortar will not be permitted.

6.02.05.01 Cement

Air Entraining Portland Cement shall conform to the requirements for Type 1A of the MDOT 2012 Standard Specifications for Construction for Air Entraining Portland Cement, ASTM Designation C150.

6.02.05.02 Masonry Sand

Masonry Sand shall conform to the requirements of “Natural Sand, 2MS” of the MDOT 2012 Standard Specifications for Construction.

6.02.05.03 Water

Water for mixing mortar shall be obtained from the public water supply unless otherwise approved by the Engineer.

6.02.06 Concrete

Concrete for pipe encasement, special pipe embedment, manhole bases and similar items shall meet the requirements of the MDOT 2012 Standard Specifications for Construction for Grade S3 concrete. Grade S3 concrete shall have the strength of 3,000 psi at 28 days.

6.02.07 Manhole Materials

6.02.07.01 Adjusting Rings

Precast grade adjusting rings shall conform to the requirements of ASTM Designation C478.

6.02.07.02 Precast Units

Unless otherwise specified, all manholes shall be precast and water tight.

Precast reinforced concrete manhole risers and precast reinforced concrete manhole conical top sections shall conform to the requirements of ASTM C478, Precast Reinforced Concrete Manhole Sections. Bituminous waterproofing shall be applied to outer surface of manhole at a rate of one gallon per 100 square feet. Manholes shall be free of holidays and open pinholes.

Joints for precast sections shall be premium rubber, butyl rubber composition seals, "RAM-NEK", or approved equal.

6.02.07.03 Castings

Castings shall meet the requirements specified in the MDOT 2012 Standard Specifications for Construction Section 908. Manhole covers and rings and similar combinations of castings shall be machined to provide an even bearing.

Unless otherwise specified, manhole castings shall be provided with 24 inch openings and shall be East Jordan No. 1040 with Type A solid cover, or approved equal.

Where indicated on the plans, water-tight manhole covers shall be East Jordan No. 1040 WT, with Type A solid cover, or approved equal.

6.02.07.04 External Casting and Adjusting Ring Seals

The casting frame, adjusting rings and top section of all manholes shall be wrapped with a watertight seal joint encapsulation system with rubber backing to minimize infiltration into the manhole. Material shall be Infi-Shield External Uni-band Seal by Sealing Systems, Wrapid Seal by CANUSA-CPS, or approved equal. Installation shall follow manufacturer's recommendations.

6.02.07.05 Steel Reinforcement

Steel Reinforcement shall conform to the requirements for steel reinforcement of Section 905 of the MDOT 2012 Standard Specifications for Construction.

6.02.07.06 Flexible Manhole Connectors (Rubber Boots)

Flexible manhole connectors (also called rubber boots) shall be "Kor-N-Seal" by National Pollution Control Systems, Inc., "P.S.X." or "Press Wedge II" by Press Seal Gasket Corporation, "Lock Joint Flexible Manhole Sleeve" by Inter Pace Corporation, "A-LOK," "Z-LOK," or "QUIK-LOK" by A-LOK Products, Inc. or approved equal. Flexible manhole connectors shall conform to the requirements of ASTM Designation C923, Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

6.02.07.07 Manhole Steps

Unless otherwise specified, manhole steps shall be plastic coated steel steps conforming to the requirements of ASTM Designation C478, or approved equal, spaced at sixteen inches (16") on center.

6.02.07.08 Manholes with Corrosive Conditions

When shown on the drawings, or included in the proposal items, manholes that

are anticipated to have corrosive conditions due to septicity, forcemain connection or other causes shall be provided with corrosion protection on the interior of the manhole.

Corrosion protection may be provided via a polymer concrete manhole, a bond welded PVC cast in place liner, or an epoxy liner as approved by the Engineer.

6.03 INSPECTION OF MATERIALS BY CONTRACTOR

It shall be the responsibility of the Contractor to inspect all materials for cracks, flaws or other defects before they are incorporated into the work. Any materials found to be defective or damaged shall be promptly removed from the job site by the Contractor.

6.04 LAYING PIPE

6.04.01 Alignment and Grade

6.04.01.01 Laser Alignment

The Contractor shall use the laser beam method of maintaining line and grade for sewer construction, unless otherwise approved by the Engineer. The Contractor shall submit evidence to the Engineer that a qualified operator will operate the laser beam equipment during the course of construction.

The Engineer shall place line and grade stakes at each manhole, or more often, as determined by the Engineer. The Contractor shall check the line and grade at every point at which a stake has been placed.

6.04.02 Handling

Pipe shall be protected during unloading and handling against impacts, shocks and free fall. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.

6.04.03 Direction of Laying

Excavation of trenches and laying of pipe shall begin at the outlet for the sewer and proceed upgrade with the individual pipe being laid with the spigot end downstream.

6.04.04 Placing

The pipe shall be placed on the prepared sub-grade and held firmly in place during subsequent pipe jointing and embedment operations. Successive pipes shall be carefully positioned so that when laid, they form a sewer with a uniform invert true to line and grade.

Sufficient pressure shall be applied by an approved method to each pipe as it is

laid to ensure that the spigot is completely home in the bell. Care shall be exercised to prevent joints from opening as successive lengths of pipe are placed. The Contractor shall take the necessary precautions when using a trench box to prevent joint separation when the box is pulled ahead.

All plastic/flexible pipe shall be installed in accordance with ASTM D2321. Rigid pipe shall be installed in accordance with ASTM C12 (vitrified clay pipe) and ASTM C1479 (precast concrete pipe), if approved by the Owner.

6.04.05 Cleaning Sewer

The interior of the sewer shall be cleaned of all jointing material, dirt and debris as the work progresses.

In small sewers where cleaning after laying may be difficult, a swab or drag may be required in the pipeline to satisfactorily complete this work. Where possible, a plug shall be installed on the downstream end of the sewer to prevent any sand and debris from entering the existing sewer.

6.05 PIPE JOINTS

Pipe joints shall be made in strict accordance with the pipe manufacturer's recommendations unless otherwise specified herein. All lubricants, gaskets and other materials required to make the joints shall be supplied or recommended by the pipe manufacturer, and approved by the Engineer.

Pipe layers shall be fully qualified and experienced in the work being performed and shall check each joint after it is completed to see that no part of the joint material is left on the inside of the pipe and that the joint is properly made.

6.06 LOCATION OF WYES AND TEES

The approximate locations of wyes or tees are shown on the drawings. These locations may be adjusted where necessary to best serve the various properties. Exact locations shall be determined by the Engineer before the wyes or tees are installed.

The Contractor shall keep an accurate record of measurements from the nearest downstream manhole to each wye or tee which is installed, the length of each lateral, the depth at the end of each lateral and the distance to the down stream manhole parallel to the sewer at the end of each lateral. These measurements shall be recorded on the record plan to be furnished by the Contractor to the Engineer and Owner.

6.07 SANITARY SEWER LATERALS

6.07.01 General

Installation of sanitary sewer laterals shall meet all requirements specified for

sanitary sewers. All laterals shall be inspected by the Engineer before the trench is backfilled.

6.07.02 Length

All sanitary sewer laterals shall be laid at right angles to the sanitary sewer mainline unless otherwise shown on the drawings, and shall extend to a point one foot outside the street right of way (property line) unless otherwise directed. No payment will be made for pipe laid beyond this point unless specifically ordered by the Engineer.

The Contractor shall measure and record on his record drawing the horizontal length of the lateral from the main line sewer to the end of the lateral and provide this information to the Engineer.

6.07.03 Grade

It is intended that the ends of laterals at property lines will be deep enough to service the lowest floor of all existing buildings by gravity flow.

The minimum grade on the lateral shall be 2 percent (1/4 in/ft.). Where minimum depths as specified herein cannot be obtained and when approved by the Engineer, minimum grades may be reduced to 1 percent (1/8 in/ft.).

Where the elevation of the end of the lateral to serve an existing structure is not shown on the drawings it shall be set at 3 feet below basement grade for standard houses (11 feet below first floor) or 4 feet below basement grade for houses with walkout basements (12 feet below first floor) where the set-back is 50 feet or less. When the house is set back further than 50 feet it may be set at 2 feet below the basement elevation for standard houses (3 feet for walkouts) plus an additional depth of 2 percent multiplied by the set-back distance to the structure.

The minimum depth of the end of the lateral at the property line in all cases shall be a minimum 9'-0" below centerline of the street. (See lateral and property line riser detail in these specifications.)

6.07.04 Risers

Where the sanitary sewer is more than twelve feet deep, a main line riser shall be constructed in accordance with the standard details or as shown on the drawings. Backfill shall be carefully placed and compacted around the riser in an approved manner which will not damage the sewer or riser.

Property line risers shall be constructed at the end of the lateral (at a point approximately five (5) feet from the right-of-way line unless otherwise specified).

The property line riser shall consist of a 6" sewer lateral pipe extended upward to a minimum of one (1) foot above the normal groundwater table, or to a depth of not greater than four (4) feet below grade at the end, whichever is the closest to

finished grade. In all cases the lateral shall have a minimum of two (2) feet of cover.

6.07.05 Markers and Measurements

After installation of the service lateral, but prior to backfilling, the Contractor shall provide and install a 2" x 2" wood marker for each service. The wood markers shall be set vertically from the end of the lateral to twelve (12) inches above finish surface elevations. Also, a 1/2" diameter by 3' long metal stake shall be placed vertically and adjacent to the wood marker with 6" cover. The Contractor shall assist the Construction Observer in locating the end of each lateral, and in recording the location by measuring to the nearest downstream manhole.

After the record drawing locations have been recorded and checked by the Construction Observer, the Contractor shall cut off the markers as follows: in improved areas, the markers shall be cut off two inches below grade; in undeveloped areas, the markers shall be cut off six inches above grade.

6.08 MANHOLE CONSTRUCTION

Manholes shall be constructed in accordance with the standard details and as specified herein. Manholes shall be water tight.

Unless specified otherwise, all manholes shall be precast.

Precast bases shall be installed on sand or gravel subbase in such a way as to provide a uniform bearing under the manhole base.

Precast manholes with integral bottom and channel may be used; however, any changes to the structure due to minor field adjustments in alignment and grade required to meet construction conditions, shall be made by the Contractor at no additional cost to the Owner.

Benchs shall be constructed from the invert to the crown on the pipe for the entire length of the manhole or junction point.

Stubs shall be provided in manholes for future connections as shown on the drawings or as directed by the Engineer. All such stubs shall be sealed with standard watertight, removable plugs.

All openings in manholes for the purpose of receiving pipes (including openings for future pipes) shall be fitted with a flexible type connector. Flexible connectors shall be factory installed. Openings for future connections shall be sealed by an approved prefabricated cap or plug.

Precast concrete adjusting rings shall be used to bring existing and new manhole structure covers within the proposed pavement to grade. After the cover is

brought to grade, the entire hole created by excavating to raise the casting shall be filled in three-inch (3") lifts with Hot Mix Asphalt Mixture 3C or 13A to the top of the leveling course and air tamped to achieve proper compaction. Special care shall be taken to prevent debris from entering sewers.

6.09 CUT-INS

When cutting into an existing manhole, the opening shall be no larger than is necessary to admit the new sewer. The opening shall be made by a concrete drilling or coring machine and shall have a mechanically compressed flexible joint connection installed. All broken or surplus material falling inside the structure shall be removed.

Flow channels and/or drop connections shall be constructed as specified or as directed to accommodate the sewer being cut-in.

Unless otherwise specified, cut-ins shall be considered part of the major items of work, and no specific payment will be made therefor.

6.10 ACCEPTANCE TESTS

6.10.01 Alignment and Grade

Each section of sewer may be checked by the Engineer for alignment and grade using lights and mirrors, television inspection, or other similar means. The Contractor shall assist the Engineer in the performance of these tests when necessary.

If a section of sewer is determined by the Engineer not to be acceptable for alignment or grade, the Contractor shall relay the sewer at no additional cost to the Owner.

6.10.02 Leakage Tests

The completed sewer shall be free from leaks either by infiltration or exfiltration. Manholes will be visually inspected for leakage. No more than 1,000 feet of main sewer will be considered for partial payment until it has been satisfactorily tested and approved.

The Contractor shall provide all necessary labor, equipment and supervision to perform infiltration, exfiltration and air tests in accordance with the requirements of the Engineer. All sewers shall be subjected to an air test unless otherwise specified below.

All sewers which are submerged by ground water to an average depth of greater than seven (7) feet above the crown of the sewer at the time of the test shall be subjected to an infiltration test.

The air test shall be performed on each section of pipe between manholes after

laterals are installed. Testing shall conform to ASTM F1417 for plastic flexible pipe, ASTM C828 for clay pipe (if approved) and ASTM C924 for reinforced concrete pipe. The section of pipe being tested shall be sealed at each manhole using inflatable plugs or other approved devices. All plugs shall be adequately braced.

Where the expected water table level, as determined by the soil borings, is above the sewer elevation, the pressure testing limits for dry trench conditions shall be as follows:

1. Where the expected water table level is 0' to 7' above the pipe, the test pressure limits will be 3.5 to 2.5 psig.
2. Where the expected water table level is over 7' above the pipe, the test pressure limits will be 4.5 to 3.5 psig.

In a wet trench condition where the water table has risen above the pipe to a depth of less than 7' above the crown of the pipe prior to testing, the air testing limits shall be determined by adding to the original 3.5 psig. an additional 0.433 psig. for each foot the water table is above the crown of the pipe, or as determined in the dry trench condition, whichever is greater.

The air pressure in the section under test shall be raised to an initial pressure of 0.5 psig. above the beginning test pressure and allowed to stabilize for a minimum of five (5) minutes. Air shall be added during this stabilization period as required to maintain the pressure at or above the beginning test pressure.

The rate of air loss shall be determined by measuring the time interval required for the internal pressure to decrease 1.0 psig. within the limits previously specified.

Minimum time interval for satisfactory test shall be in accordance with Table 1 and Table 2 following this section.

In the event the Engineer determines that the results of the air test are inconclusive because of visible infiltration, unsatisfactory or incomplete records, or improper application of testing methods or equipment, or other similar reasons, the Engineer may require either an exfiltration test or an infiltration test for the section or sections of sewer involved.

The allowable leakage as measured by either an infiltration test or an exfiltration test shall not exceed 50 gallons per day per inch of diameter per mile of sewer.

Sewers shall be tested for exfiltration by isolating a section or sections of the sewers between manholes by means of an approved temporary type of water-tight bulkhead. The isolated section of sewer shall then be filled with water to a level which is two and one-half (2-1/2) feet above the existing water-table but not less than two and one-half (2-1/2) feet above the crown of the sewer pipe at the high

end of the isolated section under the test. The length of the section shall be such that, where possible, the water level at its lower end will not be more than five (5) feet above the crown of the pipe except as may be required by a high water table.

The length of time and the exfiltration test period shall be at the discretion of the Engineer. Determination of the amount of exfiltration shall be made by measurement of the loss of volume of water in the manholes. The amount of exfiltration over a 24 hour period will then be calculated from the measured loss of volume and time period.

On any section of sewer that the Engineer shall deem impractical to test by means of the exfiltration test specified above, as may be the case when local connections are involved, a suitable infiltration test will be required.

6.10.03 Pipe Deflection Tests (Flexible Pipe Only)

Flexible pipe is any pipe having a pipe stiffness of 115 psi. or less as defined under the requirements of ASTM Designation D2412. Truss pipe will not require a deflection test if it has less than twelve feet (12') of cover.

The completed installation of flexible pipe shall at no point have out-of-round deflections in the main sewer pipe greater than five percent (5%) of the pipe's actual original inside diameter. Go/no go gauging tests, using an approved pointed mandrel with nine (9) points, shall be performed by the Contractor in the presence of the Engineer, or his authorized representative after the trench is backfilled, and before the surface restoration is begun. Pipe with deflections greater than five percent (5%) shall be relaid by the Contractor at no additional expense to the Owner. Use of mechanical devices or equipment to complete the go/no go tests and vibratory rerounding of failed sections are prohibited. A minimum of thirty (30) days shall elapse between installation and backfilling and deflection testing.

6.10.04 Televising

After the pipe deflection test, placement of base course (when the pipe is proposed under pavement), and pipe cleaning (when the sewer has been live prior to televising), the Contractor shall conduct a continuous digital video recording inspection of all sanitary sewers. The inspection and documentation shall meet the requirements of the National Association of Sewer Service Companies (NASSCO) specification for television inspection of sewers. Closed-circuit television (CCTV) recording shall be conducted in compliance with the North American Pipeline Assessment and Certification Program (PACP) standards for sewer defect identification and assessment. Work shall be performed by a PACP-certified operator and delivered on professional quality recording media with audio input that is compatible with the Engineer's and Owner's equipment for viewing. The televising software shall be PACP-certified by NASSCO and shall be capable of both exporting to and importing from the standard PACP database.

If the television inspection of an entire section (manhole to manhole) cannot be successfully performed from one manhole, a reverse setup shall be performed per PACP requirements as a second survey.

The Contractor shall provide a written report, two copies of the recording on DVD, and a digital copy of the exported PACP database. The recording shall show the name of the project, the purpose of inspection, the date and approximate time of recording, the name of the street, the manhole numbers of each end of each run (the “from” and “to” manholes) and stationing between manholes. The recording shall clearly show the pipe interior, joints, alignment, and wye locations and stations, and shall be reviewed by the Engineer for evidence of compliance with the Contract Documents for workmanship and materials. The written report shall contain a log for each recording to provide a written record of the information provided on the recording, and shall show the name of the project and all other pertinent data.

6.11 MEASUREMENT AND PAYMENT

6.11.01 General

All proposed construction shall be measured for payment by the Engineer in accordance with the items listed in the Proposal.

The unit price bid for each Proposal item shall be payment in full for completing the work, ready for use as specified.

6.11.02 Sanitary Sewers

Measurement of the length of the sewer shall be in lineal feet along the centerline of the sewer from center of manhole to center of manhole.

Where depth classifications are provided, the depth of the sewer connecting two adjacent structures shall be considered as being the average of the depth from earth grade to the sewer invert at these structures.

6.11.03 Manholes

Manholes shall be paid for in accordance with the units established in the Proposal. When no Proposal item is provided for castings, the castings and their installation shall be considered part of the major items of work.

When corrosion protection is needed for existing manholes, this shall be paid for separately in accordance with the units established in the Proposal. When called for on the drawings or in the project specifications for corrosion protection in new manholes, this shall be paid for separately in accordance with the units established in the Proposal; if no Proposal item is provided, corrosion protection shall be considered included in the Proposal item for manholes.

6.11.04 Wyes or Tees

When a specific item is provided in the Proposal for Wyes or Tees the unit price bid shall be the additional cost of furnishing and placing the wye or tee over and above the cost of furnishing and laying the sewer pipe.

When no Proposal item is provided, the wyes or tees and their installation shall be considered part of the major items of work.

6.11.05 Sanitary Sewer Laterals

The length of sewer laterals shall be measured horizontally from the center of the main sewer to the end of the lateral as specified.

6.11.06 Cut-Ins

Cut-ins shall be considered part of the major items of work and no specific payment will be made therefor.

6.11.07 Stubs

Stubs shall be considered part of the major items of work and no specific payment will be made therefor.

6.11.08 Risers

The length of main line risers shall be measured vertically from the top of the main sewer to the end of the riser. The length of property line risers shall be measured vertically from the top of the lateral at the lower bend for the riser to the end of the riser. When no Proposal item is provided, the risers and their installation shall be considered part of the major items of work.

TABLE 1 – PVC and DI Pipe

Pipe Diameter, in.	Minimum Time, min:s	Length for Minimum Time, ft	Time for Longer Length, s	Specification Time for Length (L) Shown, min:s								
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	
4	3:46	597	0.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	0.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48	
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04	
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31	
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33	
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	

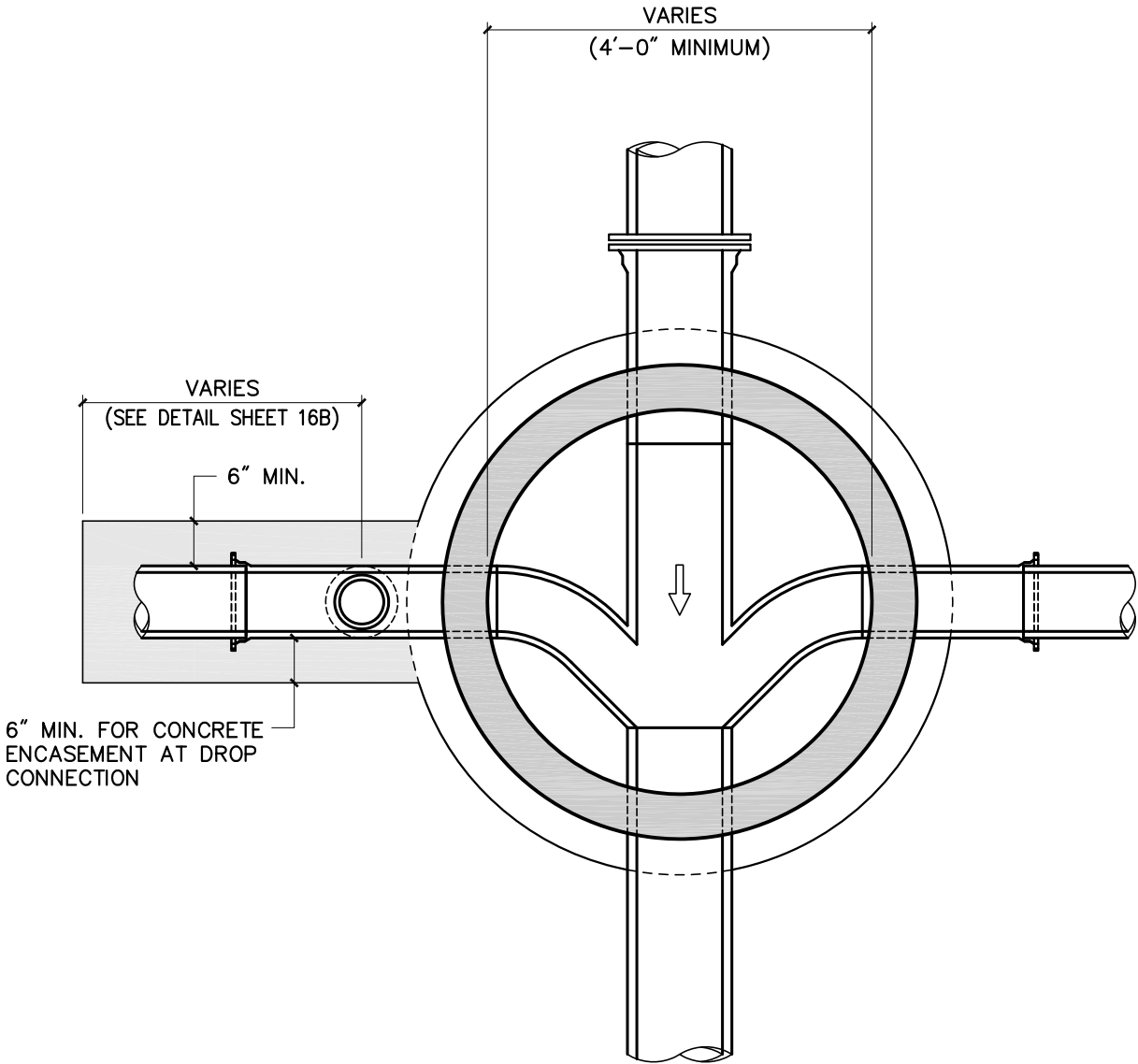
TABLE 2 – VCP and Concrete Pipe

Pipe Diameter, in.	Minimum Time, min:s	Length for Minimum Time, ft	Time for Longer Length, s	Specification Time for Length (L) Shown, min:s								
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	
4	1:53	597	0.190 L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	0.427 L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12	
8	3:47	298	0.760 L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42	
10	4:43	239	1.187 L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54	
12	5:40	199	1.709 L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50	
15	7:05	159	2.671 L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02	
18	8:30	133	3.846 L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51	
21	9:55	114	5.235 L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16	
24	11:20	99	6.837 L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17	
27	12:45	88	8.653 L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54	
30	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07	
33	15:35	72	12.926 L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57	
36	17:00	66	15.384 L	25:39	38:28	51:17	64:06	76:55	89:44	102:34	115:23	

Note: Table to be used when testing one diameter only.

When testing two sizes of pipe simultaneously, time shall be computed by the ratio of lengths involved.

$$\text{Time} = \frac{\text{Length 1} \times \text{Time 1} + \text{Length 2} \times \text{Time 2}}{\text{Length 1} + \text{Length 2}}$$



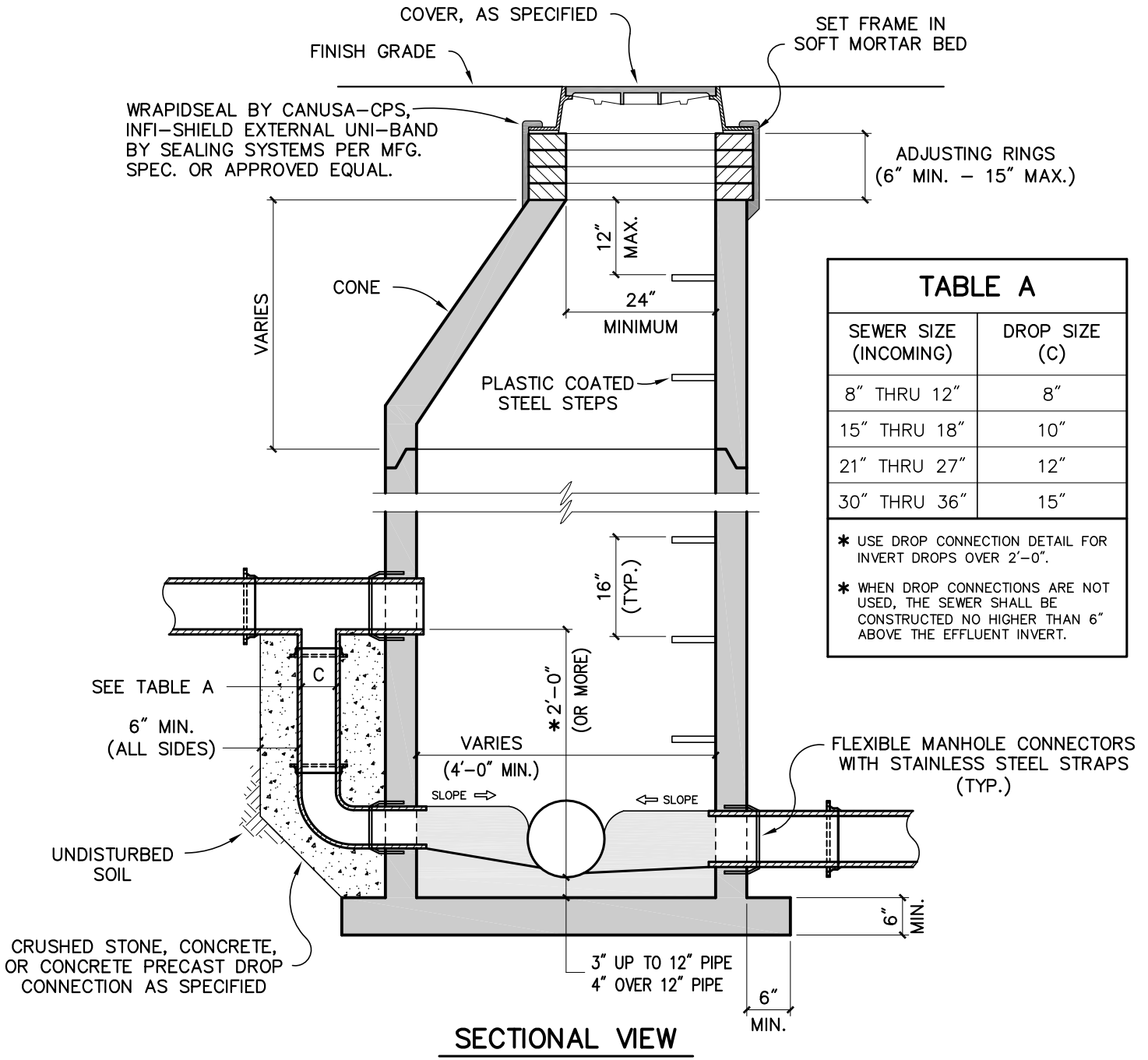
PLAN VIEW

STANDARD SANITARY SEWER MANHOLE (PRECAST CONCRETE)

NOTES

1. IF BOTTOM IS PRECAST CONCRETE, SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED WITH GEOTEXTILE FABRIC..
2. CONE MAY BE ROTATED TO ALIGN STEPS TO VARIOUS LOCATIONS IN MANHOLE.
3. FLOW CHANNEL WALL HEIGHT SHALL BE EQUAL TO CROWN OF PIPE.

H:_SPECIFICATION DRAWINGS\SECTION 6 - SANITARY SEWER\16A_SS_SANITARY_MANHOLE_PRCASD.WG - WDS - Sep. 18 2012 - 08:39am - Prein&Newhof



SEWER SIZE (INCOMING)	DROP SIZE (C)
8" THRU 12"	8"
15" THRU 18"	10"
21" THRU 27"	12"
30" THRU 36"	15"

* USE DROP CONNECTION DETAIL FOR INVERT DROPS OVER 2'-0".

* WHEN DROP CONNECTIONS ARE NOT USED, THE SEWER SHALL BE CONSTRUCTED NO HIGHER THAN 6" ABOVE THE EFFLUENT INVERT.

SECTIONAL VIEW

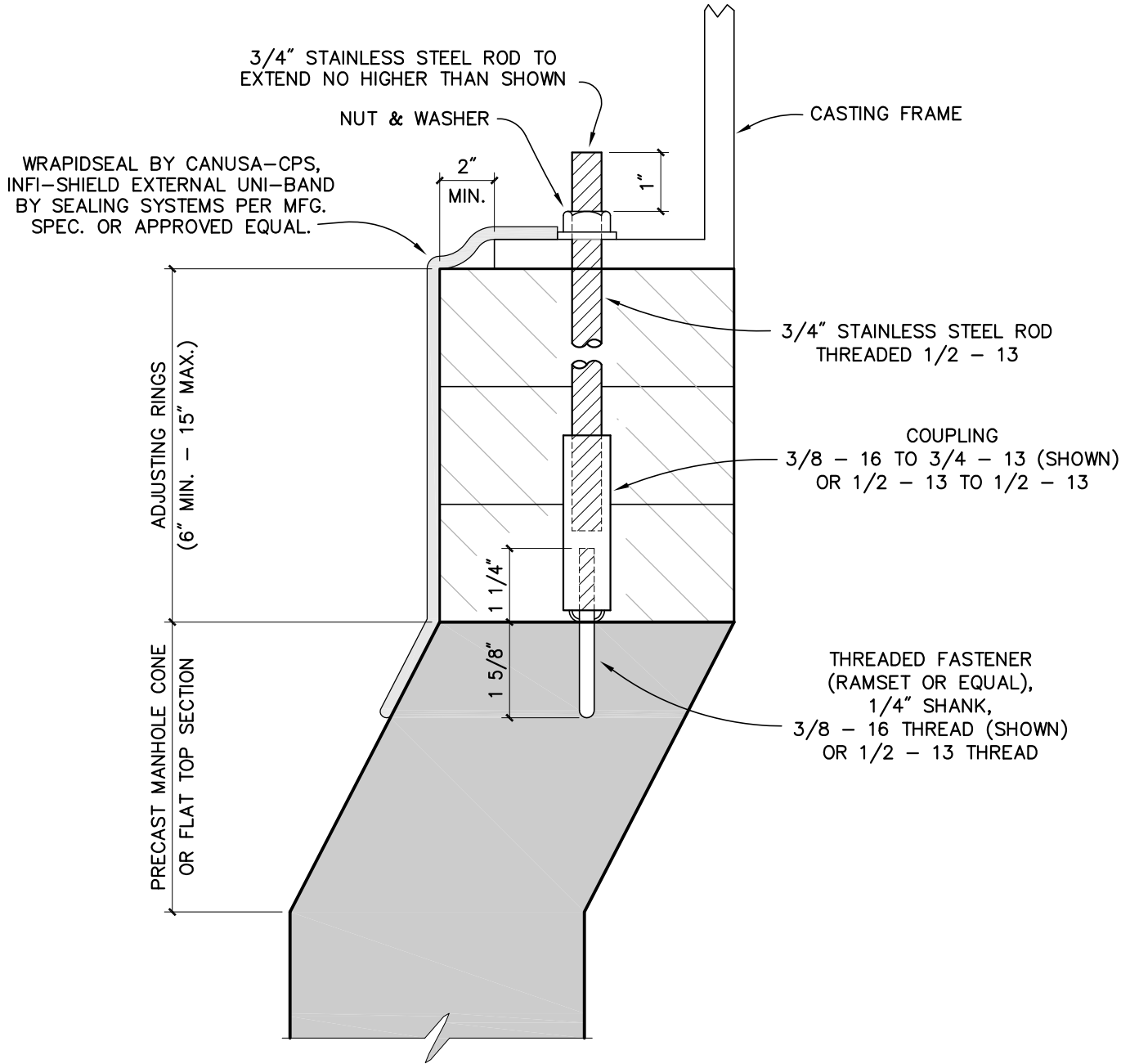
STANDARD SANITARY SEWER MANHOLE

(PRECAST CONCRETE)

NOTES

1. PRECAST CONCRETE MANHOLE SHALL MEET ASTM C478.
2. IF BOTTOM IS PRECAST CONCRETE, SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED IN GEOTEXTILE FABRIC.
3. CONE MAY BE ROTATED TO ALIGN STEPS TO VARIOUS LOCATIONS IN MANHOLE.
4. FLOW CHANNEL WALL HEIGHT SHALL BE EQUAL TO CROWN OF PIPE.

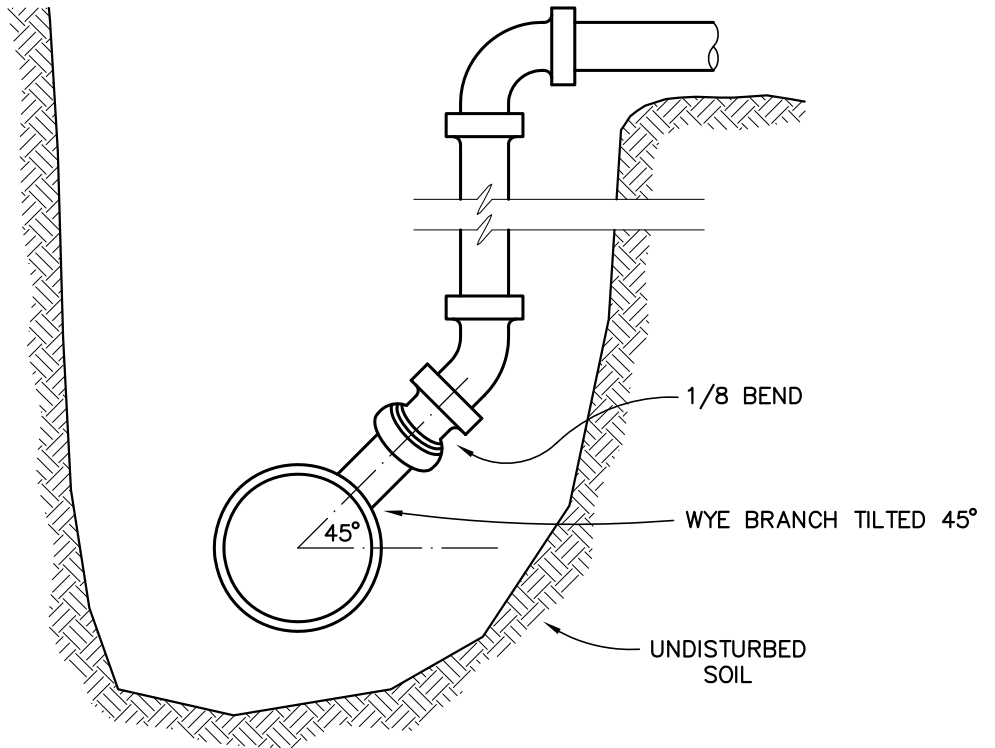
H:\SPECIFICATION DRAWINGS\SECTION 6 - SANITARY SEWER\16B_SS_SANITARY_MANHOLE_PRECAST.DWG - WDS - Sep, 18 2012 - 08:37am - Prein&Newhof



ANCHOR DETAIL

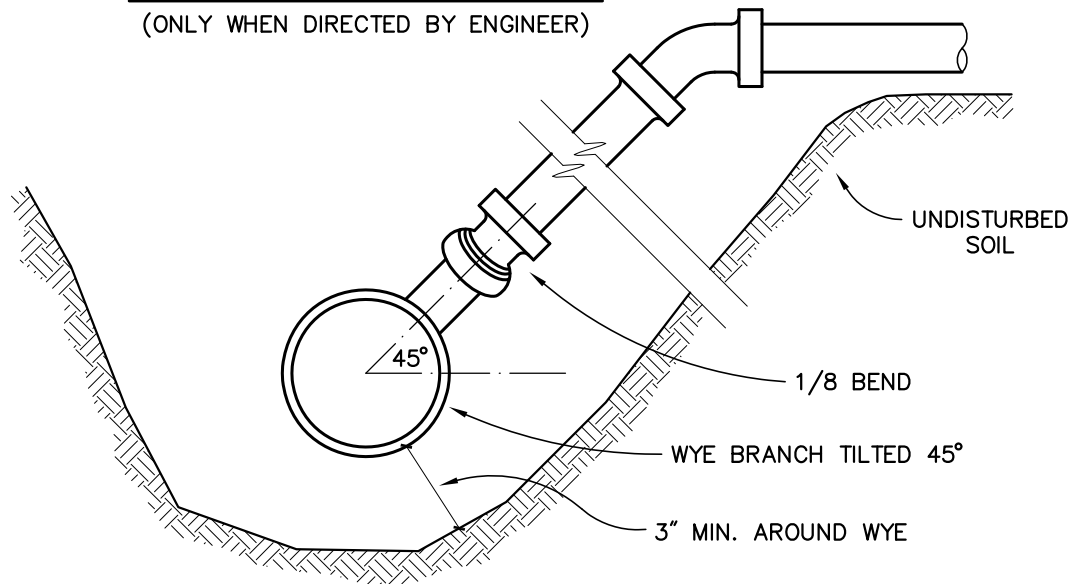
NOTE

FOR ALL PRESSURE TIGHT OR WATERTIGHT COVERS,
FOUR (4) ANCHORS PER COVER



VERTICAL TRENCH

(ONLY WHEN DIRECTED BY ENGINEER)



SLOPING TRENCH

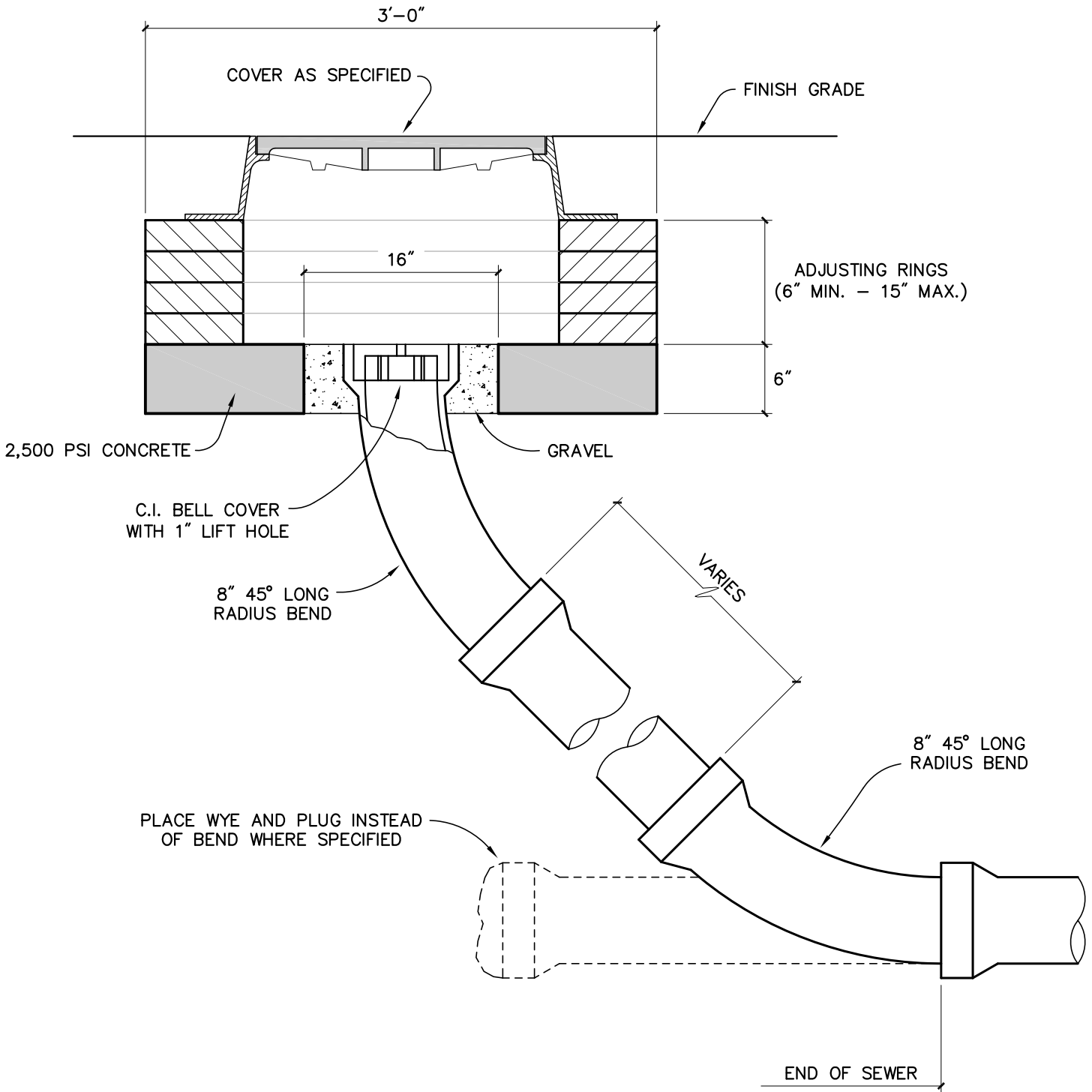
(STANDARD)

STANDARD RISER DETAILS

(SEWERS OVER 12 FEET DEEP)

NOTE

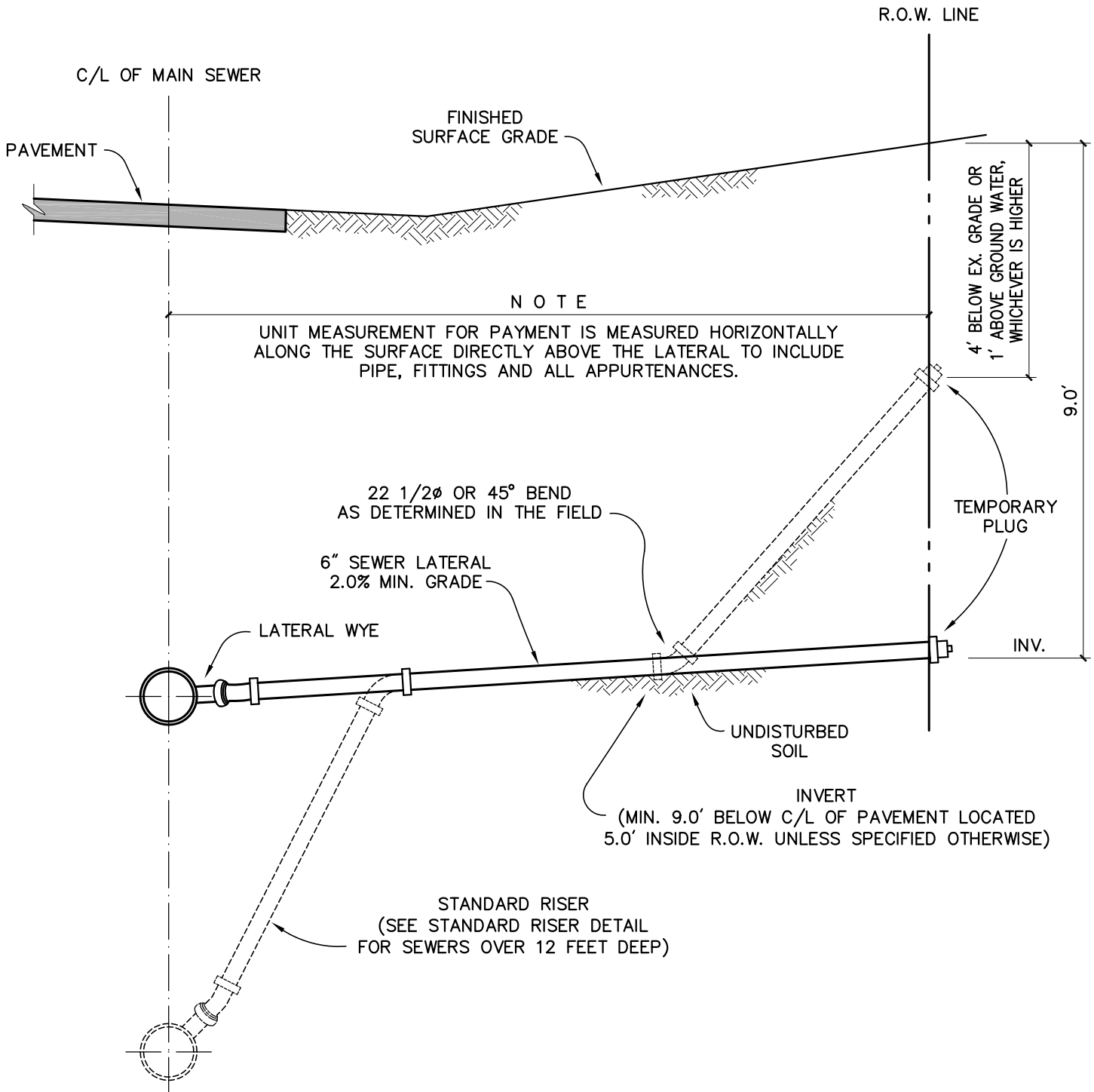
SEE PLANS OR SPECS FOR SIZE AND DEPTH OF LATERAL



SEWER CLEANOUT

NOTES

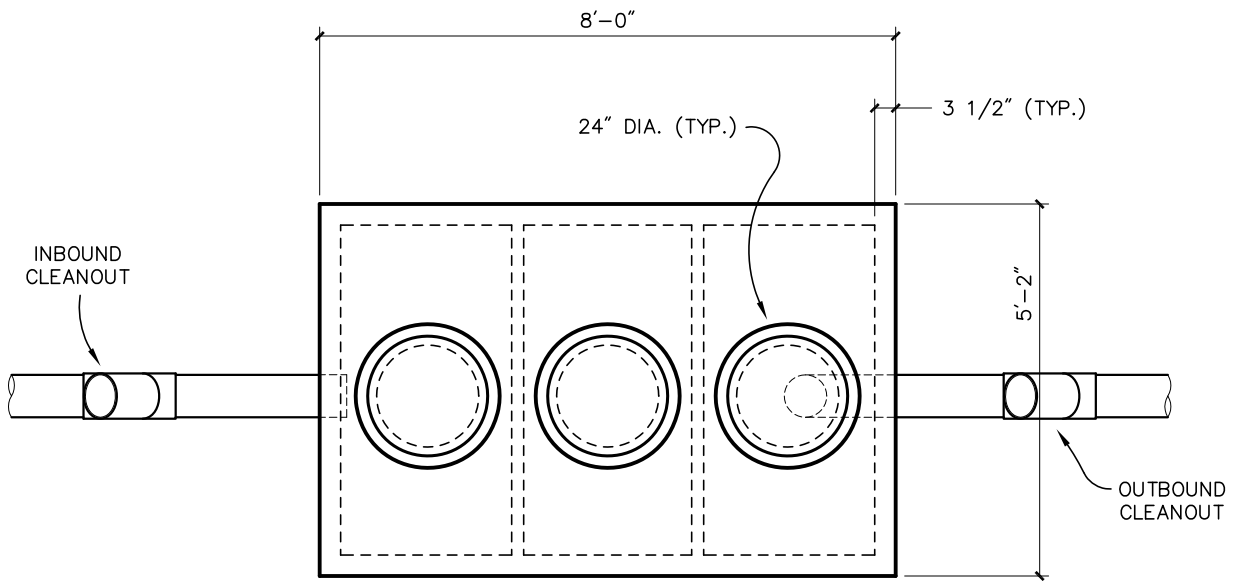
1. THE PIPE FOR THE INCLINED EXTENSION FOR CLEANOUT SHALL BE 8" DIA. IF SEWER IS LARGER THAN 8", THEN A REDUCER SHALL BE PLACED BETWEEN END OF SEWER AND LONG RADIUS BEND.
2. JOINTS SHALL BE SAME AS SPECIFIED FOR SEWER CONSTRUCTION.



LATERAL AND PROPERTY LINE RISER DETAILS

NOTE

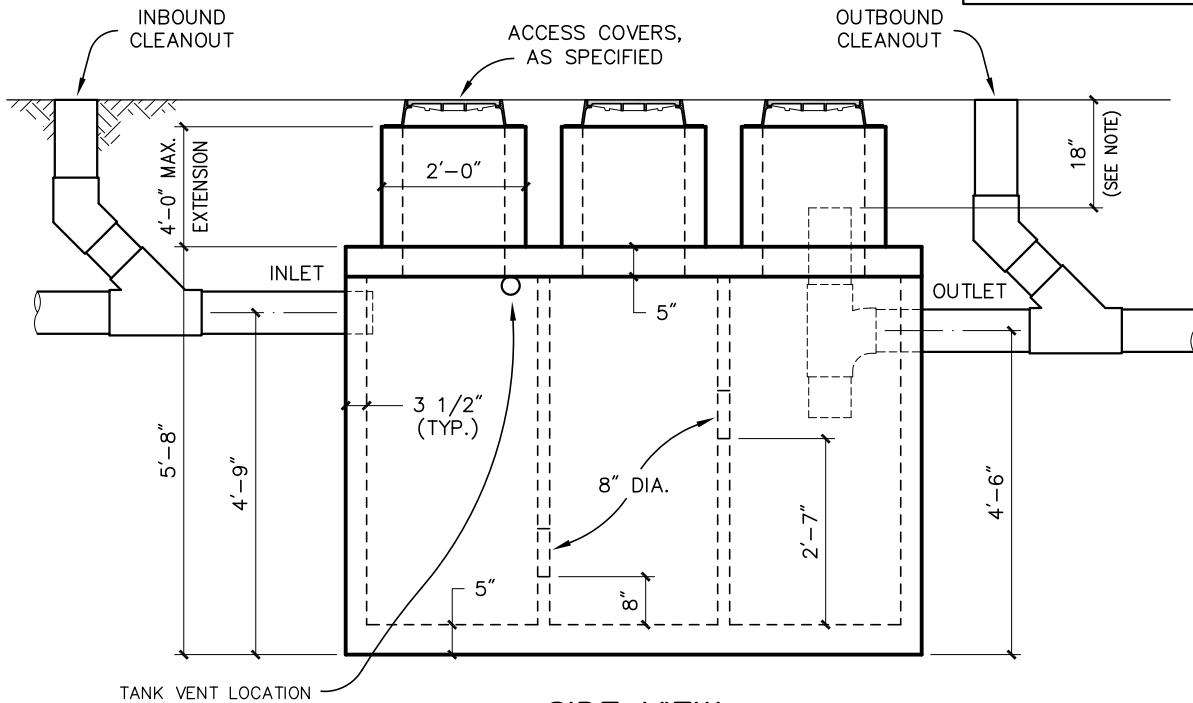
PROPERTY LINE RISER IS REQUIRED WHEN LATERAL IS IN WATER OR WHEN OTHERWISE SPECIFIED.



TOP VIEW

NOTE

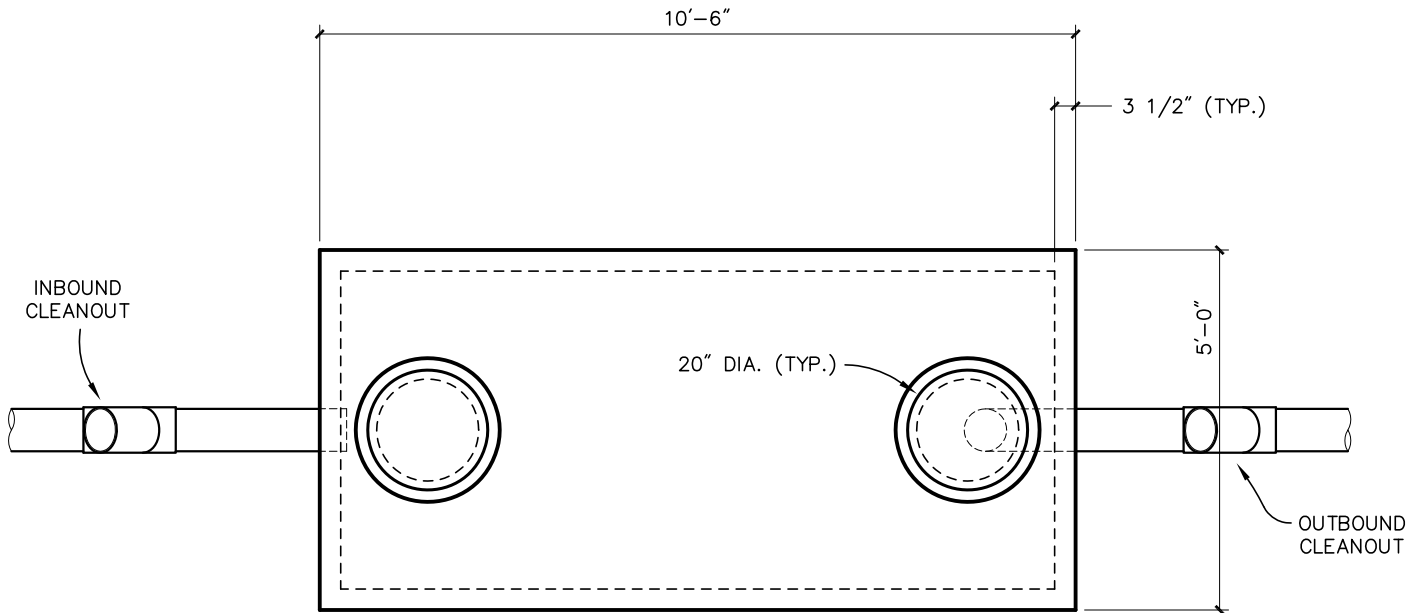
DROP LEG ASSEMBLY RISER MUST BE BROUGHT UP TO WITHIN 18" OF GRADE ELEVATION



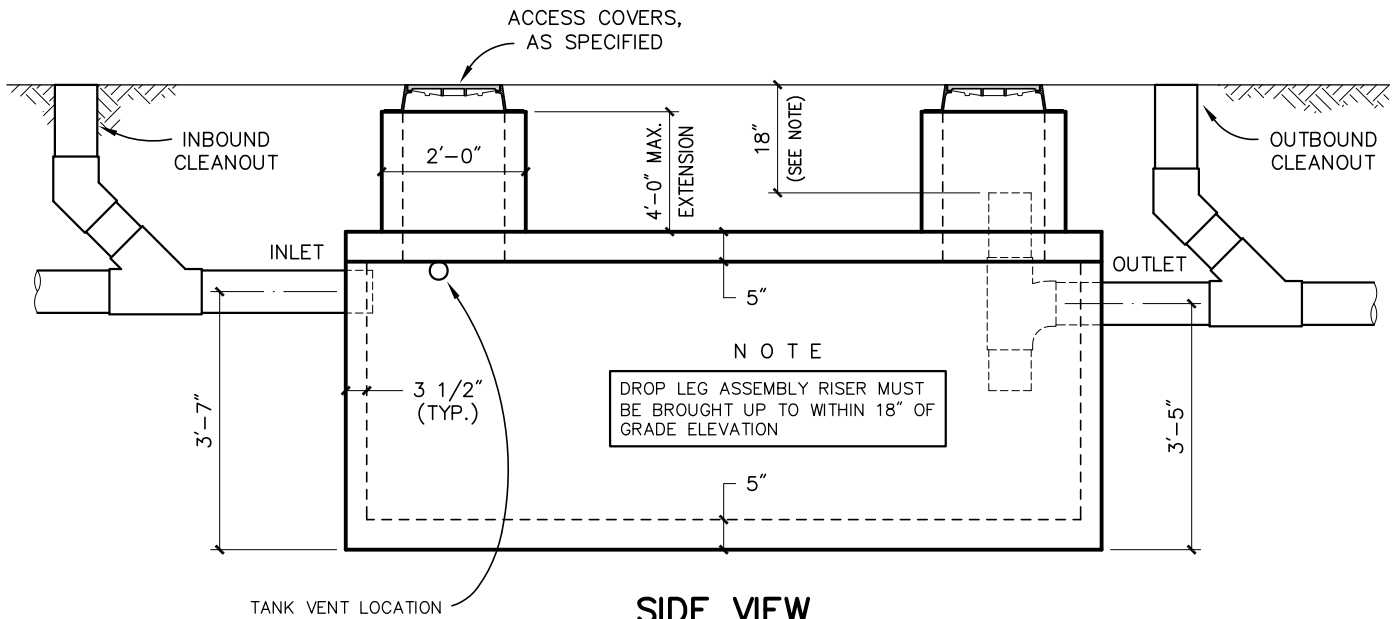
SIDE VIEW

- ACCESS COVERS MUST BE RATED FOR ANTICIPATED TRAFFIC LOAD.
- SEAL BETWEEN TANK AND EXTENSIONS MUST BE WATER TIGHT.
- THE TANK JOINT MUST BE GASKETED AND ENCAPSULATED WITH WRAPIDSEAL OR INFI-SHIELD.
- THE TANK MUST HAVE A VENT ABOVE ALL TANK INVERTS AND MUST BE MADE WATER TIGHT.
- INBOUND AND OUTBOUND PIPES MUST HAVE BOOTED SEAL AT TANK OPENING.
- 18" MINIMUM LENGTH ON OUTBOUND DROPLEG
- A SANITARY TEE MUST BE INCLUDED ON THE DROPLEG ASSEMBLY.

1,000 GALLON OUTDOOR GREASE INTERCEPTER



TOP VIEW



SIDE VIEW

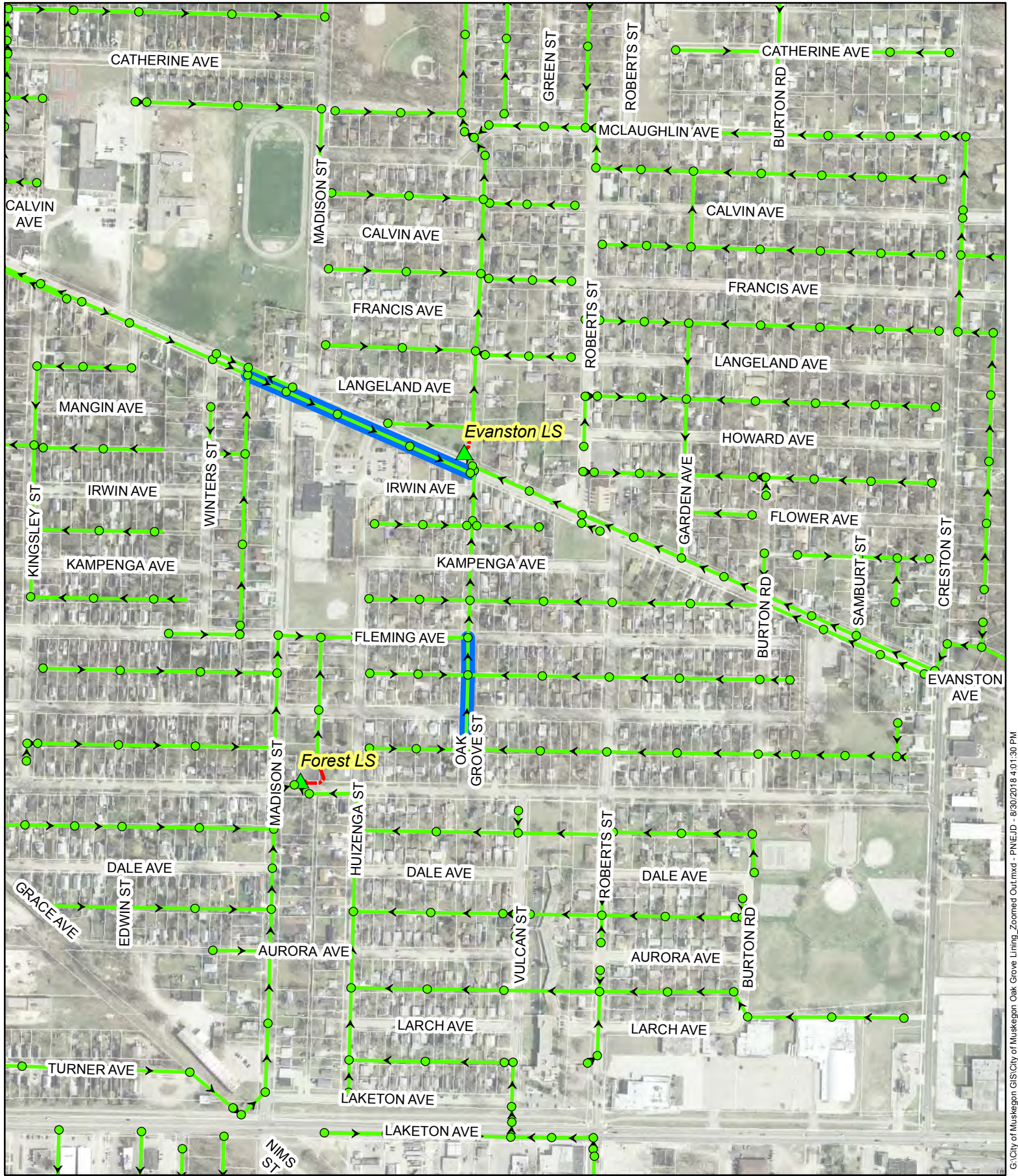
- ACCESS COVERS MUST BE RATED FOR ANTICIPATED TRAFFIC LOAD.
- SEAL BETWEEN TANK AND EXTENSIONS MUST BE WATER TIGHT.
- THE TANK JOINT MUST BE GASKETED AND ENCAPSULATED WITH WRAPIDSEAL OR INFI-SHIELD.
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- INBOUND AND OUTBOUND PIPES MUST HAVE BOOTED SEAL AT TANK OPENING.
- 18" MINIMUM LENGTH ON OUTBOUND DROPLEG
- A SANITARY TEE MUST BE INCLUDED ON THE DROPLEG ASSEMBLY.

1,000 GALLON OUTDOOR OIL & SAND SEPARATOR

(SHALLOW)

Appendix B

Sewer Lining Maps



G:\City of Muskegon GIS\City of Muskegon Oak Grove Lining_Zoomed Out.mxd - PNE\ID - 8/30/2018 4:01:30 PM



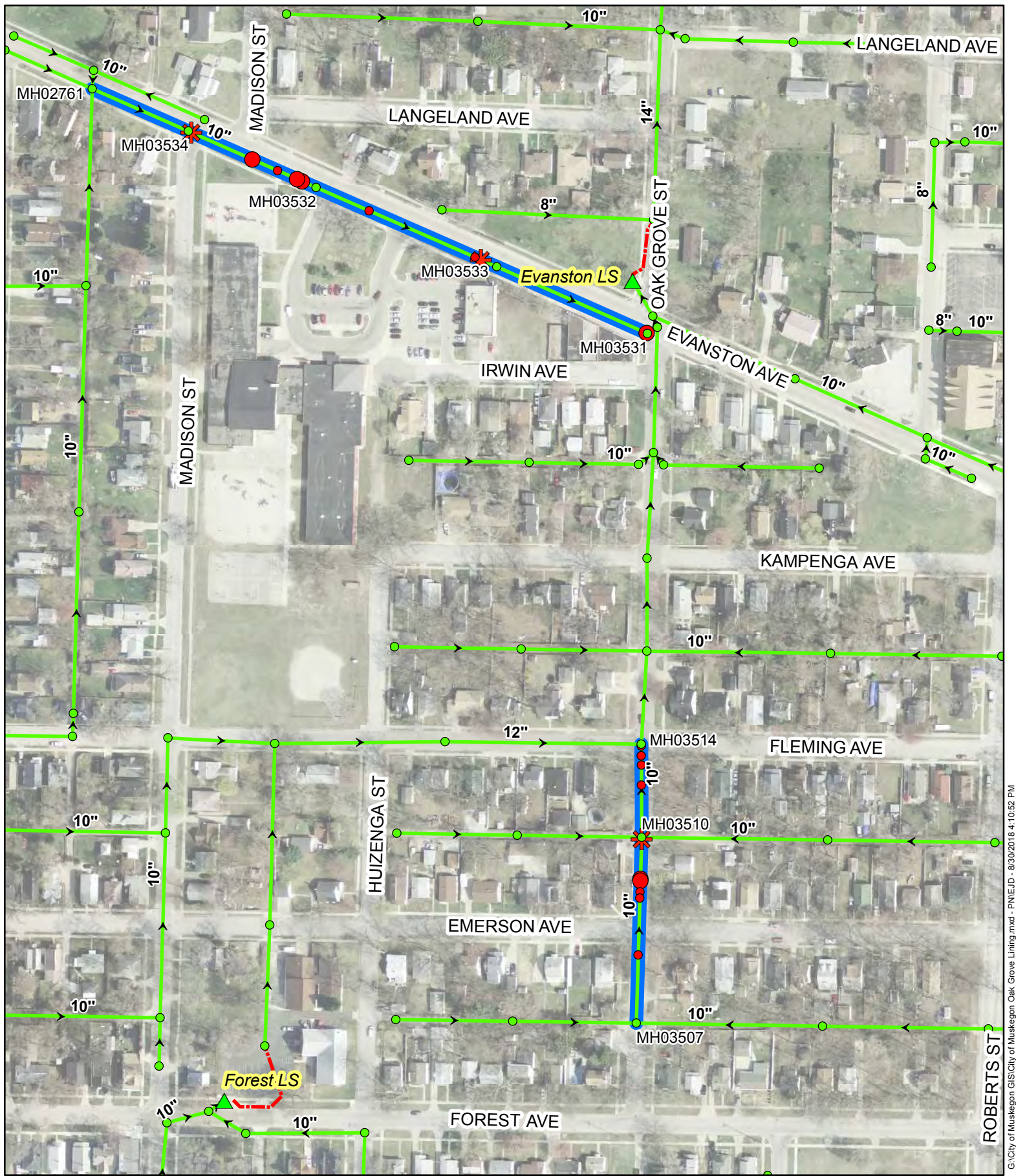
SCALE: 1" = 500'

Legend

- Sanitary Manhole
- ▲ Sanitary Pump Station
- Sanitary Gravity Main
- - - Force Main
- Proposed CIPP Lining

CITY OF MUSKEGON
 MUSKEGON COUNTY, MI
PROJECT AREA MAP

Prein&Newhof
 2170624



G:\City of Muskegon GIS\City of Muskegon Oak Grove Lining.mxd - PNIE\ID - 8/30/2018 4:10:52 PM



SCALE: 1" = 200'

- Sanitary Manhole
- ▲ Sanitary Pump Station
- ▶ Sanitary Gravity Main
- - - Force Main
- Proposed CIPP Lining

Legend

Infiltration Observations (May 2016)

- Dripper
- Runner
- ✱ Gusher

CITY OF MUSKEGON
 MUSKEGON COUNTY, MI
PROPOSED LINING MAP

Prein & Newhof
 2170624



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286


Inspection report

Date : 5/5/2016	Work Order : Default	Weather : Dry	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3676
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 294.8	Length Surveyed : 294.8

City : Muskegon	Drainage Area :	Upstream MH : MH03507
Street : Oak Grove	Media Label :	Up Rim to Invert : 0.0
Location Code : Main highway <input type="checkbox"/> urban	Flow Control : Not Controlled	Downstream MH : MH03510
Location Details :	Sheet Number :	Down Rim to Invert : 0.0

Pipe shape: Circular	Sewer Use: Sanitary
Pipe size: 12	Sewer Category : SEC
Pipe material: Clay	Purpose: Routine Assessment
Lining Method :	Owner :

Additional Info :

1:690	Distance	Code	Observation	Counter	Photo	Grade
MH03507						
	0.00	AMH	Manhole, downstream, survey begins./downstream, survey begins.	00:00:25		
	0.00	MWL	Water Level, 10% of cross sectional area	00:00:31		
	2.57	JOM	Joint Offset Medium	00:01:26		S1
	2.57	IG	Infiltration Gusher from 10 o'clock to 1 o'clock, within 8 inch	00:01:33		M5
	7.54	S01 DSZ	Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Debris., Start / Debris.	00:02:46		
	18.18	JOM	Joint Offset Medium	00:03:45		S1
	27.09	JOM	Joint Offset Medium	00:04:44		S1
	42.24	RFJ	Roots Fine Joint at 2 o'clock, within 8 inch	00:06:26		M1
	45.08	F01 DSZ	Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Debris., Finish / Debris.	00:07:06		M2
	57.68	JOM	Joint Offset Medium	00:08:04		S1
	60.65	RFJ	Roots Fine Joint from 9 o'clock to 2 o'clock, within 8 inch	00:08:41		M1
	67.05	IR	Infiltration Runner at 1 o'clock, within 8 inch	00:09:52		M4
	67.07	RFJ	Roots Fine Joint from 10 o'clock to 11 o'clock, within 8 inch	00:09:59		M1



Inspection report

Date : 5/5/2016	Work Order : Default	Weather : Dry	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3676
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 294.8	Length Surveyed : 294.8

1:690	Distance	Code	Observation	Counter	Photo	Grade
	70.13	JOM	Joint Offset Medium	00:11:02		S1
	70.13	IR	Infiltration Runner at 12 o'clock	00:11:07		M4
	70.76	RFJ	Roots Fine Joint from 9 o'clock to 3 o'clock, within 8 inch	00:11:13		M1
	73.01	JOM	Joint Offset Medium	00:11:59		S1
	87.89	JOM	Joint Offset Medium	00:13:11		S1
	87.89	RFJ	Roots Fine Joint from 9 o'clock to 5 o'clock, within 8 inch	00:13:13		M1
	87.89	ID	Infiltration Dripper at 12 o'clock, within 8 inch	00:13:22		M3
	91.19	S02 RFJ	Roots Fine Joint from 9 o'clock to 5 o'clock, Start, within 8 inch	00:14:23		
	97.58	JOM	Joint Offset Medium	00:15:44		S1
	97.59	ID	Infiltration Dripper at 12 o'clock, within 8 inch	00:15:51		M3
	103.61	RMJ	Roots Medium Joint from 7 o'clock to 12 o'clock, 5% lost, within 8 inch	00:16:53		M3
	106.83	JOM	Joint Offset Medium	00:17:44		S1
	112.97	JOM	Joint Offset Medium	00:18:34		S1
	122.11	JOM	Joint Offset Medium	00:19:34		S1
	143.71	JOM	Joint Offset Medium	00:21:47		S1
	146.58	F02 RFJ	Roots Fine Joint from 9 o'clock to 5 o'clock, Finish, within 8 inch	00:22:11		M1
	158.74	JOM	Joint Offset Medium	00:23:17		S1
	179.99	RFJ	Roots Fine Joint from 9 o'clock to 1 o'clock, within 8 inch	00:25:05		M1
	189.31	JOM	Joint Offset Medium	00:26:21		S1





Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286

Inspection report

Date : 5/5/2016	Work Order : Default	Weather : Dry	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3676
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 294.8	Length Surveyed : 294.8

1:690	Distance	Code	Observation	Counter	Photo	Grade
	189.32	RFJ	Roots Fine Joint from 8 o'clock to 2 o'clock, within 8 inch	00:26:29		M1
	189.32	ID	Infiltration Dripper at 10 o'clock, within 8 inch	00:26:35		M3
	192.97	IS	Infiltration Stain at 8 o'clock, within 8 inch	00:27:51		M4
	223.06	JOM	Joint Offset Medium	00:29:48		S1
	223.07	RFJ	Roots Fine Joint from 10 o'clock to 2 o'clock, within 8 inch	00:29:53		M1
	226.32	JOM	Joint Offset Medium	00:30:36		S1
	226.34	RFJ	Roots Fine Joint from 9 o'clock to 12 o'clock, within 8 inch	00:30:43		M1
	268.17	RFJ	Roots Fine Joint from 3 o'clock to 5 o'clock, within 8 inch	00:33:56		M1
	273.92	JOM	Joint Offset Medium	00:34:46		S1
	280.12	JOM	Joint Offset Medium	00:35:29		S1
	292.77	RBJ	Roots Ball Joint from 7 o'clock to 5 o'clock, 75% lost, within 8 inch	00:36:28		M4
	294.75	AMH	Manhole, upstream, survey complete. / upstream, survey complete.	00:37:24		
MH03510						
QSR	QMR	SPR	MPR	OPR	SPRI	MPRI
□	□	18.0	70.0	88.0	1.0	3.3
						2.3



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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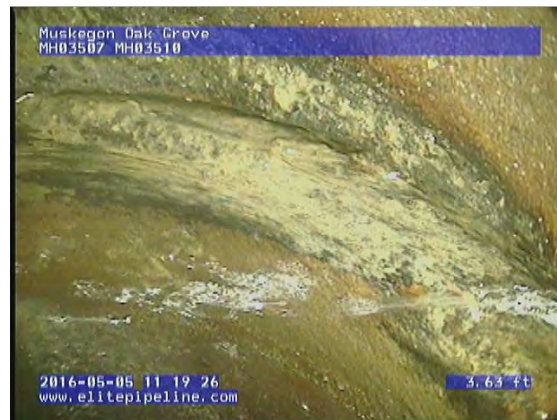
GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_111804_486.jpg, 00:00:25, 0.00
 Manhole, downstream, survey begins.



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112016_223.jpg, 00:01:26, 2.57
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112044_947.jpg, 00:01:33, 2.57
 Infiltration Gusher from 10 o'clock to 1 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112103_233.jpg, 00:01:33, 2.57
 Infiltration Gusher from 10 o'clock to 1 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112211_171.jpg, 00:02:46, 7.54
 Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Debris., Start



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112319_350.jpg, 00:03:45, 18.18
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112417_126.jpg, 00:04:44, 27.09
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112641_393.jpg, 00:06:26, 42.24
 Roots Fine Joint at 2 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112700_276.jpg, 00:06:26, 42.24
 Roots Fine Joint at 2 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112838_179.jpg, 00:08:04, 57.68
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112928_428.jpg, 00:08:41, 60.65
 Roots Fine Joint from 9 o'clock to 2 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_112951_415.jpg, 00:08:41, 60.65
 Roots Fine Joint from 9 o'clock to 2 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113047_904.jpg, 00:09:52, 67.05
 Infiltration Runner at 1 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113126_184.jpg, 00:09:52, 67.05
 Infiltration Runner at 1 o'clock, within 8 inch



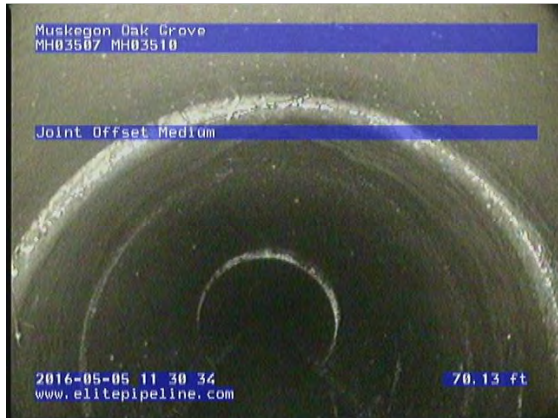
GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113112_729.jpg, 00:09:59, 67.07
 Roots Fine Joint from 10 o'clock to 11 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113131_305.jpg, 00:09:59, 67.07
 Roots Fine Joint from 10 o'clock to 11 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113211_299.jpg, 00:11:02, 70.13
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113426_804.jpg, 00:11:07, 70.13
 Infiltration Runner at 12 o'clock



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113419_024.jpg, 00:11:13, 70.76
 Roots Fine Joint from 9 o'clock to 3 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113435_339.jpg, 00:11:13, 70.76
 Roots Fine Joint from 9 o'clock to 3 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113510_230.jpg, 00:11:59, 73.01
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113829_023.jpg, 00:13:11, 87.89
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113639_283.jpg, 00:13:13, 87.89
 Roots Fine Joint from 9 o'clock to 5 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113821_665.jpg, 00:13:13, 87.89
 Roots Fine Joint from 9 o'clock to 5 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113809_419.jpg, 00:13:22, 87.89
 Infiltration Dripper at 12 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113858_220.jpg, 00:14:23, 91.19
 Roots Fine Joint from 9 o'clock to 5 o'clock, Start, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_113911_158.jpg, 00:14:23, 91.19
 Roots Fine Joint from 9 o'clock to 5 o'clock, Start, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114024_426.jpg, 00:15:44, 97.58
 Joint Offset Medium



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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114046_033.jpg, 00:15:51, 97.59
 Infiltration Dripper at 12 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114049_830.jpg, 00:15:51, 97.59
 Infiltration Dripper at 12 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114154_834.jpg, 00:16:53, 103.61
 Roots Medium Joint from 7 o'clock to 12 o'clock, 5% lost, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114208_439.jpg, 00:16:53, 103.61
 Roots Medium Joint from 7 o'clock to 12 o'clock, 5% lost, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114251_000.jpg, 00:17:44, 106.83
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114402_747.jpg, 00:18:34, 112.97
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114521_356.jpg, 00:19:34, 122.11
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114750_654.jpg, 00:21:47, 143.71
 Joint Offset Medium



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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114822_035.jpg, 00:22:11, 146.58
 Roots Fine Joint from 9 o'clock to 5 o'clock, Finish, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_114935_249.jpg, 00:23:17, 158.74
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115133_828.jpg, 00:25:05, 179.99
 Roots Fine Joint from 9 o'clock to 1 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115230_357.jpg, 00:25:05, 179.99
 Roots Fine Joint from 9 o'clock to 1 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115329_603.jpg, 00:26:21, 189.31
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115419_978.jpg, 00:26:29, 189.32
 Roots Fine Joint from 8 o'clock to 2 o'clock, within 8 inch



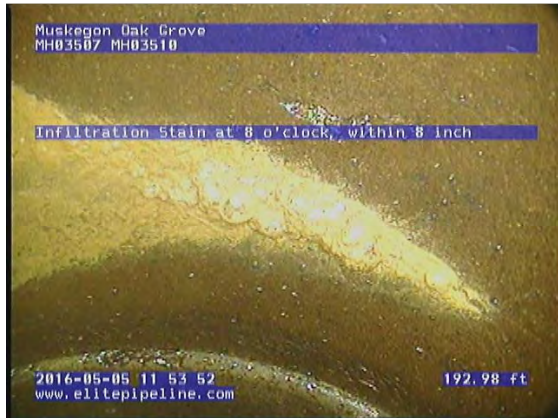
GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115434_520.jpg, 00:26:29, 189.32
 Roots Fine Joint from 8 o'clock to 2 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115428_369.jpg, 00:26:35, 189.32
 Infiltration Dripper at 10 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3676	JN2064
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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115529_658.jpg, 00:27:51, 192.97
 Infiltration Stain at 8 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115732_073.jpg, 00:29:48, 223.06
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115802_730.jpg, 00:29:53, 223.07
 Roots Fine Joint from 10 o'clock to 2 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115810_782.jpg, 00:29:53, 223.07
 Roots Fine Joint from 10 o'clock to 2 o'clock, within 8 inch



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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115836_850.jpg, 00:30:36, 226.32
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115909_956.jpg, 00:30:43, 226.34
 Roots Fine Joint from 9 o'clock to 12 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_115916_947.jpg, 00:30:43, 226.34
 Roots Fine Joint from 9 o'clock to 12 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120215_554.jpg, 00:33:56, 268.17
 Roots Fine Joint from 3 o'clock to 5 o'clock, within 8 inch



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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120227_569.jpg, 00:33:56, 268.17
 Roots Fine Joint from 3 o'clock to 5 o'clock, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120311_463.jpg, 00:34:46, 273.92
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120356_056.jpg, 00:35:29, 280.12
 Joint Offset Medium



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120527_848.jpg, 00:36:28, 292.77
 Roots Ball Joint from 7 o'clock to 5 o'clock, 75% lost, within 8 inch



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GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120552_145.jpg, 00:36:28, 292.77
Roots Ball Joint from 7 o'clock to 5 o'clock, 75% lost, within 8 inch



GM3676_29b5a4f6-782c-44a4-b604-e6dda5d2d56c_20160505_120629_923.jpg, 00:37:24, 294.75
Manhole, upstream, survey complete.



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286

Inspection report

Date : 5/5/2016	Work Order : Default	Weather : Dry	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3683
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Downstream	Pipe Joint Length :	Total Length : 150.0	Length Surveyed : 150.0

City : Muskegon	Drainage Area :	Upstream MH : MH03510
Street : Oak Grove	Media Label :	Up Rim to Invert : 0.0
Location Code : Main highway <input type="checkbox"/> urban	Flow Control : Not Controlled	Downstream MH : MH03514
Location Details :	Sheet Number :	Down Rim to Invert : 0.0

Pipe shape: Circular	Sewer Use: Sanitary
Pipe size: 10	Sewer Category : SEC
Pipe material: Clay	Purpose: Routine Assessment
Lining Method :	Owner :

Additional Info :

	1:1148 Distance	Code	Observation	Counter	Photo	Grade
	0.00	AMH	Manhole, upstream, survey begins. / upstream, survey begins.	00:00:26		
	0.00	MWL	Water Level, 5% of cross sectional area	00:00:38		
	7.24	IS	Infiltration Stain at 2 o'clock, within 8 inch	00:01:39		M4
	12.47	RFJ	Roots Fine Joint from 11 o'clock to 2 o'clock, within 8 inch	00:02:11		M1
	20.89	RFJ	Roots Fine Joint from 10 o'clock to 3 o'clock, within 8 inch	00:03:10		M1
	23.27	CL	Crack Longitudinal at 12 o'clock, within 8 inch	00:04:13		S2
	24.44	RFJ	Roots Fine Joint from 10 o'clock to 4 o'clock, within 8 inch	00:04:49		M1
	77.56	RFJ	Roots Fine Joint from 9 o'clock to 11 o'clock, within 8 inch	00:08:34		M1
	80.51	S01 RFJ	Roots Fine Joint from 7 o'clock to 5 o'clock, Start, within 8 inch	00:09:18		
	83.98	ID	Infiltration Dripper at 2 o'clock, within 8 inch	00:09:44		M3
	90.31	F01 RFJ	Roots Fine Joint from 7 o'clock to 5 o'clock, Finish, within 8 inch	00:10:24		M1
	116.49	RFJ	Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch	00:12:18		M1
	116.49	ID	Infiltration Dripper from 12 o'clock to 3 o'clock, within 8 inch	00:12:29		M3
	131.34	RMJ	Roots Medium Joint from 7 o'clock to 3 o'clock, 20% lost, within 8 inch	00:13:49		M3



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286

Inspection report

Date : 5/5/2016	Work Order : Default	Weather : Dry	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3683
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Downstream	Pipe Joint Length :	Total Length : 150.0	Length Surveyed : 150.0

	Distance	Code	Observation	Counter	Photo	Grade	
	131.36	ID	Infiltration Dripper at 1 o'clock, within 8 inch	00:13:55		M3	
	136.72	MGO	General Observation, possible material change / possible material change	00:15:52			
	139.17	MWL	Water Level, 25% of cross sectional area, Might be from cleaning truck upstream. / Might be from cleaning truck upstream.	00:15:16			
	147.00	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 2 o'clock to 4 o'clock, within 8 inch	00:18:33		M2	
	147.00	ID	Infiltration Dripper from 11 o'clock to 12 o'clock, within 8 inch	00:18:48		M3	
	150.00	AMH	Manhole, downstream, survey complete. / downstream, survey complete.	00:19:22			
QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
□	□	2.0	28.0	30.0	2.0	2.2	2.1



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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_121917_971.jpg,00:00:26,0.00
 Manhole, upstream, survey begins.



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122045_186.jpg,00:01:39,7.24
 Infiltration Stain at 2 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122130_003.jpg,00:02:11,12.47
 Roots Fine Joint from 11 o'clock to 2 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122141_153.jpg,00:02:11,12.47
 Roots Fine Joint from 11 o'clock to 2 o'clock, within 8 inch



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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122240_438.jpg, 00:03:10, 20.89
 Roots Fine Joint from 10 o'clock to 3 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122306_316.jpg, 00:03:10, 20.89
 Roots Fine Joint from 10 o'clock to 3 o'clock, within 8 inch



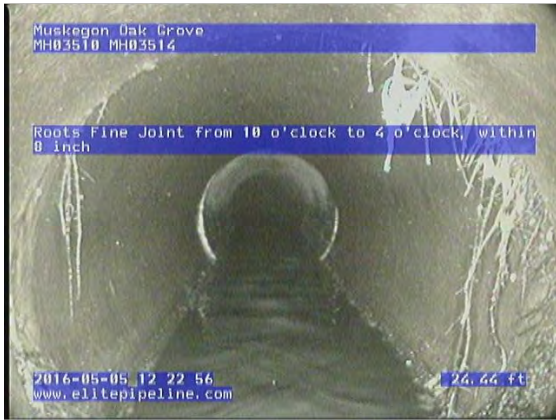
GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122356_269.jpg, 00:04:13, 23.27
 Crack Longitudinal at 12 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122406_744.jpg, 00:04:13, 23.27
 Crack Longitudinal at 12 o'clock, within 8 inch



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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122432_837.jpg, 00:04:49, 24.44
 Roots Fine Joint from 10 o'clock to 4 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122500_362.jpg, 00:04:49, 24.44
 Roots Fine Joint from 10 o'clock to 4 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122855_232.jpg, 00:08:34, 77.56
 Roots Fine Joint from 9 o'clock to 11 o'clock, within 8 inch



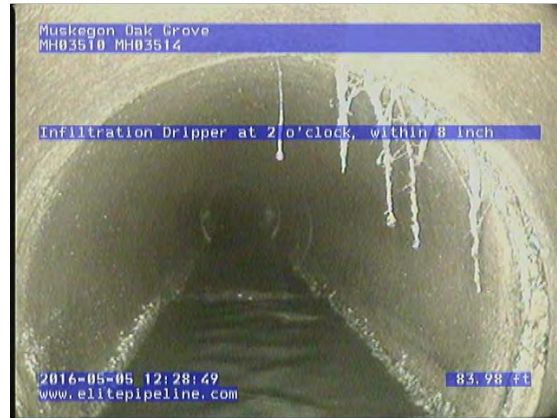
GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122908_817.jpg, 00:08:34, 77.56
 Roots Fine Joint from 9 o'clock to 11 o'clock, within 8 inch



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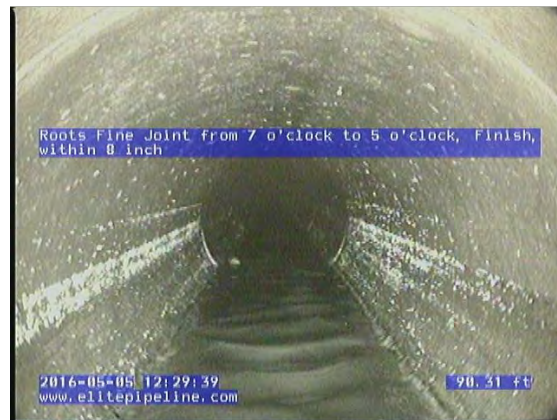
GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_122951_580.jpg, 00:09:18, 80.51
 Roots Fine Joint from 7 o'clock to 5 o'clock, Start, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123026_587.jpg, 00:09:44, 83.98
 Infiltration Dripper at 2 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123037_540.jpg, 00:09:44, 83.98
 Infiltration Dripper at 2 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123115_788.jpg, 00:10:24, 90.31
 Roots Fine Joint from 7 o'clock to 5 o'clock, Finish, within 8 inch



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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123317_777.jpg, 00:12:18, 116.49
 Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123405_642.jpg, 00:12:18, 116.49
 Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123345_591.jpg, 00:12:29, 116.49
 Infiltration Dripper from 12 o'clock to 3 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123354_156.jpg, 00:12:29, 116.49
 Infiltration Dripper from 12 o'clock to 3 o'clock, within 8 inch



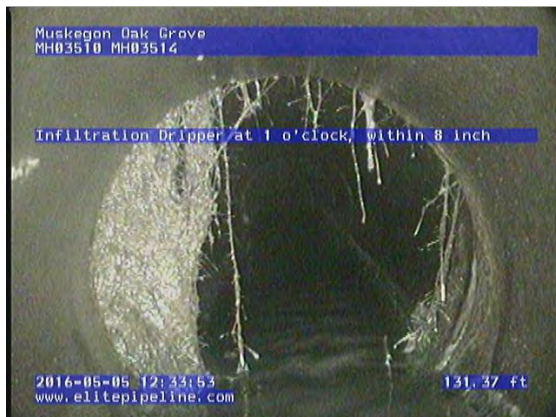
City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3683	JN2064
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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123514_953.jpg, 00:13:49, 131.34
 Roots Medium Joint from 7 o'clock to 3 o'clock, 20% lost, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123554_462.jpg, 00:13:49, 131.34
 Roots Medium Joint from 7 o'clock to 3 o'clock, 20% lost, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123530_235.jpg, 00:13:55, 131.36
 Infiltration Dripper at 1 o'clock, within 8 inch



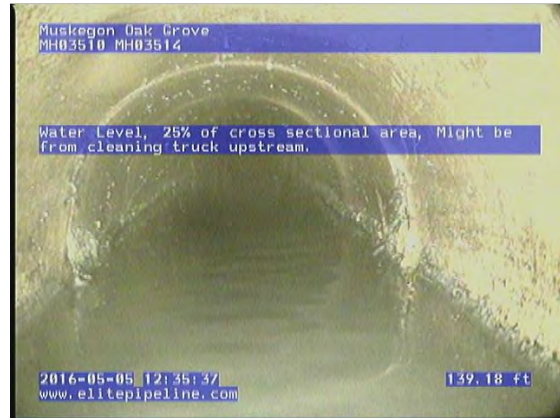
GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123542_297.jpg, 00:13:55, 131.36
 Infiltration Dripper at 1 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3683	JN2064
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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123850_542.jpg, 00:15:52, 136.72
 General Observation, possible material change



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_123714_085.jpg, 00:15:16, 139.17
 Water Level, 25% of cross sectional area, Might be from cleaning truck upstream.



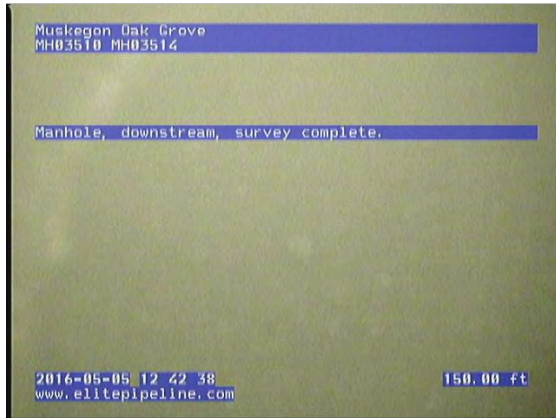
GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_124305_614.jpg, 00:18:33, 147.00
 Deposits Attached Encrustation, 5% of cross sectional area from 2 o'clock to 4 o'clock, within 8 inch



GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_124332_935.jpg, 00:18:48, 147.00
 Infiltration Dripper from 11 o'clock to 12 o'clock, within 8 inch



City Muskegon	Street Oak Grove	Date 5/5/2016	Pipe Segment Reference GM3683	JN2064
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GM3683_ed2824f5-d3e3-4757-88d6-d4208adc31ee_20160505_124415_069.jpg, 00:19:22, 150.00
Manhole, downstream, survey complete.



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286

Inspection report

Date : 5/12/2016	Work Order : Default	Weather : Saturated	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3700
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 264.9	Length Surveyed : 264.9

City : Muskegon	Drainage Area :	Upstream MH : MH03533
Street : Evanston	Media Label :	Up Rim to Invert : 0.0
Location Code : Main highway <input type="checkbox"/> urban	Flow Control : Not Controlled	Downstream MH : MH03531
Location Details :	Sheet Number :	Down Rim to Invert : 0.0

Pipe shape: Circular	Sewer Use: Sanitary
Pipe size: 10	Sewer Category : SEC
Pipe material: Clay	Purpose: Routine Assessment
Lining Method :	Owner :

Additional Info :

1:2273	Distance	Code	Observation	Counter	Photo	Grade
MH03533	0.00	AMH	Manhole, downstream, survey begins / downstream, survey begins	00:00:19		
	0.00	MWL	Water Level, 15% of cross sectional area	00:00:26		
	1.00	CM	Crack Multiple from 12 o'clock to 12 o'clock, within 8 inch	00:01:23		S3
	1.25	ID	Infiltration Dripper at 12 o'clock, within 8 inch	00:01:57		M3
	1.66	IR	Infiltration Runner at 9 o'clock, within 8 inch	00:02:31		M4
	2.89	RFJ	Roots Fine Joint at 12 o'clock, within 8 inch	00:03:29		M1
	16.89	TFA	Tap Factory Made Active at 12 o'clock, 6inch dim, within 8 inch	00:03:48		
	130.36	TF	Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch	00:09:15		
	131.72	RFL	Roots Fine Lateral at 12 o'clock	00:09:39		M1
	158.48	TF	Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch	00:11:02		
	200.60	TF	Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch	00:13:23		
	226.77	DSZ	Deposits Settled Other, 15% of cross sectional area from 5 o'clock to 7 o'clock, Debris / Debris	00:14:59		M3
	250.29	TF	Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch	00:16:30		
	255.46	DSZ	Deposits Settled Other, 15% of cross sectional area from 5 o'clock to 7 o'clock, Debris / Debris	00:17:22		M3






Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 ☐
 (616) 726-8286

Inspection report

Date : 5/12/2016	Work Order : Default	Weather : Saturated	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3700
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 264.9	Length Surveyed : 264.9

	Distance	Code	Observation	Counter	Photo	Grade	
	1.0073 264.87 MH03531	AMH	Manhole, upstream, survey complete. / upstream, survey complete.	00:18:21			
QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
☐	☐	3.0	15.0	18.0	3.0	2.5	2.6



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3700	JN2064
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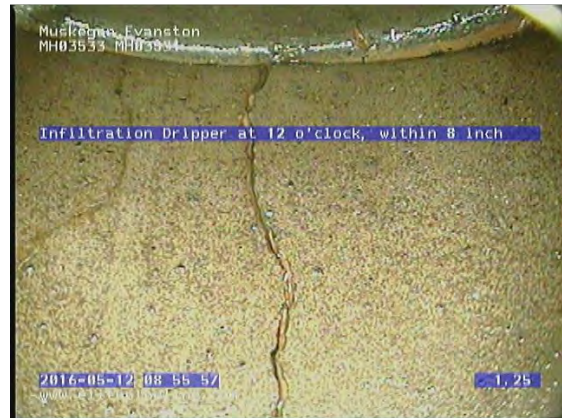
GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085517_579.jpg, 00:00:19, 0.00
 Manhole, downstream, survey begins



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085644_396.jpg, 00:01:23, 1.00
 Crack Multiple from 12 o'clock to 12 o'clock, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085732_800.jpg, 00:01:23, 1.00
 Crack Multiple from 12 o'clock to 12 o'clock, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085716_640.jpg, 00:01:57, 1.25
 Infiltration Dripper at 12 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3700	JN2064
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GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085806_617.jpg, 00:02:31, 1.66
 Infiltration Runner at 9 o'clock, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085841_800.jpg, 00:02:31, 1.66
 Infiltration Runner at 9 o'clock, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_085910_343.jpg, 00:03:29, 2.89
 Roots Fine Joint at 12 o'clock, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090010_169.jpg, 00:03:29, 2.89
 Roots Fine Joint at 12 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3700	JN2064
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GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090138_517.jpg, 00:03:48, 16.89
 Tap Factory Made Active at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090129_333.jpg, 00:03:48, 16.89
 Tap Factory Made Active at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090652_594.jpg, 00:09:15, 130.36
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090708_018.jpg, 00:09:15, 130.36
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3700	JN2064
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GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090722_583.jpg, 00:09:39, 131.72
 Roots Fine Lateral at 12 o'clock



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090855_710.jpg, 00:11:02, 158.48
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_090907_178.jpg, 00:11:02, 158.48
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091123_807.jpg, 00:13:23, 200.60
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3700	JN2064
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GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091136_847.jpg, 00:13:23, 200.60
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091310_103.jpg, 00:14:59, 226.77
 Deposits Settled Other, 15% of cross sectional area from 5 o'clock to 7 o'clock, Debris



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091452_627.jpg, 00:16:30, 250.29
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091511_684.jpg, 00:16:30, 250.29
 Tap Factory Made at 12 o'clock, 6inch dim, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3700	JN2064
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GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091611_340.jpg, 00:17:22, 255.46
Deposits Settled Other, 15% of cross sectional area from 5 o'clock to 7 o'clock, Debris



GM3700_d760bc2d-7738-420b-a21c-0e3d9fae79d8_20160512_091733_376.jpg, 00:18:21, 264.87
Manhole, upstream, survey complete.



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286

Inspection report

Date : 5/12/2016	Work Order : Default	Weather : Saturated	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3701
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 317.7	Length Surveyed : 317.7

City : Muskegon	Drainage Area :	Upstream MH : MH03532
Street : Evanston	Media Label :	Up Rim to Invert : 0.0
Location Code : Main highway <input type="checkbox"/> urban	Flow Control : Not Controlled	Downstream MH : MH03533
Location Details :	Sheet Number :	Down Rim to Invert : 0.0

Pipe shape: Circular	Sewer Use: Sanitary
Pipe size: 10	Sewer Category : SEC
Pipe material: Clay	Purpose: Routine Assessment
Lining Method :	Owner :

Additional Info :

	1:2632 Distance	Code	Observation	Counter	Photo	Grade
	0.00	AMH	Manhole, downstream, survey begins / downstream, survey begins	00:00:20		
	0.00	MWL	Water Level, 20% of cross sectional area	00:00:31		
	27.89	IG	Infiltration Gusher from 12 o'clock to 4 o'clock, within 8 inch	00:01:55		M5
	38.04	ID	Infiltration Dripper at 1 o'clock, within 8 inch	00:03:02		M3
	38.04	CL	Crack Longitudinal at 12 o'clock, within 8 inch	00:03:15		S2
	43.20	RFJ	Roots Fine Joint from 1 o'clock to 4 o'clock, within 8 inch	00:03:45		M1
	162.52	RFJ	Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch	00:10:35		M1
	165.85	RFJ	Roots Fine Joint from 7 o'clock to 1 o'clock, within 8 inch	00:11:17		M1
	224.36	ID	Infiltration Dripper at 12 o'clock, within 8 inch	00:14:41		M3
	233.10	RFJ	Roots Fine Joint from 1 o'clock to 5 o'clock, within 8 inch	00:15:23		M1
	239.43	RFJ	Roots Fine Joint from 7 o'clock to 10 o'clock, within 8 inch	00:16:08		M1
	242.41	RFJ	Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch	00:16:44		M1
	263.46	RFJ	Roots Fine Joint from 7 o'clock to 12 o'clock, within 8 inch	00:18:40		M1
	294.13	DSZ	Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, within 8 inch, Debris / Debris	00:21:01		M2



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092339_488.jpg, 00:00:20, 0.00
 Manhole, downstream, survey begins



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092540_357.jpg, 00:01:55, 27.89
 Infiltration Gusher from 12 o'clock to 4 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092558_697.jpg, 00:01:55, 27.89
 Infiltration Gusher from 12 o'clock to 4 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092653_465.jpg, 00:03:02, 38.04
 Infiltration Dripper at 1 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092713_281.jpg, 00:03:15, 38.04
 Crack Longitudinal at 12 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092717_543.jpg, 00:03:15, 38.04
 Crack Longitudinal at 12 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092751_813.jpg, 00:03:45, 43.20
 Roots Fine Joint from 1 o'clock to 4 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_092804_746.jpg, 00:03:45, 43.20
 Roots Fine Joint from 1 o'clock to 4 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_093449_767.jpg, 00:10:35, 162.52
 Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_093513_265.jpg, 00:10:35, 162.52
 Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_093545_250.jpg, 00:11:17, 165.85
 Roots Fine Joint from 7 o'clock to 1 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_093558_113.jpg, 00:11:17, 165.85
 Roots Fine Joint from 7 o'clock to 1 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_093913_327.jpg, 00:14:41, 224.36
 Infiltration Dripper at 12 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094006_610.jpg, 00:15:23, 233.10
 Roots Fine Joint from 1 o'clock to 5 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094018_482.jpg, 00:15:23, 233.10
 Roots Fine Joint from 1 o'clock to 5 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094104_451.jpg, 00:16:08, 239.43
 Roots Fine Joint from 7 o'clock to 10 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094117_401.jpg, 00:16:08, 239.43
 Roots Fine Joint from 7 o'clock to 10 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094155_139.jpg, 00:16:44, 242.41
 Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094217_264.jpg, 00:16:44, 242.41
 Roots Fine Joint from 7 o'clock to 5 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094400_230.jpg, 00:18:40, 263.46
 Roots Fine Joint from 7 o'clock to 12 o'clock, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094420_095.jpg, 00:18:40, 263.46
 Roots Fine Joint from 7 o'clock to 12 o'clock, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094633_088.jpg, 00:21:01, 294.13
 Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, within 8 inch, Debris



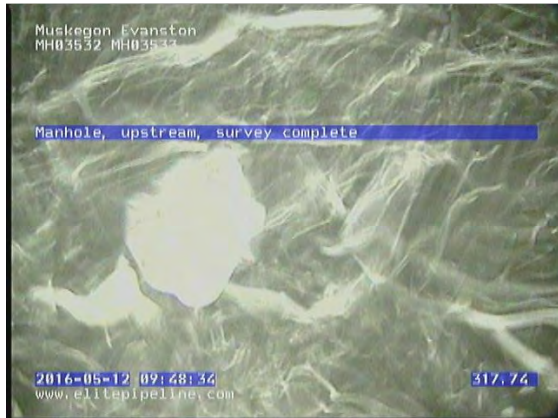
GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094747_063.jpg, 00:22:07, 308.55
 Tap Factory Made Capped at 12 o'clock, 6inch dim, within 8 inch



GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094815_242.jpg, 00:22:07, 308.55
 Tap Factory Made Capped at 12 o'clock, 6inch dim, within 8 inch



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3701	JN2064
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GM3701_62c62d3f-fa26-4182-aa9d-10e119c32db3_20160512_094953_642.jpg, 00:23:57, 317.73
Manhole, upstream, survey complete



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 (616) 726-8286

Inspection report

Date : 5/12/2016	Work Order : Default	Weather : Saturated	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3702 & GM3722
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 394.0	Length Surveyed : 394.0

City : Muskegon	Drainage Area :	Upstream MH : MH02761
Street : Evanston	Media Label :	Up Rim to Invert : 0.0
Location Code : Main highway <input type="checkbox"/> urban	Flow Control : Not Controlled	Downstream MH : MH03532
Location Details :	Sheet Number :	Down Rim to Invert : 0.0

Pipe shape : Circular	Sewer Use : Sanitary
Pipe size : 10	Sewer Category : SEC
Pipe material : Clay	Purpose : Routine Assessment
Lining Method :	Owner :

Additional Info :

1:1934	Distance	Code	Observation	Counter	Photo	Grade
MH02761	0.00	AMH	Manhole, downstream, survey begins / downstream, survey begins	00:00:20		
	0.00	MWL	Water Level, 10% of cross sectional area	00:00:26		
	24.56	IR	Infiltration Runner at 12 o'clock, within 8 inch	00:02:33		M4
	24.98	CM	Crack Multiple from 11 o'clock to 1 o'clock, within 8 inch	00:02:55		S3
	33.44	IR	Infiltration Runner at 2 o'clock, within 8 inch	00:03:59		M4
	34.28	CS	Crack Spiral from 3 o'clock to 4 o'clock, within 8 inch	00:04:25		S2
	36.68	DSZ	Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Debris / Debris	00:04:43		M2
	48.72	CL	Crack Longitudinal at 10 o'clock, within 8 inch	00:05:58		S2
	49.70	CL	Crack Longitudinal at 2 o'clock, within 8 inch	00:06:32		S2
	67.73	ID	Infiltration Dripper at 11 o'clock, within 8 inch	00:07:52		M3
	76.51	CL	Crack Longitudinal at 2 o'clock, within 8 inch	00:08:52		S2
	112.19	IR	Infiltration Runner at 11 o'clock, within 8 inch	00:11:13		M4
	220.23	IG	Infiltration Gusher at 11 o'clock	00:18:07		M5
	221.35	MGO	General Observation, This hole is at MH03534, verified from the top outside the pipe. / This hole is at MH03534, verified from the top outside the pipe.	00:40:00		



Inspection report

Date : 5/12/2016	Work Order : Default	Weather : Saturated	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3702 & GM3722
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 394.0	Length Surveyed : 394.0

1:1934	Distance	Code	Observation	Counter	Photo	Grade
	221.43	H	Hole at 11 o'clock	00:18:31		S3
	250.29	TB	Tap Break-In at 12 o'clock, 6inch dim, within 8 inch	00:20:50		
	263.69	DSZ	Deposits Settled Other, 5% of cross sectional area from 5 o'clock to 7 o'clock, within 8 inch, Debris / Debris	00:22:18		M2
	267.77	RFJ	Roots Fine Joint from 2 o'clock to 4 o'clock, within 8 inch	00:23:16		M1
	270.04	RFJ	Roots Fine Joint from 10 o'clock to 5 o'clock, within 8 inch	00:23:57		M1
	273.04	RFJ	Roots Fine Joint from 10 o'clock to 5 o'clock, within 8 inch	00:24:38		M1
	276.02	RFJ	Roots Fine Joint from 8 o'clock to 1 o'clock, within 8 inch	00:25:42		M1
	288.13	RFJ	Roots Fine Joint from 7 o'clock to 10 o'clock, within 8 inch	00:26:54		M1
	291.13	RMJ	Roots Medium Joint from 7 o'clock to 9 o'clock, 10% lost, within 8 inch	00:27:24		M3
	294.21	RMJ	Roots Medium Joint from 7 o'clock to 8 o'clock, 10% lost, within 8 inch	00:27:58		M3
	312.77	CM	Crack Multiple from 10 o'clock to 2 o'clock, within 8 inch	00:29:31		S3
	313.46	RFB	Roots Fine Barrell at 10 o'clock, within 8 inch	00:30:07		M2
	313.46	TB	Tap Break-In at 12 o'clock, 6inch dim	00:30:29		
	315.07	CL	Crack Longitudinal at 12 o'clock, within 8 inch	00:31:09		S2
	315.36	CS	Crack Spiral from 2 o'clock to 4 o'clock, within 8 inch	00:31:47		S2
	315.36	RFB	Roots Fine Barrell at 4 o'clock, within 8 inch	00:31:58		M2
	316.87	CL	Crack Longitudinal at 3 o'clock, within 8 inch	00:32:39		S2
	331.81	DSZ	Deposits Settled Other, 20% of cross sectional area from 4 o'clock to 8 o'clock, Debris / Debris	00:33:56		M3
	361.52	DSZ	Deposits Settled Other, 20% of cross sectional area from 4 o'clock to 8 o'clock, Debris / Debris	00:36:32		M3



Elite Pipeline Services
 5220 Edgewater Drive
 Allendale, MI 49401
 ☐
 (616) 726-8286

Inspection report

Date : 5/12/2016	Work Order : Default	Weather : Saturated	Surveyed By : Dan Zuidema	Certificate Number : U-115-06023121	Pipe Segment Ref. : GM3702 & GM3722
Year laid : 1939	Pre-cleaning : No Pre-Cleaning	Direction : Upstream	Pipe Joint Length :	Total Length : 394.0	Length Surveyed : 394.0

	1:1934 Distance	Code	Observation	Counter	Photo	Grade	
	370.26	RFJ	Roots Fine Joint from 8 o'clock to 4 o'clock, within 8 inch	00:37:33		M1	
	379.58	RFJ	Roots Fine Joint from 2 o'clock to 4 o'clock, within 8 inch	00:38:38		M1	
	394.00	AMH	Manhole, upstream, survey complete. possibly to MH02761 / upstream, survey complete. possibly to MH02761	00:39:52			
QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
☐	☐	23.0	47.0	70.0	2.3	2.4	2.3



City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3702 & GM3722	JN2064
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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095328_625.jpg, 00:00:20, 0.00
 Manhole, downstream, survey begins



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095554_304.jpg, 00:02:33, 24.56
 Infiltration Runner at 12 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095626_606.jpg, 00:02:33, 24.56
 Infiltration Runner at 12 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095638_538.jpg, 00:02:55, 24.98
 Crack Multiple from 11 o'clock to 1 o'clock, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095737_885.jpg, 00:03:59, 33.44
 Infiltration Runner at 2 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095756_416.jpg, 00:03:59, 33.44
 Infiltration Runner at 2 o'clock, within 8 inch



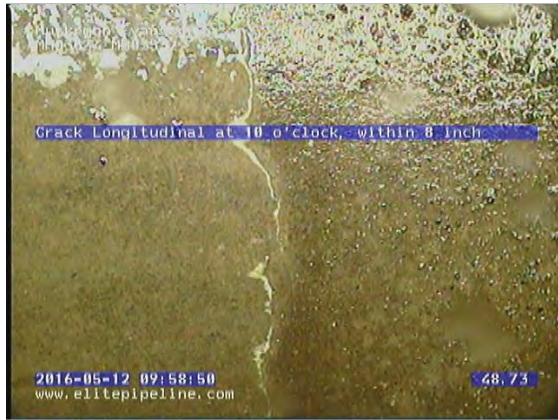
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095815_682.jpg, 00:04:25, 34.28
 Crack Spiral from 3 o'clock to 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_095849_203.jpg, 00:04:43, 36.68
 Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Debris



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100009_687.jpg, 00:05:58, 48.72
 Crack Longitudinal at 10 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100014_589.jpg, 00:05:58, 48.72
 Crack Longitudinal at 10 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100050_142.jpg, 00:06:32, 49.70
 Crack Longitudinal at 2 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100054_862.jpg, 00:06:32, 49.70
 Crack Longitudinal at 2 o'clock, within 8 inch



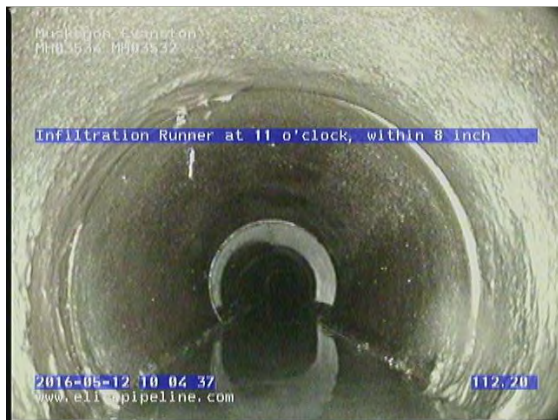
City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3702 & GM3722	JN2064
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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100227_024.jpg, 00:07:52, 67.73
 Infiltration Dripper at 11 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100327_338.jpg, 00:08:52, 76.51
 Crack Longitudinal at 2 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100555_923.jpg, 00:11:13, 112.19
 Infiltration Runner at 11 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_100607_953.jpg, 00:11:13, 112.19
 Infiltration Runner at 11 o'clock, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_101259_971.jpg, 00:18:07, 220.23
 Infiltration Gusher at 11 o'clock



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_111721_431.jpg, 00:40:00, 221.35
 General Observation, This hole is at MH03534, verified from the top outside the pipe.



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_101334_973.jpg, 00:18:31, 221.43
 Hole at 11 o'clock



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_101606_075.jpg, 00:20:50, 250.29
 Tap Break-In at 12 o'clock, 6inch dim, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_101620_298.jpg, 00:20:50, 250.29
 Tap Break-In at 12 o'clock, 6inch dim, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_101758_240.jpg, 00:22:18, 263.69
 Deposits Settled Other, 5% of cross sectional area from 5 o'clock to 7 o'clock, within 8 inch, Debris



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_101856_978.jpg, 00:23:16, 267.77
 Roots Fine Joint from 2 o'clock to 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102315_934.jpg, 00:23:57, 270.04
 Roots Fine Joint from 10 o'clock to 5 o'clock, within 8 inch



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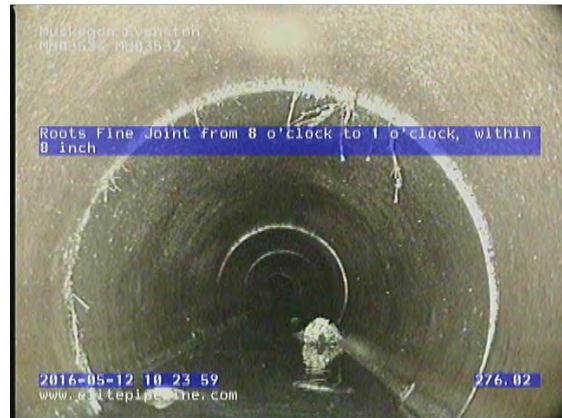
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102333_883.jpg, 00:23:57, 270.04
 Roots Fine Joint from 10 o'clock to 5 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102406_541.jpg, 00:24:38, 273.04
 Roots Fine Joint from 10 o'clock to 5 o'clock, within 8 inch



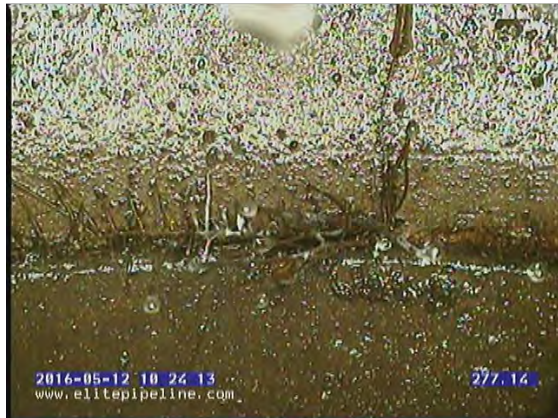
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102429_325.jpg, 00:24:38, 273.04
 Roots Fine Joint from 10 o'clock to 5 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102518_135.jpg, 00:25:42, 276.02
 Roots Fine Joint from 8 o'clock to 1 o'clock, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102532_661.jpg, 00:25:42, 276.02
 Roots Fine Joint from 8 o'clock to 1 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102803_564.jpg, 00:26:54, 288.13
 Roots Fine Joint from 7 o'clock to 10 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102815_939.jpg, 00:26:54, 288.13
 Roots Fine Joint from 7 o'clock to 10 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102845_351.jpg, 00:27:24, 291.13
 Roots Medium Joint from 7 o'clock to 9 o'clock, 10% lost, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102857_697.jpg, 00:27:24, 291.13
 Roots Medium Joint from 7 o'clock to 9 o'clock, 10% lost, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102938_445.jpg, 00:27:58, 294.21
 Roots Medium Joint from 7 o'clock to 8 o'clock, 10% lost, within 8 inch



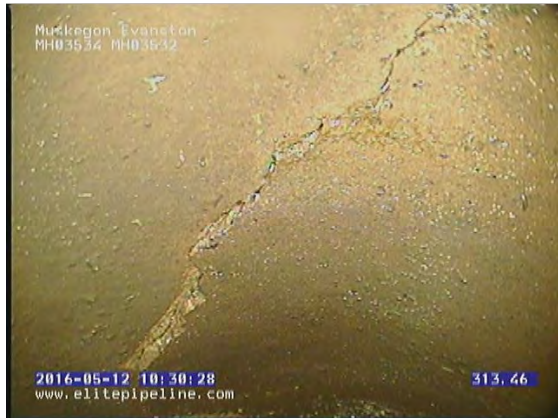
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_102948_077.jpg, 00:27:58, 294.21
 Roots Medium Joint from 7 o'clock to 8 o'clock, 10% lost, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103123_004.jpg, 00:29:31, 312.77
 Crack Multiple from 10 o'clock to 2 o'clock, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103146_921.jpg, 00:29:31, 312.77
 Crack Multiple from 10 o'clock to 2 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103212_158.jpg, 00:30:07, 313.46
 Roots Fine Barrell at 10 o'clock, within 8 inch



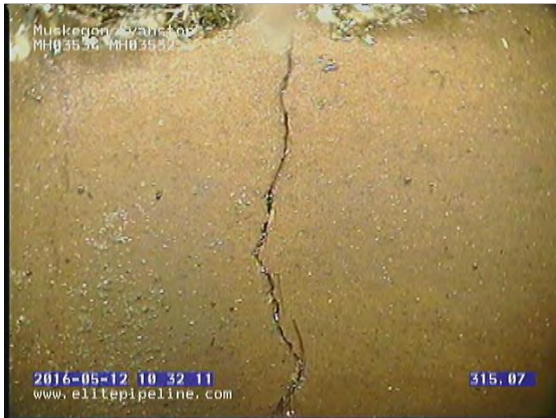
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103241_628.jpg, 00:30:29, 313.46
 Tap Break-In at 12 o'clock, 6inch dim



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103258_925.jpg, 00:30:29, 313.46
 Tap Break-In at 12 o'clock, 6inch dim



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103330_854.jpg, 00:31:09, 315.07
 Crack Longitudinal at 12 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103338_965.jpg, 00:31:09, 315.07
 Crack Longitudinal at 12 o'clock, within 8 inch



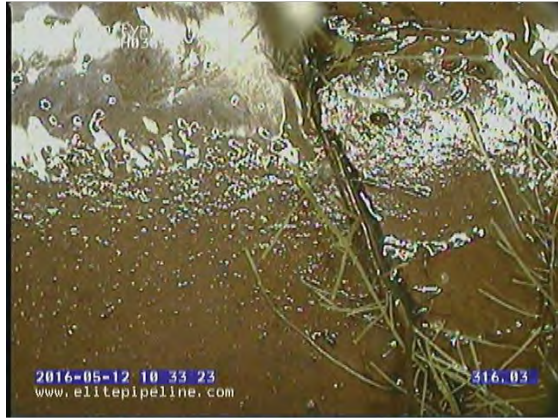
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103416_302.jpg, 00:31:47, 315.36
 Crack Spiral from 2 o'clock to 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103422_133.jpg, 00:31:47, 315.36
 Crack Spiral from 2 o'clock to 4 o'clock, within 8 inch



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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103441_922.jpg, 00:31:58, 315.36
 Roots Fine Barrell at 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103447_553.jpg, 00:31:58, 315.36
 Roots Fine Barrell at 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103530_888.jpg, 00:32:39, 316.87
 Crack Longitudinal at 3 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103537_751.jpg, 00:32:39, 316.87
 Crack Longitudinal at 3 o'clock, within 8 inch



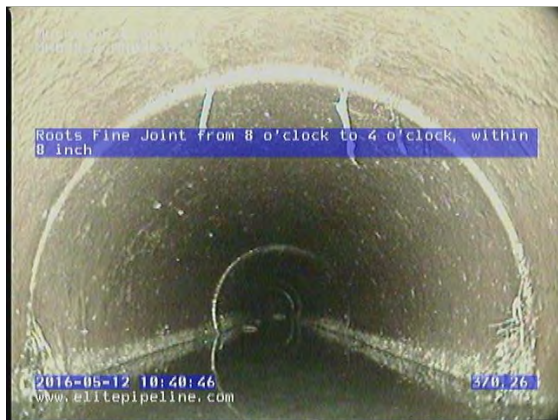
City Muskegon	Street Evanston	Date 5/12/2016	Pipe Segment Reference GM3702 & GM3722	JN2064
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GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103710_711.jpg, 00:33:56, 331.81
 Deposits Settled Other, 20% of cross sectional area from 4 o'clock to 8 o'clock, Debris



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_103959_750.jpg, 00:36:32, 361.52
 Deposits Settled Other, 20% of cross sectional area from 4 o'clock to 8 o'clock, Debris



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_104205_547.jpg, 00:37:33, 370.26
 Roots Fine Joint from 8 o'clock to 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_104218_547.jpg, 00:37:33, 370.26
 Roots Fine Joint from 8 o'clock to 4 o'clock, within 8 inch



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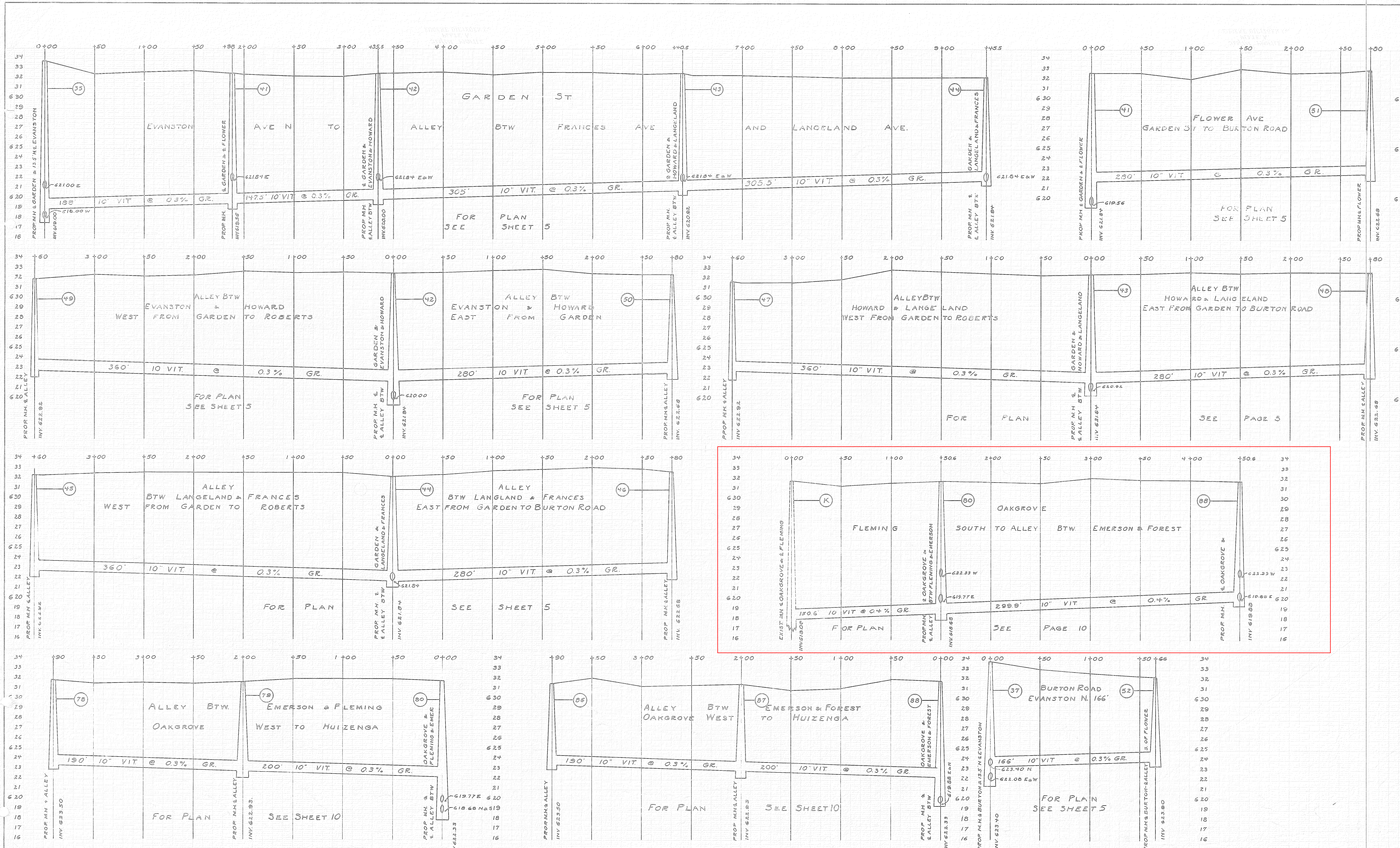
GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_104322_053.jpg, 00:38:38, 379.58
 Roots Fine Joint from 2 o'clock to 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_104332_914.jpg, 00:38:38, 379.58
 Roots Fine Joint from 2 o'clock to 4 o'clock, within 8 inch



GM3702_bffedebf-8262-4dd8-8638-19abd94e99a5_20160512_110206_027.jpg, 00:39:52, 394.00
 Manhole, upstream, survey complete. possibly to MH02761



REVISED	DATE	CHK'D	DRBY PA
			TRBY EJC
			CHK'D EJC
			APP'D
			ALL N
SURVEY	DATE	CHK'D	BUDGET
61-2-2507 EAST MUSKEGON SANITARY LATERALS CITY OF MUSKEGON OFFICE OF THE CITY ENGINEER			
PROJ. NO.	DATE	DIST.	SH. NO.
	11/17/17	4	6