



2024 CIPP LINING

Issued: February 7, 2024



PROJECT MANUAL

CITY OF ARDEN HILLS
1245 WEST HIGHWAY 96
ARDEN HILLS, MN 55112

CITY PROJECT PW-23-0101
TKDA PROJECT 20940.000

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TITLE PAGE

City of Arden Hills

2024 CIPP Lining

City Project Number: PW-23-0101

OWNER:

City of Arden Hills
1245 West Highway 96
Arden Hills, MN 55112
Telephone: (651) 792-7800

CIVIL ENGINEER:

TKDA
444 Cedar Street, St Paul, MN, 55101
Telephone: 651-292-4400
Contact: Larry Poppler, PE, TKDA
Telephone: 651-292-4457
Email: larry.poppler@tkda.com

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CERTIFICATION

2024 CIPP Lining

City Project No.: PW-23-0101

I hereby certify that this specification was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: _____

Printed Name: Larry Poppler, PE License No. 41005

Date: February 7, 2024



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ADVERTISEMENT FOR BIDS

(OFFICIAL PUBLICATION)

2024 CIPP Lining
CITY PROJECT NUMBER PW-23-0101

FOR THE CITY OF ARDEN HILLS
RAMSEY COUNTY, MINNESOTA

NOTICE IS HEREBY GIVEN that sealed bids will be received in the office of the City Clerk, City of Arden Hills until 3:00 p.m. local time, March 6, 2024, at the Arden Hills City Hall, 1245 West Highway 96, Arden Hills, MN 55112, and will be publicly opened and read aloud at said time and place by representatives of the City of Arden Hills. Bids arriving after the designated time will be returned unopened.

Said proposals are for the furnishing of all equipment, labor, and materials for the construction, complete in-place, of the following approximate quantities and other quantities specified in the Proposal Form:

5,700	Linear Feet	8" Cured In Place Pipe
118	Each	Reinstate Sanitary Sewer Service
1	Lump Sum	Temporary Conveyance
1	Lump Sum	Traffic Control
1	Lump Sum	Sanitary Sewer Pipe Repair - Open Cut
118	Each	Lateral Connection Sealing

Bids must be submitted on the Proposal Forms provided in accordance with the Contract Documents, Plans, and Specifications, which are on file with the City Engineer of Arden Hills and may be seen at City Hall, 1245 West Highway 96, Arden Hills, MN 55112.

A complete digital copy of the Proposal Form, Plans, and Specifications are available at www.questcdn.com. Documents may be downloaded for a non-refundable fee of \$25.00 by inputting Quest project #8963056 on the website's Project Search page. Please contact QuestCDN at 952.233.1632 or info@questcdn.com for assistance in registration and downloading the digital project information.

An optional paper set of Proposal Form, Plans and Specifications may be obtained from the Office of the City Engineer, 1245 West Highway 96, Arden Hills, MN 55112, for a nonrefundable fee of \$100.00 per set, check payable to the City of Arden Hills.

Bids will only be accepted from Contractors who purchase digital or paper bidding documents as specified above. The provisions of Minn. Stat. 16C.285 Responsible Contractor are imposed as a requirement of this contract.

No bid will be considered unless sealed and filed with the City Clerk of Arden Hills before the stated bid time and accompanied by a bid bond, cashier's check, or certified check made payable without recourse to the City of Arden Hills in an amount equal to five percent (5%) of the amount bid, to be forfeited as liquidated damages in the event that the bid is accepted and the bidder fails to enter promptly into a written contract and furnish the required bonds. A Performance Bond and a Labor and Material Payment Bond, each in the full amount of the Contract Sum, will be required of the successful bidder.

No bid may be withdrawn for a period of ninety (90) calendar days after bids are opened. The Owner reserves the right to reject any or all bids and to waive irregularities and formalities in order to award the contract in the best interests of the City of Arden Hills.

DATED: February 7, 2024
By Order of the Arden Hills City Council
Julie Hanson
City Clerk
City of Arden Hills, Minnesota

PUBLISHED IN THE PIONEER PRESS
PUBLISHED ON QUESTCDN
Finance & Commerce

February 14th, 2024
February 14th, 2024
February 14th, 2024

INSTRUCTION TO BIDDERS

1. CONTRACT DOCUMENTS

Contract Documents consist of those documents as listed in Agreement. The form of these documents is on file in the office of the City Clerk.

2. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Bidders are expected to make a thorough examination of the site of the work prior to submitting a proposal. It is the Bidder's responsibility to become familiar with obstacles which may be encountered and other local conditions affecting the execution of the work.
- B. Bidders must satisfy themselves by personal examination of the Contract Documents and by such other means as they prefer as to the accuracy of the quantities of work to be performed, the intent of the Contract Documents, the contract completion dates, and the requirements of the Owner and Engineer. The successful Bidder must employ, as far as possible, the methods and means of carrying out the work in a manner as will not cause interference or interruption with the work of others or the operations of the Owner.
- C. Submission of a Proposal shall be considered evidence that the Bidder is thoroughly familiarized with the conditions to be encountered, the character, quality and quantity of the work to be performed, materials to be furnished, and the requirements of the Contract Documents.

3. INADEQUACIES, OMISSIONS, CONFLICTS

- A. Any verbal information obtained from or statement made by representatives of the Owner upon examination of the Contract Documents or the site, for the purpose of bidding, which apparently corrects or in any way amends the Contract Documents, shall be invalid. The Owner will not be responsible for such verbal information or statements.
- B. Bidders shall bring any inadequacies, omissions, or conflicts to the Engineer's attention at least seven (7) days before the due date for bids. Clarification will be supplied to Bidders by Addenda, and each Addendum shall be acknowledged on the Proposal Form. Failure to so request clarification of any inadequacy, omissions, or conflicts will not relieve the Bidder of responsibility. The signing of the Proposal will be considered as implicitly denoting that the Bidder has a thorough comprehension of the full intent and scope of the Contract Documents.

4. MODIFICATIONS TO CONTRACT DOCUMENTS

- A. The Owner reserves the right to modify the Contract Documents at any time prior to the opening of bids.
- B. Such modification will be made by Addendum, duly numbered and dated.
- C. If Addenda are issued, Bidders shall acknowledge receipt thereof on the Proposal Form. Failure to do so may be cause for rejection of any such Proposal.

5. SUBSTITUTION OF MATERIALS

- A. Should a Bidder propose to substitute materials other than those specified herein, said

INSTRUCTION TO BIDDERS

materials must be found acceptable and approved by the Engineer, in writing, seven (7) calendar days prior to the opening of bids. Otherwise, it is understood that the Bidder shall furnish materials as specified.

6. WITHDRAWAL OF BIDS

- A. A bidder may withdraw a proposal without prejudice, provided the bidder files a written request to the Owner before the hour of opening of bids.
- B. Such withdrawn proposal may be modified and resubmitted by the bidder at any time prior to the hour set for the opening of bids.

7. PREPARATION OF PROPOSALS

- A. The bidder shall submit his proposal on the form provided by the Engineer.
- B. The blank spaces in the proposal shall be filled in correctly with ink or where indicated for each and every item for which a quantity is given, and the bidder shall state the prices for which he proposes to do each item of the work contemplated. Alterations, corrections or deletions may nullify the bid unless each alteration, correction or deletion is initialed by the bidder.
- C. The bidder's proposal shall be signed correctly with ink. If the proposal is made by an individual, his name and post office address shall be shown. If made by a firm or partnership, the name and post office address of each member of the firm or partnership shall be shown. If made by a corporation, the person signing the proposal shall show the name of the state under the law of which the corporation was chartered. All bids for corporations shall bear the official seal of the corporation.
- D. The bidder shall not stipulate in the proposal any conditions not provided for on the Proposal Form.
- E. Proposals may be rejected if they show any omission, alteration of form, additions not called for, conditional bids or alternate bids not specified, or irregularities of any kind. Proposals in which the prices are obviously unbalanced may be rejected.

8. DELIVERY OF PROPOSALS

- A. All bids shall be placed in a sealed envelope with a statement thereon showing the work covered by the bid, and addressed as stipulated in the Advertisement for Bids. Proposals may be mailed or submitted in person.
- B. No bids will be received after the time set for receiving them. Bids arriving by mail at the office of the Owner after the hour designated for receiving bids will be returned to the sender unopened.

9. PUBLIC OPENING OF PROPOSALS

- A. Proposals will be opened publicly and read aloud in such place as designated at the time and the date set in the Advertisement for Bids.
- B. Bidders or their authorized agents are invited to be present.

INSTRUCTION TO BIDDERS

10. AWARD OF CONTRACT

- A. The award of the Contract will be made to the lowest responsive, responsible Bidder based on the Proposal Form with the lowest base bid, or with the lowest sum of the base bid and any combination of selected bid alternates, at the discretion of the Owner. The decision to include alternate bid items as part of the basis for awarding the contract shall be at the sole discretion of the City
- B. Discrepancies between words and figures will be resolved in favor of words. If discrepancies exist between an extension or indicated sum of any column of figures, the corrected extensions or sum thereof will govern.
- C. In case of error in the extension of prices, the unit bid prices shall govern.
- D. Owner reserves the right to reject any and all bids, the right to waive any and all informalities, the right to disregard all nonconforming or conditional bids or counter proposals, and to accept any bid which will best serve the interests of the Owner.
- E. A “responsible” bid is one from a Bidder that has:
 - a. Financial resources, technical qualifications, experience, organization and facilities adequate to carry out the project, or a demonstrated ability to obtain these;
 - b. Resources to meet the completion schedule contained in the Agreement;
 - c. A satisfactory performance record for completion of other similar projects from both the Contractor and the superintendent/foreperson who will be overseeing this work.
 - d. A satisfactory performance record of conformance with local, state and federal regulations.
- F. A “responsive” bid must include the following:
 - a. Complete Proposal Form.
 - b. Bid Security.
 - c. Initial Contractor Verification of Compliance form.

11. RESPONSIBLE CONTRACTOR

- A. The provisions of Minn. Stat. 16C.285 are imposed as a requirement of this contract. All bidders and persons or companies providing a submission to the Advertisement for Bids of the City shall comply with the provisions of the statute.
- B. Any prime contractor or subcontractor that does not meet the minimum criteria established for a “responsible contractor” as defined in Minn. Stat. § 16C.285, subd. 3, or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the Project or to perform work on the Project.
- C. A responding contractor shall submit to the Owner a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in clauses (1)-(6) of Minn. Stat. § 16C.285, subd. 3, at the time that it responds to this solicitation document. A responding contractor must also submit a list of first-tier subcontractors it intends to retain on the project, at the time that it responds to this solicitation document.

INSTRUCTION TO BIDDERS

- D. Prior to being awarded a contract, the apparent successful prime contractor must submit a supplemental verification under oath confirming that all subcontractors and motor carriers meet the minimum criteria of Minn. Stat. § 16C.285, subd. 3. The apparent successful prime contractor has an ongoing duty to submit supplemental verification forms for each additional subcontractor retained for the project.
- E. A false statement under oath verifying compliance with any of the minimum criteria shall make the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction project and may result in termination of a contract awarded to a prime contractor or subcontractor that submits a false statement.

12. EVIDENCE OF RESPONSIBILITY

- A. When requested by the Owner, the bidder shall furnish a balance sheet, certified by a certified public accountant as to a date not more than sixty (60) days prior to the date of the opening of the proposals which shall set forth outstanding assets and liabilities in reasonable detail.
- B. The bidder shall also furnish, when requested, a list of work of a similar nature performed with dates of completion.
- C. The bidder shall also furnish any other additional information relative to financial responsibility and competence to do the work as may be requested by the Owner prior to the acceptance of any proposal.

13. DISQUALIFICATION OF BIDDERS

- A. More than one proposal for the same project from an individual firm, partnership or corporation under the same or different names will not be considered.
- B. Evidence that any bidder is interested in more than one proposal for the same work will cause rejection of all such proposals. Collusion between the bidders will be considered sufficient cause for the rejection of all bids so affected.
- C. Failure on the part of any bidder to carry out previous contracts satisfactorily or lack of the experience, equipment or financial resources necessary for the satisfactory completion of the work may be deemed sufficient cause for disqualification.

14. CONTRACT EXECUTION

- A. The Bidder to whom a Contract is awarded will be required to furnish, and at all times maintain, a satisfactory Performance and Payment Bond to the Owner in an amount equal to one hundred percent (100%) of the Contract Price. The bonds shall be executed by a Surety Company authorized to do business in the State of Minnesota and acceptable as Surety to the Owner. The form of bond is that required by statute. Personal sureties will not be approved.
- B. Failure to furnish the Contract Bond in a sum equal to the amount of the award, furnish adequate insurance certificates, or to execute the Contract within ten (10) days, as specified, shall be just cause for the annulment of the award, and it shall be understood by the bidder that in the event of the annulment of the award, the amount of the guaranty deposited with the proposal shall be retained by the Owner, not as a penalty, but as

INSTRUCTION TO BIDDERS

liquidated damages.

- C. The Owner reserves the right to delete any line item from the bid prior to final contract execution.
- D. All out-of-state contractors on construction work over \$100,000 will be required to file an exemption from Surety Deposit (Form SDE) prior to their first progress payment.
- E. If awarded the project, the Bidder agrees not to discriminate on account of race, creed or color as per Minnesota Statutes, Section 181.59 and Minnesota Statutes 363.

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PROPOSAL FORM

Bidder _____

City of Arden Hills
1245 Highway 96
Arden Hills, MN 55112

Time: 3:00 PM
Date: March 6, 2024

Attention: Arden Hills City Council

RE: 2024 CIPP Lining, Arden Hills, MN

The following proposal is made for furnishing and installing all labor and materials necessary for the 2024 CIPP Lining Project (City Project No. PW-23-0101), for the City of Arden Hills, Minnesota.

The undersigned certifies that the Contract Documents listed in the Instructions to Bidders have been carefully examined, and that the site of the work has been personally inspected. The undersigned declares that the amount and nature of the work to be done is understood, and that at no time will misunderstanding of the Contract Documents be pleaded.

On the basis of the Contract Documents, the undersigned proposes to furnish all necessary apparatus and other means of construction, to do all the work and furnish all the materials in the manner specified, and to accept as full compensation therefore the sum of the various products obtained by multiplying each unit price herein bid for the work or materials, by quantities thereof actually incorporated in the completed project, as determined by the Engineer.

The undersigned understands that the quantities mentioned herein are approximate only, and are subject to increase or decrease, and hereby proposes to perform all work as either increased or decreased, in accordance with the provisions of the specification, at the unit prices bid in the following proposal schedule, unless such schedule designates lump sum bids.

PROPOSED SCHEDULE: The Bidder agrees to perform all work described in the Contract Documents and shown on the plans for the following unit prices:

PROPOSAL FORM

2024 CIPP LINING - BID FORM					
BASE BID					
ITEM NUMBER	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LUMP SUM	1		
2	TRAFFIC CONTROL	LUMP SUM	1		
3	TEMPORARY CONVEYANCE	LUMP SUM	1		
4	CLEAN & TELEWISE SANITARY SEWER (PRE-REHABILITATION)	LIN FT	5727		
5	HEAVY SEWER CLEANING	HOUR	25		
6	TRIM PROTRUDING TAP	HOUR	5		
7	CIPP LINING - 8" SANITARY SEWER	LIN FT	5727		
8	REINSTATE SANITARY SEWER SERVICE	EACH	118		
9	REINSTATE OUTSIDE DROP	EACH	1		
10	SANITARY SEWER PIPE REPAIR - OPEN-CUT	LUMP SUM	1		
TOTAL OF ITEMS 1-10					

_____ DOLLARS AND _____ CENTS
(PRINT TOTAL BASE BID, IN WORDS, ABOVE)

2024 CIPP LINING - BID FORM					
ALTERNATE BID					
ITEM NUMBER	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
11	LATERAL CONNECTION SEALING - 5 FEET	EACH	118		
TOTAL OF ITEM 11					

_____ DOLLARS AND _____ CENTS
(PRINT TOTAL ALTERNATE BID, IN WORDS, ABOVE)

PROPOSAL FORM

All Bidders shall submit the following information with their Bid:

1. Required Bid Security;
2. Non-Collusion Affidavit;
3. Responsible Contractor Verification and Certification Compliance Form

Bid security in the amount of at least five percent (5%) of the Total Base Bid accompanies this Bid, the same being subject to forfeiture in the event of default.

The undersigned acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____

The Contractor agrees to complete the project as set forth in the Agreement Between Owner and Contractor for Construction Contract Form.

It is understood by the undersigned that the Owner reserves the right to reject any or all bids and to waive irregularities and formalities in order to serve the best interests of the Owner and that this bid may not be withdrawn until Ninety (90) days after the date of opening.

It is understood that if accepted by the Owner, this Bid becomes a part of the Contract documents, and failing to comply with any part of this Bid will be taken as failure of the bidder to comply with the Contract Documents and will be just cause for rejection of the work.

Respectfully Submitted:

Bidder is: Corporation Partnership Individual

Firm: _____

By: _____

Title: _____

Address: _____

_____ Zip Code _____

Telephone: _____

E-Mail: _____

END OF DOCUMENT

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NON-COLLUSION AFFIDAVIT

The following Non-Collusion Affidavit shall be executed by the bidder:

State Project No. _____

Federal Project No. _____

State of Minnesota _____)

) ss

County of _____)

I, _____, do state under penalty of
(name of person signing this affidavit)

perjury under 28 U.S.C. 1746 of the laws of the United States:

(1) that I am the authorized representative of _____

(name of person, partnership or corporation submitting this proposal)

and that I have the authority to make this affidavit for and on behalf of said bidder;

(2) that, in connection with this proposal, the said bidder has not either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding;

(3) that, to the best of my knowledge and belief, the contents of this proposal have not been communicated by the bidder or by any of his/her employees or agents to any person who is not an employee or agent of the bidder or of the surety on any bond furnished with the proposal and will not be communicated to any person who is not an employee or agent of the bidder or of said surety prior to the official opening of the proposal, and

(4) that I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed: _____
(bidder or his authorized representative)

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RESPONSIBLE CONTRACTOR FORM

1. Responsible Contractor:

The Owner cannot award a construction contract in excess of \$50,000 unless the Bidder is a "responsible contractor" as defined in Minnesota Statutes §16C.285, subdivision 3. A Bidder submitting a Proposal for this Project must verify that it meets the minimum criteria specified in that statute by submitting the Responsible Contractor Verification and Certification of Compliance form (Attachment A). A company owner or officer must sign the Responsible Contractor Verification and Certification of Compliance form under oath verifying compliance with each of the minimum criteria. Bidders must obtain verifications of compliance from all subcontractors. A Bidder must submit signed copies of verifications and certifications of compliance from subcontractors upon the Owner's request.

A Bidder or subcontractor who does not meet the minimum criteria established in Minnesota Statutes §16C.285, subdivision 3, or who fails to verify compliance with the criteria, will not be a "responsible contractor" and will be ineligible to be awarded the Contract for this Project or to work on this Project. Making a false statement verifying compliance with any of the minimum criteria will render the Bidder or subcontractor ineligible to be awarded a construction contract for this Project and may result in the termination of a contract awarded to a Bidder or subcontractor that makes a false statement.

A Bidder must also identify each subcontractor it intends to use on the Project. A Bidder must complete Attachment A-1 and submit it with the Responsible Contractor Verification and Certification of Compliance form (Attachment A), identifying each subcontractor it intends to use as of the time of bid submission. **THE COMPLETED FORMS MUST BE SUBMITTED WITH THE BID PROPOSAL.**

If the Bidder retains additional subcontractors after submitting its Responsible Contractor Verification and Certification of Compliance form, then the Bidder must submit Attachment A-2 within 14 days of retaining the additional subcontractor. Documents must be submitted to the Project Engineer. Include the State Project number specific to the bid on the form.

For Projects in excess of \$50,000, the Contractor may sublet work only to subcontractors that meet the definition of "responsible contractor" in Minnesota Statutes §16C.285, subdivision 3. The Contractor is responsible for obtaining verifications of compliance with §16C.285 from subcontractors using a form provided by the Department. The Contractor must provide such verifications to the Department upon the Department's request.

RESPONSIBLE CONTRACTOR FORM

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE ATTACHMENT A

City Project Number PW-23-0101

<p>Minn. Stat. § 16C.285, Subd. 7. IMPLEMENTATION. ... any prime contractor or subcontractor that does not meet the minimum criteria in subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project...</p>	
<p>Minn. Stat. § 16C.285, Subd. 3. RESPONSIBLE CONTRACTOR, MINIMUM CRITERIA. "Responsible contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:</p>	
(1)	<p>The Contractor:</p> <ul style="list-style-type: none">(i) is in compliance with workers' compensation and unemployment insurance requirements;(ii) is currently registered with the Department of Revenue and the Department of Employment and Economic Development if it has employees;(iii) has a valid federal tax identification number or a valid Social Security number if an individual; and(iv) has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative.
(2)	<p>The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:</p> <ul style="list-style-type: none">(i) repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of \$25,000 or more within the three-year period;(ii) has been issued an order to comply by the commissioner of Labor and Industry that has become final;(iii) has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;(iv) has been found by the commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;(v) has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or(vi) has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;

RESPONSIBLE CONTRACTOR FORM

(3)	The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 3268. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order;'
(4)	The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearing or was not appealed to the office;'
(5)	The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification;'
	* Any violations, suspensions, revocations, or sanctions, as defined in clauses (2) to (5), occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.
(6)	The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions; and
(7)	All subcontractors that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).
Minn. Stat. § 16C.285, Subd. 5. SUBCONTRACTOR VERIFICATION.	

RESPONSIBLE CONTRACTOR FORM

A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project (Attachment A-1).

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification (Attachment A-2) confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Minn. Stat. § 16C.285, Subd. 4. VERIFICATION OF COMPLIANCE.

A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3 at the time that it responds to the solicitation document.

A contracting authority may accept a sworn statement as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. Failure to verify compliance with any one of the minimum criteria or a false statement under oath in a verification of compliance shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract on the project for which the verification was submitted.

A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria.

RESPONSIBLE CONTRACTOR FORM

CERTIFICATION

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

- 1) My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. § 16C.285,
- 2) I have included Attachment A-1 with my company's solicitation response, and
- 3) if my company is awarded a contract, I will also submit Attachment A-2 as required.

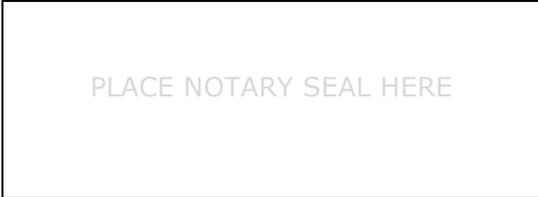
Authorized Signature of Owner or Officer:	Printed Name:
Title:	Date:
Company Name:	

Sworn to and subscribed before me this

_____ day of _____, 20__.

Notary Public

My Commission Expires: _____



RESPONSIBLE CONTRACTOR FORM

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE ATTACHMENT A-1

FIRST-TIER SUBCONTRACTORS LIST

SUBMIT WITH PRIME CONTRACTOR RESPONSE

PROJECT NUMBER MIN 1901

Minn. Stat. § 16C.285, Subd. 5. A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project.

FIRST TIER SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

RESPONSIBLE CONTRACTOR FORM

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE ATTACHMENT A-2

ADDITIONAL SUBCONTRACTORS LIST
PRIME CONTRACTOR TO SUBMIT AS SUBCONTRACTORS ARE ADDED TO THE PROJECT
PROJECT NUMBER MIN 1901

This form must be submitted to the Owner.

Minn. Stat. § 16C.285, Subd. 5. ... If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

ADDITIONAL SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

RESPONSIBLE CONTRACTOR FORM

ADDITIONAL SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-2

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:
 All additional subcontractors listed on Attachment A-2 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285.

Authorized Signature of Owner or Officer:	Printed Name:
Title:	Date:
Company Name:	

Sworn to and subscribed before me this

_____ day of _____, 20__.

 Notary Public
 My Commission Expires: _____



END OF DOCUMENT 004513

NOTICE TO ALL BIDDERS

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

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MINNESOTA DEPARTMENT OF TRANSPORTATION
NOTICE TO BIDDERS
SUSPENSIONS/DEBARMENTS

Do not use suspended or debarred parties as subcontractors or material suppliers on this project.

Both the federal government and the State of Minnesota suspend and debar vendors. Review the lists of suspended and debarred vendors when submitting a bid and when submitting a request to sublet.

State Suspensions and Debarments.

To review the list of parties suspended and debarred by the State of Minnesota, go to this website: <http://www.mmd.admin.state.mn.us/debarredreport.asp> . This list includes parties suspended and debarred by the Minnesota Department of Transportation and the Minnesota Department of Administration.

Federal Suspensions and Debarments.

The federal government maintains a website listing suspended and debarred parties. You do not need a username or password to use the search functions on the website. You can either search for specific entity names, or see a list of parties suspended and debarred by the Federal Highway Administration.

To search the status of a particular vendor, follow this process:

First, go to the System for Awards Management (SAM) website: <https://www.sam.gov> (requires Internet Explorer version 11 or higher, or another supported browser such as Chrome).

Next, click on the "Search Records" icon.

Next, enter the potential subcontractor or supplier's name in the "Quick Search" box and click the "search" button.

To view a list of all entities suspended or debarred by the Federal Highway Administration, follow this process:

First, go to the System for Awards Management (SAM) website: <https://www.sam.gov> (requires Internet Explorer version 11 or higher, or another supported browser such as Chrome).

Next, click on the "Search Records" icon.

Next, click on the "Advance Search – Exclusion" tab.

Next, click on the "single search" icon and a search form will pop up.

Next, go to the "Agency" field on the search page and select "Federal Highway Administration" from the drop-down list.

Next, click the "search" button, and the list of suspended and debarred parties will appear.

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NOTICE TO BIDDERS

Minnesota Statutes require prompt payment to subcontractors:

Minn. Stat. § 471.425 PROMPT PAYMENT OF LOCAL GOVERNMENT BILLS.

Subdivision 1. **Definitions.** For the purposes of this section, the following terms have the meanings here given them.

. . . (d) "Municipality" means any home rule charter or statutory city, county, town, school district, political subdivision or agency of local government. "Municipality" means the Metropolitan Council or any board or agency created under chapter 473.

. . . Subd. 4a. **Prompt payment to subcontractors.** Each contract of a municipality must require the prime contractor to pay any subcontractor within ten days of the prime contractor's receipt of payment from the municipality for undisputed services provided by the subcontractor. The contract must require the prime contractor to pay interest of 1-1/2 percent per month or any part of a month to the subcontractor on any undisputed amount not paid on time to the subcontractor. The minimum monthly interest penalty payment for an unpaid balance of \$100 or more is \$10. For an unpaid balance of less than \$100, the prime contractor shall pay the actual penalty due to the subcontractor. A subcontractor who prevails in a civil action to collect interest penalties from a prime contractor must be awarded its costs and disbursements, including attorney's fees, incurred in bringing the action.

Minn. Stat. § 15.72 PROGRESS PAYMENTS ON PUBLIC CONTRACTS; RETAINAGE.

. . . Subd. 2. **Retainage.** . . . (c) A contractor on a public contract for a public improvement must pay all remaining retainage to its subcontractors no later than ten days after receiving payment of retainage from the public contracting agency, unless there is a dispute about the work under a subcontract. If there is a dispute about the work under a subcontract, the contractor must pay out retainage to any subcontractor whose work is not involved in the dispute, and must provide a written statement detailing the amount and reason for the withholding to the affected subcontractor.

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AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

THIS AGREEMENT is made this ___ day of ___, 20__ (hereinafter "Effective Date of the Contract") by and between the City of Arden Hills, Ramsey County, Minnesota (hereinafter "Owner") and _____ (hereinafter "Contractor"). The Owner and Contractor hereby agree as follows:

ARTICLE 1 – THE WORK AND THE PROJECT

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Cleaning and televising of sanitary sewers, 8" Sanitary Sewer CIPP (Cured-in-Place-Pipe) Rehabilitation, Open-Cut Sanitary Sewer Pipe Repair, Lateral Connection Sealing
- 1.02 The Project, of which the Work under the Contract Documents is a part is generally described as follows: 2024 CIPP Lining, City Project No. PW-23-0101.

ARTICLE 2 – CONTRACT DOCUMENTS

- 2.01 The Contract Documents consist of the following:
- A. This Agreement
 - B. Performance and Payment Bonds
 - C. Insurance Certificates
 - D. Instructions to Bidders
 - E. General Conditions
 - F. Supplementary Conditions
 - G. Division 1 – General Requirements
 - H. Division 2 – Sanitary Sewer Rehabilitation Special Provisions
 - I. Drawings (not attached by incorporated by reference) consisting of ___ sheets with each sheet bearing the following general title: _____, dated _____.
 - J. Addenda (Numbers _ and _ inclusive)
 - K. Exhibits to the Agreement
 - 1. Contractor's Bid (pages _ to _ inclusive)
 - 2. Non-Collusion Affidavit
 - 3. Responsible Contractor Verification and Certification of Compliance Form
 - L. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - 1. Notice to Proceed
 - 2. Work Change Directives
 - 3. Change Orders
 - 4. Field Orders
- 2.02 This instrument, together with the documents hereinabove mentioned, form the Agreement, and they are as fully a part of the Agreement as if hereto attached or herein repeated.
- 2.03 The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions and Supplemental Conditions.

ARTICLE 3 – CONTRACT TIMES

- 3.01 Contract Times: The Contractor is to substantially complete construction of the project no later than September 13, 2024 in accordance with Paragraph 15.03 of the General Conditions. Substantial completion is defined as the completion of all payable items and delivery of all receivables. Final completion, defined as completion of all punchlist items, is to be complete by September 27, 2024.

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

- 3.02 All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 3.03 Liquidated Damages: Contractor and Owner recognize that time is of the essence as stated above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 3.01 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize that delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay, but not as a penalty;
- A. Substantial Completion: Contractor shall pay Owner \$200.00 for each day that expires after the time specified in Paragraph 3.01 above for Substantial Completion until the Work is substantially complete, as duly adjusted pursuant to the Contract.
 - B. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time for completion and readiness for final payment, as duly adjusted pursuant to the Contract, Contractor shall pay Owner \$300.00 for each day that expires after such time until the Work is completed and ready for final payment.
 - C. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 4 – CONTRACT PRICES

- 4.01 The Owner shall pay the Contractor for the performance of this Agreement according to the schedule of approximate quantities and unit prices as set out in the Contract Documents submitted by the Contractor on _____, the aggregate of which is estimated to be \$_____.
- 4.02 The Contract shall include Schedule ___ and Schedule ___ items as provided on the Proposal Form.
- 4.03 Payment is based an amount equal to the sum of the extended prices, established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item completed and accepted by the Engineer.
- 4.04 The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determination of actual quantities and classifications are to be made by the Engineer.

ARTICLE 5 – PAYMENT PROCEDURES

- 5.01 Progress Payments: Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 10th day of each month during performance of the Work as provided in Paragraph 5.02 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
- 5.02 Retainage: Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

- A. Ninety five (95) percent of Work completed (with the balance being retainage). *If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work has been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and*
 - B. *Fifty (50) percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).*
- 5.03 Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set-off by Owner pursuant to Paragraph 15.01E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.
- 5.04 Final Payment: Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Prices as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 6 – CONTRACTOR'S REPRESENTATIONS

- 6.01 In order to induce the Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference identified in the Contract Documents.
 - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Contract Documents, and reports relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Contract Documents.
 - E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the site-related reports identified in the Contract Documents, with respect to the effect of such information, observation, and documents on (1) the cost, progress and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor; and (3) Contractor's safety precautions and programs.
 - F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 - G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 7 – MISCELLANEOUS

- 7.01 Terms: Terms used in the Agreement will have the meanings stated in the General Conditions and Supplementary Conditions.
- 7.02 Assignment of Contract: Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 7.03 Successors and Assigns: Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations in the Contract Documents.
- 7.04 Severability: Any provision or part of the Contract Documents held to be void or unenforceable under any law or regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- 7.05 Contractor's Certifications
 - A. The provisions of Minn. Stat. 16C.285 Responsible Contractor are imposed as a requirement of this Contract. This Contract may be terminated by the Owner at any time upon discovery by the Owner that the prime contractor or subcontractor has submitted a false statement under oath verifying compliance with any of the minimum criteria set forth in the Statute.
 - B. The provisions of Minn. Stat. 471.425, subdivision 4a regarding payments to subcontractors are imposed as a requirement of this Contract.

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**AGREEMENT BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT**

IN WITNESS WHEREOF, Owner and Contractor have caused this instrument to be executed in duplicate as of the Effective Date of the Contract.

OWNER:

CONTRACTOR:

_____ City of Arden Hills _____

By: _____

By: _____

Title: Mayor _____

Title: _____

Attest: _____

Attest: _____

Title: City Clerk _____

Title: _____

Address for Giving Notices:

Address for Giving Notices:

City of Arden Hills _____

Attention: Public Works Director _____

1245 West Highway 96 _____

Arden Hills, MN 55112 _____

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PERFORMANCE BOND

<p>Contractor</p> <p>Name: [Full formal name of Contractor]</p> <p>Address <i>(principal place of business)</i>: [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address <i>(principal place of business)</i>: [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: [Full formal name of Owner]</p> <p>Mailing address <i>(principal place of business)</i>: [Address of Owner's principal place of business]</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: [Owner's project/contract name, and location of the project]</p> <p>Contract Price: [Amount from Contract]</p> <p>Effective Date of Contract: [Date from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date]</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Mailing address <i>(principal place of business)</i> : [Address of Owner's principal place of business]	Contract Description <i>(name and location)</i> : [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

Form IC134 Instructions

Contractor Affidavit

No state agency or local unit of government can make final payment to a contractor until the Department of Revenue has certified that the contractor and any subcontractor have fulfilled the requirements of Minnesota withholding tax laws.

If you are a prime contractor, a contractor or a subcontractor who did work on a project for the state of Minnesota or any of its local government subdivisions — such as a county, city or school district — you must submit a Contractor Affidavit to the Department of Revenue to receive a certificate of compliance.

Use of Information

The Department of Revenue needs **all** the requested information to determine if you have met the state income tax withholding requirements. If all required information is not provided, Form IC134 will be returned to you for completion.

All information on this Contractor Affidavit is private by state law. It cannot be given to others without your permission, except to the Internal Revenue Service, other states that guarantee the same privacy and certain government agencies as provided by law.

Minnesota Tax ID Number

You must have a Minnesota tax ID number if you have employees who work in Minnesota. You must enter your Minnesota tax ID number on Form IC134.

If you don't have a Minnesota tax ID number, apply online at www.revenue.state.mn.us or by calling our Business Registration Office at 651-282-5225 or 1-800-657-3605.

If you have no employees and did all the work yourself, you do not need a Minnesota tax ID number. Instead, enter your Social Security number in the space for Minnesota tax ID number and explain who did the work.

Submit Contractor Affidavit

Form IC134 cannot be processed by the Department of Revenue until you finish the work. If you submit the form before the project is completed, it will be returned to you unprocessed.

If any withholding payments are due to the state, Minnesota law requires certified payments before we approve your Form IC134.

If you are a subcontractor or sole contractor, submit the form when you have completed your part of the project.

If you are a prime contractor, submit the form when the entire project is completed and you have received certified Contractor Affidavits from all of your subcontractors.

If you're a prime contractor and a subcontractor on the same project

If you were hired as a subcontractor to do work on a project, and you subcontracted all or a part of your portion of the project to another contractor, you are a prime contractor as well. Complete both the subcontractor and prime contractor areas on a single Form IC134.

You may submit your Contractor Affidavit either electronically **or** by mail. This affidavit must be certified and returned before the state or any of its subdivisions can make final payment for your work.

For an immediate response: Complete and submit your Contractor Affidavit electronically. Go to www.revenue.state.mn.us and choose **Withholding Tax**. Under the File and Pay tab, click on Contractor Affidavit Information for Government Projects.

You may complete and mail Form IC134 to: Minnesota Revenue, Mail Station 6610, St. Paul, MN, 55146-6610. If you have fulfilled the requirements of Minnesota withholding tax laws, the department will sign your Form IC134 and return it to you.

To receive your final payment, submit the certified Contractor Affidavit to the government unit for which the work was done. If you are a subcontractor, submit the certified Contractor Affidavit to your prime contractor to receive your final payment.

Information and Assistance

Additional forms and information, including fact sheets and frequently asked questions, are available on our website.

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

Phone: 651-282-9999 or 1-800-657-3594

This information is available in alternate formats.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 Contractor's Insurance

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.01 *Owner’s Representative*

- A. Engineer will be Owner’s representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner’s representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer’s consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer’s Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer’s authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer’s authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner’s delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer’s authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:* Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance:* Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY GENERAL CONDITIONS

SGC 0 INTRODUCTION

These Supplementary General Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2018 Edition) and other provisions of the Contract Documents as indicated below. All provisions, which are not so amended or supplemented, remain in full force and effect.

SGC 1.01 DEFINED TERMS

The terms used in these Supplementary Conditions, which are defined in the Standard General Conditions of the Construction Contract (C-700, 2018 Edition), have the meanings assigned to them in the General Conditions and as amended below.

Owner shall mean the City of Arden Hills, 1245 West Highway 96, Arden Hills, MN 55112.

Engineer shall mean the City Engineer of the City of Arden Hills.

Department shall mean the City of Arden Hills Public Works Department.

Contractor shall mean the individual or entity with whom the Owner has entered into the Agreement.

Observer shall mean the individual or entity with whom the Owner and Engineer is represented in the observation and inspection of the project.

SGC 2.01 DELIVERY OF BONDS AND EVIDENCE OF INSURANCE

Delete paragraph 2.01B and insert the following:

Evidence of Contractor's Insurance: When Contractor delivers the signed counterparts of the Agreement to Owner and before any work at the site is started, Contractor shall deliver to Owner, with a copy to Engineer, insurance certificates and endorsements (and other evidence of insurance requested by Owner) which Contractor is required to purchase and maintain in accordance with paragraphs 5.03B and 5.04.

SGC 2.03 BEFORE STARTING CONSTRUCTION

Paragraph 2.03.A of the General Conditions shall be deleted in its entirety and replaced by the following paragraphs.

- B. Preliminary Schedules: Within ten (10) days after the Effective Date of the Agreement (unless otherwise specified in the Contract Documents) and before the preconstruction conference, Contractor shall submit to Engineer the following for timely review.
 1. The Contractor shall submit in writing to the Engineer for review a progress schedule indicating the order in which the Contractor proposes to perform the various stages of the Work, the dates on which the Contractor will start the various features thereof, and the contemplated dates for completing the same. This schedule shall be in the form of a bar chart of a suitable scale to indicate appropriately the percentage of work scheduled and completed by weekly schedules. The lack of a schedule shall be cause for withholding of progress payments and could result in a work stoppage. If the work is stopped, no credit of working days or payment of down time will be provided.

The progress schedule will be acceptable to the Engineer if it provides an orderly progression of the Work to completion within any specified Milestones and the

Contract Times. Such acceptance will not impose on the Engineer responsibility for the progress schedule of the Work nor interfere with or relieve the Contractor from the Contractor's full responsibility therefore.

2. The Contractor shall present to the Engineer three (3) copies of detailed, dimensioned manufacturer's drawings of all materials, apparatus and machinery, and for such fittings and devices as the Engineer may direct. The Engineer will keep two copies of each set and return the rest to the Contractor with the Engineer's approval or notations. In case of lack of approval, the Contractor shall submit new drawings, corrected as required by the Engineer. All such drawings shall be submitted to the Engineer with ample time allowance for consideration. Submittals shall be required for, but not limited to: manhole structures, castings, sewer pipe, water main, lift stations, waterworks brass, concrete mix design, bituminous pavement design, seed, prefabricated structures, traffic control, and other materials as required by the Engineer.
3. The Engineer's approval of such drawings and progress schedules shall not relieve the Contractor from responsibility for deviations from drawings or specifications unless the Contractor has, in writing, called the Engineer's attention to such deviations at the time of submission, nor shall it relieve the Contractor from the responsibility for errors of any sort in shop drawings or progress schedules. No Work shall be started progress schedules have been approved by the Engineer.

SGC 2.04 PRECONSTRUCTION CONFERENCE

Add a new paragraph immediately after 2.04.A of the General Conditions, which is to read as follows:

- B. The preconstruction meeting will be arranged by the Engineer. The Contractor's project superintendent and foreman will be present at this meeting. The Contractor's project superintendent shall be familiar with all phases of the work to be executed and shall oversee the work during its progress. The project superintendent shall represent the Contractor in the Contractor's absence, and communications and directions given to the project superintendent shall be as binding as if given to the Contractor. The Contractor's work schedule and a list of subcontractors and suppliers shall be submitted and reviewed along with any other information necessary for the orderly execution of the work at the preconstruction conference.

SGC 2.05 INITIAL ACCEPTANCE OF SCHEDULES

Paragraph 2.05 of the General Conditions shall be deleted in its entirety.

SGC 3.02 REFERENCE STANDARDS

Add new paragraphs immediately after 3.02.A.2 of the General Conditions, which are to read as follows:

3. The work shall be performed in accordance with:
 - A. The 2020 edition of the Minnesota Department of Transportation Standard Specifications for Construction, (MnDOT Specifications) and any supplements or amendments thereto issued prior to the date of these Contract Documents.
 - B. The 2023 Edition of the City Engineers Association of Minnesota Standard Specifications for Trench Excavation and Backfill/Surface Restoration and Sanitary and Storm Sewer Installation.
 - C. The Project Manual, which contain individual project Bidding Requirements, Proposal Form, Conditions of the Contract, Contract Forms, Specifications, and any other project-specific information in the form of appendices.

Traffic control shall be in accordance with the current edition of the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD), including the current edition of the Field Manual for Temporary Traffic Control Zone Layouts.

The provisions for construction shall comply with the following precedence ("1" being the highest precedence, "3" being the lowest):

- 1) Individual Project Plan
- 2) Individual Project Manual
- 3) MnDOT Standard Specifications for Construction

Any conflicting requirements or language shall follow that stated in the highest precedence document of those listed above, unless directed in writing by the Engineer.

4. Coordination of Plans and Specifications shall be in accordance with the provisions of MnDOT Specification 1504, as modified by the following definitions:
 - a. Standard Specification: Refer in precedent order to the current Standard Utilities Specifications of the City Engineers Association, the current MnDOT Standard Specifications and the other specifications of ASTM, ANSI, AWWA, etc., as referenced and as published on the date of the bid advertisement.
 - b. Supplemental Specifications: Refer in precedent order to the Supplementary Conditions and the General Conditions as contained in these Contract Documents.
 - c. Work under these Contract Documents shall be governed by all applicable federal, state, and local laws, regulations, codes and ordinances, and the Contract Documents defined in the Agreement

Should the Contract Documents conflict with any of the regulations and standards mentioned in preceding paragraphs of these Supplementary Conditions, the regulations and standards shall take precedence. This shall not, however, be construed to relieve the Contractor from complying with the requirements of the Contract Documents, which are in excess of, but not contrary to, the regulations and standards.

SGC 4.04 PROGRESS SCHEDULE

Paragraph 4.04.A of the General Conditions shall be deleted in its entirety.

SGC 5.03 SUBSURFACE AND PHYSICAL CONDITIONS

Add new paragraph immediately after 5.03.C of the General Conditions, which are to read as follows:

Notwithstanding Paragraphs 5.03.A and 5.03.C, under no circumstances may the Contractor rely upon the accuracy of the "technical data" contained in reports of explorations or tests of the amounts, elevations, or locations of subsurface groundwater.

SGC 5.04 DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS

Amend paragraph 5.04.E.2.a. by inserting in the second line of this paragraph immediately after the word "conditions" the following:

"or reasonably should have known thereof."

SGC 5.06I HAZARDOUS ENVIRONMENTAL CONDITION AT SITE

Paragraph 5.06I of the General Conditions shall be deleted in its entirety.

SGC 6.01C PERFORMANCE, PAYMENT, AND OTHER BONDS

The first sentence of this section is changed to read as follows:

All bonds shall be in a form acceptable to Owner and shall fulfill statutory requirements

SGC 6.03 CONTRACTOR'S LIABILITY INSURANCE

The following supplementary conditions are for City contracts. Add the following new paragraph immediately after paragraph 6.03.B:

The limits of liability for the insurance required by paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations. The intent is to require all Contractors to carry at least \$2,000,000 of coverage. These limits may be derived from the use of underlying coverage or Umbrella/Excess Insurance.

- 1. Worker's Compensation and related coverage under paragraphs 6.03 of the General Conditions.

Coverage A: Statutory

Coverage B: Employers Liability

Bodily Injury by Accident: Each Accident	\$500,000
Bodily Injury by Disease: Each Employee	\$500,000
Bodily Injury by Disease: Policy Limit	\$2,000,000

Coverage may be written at the State minimum limits but the difference must be supplemented through the use of an Umbrella/Excess policy.

- 2. The policy shall name the City of Arden Hills and the firm serving in the official capacity of Observer as additional insureds on a primary and non-contributory basis. As additional insureds, the City of Arden Hills and Observer shall be entitled to the limit required by this agreement or Contractor's actual policy limits, whichever is greater.

Contractor is required to provide the following endorsements: CG 20 10 07 04 or CG 20 10 04 13 and CG 20 37 07 04 or CG 20 37 04 13 or their equivalent.

General Liability:

Commercial General Liability	
General Aggregate	\$2,000,000
Product – Completed Operations Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence (Bodily Injury and Property Damage)	\$1,000,000
(Explosion, Collapse, and Underground shall not be deleted)	

Certificate of Insurance should indicate:	
Contractual Liability is covered	Yes
Governmental Immunity is waived to the extent of insurance	Yes
Operations of subcontractor is covered	Yes

Optional:	
Certificate of Insurance should indicate:	
Contractual Liability is covered	Yes
Operations of subcontractor is covered	Yes

The intent is to ensure that the "per occurrence" limits and "product-completed operation" aggregates are at least \$2,000,000, but may be attained through the use of an Umbrella/Excess policy.

3. Automobile Liability:

Bodily Injury:	
Each Person	\$2,000,000
Each Accident	\$2,000,000
Property Damage:	
Each Accident	\$2,000,000
or	
Bodily Injury & Property Damage (Combined Single Limit)	\$2,000,000

The intent is to ensure that the limits are at least \$2,000,000, but may be attained through the use of an Umbrella/Excess policy.

4. Umbrella/Excess Liability:	
General Aggregate	\$5,000,000*
Each Occurrence	\$5,000,000

**The required minimum shall be \$5,000,000, or policy limits, whichever is greater.*

The Contractor is also responsible for meeting all insurance requirements set by Ramsey County or the Minnesota Department of Transportation (MnDOT) for any work on or under the County or MnDOT right-of-way if applicable.

SGC 6.04 OWNER'S LIABILITY INSURANCE

Paragraph 6.04A of the General Conditions shall be deleted in its entirety.

SGC 6.04 BUILDER'S RISK AND OTHER PROPERTY INSURANCE

Delete paragraph 6.04 in its entirety and insert the following:

Builder's Risk Insurance: Before commencement of the Work, the Contractor shall provide Builder's Risk Insurance on a multiple peril form in the full amount of the total construction and material contract. Such insurance shall contain an appropriate rider to include as Additional Named Insureds, the Owner, the Engineer and his consultants, and each of their officers, employees and agents, all subcontractors, the equipment contractors and all of their subcontractors on the construction premises. Such insurance may have a deductible clause but the deductible amount shall be borne by the Contractor and shall not exceed \$1,000.00.

SGC 6.05 PROPERTY LOSSES; SUBROGATION

Paragraph 6.06 of the General Conditions shall be deleted in its entirety.

SGC 7.03 LABOR; WORKING HOURS

Add the following to 7.03.C of the General Conditions to read as follows:

Working hours shall be restricted to the hours of 7:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. on Saturdays. Work will not be permitted on Sundays and holidays.

SGC 7.07 CONCERNING SUBCONTRACTORS AND SUPPLIERS

At the end of the paragraph 7.07.L add the following:

In accordance with Minnesota Statute 471.425, the Contractor shall pay any subcontractor within ten days of the Contractor's receipt of payment from the municipality.

SGC 7.11 LAWS AND REGULATIONS

Add Paragraph D: DATA PRACTICES ACT

The Contractor must comply with the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13, as it applies to 1) all data provided by the Owner pursuant to this Agreement, and 2) all data, created, collected, received, stored, used, maintained, or disseminated by the Contractor pursuant to this Agreement. The Contractor is subject to all the provisions of the Minnesota Government Data Practices Act, including but not limited to the civil remedies of Minnesota Statutes Section 13.08, as if it were a government entity. In the event the Contractor receives a request to release data, the Contractor must immediately notify the Owner. The Owner will give the Contractor instructions concerning the release of the data to the requesting party before the data is released. Contractor agrees to defend, indemnify, and hold the Owner, its officials, officers, agents, employees, and volunteers harmless from any claims resulting from Contractor's officers', agents', owners', partners', employees', volunteers', assignees' or subcontractors' unlawful disclosure and/or use of protected data. The terms of this paragraph shall survive the cancellation or termination of this Agreement.

SGC 7.13 SAFETY AND PROTECTION

Add a new paragraph immediately after 7.13.J of the General Conditions, which is to read as follows:

The Contractor shall provide all necessary temporary barricades, fences and other protection as required for the proper execution of the work and for the protection of his employees, employees of the Owner, other construction personnel, and the general public according to all Federal, State, and Local regulations. This may include increased signing as necessary. The Contractor may need to furnish, erect, and maintain lights to provide a safe work environment according to all state and federal codes. All utility trenches shall be backfilled at the end of each working day and driveway access provided to individual residences to the satisfaction of the Engineer. The Contractor shall immediately call "911" if a gas utility line is struck or damaged.

SGC 7.16 SUBMITTALS

Add a new paragraph immediately after 7.16.B.1 of the General Conditions, which is to read as follows:

The Contractor shall present to the Engineer three (3) copies of detailed, dimensioned manufacturer's drawings of all materials, apparatus and machinery, and for such fittings and devices as described in the Supplementary General Conditions. In case of lack of approval, the Contractor shall submit new drawings, corrected as required by the Engineer. All such drawings shall be submitted to the Engineer with a time allowance of ten (10) days for consideration.

All shop drawings shall be submitted through the Prime or General Contractor and be accompanied by a letter of transmittal. The Prime or General Contractor shall approve all shop drawings before transmitting them to Engineer for approval.

SGC 8.01 OTHER WORK AT SITE

Add the following to 8.01.D of the General Conditions to read as follows:

The Contractor shall cooperate with all parties to facilitate the prompt completion of all contracts.

Add the following immediately after 8.01.F of the General Conditions, which is to read as follows:

- D. The Contractor is hereby advised that the following work maybe performed on the site by others during the contract time.
 - 1. The individual lot owners or their agents may be site grading and/or constructing buildings on the lots adjacent to the proposed streets.
 - 2. Private utility companies may be installing and/or relocating underground facilities on or adjacent to the project.
- E. If Owner performs work for the Contractor, the Contractor must payOwner for such work with no deduction in Contract amount.

SGC 9.11 EVIDENCE OF FINANCIAL ARRANGEMENTS

Paragraph 9.11 of the General Conditions shall be deleted in its entirety.

SGC 10.02 VISITS TO SITE

Add a new paragraph immediately after 10.02.B of the General Conditions, which is to read as follows:

- C. Throughout the construction phase, regular weekly meetings will be held by the Engineer on site to review progress and to discuss items necessary for an orderly completion of the project. The weekly construction meetings shall include the Engineer and Contractor. The Contractor’s representative must be able to make decisions for the Contractor pertaining to the project. All project conflicts shall be brought to these meetings, including requests for additional payment. Meeting minutes will be provided to all participants as a record of the meeting.

SGC 11.02 CHANGE ORDERS

Add a new paragraph immediately after 11.02.A of the General Conditions, which is to read as follows:

Any requests for “Change Orders” shall be submitted to the Engineer in writing within seven (7) days of the occurrence. Any requests shall be approved by the Engineer prior to the work commencing.

SGC 12.01 CLAIMS

The first sentence of Paragraph 12.01.B of the General Conditions shall be deleted and the following inserted in its place:

Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to the Engineer and the other party to the Contract promptly but in no event later than ten (10) days after the start of the event giving rise thereto.

Add the following paragraphs to 12.01F of the General Conditions to read as follows:

Except as specifically authorized in writing by the Engineer at the time additional work is done beyond the original scope of the Contract Documents, the Contractor shall make no claims for additional compensation. The Contractor's plea of ignorance of foreseeable conditions which will create difficulties or hindrances in the execution of the work will not be acceptable to the Owner as an excuse for any failure of the Contractor to fulfill the requirements of the Contract Documents, and shall not be a basis for the Contractor's claim for additional compensation.

Any discrepancies in or conflicts between the items described in these Contract Documents must be submitted in writing to the Engineer for adjustment prior to proceeding with the work as any claims for additional compensation to achieve compliance with the requirements of those items will not be allowed or considered.

SGC 13.01B5F COST OF THE WORK

Paragraph 13.01B5F of the General Conditions shall be deleted in its entirety.

SGC 13.01C COSTS EXCLUDED

Insert the following after Paragraph 13.01C.7:

- 8. Sales, consumer, use and other similar taxes related to the Work for which Contractor is liable.

SGC 13.03 UNIT PRICE WORK

Delete paragraph 13.03.E in its entirety and insert the following in its place.

There will be no adjustment in unit price for increased or decreased quantities. In addition, the Owner reserves the right to reduce certain quantities or delete certain items from each section of the bids as the Owner sees fit, either before or after the Award of Contract. There will be no additional compensation due to remobilization of equipment as necessary to complete punch list items or other items not completed by the Contractor. There will be no additional compensation due to restocking charges for materials not used on the project.

SGC 14.02 TESTS AND INSPECTIONS

Add the following paragraphs to 14.02.A of the General Conditions to read as follows:

The Contractor shall provide a minimum twenty-four (24) hours' notice to the Observer for any testing that must be observed or accomplished by someone other than the Contractor's personnel. All final tests and inspections shall be performed under the observation of the Resident Project Observer.

All tests on material to be placed shall be completed prior to the placing of any material. Tests shall be made in accordance with the American Society for Testing and Materials (ASTM) standard and tentative specifications that apply, except as otherwise specified.

Signed copies of all reports on tests shall be sent at once to the Owner, Engineer and Contractor. Inspection and testing shall in no way relieve the Contractor or supplier from the responsibility of furnishing materials and workmanship in accordance with the plans and specifications.

SGC 15.01 PROGRESS PAYMENTS

Amend paragraph 15.01B.4 of the General Conditions to read as follows:

The amount of retainage with respect to all progress payments will be as follows:

Minnesota Contractors	5%
Exempt Non-Minnesota Contractors	5%

Non-Exempt Non-Minnesota Contractors
*State Surety Deposit

5% + 8%* = 13%

Non-Minnesota Contractors are advised to file Form SDE with the Minnesota Department of Revenue to determine their exemption status.

No reduction in retainage will be allowed until final acceptance of entire project, unless approved by the Engineer.

Delete paragraph 15.01.D.1 in its entirety and replace with the following paragraphs:

1. Thirty days (30) after presentation of the Application for Payment to owner with Engineer's recommendation, the amount recommended (subject to the provision of paragraph 15.01.D and any Owner set-offs) will become due and when due will be paid by Owner to Contractor, unless extenuating circumstances exist which would preclude such payment by Owner to Contractor. If such extenuating circumstances exist, then payment shall be made within forty-five (45) days after Owner receives presentation of the Application for Payment.
2. Pursuant to Minnesota Statute 471.425, Subdivision 4a, the Contractor must pay any subcontractor within ten (10) days of the Contractor's receipt of payment from the City for undisputed services provided by the subcontractor. The Contractor must pay interest of one and one-half percent (1 ½ %) per month or any part of a month to the subcontractor on any undisputed amount not paid on time to the subcontractor. The minimum monthly interest penalty payment for an unpaid balance of \$100.00 or more is \$10.00. For an unpaid balance of less than \$100.00, the Contractor shall pay the actual penalty due to the subcontractor. A subcontractor who prevails in a civil action to collect interest penalties from the Contractor shall be awarded its costs and disbursements, including attorney's fees, incurred in bringing the action.

SGC 15.05 FINAL INSPECTION

Add the following after the second sentence of paragraph 15.05.A of the General Conditions:

If, after such measures are taken, subsequent inspections by the Engineer reveal that any of the previously identified construction items remain incomplete or defective, the Engineer will again notify the Contractor in writing of the remaining construction items. All costs associated with any subsequent inspections in which said remaining particulars are revealed, will be documented by the Engineer and paid by the Contractor to the Owner.

SGC 15.06 FINAL PAYMENT

Add a new paragraph immediately after paragraph 15.06.A.3 of the General Conditions, which is to read as follows:

4. Before final application for payment is made for the work, the Contractor must make satisfactory showing of compliance with M.S.A. 290.92, which requires the withholding of state income taxes for wages paid to employees on this project. Receipt by the Engineer of a certificate of Compliance from the Commissioner of Taxation to the Owner will satisfy this requirement. The Contractor is advised that before such certificate can be issued, the Contractor must first place on file with the Commissioner of Taxation an affidavit that the Contractor has complied with the provisions of M.S.A. 290.92. The required affidavit form will be supplied by the Commissioner of Taxation, Centennial Building, St. Paul, Minnesota, on request.

Final payment will not be made until the Contractor shall have filed with the Engineer evidence in the form of an affidavit or such other evidence as may be required that all claims against him by reason of the Contract have been fully paid or satisfactorily secured. This shall be in the form of IC134 forms, paid-in-full final lien waivers from the Contractor, subcontractors, and major suppliers, and a Consent of Surety shall precede

or accompany the final application for payment. In case such evidence is not furnished, the Owner may retain out of any monies due said Contractor sums sufficient to cover all lienable claims unpaid. In addition, a two (2) year maintenance bond is required from the Contractor. Said maintenance bond is to be dated to begin the date the City Council formally accepts the project. . If the foregoing conditions are satisfied, the Owner will release all retainage no later than 60 days after substantial completion, as defined in state law. The Contractor must pay all remaining retainage to its subcontractors in accordance with M. S. A. 337.10.

SGC 15.08 CORRECTION PERIOD

Amend the first sentence of paragraph 15.08.A of the General Conditions to read as follows:

If within two (2) years after the date of final acceptance of the project by the City Council; or such longer period of time as may be prescribed by Laws or Regulations; or by the terms of any applicable special guarantee required by the Contract Documents; or by any specific provision of the Contract Documents, any Work that is found to be defective, or if the repair of any damages to the land or areas made available for the Contractor's use by the Owner or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, the Contractor shall promptly, without cost to the Owner, and in accordance with the Owner's written instructions:

- (i) Repair such defective land or areas, or
- (ii) Correct such defective Work or, if the defective Work has been rejected by the Owner, remove it from the Project and replace it with Work that is not defective, and
- (iii) Satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting there from.

The two (2) year maintenance guarantee shall be included in and be a part of the Contractor Security (Performance Bond) previously specified. The provisions of this section shall not be construed as restricting Contractor's liability for breach of contract by reason of non-conformance with the specification for defects or faulty workmanship.

With regards to any surface concrete work, including but not limited to sidewalks, curb, gutter, and driveway aprons within the project area, the Contractor shall assume full responsibility for any warranty work unless written approval is provided by the Owner releasing the Contractor from the responsibility for damages.

The intent of this provision is to release the Contractor from accepting monetary losses for destruction of concrete sidewalk, curb, gutter, and driveway aprons due to damages and circumstances out of the control of the Contractor. At no point during the two (2) year warranty period shall this relieve the Contractor's responsibility for correction of the defective work as stated in the preceding paragraph, or as caused by poor construction and defective materials. The Owner or Engineer shall make the final determination of what material is defective within the project area at any point within the two-year warranty period.

SGC 17.01 METHODS AND PROCEDURES

Article 17.01, Methods and Procedures, of the General Conditions shall be deleted in its entirety and replaced with the following paragraphs:

In an effort to resolve any conflicts that arise during the design or construction of the project or following the completion of the project, the Contractor and the Engineer agree that all disputes between them arising out of or relating to this agreement shall be resolved, if possible, at the lowest possible staff level. If the dispute cannot be resolved between the Contractor and the Engineer the dispute shall be submitted to non-binding mediation.

The rights and remedies available to the Contractor shall be limited to breach of Contract, and no other cause of action, including, without limitation, negligence, misrepresentation or other tort

theory. The Owner or Contractor may assert any such breach of contract claim in any court of competent jurisdiction. Neither the Owner nor the Contractor shall be entitled to a jury trial in any such action. The right and remedies to the Owner hereunder shall be in addition to and shall not be constructed in any way as a limitation of any rights and remedies available to the Owner, which is otherwise available by law or contract, by special warranty or guarantee, or by other provision of the Contract documents. The provision of this paragraph shall be as effective as if repeated specifically in the contract documents in connection with each particular duty, obligation, right and remedy to which it may apply. All representations, warranties and guarantees made in the Contract documents shall survive final payment, termination or completion of this agreement.

No waiver or failure to enforce any part or provision of the contract documents, including but not limited to the change order process, shall be deemed to be waiver by the Owner of any subsequent default or breach of the same or any other part or provision contained herein, or right to enforce the same or any other part or provision contained herein.

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GENERAL REQUIREMENTS

SUMMARY OF WORK

The 2024 CIPP Lining Project includes but is not limited to installation of traffic control devices, sanitary sewer cleaning, televising, temporary conveyance of wastewater, sanitary sewer lining by cured-in-place-pipe (CIPP) lining, open-cut sanitary sewer repair, lateral connection sealing by chemical grouting, and restoration. The project shall include the furnishing of all labor, materials, tools, and equipment necessary to complete this work as shown on the plans and specified herein within the City of Arden Hills, Ramsey County, Minnesota.

The Owner is the City of Arden Hills, Ramsey County, Minnesota. All work will be completed within property under the control of the Owner, in public rights-of-way, easements obtained by the Owner, or on property for which the Owner has been granted a right-of-entry. The work included in this specification lies within the City of Arden Hills. The general location of the Work is as shown on Sheet 1 of the plans. More detailed locations are shown in the plans.

"APPROVED EQUAL" CLAUSE

All articles specified by trade names are to be considered as standards. When more than one manufacturer of materials is specified, the option as to which manufacturer's product is to be used will be with the Contractor. When only one manufacturer is specified other makes of equal value, quality, and workmanship may be used, however, the Owner shall approve of any such substitution in writing.

CEAM SPECIFICATIONS

The 2023 Edition of the City Engineers Association of Minnesota Standard Specifications: 2600 Trench Excavation and Backfill/Surface Restoration; 2621 Sanitary Sewer and Storm Sewer Installation; 2631 CIPPS Sewer Pipe Rehabilitation – Cured In Place Pipe Systems; ("CEAM Specifications") shall apply except as noted herein or the special provisions.

CONCRETE WASHOUT

The Contractor shall provide an approved containment and disposal system that meets the MPCA regulations for a concrete washout area including but not limited to ready mixed concrete delivery trucks with portable washout systems on the truck. It is prohibited to washout mixers in the public right of way or into the public storm sewer. The Owner has the right to fine the Contractor for any washout violations, in addition to any MPCA fines. The Contractor shall pay to the Owner, as a penalty, the sum of \$1,500.00 per violation per day. Payment for concrete washout systems shall be incidental and merged with the accepted unit price bid items for the various concrete items.

CONSTRUCTION LIMITS

The Contractor shall confine operations to the limits of the construction area as shown on the plans. The City will endeavor to have obtained necessary rights-of-entry, rights-of-way, and easements prior to the Contractor commencing work. Failure to acquire all rights-of-entry, rights-of-way, and easements prior to the start of construction shall not be cause for a request of time extension or additional monies by the Contractor.

Should special and/or extraordinary construction methods need to be employed by the Contractor for the completion of the project such as, but not limited to, trench box construction, any special and/or extraordinary construction methods used shall be considered incidental to the project.

DEFINITIONS

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The definitions of "Owner" and "Contractor" as described in the GENERAL CONDITIONS shall be expanded to include the authorized Representatives of both the Owner and Contractor.

DEFINITIONS in MNDOT SPECS are updated, so replace the definitions for "Payment Bond" and "Performance Bond" with the following:

PAYMENT BOND. A bond furnished in accordance with Minnesota Statutes §574.26 and meeting the terms specified in Minnesota Statutes §574.26 subdivision 2 (2).

PERFORMANCE BOND. A bond furnished in accordance with Minnesota Statutes §574.26 and meeting the terms specified in Minnesota Statutes §574.26 subdivision 2 (1).

MINNESOTA DATA PRACTICES ACT

All of the data created, collected, received, stored, used, maintained, or disseminated by the Contractor and sub-contractors in the performance of this contract is subject to the requirements of Minnesota Statutes 13. The Contractor and sub-contractors must comply with these requirements as if it were a government entity.

MINNESOTA SALES TAX

In the preparation of the bid proposal for this project it is assumed that the Bidder has taken into consideration any sales, use or excise tax that might be assessed on the purchase of and the storage, use or consumption of any materials, services, or supplies for performance of the Contract Work. Any such tax paid by the Contractor will be considered an incidental expense for which no direct compensation will be made, other than the Contract unit price bid which shall, without exception, include compensation for any and all taxes in any way involved in the Contract Work.

MNDOT SPECS DEFINED

References to "MNDOT SPECS" in these Specifications shall mean the 2020 edition of the Minnesota Department of Transportation, Standard Specifications for Construction, except as may be amended by later editions, or herein. If any item or method of construction is not specifically covered in these Specifications, then the "MNDOT SPECS" shall apply.

MOBILIZATION

Mobilization includes:

- Move personnel, equipment, materials, and all other items required to complete the work at the Site.
- Establish Contractor offices, building, or other facilities necessary for work on the Project.
- Temporarily hold or relocate utilities and any miscellaneous structures, such as signs, power poles, guy wires, and mailboxes disturbed.

Measurement and payment for Mobilization shall be at the Contract bid price per Lump Sum. This will be considered payment in full for all work and costs of this Bid Item. The amount of the Lump Sum Bid shall not exceed 4 percent of the Total Base Bid.

Partial payment of the Mobilization will be made based on a percentage of the contract earned. Mobilization payment percentages shown are cumulative:

First Partial Payment	Pay 50%
Percent of original contract amount earned = 25%	Pay 70%
Percent of original contract amount earned = 50%	Pay 90%
Percent of original contract amount earned = 100%	Pay 100%

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OWNER

The Work described and outlined in the Specifications and shown on the Drawings will be done for the City of Arden Hills, Ramsey County, Minnesota, hereinafter referred to as the Owner, with whom the successful Bidder shall enter into an Agreement to construct this project.

Questions regarding this Project, including any questions prior to bidding, are to be directed to Larry Poppler, TKDA, 651.292.4457 or David Swearingen, Public Works Director, City of Arden Hills, Minnesota. Telephone: 651.792.7847.

PROMPT PAYMENT TO SUBCONTRACTORS

As required by Minnesota Statute 471.425, the Contractor must pay any subcontractor within ten (10) days of the prime contractor's receipt of payment from the Owner for undisputed services provided by the subcontractor. The Contractor must pay interest of 1 1/2 percent per month or any part of a month to the subcontractor on any undisputed amount not paid on time to the subcontractor. The minimum monthly interest penalty payment for an unpaid balance of \$100 or more is \$10. For an unpaid balance of less than \$100, the Contractor shall pay the actual penalty due to the subcontractor. A subcontractor who prevails in a civil action to collect interest penalties from a prime contractor must be awarded its costs and disbursements, including attorney's fees, incurred in bringing the action.

REDUCTION OR DELETION OF BID QUANTITIES

The Owner has the right to reduce substantially, or to delete a bid item in its entirety. Certain proposal work items are included in anticipation of the possibility that conditions may be encountered that require this work. The estimates of quantities for these Proposal Items are based upon general experience in the area. They are included in the work to establish a unit bid price should such work be required to complete the project. These quantities are not guaranteed, and the extent of the work required will be dependent upon prevailing conditions. As such, no unit price adjustment for any magnitude of increased or decreased quantities is allowed.

TIME OF COMPLETION

The Contractor is to substantially complete construction of the project no later than September 13, 2024. Substantial completion is defined as the completion of all payable items and delivery of all receivables. Final completion, defined as completion of all punchlist items, is to be complete by September 27, 2024.

Any requests from the Contractor for modification of the plans and specifications shall be accompanied by an estimate of the time savings or extension. No extension of time will be acknowledged at the end of the project for failing to notify the Engineer at the time that the delay occurred.

The Contractor shall diligently, and without delay, complete all work as described in this Contract and in the Engineer's punch list(s) to meet the Substantial and Final Completion dates of all Work, including execution and submittal of all documentation for final payment.

When the Contractor has completed the work on each stage of construction, they shall request inspection. It is anticipated that only Semi Final and Final inspections will be required. Should additional inspections be needed because of the Contractor's failure to complete the first checklist, the Owner may bill the Contractor for the cost of additional required inspections.

The warranty period for the project will not commence until the date that City Council formally takes action to accept the project, and certify final payment due the Contractor for work performed under the improvement contract.

WORK SEQUENCE

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GENERAL REQUIREMENTS

The Contractor shall provide sequencing for this project in accordance with the following requirements:

1. Avoid the use of heavy equipment on a newly paved bituminous base course.
2. Perform work in such a manner as to cause the least interference with adjoining property owners and the general public. Base bituminous must be placed within 21 calendar days of reclaiming.
3. The streets will remain open to local traffic during construction. Seven (7) days' notice to City staff shall be provided prior to installing traffic control signs. Advanced warning signs shall be placed seven (7) days in advance of any work. The Contractor shall schedule work continuously to avoid delays.
4. All proposed haul roads must be approved by the City of Arden Hills, Ramsey County/MnDOT Right-of-Way Department (for any haul routes proposed along County/MnDOT roadways). Any damage to existing streets due to unapproved construction use will be repaired at the Contractor's expense.
5. A preconstruction conference shall be conducted within seven (7) days of the Effective Date of the Agreement, and Work at the site shall start within seven (7) days of receiving the Notice to Proceed. The Contractor must also submit a complete work schedule for the entire duration of the project prior to the preconstruction conference.
6. The Contractor shall supply cell phone number, daytime office number, fax number, and pager number of the project superintendent handling this contract and the project superintendent shall be available twenty-four (24) hours a day. The Contractor's project superintendent shall be familiar with all phases of the work to be executed and shall oversee the work during the progress. The project superintendent shall represent the Contractor and communications and directions given to him shall be as binding as if given to the Contractor.
7. The Contractor's list of subcontractors and suppliers shall be submitted and reviewed along with scheduling, materials (including bituminous and concrete mix design), material sources, construction methods, and any other information requested for execution of the work.
8. During the course of construction, regular weekly meetings will be conducted to review project progress, and discuss items necessary for the orderly completion of the project.
9. An updated monthly work schedule must be included with any partial payment request. The lack of a schedule may be cause for withholding of progress payments and could result in a work stoppage. The Contractor must notify the Engineer of any and all delays within ten (10) days of the occurrence. These may be considered for an extension to the completion dates.
10. A three-week look ahead schedule shall be provided by the Contractor at each weekly construction meeting.

SOIL CONDITIONS

The Contractor is advised to determine, to their own satisfaction, the exact soils and ground water conditions prior to submitting their bid. In wet trenches, the Contractor shall dewater the trench by an acceptable method. No additional payment will be made for use of granular or aggregate material to aid in dewatering.

MnDOT SPECIFICATIONS

The 2020 Edition of the Minnesota Department of Transportation (MnDOT) Standard Specifications for Construction ("MnDOT Specifications") shall apply except as noted herein.

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GENERAL REQUIREMENTS

Where the Minnesota Department of Transportation specifications are referred to herein and where a reference to the word "State" is mentioned, it is understood that the word "Owner" is substituted. All reference to the word "Engineer" shall be interpreted as the City Engineer for the Owner.

In no cases shall any part of Division I (General Requirements and Covenants) of the MnDOT Specifications, Sections 1201 through 1307 apply to this contract unless specifically stated elsewhere in these specifications.

1402 – CONTRACT REVISIONS

The provisions of MnDOT 1402 are modified and/or supplemented with the following:
Add the following new paragraph to MnDOT 1402:

1402.7 – "OR-EQUAL" CLAUSE

Whenever a material or article required is shown on the Plans or in the Specifications by using the name of a product or of a particular manufacturer, it is to be understood that other products or materials which will adequately perform the required function may be considered equal and satisfactory in the Engineer's opinion. A comparable product shall not be purchased or installed without the Engineer's approval. A "Contract Change Order" shall be used if the Contract is to be modified.

1404 – MAINTENANCE OF TRAFFIC AND (2563) TRAFFIC CONTROL

The provisions of MnDOT 1404 are modified and/or supplemented with the following:

The Contractor shall provide to the Engineer, at least seven (7) days in advance of erecting traffic control devices, a traffic control plan that indicates placement of traffic control devices, schedule and duration of time for the traffic control, including identification of flag person(s) for temporary lane closures and proposed detours of traffic. All traffic control devices shall have flashing beacons.

The Contractor shall furnish, erect and maintain traffic control devices (barricades and ballasts, warning signs, flashers, cones and drums, etc.) to adequately warn and protect the public from hazardous protrusions, materials, excavations, etc., resulting directly or indirectly from the construction. Traffic control devices shall be in accordance with MnDOT 1710.

Traffic control shall be the sole responsibility of the Contractor and shall conform to the requirements of the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD), including the current edition of the Field Manual for Temporary Traffic Control Zone Layouts. The Contractor shall be required to submit in writing a copy of the traffic control plan to the Engineer at least forty-eight (48) hours prior to a proposed partial blockage or closure of any street or public right-of-way.

The Contractor shall furnish names, addresses, and phone numbers of at least three (3) individuals responsible for the placement and maintenance of traffic control devices. At least one of these individuals shall be "on call" twenty-four (24) hours per day, seven (7) days per week during the times any traffic control devices, furnished and installed by the Contractor, are in place. The required information shall be submitted to the Engineer at the preconstruction conference. The Contractor shall also furnish the names, addresses, and phone numbers of those individuals to the following:

- | | |
|---------------------------------------|----------------|
| 1. City of Arden Hills – Public Works | (651) 792-7851 |
| 2. Ramsey County Sheriff's Department | (651) 767-0640 |
| 3. Lake Johanna Fire Department | (651) 483-0767 |
| 4. Mounds View School District | (651) 621-6000 |

Traffic control devices shall be inspected daily or as directed by the Engineer. Warning lights shall be checked weekly by the Contractor or its representative for proper operation and cleaned as required. All broken or ineffective traffic barriers, warning signs, and warning lights shall be replaced immediately.

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Measurement and Payment: Traffic Control shall be measured by the LUMP SUM and paid in accordance with the following schedule.

1. On the first partial estimate that shows work performed on at least one major contract item, 25 percent of the amount bid for Traffic Control will be paid, but not more than 3 percent of the original Contract amount.
2. On subsequent partial estimates, payment shall be made at the same percentage as the value of work completed to date relative to the original Contract amount, except that payment shall not be reduced from the original 25 percent. Materials on hand shall be excluded from the payment ratio computation.
3. At such time that 95 percent of the original Contract amount is earned, full payment for Traffic Control shall be made.

1407 – FINAL CLEANUP

The provisions of MnDOT 1407 are modified and/or supplemented with the following:

During the progress of the work, the area affected shall be kept clean and free of all rubbish and surplus materials at all times. All unneeded construction equipment shall be removed from the site and all damage repaired so that the public and adjacent property owners are inconvenienced as little as possible.

Where materials or debris have washed or flowed into or have been placed in water courses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations, such material or debris shall be removed and satisfactorily disposed of during progress of work. All ditches, channels, drains, etc. shall be kept in a clean and neat condition. All catch basins and sumps shall be cleaned just prior to final acceptance of the project.

Any material deposited on streets adjacent to the project from construction or hauling operations shall be cleaned as directed by the Engineer. If the Contractor fails to clean adjacent roadways within twenty-four (24) hours of notification, the Engineer shall make arrangements to have the roadways cleaned by the City and bill the Contractor \$500.00 per occurrence. The \$500.00 fee for street sweeping will be deducted from project retainage for each occurrence.

It is expected that the existing streets and private properties adjacent to the project will remain clean and free of soil and debris throughout the duration of the project. All roadways, driveways, parking areas, lawns, etc. should be inspected on a minimum daily basis to prevent soil and debris from building up. Any soils or debris shall be removed immediately upon discovery. If, in the opinion of the Engineer, the areas adjacent to the construction area are not being sufficiently cleaned, the Engineer shall arrange to have the work completed by a separate Contractor. All costs associated with cleaning the area shall be deducted from the monies due the Contractor.

On or before the completion of work, the Contractor shall, unless otherwise directed in writing, remove all temporary works, tools and machinery or other construction equipment placed by the Contractor. The Contractor shall remove all rubbish from any grounds which the Contractor has occupied and shall leave all the premises and adjacent properties affected by the operation in a neat and restored condition satisfactory to the Engineer.

Sweeping of streets and parking lots that are impacted by the construction shall be the responsibility of the Contractor. The Contractor shall provide street and parking lot sweeping when requested by the Engineer, at no additional cost to the Owner. The sweeper shall be a pick-up stylesweeper.

Unless the proposal includes a contract bid item for cleanup, cleanup shall be incidental to the contract. Failure to perform clean-up may result in the stoppage of work until clean-up is completed. No additional compensation shall be made for down time resulting from a work stoppage to perform clean-up.

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GENERAL REQUIREMENTS

1507 – UTILITY PROPERTY AND SERVICE

The provisions of MnDOT 1507 are modified and/or supplemented with the following:

Plans shall contain information depicting the relative location of existing utilities to the extent this information is available from the respective utility companies. The Owner does not, however, guarantee the locations as shown on the plans, and it is the Contractor's responsibility to ascertain the final location of these utilities and to notify the utility companies prior to commencing construction. The Contractor shall be responsible for the coordination of utility locates.

The subsurface utility information shown on the plans concerning type and location of private utilities has been designated utility quality level D. The quality level was determined according to the guidelines of CI/ASCE 38-22, entitled "Standard Guideline for Investigating and Documenting Existing Utilities".

All bidders are expected and assume the responsibility to contact the affected utilities prior to submitting the bid to determine the extent of their facilities within the project area and the scope and anticipated schedule of the facility relocation, removal, or adjustment. The Contractor shall be responsible for any requirements imposed by utility companies within the project area.

The Contractor shall pothole to locate private utilities, as required, prior to construction. This work shall be considered incidental to project costs. The following utility owners, in addition to others, may have existing facilities that may be affected by the work under this Contract. The Contractor shall coordinate work efforts with utility relocations in an effort to prevent delays.

City of Arden Hills, David Swearingen (water, sewer, storm sewer)
Phone: 651-792-7852
dswearingen@cityofardenhills.org

Xcel Energy, Scott Widmer (Gas)
Phone: 651-261-3087
scott.a.widmer@xcelenergy.com

Xcel Energy, Scott Tomford (Electric)
Phone: 763-439-3418
scott.tomford@xcelenergy.com

Lumen/Terra Tech, Chuck Daher (Telephone/Internet)
Phone: 612-298-2825
cdaher@terratechllc.net

Comcast, Luke Bastil (Cable telecommunications)
lukebastil@comcast.com

The following utility owners have existing facilities in the area of construction. These utilities will not be affected by work under this Contract. The utilities listed below are for informational purposes only.

- a. CITY OF ARDEN HILLS
- b. COMCAST COMMUNICATIONS INC.
- c. CENTURYLINK
- d. XCEL ENERGY

1507.2 – NOTIFICATION

It may be necessary to relocate existing private utilities to facilitate construction. It is the Contractor's responsibility to coordinate work with the non-municipal utility companies and preserve the existing

DIVISION 1

GENERAL REQUIREMENTS

condition of said utilities. The Owner will not be responsible for any delay that the Contractor may encounter due to the utility company involved failing to promptly do their necessary work. All crossings shall be thoroughly backfilled and compacted, using mechanical tampers to prevent any displacement or settlement of the utility lines. No compensation will be allowed the Contractor for replacement of damaged utilities.

State law requires that the Contractor to contact Gopher State One Call (651-454-0002) for utility locations before doing any underground excavation. All costs associated with Gopher State One Call notification and administration and coordination with facility operators shall be considered incidental.

1511 – INSPECTION OF WORK

The provisions of MnDOT 1511 are modified and/or supplemented with the following:

Any person representing federal or state agencies, the Engineer, or Owners shall have the right-of-entry to inspect the work being performed by the Contractor. If the case warrants, the Contractor shall provide proper facilities for such access and inspection.

The Contractor shall notify the resident Observer anytime he anticipates working on this project. No work will be allowed without notifying the Observer a minimum of twenty-four (24) hours beforehand.

1512 – UNACCEPTABLE WORK AND UNAUTHORIZED WORK

MnDOT Spec 1512 is hereby modified as follows:

Add MnDOT 1512.1 number (5) with the following:

- (5) After the Contractor has been given proper notice to acceptably correct the Work and Materials and has failed to do so, provide notice of default in accordance with MnDOT 1808 "Default of Contactor."

1514 – GARBAGE SERVICE

The provisions of MnDOT Spec 1514 are modified as follows:

Add MnDOT 1514 with the following:

1. The Contractor shall be required to accommodate garbage pickup while the Project is under construction. This coordination shall include contact with the solid waste collection companies serving the area and maintaining access to the individual residences. In the event that garbage pickup is not accommodated, the Contractor shall be responsible for contracting independently to have the garbage removed at no cost to the Project or property owner/resident. Maintaining access for garbage service shall be considered incidental to the Project cost.
2. During times where a grade difference of 3" (0.25') or more persists for 24 hours, the contractor shall provide ramping (lumber or gravel) for driveway and street access. Lumber shall be free of sharp objects and protrusions.

1603 – MATERIALS: SPECIFICATIONS, SAMPLES, TESTS, AND ACCEPTANCE

The provisions of MnDOT 1603 are modified and/or supplemented with the following:

Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of the Contract Documents. Any retesting due to failures shall be at the expense of the Contractor.

1603.2 – SAMPLING AND TESTING

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The first paragraph of MnDOT 1603.2 is hereby deleted and replaced with the following:

The rates of testing to be completed may be adjusted as determined by the Engineer. The Contractor will be responsible for coordination of the following tests and communication with Engineer. Contact information will be distributed at the pre-construction meeting.

Type	Testing	Minimum
Trench Backfill	In-place density	1 per 3-foot depth per 300 LF
Subgrade	Density and moisture	1 per 500 SY
Subgrade	Test rolling TR 30	All areas, Visual Inspection
Select Granular	Gradation	1/500 Ton
Select Granular	Density and moisture	1/500 Ton
Aggregate Base	Gradation and percent crushed	1/500 Ton
Aggregate Base	Density and moisture	1/500 Ton
Aggregate Base	Test rolling TR 30	All areas, Visual Inspection
Concrete	Slump	Minimum 1/day, 1/100CY thereafter
Concrete	Air entrainment	Minimum 1/day, 1/100CY thereafter
Concrete	Cylinders	Minimum 1/day, 1/100CY thereafter
Bituminous	In-place density	If required by Engineer
Bituminous	Asphalt content	1/1000 Ton, as directed by Engineer
Bituminous	Gradations/extraction	1/1000 Ton, as directed by Engineer

Testing field work shall be completed to assure quality of materials and/or workmanship. The Contractor will assist the Owner in coordination of the tests to be performed, incidental to the project.

Engineer will report all test results, either passing or failing and provide to the Observer, Owner, and Contractor. Failing test results shall be retested to confirm compliance with the project specifications.

1606 – STORAGE OF MATERIALS

The provisions of MnDOT 1606 are hereby supplemented with the following:

The Contractor shall be responsible for identifying and providing a project storage area. The area shall be cleaned up and fully restored to the pre-existing condition prior to closing out this project. The cleanup, restoration, and erosion control of the project storage area shall be the Contractor's responsibility; no compensation will be made for this work.

The only materials that will be allowed to be stockpiled within project limits are materials which will be incorporated into the project and then only in the quantity needed. Materials cannot be stockpiled which are for use on other projects. This specification applies to manufactured and natural materials (including material stockpiled for crushing).

If the Contractor elects to crush excavated materials within the project limits, the quantity of crushed material will be limited to only the quantity required for this project. The Contractor will not be allowed to crush materials other than those found within the project limits, unless approved in writing by the Engineer. The Contractor will not be allowed to remove crushed material from the project limits, unless approved in writing by the Engineer.

1701 – LAWS TO BE OBSERVED

The provisions of MnDOT 1701 are modified and/or supplemented with the following:

Environmental Program Delivery:

After the Contract award, the Project Manager, the Contractor designated erosion control supervisor, all supervisors of subcontractors or supervisors of individual work activities shall attend an Environmental Training session provided by project's Environmental Compliance Manager (ECM). The training will

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consist of an approximately one (1) hour commitment and will be provided by the ECM and Regulatory Agency staff. Training will consist of a Project overview, an overview of Project specific environmental commitments and documents, NPDES rules and regulations, water appropriations, decontamination protocols, plan content, example past means, methods and amendment processes, and general goals of the construction. This is to ensure contractor awareness of compliance costs and incorporation of best management practices when working within Areas of Environmental Sensitivity (AES).

Contractor personnel that are required attend the training include: the Project Manager and the designated erosion control supervisor, per MnDOT 1717. Other Contractor personal invited are Contractors' lead staff preparing the bid, potential Project construction supervisors overseeing the work of the Prime Contractor and all subcontractors, proposed environmental quality control managers or proposed erosion control supervisor (if different from the Contractor Project Manager or Environmental Compliance Officer), proposed specialty contractor's supervisors performing specific work of dewatering and working in environmentally sensitive areas.

Routine Environmental Audit:

The City will audit contractors and installers with approved SWPPPs on a monthly or weekly basis or as deemed necessary by the Engineer to determine if the SWPPP is being properly implemented. The City will rely on the provisions of MnDOT 1807 if the audit indicates non-conformance. Corrective action, up to and including the Contractor hiring a third-party Quality Control Inspector, may be required as a disciplinary step, at no cost to the City.

1706 – EMPLOYEE HEALTH AND WELFARE

The provisions of MnDOT 1706 are modified and/or supplemented with the following:

The Contractor, at their own expense, shall provide and maintain temporary toilet facilities at the site during the construction period sufficient for the scheduled workforce. The Contractor and Engineer shall agree to the location of the temporary toilet facilities.

1707 – PUBLIC CONVENIENCE AND SAFETY

The provisions of MnDOT 1707 are modified and/or supplemented with the following:

The Contractor shall provide any barricades, fences or other means of protection necessary to properly execute the work and adequately protect the Contractor's employees, employees of the Owner, employees of the Engineer, and members of the public according to federal, state, and local regulators. All utility trenches shall be backfilled at the end of each working day. All labor and materials necessary to comply with these provisions are incidental, and no payment shall be made.

Add the following new paragraph to MnDOT 1707:

Noise Control: Comply with local and state ordinances on noise abatement.

The Contractor shall eliminate noise to as great an extent as possible at all times. The Contractor shall not exceed noise levels of 85 decibels within close proximity of existing residential areas. Air compressing plants, generators or other noise emitting equipment shall be equipped with silencers and the exhausts of all gasoline motors or other power equipment shall be provided with mufflers. The Contractor shall provide a plan to the Owner for review and approval detailing noise abatement measures to be implemented and a mitigation plan if noise levels are exceeded. If noise levels are exceeded, the Contractor will be responsible to implement an approved mitigation plan.

Coordination with Service Providers

The Contractor shall coordinate with the postal service, recycling service, garbage collection service, and

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school bus service to maintain continual uninterrupted service to all residences and businesses throughout the duration of the project.

The Contractor shall haul recycling and garbage for residents to a designated pick-up location in the morning, as required by the subject service provider, and haul the containers back to each residence the same evening. The Contractor shall label recycling and garbage containers with the corresponding address prior to moving to a pick-up location. All equipment, materials, and labor required to coordinate with recycling and garbage service providers and maintain services shall be incidental to the Contract. Garbage pick-up day varies depending on service throughout the project area.

Temporary Mailboxes shall be furnished and installed at a central project location during the project for each phase of construction where the postal service will not be able to reach the original mailbox locations. The Contractor must coordinate the location and addresses of the temporary mailboxes with the postal service. Temporary Mailboxes will be compensated for under salvage and reinstall mailbox measured per each and will include installation, maintenance during construction, removal, and coordination with the postal service. Salvage Mailbox and Install Mailbox shall both be measured and paid per EACH and will include removing and salvaging the existing post and mailbox from its original location, storing the post and mailbox in a safe location, and installing the post and mailbox back in its original location to the satisfaction of the Engineer and Owner. Any mailboxes that are damaged during the salvaging and reinstalling process must be replaced at the Contractor's cost.

1712 – PROTECTION AND RESTORATION OF PROPERTY

The provisions of MnDOT 1712 are modified and/or supplemented with the following:

Add the following new paragraph to MnDOT 1712.1:

Existing Improvements: Protect in place, and/or remove and reinstall all fences, street signs, lawn irrigation systems, retaining walls, and other items required to construct the proposed improvements. The work associated with protecting, and/or removing and reinstalling all fences, street signs, lawn irrigation systems, retaining walls, and other items shall be considered incidental to the project unless specific bid items are provided in the Proposal Form.

Provide and use only rubber-tired dozers, front-end loaders and other necessary equipment on all work where street pavements or portions of pavements are undisturbed for the protection of the pavements or in such locations as the Engineer may direct. No compensation will be allowed the Contractor for resurfacing or replacing damaged pavements.

Protect adjoining properties and structures from hazards in connection with performance of the work. The Contractor is responsible for any and all damages to properties and structures that occur as a result of their operations.

1717 – AIR, LAND, AND WATER POLLUTION

Pollution of natural resources of air, land, and water by operations under this Contract shall be prevented, controlled, and abated in accordance with the rules, regulations, and standards adopted and established by the Minnesota Pollution Control Agency (MPCA). The provisions of MnDOT 1717 are modified and/or supplemented with the following:

1717.1 – GENERAL

The provisions of 1717.1.D are modified and/or supplemented as follows:

Dust Control: The Contractor shall be responsible for dust control. Water is available to the Contractor for this use for purchase, but suitable arrangements must be made with the Owner to determine locations where water may be obtained.

Water for construction purposes may be obtained from the City Public Works Department via hydrants

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on-site as approved by the Engineer. The Contractor must obtain a meter from the City Public Works Department and pay a deposit for the meter. The Contractor will pay for the water used for construction purposes at the rate determined by the City.

The Contractor will be responsible for developing a dust control plan that shall include, but not be limited to, the following dust control measures:

1. Minimize period of exposed or graded areas.
2. Spraying construction areas and haul roads with water or calcium chloride.
3. Minimize use of vehicles on unpaved surfaces.
4. Covering or spraying material piles and trucks.
5. Street sweeping.
6. Using natural or artificial wind breaks.

The Owner has the right to perform this work at the Contractor's expense if the work is not completed in a timely manner according to the Engineer. The Owner will deduct from payment due to the Contractor for all corresponding amounts to cover the cost for dust control measures.

1717.2 – STORMWATER MANAGEMENT AND EROSION CONTROL

The provisions of MnDOT 1717.2 are modified and/or supplemented as follows:

Erosion control shall be placed and maintained by the Contractor. The Contractor shall use the appropriate means of control for individual situations. The erosion control types may include but are not limited to silt fence, fiber blanket, rock construction entrances, diversion ditches, and catch basin inlet protection, all of which will be considered incidental to the project cost unless a bid item is provided in the Proposal Form. Failure to maintain the erosion control will be sufficient cause to withhold further payments on the project until the maintenance is complete.

The erosion control measures for the project have been identified in the plan set; however, modifications can be made depending on actual site conditions.

All manholes shall be protected from surface water drainage. All storm sewer systems shall be protected from sedimentation, along with downstream ponding areas. All catch basins must be protected with approved means of protection immediately following construction.

Prior to final acceptance of the project, the Contractor shall remove all erosion control items.

1801 – SUBLETTING OF CONTRACT

The provisions of MnDOT 1801 are modified as follows:

For Projects in excess of \$50,000, the Contractor may sublet work only to subcontractors that meet the definition of "responsible contractor" in Minnesota Statutes §16C.285, subdivision 3. The Contractor obtain verifications of compliance with §16C.285 from subcontractors using a form provided by the Owner. The Contractor must provide such verifications to the Owner upon the Owner's request.

1807 – FAILURE TO COMPLETE THE WORK ON TIME

The provisions of MnDOT 1807 are supplemented as follows:

Liquidated Damages: Contractor and Owner recognize that time is of the essence as stated above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 3.01 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize that delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work

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is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay, but not as a penalty;

- A. Substantial Completion: Contractor shall pay Owner \$200.00 for each day that expires after the time specified in Paragraph 3.01 above for Substantial Completion until the Work is substantially complete, as duly adjusted pursuant to the Contract.
- B. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time for completion and readiness for final payment, as duly adjusted pursuant to the Contract, Contractor shall pay Owner \$300.00 for each day that expires after such time until the Work is completed and ready for final payment.
- C. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

1903 – COMPENSATION FOR ALTERED QUANTITIES

The provisions of MnDOT 1903 are hereby deleted and replaced with the following:

There will be no adjustment in unit price for an under-run or over-run of the estimated quantity. There will be no adjustment in unit price for increased or decreased quantities. In addition, the Owner reserves the right to reduce certain quantities or delete certain items from each section of the bids as the Owner sees fit, either before or after the Award of Contract. There will be no additional compensation due to remobilization of equipment as necessary to complete punch list items or other items not completed by the Contractor. There will be no additional compensation due to restocking charges for materials not used on the project.

The Owner may add work to the project in areas located inside the established construction limits. Any additional work shall be paid for under unit bid prices.

CONTRACTOR'S USE OF PREMISES

This section shall cover the Contractor's use of Premises.

GENERAL

Based on personal examination of the site, the Contractor must satisfy himself as to all local conditions affecting the performance of the contract. The Contractor is considered to accept such conditions as found to exist.

EXISTING UNDERGROUND UTILITIES

Existing underground utilities, as shown on the drawings are located in accordance with available data but locations shall be determined by each Contractor as the work proceeds. Excavation work shall be done carefully to avoid damaging existing utilities. The Contractor shall provide for protection, temporary removal and replacement, or relocation of identified obstructions as required for the performance of the work required in these contract documents. No extra payment will be made for this work unless specified in the proposal or special provisions.

Obstructions not shown on the drawings or indicated in the specifications, and requiring relocation, shall be exposed by the Contractor without injury, or if injured, shall be repaired by Contractor at their expense. Removal of such obstruction or its relocation shall be made by the Contractor according to the provisions of the General Conditions.

EXISTING FACILITIES

The Contractor shall take complete field measurements affecting all existing construction in this project and Contractor shall be solely responsible for proper fit between their work and existing structures and equipment. The Contractor shall examine all work to which he will connect, and if any misalignment is found, shall arrange work so that the misalignment is corrected to the satisfaction of the Engineer.

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Dimensions given on the drawings for existing structures are based on existing construction drawings. It shall be the responsibility of the Contractor to verify the accuracy of these dimensions. Discrepancies in dimensions shall be brought to the attention of the Engineer prior to start of new construction.

The Contractor is responsible for any damage to existing structures, work, materials, or equipment because of their work and shall repair or replace any damaged structures, work, materials, or equipment to the satisfaction of and at no additional cost to the Owner or Engineer.

The Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, or other public or private property, which may be caused by transporting equipment, materials, or men to or from work. The Contractor shall make acceptable arrangements with the group having jurisdiction over damaged property for its repair or replacement.

CONSTRUCTION TRAILER

The Owner will work with the Contractor to determine a suitable location for a construction trailer within the project area, should the Contractor desire to have a trailer on-site for the duration of the project. No direct compensation will be paid for use of a trailer with the project. Employees of the Contractor will be permitted to park their personal vehicles within the project area but not blocking open roadways or driveways.

Park grounds outside the construction limits shall not be utilized for material storage by the contractor. Smoking is not permitted within City Parks. Trash generated by the Contractor's use of the premises shall be removed by the Contractor; City refuse facilities are for use by park patrons only.

The Contractor will be responsible for any repairs deemed necessary by the Owner to remedy damage sustained from the placement of the trailer.

UNFAVORABLE CONSTRUCTION CONDITIONS

During excessive moisture or other unsuitable construction conditions, the Contractor shall confine the work to areas which are not adversely affected by the weather. No portion of the work shall be constructed under conditions that would adversely affect the quality of the project unless special means or precautions are taken by Contractor to perform the work in a proper and satisfactory manner.

METHODS OF OPERATION

The Contractor shall inform the Engineer in advance concerning the plans for carrying out each part of the work, but the Contractor alone shall be responsible for the safety, adequacy, and efficiency of their plan, equipment, and methods.

Any method of work suggested by the Owner, Engineer, or Engineer's subconsultant but not specified, shall be used at the risk and responsibility of the Contractor. The Owner, Engineer, or Engineer's subconsultant will assume no responsibility for the Contractor's means and methods.

Review by Owner, Engineer, or Engineer's subconsultant of any plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility for the plan. Plan review shall not be considered as an assumption of any risk or liability by the Owner, Engineer, or Engineer's subconsultant, or any officer, agent or employee thereof. The Contractor shall have no claim because of the failure or inefficiency of any plan or method so reviewed.

CONDUCT OF WORK

The Contractor shall observe that the Owner reserves the right to do other work in connection with the project or adjacent to the project, by contract or otherwise. Contractor shall conduct work to impose no hardship on the Owner or others engaged in other work.

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The Contractor shall be responsible to others engaged in the work or work adjacent to this project for all damage or injury to work, to persons or property, or for loss caused by failure to finish the work within the specified time for completion. The Contractor shall adjust and coordinate the work with the work of others so that no discrepancies shall result in the overall project.

The purpose of these Contract Documents is intended to lead to the successful installation of fully functional improvements upon final completion. The Contractor installed improvements shall comply with the plans and specifications, and shall be constructed utilizing workmanship typical of the industry. This project will not be accepted until the Owner is satisfied that the desired result was achieved.

The cost of all material and labor required to complete this Project as specified and shown on the Drawings, but not specifically included as a pay item, shall be merged with the various accepted unit bid prices.

The Contractor shall conduct his operation in such a manner to protect appurtenances within the right of way such as street name signs, traffic signs, and mailboxes. During construction, these items shall be temporarily relocated as necessary and subsequently replaced in final location at the completion of the Work. Any of the appurtenances damaged during construction shall be repaired or replaced at the Contractor's expense.

All debris or rubbish caused by the Contractor's operation shall be removed and the areas occupied during such operation left in a neat, presentable condition.

Materials, tools, temporary structures, and excess earth excavation shall be removed from the area and disposed of by the Contractor. The construction site shall be left clean, to the satisfaction of the Engineer.

CONTRACT CLOSEOUT PROCEDURES

Minnesota Statute 471.425, Subd. 4a requires contracts of a municipality to have the prime contractor pay any subcontractor within ten days of the prime contractor's receipt of payment. The contract also must require that the prime contractor pay interest of 1.5 percent per month or any part of a month to the subcontractor for any undisputed amount not paid to the subcontractor within ten days.

Final payment will not be made until the Contractor shall have filed with the Engineer evidence in the form of an affidavit or such other evidence as may be required that all claims against him by reason of the Contract have been fully paid or satisfactorily secured. This shall be in the form of paid-in-full lien waivers from each supplier and subcontractor along with the IC134 Form. In case such evidence is not furnished, the Owner may retain out of any monies due said Contractor sums sufficient to cover all lienable claims unpaid.

Before final payment is made for the work on this project, the Contractor must make a satisfactory showing that he has complied with the provisions of Minnesota Statutes Annotated 290.92 requiring the withholding of state income taxes for wages paid the employees on this project. Receipt by the Engineer of a certificate of compliance from the Commissioner of Taxation will satisfy the requirement.

HOLD HARMLESS AND INDEMNIFICATION

To the fullest extent permitted by law, the Contractor agrees to indemnify the City of Arden Hills, its officers, employees, agents, and others acting on their behalf, to hold them harmless, and to defend and protect them, from and against any and all loss, damage, liability, cost and expense (specifically including attorneys' fees and other costs and expenses of defense), of any sort whatsoever, based upon, resulting from, or otherwise arising in connection with any actions, claims or proceedings (of any sort and from any source whatsoever) brought, or any loss, damage or injury of any type whatsoever sustained, whether or not also caused in part by a party indemnified hereunder, by reason of any act or omission of Contractor, its officers, employees or agents, or any other person(s) or entity(ies) for whose acts or omissions Contractor may be legally responsible, in the performance of any of Contractor's obligations (whether expressed or implied) under this Contract.

DIVISION 2

SANITARY SEWER REHABILITATION SPECIAL PROVISIONS

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PART 1 - GENERAL

1.01 SUMMARY

This work shall consist of the rehabilitation of pipelines and conduits by the installation of a resin-impregnated flexible tube Cured-In-Place Pipe System (CIPPS). The rehabilitation of pipelines shall be constructed by the installation of a resin-impregnated flexible tube which is inverted into the original conduit by use of a hydrostatic head or air pressure. Methods that are pulled in and inflated rather than inverted will be considered, providing they meet the other provisions of this Specification. The pipe, when cured, shall be continuous and tight-fitting throughout the entire length of the original pipe. The CIPP shall extend the full length of the original pipe and provide a structurally sound, joint less and watertight new pipe within the existing pipe. The Contractor is responsible for proper, accurate and complete installation of the CIPP using the system selected by the Contractor.

Neither the CIPP system, nor its installation, shall cause adverse effects to any downstream facilities. The use of the product shall not result in the formation or production of any detrimental compounds or by-products that may affect downstream structures, pumps, pipe, equipment, and wastewater treatment facilities. The Contractor shall notify the Engineer and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the CIPP system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses, and residents.

The use of the term "Plans, Specifications, and Special Provisions" within this specification shall be construed to mean those documents which compliment, modify, or clarify these specifications and are an enforceable component of the Contract Documents.

All references to MnDOT Specifications shall mean the latest published edition of the Minnesota Department of Transportation "Standard Specifications for Construction", and all supplements and amendments thereto, published prior to the date of advertisement for bids.

All references to other Specifications of AASHTO, ASTM, ANSI, AWWA, etc. shall mean the latest published edition available on the date of advertisement for bids.

1.02 DESCRIPTION OF WORK

A. CIPP mainline lining

1. The Contractor shall provide materials, labor, equipment, and services necessary for traffic control (if required), temporary conveyance and/or diversion of flows, cleaning, measurement and television inspection of sewers to be rehabilitated, CIPP installation, reconnection of service connections, quality controls, provide samples for performance of required material tests, final television inspection, testing of the rehabilitated pipe system, warranty work and other work, as specified herein.
2. The product furnished shall be a complete CIPP system including specific materials, applicable equipment and installation procedures. The CIPP shall be continuous and jointless from manhole to manhole or access point to access point and shall be free of defects that will affect the long-term life and operation of the pipe.
3. The CIPP shall not leak at the manholes or through the wall of the installed pipe. A hydrophilic seal or resin compatible with the installed CIPP shall be applied at manhole walls in accordance with the CIPP System manufacturer's recommendations.

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4. The CIPP shall be designed for a life of 50 years or greater and an equal service life. The CIPP shall be designed for fully deteriorated conditions for a structural stand-alone pipe.
 5. The installed CIPP shall comply with the chemical resistance requirements of the relevant ASTM standard(s) F1216, ASTM D5813 (Section 6.4.1), or ASTM F1743.
 6. All existing and confirmed active service connections and any other service laterals to be reinstated, as directed by the Owner, shall be re-opened robotically or by hand in the case of person-entry size piping, to their original shape and to 90% - 95% of their original area. All over-cut or under-cut service connections shall be properly repaired to meet the requirements of these specifications.
 7. All materials furnished as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirements of this Contract.
 8. Testing and warranty inspections shall be executed by the Owner. Defects found shall be repaired or replaced by the Contractor. The Contractor shall furnish, from the project installation, samples, marked with chain of custody information such as project name, section, date, diameter, and thickness, etc., for product testing at the request of the Owner.
- B. Open cut sanitary sewer pipe repair
1. The Contractor shall provide materials, labor, equipment, and services necessary for traffic control (if required), temporary conveyance and/or diversion of flows, erosion prevention and sediment control, excavation and removal of existing sewer pipe identified by the Engineer during internal sewer inspections, replacement with new sewer pipe, backfilling and restoration.
- C. Lateral Connection Sealing
1. The Contractor shall provide materials, labor, equipment, and services necessary for traffic control (if required), temporary conveyance and/or diversion of flows, cleaning, measurement and television inspection of laterals to be sealed, chemical grouting of the first five feet of lateral from the sewer main by the lateral packer method, quality controls, provide samples for performance of required material tests, final television inspection, testing of the rehabilitated pipe system, warranty work and other work, as specified herein.
- D. Light Sewer Cleaning includes up to 3 passes with a hydraulic flusher. Does not include root cutting or removal of deposits or protruding service connections.
- E. Heavy Sewer Cleaning includes an unlimited number of passes with high velocity hydro cleaning equipment/hydraulic spinner nozzle, cutting roots, removing deposits of attached encrustation, and removing deposits of attached grease. Does not include trimming of protruding taps.

1.03 METHOD OF MEASUREMENT AND PAYMENT

Payment for the work included in this section will be in accordance with the prices set forth in the proposal for the quantity of work performed. Progress payments will be made monthly based on the work performed

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during that period.

Mobilization and Traffic Control shall be measured and paid as described in Division 1 of these Specifications.

- A. TEMPORARY CONVEYANCE shall be paid for at the Contract Unit Price per Lump Sum, including all associated equipment, material, parts and labor required for the temporary conveyance of wastewater at each stage and every location required by the Contract Documents, including reserve equipment, regardless of the extent, complexity or duration of the conveyance.
- B. CLEAN & TELEWISE SANITARY SEWER (PRE-REHABILITATION) shall be paid for at the Contract Unit Price per Lineal Foot regardless of size from the center of the upstream structure to the center of the downstream structure, including light sewer cleaning, removal and transport of material cleaned from pipe, disposal fees, post-cleaning CCTV inspection for Engineer review, with typewritten report noting defects and wye locations and digital video recording, and any other cost associated with the work.
- C. HEAVY SEWER CLEANING shall be paid for at the Contract Unit Price per Lineal Foot regardless of size from the center of the upstream structure to the center of the downstream structure, heavy sewer cleaning, root cutting, deposit cutting, removal and transport of material cleaned from pipe, disposal fees, and any other cost associated with the work.
- D. TRIM PROTRUDING TAP shall be paid for at the Contract Unit Price per Hour of tap to be trimmed, and shall include all equipment, materials and labor required to actual trim the protruding tap, regardless of tap diameter. The proposal does not differentiate between the types of protruding tap materials. Trimming of Iron and Non-Iron pipe materials shall be at the same hourly rate.
- E. CIPP LINING - 8" SANITARY SEWER shall be paid for at the Contract Unit Price per Lineal Foot, measured separately by length along the line of the sewer to the nearest foot, including furnishing and installing the liner and appurtenances, CCTV inspection immediately prior to lining, post-lining CCTV inspection, furnishing and installing hydrophilic end seals, public information and notifications, and any other cost associated with the work. Terminal points of measurement will be the pipe end at free outlets; the point of junction with in-place pipe; or the center of manholes, or multiple junction points as they apply. Pipe transition sections will be measured as the larger size pipe.
- F. REINSTATE SANITARY SEWER SERVICE shall be paid for at the Contract Unit Price per Each service re-opened to no less than 90% capacity as viewed on the post construction video records provided by the Contractor, in full compensation for all costs to complete the work as specified.
- G. REINSTATE OUTSIDE DROP shall be paid for at the Contract Unit Price per Each outside drop re-opened to no less than 90% capacity as viewed on the post construction video records provided by the Contractor, in full compensation for all costs to complete the work as specified.
- H. PIPE REPAIR - OPEN CUT shall be paid for at the Contract Unit Price per Lump Sum of all labor, materials, tools, and equipment required for the removal of the existing portion of VCP with defect/s, and the installation of new 8" PVC C900 pipe in its place, connection to existing sanitary sewer using PVC to VCP transition couplings, connection to existing manhole, excavation and backfilling, cleanup, disposal of materials, aggregate base, pipe bedding material, backfilling and compaction, concrete curb and gutter, bituminous pavement, erosion prevention and sediment control devices; and all other costs associated with the work,

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complete in place, in accordance with the Contract Documents.

- I. LATERAL CONNECTION SEALING - 5 FEET shall be paid for at the Contract Unit Price per Each service connection grouted at the direction of the Engineer, including all labor, material, tools, equipment, and any other costs associated with the work. It is assumed that each building lateral designated for testing and sealing shall be tested and sealed from the main to approximately five (5) feet up the lateral. This includes testing and sealing the lateral connection point to the main. All work associated with lateral cleaning and inspection, including pre-cleaning CCTV inspection of lateral, removal and transport of material cleaned from pipe, disposal fees and post-cleaning CCTV inspection for Engineer review shall be incidental.

1.04 SPECIFICATION REFERENCES

All references to MnDOT Specifications shall mean the latest published edition of the Minnesota Department of Transportation "Standard Specifications for Construction", and all supplements and amendments thereto, published prior to the date of advertisement for bids.

All references to other Specifications of AASHTO, ASTM, ANSI, AWWA, etc. shall mean the latest published edition available on the date of advertisement for bids.

- A. ASTM F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
- B. ASTM F1743 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
- C. ASTM F2454 Standard Practice for Sealing Lateral Connections and Lines from the Mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grouting
- D. ASTM F3240 Standard Practice for Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-in-Place Rehabilitation of Main and Lateral Pipelines
- E. ASTM D543 Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
- F. ASTM D638 Standard Test Method for Tensile Properties of Plastics
- G. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- H. ASTM D792 Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- I. ASTM D2990 Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
- J. ASTM D3034 Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- K. ASTM D5813 Standard Specification for Cured-in Place Thermosetting Resin Sewer Pipe
- L. ASTM C1173 Standard Specification for Flexible Transition Couplings for Underground Piping Systems

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M. City Engineers Association of Minnesota (CEAM) Standard Specifications

1.05 SUBMITTALS

A. Items which must be included with the bid

1. Bids must be labeled clearly on the outside of the envelope and meet all the requirements described in the INSTRUCTIONS TO BIDDERS.
2. Manufacturer's certificate of compliance certifying that materials to be used meet the referenced standards and these Specifications.
3. A copy of the license or certificate verifying the manufacturer's or licensor's approval of the Installer.
4. Evidence of the Installer's experience with a comprehensive list of at least three (3) projects of a similar size, type and scope as called for on this project completed within the state of Minnesota demonstrating a minimum of three (3) years of lining experience utilizing the same material (CIPP product) proposed for this project. Each project listed shall include at least one reference who represents the project's Owner.

B. Items that must be presented for review and approval at the preconstruction meeting or 14 days before installation begins, whichever is first

1. Temporary Conveyance Plan signed by a Professional Engineer licensed in the State of Minnesota.
2. Traffic Control Plan in accordance with Division 1 of these Specifications.
3. Construction schedule

C. CIPP Rehabilitation

1. Shop drawings of all CIPP materials including but not limited to resin, felt, hydrophilic end seals and catalysts.
2. The name of the CIPP lining manufacturer and supplier for this work and a list of previous work.
3. CIPP thickness design calculations in accordance with the Appendix of ASTM F1216 for each CIPP segment performed and certified by a Professional Engineer licensed in the State of Minnesota.
4. Pipe Size Confirmation. Submit a table confirming the segment lengths and inside diameter measurements of all sewers scheduled to be lined.
5. Field sampling procedure in accordance with ASTM D5813.
6. MSDS sheets for all materials.

D. Sanitary Sewer Pipe Repair - Open Cut

1. Mix designs for all restoration materials including bituminous material and concrete.

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2. PVC pipe shop drawings
 3. Manhole boot connection shop drawings
 4. Transition coupling shop drawings
 5. Storm drain inlet protection shop drawings
 6. Aggregate base gradation
 7. Pipe bedding gradation
- E. Lateral Connection Sealing
1. Equipment operating procedures and systems.
 2. Chemical grout information
 - a. Shop drawings for all grouts and additives
 - b. Manufacturers recommended procedures for storing, mixing, testing and handling of chemical grouts.
 - c. MSDS sheets for all materials to be used.
 3. Identify the manufactures & models of the packers to be utilized on the Project.
 4. Upon completion of each pipe segment, submit to Engineer a report showing the following data for each joint and/or lateral connection tested, grouted or attempted to be grouted.
 - a. Identification of the sewer pipe section tested by assigned sewer ID or house address for lateral connections, and length.
 - b. Type of pipe material, diameter & depth of pipe to the surface at manholes.
 - c. Length of pipe sections between joints.
 - d. Test pressure used and duration of test.
 - e. Pass/fail results for each joint/connection tested.
 - f. Location stationing of each joint/connection tested and location of any joints/connections not tested with an explanation for not testing.
 - g. Volume of grout material used on each joint or connection.
 - h. Gel set time used (cup test results from tanks)
 - i. Grout mix record of the batches mixed including amount of grout and catalyst, additives, temperature of the grout solution in tanks.
 - j. Name of the operator conducting testing and sealing shall be noted on the reports.

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- F. Items that must be included with request for final payment
1. All USB flash drives or copies thereof which shall become the property of the Owner. This includes the television identification conducted prior to and after completion of the project installation. Two copies of each to be submitted. Digital video files are to be individual files for each sewer run from one MH to the next. The segments shall be named based on the MH numbers upstream to downstream.
 2. Satisfactory physical properties testing reports for each pipe segment.
 3. Construction logs
 4. Labor IC134 forms.

PART 2 - PRODUCTS

2.01 GENERAL

All materials required for this work shall be new material conforming to requirements of the referenced specifications for the class, kind, type, size, grade, and other details indicated in the Contract. Unless otherwise indicated, all required materials shall be furnished by the Contractor. If any options are provided for, as to type, grade, or design of the material, the choice shall be limited as may be stipulated in the Plans, Specifications, or Special Provisions.

All manufactured products shall conform in detail to such standard design drawings as may be referenced or furnished in the Plans. Otherwise, the Owner may require advance approval of material suppliers, product design, or other unspecified details as it deems desirable for maintaining adopted standards.

All materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP manufacturer to avoid damage. Damage includes but is not limited to, gouging, abrasion, flattening, cutting, puncturing, and ultra-violet (UV) degradation. All damaged materials shall be promptly removed from the project site at no cost to the Owner. On site material storage locations shall be approved by the Engineer.

The final decision to accept or reject the applicant lies solely with the Engineer and Owner. All decisions will be based upon the long term best interest of the city.

2.02 CIPP MATERIALS

- A. CIPP Fabric Tube
1. The CIPP fabric "Tube" shall consist of one or more layers of absorbent non-woven felt fabric, felt/fiberglass or fiberglass and meet the requirements of ASTM F 1216, ASTM F 1743, ASTM D5813 & ASTM F2019. The fabric Tube shall be capable of absorbing and carrying resins, manufactured to withstand installation pressures and curing temperatures, have sufficient strength to bridge missing pipe segments, and stretch to fit irregular pipe sections.
 2. Tubes shall have a uniform thickness that when compressed at installation pressures will equal the specified nominal tube thickness.
 3. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that

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when compressed at installation pressures will meet or exceed the design thickness after cure.

4. The fabric tube shall be manufactured to a size and length that when installed will tightly fit the internal circumference and length of the original pipe. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends. The Contractor shall determine the minimum tube length necessary to effectively span the designated run between manholes. The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin, to ensure that the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the inside diameter of the existing pipelines in the field prior to ordering liner so that the liner can be installed in a tight-fitted condition. No additional compensation shall be paid for measured diameters which vary from the measurements indicated on the plans or bid form. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be allowed.
5. The minimum length of the fabric tube shall be that deemed necessary by the installer to effectively span the distance from the starting manhole to the terminating manhole or access point, plus that amount required to run-in and run-out for the installation process.
6. The outside and/or inside layer of the fabric tube (before inversion/pull-in, as applicable) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wet-out) procedure.
7. No material shall be included in the fabric tube that may cause de-lamination in the cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the felt fabric and the activated resin containing a colorant. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No materials shall be included in the tube that is subject to delamination in the CIPP.
8. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue of the color shall be dark enough to distinguish a contrast between the fully resin saturated felt fabric and dry or resin lean areas.
9. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813. The outside of the fabric tube shall be marked every five feet (5') with the name of the manufacturer or CIPP system, manufacturing lot and production footage.
10. The nominal fabric tube wall thickness shall be constructed to the nearest 0.5 mm increment, rounded up from the design thickness for that section of installed CIPP. Wall thickness transitions, in 0.5 mm increments or greater as appropriate, may be fabricated into the fabric tube between installation entrance and exit access points. The quantity of resin used in the impregnation shall be sufficient to fill all the felt voids for the nominal felt thickness.

B. Resin

1. The resin shall be a corrosion resistant polyester or vinyl ester resin and catalyst system or epoxy resin and hardener system that, when properly cured within the tube composite,

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meets the requirements of ASTM F1216 or ASTM F1743, the mechanical properties herein, and those which are to be utilized in the design of the CIPP for this project. The resin, specified for the specific application defined in the contract documents, shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.

- 2. The resin to tube ratio, by volume, shall be furnished as recommended by the CIPP tube manufacturer.

- C. Manhole Connections - A seal, consisting of a resin mixture or hydrophilic seal, shall be compatible with the CIPP System manufacturer's recommendations.

2.03 STRUCTURAL REQUIREMENTS

- A. The CIPP shall be designed as per ASTM F 1216, Appendix X 1. The CIPP design shall assume no bonding to the original pipe wall.

- B. The design engineer shall set the long term (fifty (50) year extrapolated) Creep Retention Factor at fifty percent (50%) of the initial design flexural modulus as determined by ASTM D-790 test method. This value shall be used unless the Contractor submits long term test data (ASTM D2990) to substantiate a higher retention factor.

- C. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers.

- D. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

- E. The cured pipe material (CIPP) shall conform to the minimum structural standards, as listed below.

Property	Test Method	Cured Composite per ASTM F1216	Cured Composite per Design
Flexural Modulus of Elasticity (Short Term)	ASTM D790	250,000 psi	Contractor Value
Flexural Strength (Short Term)	ASTM D790	4,500 psi	Contractor Value

- F. The required structural CIPP wall thickness shall be based as a minimum, on the physical properties listed above and in accordance with the Design Equations in the appendix of ASTM F1216, and the following design parameters:

Design Safety Factor	2.0 (1.5 For Pipes 36" Or Larger)
Creep Retention Factor	33%
Ovality	2% Or As Measured By Field Inspection
Soil Modulus	1000 psi
Groundwater Depth	Equal to soil depth

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Soil Depth (Above The Crown)	The deepest actual depth for each pipe segment
Live Load	H20 Highway
Soil Load (Assumed)	120 Lb/Cu. Ft.
Minimum Service Life	50 Years

2.04 TESTING REQUIREMENTS

- A. Chemical Resistance - The Contractor shall certify that CIPP shall meet the chemical resistance requirements of ASTM F 1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.
- B. Hydraulic Capacity - Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.
- C. CIPP Field Samples - When requested by the Owner, the Contractor shall submit test results from field installations in the USA 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 in above have been achieved in previous field applications. Samples for this project shall be made and tested as described herein.

2.05 OPEN CUT PIPE REPAIR MATERIALS

- A. PVC sewer pipe shall be C900, conforming to AWWA C900.
- B. Pipe manhole connectors shall be PSX: Direct Drive or approved equal.
- C. Shielded transition couplings shall have a stainless steel shear ring and be Fernco Strong Back or approved equal, conforming to ASTM C1173.
- D. Pipe bedding shall be Coarse Aggregate Bedding in accordance with MnDOT 3149.2G.2.
- E. Aggregate base shall be in accordance with MnDOT 3138 Class 5.
- F. Concrete curb and gutter shall be in accordance with MnDOT 2531, with a minimum 28-day compressive strength of 4,500 psi.
- G. Bituminous material shall be in accordance with MnDOT 2360, Type SPWEA230B.
- H. Storm drain inlet protection shall be Wimco Road Drain Curb & Gutter model or approved equal.

2.06 CHEMICAL GROUT

- A. General - All grout materials shall have the following characteristics:
 - 1. While being injected, the grout must be able to react /perform in the presence of water (groundwater).

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2. The ability to increase grout mix viscosity, density and gel strength by increased concentration of constituents or the use of approved additives.
 3. The cured grout must withstand submergence in water without degradation.
 4. The resultant grout formation must be homogeneous and prevent the passage of water (infiltration) through the pipe joint.
 5. The grout must not be biodegradable.
 6. The cured grout should be chemically stable and resistant to organics found in sewage.
 7. Residual grout shall be easily removable from the sewer line to prevent blockage of the sewage flow.
- B. Provide a chemical grout complying with ASTM F2454, meeting the following characteristics:
1. A minimum of 10% acrylamide base material by weight in the total grout mix. A higher concentration of acrylamide base material is recommended to increase strength or offset dilution during injection.
 2. The ability to tolerate some dilution and react in moving water during injection.
 3. A viscosity of approximately 2 centipoise, which can be increased with approved additives.
 4. A controllable reaction time from 10 seconds to 1 hour.
 5. A reaction (curing) that produces a homogenous, chemically stable, non-biodegradable, firm, flexible gel.
 6. The ability to increase mix viscosity, density and gel strength by increased concentrations of the mix constituents or by the use of approved additives.
 7. Handle, mix, and store grout in accordance with the manufacturer's recommendations. The materials shall be delivered to the site in unopened original manufacturer's containers.
 8. Product Manufacturer - Avanti AV-100, Avanti AV-118; or equal.
- C. A latex or "diatomaceous earth" additive shall be added for joint grouting to increase compressive and tensile strength. The quantity of strengthening agent additive shall be as recommended by the manufacturer and approved by Engineer.
1. Avanti AV-257 Icoset; or approved equal.
- D. When roots are present, for joint and lateral connection joint sealing, a root deterrent chemical shall be added to control root re-growth. The quantity of inhibitor shall be as recommended by the manufacturer and approved by Engineer.
1. Avanti AC-50W; or approved equal.
- E. Freeze/Thaw - In those lines where the grout may be exposed to a freeze-thaw cycle, ethylene

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glycol or other Engineer approved additive shall be used to prevent chemical grout cracking once set.

- F. When using non soluble additives the grout tanks must have mechanical mixing devices to keep the additives in suspension and maintain a uniform solution of grout and additive.

PART 3 - EXECUTION

3.01 ACCESS

It will be the responsibility of the Owner to locate and designate all manhole access points open and accessible for the work, and provide rights of access to these points. If a street must be closed to traffic because of the orientation of the sewer, the Contractor shall institute the actions necessary to do this for the mutually agreed time period. Traffic Control shall be the responsibility of the Contractor and shall conform to the latest revision of the MMUTCD and other provisions of this specification herein. The Contractor shall keep the roadway open to traffic at all times unless given prior approval by the Engineer.

3.02 WATER USAGE

Water for the cleaning and installation of the CIPP will be furnished by the Owner. The Contractor shall notify the Owner prior to work and arrange for the acquisition of a water meter and coordinate operations with Owner/Engineer as to not deplete the local water supply. Water shall be taken from locations designated by the Owner.

3.03 NOTIFICATION

The Contractor shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be temporarily out of service, the maximum amount of time of no service shall be 12 hours for any property served by the sewer. The Contractor shall be required to notify the Owner and all affected properties whose service laterals will be out of commission and to advise against water usage until the sewer main is back in service. Such notification shall be provided to the Utility Department and property owner at least one week prior to service disruption.

The Public Information and Notification program shall at a minimum require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line and the following:

- A. Written notice to be delivered to each home or business describing work, schedule, how it affects them, and a local telephone number of the Contractor they can call to discuss the project or any problems which could arise.
- B. Personal contact and attempted written notice the day prior to the beginning of work being conducted on the section relative to the residents affected.
- C. Personal contact with any home or business which cannot be reconnected within the time stated in the written notice.

3.04 TEMPORARY CONVEYANCE OF WASTEWATER

The Contractor shall provide a temporary conveyance for the flow of existing mainline and service connection effluent around the section or sections of pipe designated for CIPP installation. Installation of the liner shall not begin until the Contractor has installed a sewage by-pass system and all pumping facilities have been installed and tested under full operating conditions including the bypass of mainline and side sewer flows. Once the lining process has begun, existing sewage flows shall be maintained, until the

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resin/felt tube composite is fully cured, cooled down, fully televised and the CIPP ends finished. The Contractor shall coordinate sewer temporary conveyance and flow interruptions with the Engineer at least fourteen (14) days in advance and with the property owners and businesses at least three (3) business days in advance. The pump and bypass lines shall be of adequate capacity and size to handle peak flows. The Contractor shall submit a detail of the temporary conveyance plan and design to the Engineer prior to proceeding with any CIPP installation.

3.05 SANITARY SEWER CLEANING

The Contractor shall remove all internal debris from the pipe line that will interfere with the installation and the final product delivery of the CIPP as required in these specifications. Solid debris and deposits shall be removed from the system and disposed of properly by the Contractor. Moving material from manhole section to manhole section shall not be allowed. As applicable the contractor shall either plug or install a flow bypass pumping system to properly clean the pipe lines. The Contractor shall ensure that no debris is transferred downstream during cleaning operations. The Contractor shall use a vacuum vehicle or similar means to remove debris during cleaning operations. Precaution shall be taken, by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. The repair of any damage, caused by the cleaning equipment, shall be the responsibility of the Contractor. Disposal of the cleaning debris shall be in accordance with local, State and Federal Law and shall be incidental.

A. Pre-Rehabilitation Sewer Pipe Cleaning

1. Perform light cleaning with hydraulic flusher or high velocity cleaning equipment to remove loose debris.
2. Complete up to three passes to remove all debris from line.
3. If the light cleaning fails to leave the sewer line in a condition ready for lining, contact Engineer for authorization to proceed with heavy sewer cleaning.

B. Heavy Sewer Cleaning

1. Notify Engineer prior to performing heavy cleaning as required to remove obstructions, grease, rocks, sticks, deposits and roots so the sewer is ready for lining.
2. Utilize rotating nozzles, saws or cutters, or high velocity hydro-cleaning equipment.
3. Notify Engineer prior to use of mechanical/hydraulic spinner nozzle, chain flail, or other devices that may damage pipes or service connections.
4. If deposits and obstructions cannot be removed by tools normally used in the sewer cleaning industry, notify the Engineer.
5. Maintain a log of time spent performing heavy pipe cleaning on each line segment.

3.06 TRIMMING OF PROTRUDING SERVICES

- A. The Contractor shall trim all existing protruding taps as necessary to satisfactorily complete liner installation.
- B. The Owner shall be notified when any protruding taps are encountered that the Contractor believes will interfere with the CIPP.
- C. The Contractor shall make available pre-CIPP TV inspection media showing all protruding

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taps for Owner review and approval prior to performing the trimming work.

- D. Maintain a log of time spent performing service tap trimming.

3.07 POST-CLEANING INSPECTION OF PIPELINES

Complete CCTV inspection of sewer upon completion of all sewer cleaning, obstruction removal, and protruding tap removal activities. Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by closed circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the CIPP into the pipelines and it shall be noted so that these conditions can be corrected.

- A. Inspect each pipe segment between manholes in a single continuous run.
- B. Accurately measure and document the diameter and length of the existing pipeline to be rehabilitated.
- C. Inspect all service connections at right angles utilizing pan and tilt capabilities of the camera. Accurately measure and log the location and clockwise position of all service connections. Note all defects including offset joints, leaking joints, pipe cracks, root infiltration, etc.
- D. Provide a copy of the video inspection to the Owner. Include on-screen continuous footage, pipe diameter, direction of viewing, manhole number, and street location reference in the recording. Provide a written report of the inspections. Include true to scale drawings of all sewer defects and observation locations.

3.08 CIPP CONSTRUCTION INSTALLATION REQUIREMENTS

CIPP installation shall be in accordance with ASTM F 1216, Section 7, with the following additional requirements:

- A. Resin Impregnation - The quality of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. A roller system shall be used to uniformly distribute the resin throughout the tube.
- B. Tube insertion shall be performed in accordance with manufacturer's recommendations and in such a way to fully extend the tube to its termination point, hold the tube tight against the pipe wall, and produce dimples at service connections and flared ends at maintenance holes. Lubricants may be used as necessary. Care shall be taken so as not to overstress the felt fiber.
- C. Temperature gauges shall be placed to determine the temperature of the incoming and outgoing water from the heat source. Another such gauge shall be placed inside the tube at the remote end to determine the temperature at that location during the cure cycle. The Contractor shall supply a suitable heat source and circulation equipment to deliver hot water or steam throughout the section to be cured by means of a restrung hose to uniformly raise the water temperature above the temperature required to effectively cure the resin in accordance with manufacturer's recommendations.
- D. The Contractor shall maintain the manufacturer recommended pressure and temperature throughout the curing process and for the duration recommended by the resin manufacturer.

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- E. Initial cure shall be considered complete when the exposed portions of the pipe are hard and sound and the remote temperature sensor indicates that the temperature is high enough to create no exotherm.
- F. The Contractor shall slowly cool the hardened pipe liner to a temperature below 100 degrees F before releasing the pressure. Cool down may be accomplished by introducing cool water into the inversion standpipe to replace water drained from a small hole placed in the downstream end. Final pressure release shall be slow to avoid development of a vacuum in the newly formed pipe liner.
- G. The finished liner shall be continuous over the length of the inversion run and be free from visual defects, including but not limited to foreign inclusions, dry spots, pinholes, and eliminations.
- H. A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed CIPP shall be applied at manhole walls in accordance with the CIPP System manufacturer's recommendations. For manholes with outside drops, install two seals, one approximately one inch inside the manhole wall and another approximately nine inches upstream of the outside drop and reinstate the drop opening through the CIPP. Do not install sleeve in host pipe more than 24 hours prior to CIPP lining. Hydrophilic gaskets shall be installed in accordance with ASTM F3240.

3.09 REINSTATEMENT OF SANITARY SEWER CONNECTIONS

It is the intent of these specifications that lateral connections to buildings (homes and businesses) be reopened without excavation utilizing a remotely controlled cutting device, monitored by a video TV camera.

- A. Prior to installing the sewer lining (during the television process), the Contractor shall be responsible for confirming and recording the locations of all sewer service connections.
- B. The Contractor shall provide a minimum of two (2) complete working cutter units plus spare key components on the site before each inversion.
- C. After sewer lining is complete, the Contractor shall re-establish all service connections. The connections shall be opened to no less than 90% capacity. Cutout edges shall be finished with a brush-style cutter to a smooth edge and free of debris or burrs that would restrict wastewater flow.
- D. In the event that service reinstatement results in a liner opening greater than 100% of the service connection opening, or damage to the service connection occurs, install a CIPP service repair to cover the over-cut service at no additional cost to the Owner.
- E. The Contractor must capture and remove all CIPP cutout material from service lines at the closest downstream manholes. The Contractor shall be responsible for future costs incurred by the Owner in locating and removing stray CIPP materials (from this project) found downstream of the project locations. The Contractor shall also be responsible for costs incurred by the Owner for cleanup or restoration in the event that stray CIPP materials (from this project) that causes sewer backups.
- F. If the Contractor is unable to re-establish the service connection from inside the pipe and excavation is necessary, no additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

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- G. Services not re-established shall be approved in writing by the Engineer. The Contractor shall be responsible for costs incurred from failure to restore an active service.

3.10 REINSTATEMENT OF 8" DROP

It is the intent of these specifications that the 8" drop be reopened without excavation utilizing a remotely controlled cutting device, monitored by a video TV camera.

- A. The connections shall be opened to no less than 90% capacity. Cutout edges shall be brushed to a smooth edge and free of debris or burrs that would restrict wastewater flow.
- B. The Contractor shall provide a minimum of two (2) complete working cutter units plus spare key components on the site before each inversion.
- C. After sewer lining is complete, the Contractor shall re-establish all drops.
- D. The Contractor must capture and remove all CIPP cutout material from drops at the closest downstream manholes. The Contractor shall be responsible for future costs incurred by the Owner in locating and removing stray CIPP materials (from this project) found downstream of the project locations. The Contractor shall also be responsible for costs incurred by the Owner for cleanup or restoration in the event that stray CIPP materials (from this project) that causes sewer backups.
- E. If the Contractor is unable to re-establish the drop from inside the pipe and excavation is necessary, no additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

3.11 LATERAL CONNECTION SEALING

- A. Develop a plan for flow diversion or stoppage. Review with Engineer prior to initiating repair.
- B. Testing and Grouting Equipment
 1. The equipment shall be constructed in such a way as to provide a means for introducing air under pressure into the void area created by the expanded ends of the packer against the host pipe. The equipment shall also provide a means for continuously measuring, viewing and recording the actual static pressure of the test medium and grout within the void area only.
 2. The grout packer for testing lateral connections shall consist of inflatable mainline end elements and a lateral grouting plug that creates a void area extending beyond the main connection. Whenever possible, the Contractor shall use a lateral grouting plug sized to match the diameter of the lateral being grouted with an effective sealing length of at least five (5) feet. Where the lateral is capped, the Contractor shall utilize alternate lateral grouting plugs or equipment sized appropriately for the capped lateral. In cases where the lateral transitions from six inches (6") to four inches (4") in diameter, the Contractor shall use a four inch (4") lateral grouting plug. However, it should be noted that in some cases a lateral plug may not launch and thus the service may not be "groutable".
 3. Void pressure data shall be transmitted from the void area directly to the monitoring equipment in the grouting truck. All test monitoring shall be above ground and in a location to allow for simultaneous and continuous observation of the televising monitor and test monitoring equipment.

DIVISION 2

SANITARY SEWER REHABILITATION SPECIAL PROVISIONS

4. Grouting equipment shall consist of the packer and appropriate pumping and hosing systems capable of supplying flow of sealing materials to completely fill the voids.
5. The volume of mixed grout pumped must be measured and recorded for each grouted connection.
6. The Contractor shall provide back-up bladders for all packers on-site any time grouting work is being conducted. Equipment for cleaning lateral blockages shall be readily available while any grouting work laterals and connections are being conducted.

C. Control Testing

1. Packer Tests - Demonstrate the acceptable performance of air test.
 - a. Prior to beginning testing and grouting, perform a demonstration test in an above ground 8 inch test cylinder suitable to contain the full length of the packer and sustain the void test pressure. For service line testing, provide an 8-inch test cylinder with 4-inch service tee to receive the lateral bladder.
 - b. Equip the test cylinder with a pressure gauge to monitor internal pressure and a release valve to exercise a controlled release of pressurized air from the void area to test the packer under both sound and leaking conditions.
 - 1) With the void release valve sealed, inflate the packer and air test void at 7-10 psi. The observed void pressure at the test cylinder pressure gauge must be within $\pm 1/2$ psi of the reading in the control center/studio void pressure gauge and follow both up and down pressure changes (allowing time for pressure equalization).
 - 2) If above test is passed, crack the release valve to simulate a very small leak. The cylinder shall be equipped with a void release valve to exercise a controlled release of the test media with the associated pressure drop to be equally displayed $\pm 1/2$ psi of the cylinder gauge and test monitoring equipment.
 - c. Prior to the commencement of joint testing, position the packer on a section of sound sewer pipe between pipe joints, and perform a test as specified. The equipment shall hold a 7-10 psi test pressure for a period of 15 seconds with a pressure drop of less than 1 psi. In the event of a failed test, repair any defective equipment and re-test to verify proper operation of all equipment at no additional compensation to Contractor. Should it be found that the surface or porosity conditions of the barrel of the sewer pipe cannot meet the joint test requirements, then the performance testing shall be waived or modified as determined by the Owner
 - d. If air testing cannot be performed successfully, repair or otherwise modify air test equipment and repeat the tests. This test may be required at any other time during the performance of joint testing work if Owner suspects the testing equipment is not functioning properly.
2. Pump Tests - At the beginning of the contract, prior to application of grout, perform a pump test to determine if proper ratios are being pumped from the grout component tanks at the proper rates and to measure pump rates. Use separate containers to capture the discharges from each of the grout component hoses, to simulate the actual volumes of each component through the interconnect hoses, hose reel and length of grout hose and confirm accuracy of grout pump totalizer. Take corrective action if ratios or rates are not

DIVISION 2

SANITARY SEWER REHABILITATION SPECIAL PROVISIONS

within manufacturer's recommended standards.

3. Grout Tests - Perform and record a grout gel test in the presence of the Engineer by recording the grout tank solution temperature, catalyst tank solution temperature, ambient air temperature in truck, and gel time of the sample whenever the following conditions occur:
 - a. At the beginning of each day, the material in the hoses shall be recycled to the tanks and a sample shall be taken.
 - b. When new batches of grout are mixed.
 - c. Whenever the temperature in the tanks or ambient temperature have changed by more than +/- 10°F from the previous gel test.

D. Lateral Connection Testing Procedure

1. Lateral connection joint testing pressure shall be equal to 0.5 psi per vertical foot of pipe depth plus 2 psi; however, test pressure shall not exceed 10 psi without approval of the Engineer.
2. Air testing lateral connections shall be accomplished by isolating the area to be tested with the lateral connection packer and by applying positive pressure into the isolated void area. A pan and tilt camera shall be used to position the lateral packer for laterals directly connected to the mainline sewer. The lateral bladder shall be inverted from the mainline assembly into the lateral pipe and inflated. The mainline elements shall then be inflated to isolate the lateral connection and the portion of the lateral to be tested. A sensing unit shall monitor the pressure of the packer void and will accurately transmit a continuous readout of the void pressure to the control panel at the grouting truck or to a pressure gauge on the packer recorded by the CCTV camera.
3. The test procedure will consist of applying a controlled air pressure into each isolated void area. Air shall then be slowly introduced into the void area until a pressure equal to or greater than the required test pressure, but in no cases greater than 2 psi above the required test pressure, is observed on the pressure monitoring equipment. Once the designated pressure in the isolated void is displayed on the meter of the control panel, the application of air pressure will be stopped and a 15 second waiting period will commence. The void pressure will be observed during this period. If the void pressure drop is greater than 2.0 psi within 15 seconds, the lateral shall be considered to have failed the air test and shall be grouted and retested.

E. Grout Preparation

1. Follow the manufacturer's recommendations for the mixing and safety procedures.
2. Adjust gel time as necessary to compensate for changes in temperature in grout component tanks or hoses. The addition of dilution water to extend gel times is not acceptable unless resulting base grout tank only material exceeds 20% by weight for solution grouts.
3. During the grouting process, the Grouting Technician shall monitor the grout component tanks to make sure that proper ratios are being pumped. If unequal levels are noted in the tanks, repeat the pump test as described above and correct any defective equipment.

DIVISION 2

SANITARY SEWER REHABILITATION SPECIAL PROVISIONS

F. Pipe Preparation

1. Prior to the application of chemical grout materials, Contractor shall clean, prepare and inspect sewer laterals in accordance with Division 2, Section 3.05 of these Specifications.

G. Lateral Sealing by Packer Injection Grouting

1. Sealing shall only be performed on those lateral connections as directed by the Engineer. This shall be accomplished by forcing grout through a system of pumps and hoses into and through the joints of the sewer from the packer within the sewer pipe.

Remove excess grout from pipe and sewer laterals. Excess grout shall be defined as a thickness of grout that given its location, size and geometry, could cause a blockage. Flush or push forward to the next downstream manhole, remove from the sewer system, and properly dispose of excess grout.

2. The lateral packer shall remain in position during the pressure test, thus maintaining the isolated void. Pressure inject grout through the lateral packer into the annular space between the lateral sealing plug and the lateral pipe.
3. Perform lateral sealing according to ASTM F2454, equipment manufacturer, grout supplier, and the following requirements.
4. Pump two-part chemical sealant material at the ratio specified by the grout supplier.
5. Continue to pump grout, in stages if necessary, until refusal is achieved.
 - a. Under initial pumping conditions, the void pressure will slowly rise to a range of approximately 2 to 4 psi.
 - b. Continue pumping until there is a sudden increase to over 8 psi in a few seconds, indicating refusal.
 - c. If a quantity of grout equal to 1 gallon per foot of service line bladder plus 3 gallons is pumped without reaching the point of refusal, staging may be required.
6. Upon reaching refusal, stop grout pumps and allow grout to cure for 1 full minute.
7. Deflate service packer, reinflate, and repeat service line pressure testing.
8. If the service connection fails, repeat injection grouting and pressure testing procedures until service is sealed or Engineer determines grout consumption is too high and continued attempts to seal service are abandoned.
9. Confirm flow after sealing of each service. If a grout blockage exists, immediately clear the service of the blockage.
10. A thin film of residual grout inside the service, which does not significantly impede flow, is a normal result of sealing and is not considered a blockage.

- #### H. Joint Sealing Verification - Record sealing of joints in conjunction with the testing of joints. Record the void pressure drop continuously on video and in writing immediately before and after sealing. After the packer is deflated and moved, record on video the visual inspection of the joint.

DIVISION 2

SANITARY SEWER REHABILITATION SPECIAL PROVISIONS

3.12 PIPE REPAIR - OPEN CUT

- A. Construction shall be in strict accordance with CEAM Specifications 2600.3 and 2621.3, except as herein modified.
 - 1. Sanitary Sewer Leakage Testing and Deflection Testing is not required.
 - 2. Backfill compaction shall meet the density requirements of MnDOT 2106.3.G2 (Quality Compaction).
- B. Develop a plan for flow diversion or stoppage. Review with Engineer prior to initiating repair.
- C. Install sediment control devices prior to any removal work and/or ground disturbing activities commence. Remove tracked sediment from paved surfaces on and off site within 24 hours of discovery.
- D. Take care during the initial excavation of the defective pipe so as not to disturb existing pipe that is still acceptable. Any sound portion of the sewer pipe broken by Contractor's negligence or carelessness shall be replaced at the Contractor's expense. After the defective pipe has been exposed, as much additional pipe shall be uncovered as is necessary to allow space for workmen and the installation of the new pipe. The defective pipe shall be saw cut out in such a way that the ends are straight and smooth and free of chips or cracks so that a smooth plain-end spigot exists at both ends to receive replacement section. The defective pipe shall be removed from the trench and the former bedding material of that pipe excavated to 6 inches below the pipe grade. The bottom of the trench shall then be filled with 6 inches of coarse aggregate bedding.
- E. Replace connections to existing manholes by removing all connecting pipe and existing mortar and inserting a watertight connection boot in the existing pipe hole. Contractor shall inspect existing connection from the inside of the manhole to determine the required connection boot size. The bottom of the manholes shall be shaped or reshaped as necessary to fit the invert of the sewer pipe.
- F. Cut pipes to length required allowing no more than 1/2-inch gap between butted pipe ends at coupling location. Cut pipes perpendicular to centerline.
- G. Connections between new and existing pipes shall be made with shielded transition couplings. The couplings shall be installed with corrosion-resistant and rustproof stainless steel clamps and shear rings. Wrap coupling around pipes, centered on butt joint, and tighten bolts according to manufacturer's recommendations.

3.13 POST-LINING INSPECTION OF PIPELINES

Complete CCTV inspection of sewer upon completion of all sewer lining, lateral and drop reinstatement, and lateral connection sealing. Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by closed circuit television.

- A. Inspect each pipe segment between manholes in a single continuous run.
- B. Verify that the services are reconnected and fully operable, with at least 90% of the original capacity.
- C. Carefully inspect the pipe interior to identify any conditions which may indicate improper installation.

DIVISION 2

SANITARY SEWER REHABILITATION SPECIAL PROVISIONS

3.14 TESTING

CIPP samples shall be prepared and tested in accordance with ASTM F 1216, Section 8.1 using either method proposed.

Leakage testing of the CIPP shall be accomplished during cure while under a positive head. CIPP products in which the pipe wall is cured while not in direct contact with the pressuring fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Owner.

Visual inspection of the CIPP shall be in accordance with ASTM F1216, Section 8.4.

3.15 CLEAN UP

Upon acceptance of the installation work and testing, the Contractor shall reinstate the project area affected by the operations.

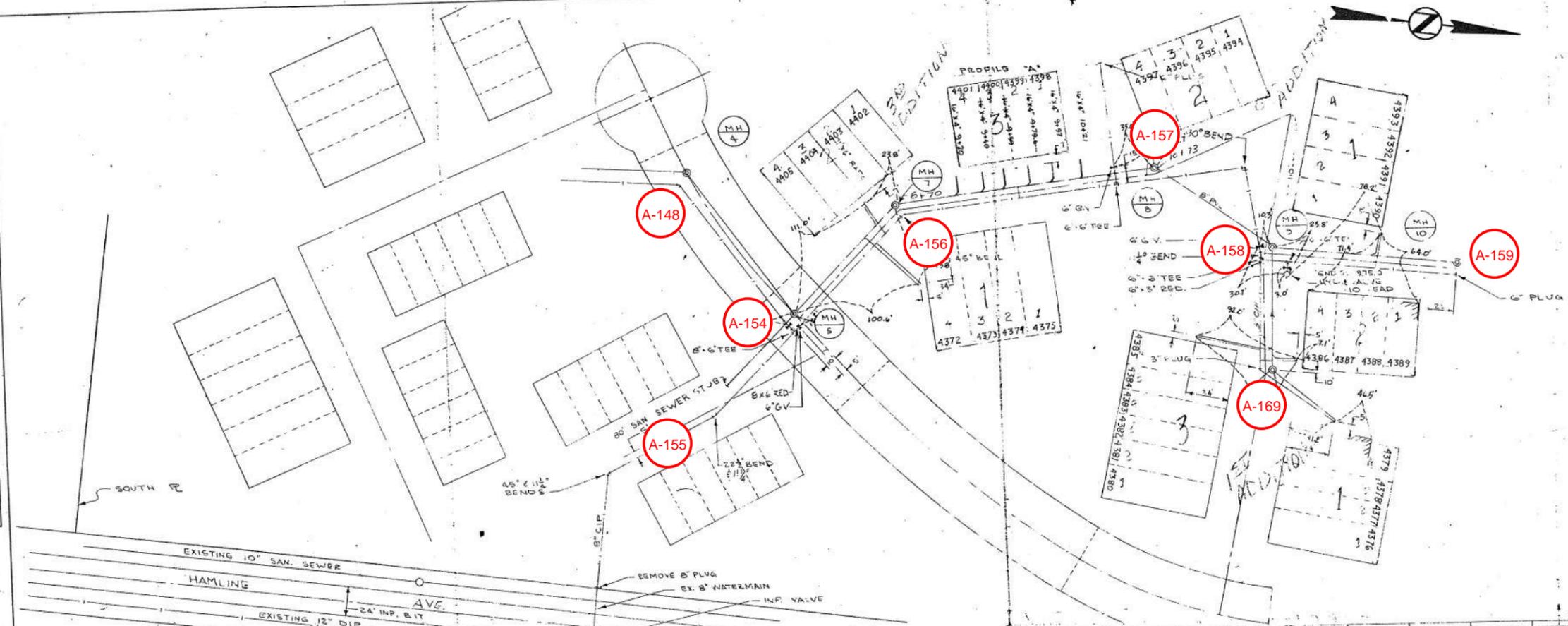
3.16 COORDINATION

The Owner reserves the right to inspect the work on an ongoing basis. The Contractor is responsible for notifying the Owner 24 hours in advance of any individual portion of the work. The Contractor will be asked to rework any work completed without the Owner being notified in advance and provided the opportunity to inspect said work.

APPENDIX 1 - CITY RECORD DRAWINGS

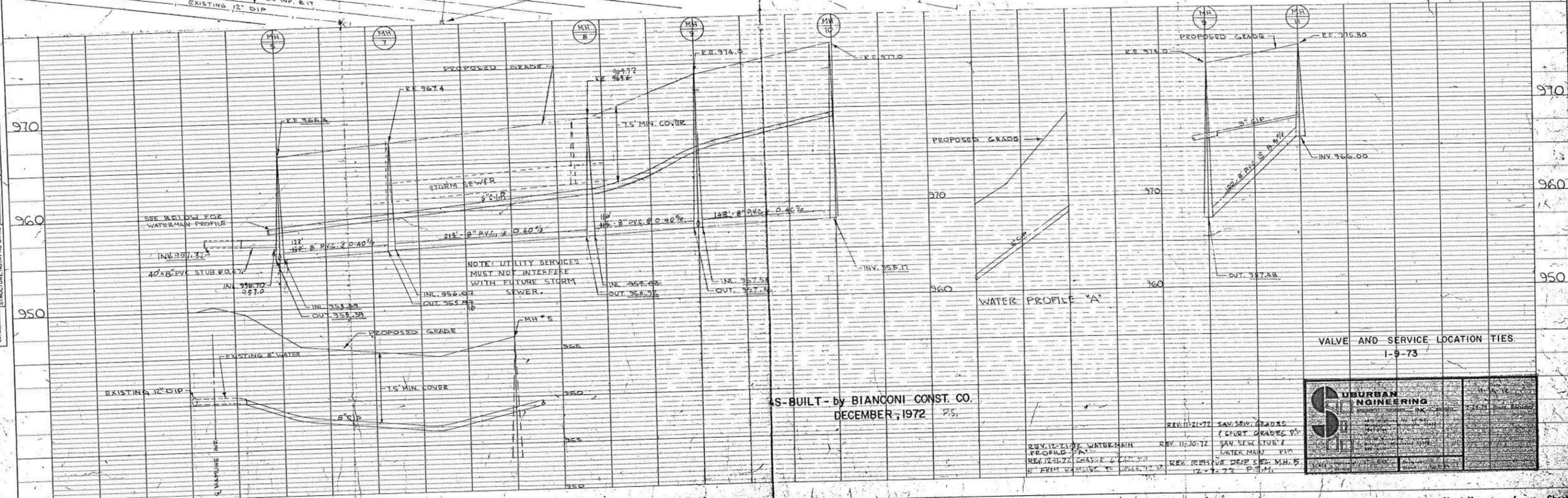
PLAN
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 RT. OF WAY CHECKED
 DATE
 BY

PROFILE
 SURVEYED
 GRADES CHECKED
 PLOTTED
 STRUCTURE NOTATING CHECKED
 DATE
 BY



FOR REFERENCE ONLY - NOT TO SCALE

NOTE:
 1. USE OF VCP ALLOWED BY SPECIFICATIONS
 2. WATER SERVICES 12\"/>



BUILT BY BIANCONI CONST. CO.
 DECEMBER, 1972

REV. 11-21-72 SAN. SEW. GRADES & CURB GRADES BY
 REV. 11-30-72 SAN. SEW. STUBS & WATER MAIN PIP
 REV. 12-17-72 GRADE & CURB
 REV. 12-17-72 DEP. S. & M.H. 5
 FROM EXISTING TO 12-17-72 P.S.

VALVE AND SERVICE LOCATION TIES
 1-9-73

	URBAN ENGINEERING INC. 400 N. 1ST ST. ST. LOUIS, MO. 63101
	PROJECT NO. 7-21-73 DATE ISSUED

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

William K. Meyer
 DATE Sept. 27, 74 REG. NO. 9250

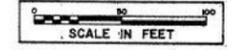
UBURBAN ENGINEERING
 REGISTERED PROFESSIONAL ENGINEERS
 4875 Highway No. 65 N.E.
 Minneapolis, Minnesota 55432
 784-1054

1101 Cliff Road
 Burnsville, Minnesota 55337
 892-1450

SCALE: Horizontal 1" = 50', Vertical 1" = 5'

DATE: 9-21-74
 REVISIONS:
 Rev. 1 - 9-21-74
 Rev. 2 - 10-1-74
 Rev. 3 - 10-1-74

AS-BUILT NOTE:
 Ring elevations of manholes & catch basins are dependent on finished grading and street const.



AS-BUILT NOV. 1974
 by BIANCONI CONST. CO.

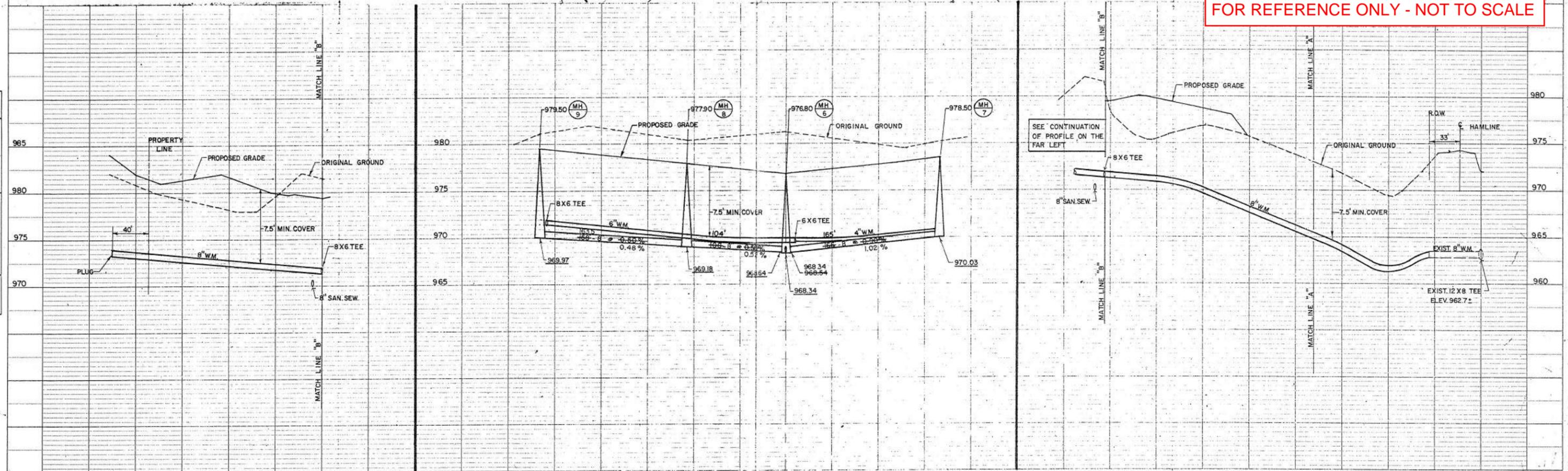
850.00 = correct figure
 850.50
 850.00 = corrected figure

PLAN	SURVEYED	DATE
	PLOTTED	
	CHECKED	
	BY	
	DATE	

CONSTRUCTION NOTES

1. ALL SANITARY SEWER SERVICES TO BE 4" C.I.S.P.
2. WATER SERVICES TO BE 1" OR 1-1/2" COPPER AS NOTED.
3. END ALL SERVICES 10' FROM BUILDING.
4. EXTENSION OF SERVICES TO BE DONE BY OTHERS UNDER SEPARATE CONTRACT.
5. ROUGH GRADING TO BE DONE BY OWNER PRIOR TO UTILITY CONSTRUCTION.
6. STORM SEWER PIPE TO BE CLASS III, WITH R-4 GASKETS
7. STATIONING ON SERVICES IS FROM DOWNSTREAM MANHOLE.

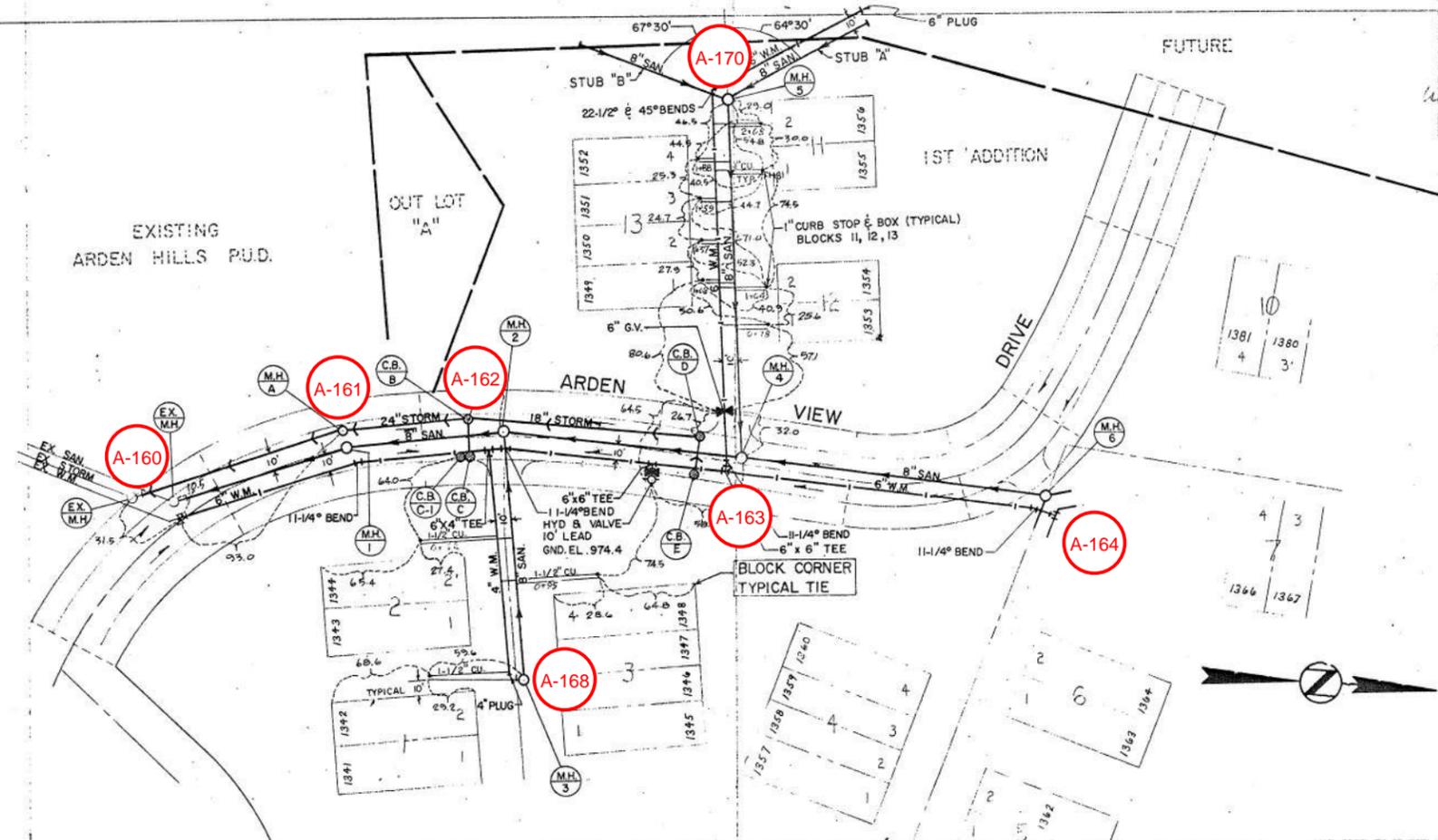
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	PLOTTED	
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	BY	
	DATE	



STORM SEWER STRUCTURE SCHEDULE			
NO.	TYPE	CASTING	DIST. BACK CURB TO E. STRUCTURE
M.H.A	48" STANDARD	R-1733	
C.B. B	48" STANDARD (SLAB TOP)	R-3250-A	
C.B. C	27" SHALLOW	R-3250-A	
C.B. C-1	27" SHALLOW	R-3250-A	
C.B. D	48" STANDARD (SLAB TOP)	R-3250-A	
C.B. E	27" SHALLOW	R-3250-A	

NOTE: CASTING NUMBERS ARE NEENAH OR APPROVED EQUAL

DATE
BY
SUBMITTED
PLOTTED
ALIGNMENT CHECKED
NOTE BOOK NO.
PLAN



CERTIFY THAT THIS PLAN, SPECIFICATIONS, REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MINNESOTA.
 William K. Meyer
 5/27/74 REG. NO. 9250

UBURBAN ENGINEERING
 INCORPORATED
 4875 Highway No. 45 N.E.
 Minneapolis, Minnesota 55425
 784-4544
 1101 Cliff Road
 Burnsville, Minnesota 55337
 850-6810

Scale: Horizontal 1" = 40', Vertical 1" = 10'
 Designed: J.A.H.
 Date: 5-20-74
 Revision: 1
 Drawn: J.A.H.
 Check: J.A.H.

850.00 = correct figure
 850.50
 850.00 = corrected figure

AS-BUILT NOTE:
 Ring elevations of manholes & catch basins are dependent on finished grading and street const.

AS-BUILT, NOV, 1974
 by BIANCONI CONST. CO.

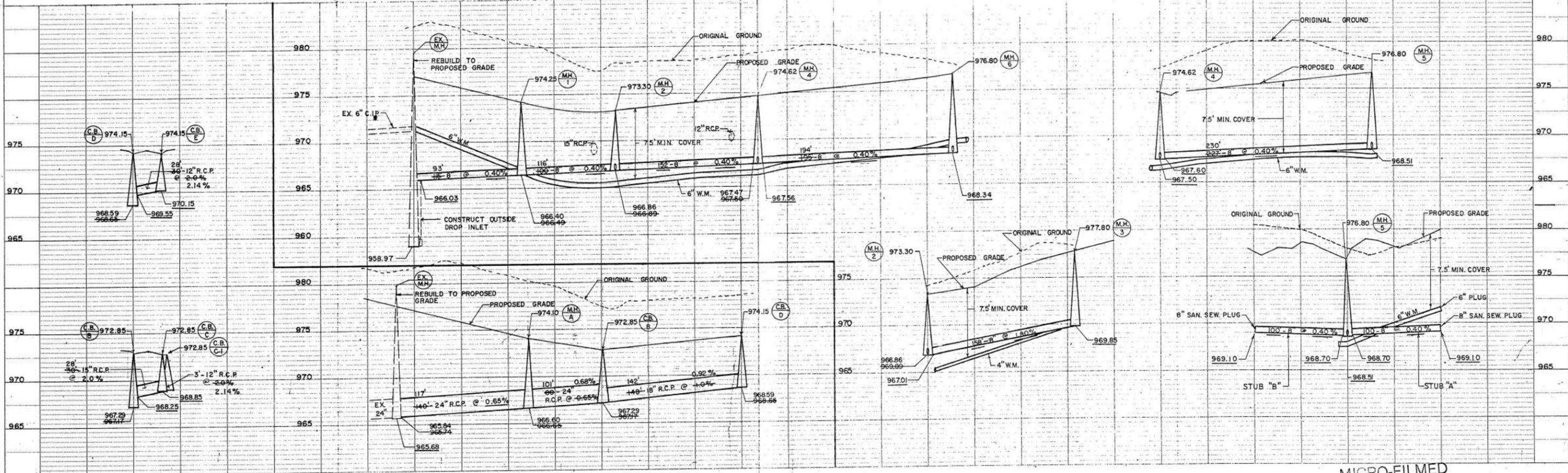


FOR REFERENCE ONLY - NOT TO SCALE

CONSTRUCTION NOTES

1. ALL SANITARY SEWER SERVICES TO BE 4" C.I.S.P.
2. WATER SERVICES TO BE 1" OR 1-1/2" COPPER AS NOTED.
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5. ROUGH GRADING TO BE DONE BY OWNER PRIOR TO UTILITY CONSTRUCTION.
6. STORM SEWER PIPE TO BE CLASS III. WITH R-4 GASKETS
7. STATIONING ON SERVICES IS FROM DOWNSTREAM MANHOLE

DATE
BY
CONVEYED
PLOTTED
GRADES CHECKED
NOTE BOOK NO.
PROFILE



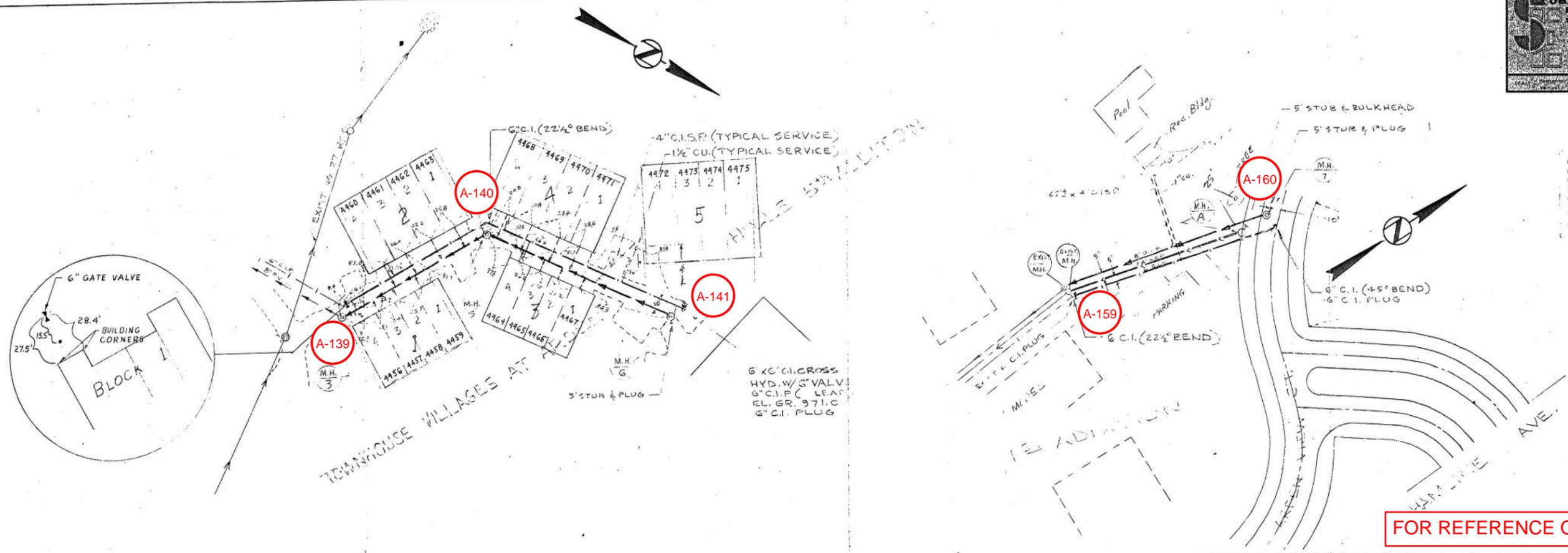
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URBAN ENGINEERING
 INCORPORATED
 1000 Hennepin Avenue, Suite 1000
 Minneapolis, Minnesota 55402
 Phone: 612-338-1111
 Fax: 612-338-1112

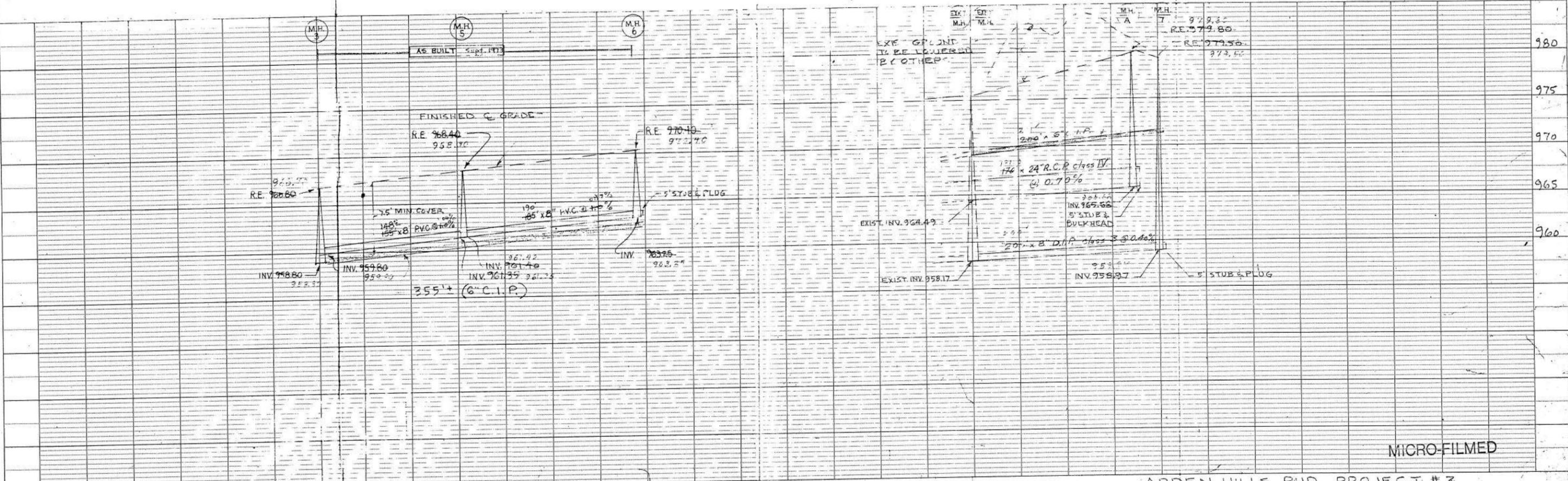
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 William R. Meyer
 DATE Aug 16, 73 REG. NO. 9250

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 SURVEYED _____
 PLOTTED _____
 ALIGNED CHECKED _____
 RT. OF WAY CHECKED _____
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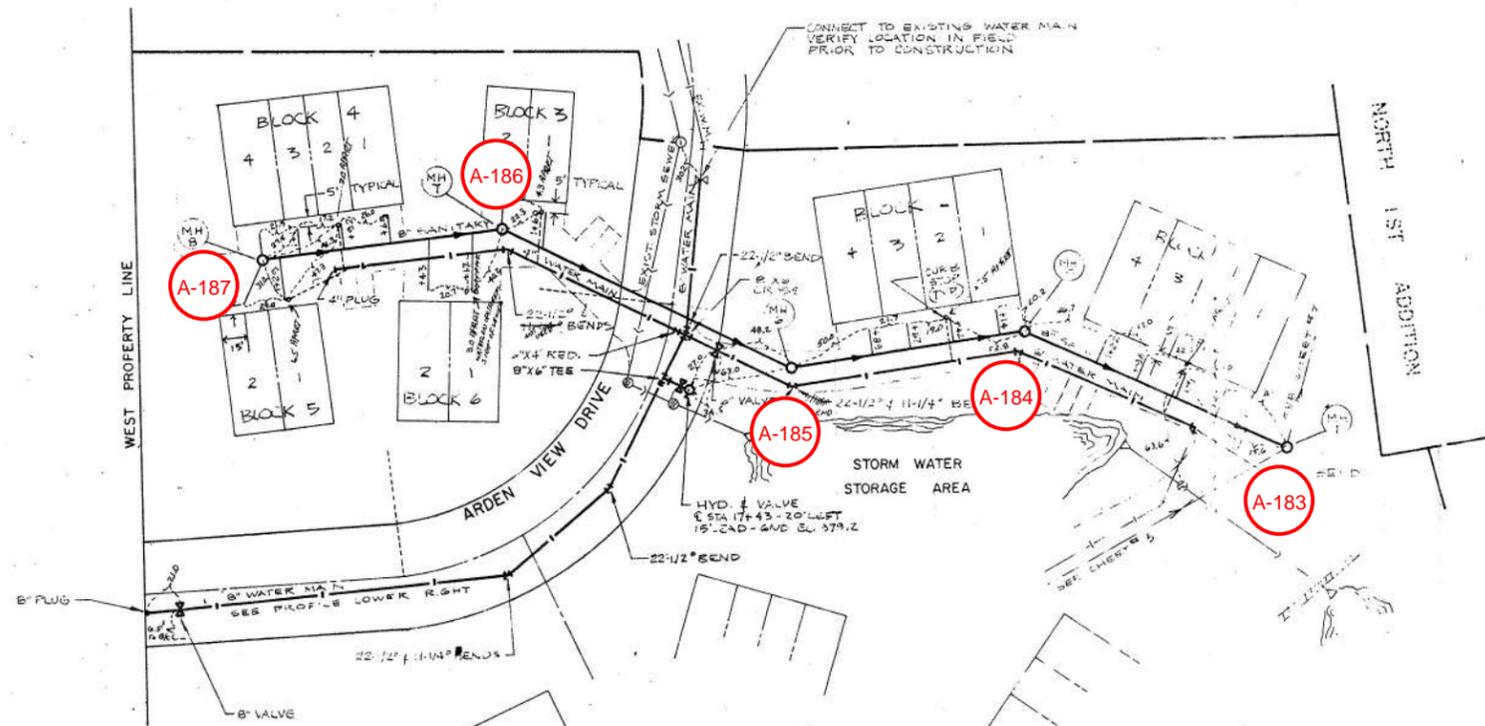


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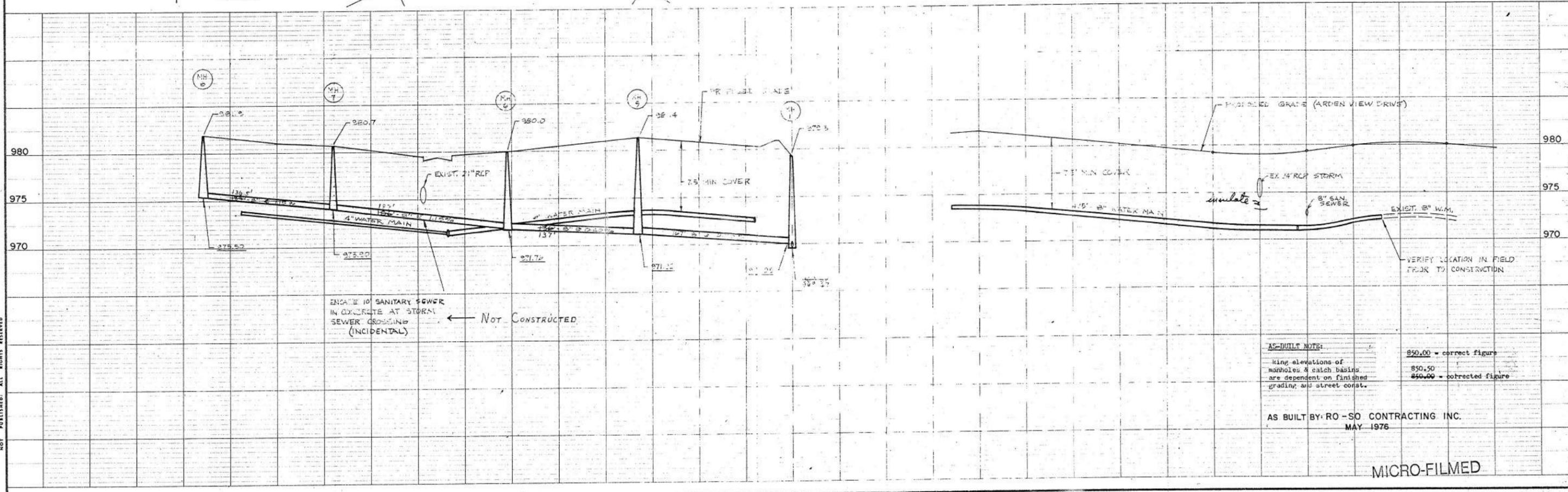
NORTH 3RD ADDITION



CONSTRUCTION NOTES

1. ALL SANITARY SEWER SERVICES TO BE 4" CISP
2. WATER SERVICES TO BE 1-1/2" COPPER
3. END ALL SERVICES 5.0' FROM BLOCK
4. EXTENSION OF SERVICES TO BUILDING TO BE DONE BY OTHERS UNDER SEPARATE CONTRACT
5. STATIONING ON SERVICES IS FROM DOWN STREAM MANHOLES

FOR REFERENCE ONLY - NOT TO SCALE



AS-BUILT NOTE:
 Ring elevations of manholes & catch basins are dependent on finished grading, and street const.
 850.00 = correct figure
 850.50 = corrected figure
 850.00 = corrected figure

AS BUILT BY: RO-SO CONTRACTING INC.
 MAY 1976

MICRO-FILMED

NOT PUBLISHED. ALL RIGHTS RESERVED

DATE: 1-15-76
 DESIGNED BY: TMH
 DRAWN BY: PS
 CHECKED BY: WKM
 PROJECT FILE NO:

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 Thomas W. Gault
 DATE: January 15, 1976 REG NO. 11,492

UBURBAN ENGINEERING
 INCORPORATED
 Minneapolis, Minnesota

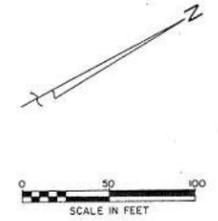
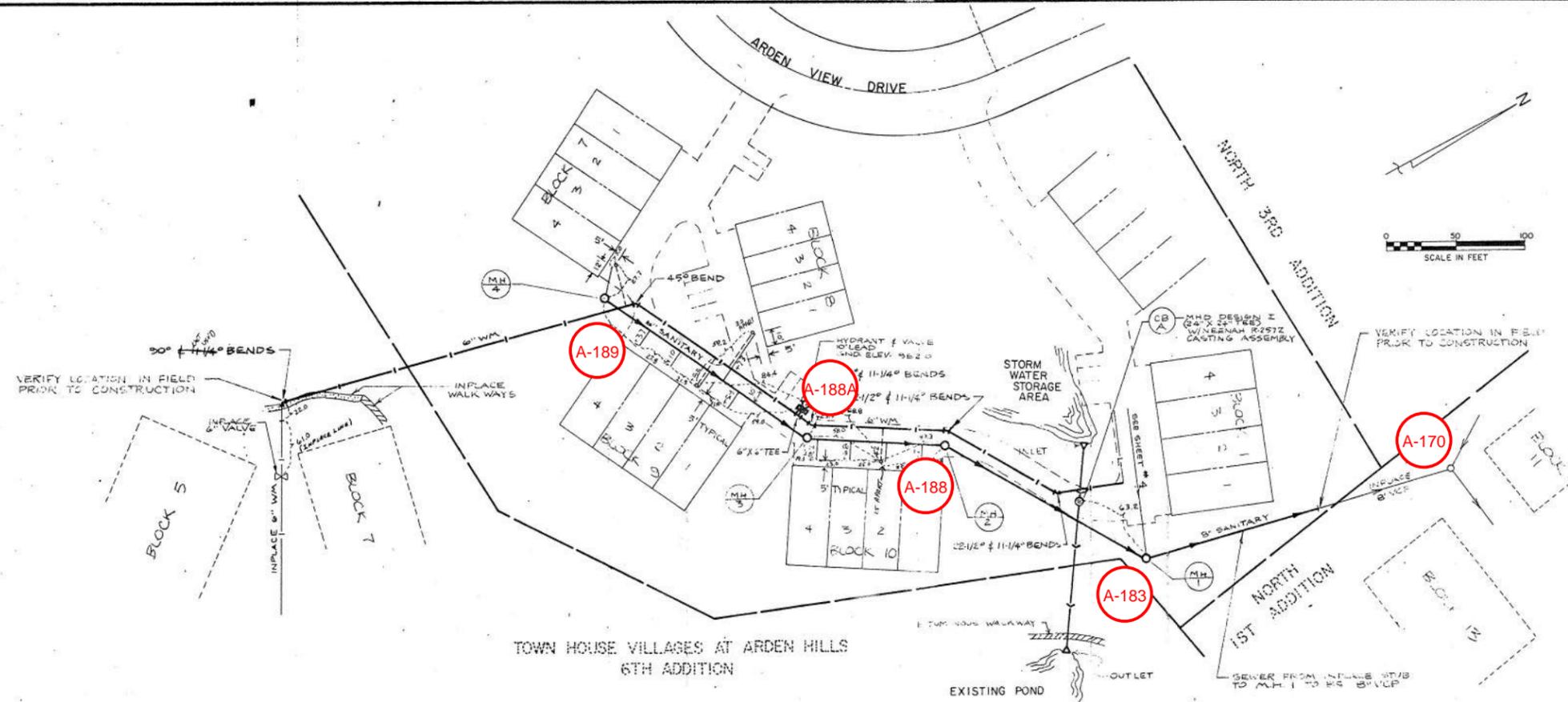
REVISIONS	DATE	DESCRIPTION

OWNER
 PENTOM INC.
 8200 HUMBOLDT AVE. S.
 MPLS. MN. 55431

PROJECT
 ARDEN HILLS P.U.D.
 TOWN HOUSE VILLAGES NORTH
 4TH ADDITION

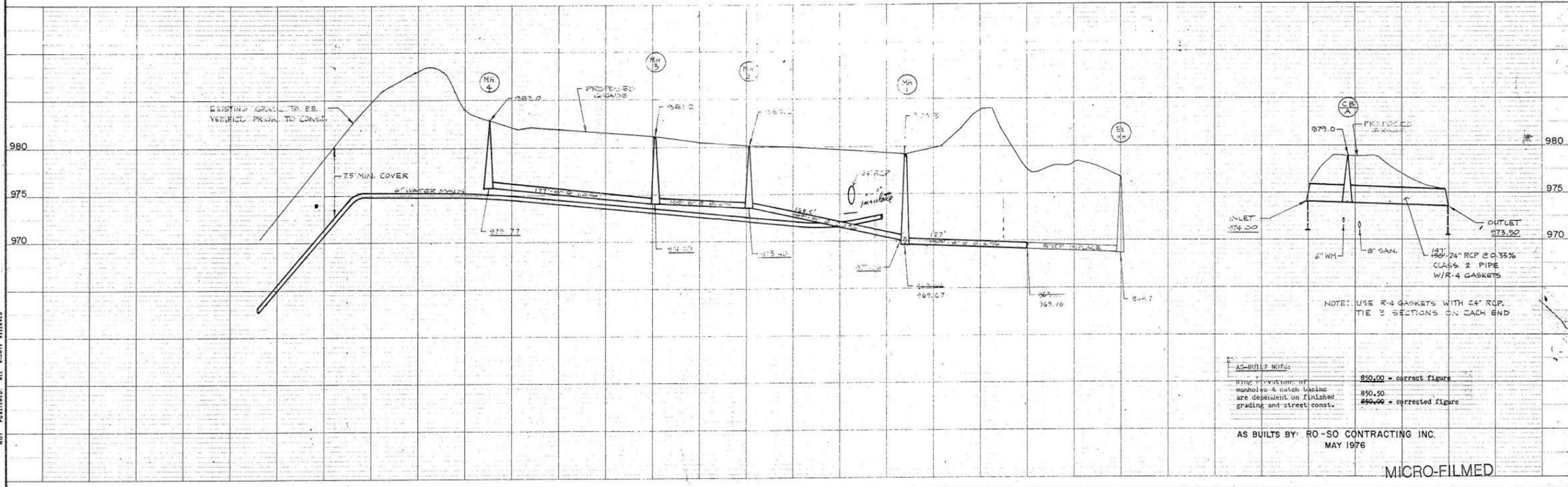
SHEET TITLE
 SANITARY SEWER AND WATER MAIN

SHEET 4 of 5 SHEETS
 HORIZ. SCALE 1" = 50'



- CONSTRUCTION NOTES**
1. ALL SANITARY SEWER SERVICES TO BE 4" CISP
 2. WATER SERVICES TO BE 1-1/2" COPPER
 3. END ALL SERVICES 5.0' FROM BLOCK
 4. EXTENSION OF SERVICES TO BUILDING TO BE DONE BY OTHERS UNDER SEPARATE CONTRACT
 5. STATIONING ON SERVICES IS FROM DOWN STREAM MANHOLES
 6. RETAINER GLANDS USED ON 90° BENDS

FOR REFERENCE ONLY - NOT TO SCALE



AS-BUILT NOTES:
 Final elevations of manholes & catch basins are dependent on finished grading and street const.
 850.00 = correct figure
 850.50
 850.00 = corrected figure

AS BUILT BY: RO-SO CONTRACTING INC.
 MAY 1976

MICRO-FILMED

DATE: 1-15-76
 DESIGNED BY: T.M.H.
 DRAWN BY: P.S.
 CHECKED BY: W.K.M.
 PROJECT FILE NO:

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 Thomas M. Hobb
 DATE: January 15, 1976 REG. NO. 4492

UBURBAN ENGINEERING
 MINNEAPOLIS, MINNESOTA

REVISIONS	DATE	DESCRIPTION

OWNER
 PENTOM INC.
 8200 HUMBOLDT AVE. S.
 MPLS. MN. 55431

PROJECT
 ARDEN HILLS P.U.D.
 TOWN HOUSE VILLAGES NORTH
 4TH ADDITION

SHEET TITLE
 SANITARY SEWER
 WATER MAIN AND STORM SEWER

SHEET 3 of 5 SHEETS

UBURBAN ENGINEERING
 INCORPORATED
 4875 Highway No. 45 N.E.
 Minneapolis, Minnesota 55412
 Tel. 464-1100
 151 W. Kenyonville
 Kenyonville, Minnesota 55378
 895-8310

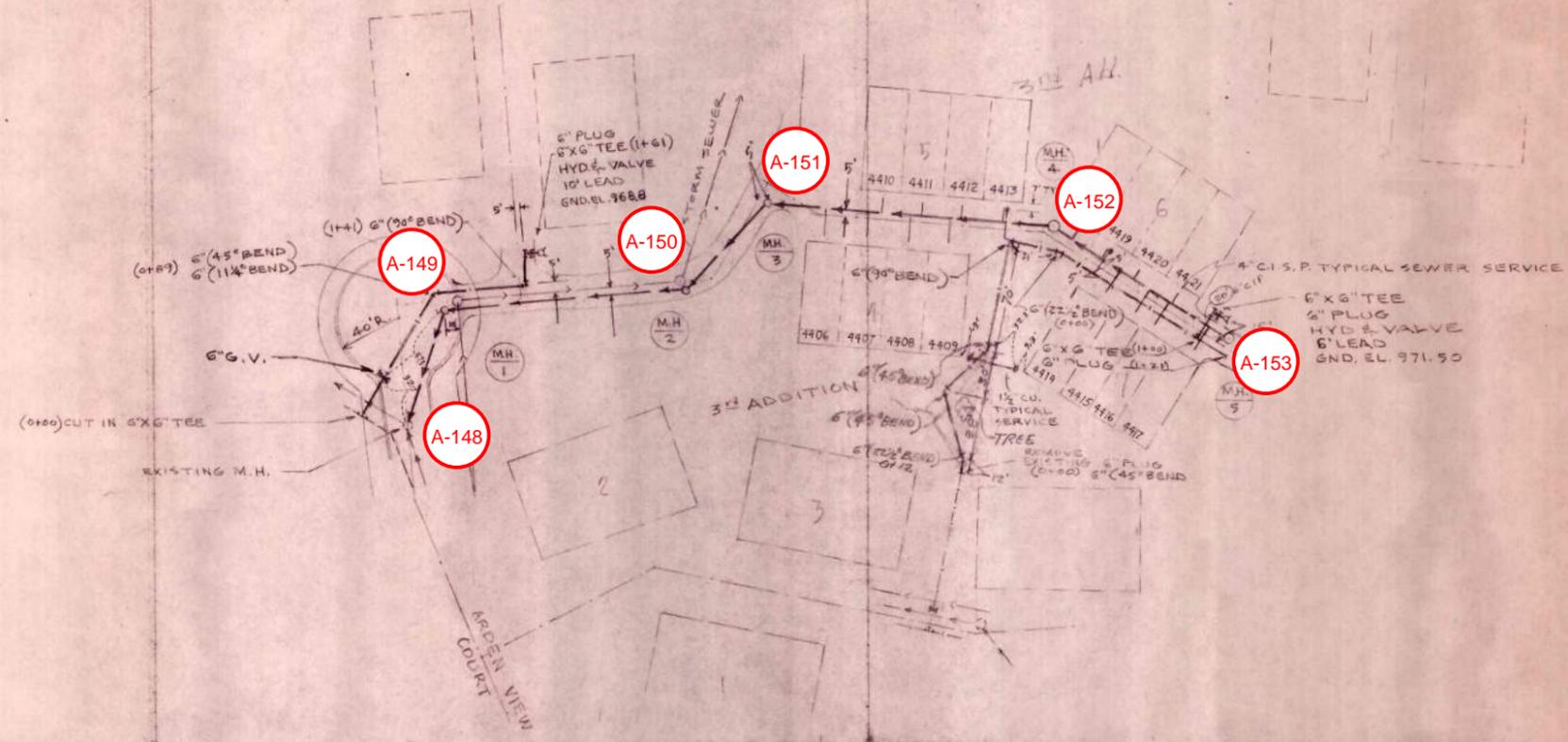
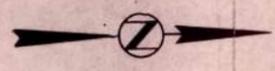
Date: **May 2, 1973**
 Revision: **T-24-74** **Revised**

SCALE: Horizontal 1" = 50'
 Vertical 1" = 5'

Designed: **W.K.M.**
 Drawn: **W.B.R.**

DATE: _____
 BY: _____
 SURVEYED: _____
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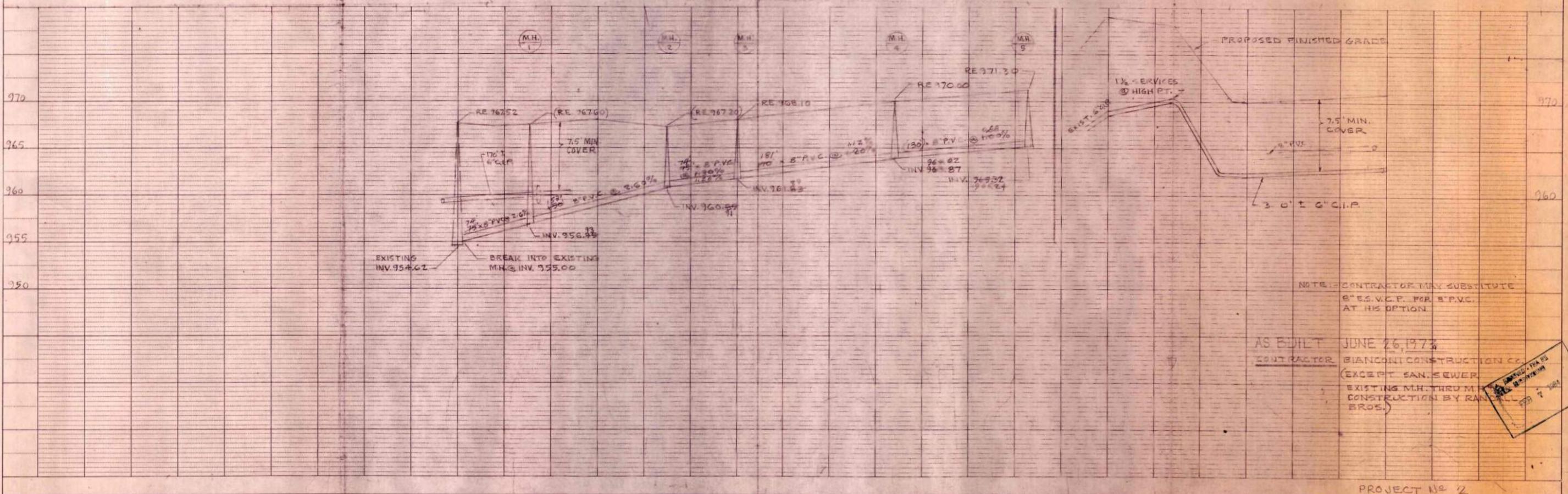
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 BY: _____
 SURVEYED: _____
 PLOTTED: _____
 G.S.S. CHECKED: _____
 STRUCTURE NOTATIONS OK'D: _____
PROFILE
 NOTE BOOK NO. _____



AS BUILT SERVICE LOCATIONS

(MH# 3 0+00) EAST	WEST
0+36	
0+62	0+73
0+93	0+97
1+15	1+22
(MH# 4 1+81)	1+44 (1+45 WATER)
(MH# 4 0+00)	0+35
0+50E	0+35E (0+38 WATER)
0+71E	0+58
0+86	0
1+16	0+87
(MH# 5 1+30)	

FOR REFERENCE ONLY - NOT TO SCALE



NOTE: CONTRACTOR MAY SUBSTITUTE 6" ES.V.C.P. FOR 8" P.V.C. AT HIS OPTION

AS BUILT JUNE 26, 1973
 CONTRACTOR: **BIANCONI CONSTRUCTION CO.**
 (EXCEPT SAN. SEWER EXISTING M.H. THRU M. CONSTRUCTION BY RAN BROS.)



UBURBAN ENGINEERING
 ENGINEERS - INC.
 4875 Highway No. 61 N1
 Minneapolis, Minnesota 55411
 784-4554

151 W. Broadway
 St. Paul, Minnesota 55102
 890-4510

SCALE: Horizontal 1" = 50'
 Vertical 1" = 5'

DESIGNED BY: W.S.M.
 DRAWN BY: S.B.M.

DATE: August 12, 1973 REG. NO. 115

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: August 12, 1973 REG. NO. 115

DATE: _____ BY: _____

PLAN

SURVEYED, PLOTTED, CHECKED, RT. OF WAY CHECKED.

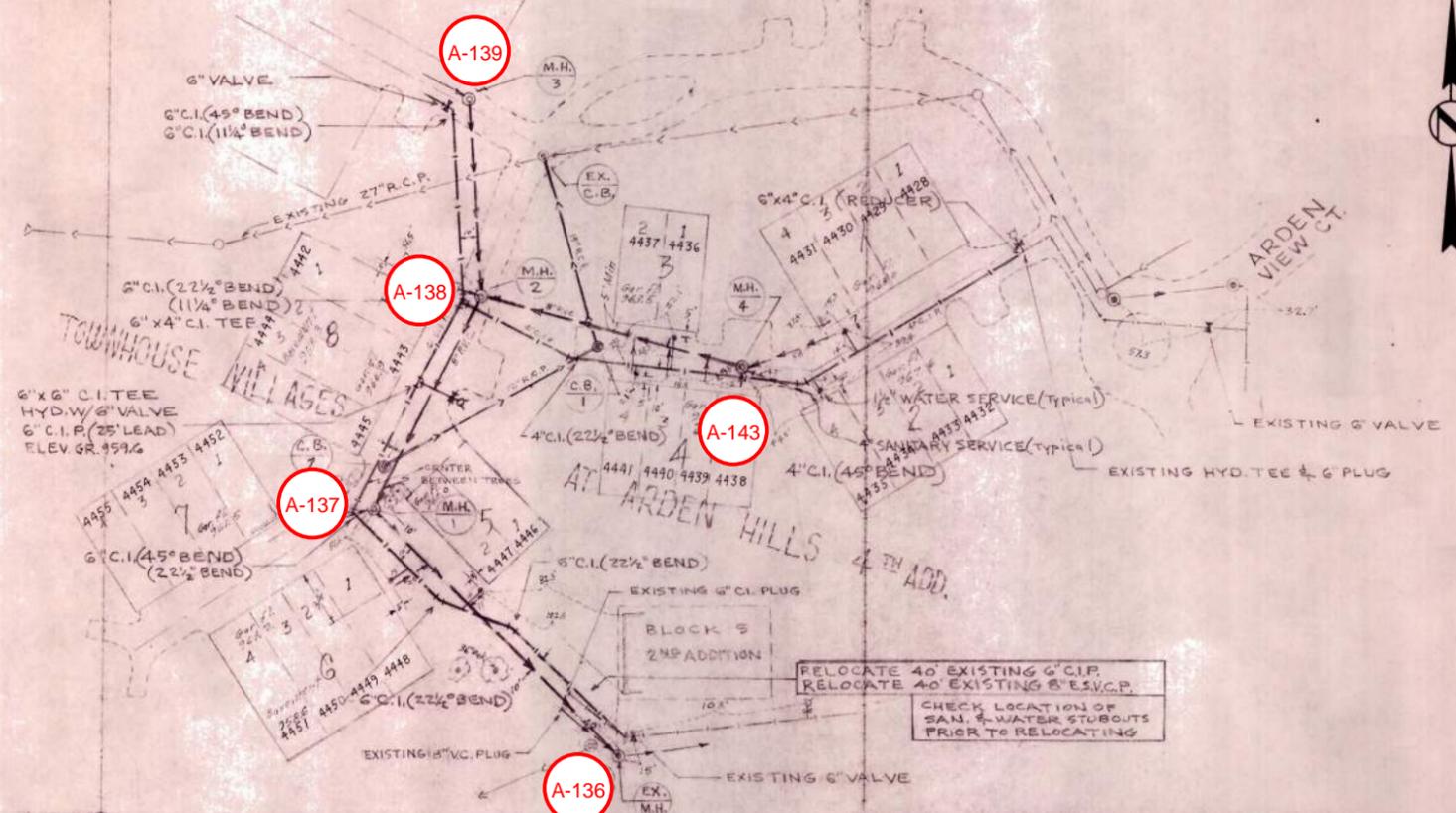
NOTE BOOK NO. _____

DATE: _____ BY: _____

PROFILE

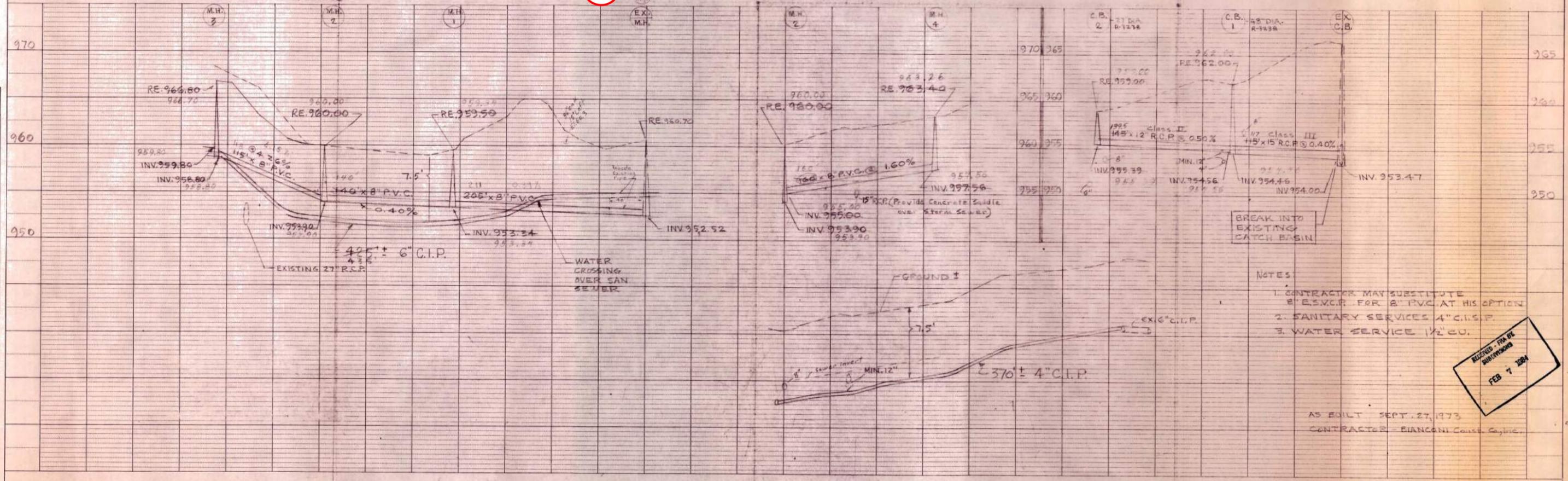
SURVEYED, GRADES CHECKED, B.M.'S NOTED, STRUCTURE NOTATIONS CHECKED.

NOTE BOOK NO. _____



RELOCATE 40' EXISTING 6" C.I.P.
 RELOCATE 40' EXISTING 6" E.S.V.C.P.
 CHECK LOCATION OF SAN. & WATER STUBOUTS PRIOR TO RELOCATING

FOR REFERENCE ONLY - NOT TO SCALE



- NOTES:
1. CONTRACTOR MAY SUBSTITUTE 8" E.S.V.C.P. FOR 8" P.V.C. AT HIS OPTION
 2. SANITARY SERVICES 4" C.I.S.P.
 3. WATER SERVICE 1/2" CU.

RECEIVED - FOR BE SUBMITTING
 FEB 7 1984

AS BUILT SEPT. 27, 1973
 CONTRACTOR - BIANCHI CONSULTING

UBURBAN ENGINEERING INC.
 4875 Highway No. 55 NE
 Minneapolis, Minnesota 55412
 764-4064
 151 W. Riverside Cr. S.W.
 Burlington, Minnesota 55708
 893-4310

Date: Sept. 14, 1973
 Project: Sept. 17, 1973
 7:24 PM Home Address

SCALE: Horizontal 1" = 50' Vertical 1" = 5'

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

William J. Meyer
 DATE: Sept 17, 1973 REG. NO. 2454

PLAN

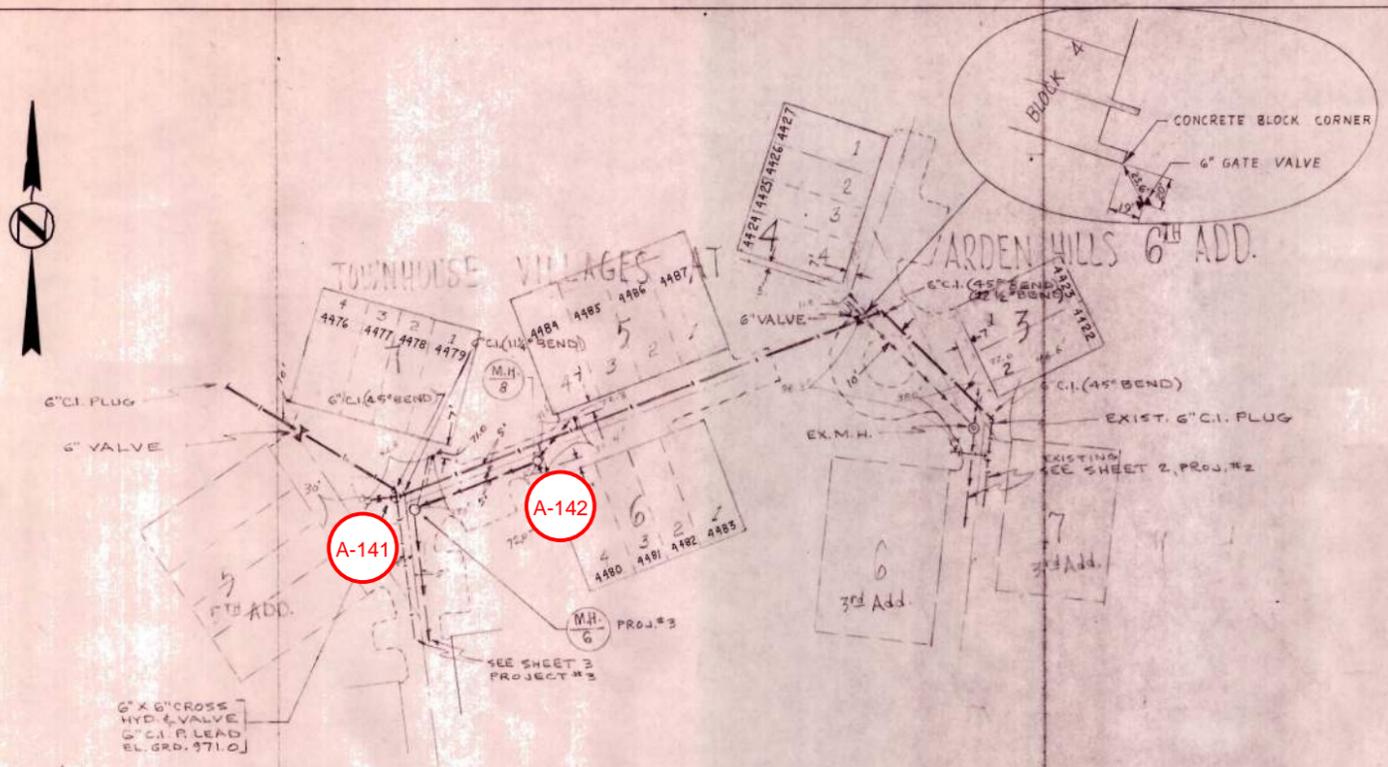
DATE	BY

SURVEYED, PLOTTED, CHECKED, BY:
 NOTE BOOK NO.

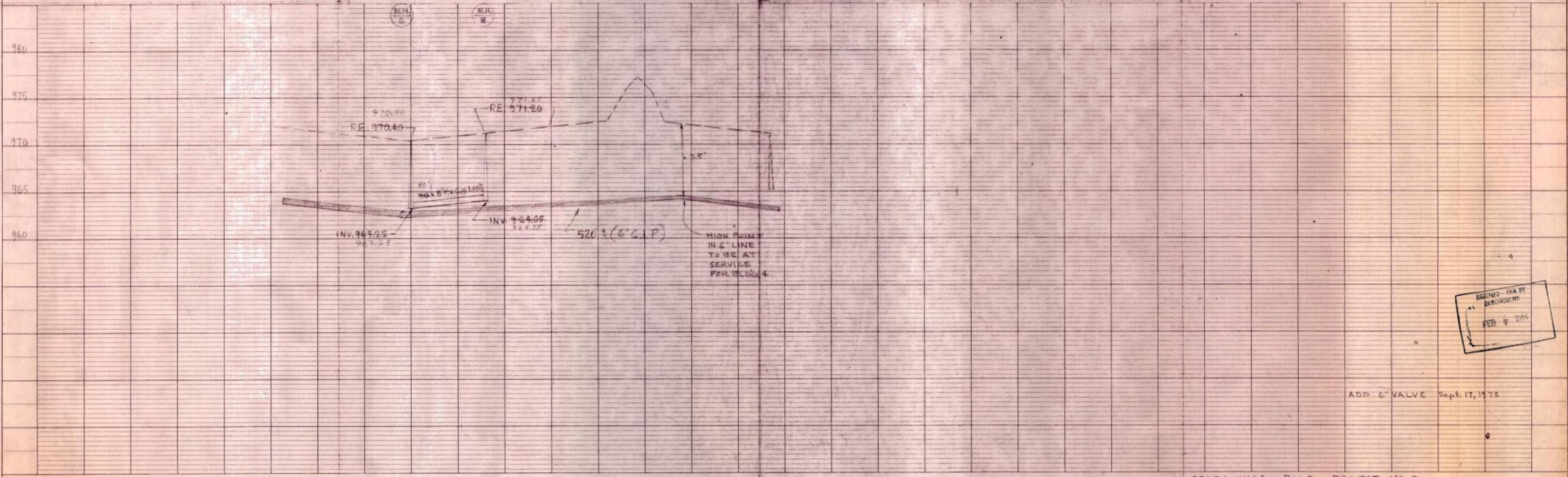
PROFILE

DATE	BY

SURVEYED, PLOTTED, CHECKED, BY:
 NOTE BOOK NO.



FOR REFERENCE ONLY - NOT TO SCALE



REVIEWED INHA BY SUBDIVISION
 FEB 8 1984

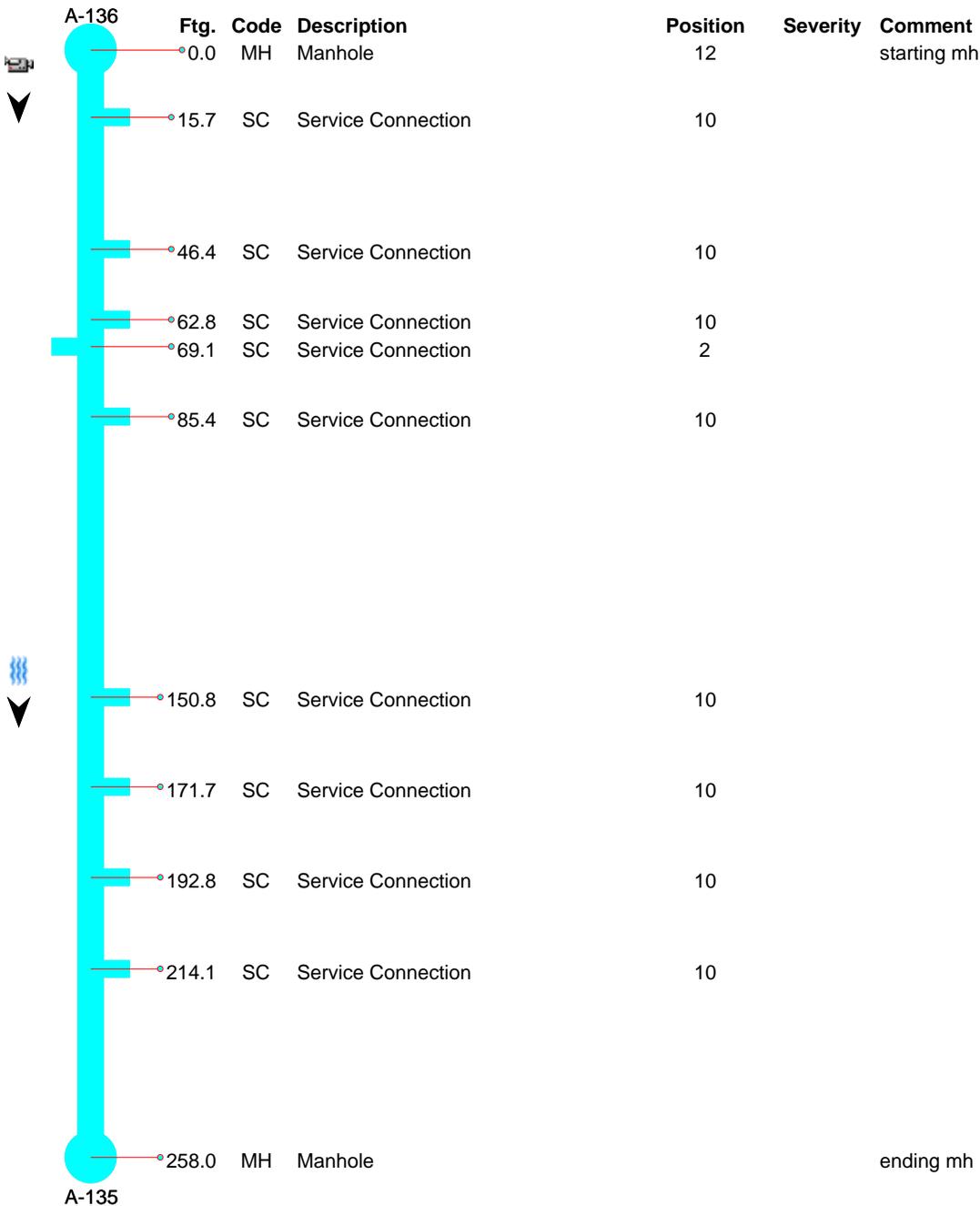
ADD 6" VALVE Sept. 17, 1973

APPENDIX 2 - 2017 PROJECT AREA TELEVISIONING REPORT



City of Arden Hills
 Public Works
 1425 Paul Kirkwold Drive
 Arden Hills, MN 55112
 (651) 755-0211

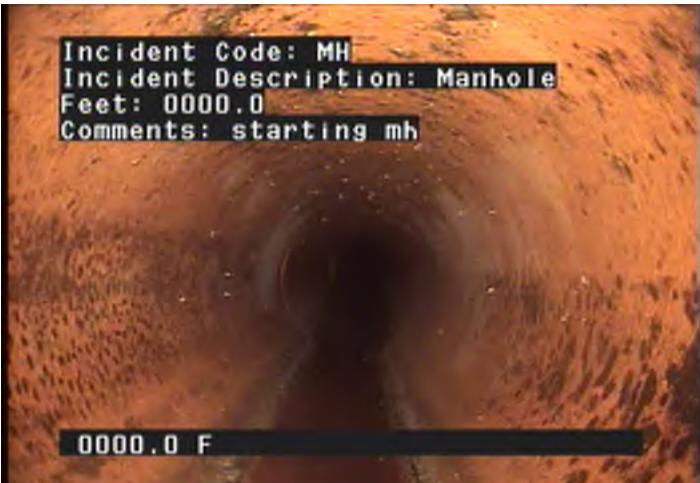
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-136	A-135		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					258





City of Arden Hills
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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-136	A-135		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					258



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 15.7 ft.



SC - Service Connection @ 46.4 ft.

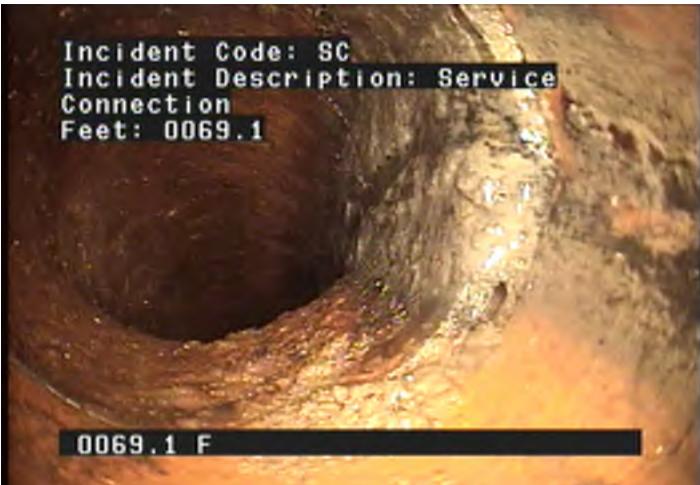


SC - Service Connection @ 62.8 ft.

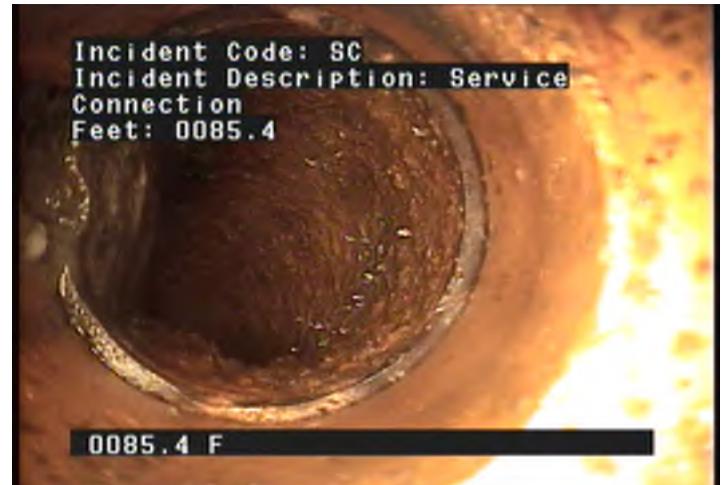


City of Arden Hills
Public Works
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(651) 755-0211

Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-136	A-135		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					258



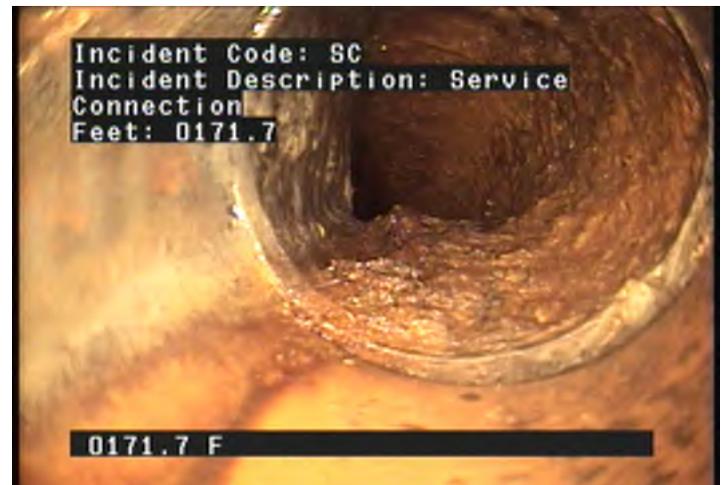
SC - Service Connection @ 69.1 ft.



SC - Service Connection @ 85.4 ft.



SC - Service Connection @ 150.8 ft.



SC - Service Connection @ 171.7 ft.



City of Arden Hills
Public Works
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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-136	A-135		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					258



SC - Service Connection @ 192.8 ft.



SC - Service Connection @ 214.1 ft.



MH - Manhole @ 258.0 ft. ending mh



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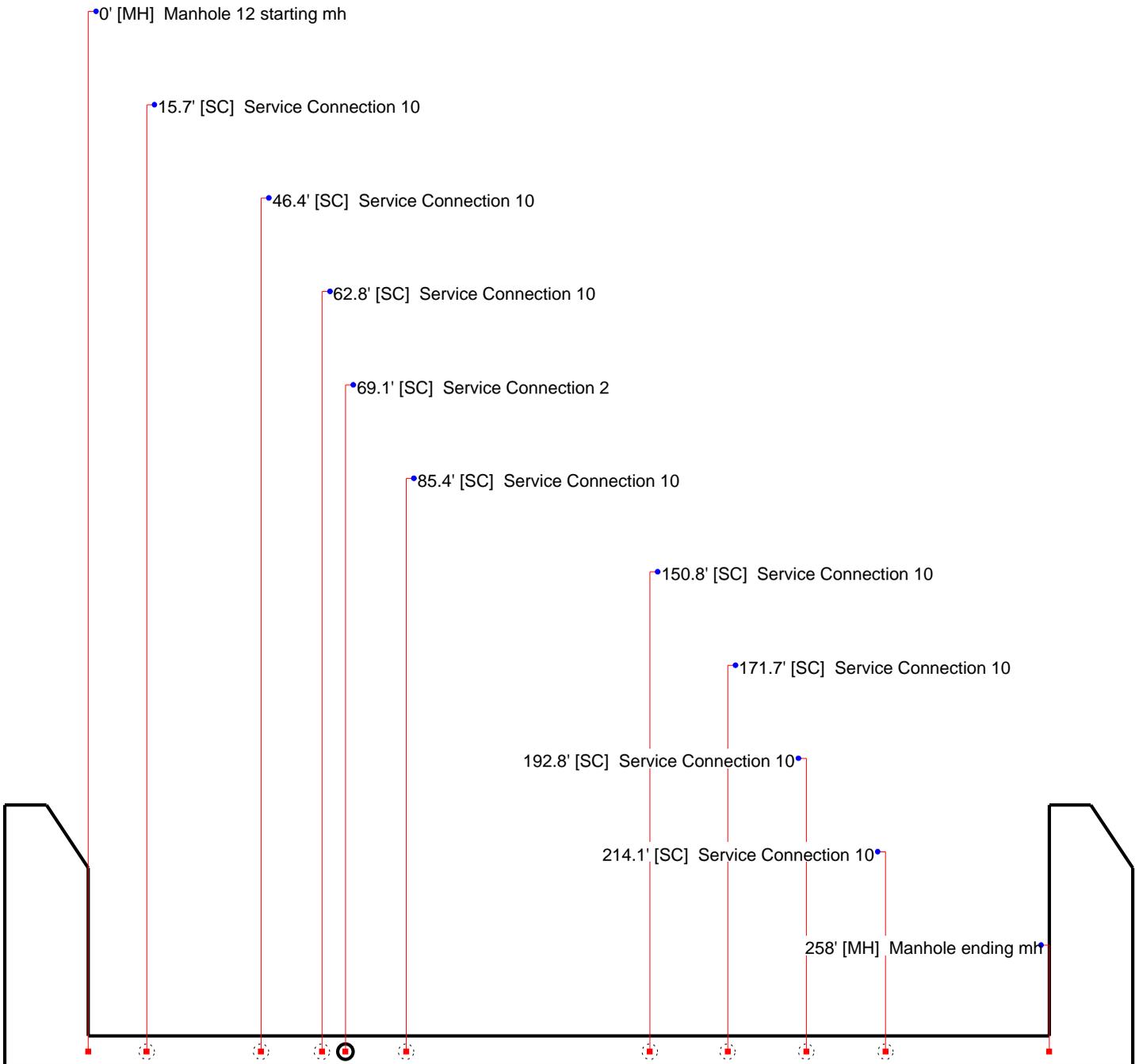
Line Segment	Block Number	Upstream MH A-136	Downstream MH A-135	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 258

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
15.7	SC	Service Connection	10			
46.4	SC	Service Connection	10			
62.8	SC	Service Connection	10			
69.1	SC	Service Connection	2			
85.4	SC	Service Connection	10			
150.8	SC	Service Connection	10			
171.7	SC	Service Connection	10			
192.8	SC	Service Connection	10			
214.1	SC	Service Connection	10			
258.0	MH	Manhole			ending mh	



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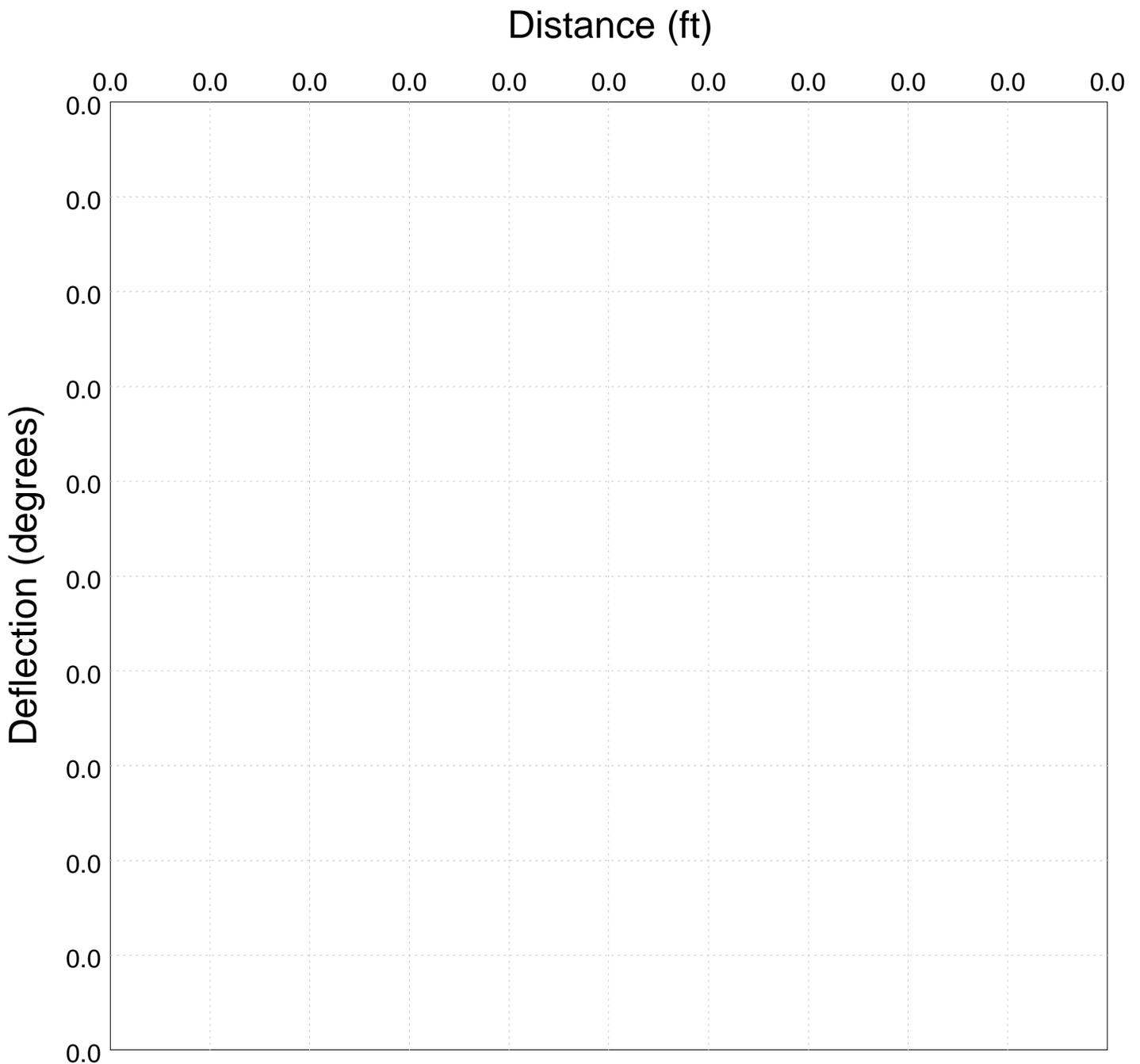
Line Segment	Block Number	Upstream MH A-136	Downstream MH A-135	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 258





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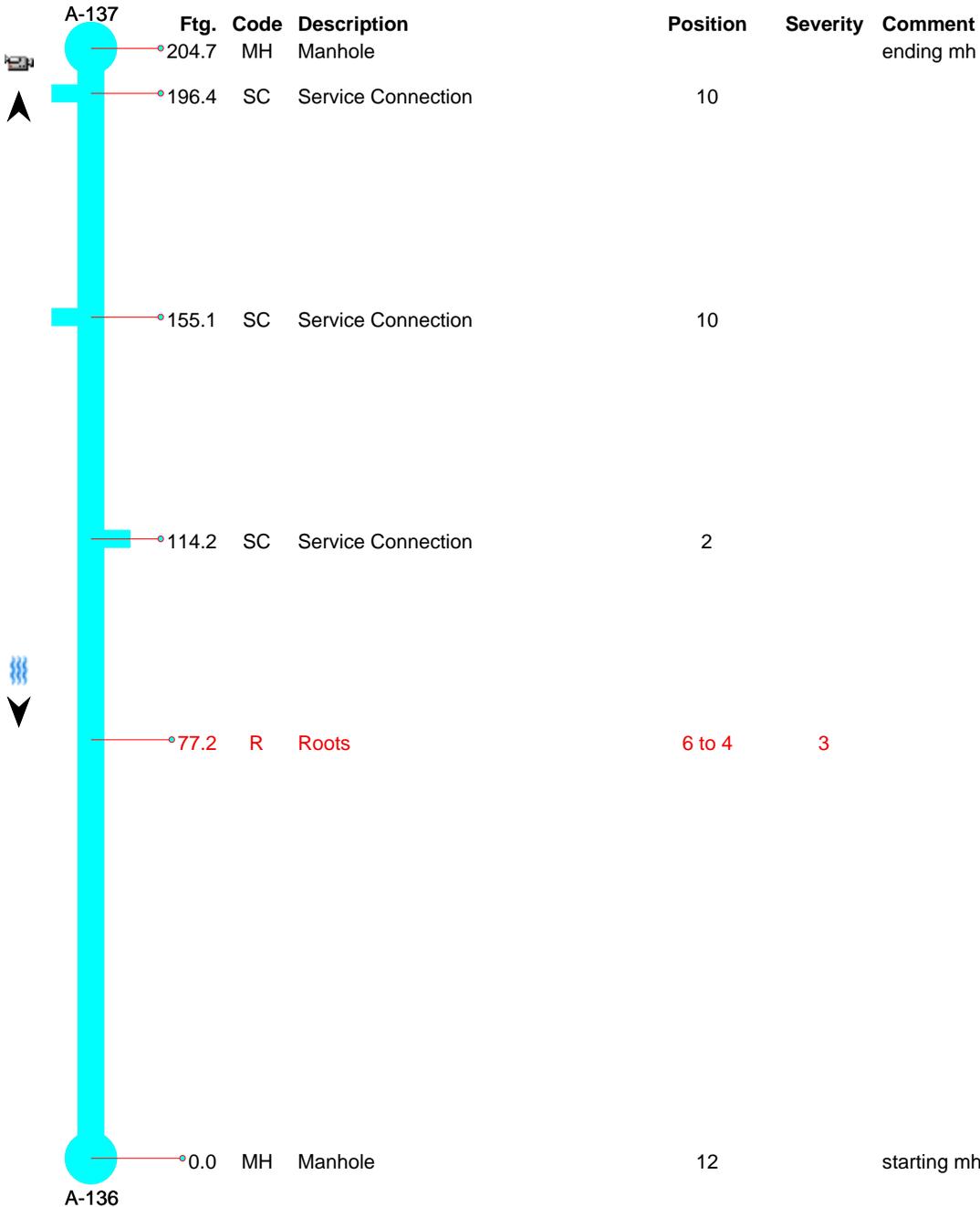
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-136	A-135		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					258





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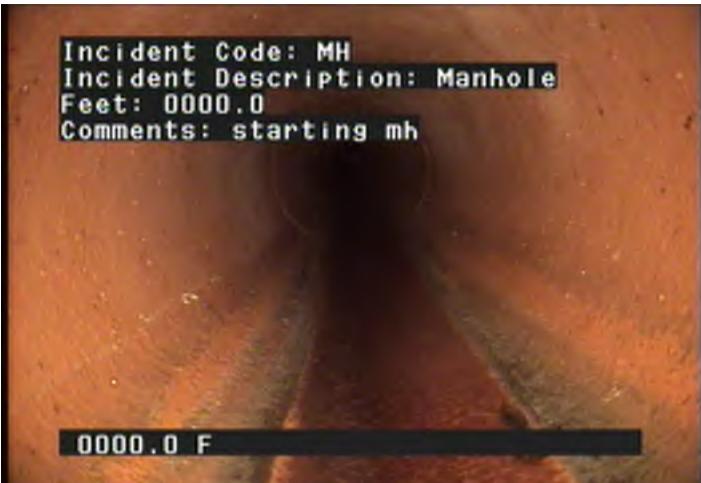
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-137	A-136		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					204.7



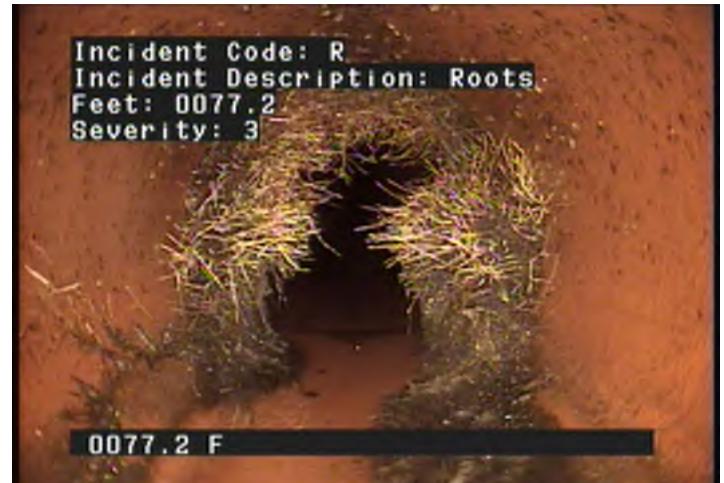


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-137	A-136		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					204.7



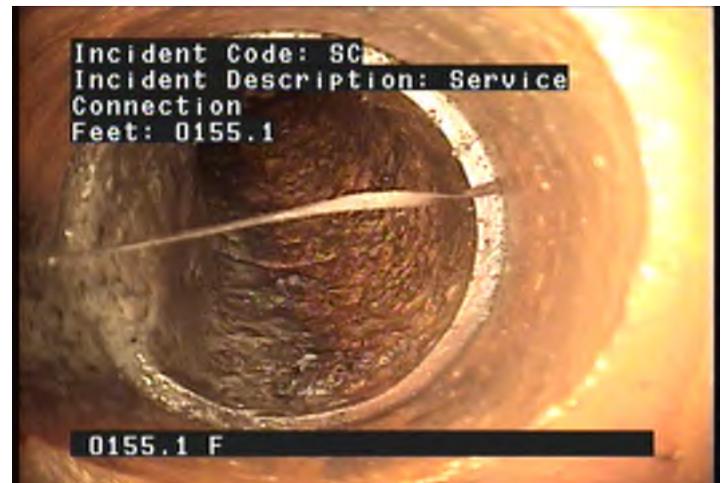
MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 77.2 ft.



SC - Service Connection @ 114.2 ft.

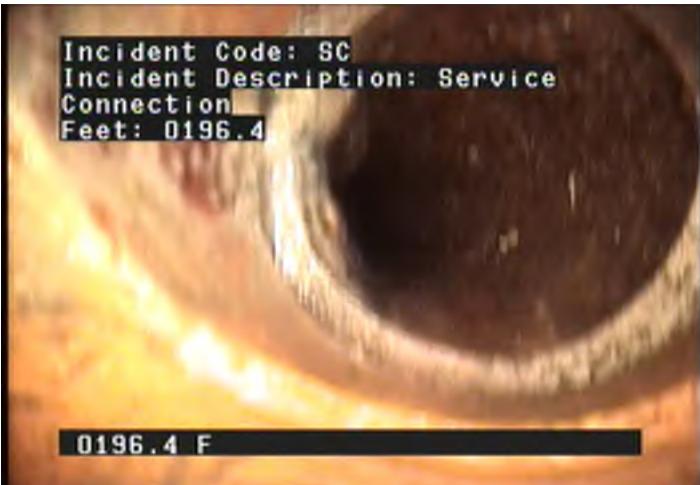


SC - Service Connection @ 155.1 ft.

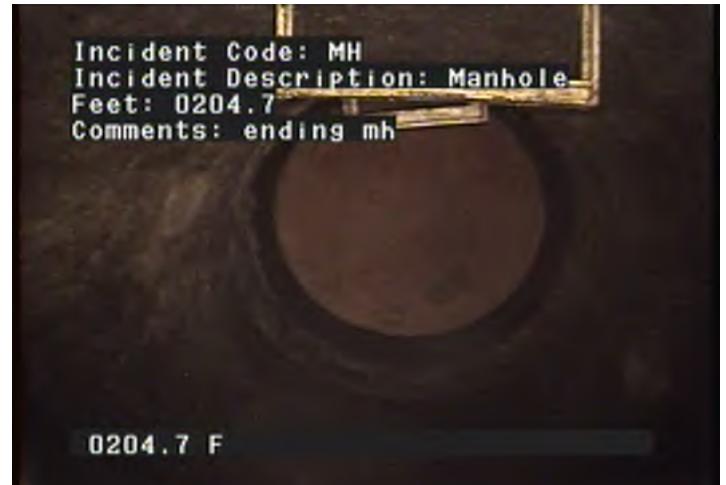


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-137	A-136		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				204.7	



SC - Service Connection @ 196.4 ft.



MH - Manhole @ 204.7 ft. ending mh



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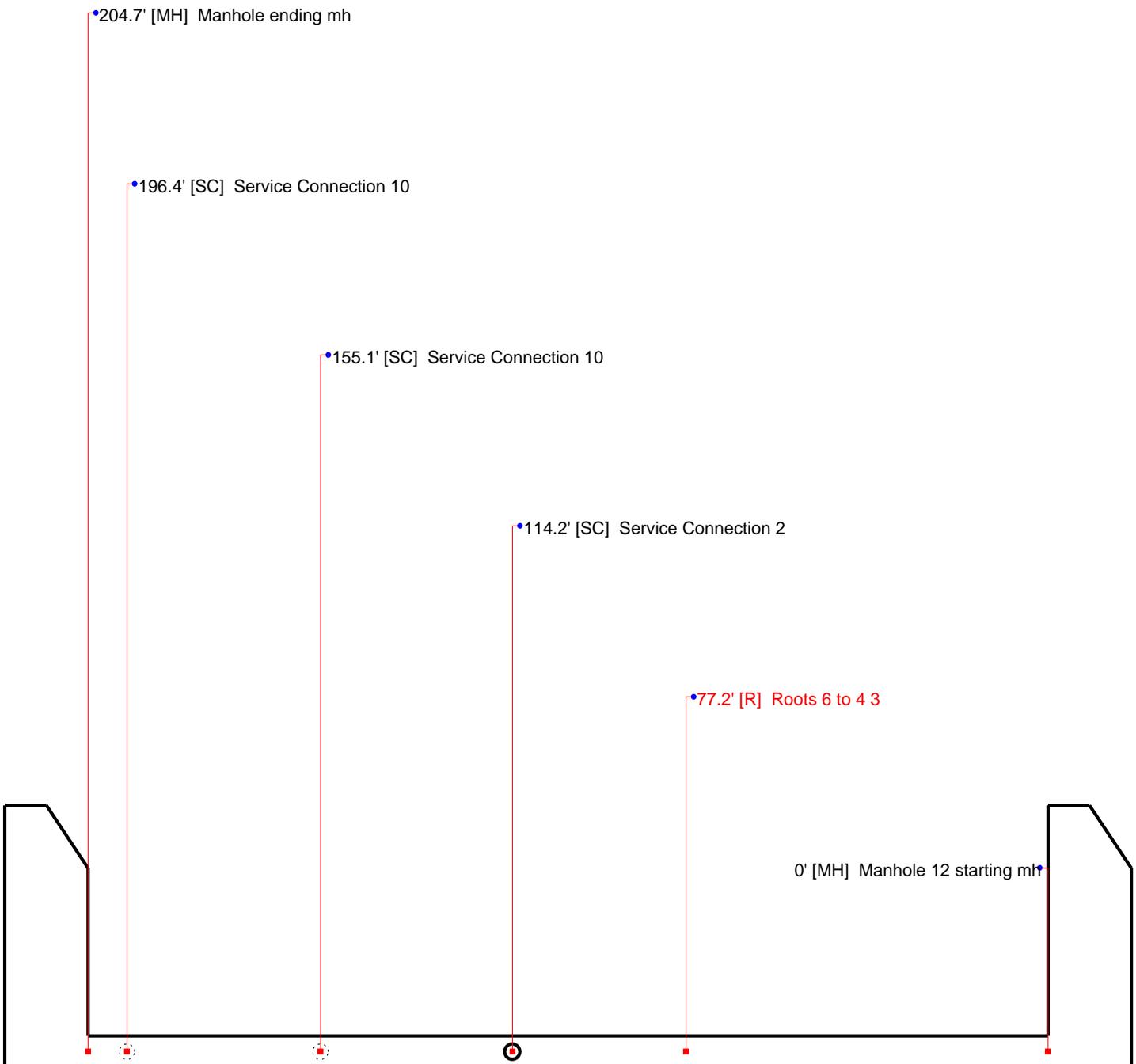
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-137	A-136		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					204.7

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
77.2	R	Roots	6 to 4	3		
114.2	SC	Service Connection	2			
155.1	SC	Service Connection	10			
196.4	SC	Service Connection	10			
204.7	MH	Manhole			ending mh	



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-137	A-136		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					204.7

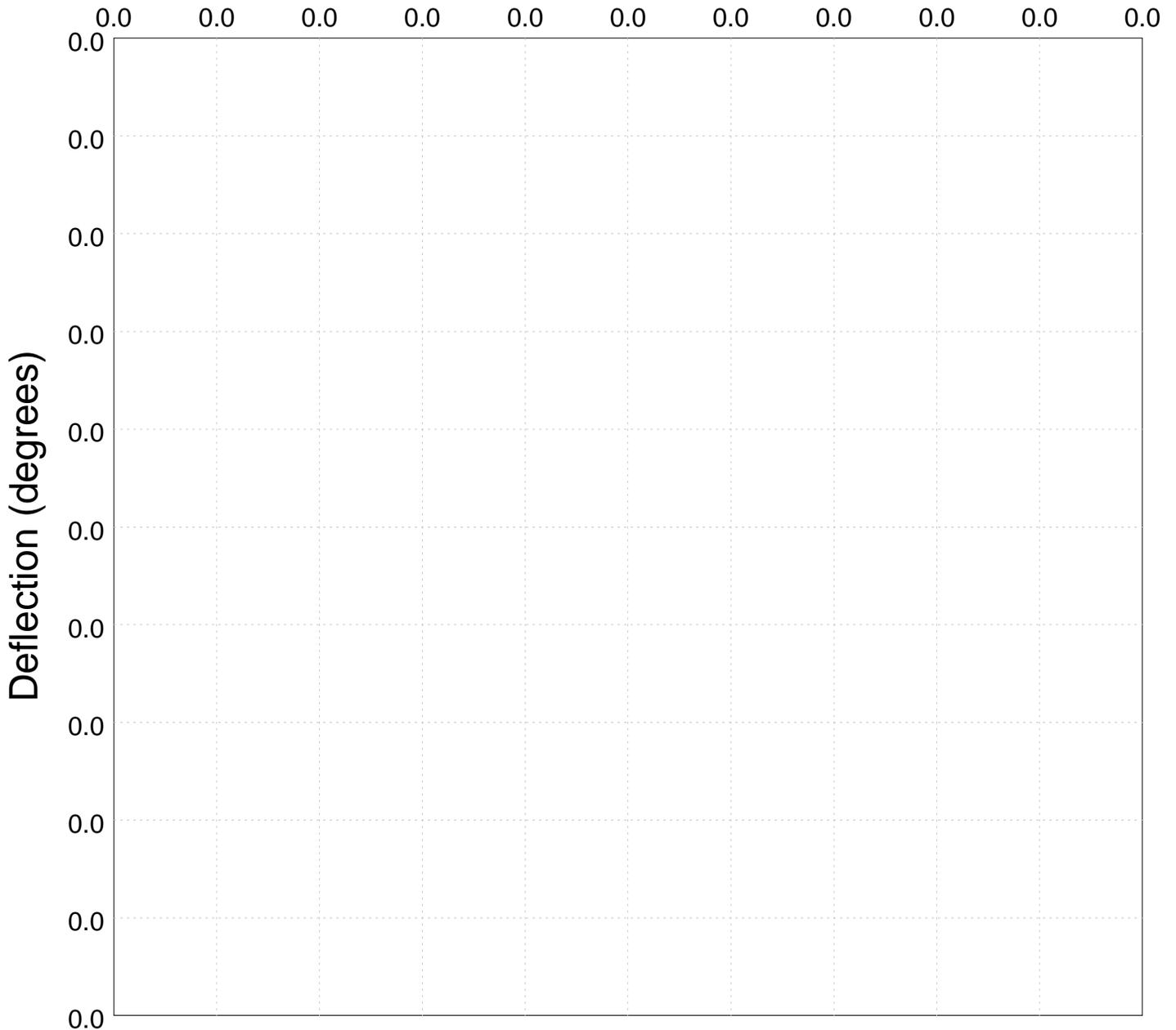




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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-137	A-136		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				204.7	

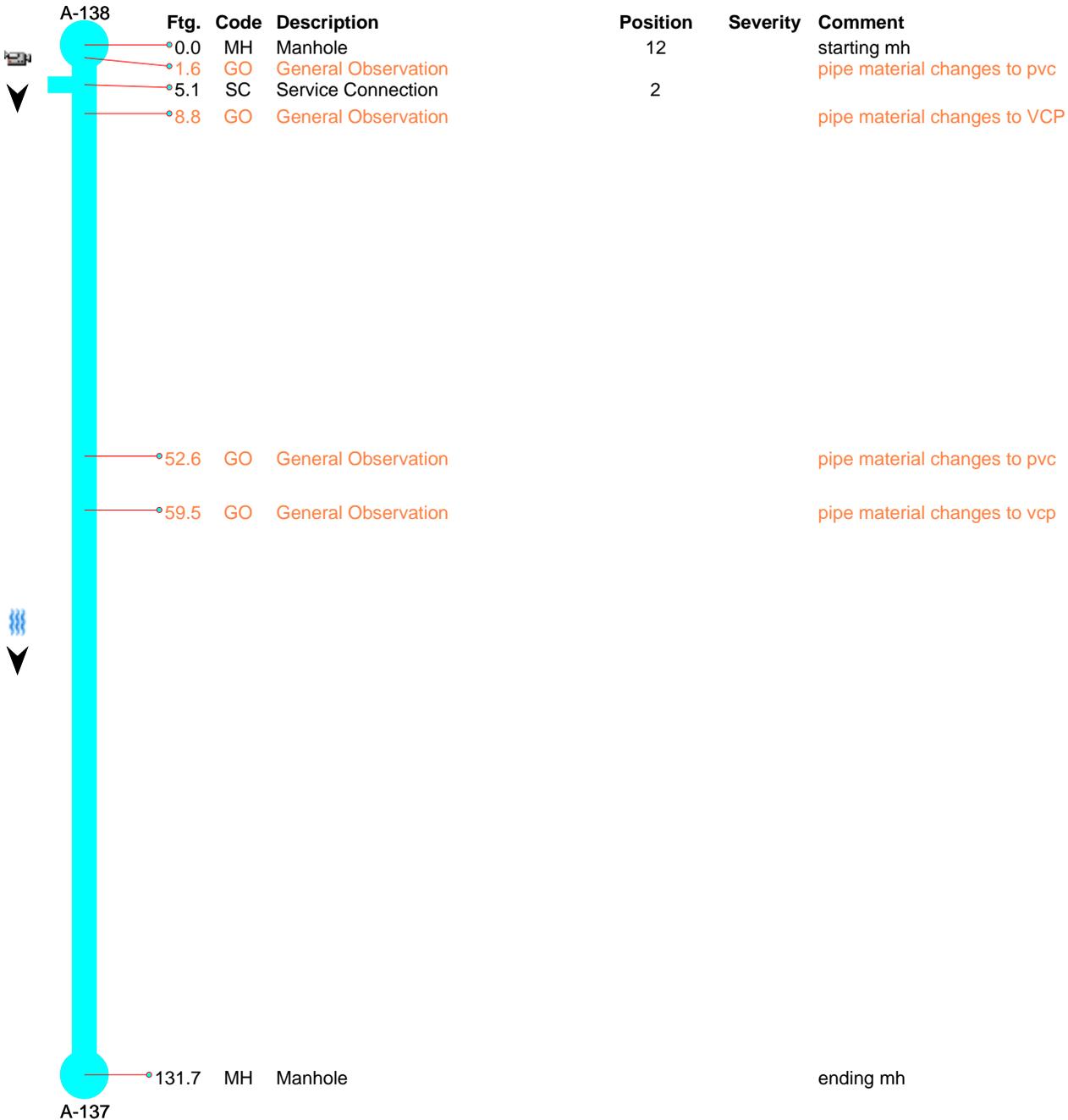
Distance (ft)





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-138	A-137		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					131.7



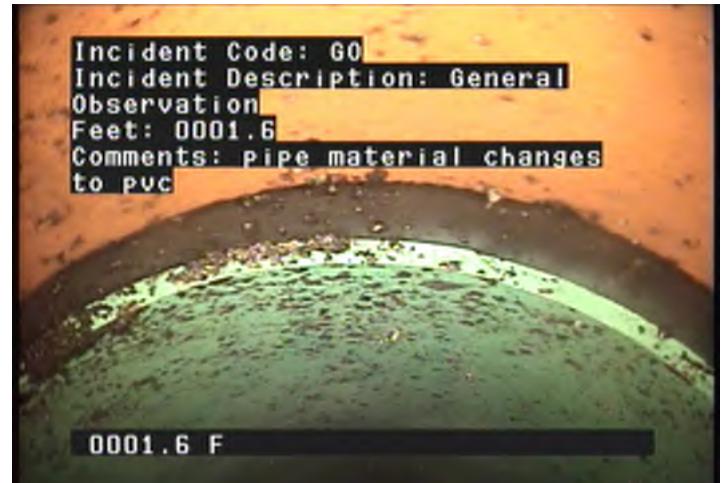


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-138	A-137		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				131.7	



MH - Manhole @ 0.0 ft. starting mh



GO - General Observation @ 1.6 ft. pipe material changes to pvc



SC - Service Connection @ 5.1 ft.

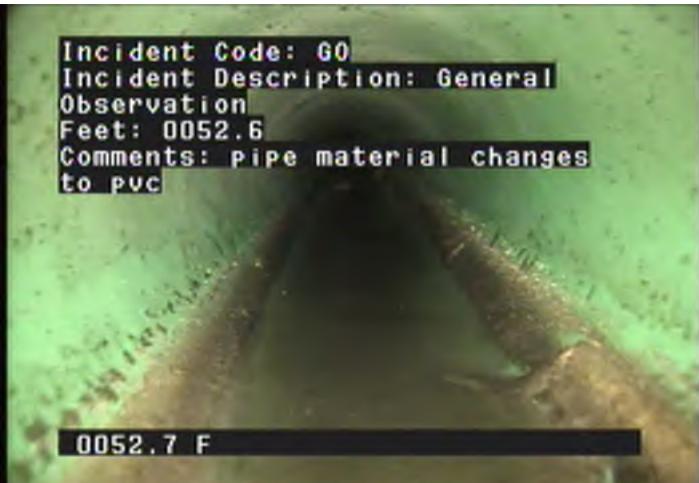


GO - General Observation @ 8.8 ft. pipe material changes to VCP

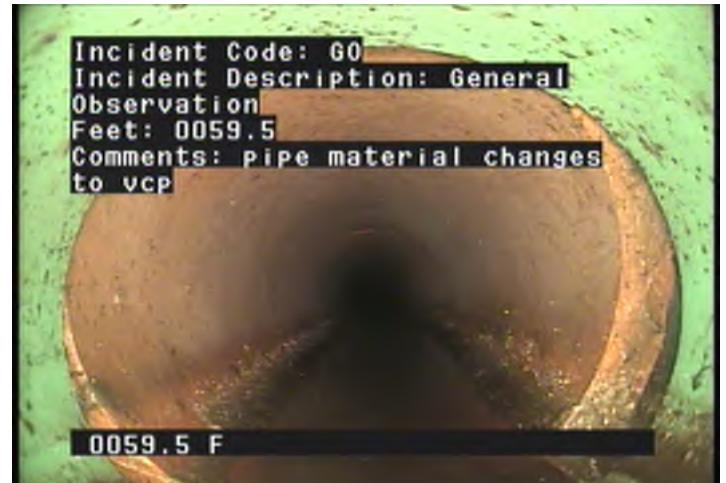


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(651) 755-0211

Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-138	A-137		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				131.7	



GO - General Observation @ 52.6 ft. pipe material changes to pvc



GO - General Observation @ 59.5 ft. pipe material changes to vcp



MH - Manhole @ 131.7 ft. ending mh



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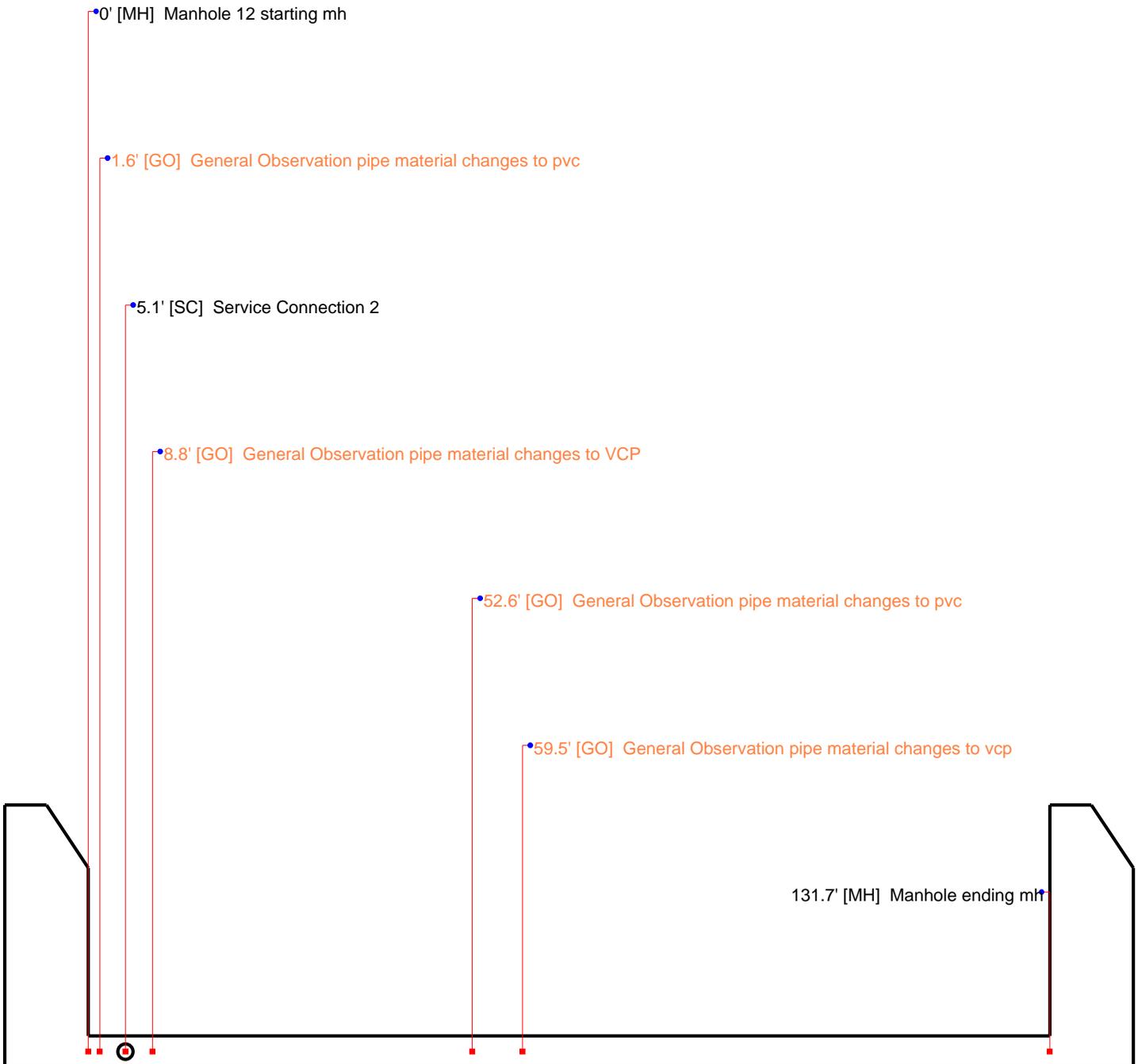
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-138	A-137		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				131.7	

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
1.6	GO	General Observation			pipe material changes to pvc	
5.1	SC	Service Connection	2			
8.8	GO	General Observation			pipe material changes to VCP	
52.6	GO	General Observation			pipe material changes to pvc	
59.5	GO	General Observation			pipe material changes to vcp	
131.7	MH	Manhole			ending mh	



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-138	A-137		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					131.7

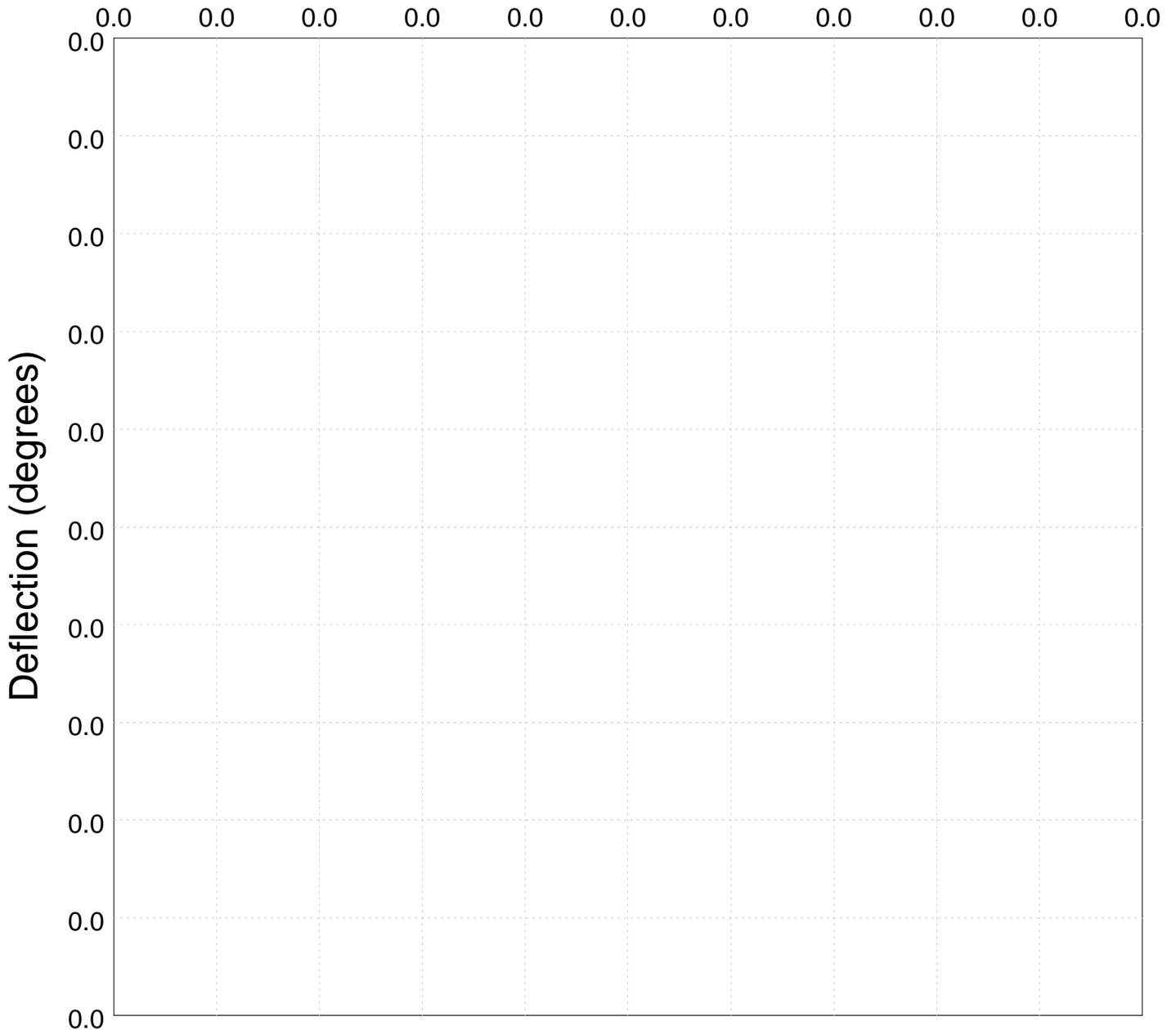




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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-138	A-137		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				131.7	

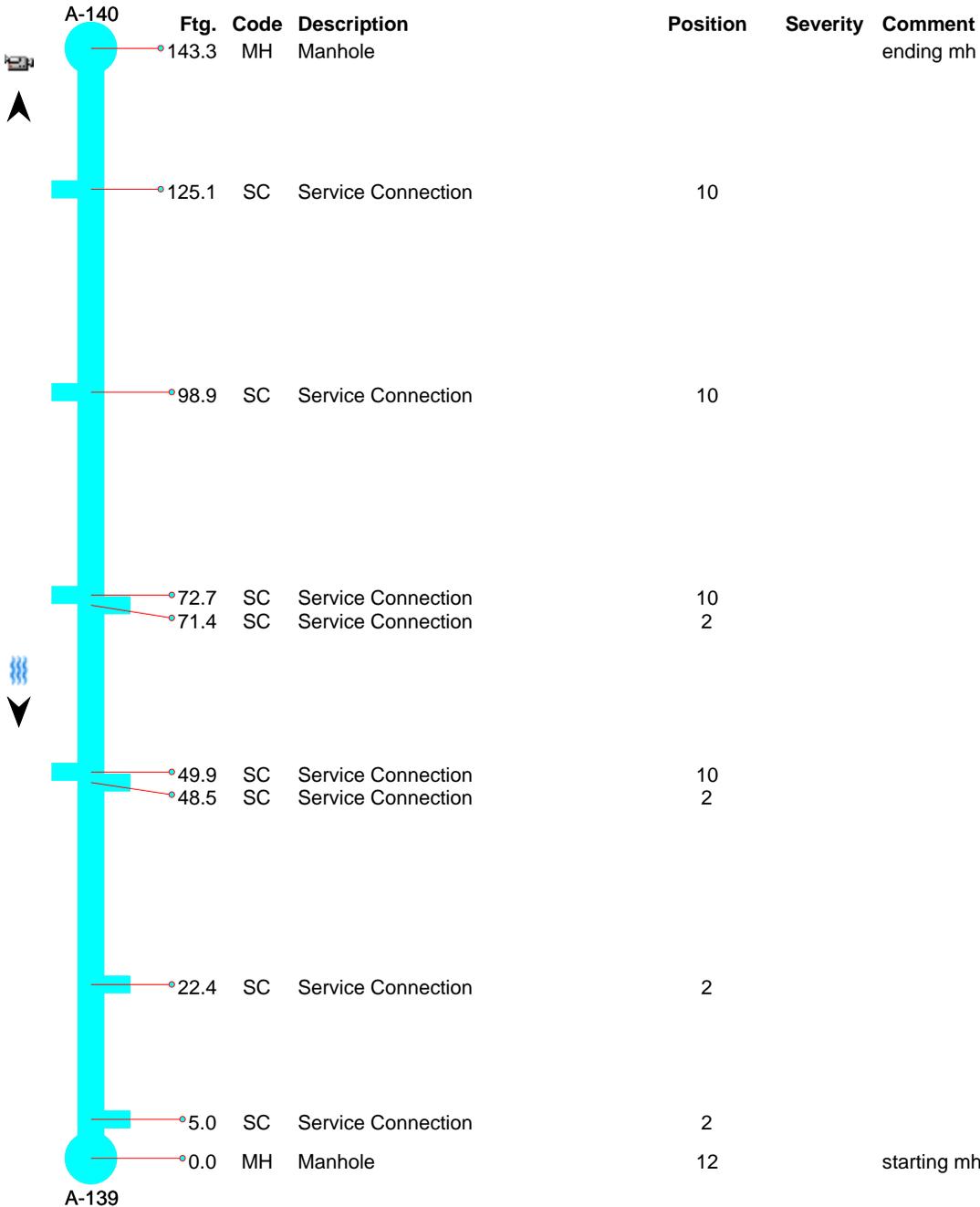
Distance (ft)





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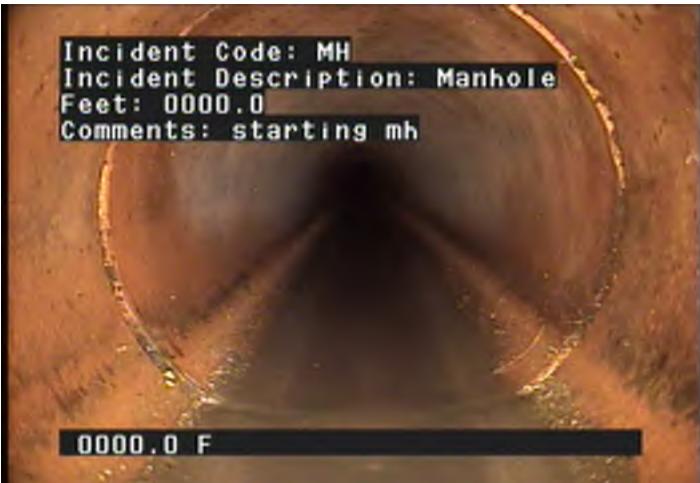
Line Segment	Block Number	Upstream MH A-140	Downstream MH A-139	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 143.3



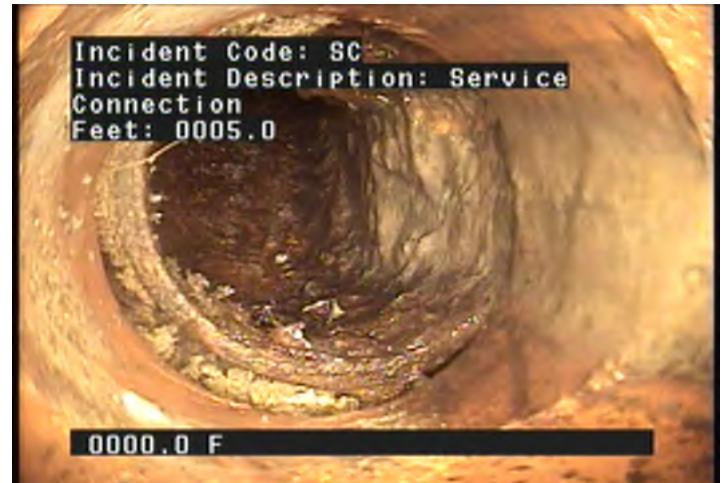


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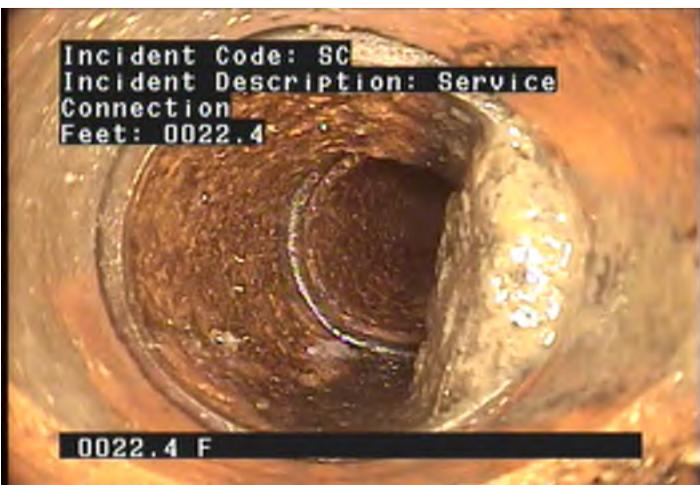
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-140	A-139		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				143.3	



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 5.0 ft.



SC - Service Connection @ 22.4 ft.



SC - Service Connection @ 48.5 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-140	A-139		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					143.3



SC - Service Connection @ 49.9 ft.



SC - Service Connection @ 71.4 ft.



SC - Service Connection @ 72.7 ft.



SC - Service Connection @ 98.9 ft.

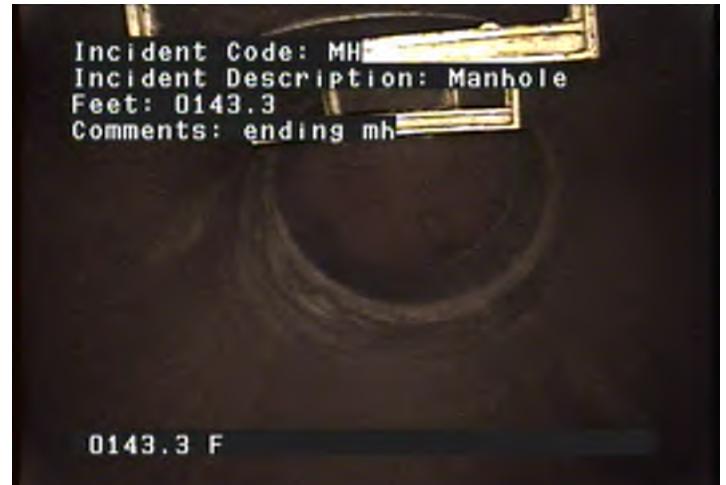


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-140	A-139		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					143.3



SC - Service Connection @ 125.1 ft.

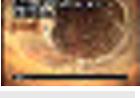
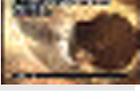


MH - Manhole @ 143.3 ft. ending mh



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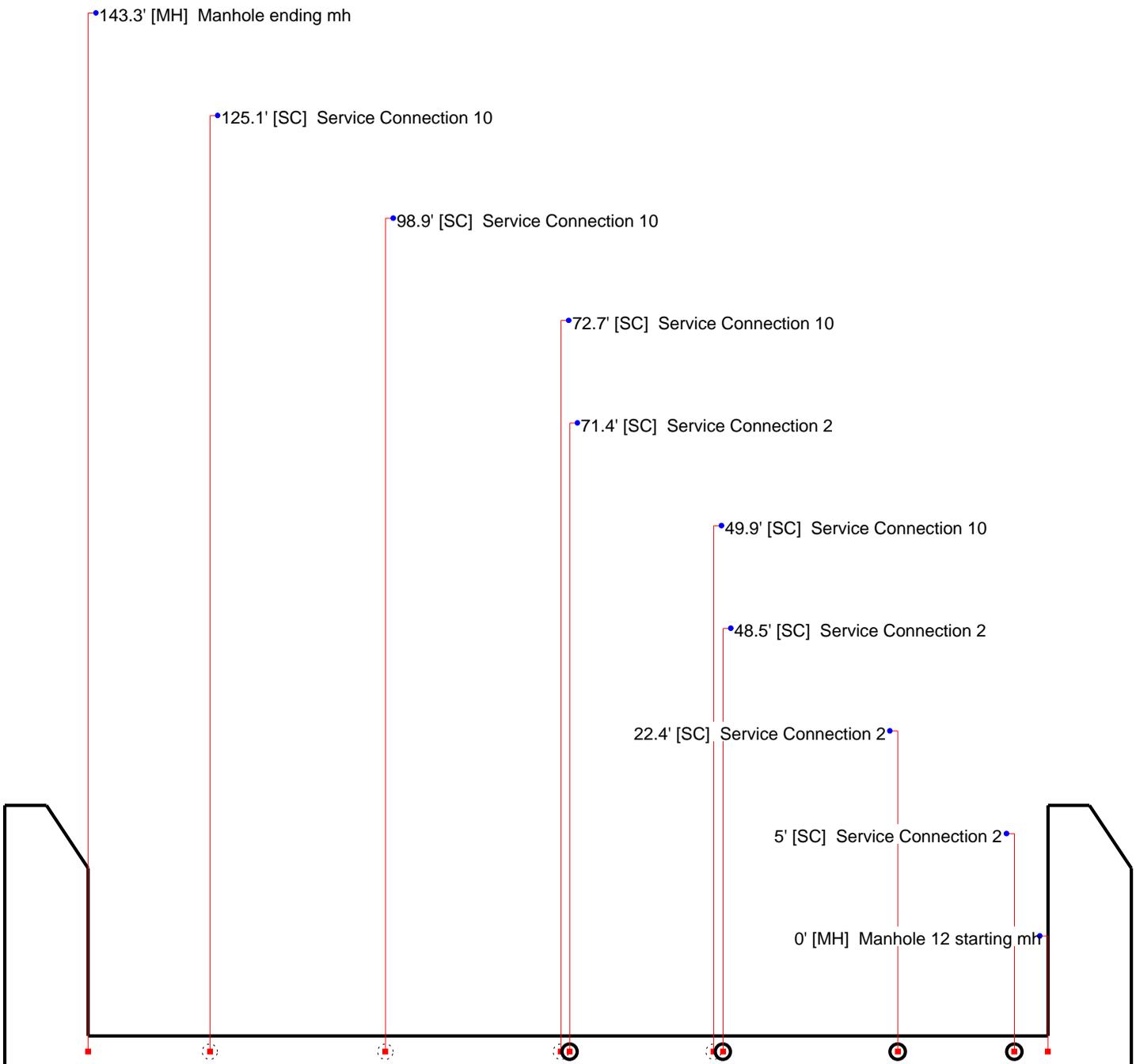
Line Segment	Block Number	Upstream MH A-140	Downstream MH A-139	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 143.3

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
5.0	SC	Service Connection	2			
22.4	SC	Service Connection	2			
48.5	SC	Service Connection	2			
49.9	SC	Service Connection	10			
71.4	SC	Service Connection	2			
72.7	SC	Service Connection	10			
98.9	SC	Service Connection	10			
125.1	SC	Service Connection	10			
143.3	MH	Manhole			ending mh	



City of Arden Hills
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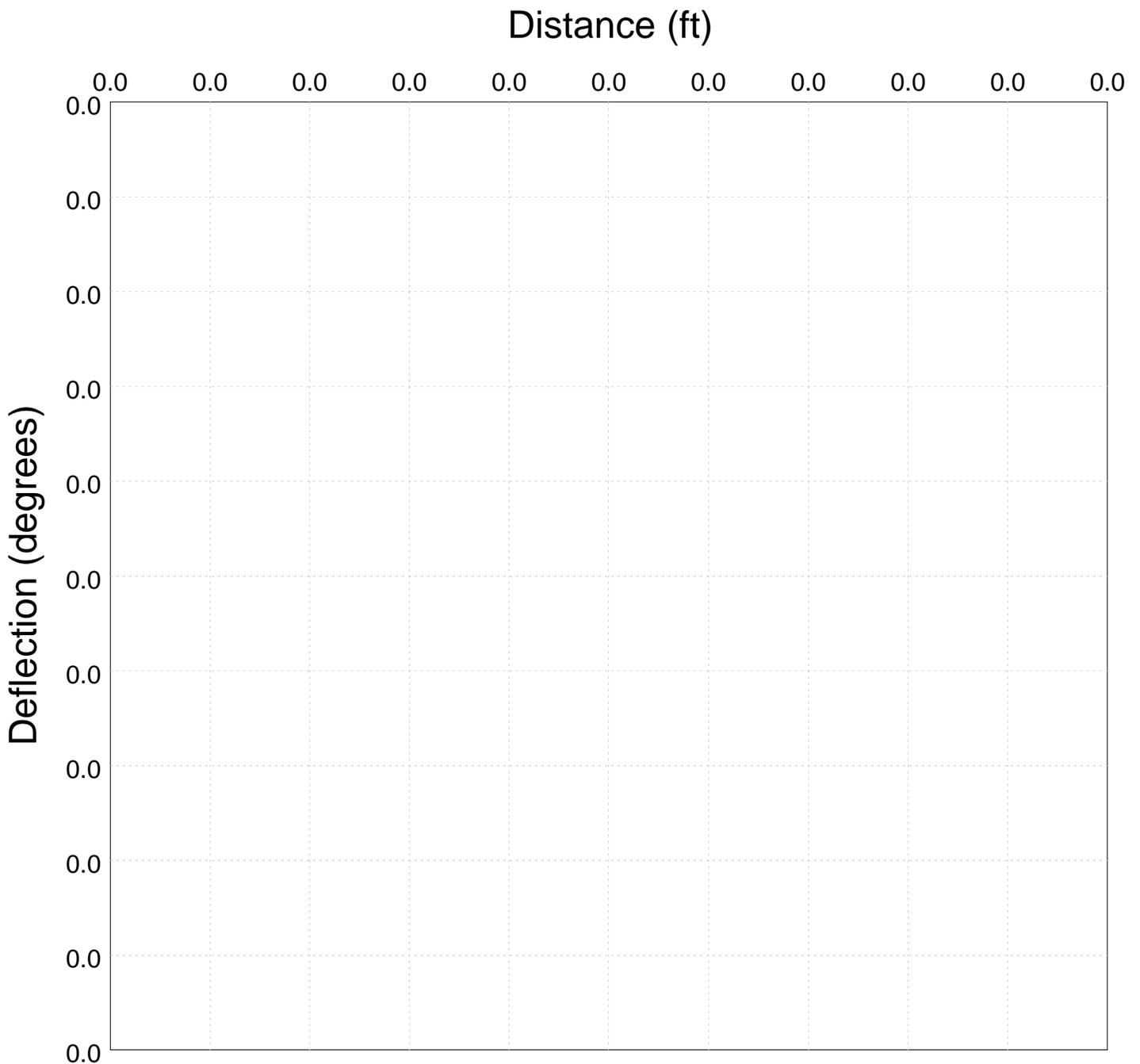
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-140	A-139		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					143.3





City of Arden Hills
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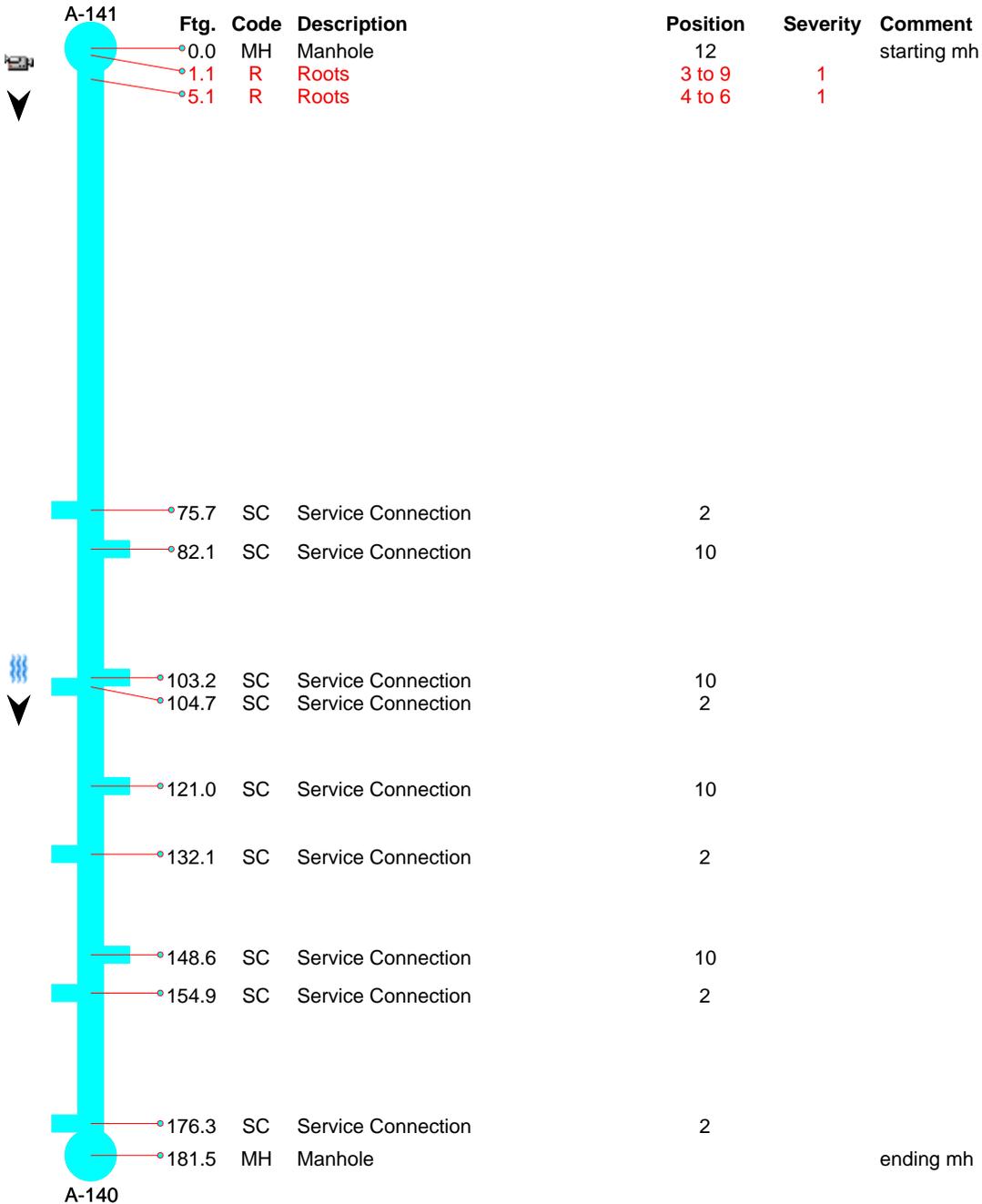
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Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				143.3	





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					181.5



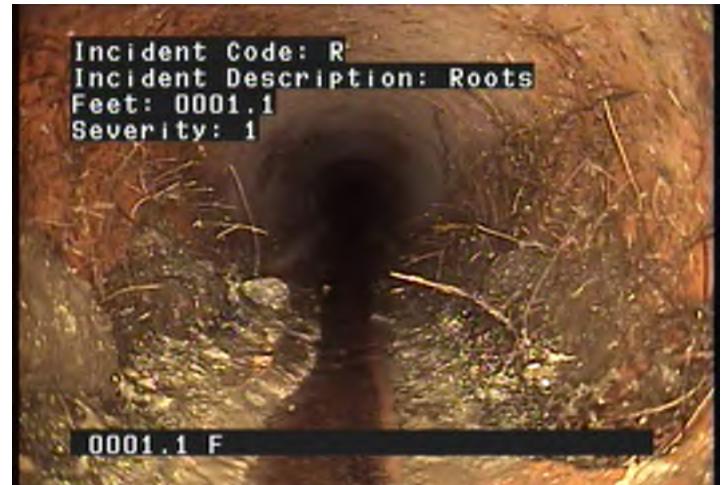


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(651) 755-0211

Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					181.5



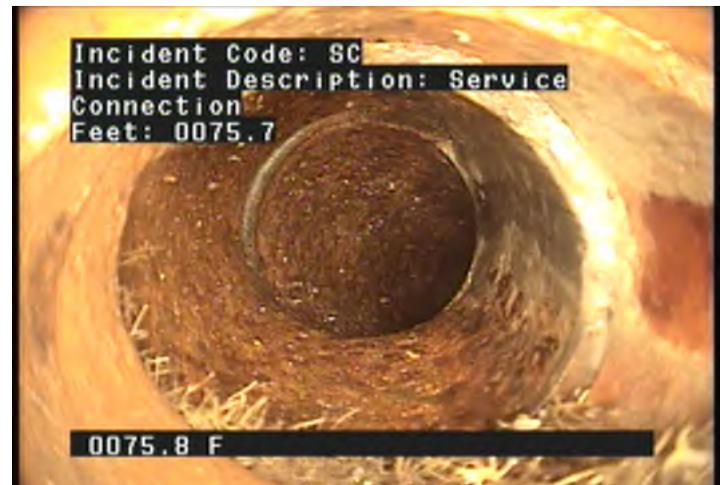
MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 1.1 ft.



R - Roots @ 5.1 ft.



SC - Service Connection @ 75.7 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					181.5



SC - Service Connection @ 82.1 ft.



SC - Service Connection @ 103.2 ft.



SC - Service Connection @ 104.7 ft.

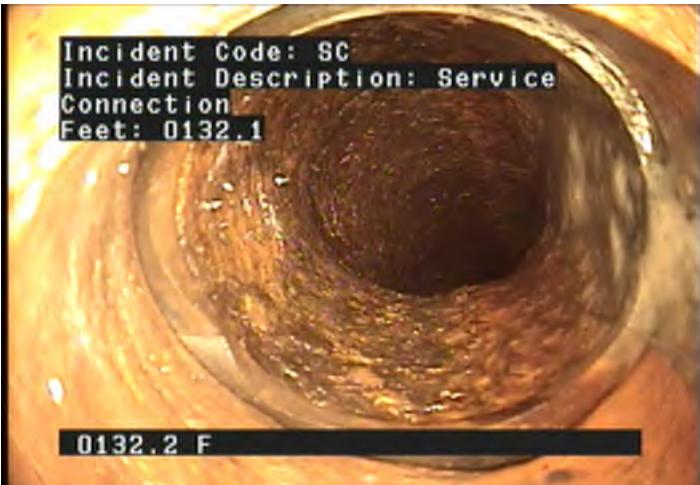


SC - Service Connection @ 121.0 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					181.5



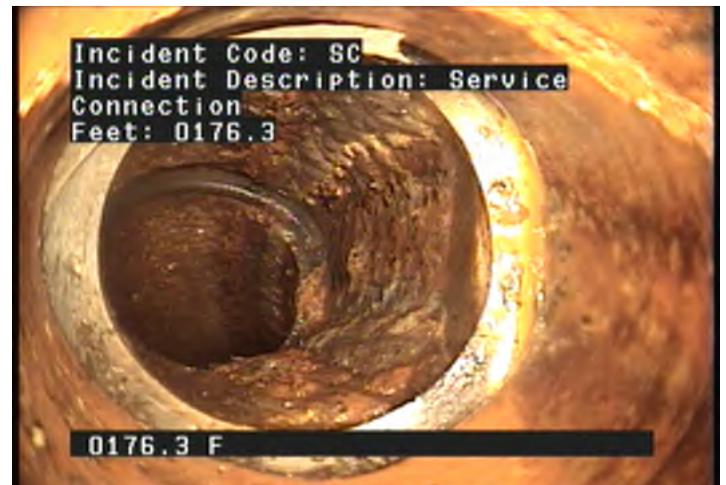
SC - Service Connection @ 132.1 ft.



SC - Service Connection @ 148.6 ft.



SC - Service Connection @ 154.9 ft.

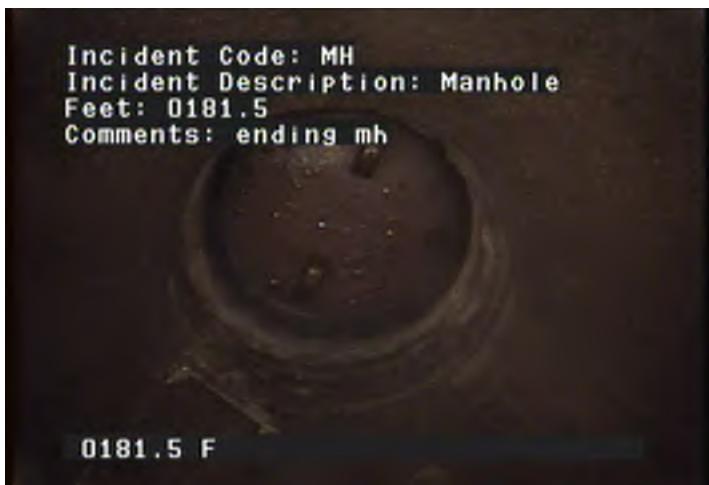


SC - Service Connection @ 176.3 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				181.5	

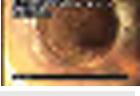
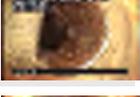


MH - Manhole @ 181.5 ft. ending mh



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Line Segment	Block Number	Upstream MH A-141	Downstream MH A-140	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 181.5

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
1.1	R	Roots	3 to 9	1		
5.1	R	Roots	4 to 6	1		
75.7	SC	Service Connection	2			
82.1	SC	Service Connection	10			
103.2	SC	Service Connection	10			
104.7	SC	Service Connection	2			
121.0	SC	Service Connection	10			
132.1	SC	Service Connection	2			
148.6	SC	Service Connection	10			
154.9	SC	Service Connection	2			



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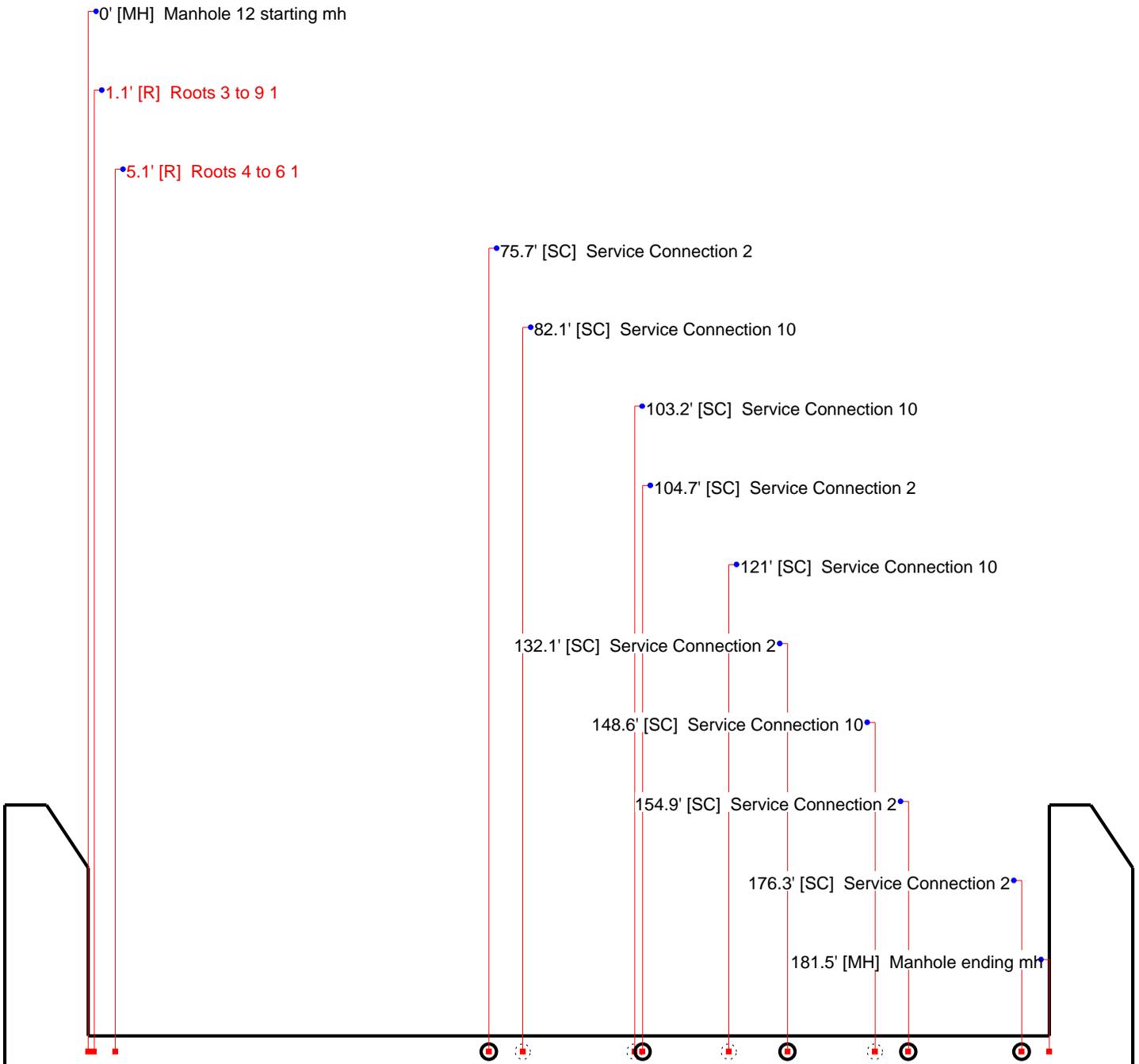
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					181.5

Ftg.	Code	Description	Position	Severity	Comment	
176.3	SC	Service Connection	2			
181.5	MH	Manhole			ending mh	



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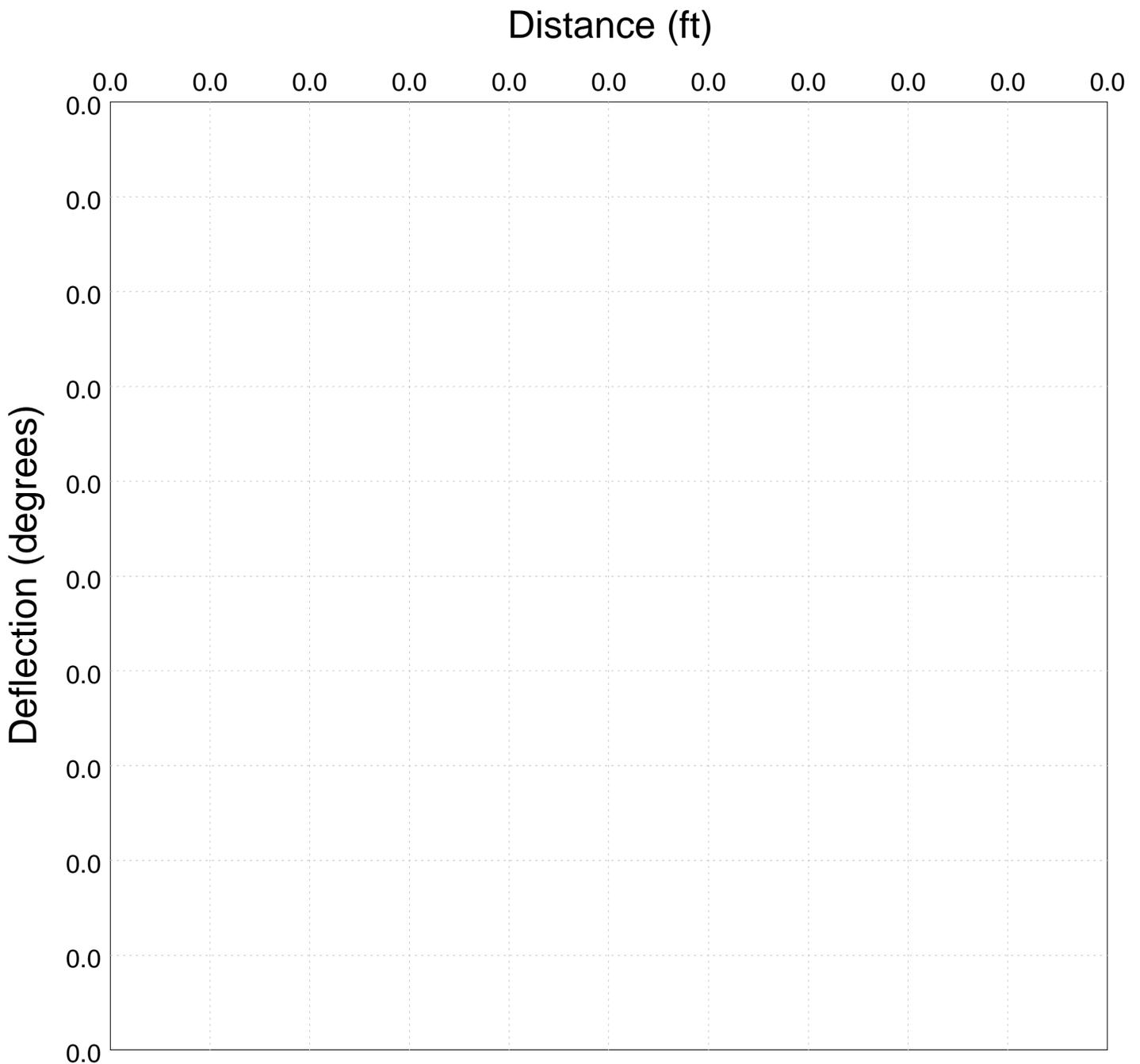
Line Segment	Block Number	Upstream MH A-141	Downstream MH A-140	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 181.5





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-141	A-140		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				181.5	





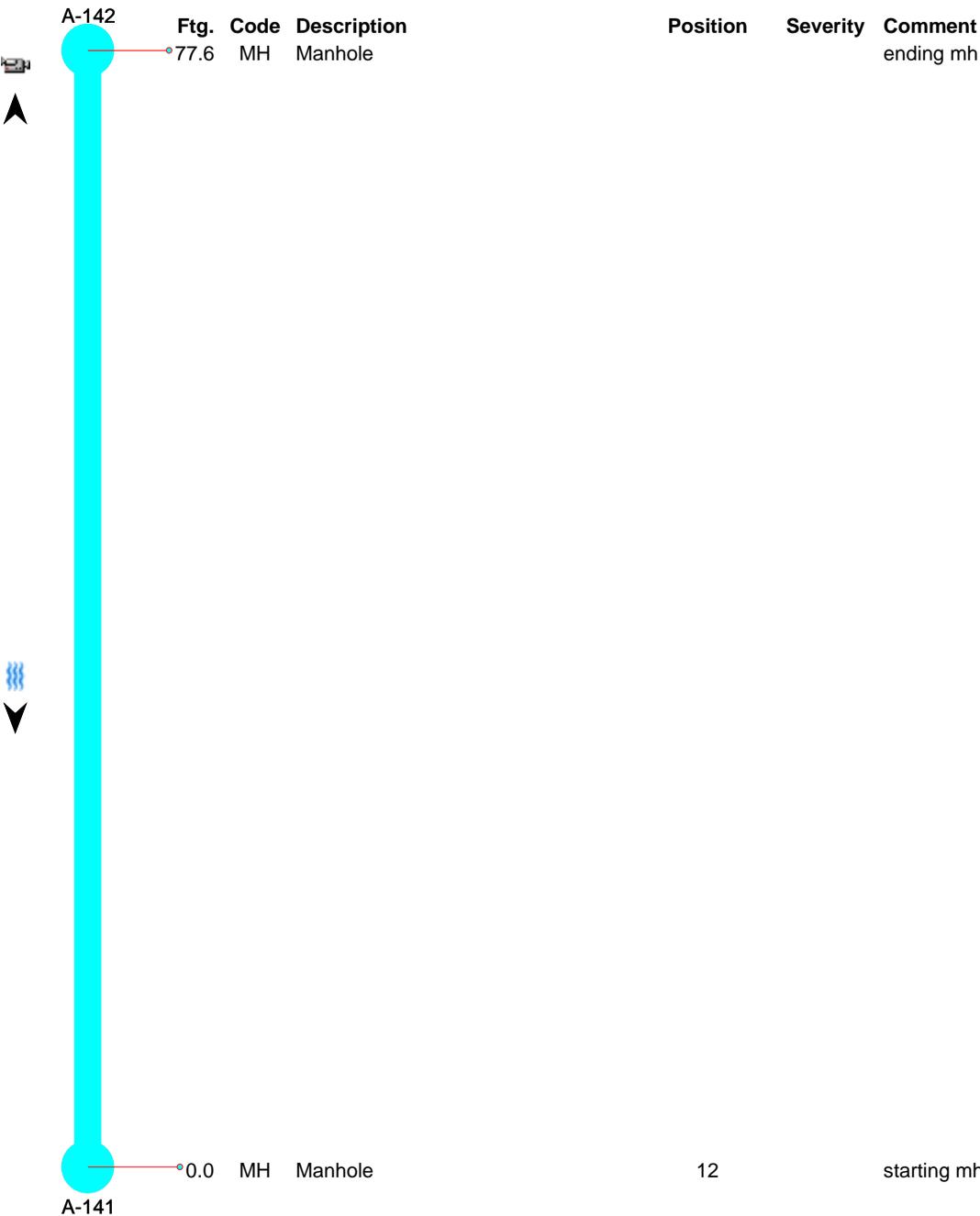
City of Arden Hills
Public Works
1425 Paul Kirkwold Drive
Arden Hills, MN 55112
(651) 755-0211

Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-142	A-141		07-Jun-2017

Surveyor	Street	City	Weather
ma	Arden View ct	arden Hills	

Size	Material	Sewer Use	Purpose	Length
8	Vitrified Clay Pipe		Routine Assessment	

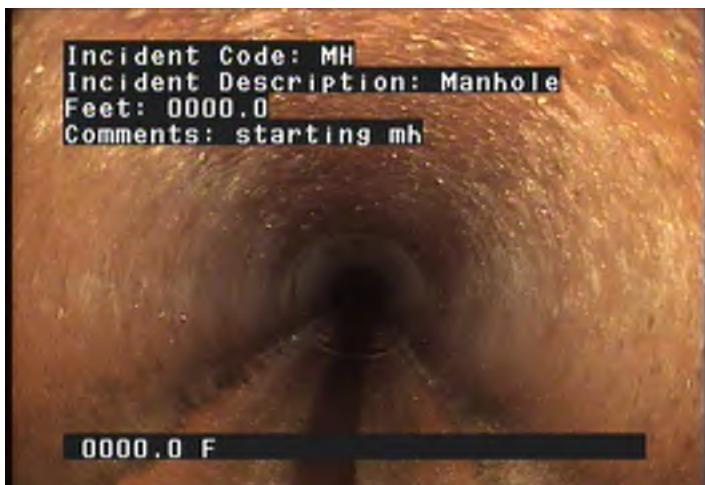
Comments	Pre-Cleaning	TV Length
		77.6



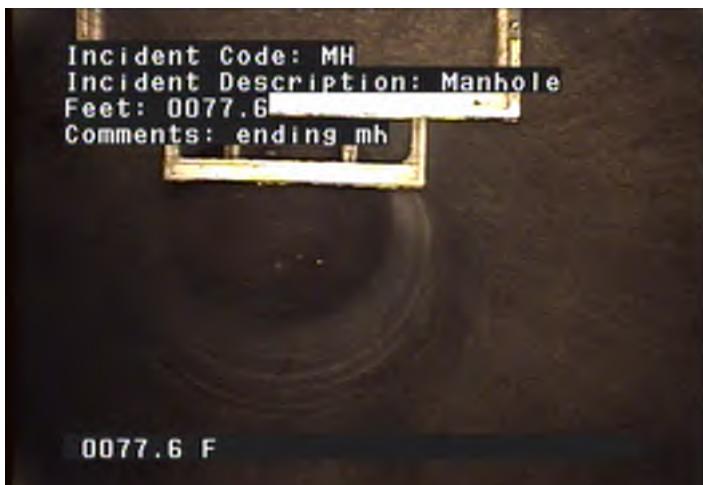


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-142	A-141		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				77.6	



MH - Manhole @ 0.0 ft. starting mh

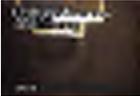


MH - Manhole @ 77.6 ft. ending mh



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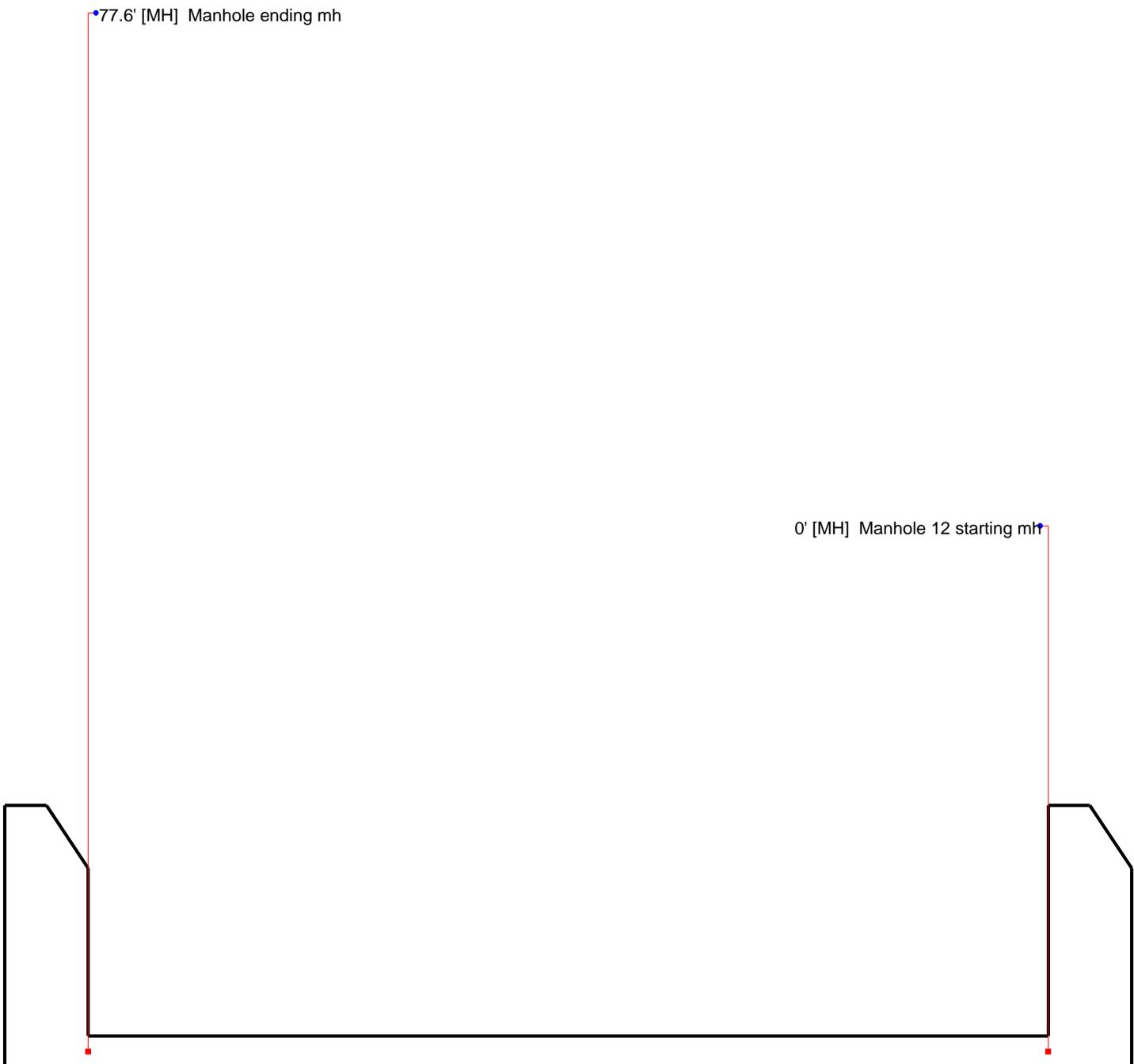
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-142	A-141		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					77.6

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
77.6	MH	Manhole			ending mh	



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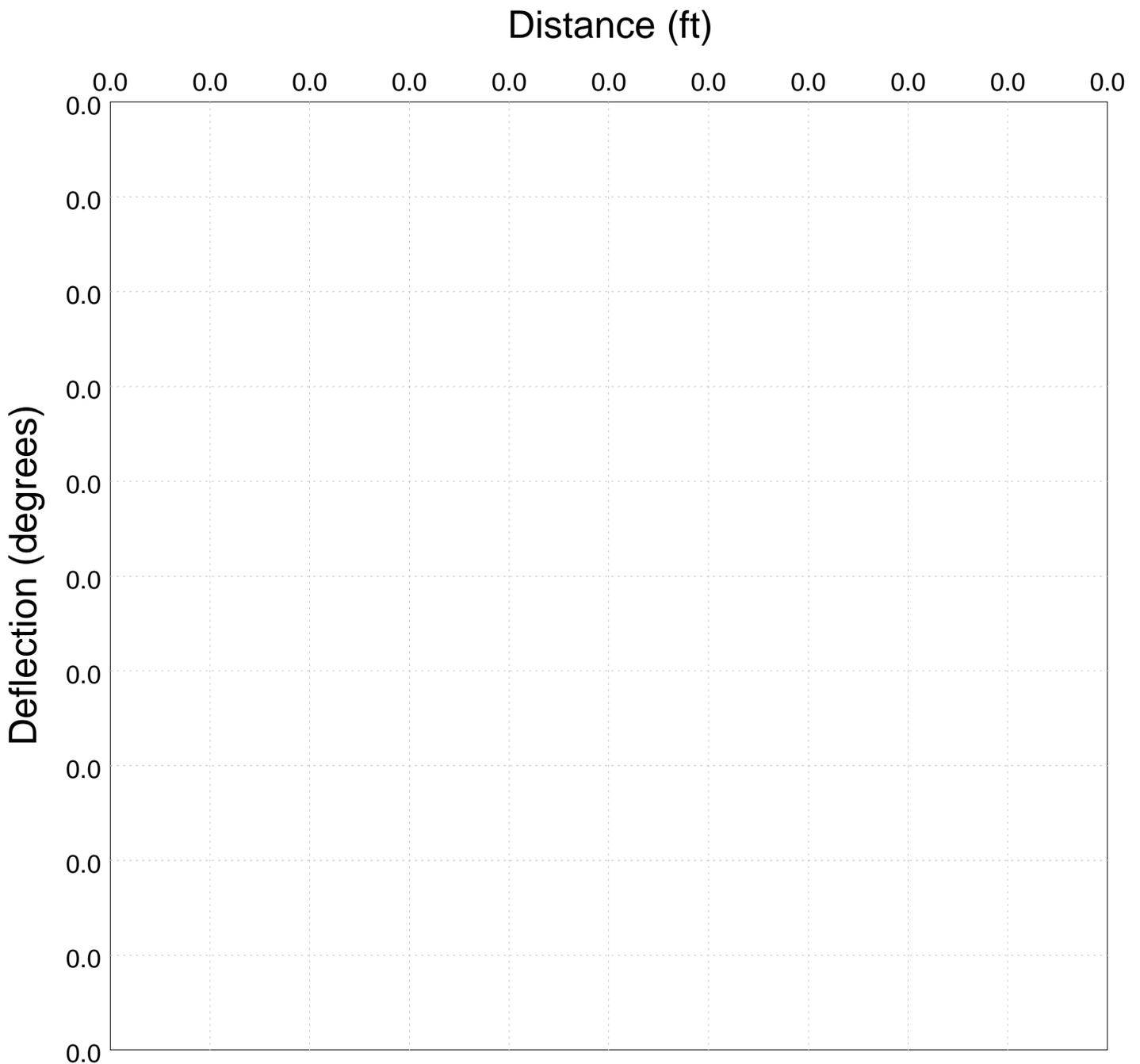
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-142	A-141		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					77.6





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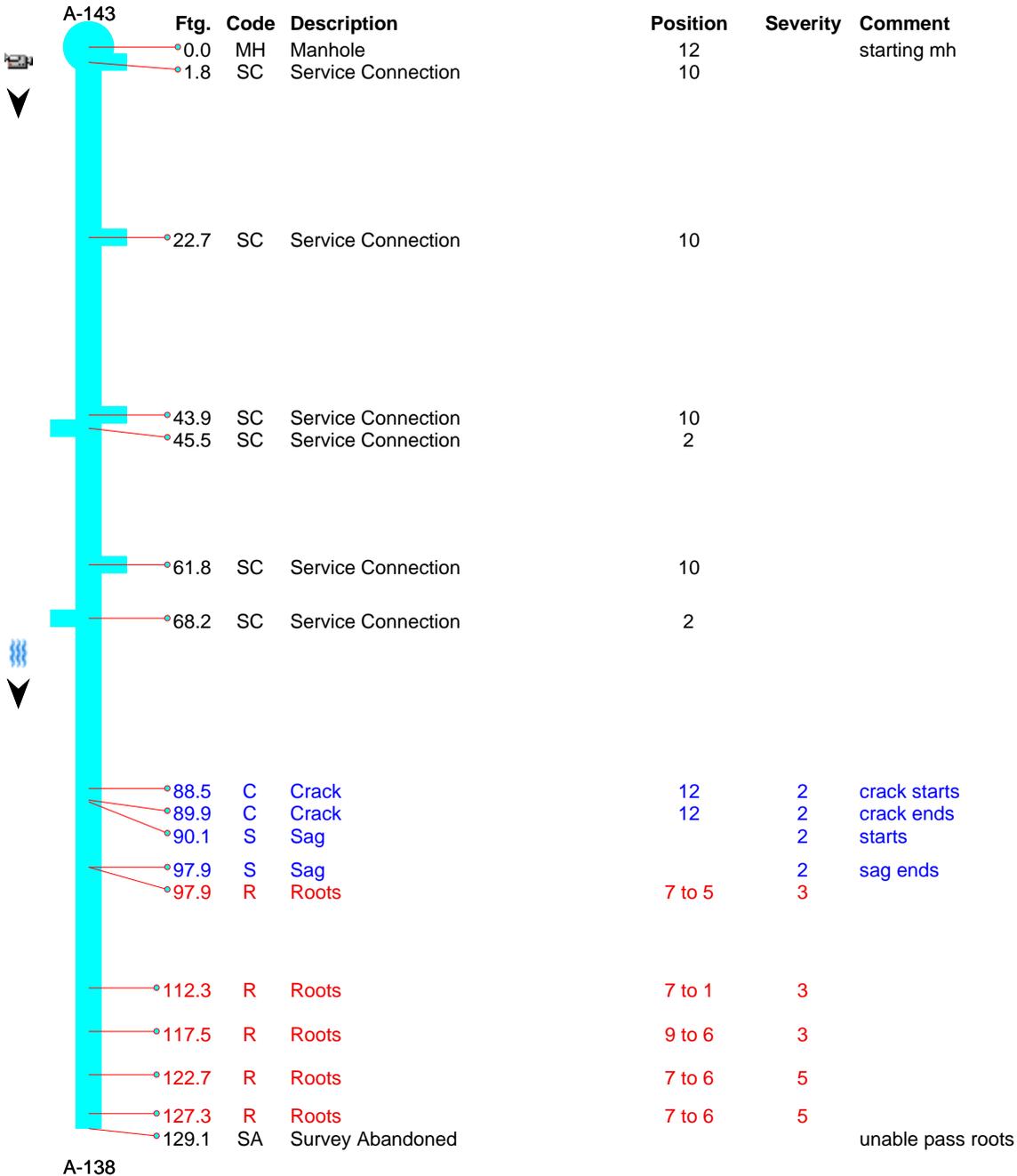
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-142	A-141		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				77.6	





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					129.1



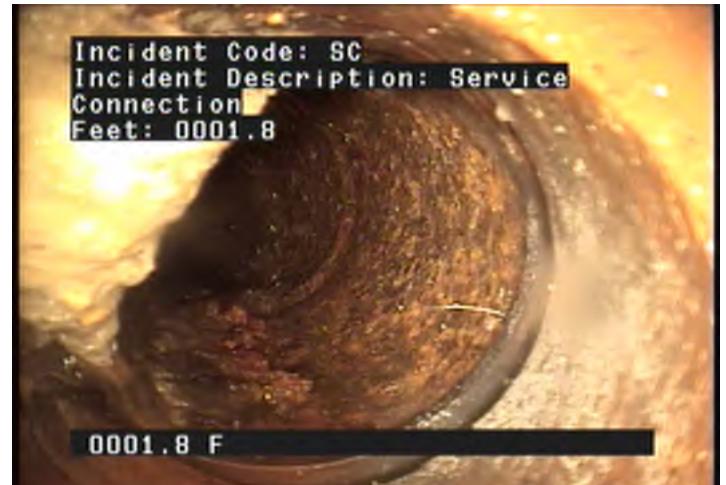


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Public Works
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Arden Hills, MN 55112
(651) 755-0211

Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					129.1



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 1.8 ft.



SC - Service Connection @ 22.7 ft.



SC - Service Connection @ 43.9 ft.



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		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					129.1



SC - Service Connection @ 45.5 ft.



SC - Service Connection @ 61.8 ft.



SC - Service Connection @ 68.2 ft.



C - Crack @ 88.5 ft. crack starts



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		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					129.1



C - Crack @ 89.9 ft. crack ends



S - Sag @ 90.1 ft. starts



S - Sag @ 97.9 ft. sag ends



R - Roots @ 97.9 ft.



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		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					129.1



R - Roots @ 112.3 ft.



R - Roots @ 117.5 ft.



R - Roots @ 122.7 ft.



R - Roots @ 127.3 ft.



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		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				129.1	

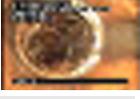
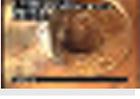
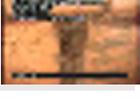
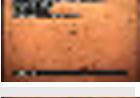


SA - Survey Abandoned @ 129.1 ft.
unable pass roots



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Line Segment	Block Number	Upstream MH A-143	Downstream MH A-138	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 129.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
1.8	SC	Service Connection	10			
22.7	SC	Service Connection	10			
43.9	SC	Service Connection	10			
45.5	SC	Service Connection	2			
61.8	SC	Service Connection	10			
68.2	SC	Service Connection	2			
88.5	C	Crack	12	2	crack starts	
89.9	C	Crack	12	2	crack ends	
90.1	S	Sag		2	starts	
97.9	S	Sag		2	sag ends	



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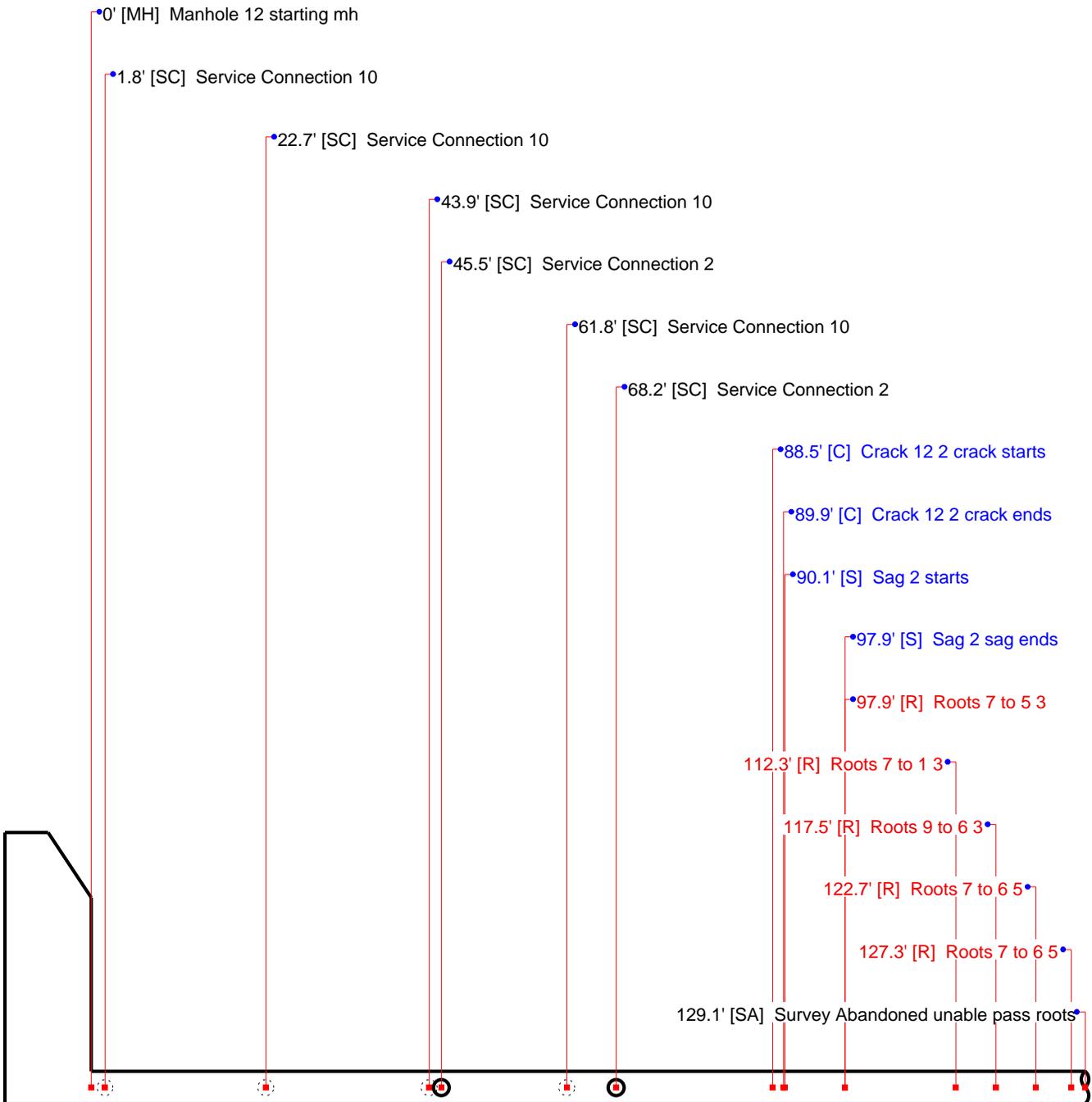
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				129.1	

Ftg.	Code	Description	Position	Severity	Comment	
97.9	R	Roots	7 to 5	3		
112.3	R	Roots	7 to 1	3		
117.5	R	Roots	9 to 6	3		
122.7	R	Roots	7 to 6	5		
127.3	R	Roots	7 to 6	5		
129.1	SA	Survey Abandoned			unable pass roots	



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Line Segment	Block Number	Upstream MH A-143	Downstream MH A-138	Section Number	Date 07-Jun-2017
Surveyor ma	Street Arden View ct		City arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 129.1

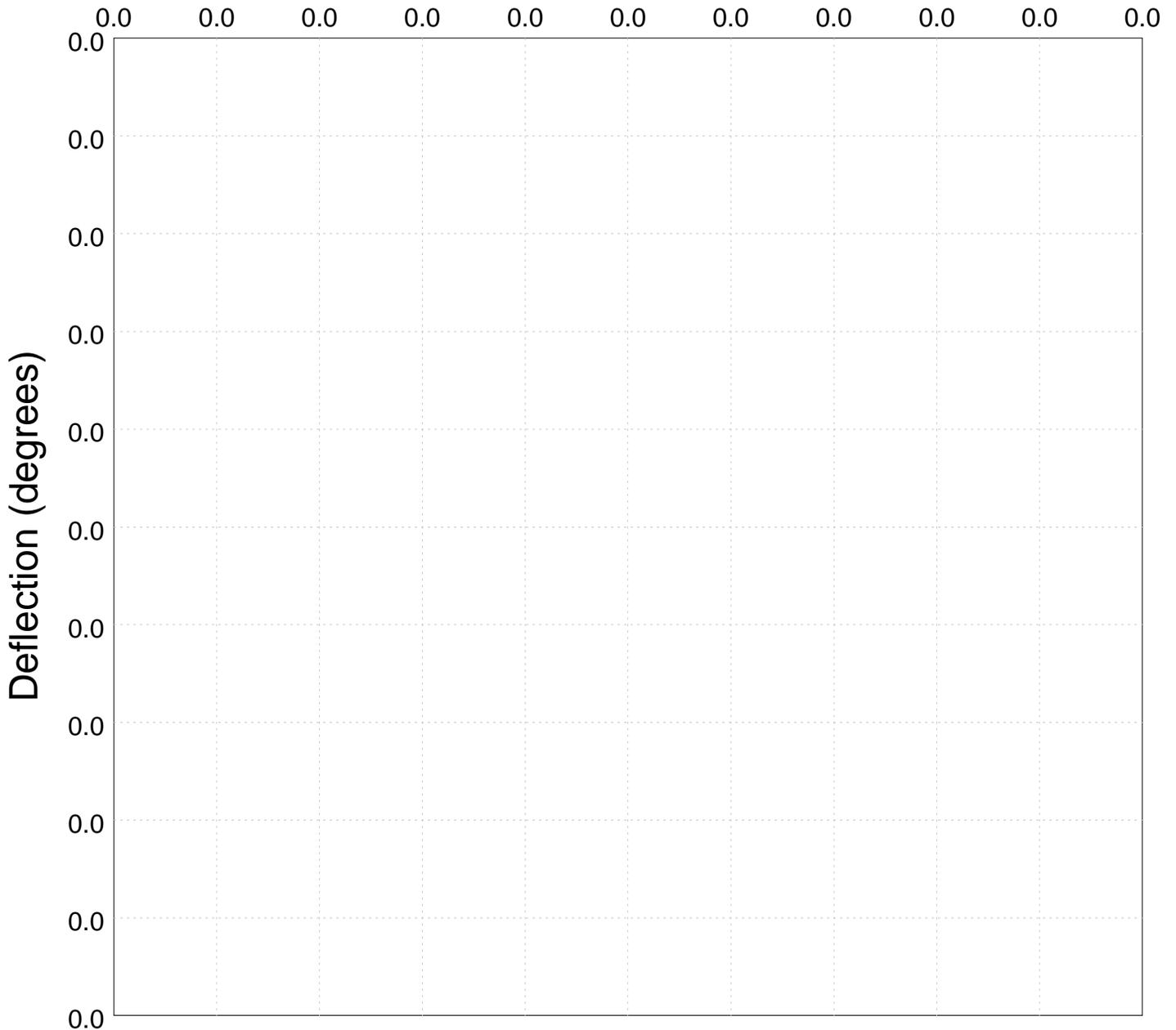




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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					129.1

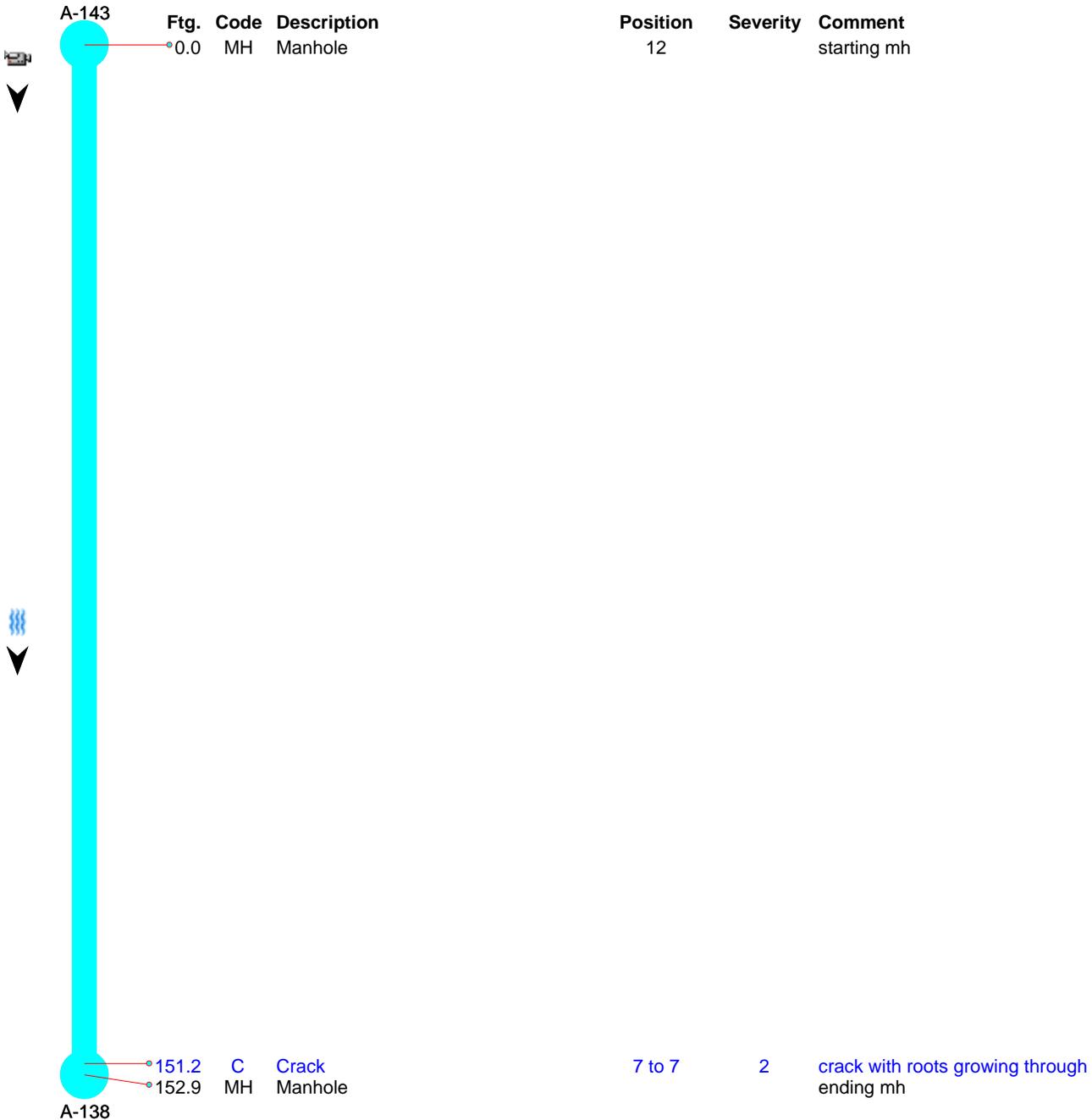
Distance (ft)





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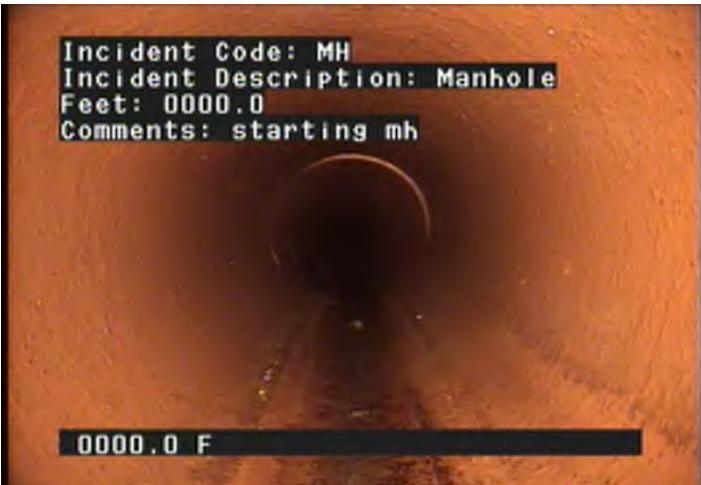
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning	TV Length			
post root cutting	Heavy Cleaning	152.9			



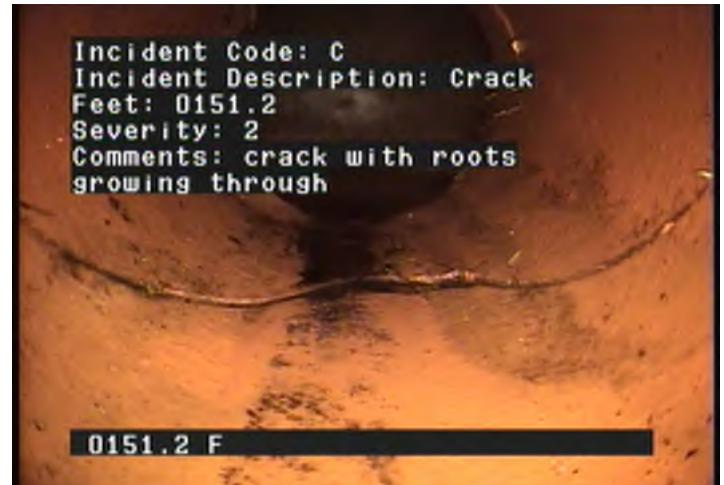


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
post root cutting	Heavy Cleaning			152.9	



MH - Manhole @ 0.0 ft. starting mh



C - Crack @ 151.2 ft. crack with roots growing through



MH - Manhole @ 152.9 ft. ending mh



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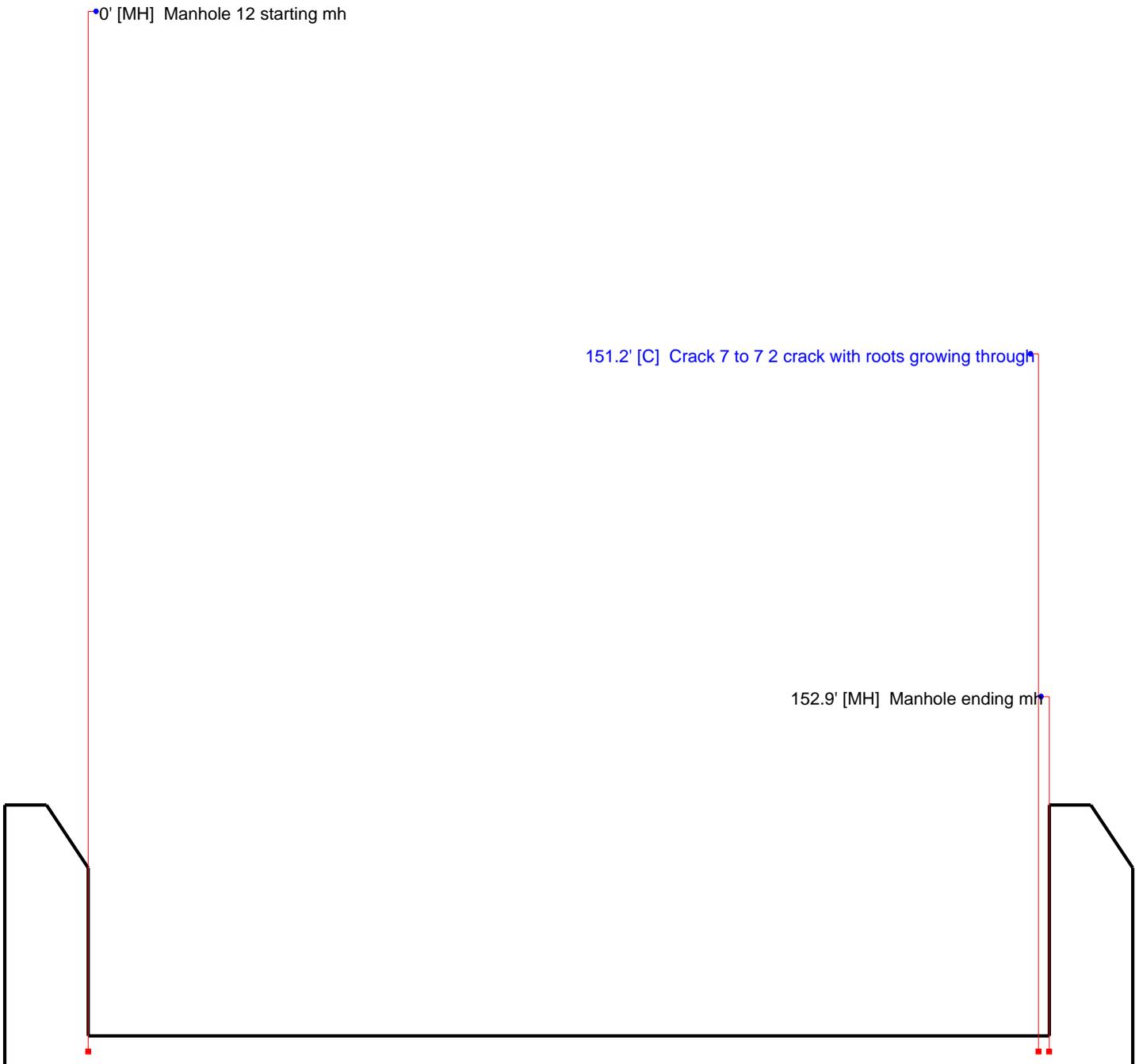
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
post root cutting				Heavy Cleaning	152.9

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
151.2	C	Crack	7 to 7	2	crack with roots growing through	
152.9	MH	Manhole			ending mh	



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
post root cutting	Heavy Cleaning			152.9	

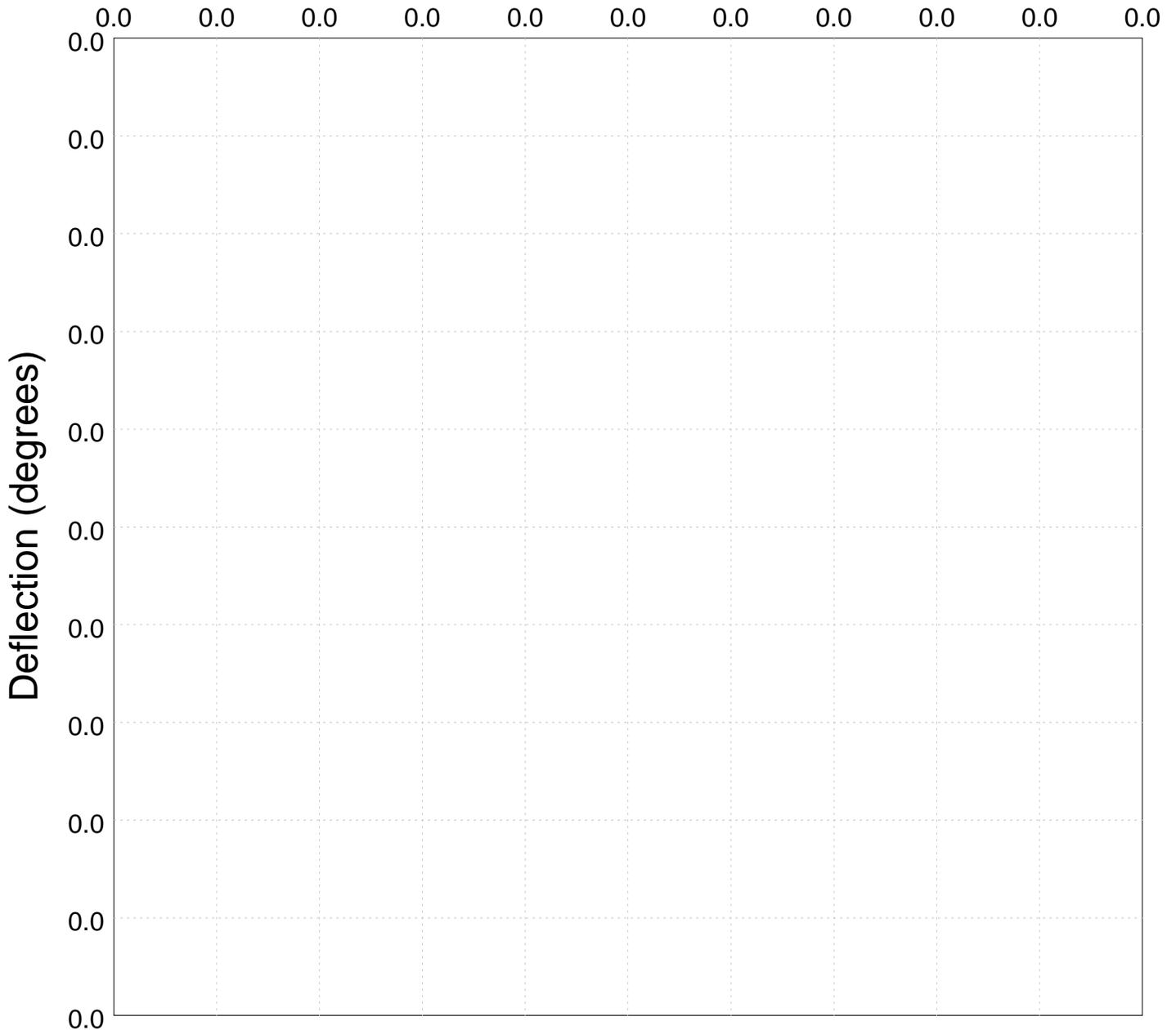




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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-143	A-138		07-Jun-2017
Surveyor	Street		City	Weather	
ma	Arden View ct		arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
post root cutting			Heavy Cleaning	152.9	

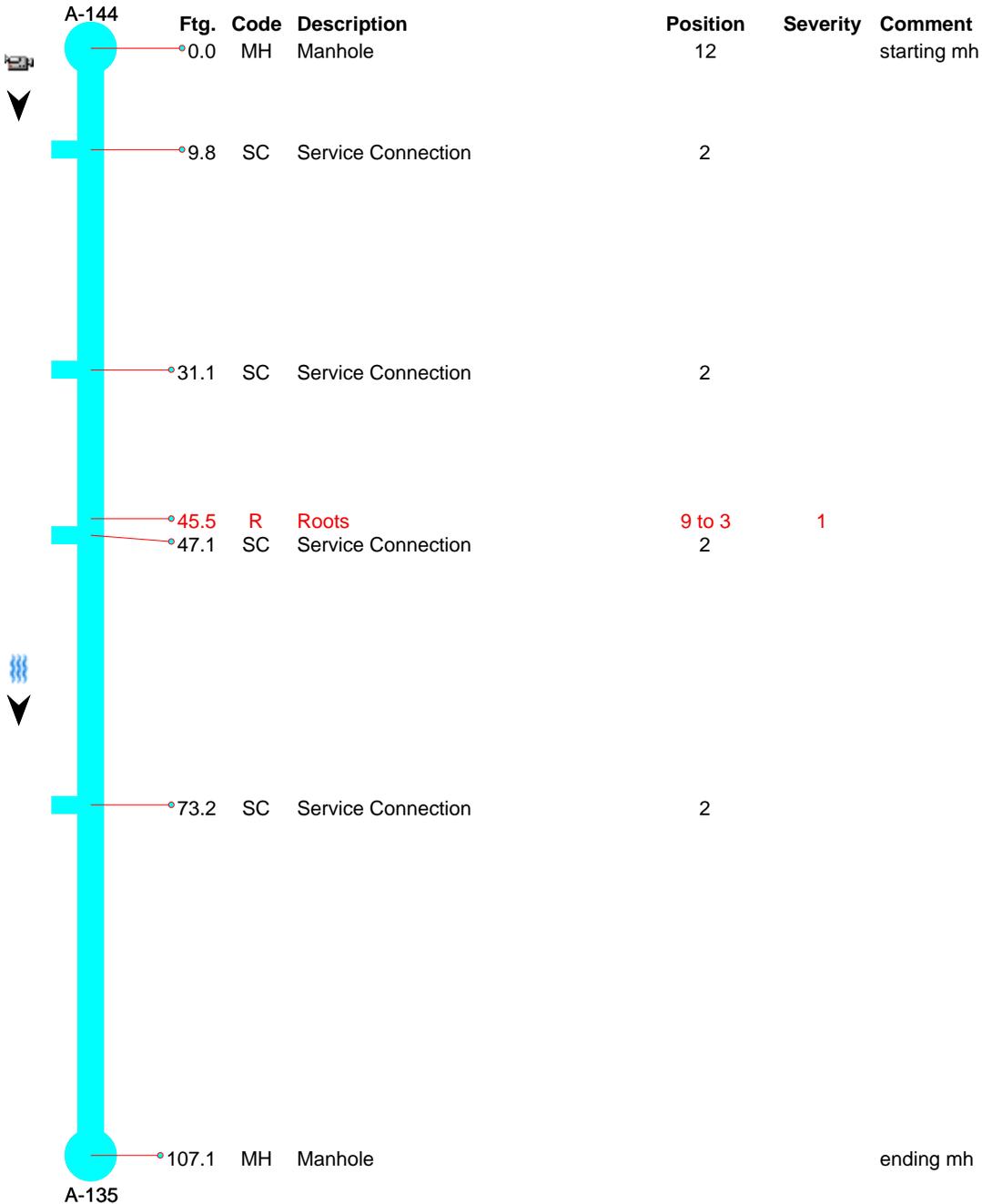
Distance (ft)





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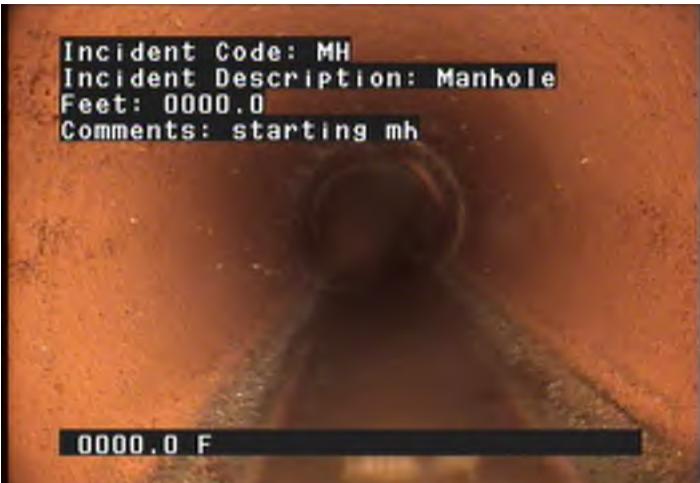
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-144	A-135		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					107.1





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-144	A-135		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					107.1



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 9.8 ft.



SC - Service Connection @ 31.1 ft.



R - Roots @ 45.5 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-144	A-135		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					107.1



SC - Service Connection @ 47.1 ft.



SC - Service Connection @ 73.2 ft.



MH - Manhole @ 107.1 ft. ending mh



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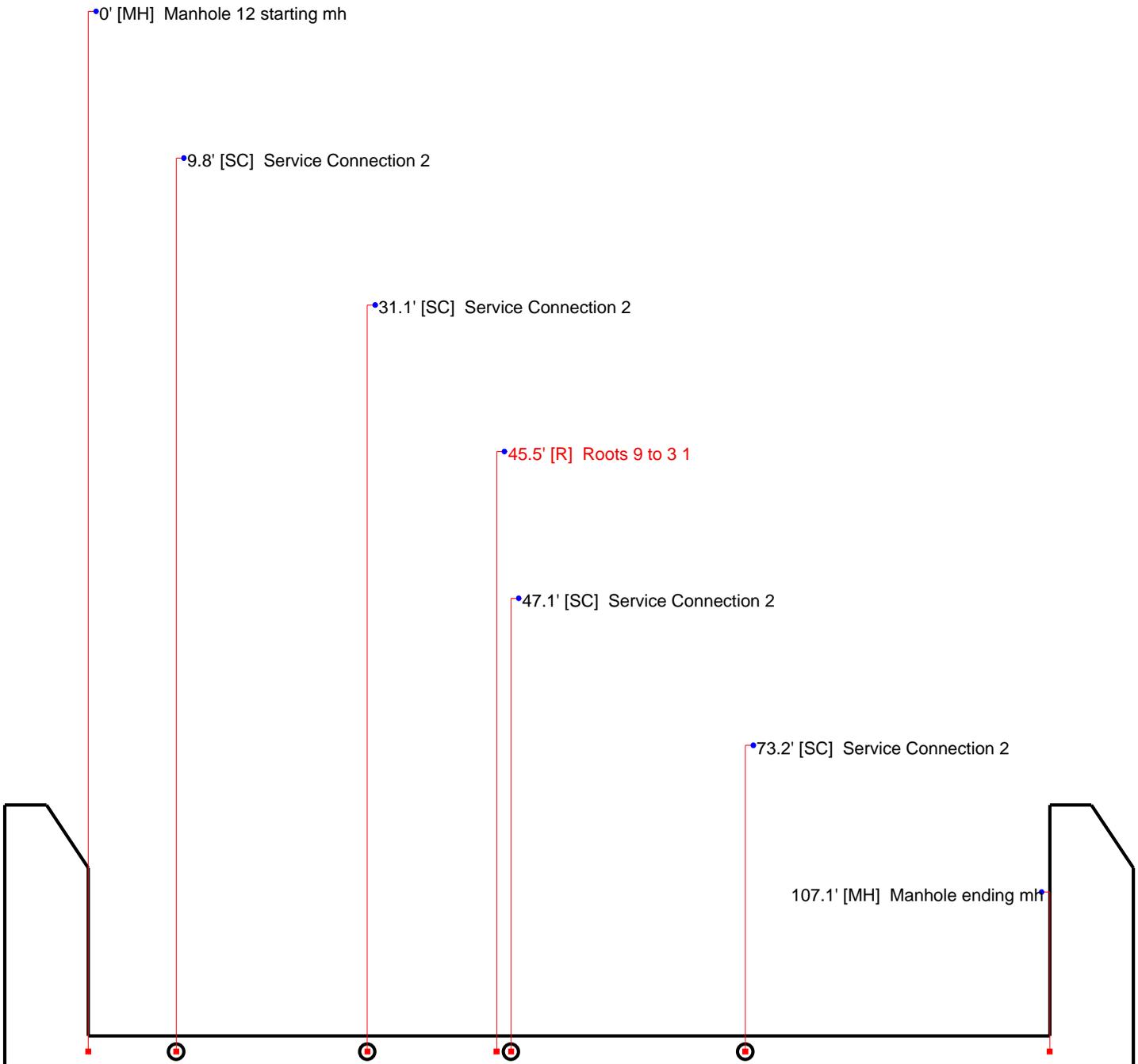
Line Segment	Block Number	Upstream MH A-144	Downstream MH A-135	Section Number	Date 08-Jun-2017
Surveyor MA	Street Arden View Court		City Arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 107.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
9.8	SC	Service Connection	2			
31.1	SC	Service Connection	2			
45.5	R	Roots	9 to 3	1		
47.1	SC	Service Connection	2			
73.2	SC	Service Connection	2			
107.1	MH	Manhole			ending mh	



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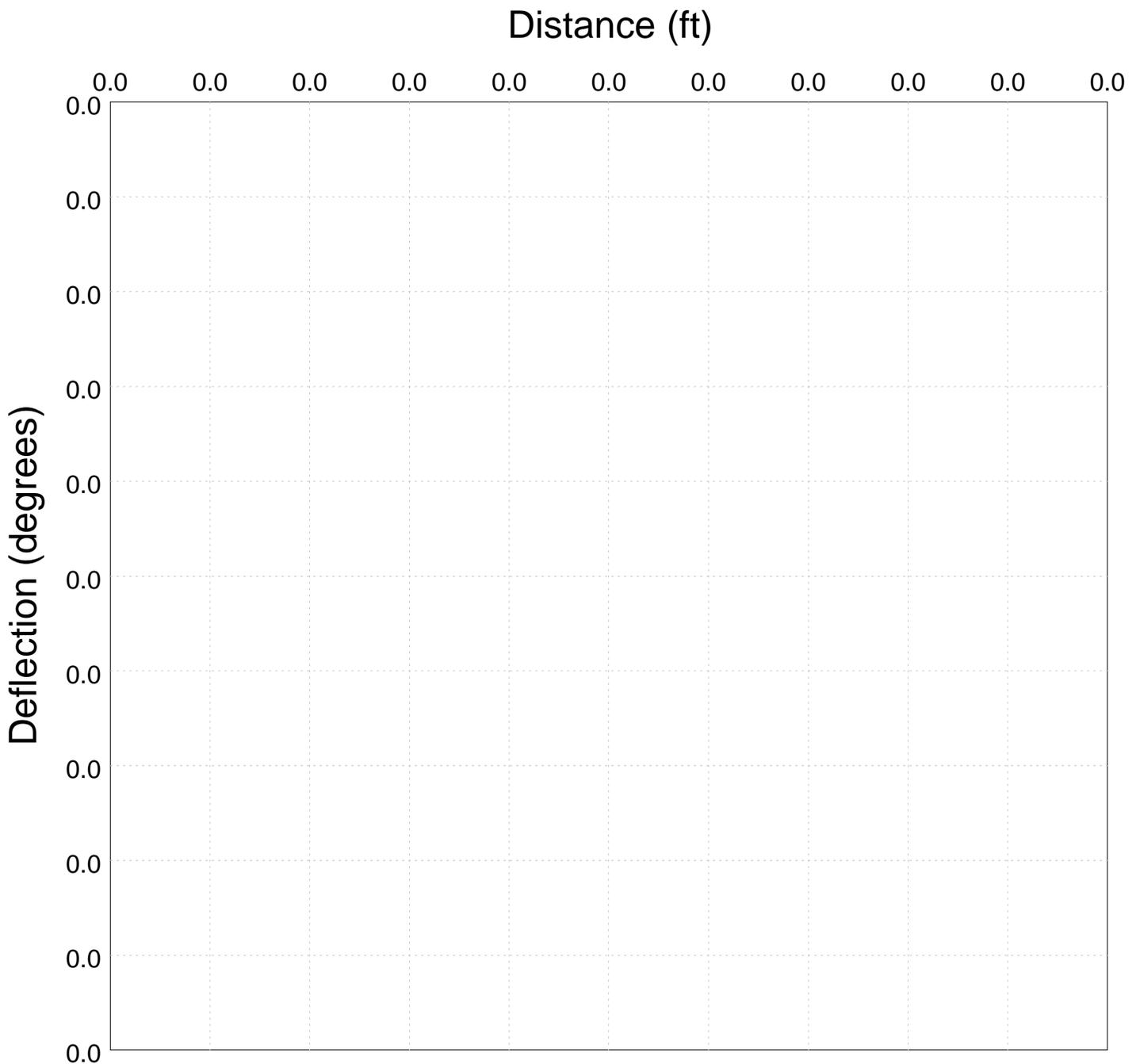
Line Segment	Block Number	Upstream MH A-144	Downstream MH A-135	Section Number	Date 08-Jun-2017
Surveyor MA	Street Arden View Court		City Arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 107.1





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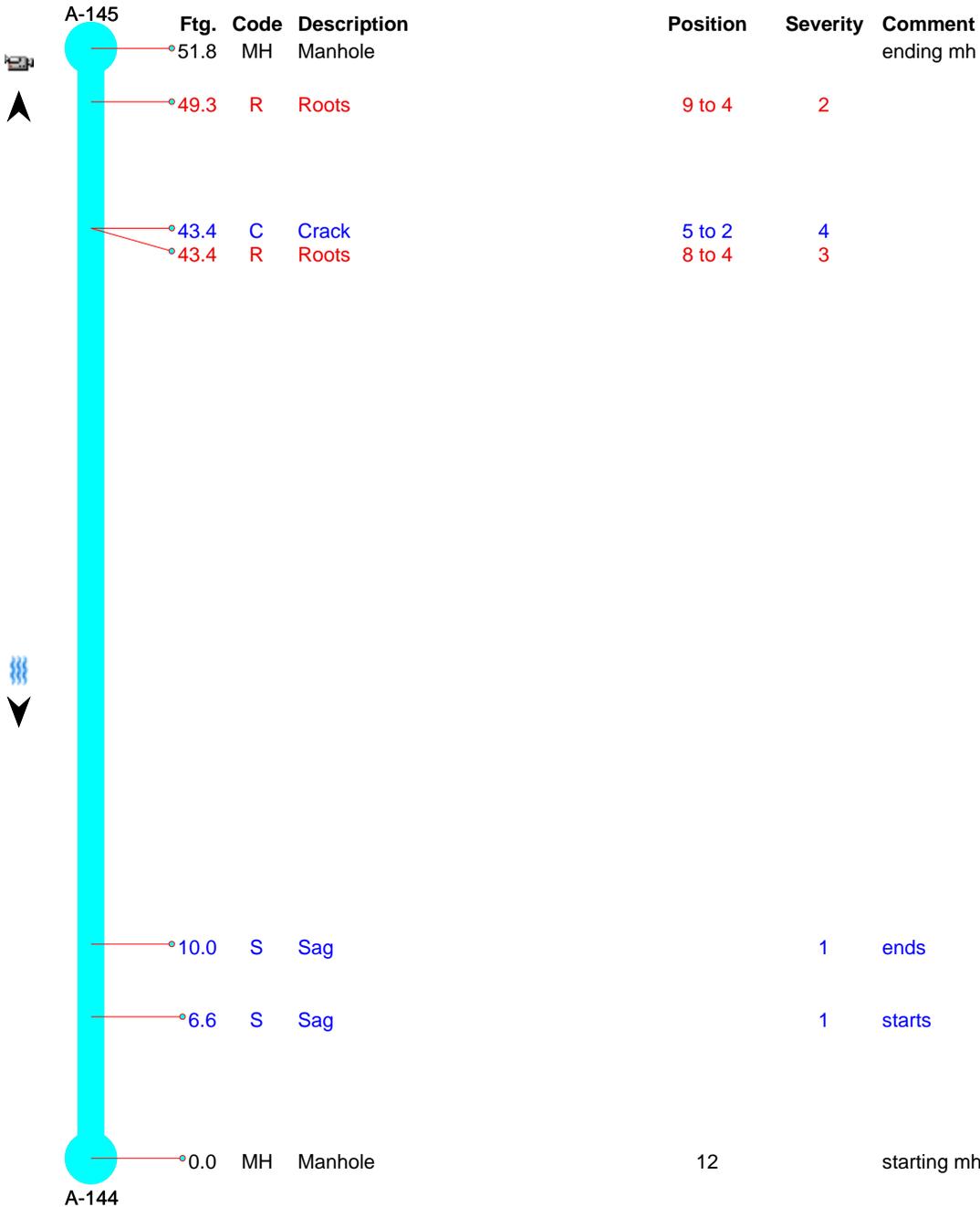
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-144	A-135		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					107.1





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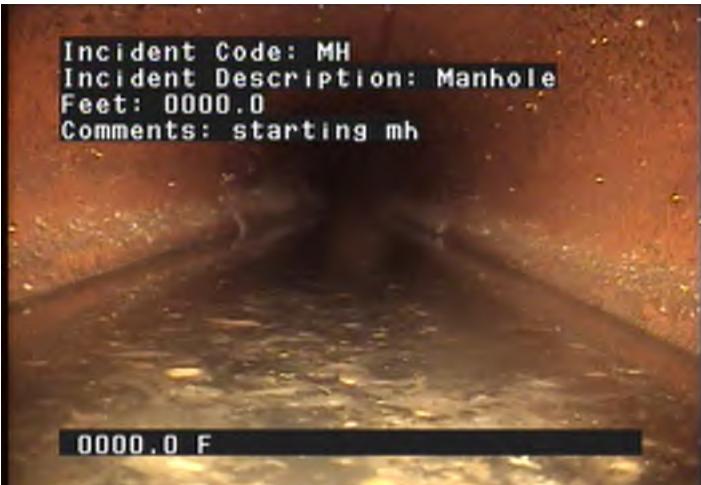
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-145	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					51.8



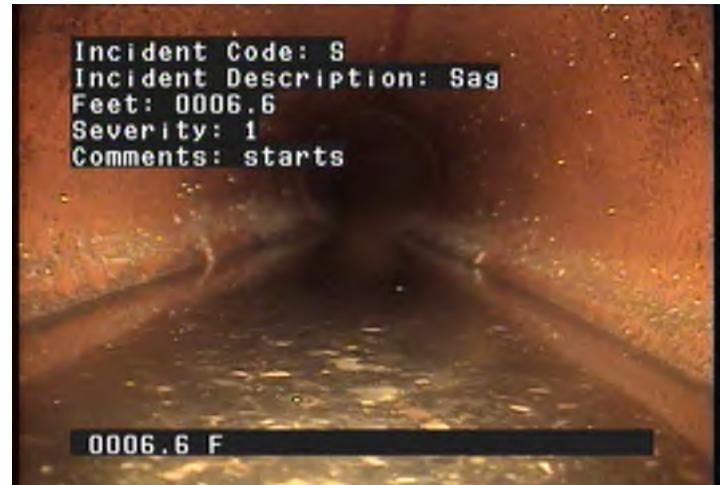


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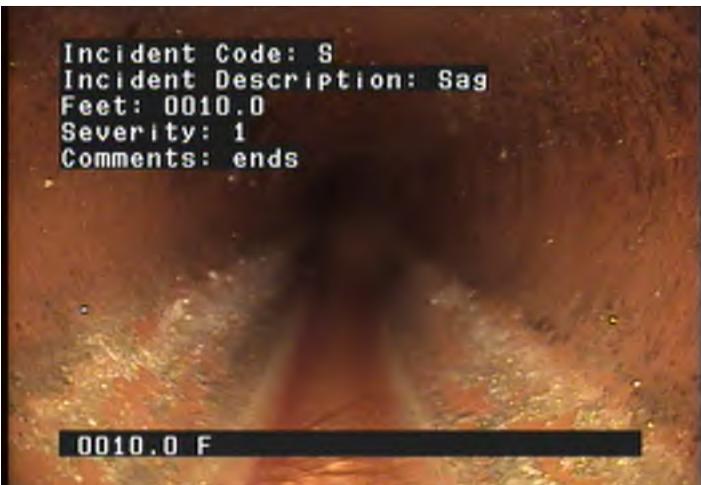
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-145	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					51.8



MH - Manhole @ 0.0 ft. starting mh



S - Sag @ 6.6 ft. starts



S - Sag @ 10.0 ft. ends



R - Roots @ 43.4 ft.



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		A-145	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					51.8



C - Crack @ 43.4 ft.



R - Roots @ 49.3 ft.



MH - Manhole @ 51.8 ft. ending mh



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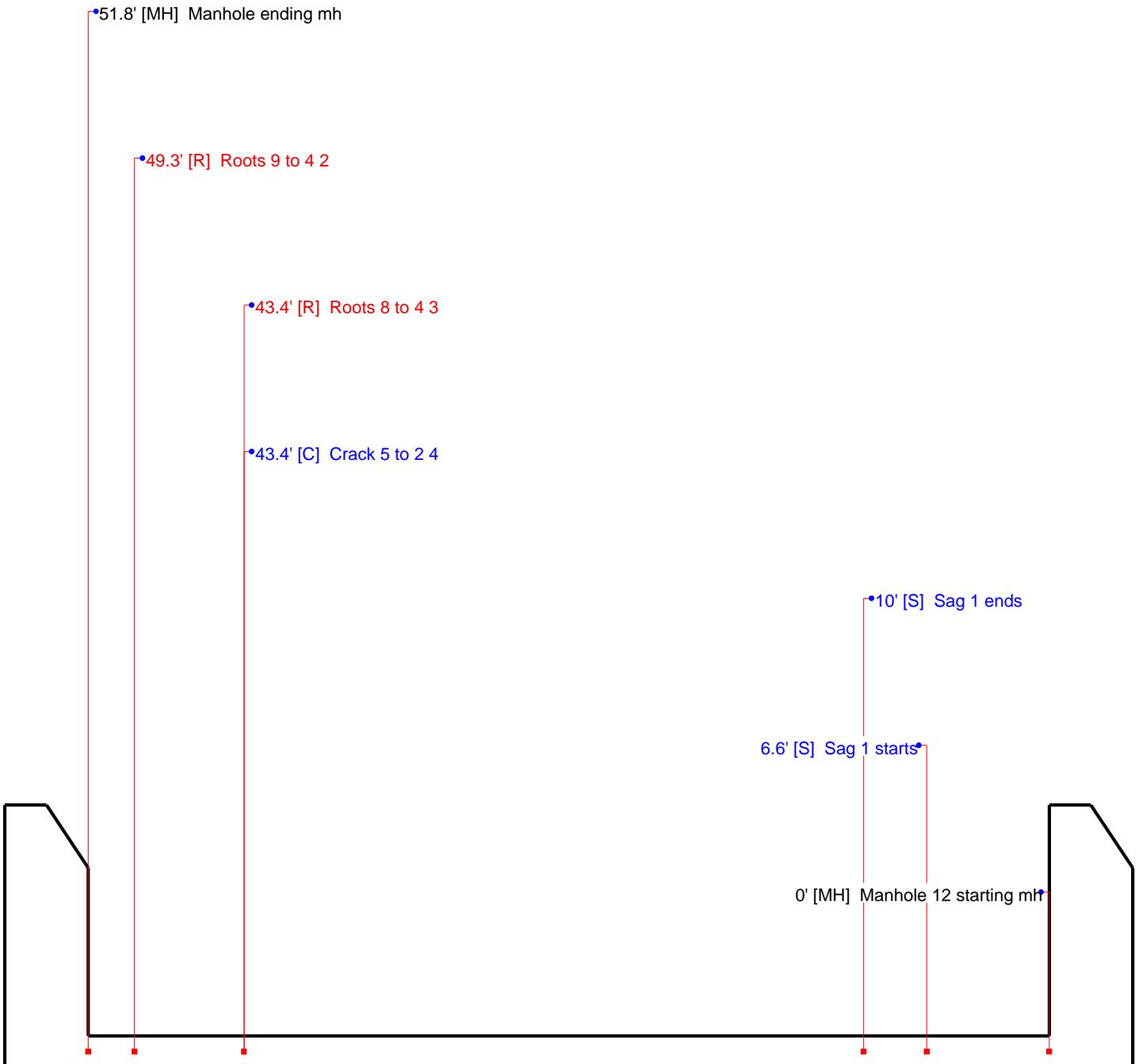
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-145	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					51.8

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
6.6	S	Sag		1	starts	
10.0	S	Sag		1	ends	
43.4	R	Roots	8 to 4	3		
43.4	C	Crack	5 to 2	4		
49.3	R	Roots	9 to 4	2		
51.8	MH	Manhole			ending mh	



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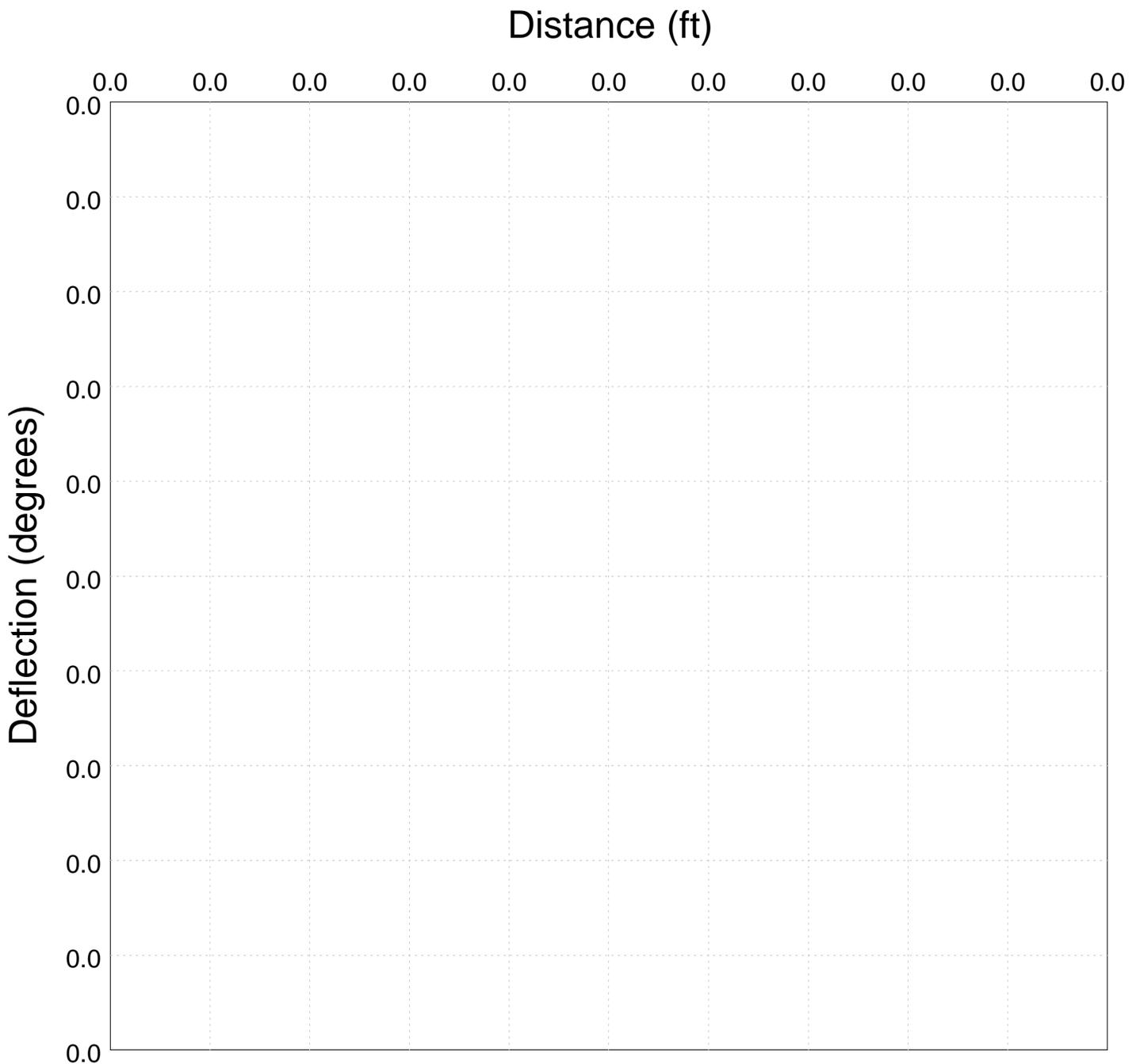
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		A-145	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					51.8





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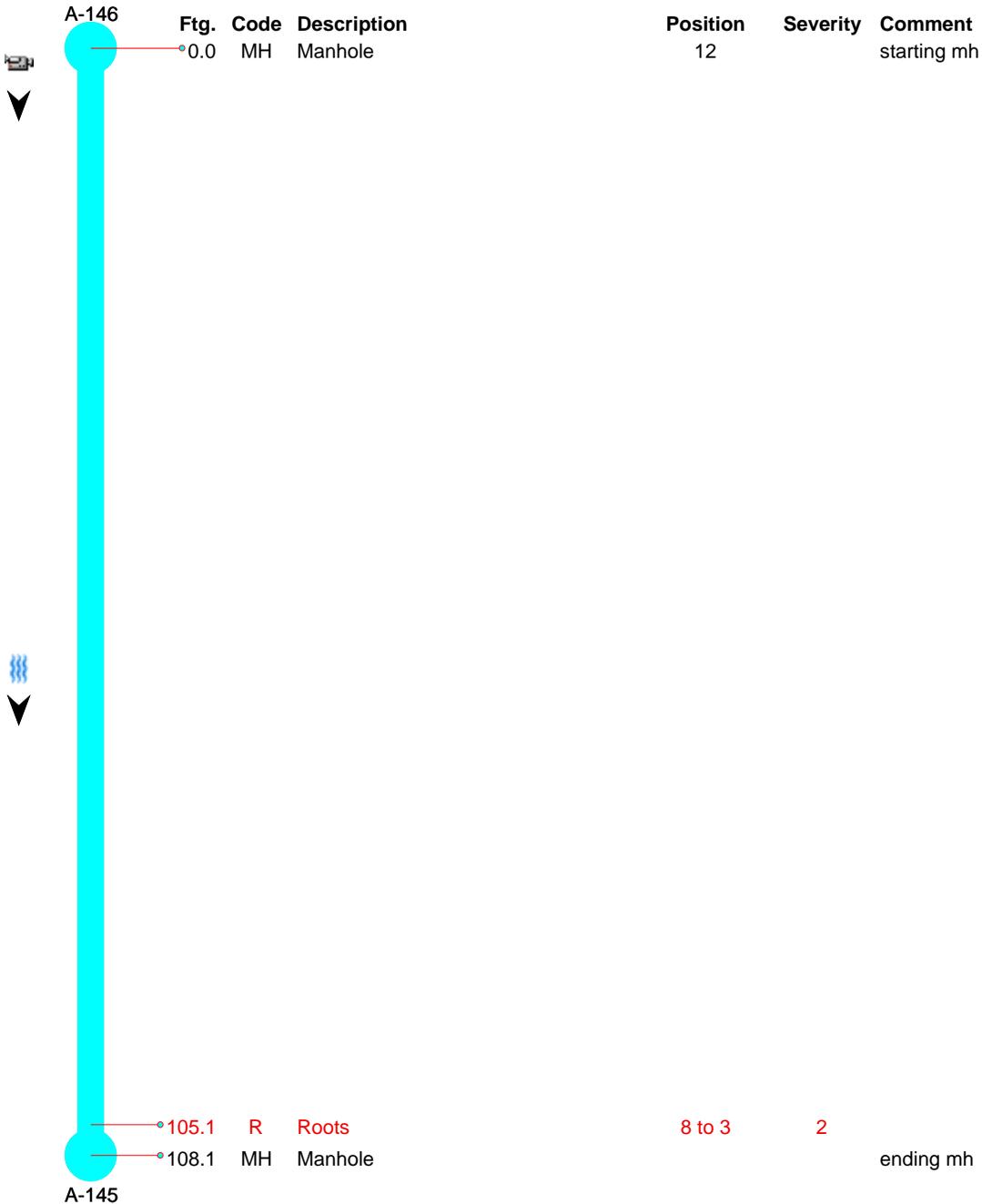
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					51.8





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-146	A-145		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					108.1





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-146	A-145		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					108.1



MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 105.1 ft.



MH - Manhole @ 108.1 ft. ending mh



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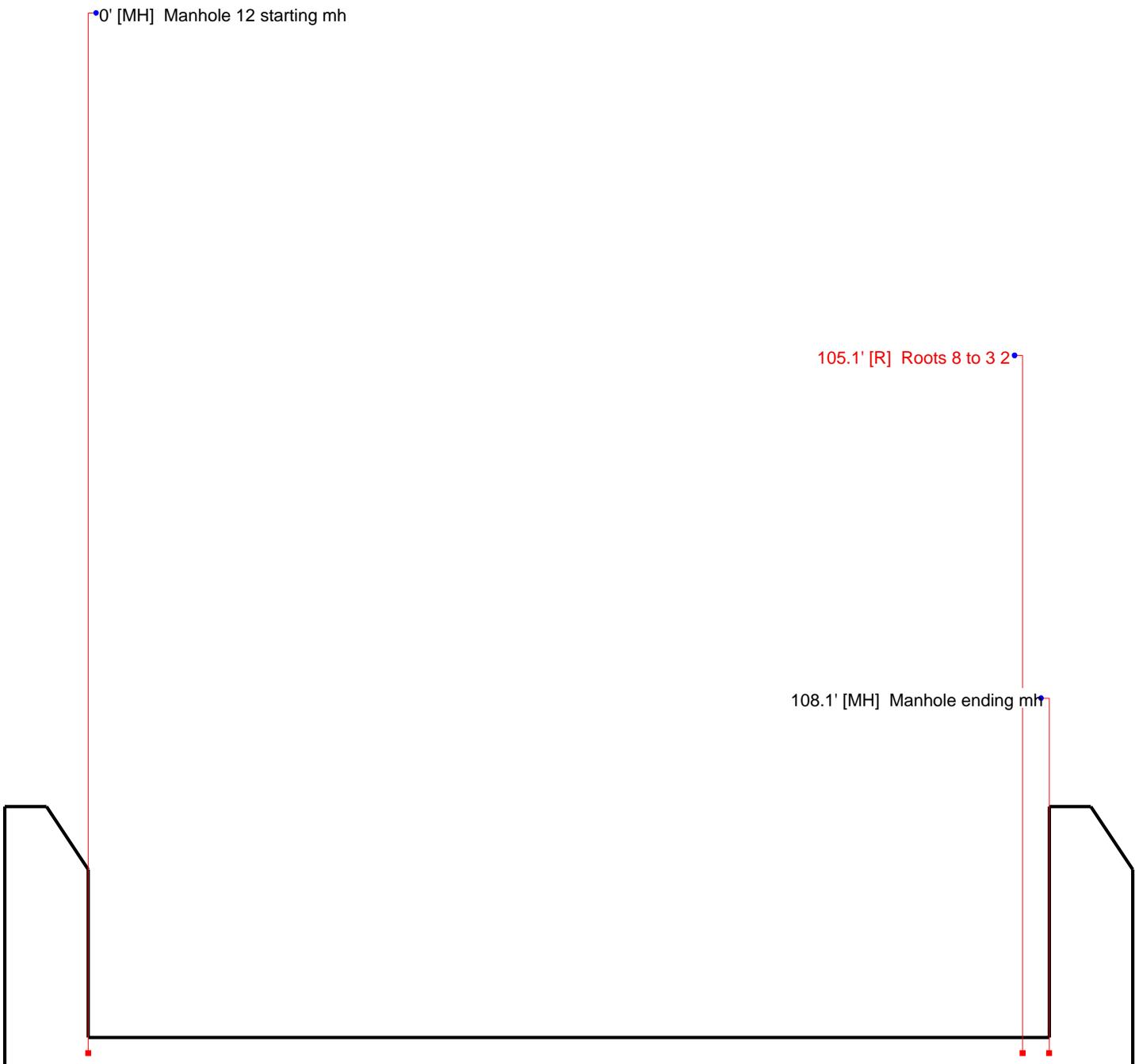
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		A-146	A-145		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					108.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
105.1	R	Roots	8 to 3	2		
108.1	MH	Manhole			ending mh	



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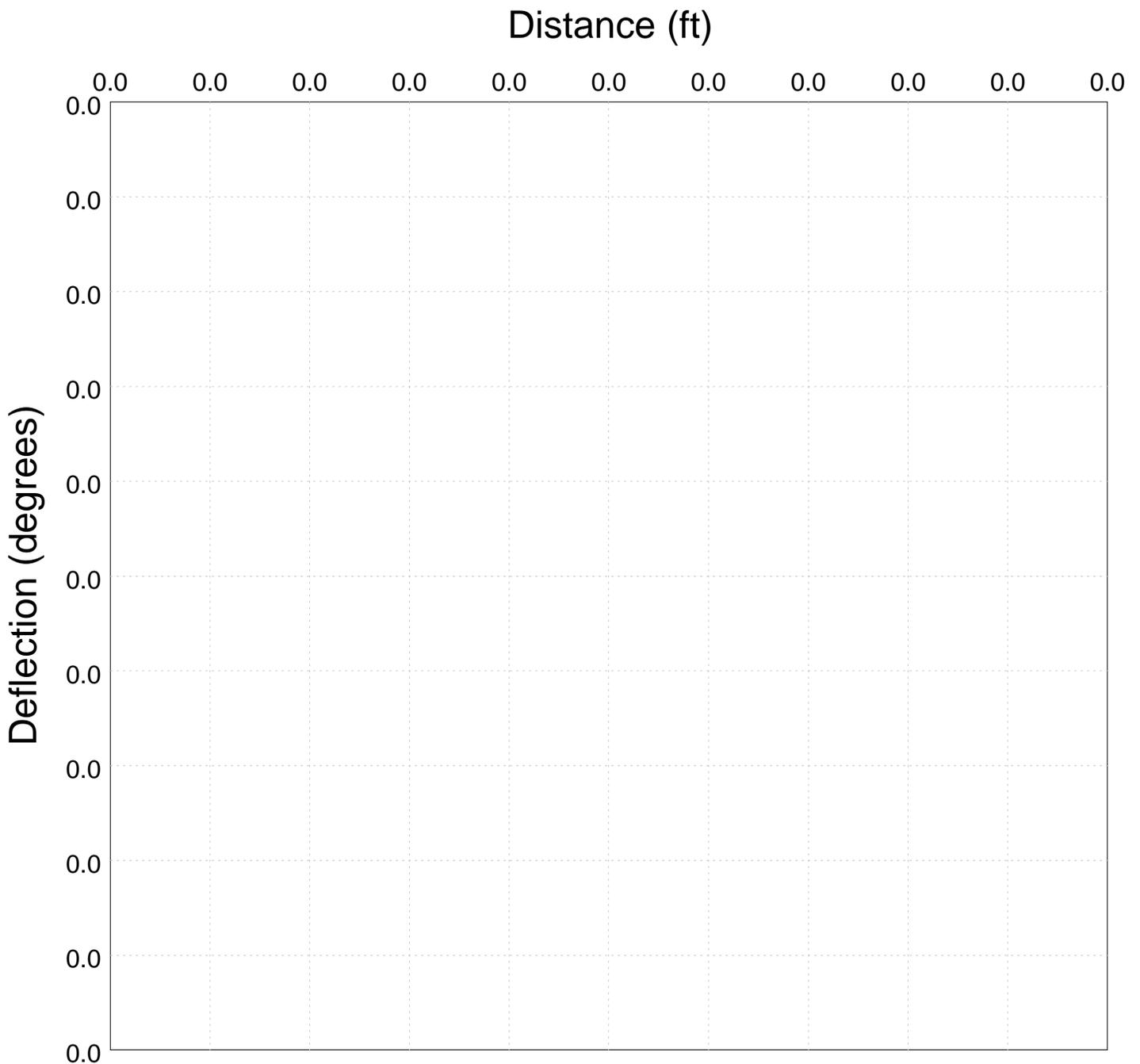
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				108.1	





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-146	A-145		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					108.1





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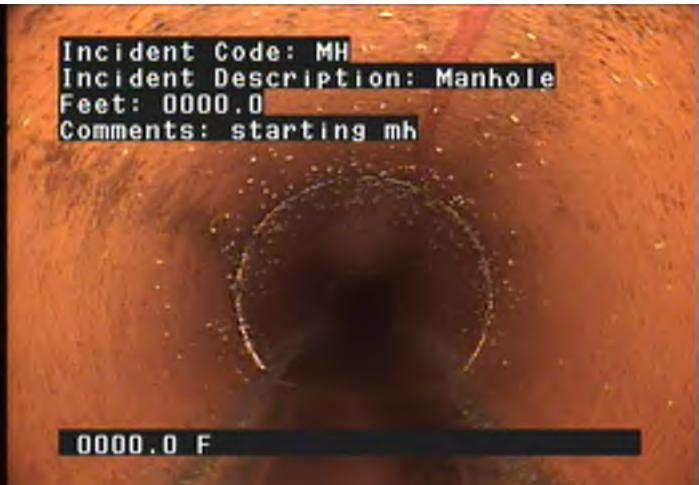
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					106.1



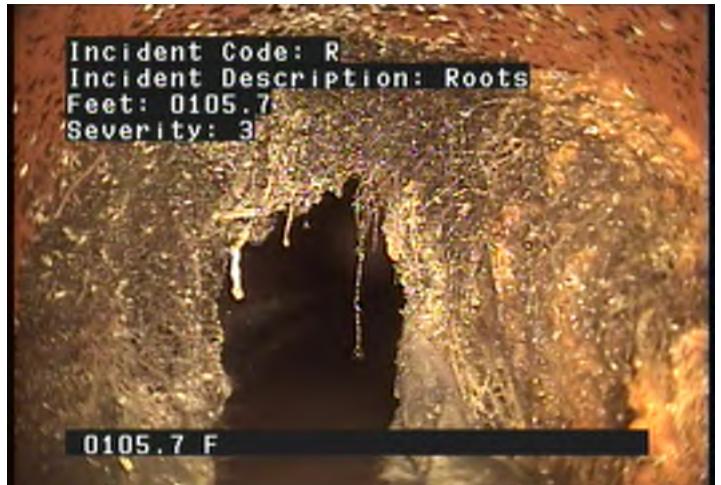


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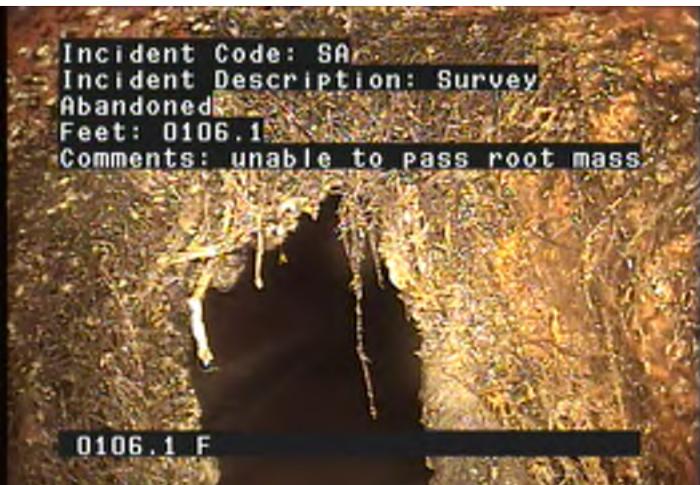
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				106.1	



MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 105.7 ft.

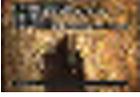


SA - Survey Abandoned @ 106.1 ft.
unable to pass root mass



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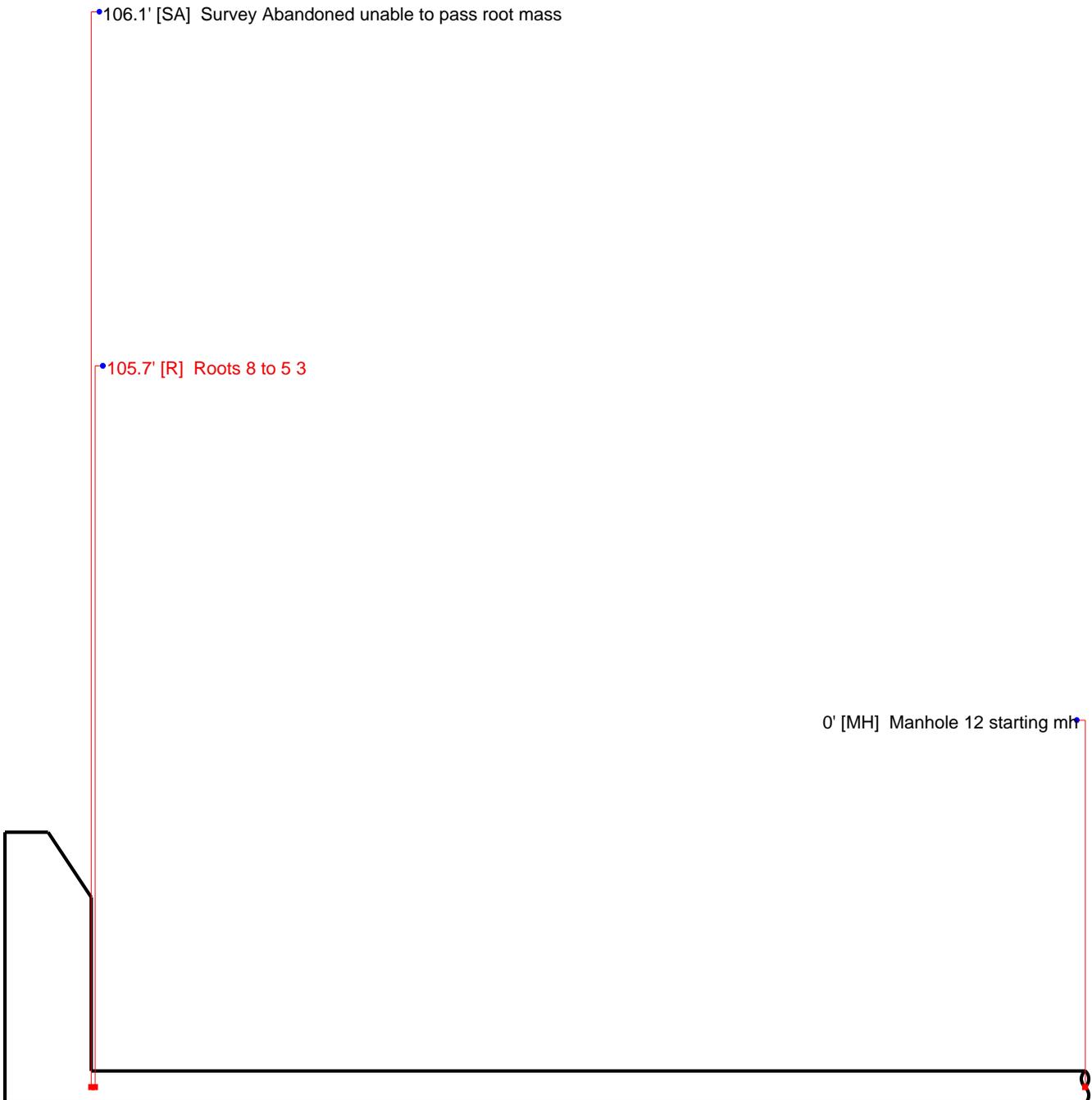
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					106.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
105.7	R	Roots	8 to 5	3		
106.1	SA	Survey Abandoned			unable to pass root mass	



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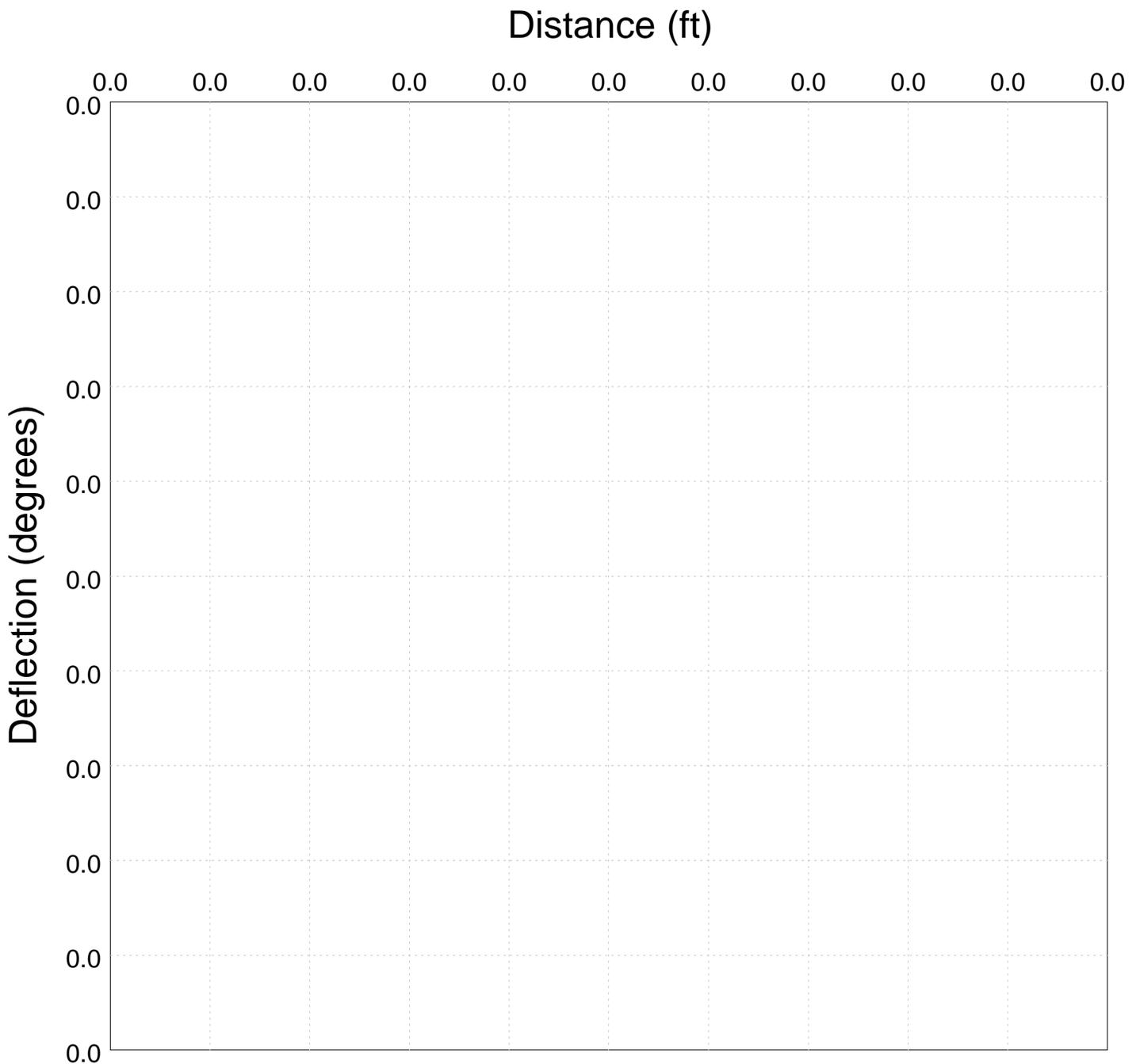
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-148	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					106.1





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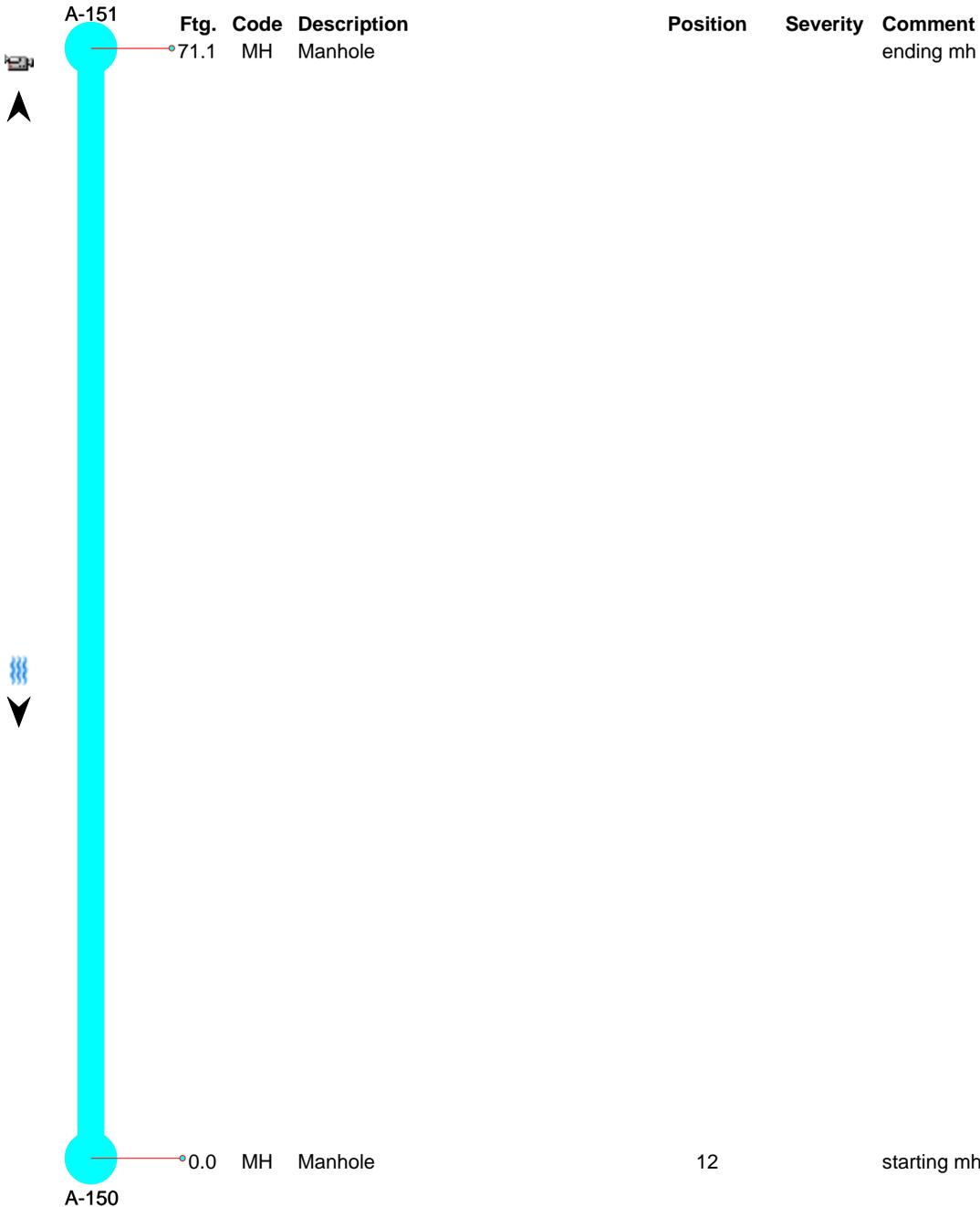
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-148	A-144		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				106.1	





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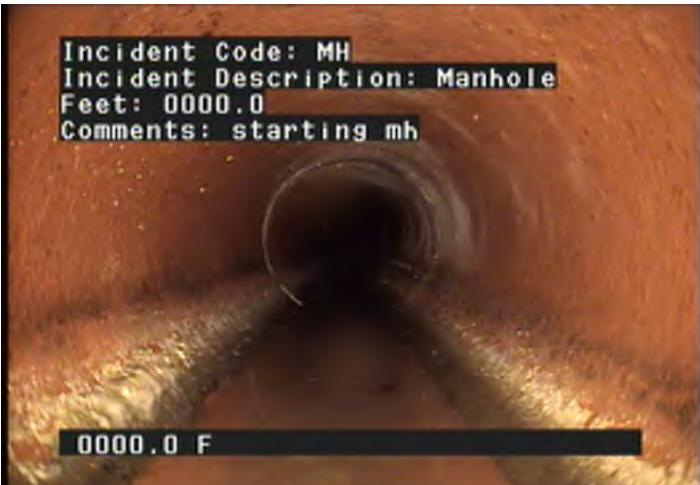
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					71.1



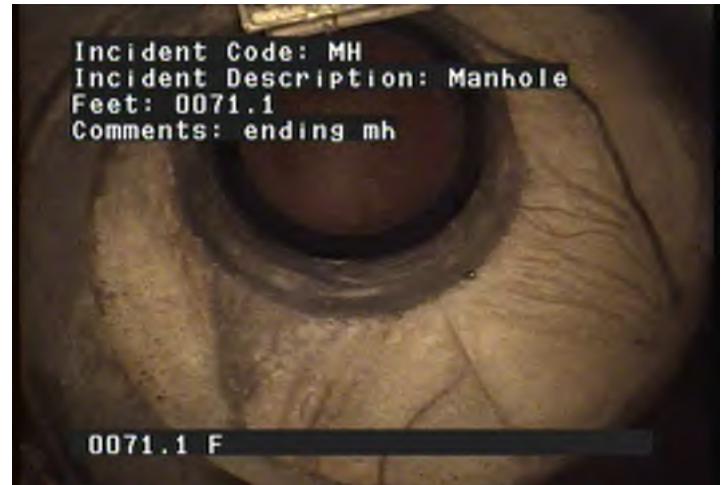


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-151	A-150		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					71.1



MH - Manhole @ 0.0 ft. starting mh

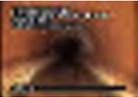
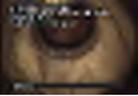


MH - Manhole @ 71.1 ft. ending mh



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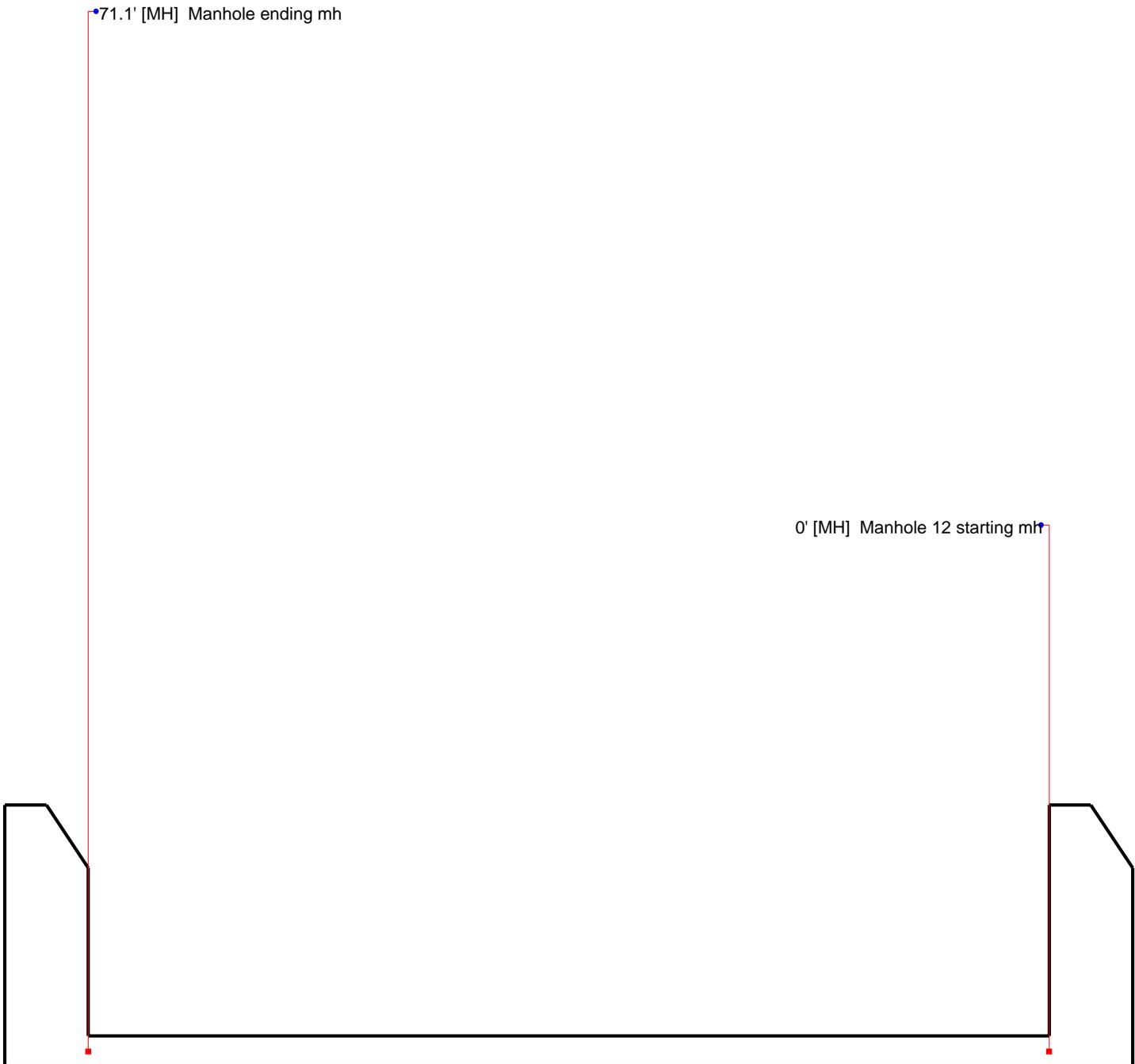
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					71.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
71.1	MH	Manhole			ending mh	



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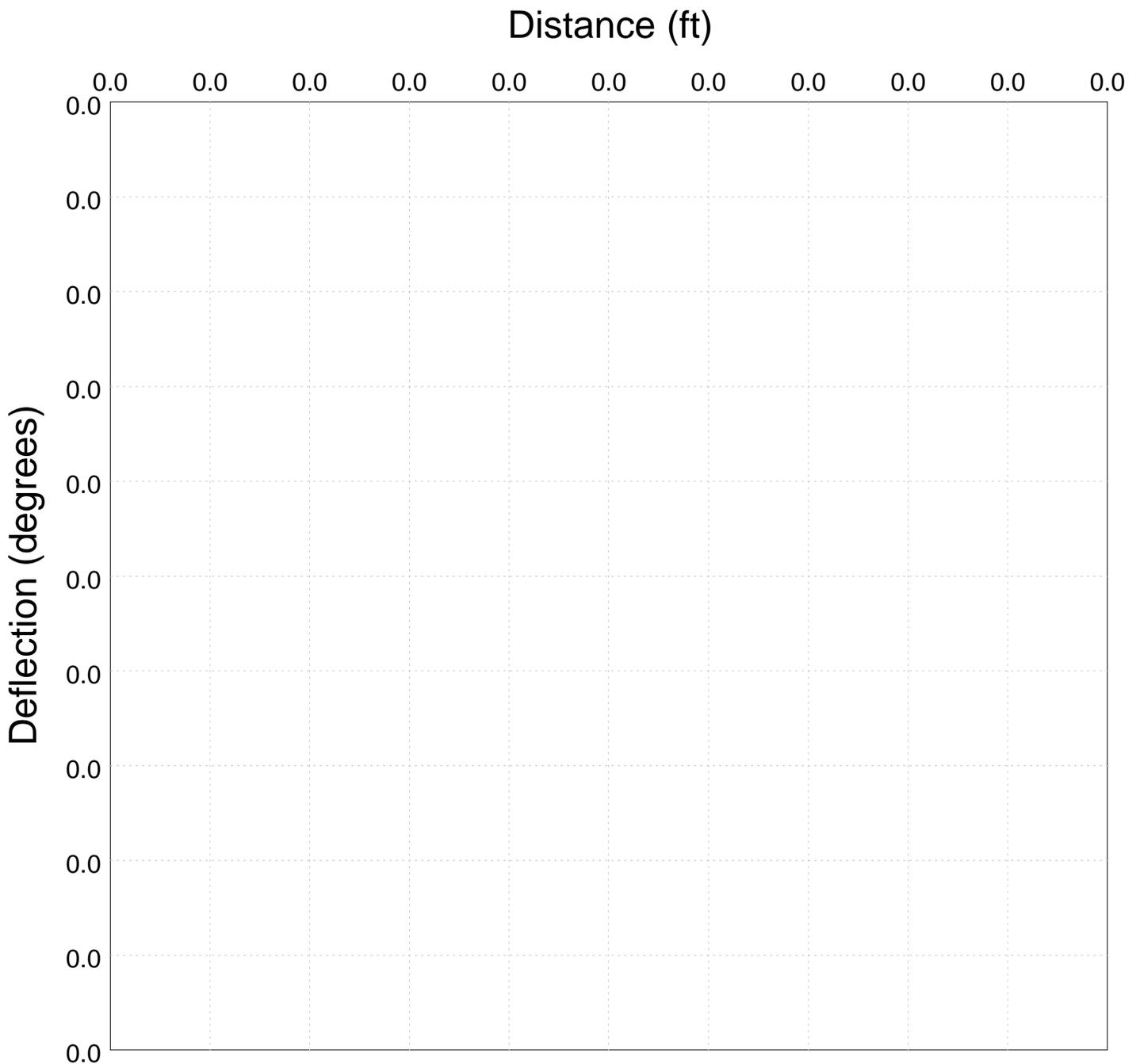
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-151	A-150		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				71.1	





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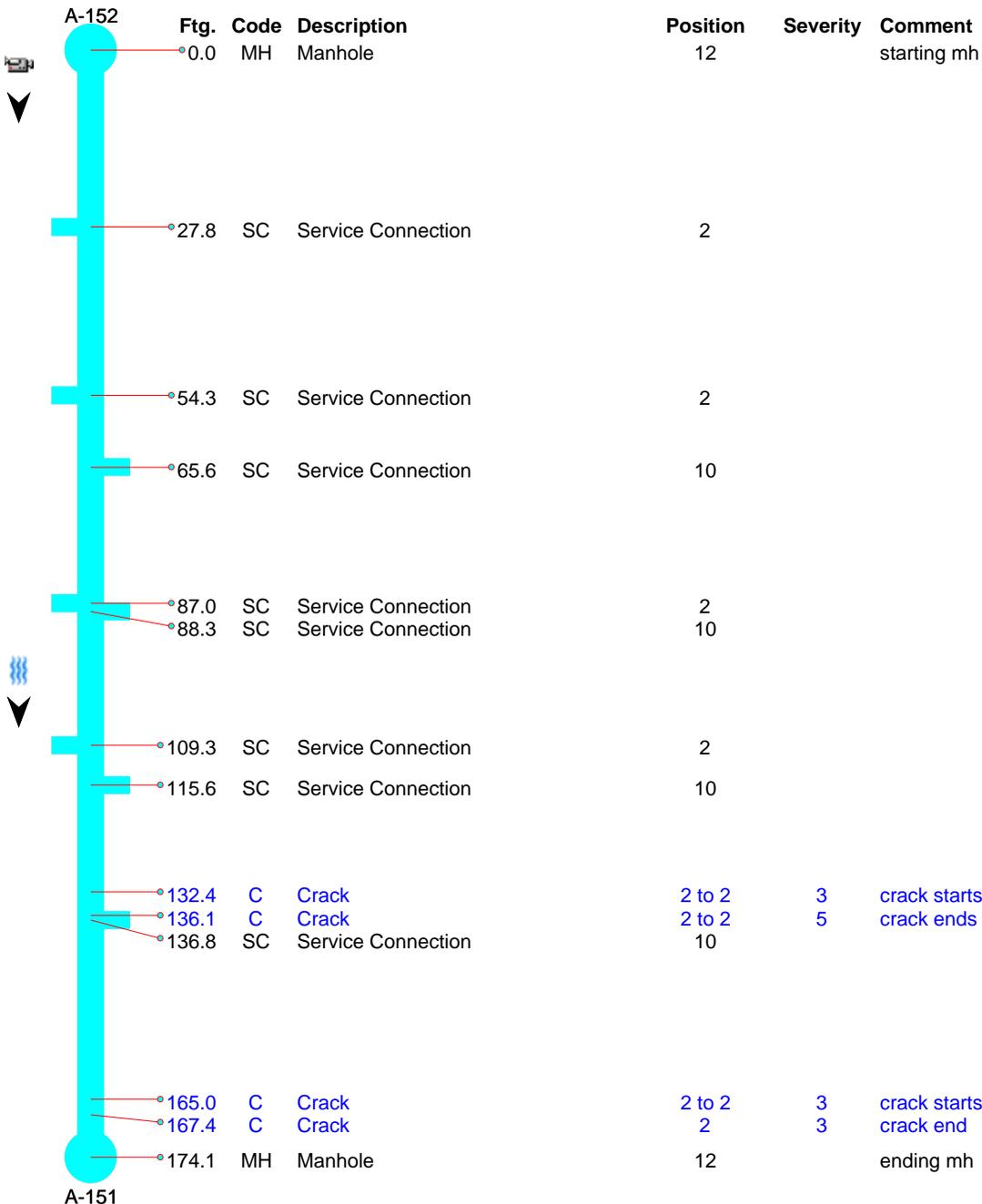
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-151	A-150		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Court		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				71.1	





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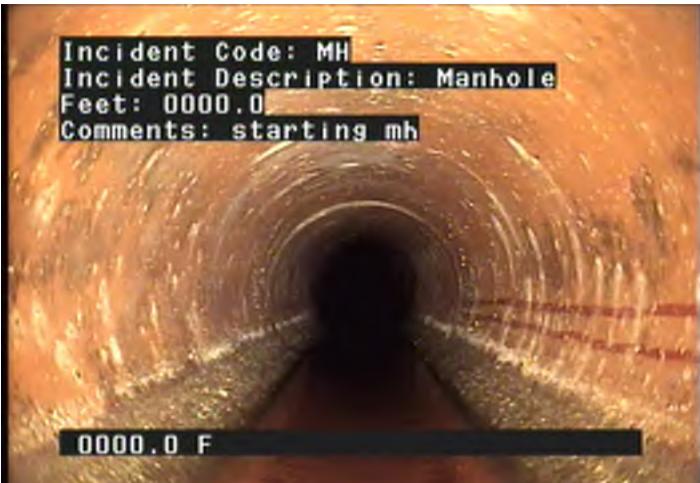
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					174.1



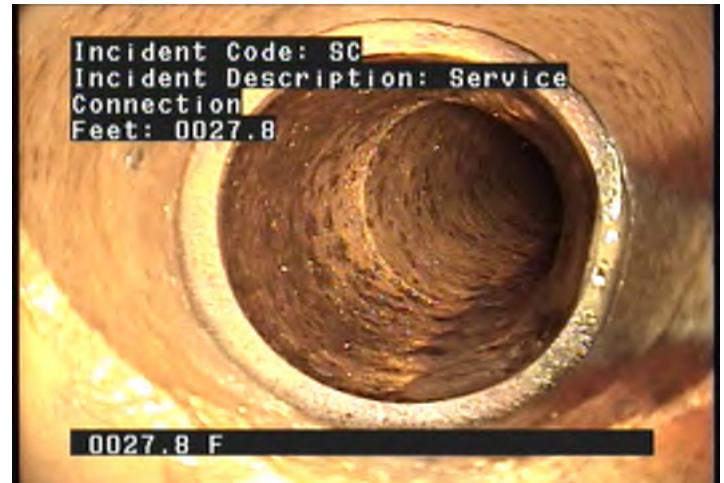


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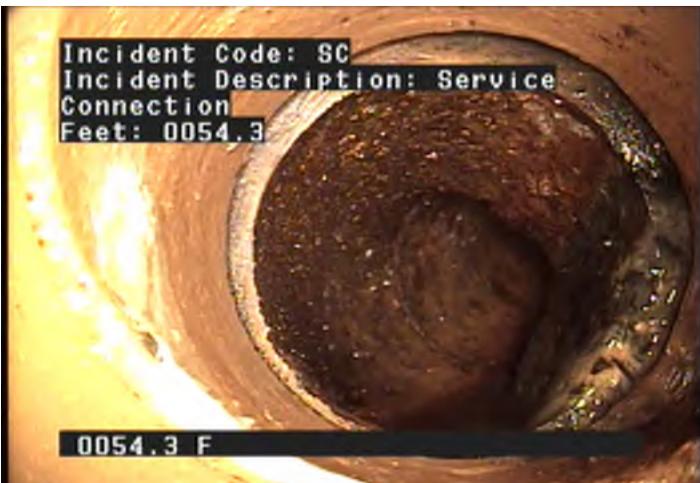
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					174.1



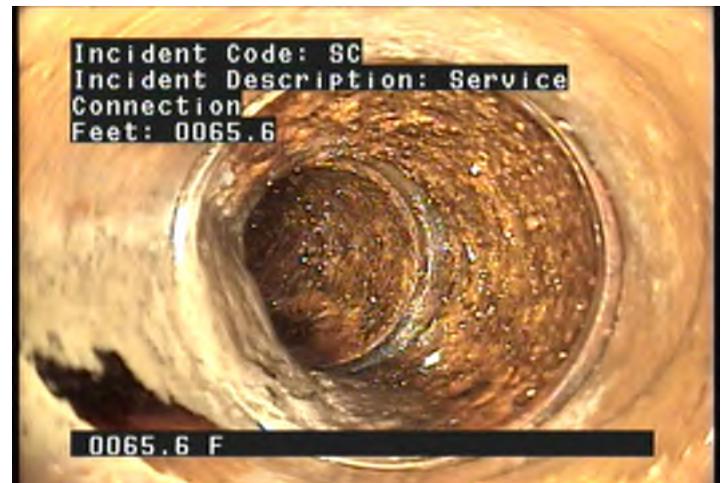
MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 27.8 ft.



SC - Service Connection @ 54.3 ft.



SC - Service Connection @ 65.6 ft.

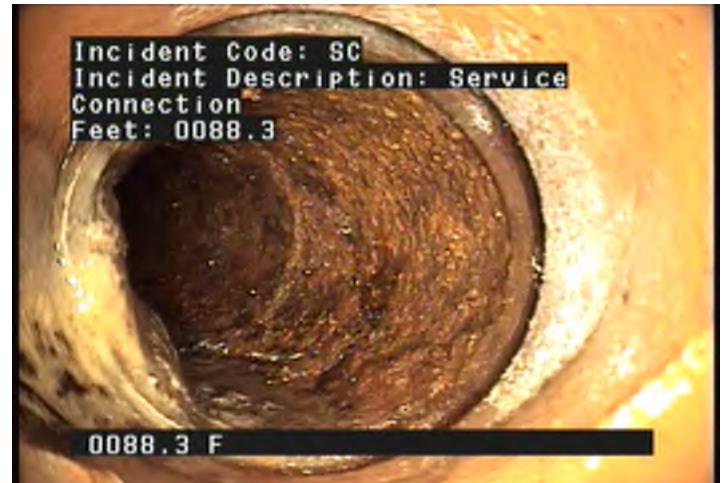


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					174.1



SC - Service Connection @ 87.0 ft.



SC - Service Connection @ 88.3 ft.



SC - Service Connection @ 109.3 ft.

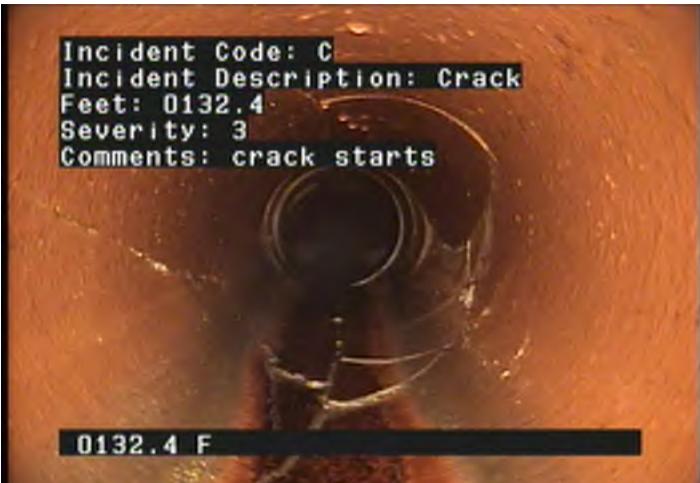


SC - Service Connection @ 115.6 ft.

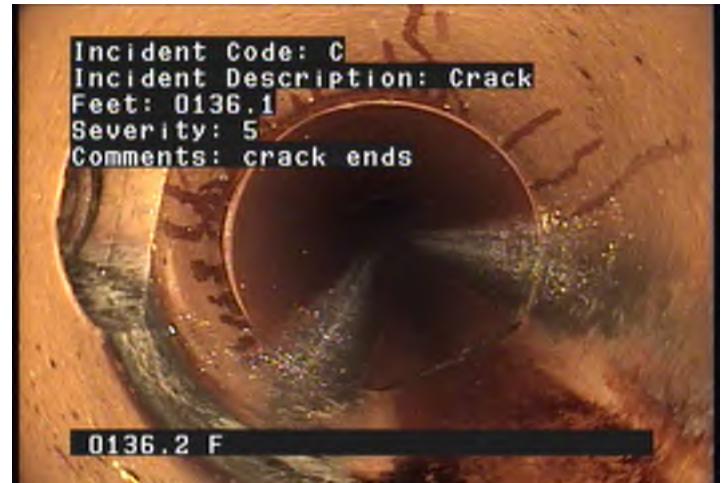


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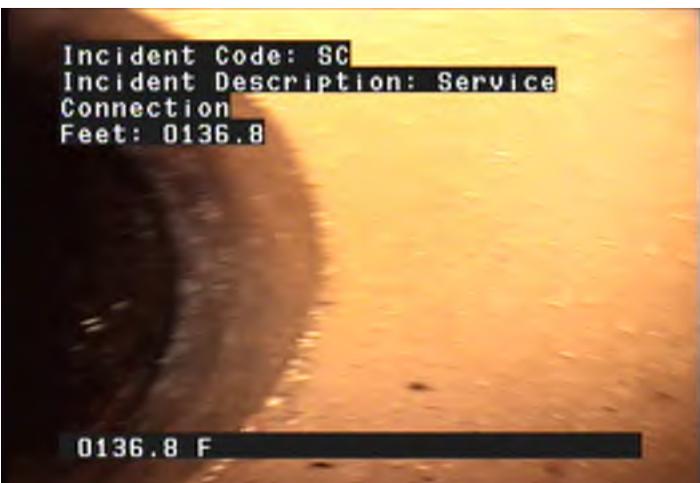
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				174.1	



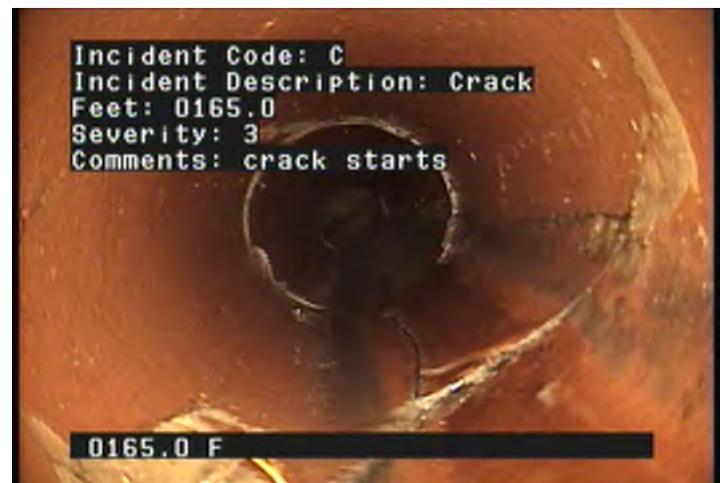
C - Crack @ 132.4 ft. crack starts



C - Crack @ 136.1 ft. crack ends



SC - Service Connection @ 136.8 ft.

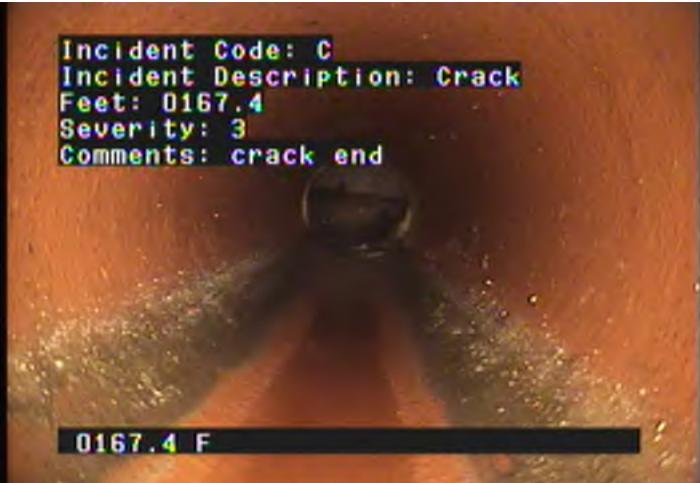


C - Crack @ 165.0 ft. crack starts



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					174.1



C - Crack @ 167.4 ft. crack end

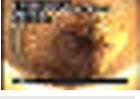
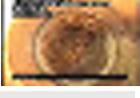
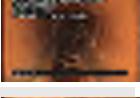


MH - Manhole @ 174.1 ft. ending mh



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Line Segment	Block Number	Upstream MH A-152	Downstream MH A-151	Section Number	Date 14-Mar-2017
Surveyor mc	Street arden view ct		City arden hills	Weather Dry	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 174.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
27.8	SC	Service Connection	2			
54.3	SC	Service Connection	2			
65.6	SC	Service Connection	10			
87.0	SC	Service Connection	2			
88.3	SC	Service Connection	10			
109.3	SC	Service Connection	2			
115.6	SC	Service Connection	10			
132.4	C	Crack	2 to 2	3	crack starts	
136.1	C	Crack	2 to 2	5	crack ends	
136.8	SC	Service Connection	10			



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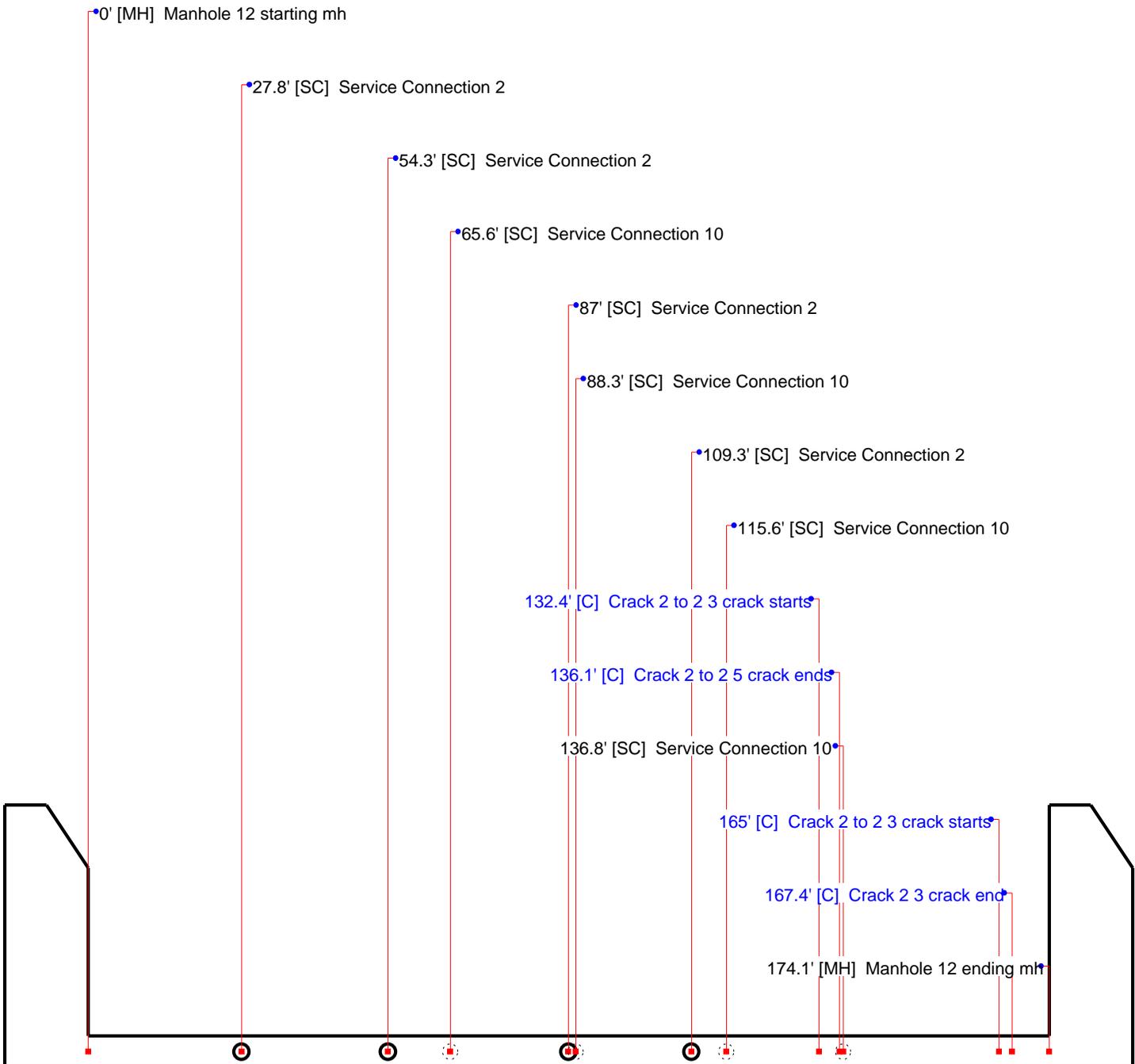
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					174.1

Ftg.	Code	Description	Position	Severity	Comment	
165.0	C	Crack	2 to 2	3	crack starts	
167.4	C	Crack	2	3	crack end	
174.1	MH	Manhole	12		ending mh	



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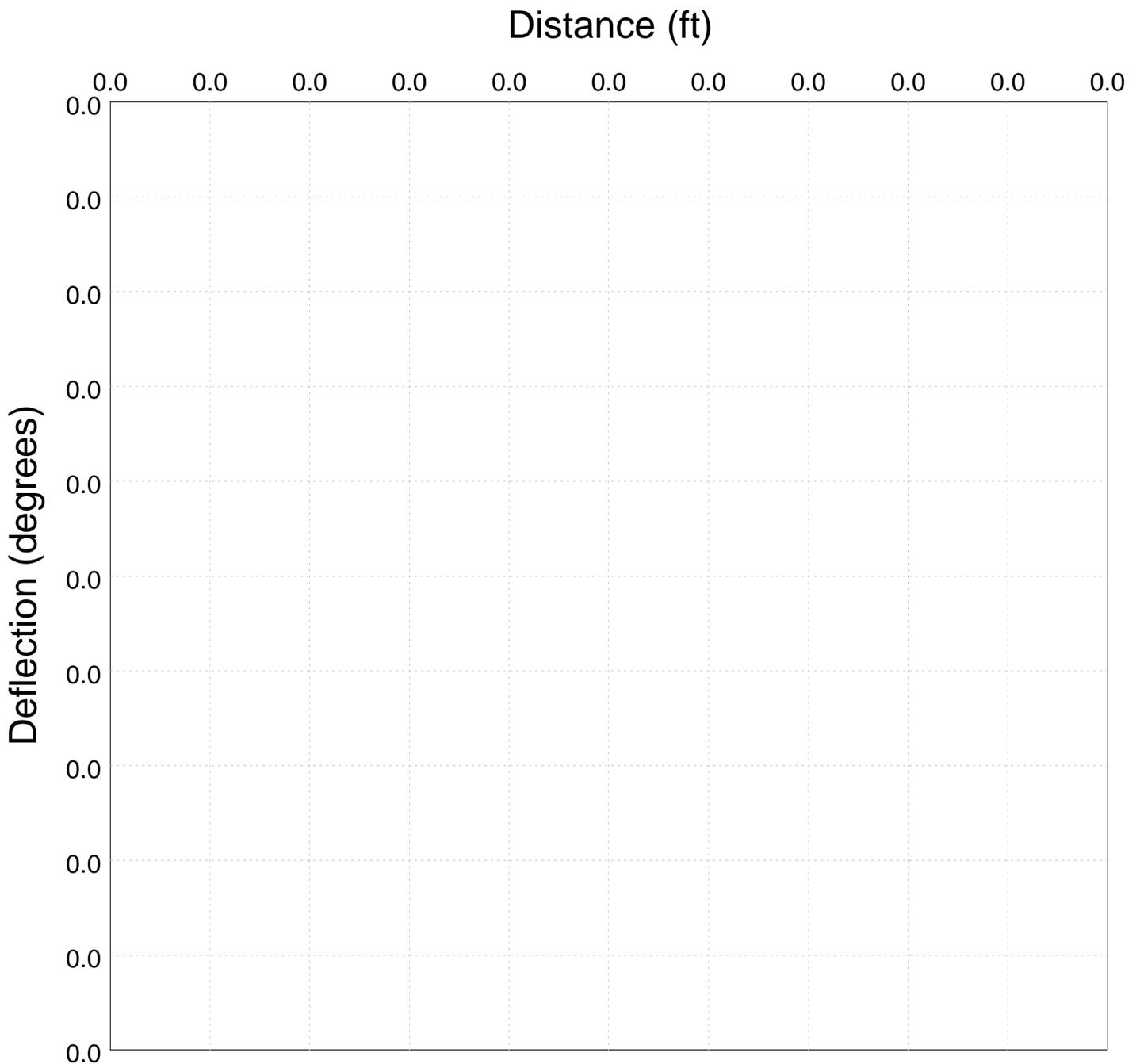
Line Segment	Block Number	Upstream MH A-152	Downstream MH A-151	Section Number	Date 14-Mar-2017
Surveyor mc	Street arden view ct		City arden hills	Weather Dry	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 174.1





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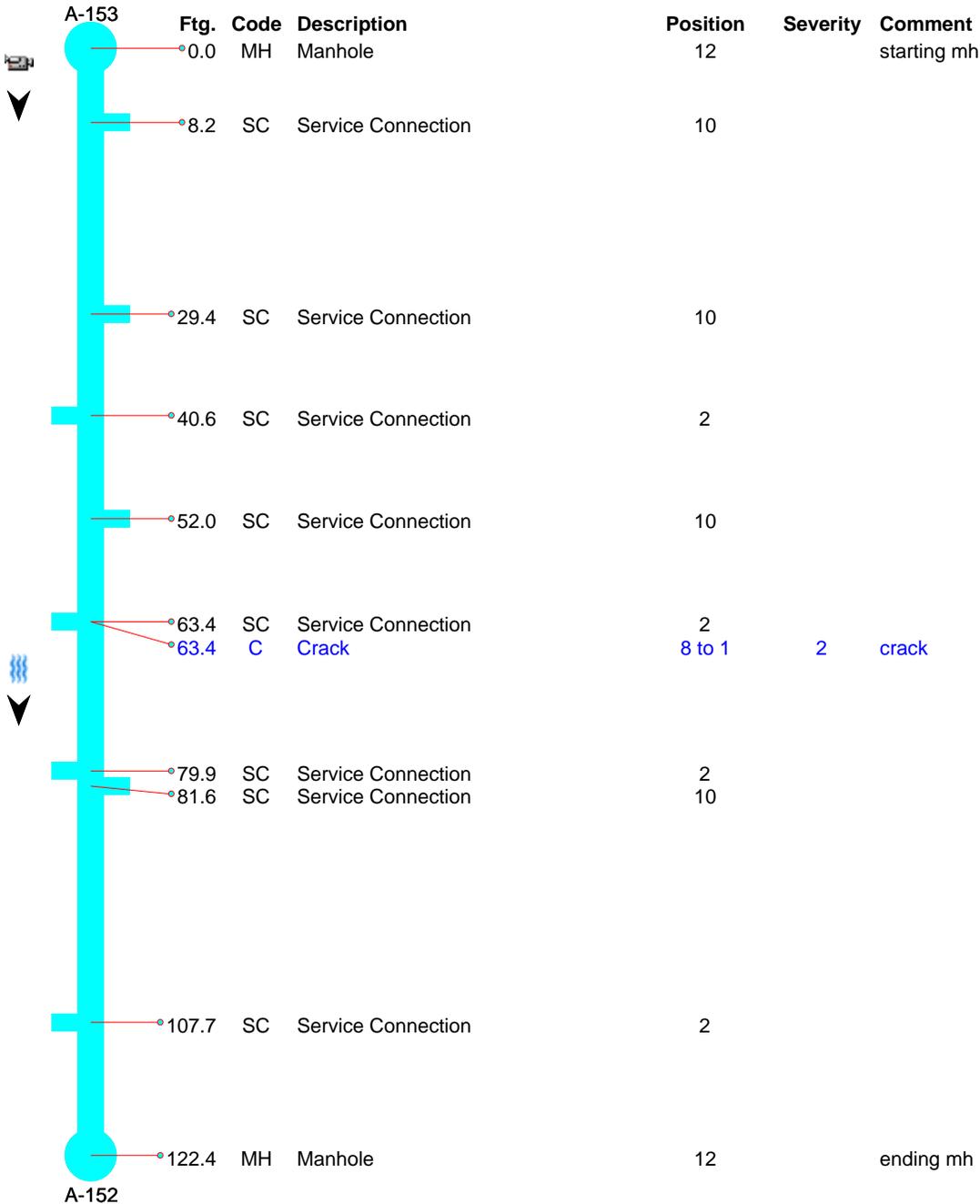
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-152	A-151		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				174.1	





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-153	A-152		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					122.4



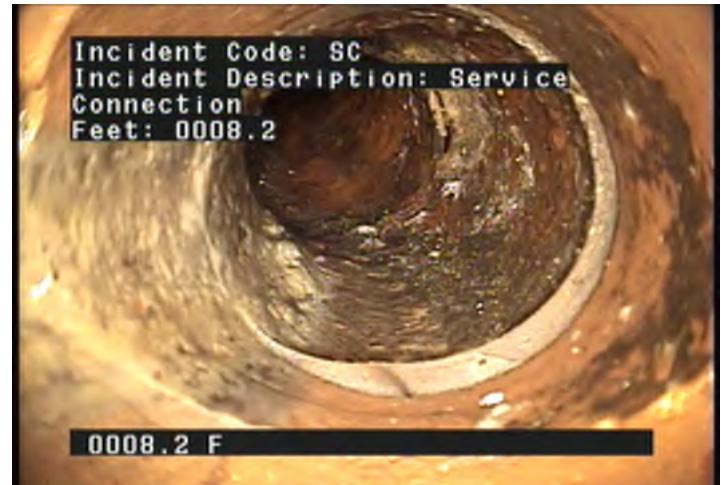


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-153	A-152		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					122.4



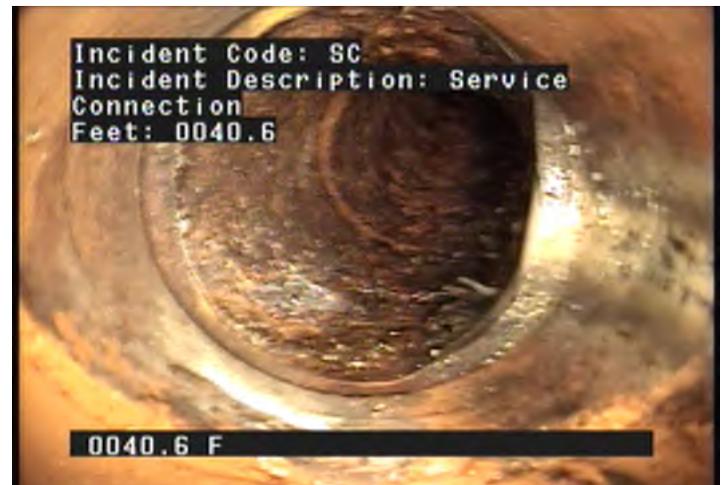
MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 8.2 ft.



SC - Service Connection @ 29.4 ft.



SC - Service Connection @ 40.6 ft.



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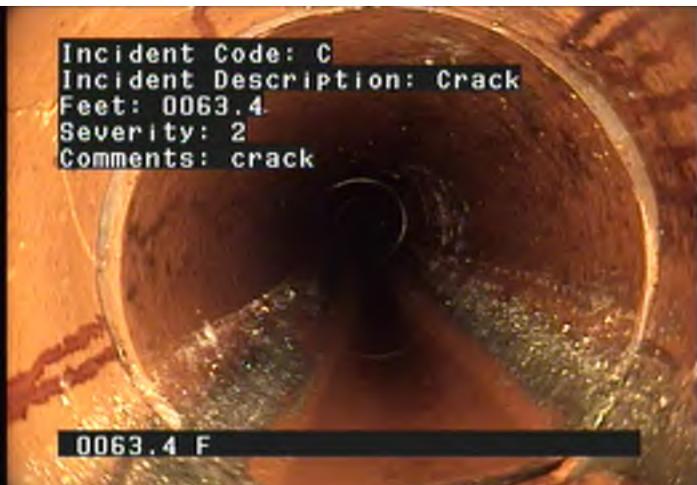
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-153	A-152		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					122.4



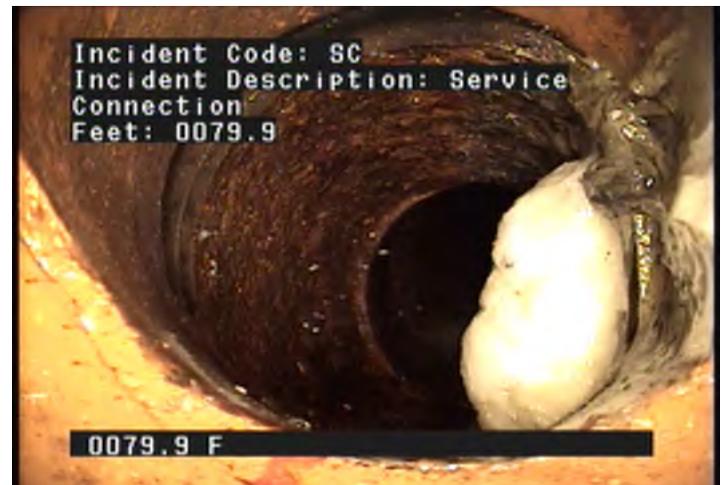
SC - Service Connection @ 52.0 ft.



SC - Service Connection @ 63.4 ft.



C - Crack @ 63.4 ft. crack

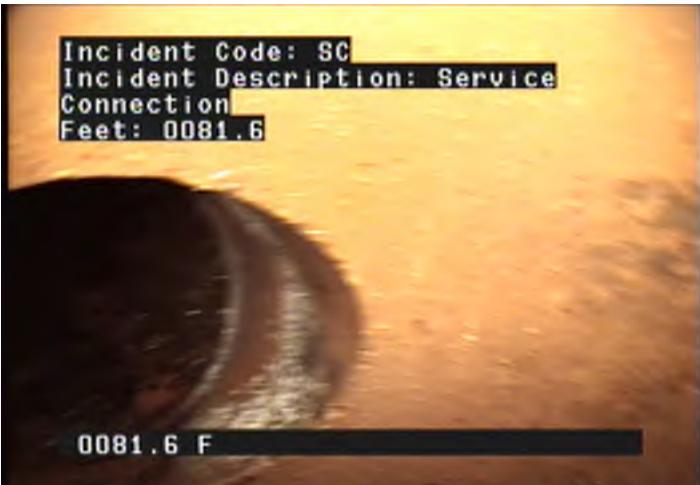


SC - Service Connection @ 79.9 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-153	A-152		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				122.4	



SC - Service Connection @ 81.6 ft.



SC - Service Connection @ 107.7 ft.



MH - Manhole @ 122.4 ft. ending mh



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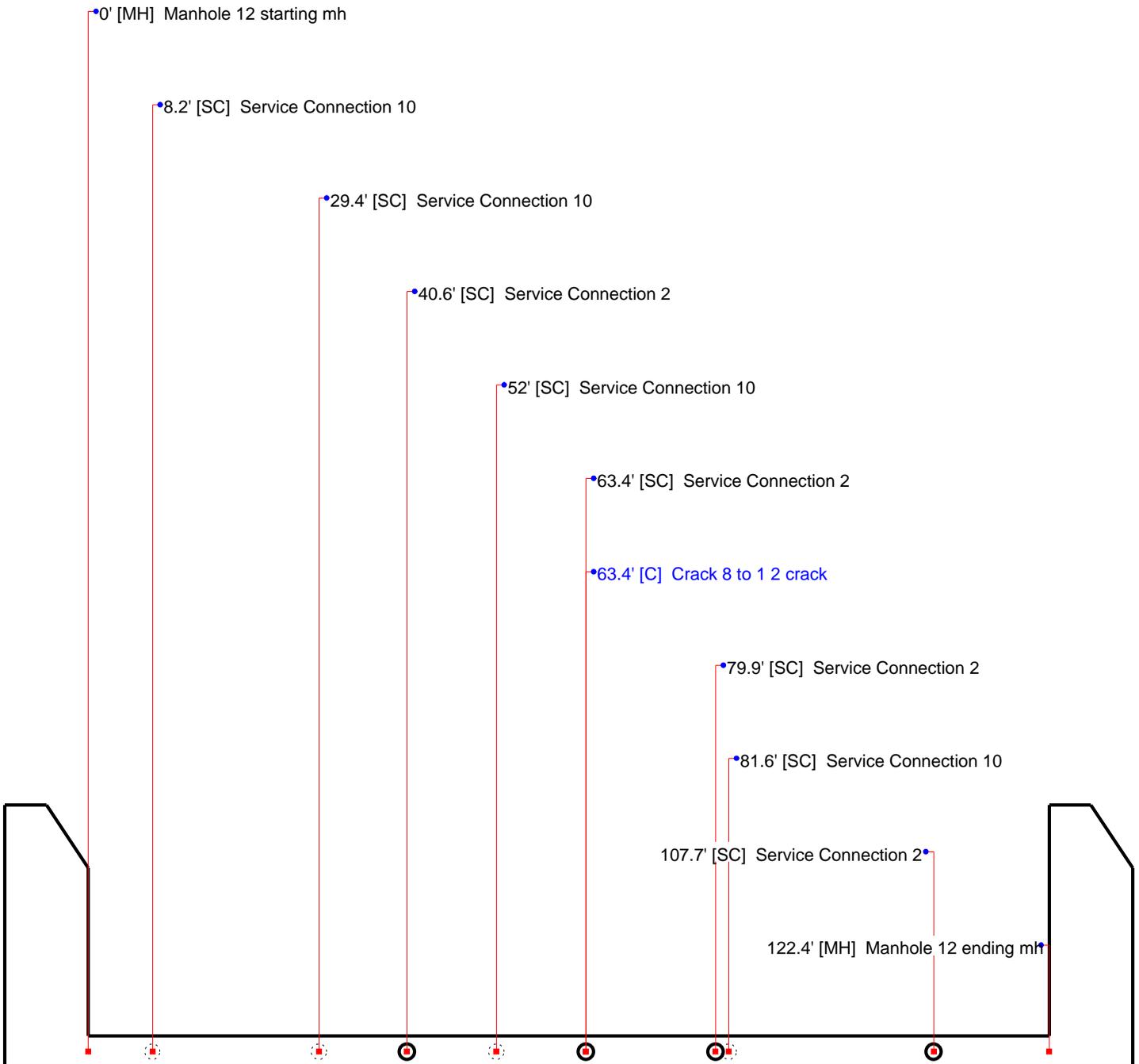
Line Segment	Block Number	Upstream MH A-153	Downstream MH A-152	Section Number	Date 14-Mar-2017
Surveyor mc	Street arden view ct		City arden hills	Weather Dry	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 122.4

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
8.2	SC	Service Connection	10			
29.4	SC	Service Connection	10			
40.6	SC	Service Connection	2			
52.0	SC	Service Connection	10			
63.4	SC	Service Connection	2			
63.4	C	Crack	8 to 1	2	crack	
79.9	SC	Service Connection	2			
81.6	SC	Service Connection	10			
107.7	SC	Service Connection	2			
122.4	MH	Manhole	12		ending mh	



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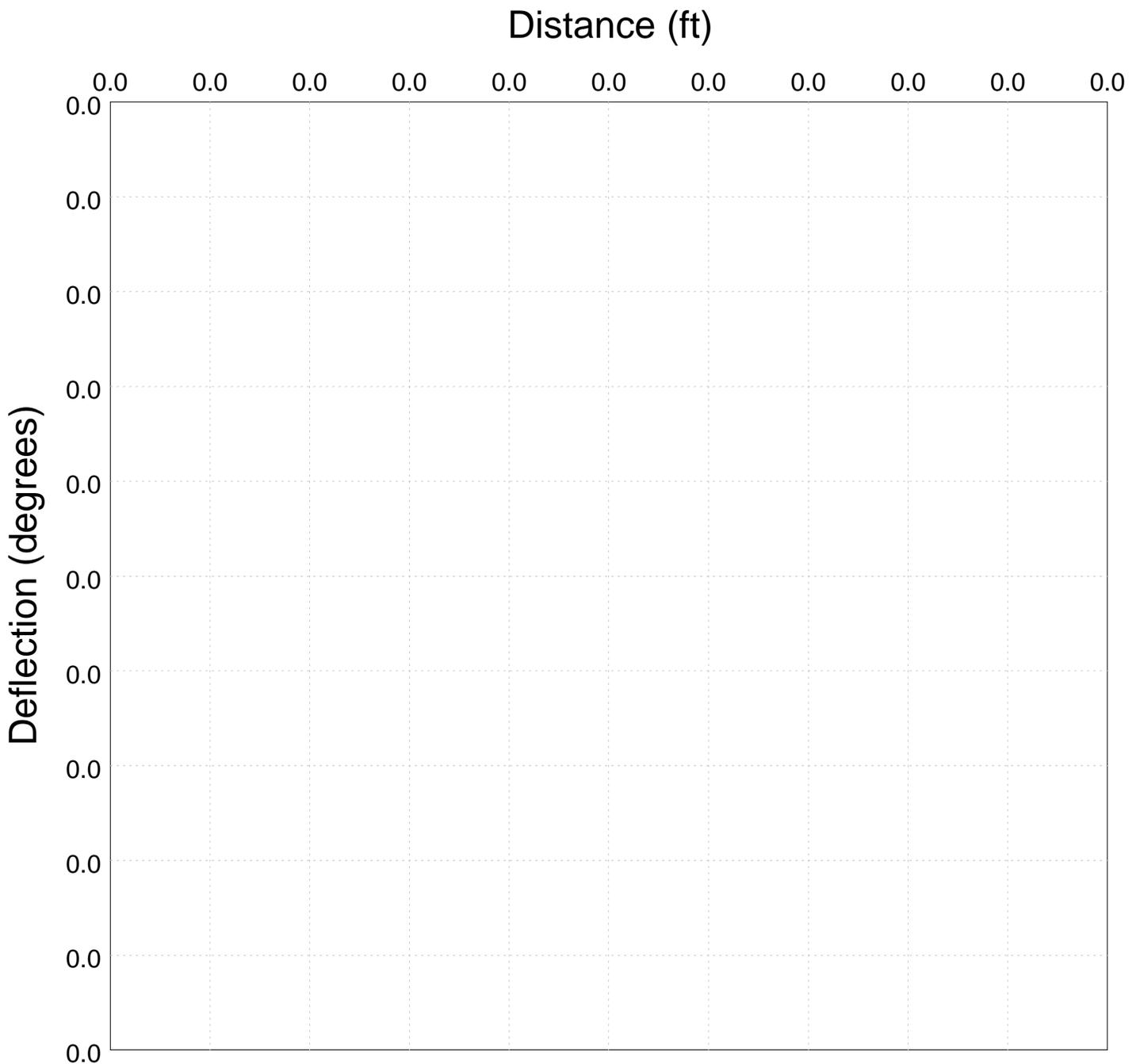
Line Segment	Block Number	Upstream MH A-153	Downstream MH A-152	Section Number	Date 14-Mar-2017
Surveyor mc	Street arden view ct		City arden hills	Weather Dry	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 122.4





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-153	A-152		14-Mar-2017
Surveyor	Street		City	Weather	
mc	arden view ct		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					122.4





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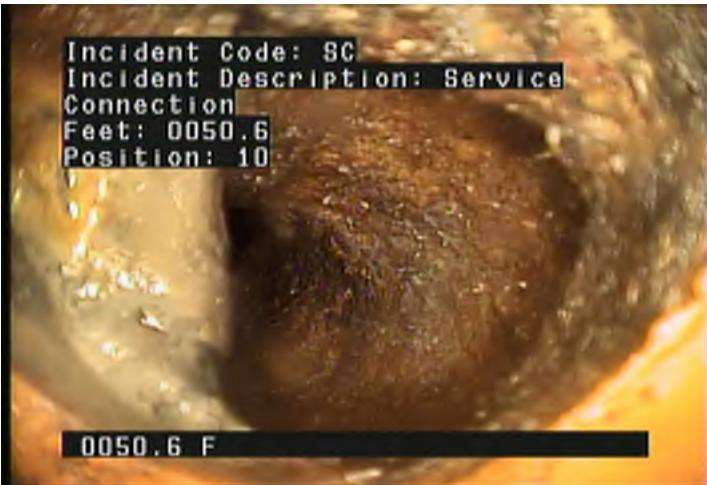
Line Segment	Block Number	Upstream MH A-157	Downstream MH A-156	Section Number	Date 03-Oct-2017
Surveyor MA	Street Arden View Ct		City Arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning Heavy Cleaning	TV Length 152.5

Ftg. Code	Description	Position	Severity	Comment
147.1	SC Service Connection	10		
152.5	SA Survey Abandoned			
140.6	R Roots	1 to 5	5	major roots from service unable to pass roots
140.3	C Crack	1 to 3	4	roots coming from crack
130.9	SC Service Connection	10		
109.5	SC Service Connection	10		
88.2	SC Service Connection	10		
71.9	SC Service Connection	10		
50.6	SC Service Connection	10		

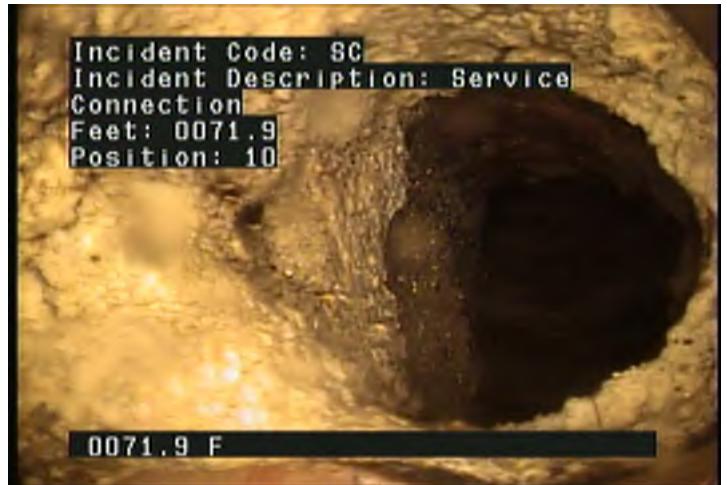


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-157	A-156		03-Oct-2017
Surveyor	Street	City	Weather		
MA	Arden View Ct	Arden Hills			
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning	TV Length			
	Heavy Cleaning	152.5			



SC - Service Connection @ 50.6 ft.



SC - Service Connection @ 71.9 ft.



SC - Service Connection @ 88.2 ft.

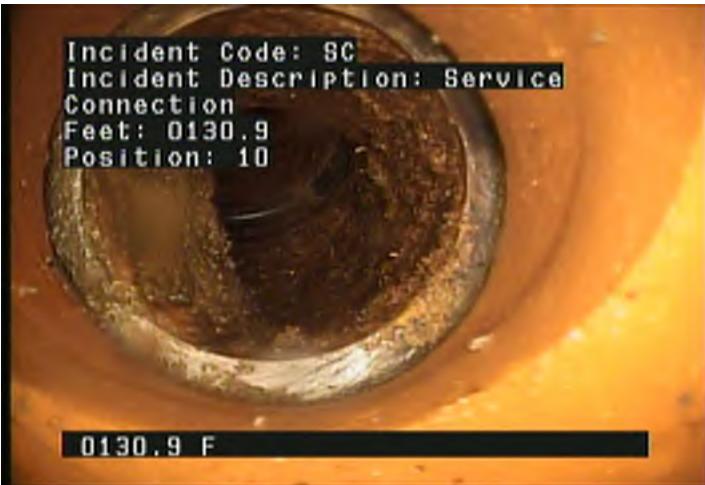


SC - Service Connection @ 109.5 ft.

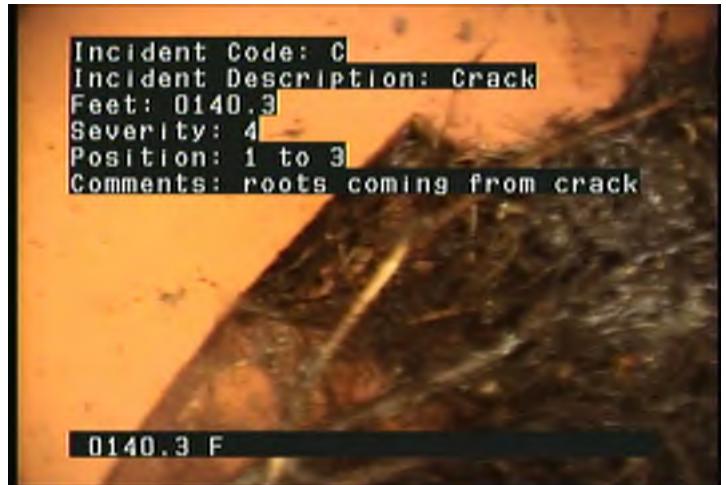


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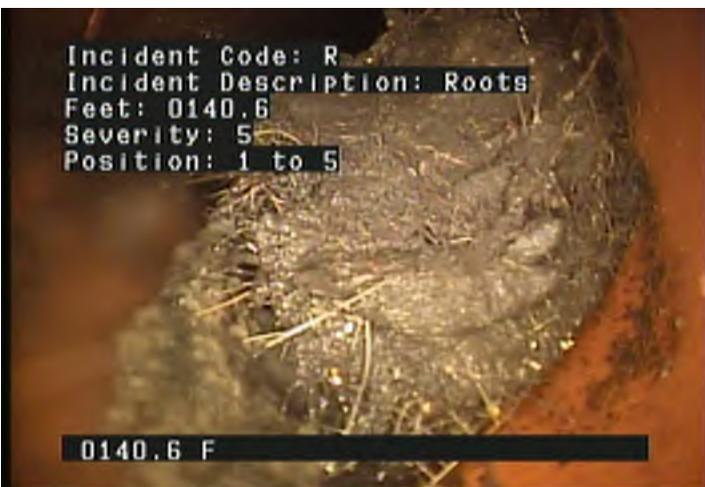
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-157	A-156		03-Oct-2017
Surveyor	Street	City	Weather		
MA	Arden View Ct	Arden Hills			
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning	TV Length			
	Heavy Cleaning	152.5			



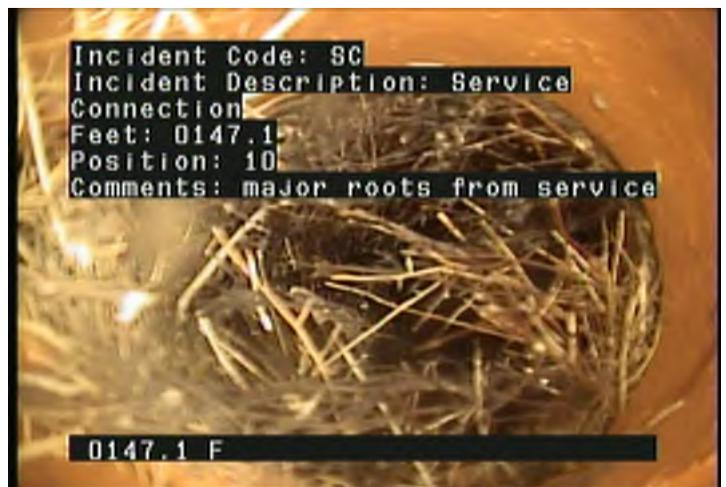
SC - Service Connection @ 130.9 ft.



C - Crack @ 140.3 ft. roots coming from crack



R - Roots @ 140.6 ft.

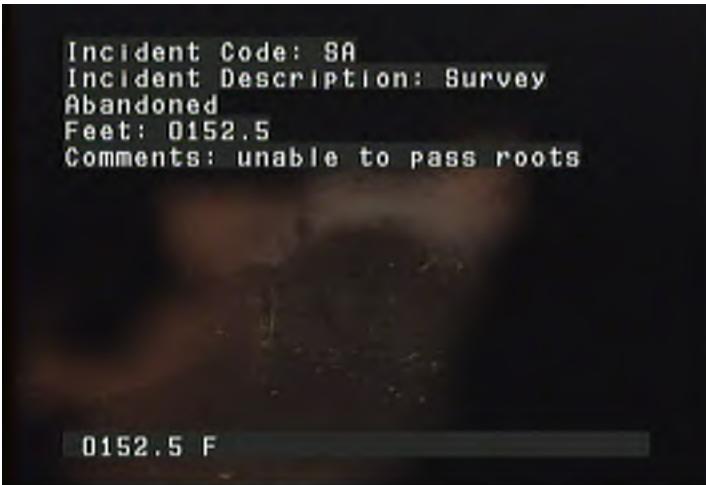


SC - Service Connection @ 147.1 ft. major roots from service



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-157	A-156		03-Oct-2017
Surveyor	Street	City	Weather		
MA	Arden View Ct	Arden Hills			
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning	TV Length			
	Heavy Cleaning	152.5			



SA - Survey Abandoned @ 152.5 ft.
unable to pass roots



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-157	A-156		03-Oct-2017

Surveyor	Street	City	Weather
MA	Arden View Ct	Arden Hills	

Size	Material	Sewer Use	Purpose	Length
8	Vitrified Clay Pipe	Sanitary	Routine Assessment	

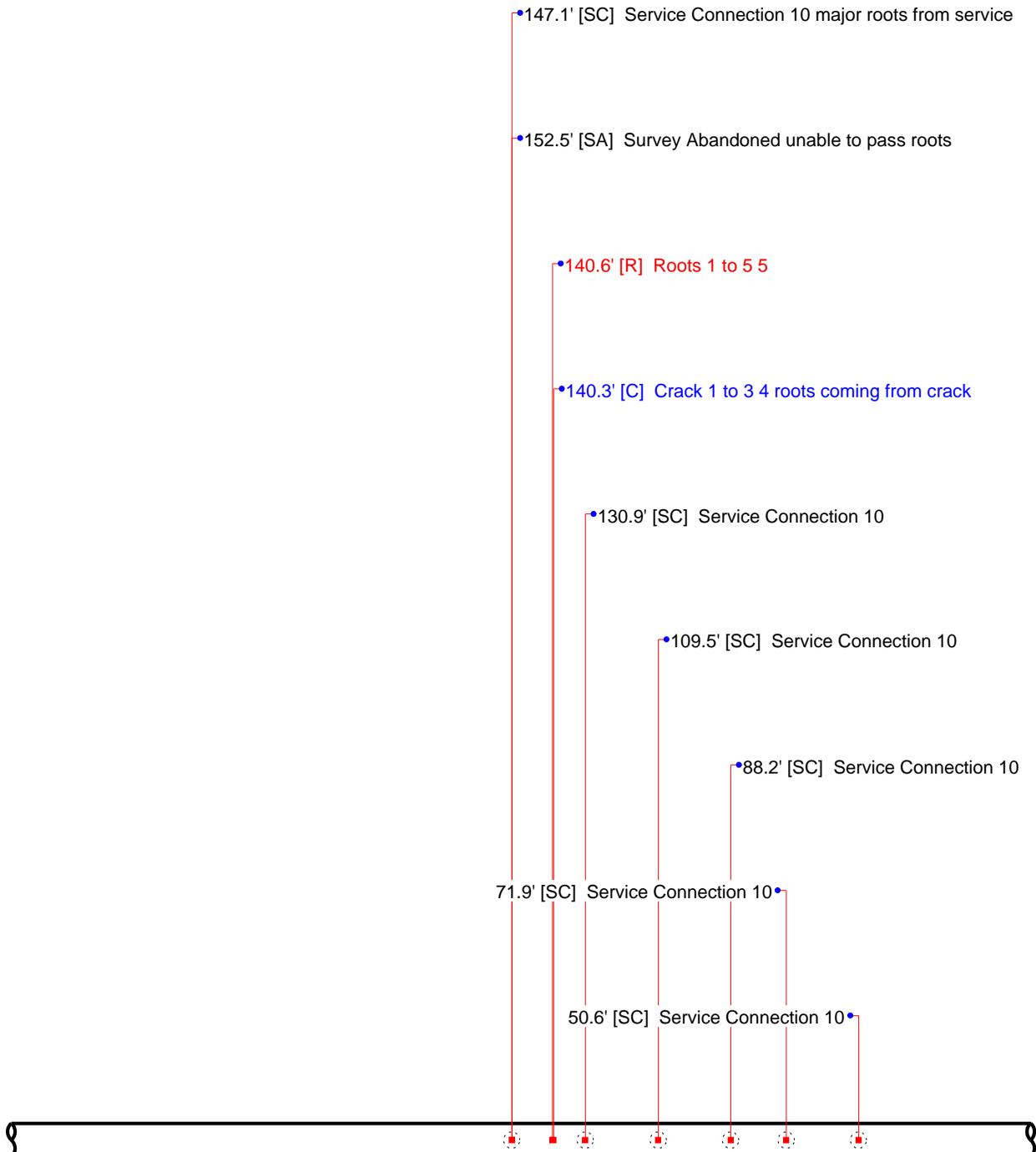
Comments	Pre-Cleaning	TV Length
	Heavy Cleaning	152.5

Ftg.	Code	Description	Position	Severity	Comment
50.6	SC	Service Connection	10		
71.9	SC	Service Connection	10		
88.2	SC	Service Connection	10		
109.5	SC	Service Connection	10		
130.9	SC	Service Connection	10		
140.3	C	Crack	1 to 3	4	roots coming from crack
140.6	R	Roots	1 to 5	5	
147.1	SC	Service Connection	10		major roots from service
152.5	SA	Survey Abandoned			unable to pass roots



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Line Segment	Block Number	Upstream MH A-157	Downstream MH A-156	Section Number	Date 03-Oct-2017
Surveyor MA	Street Arden View Ct	City Arden Hills	Weather		
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments	Pre-Cleaning Heavy Cleaning	TV Length 152.5			

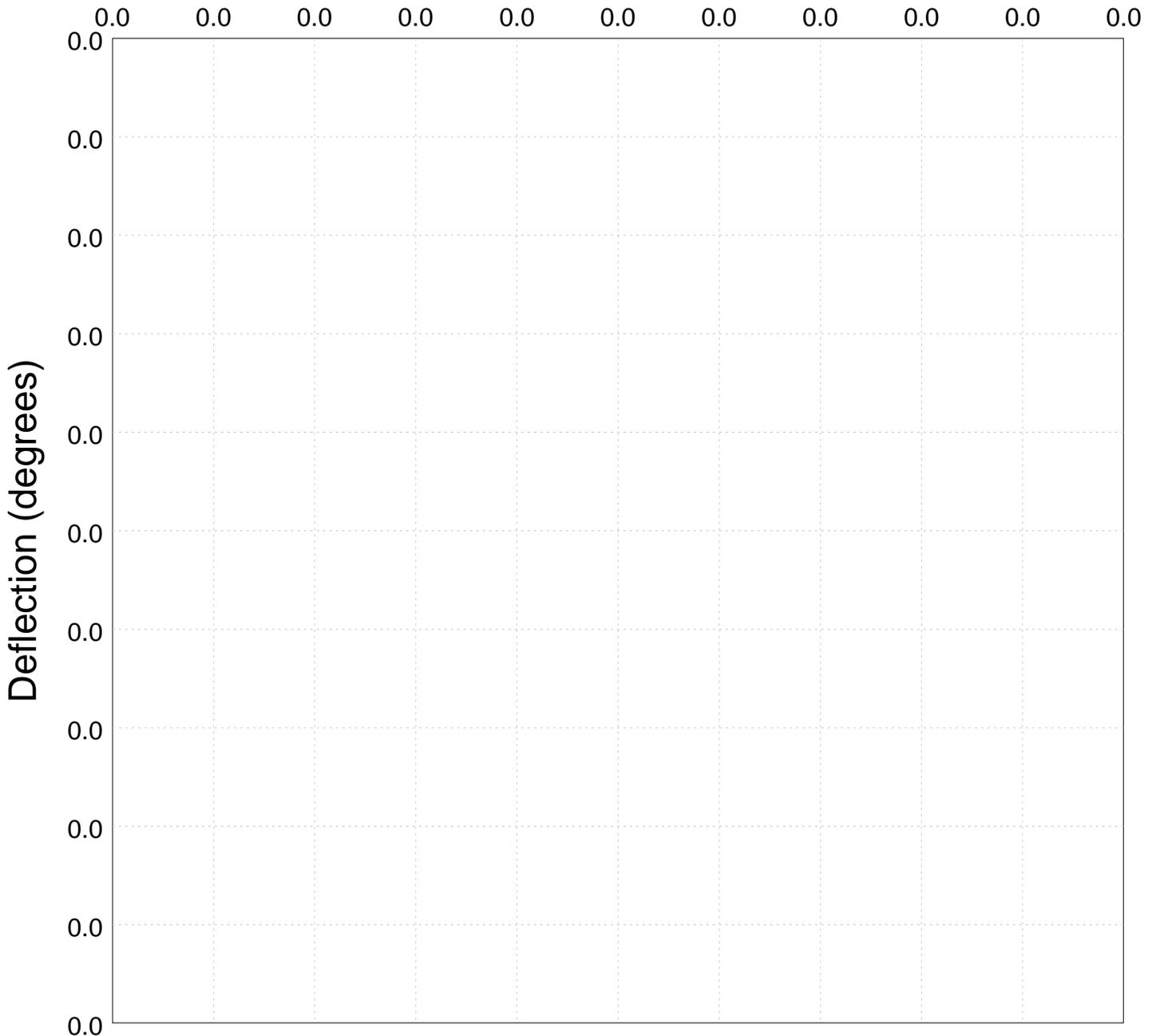




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Line Segment	Block Number	Upstream MH A-157	Downstream MH A-156	Section Number	Date 03-Oct-2017
Surveyor MA	Street Arden View Ct	City Arden Hills	Weather		
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments	Pre-Cleaning Heavy Cleaning	TV Length 152.5			

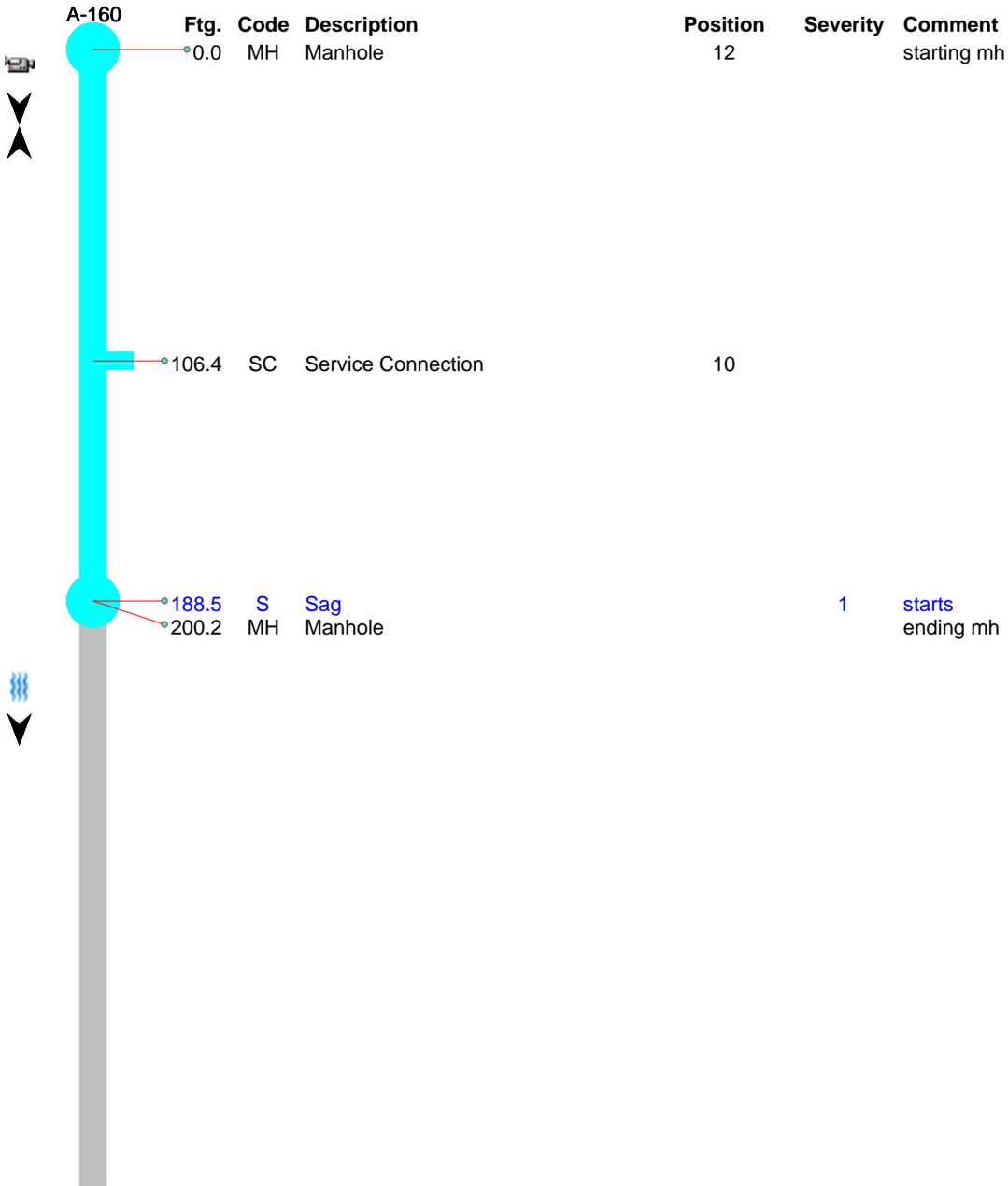
Distance (ft)





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-160	A-159		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					200.2

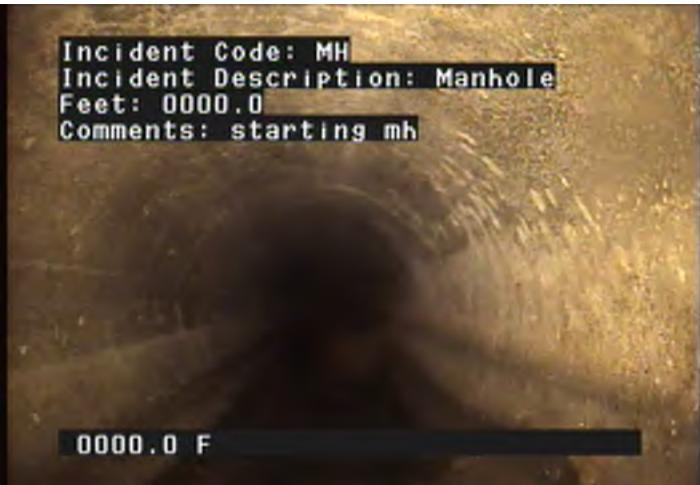


A-159

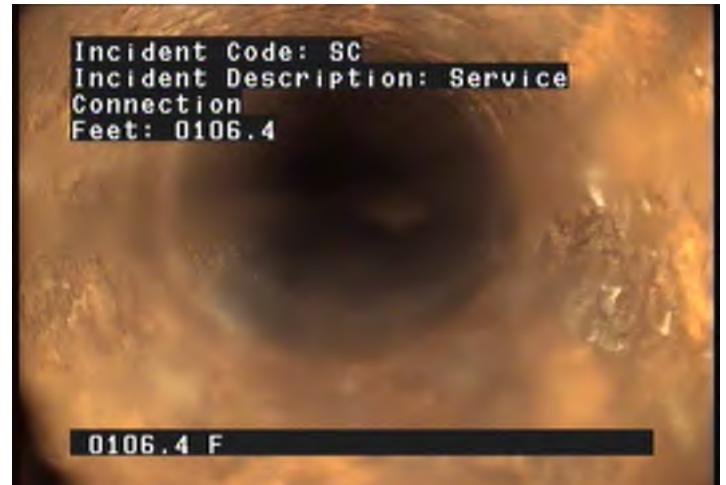


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-160	A-159		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					200.2



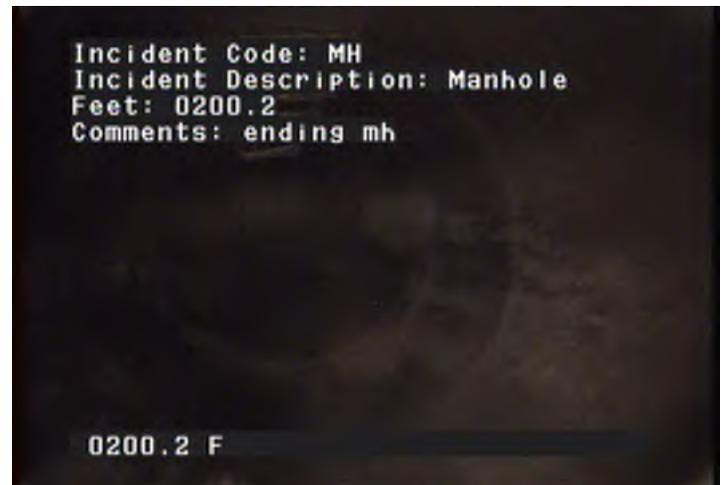
MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 106.4 ft.



S - Sag @ 188.5 ft. starts



MH - Manhole @ 200.2 ft. ending mh



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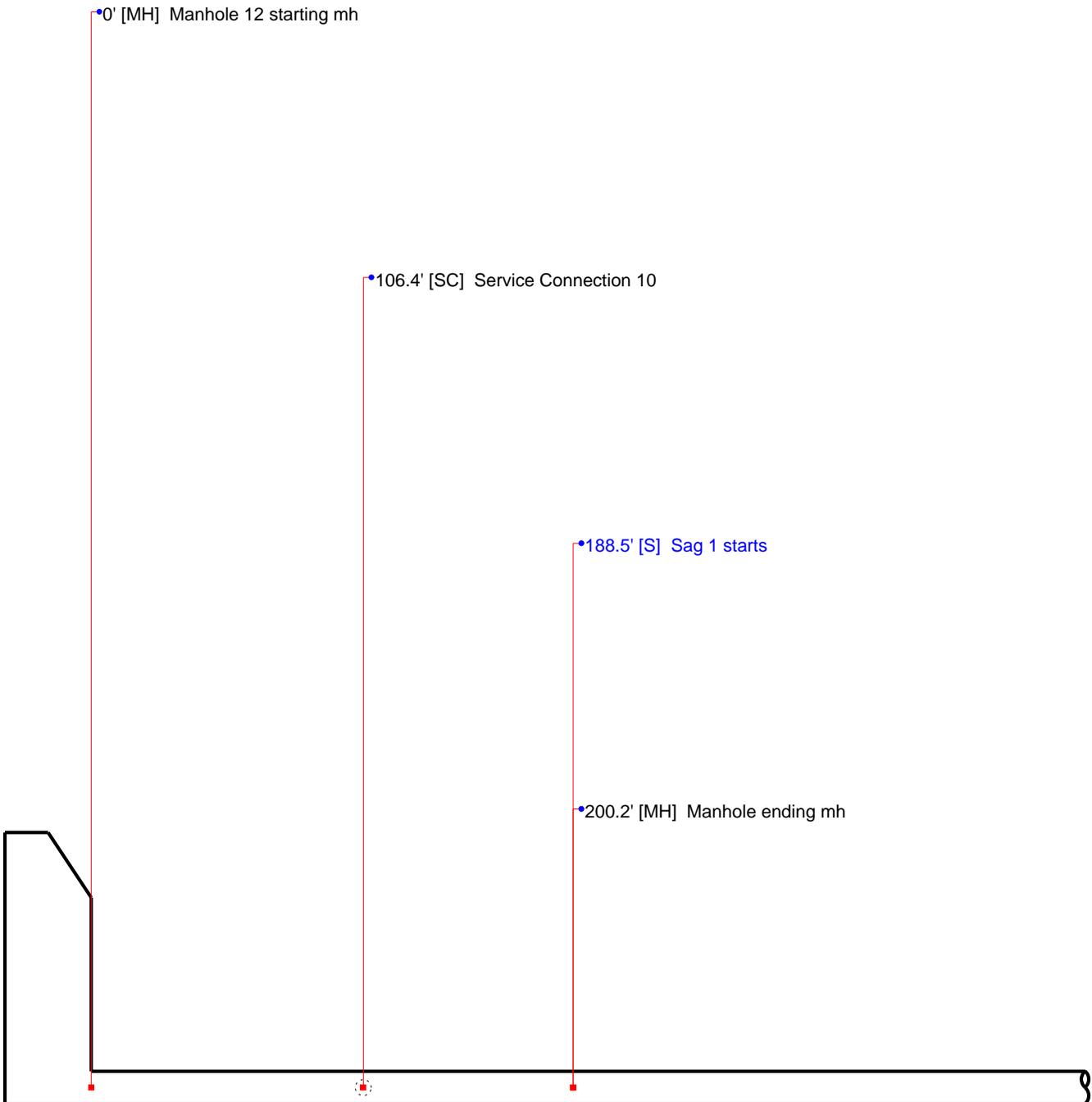
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-160	A-159		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					200.2

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
106.4	SC	Service Connection	10			
188.5	S	Sag		1	starts	
200.2	MH	Manhole			ending mh	



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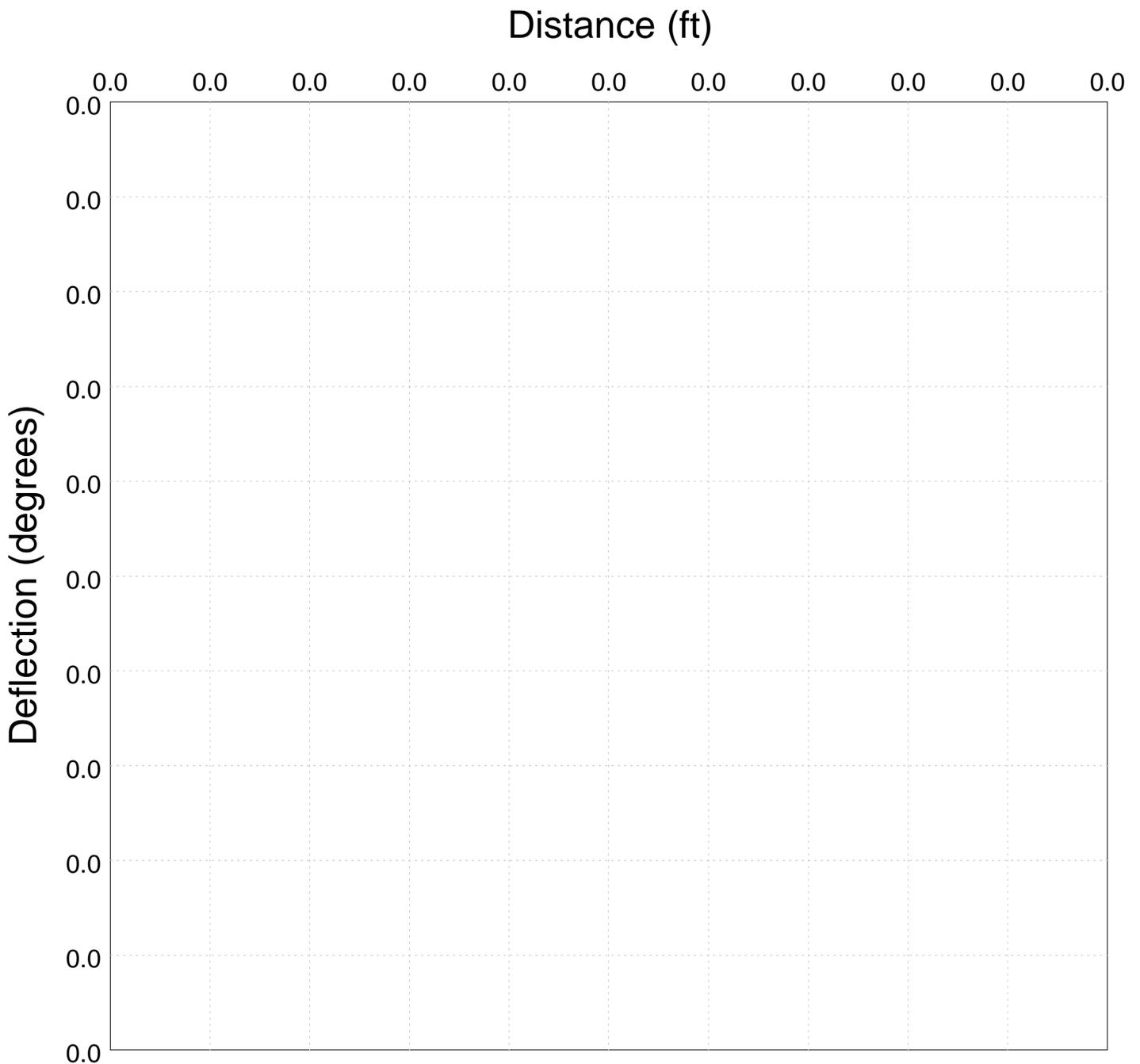
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-160	A-159		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					200.2





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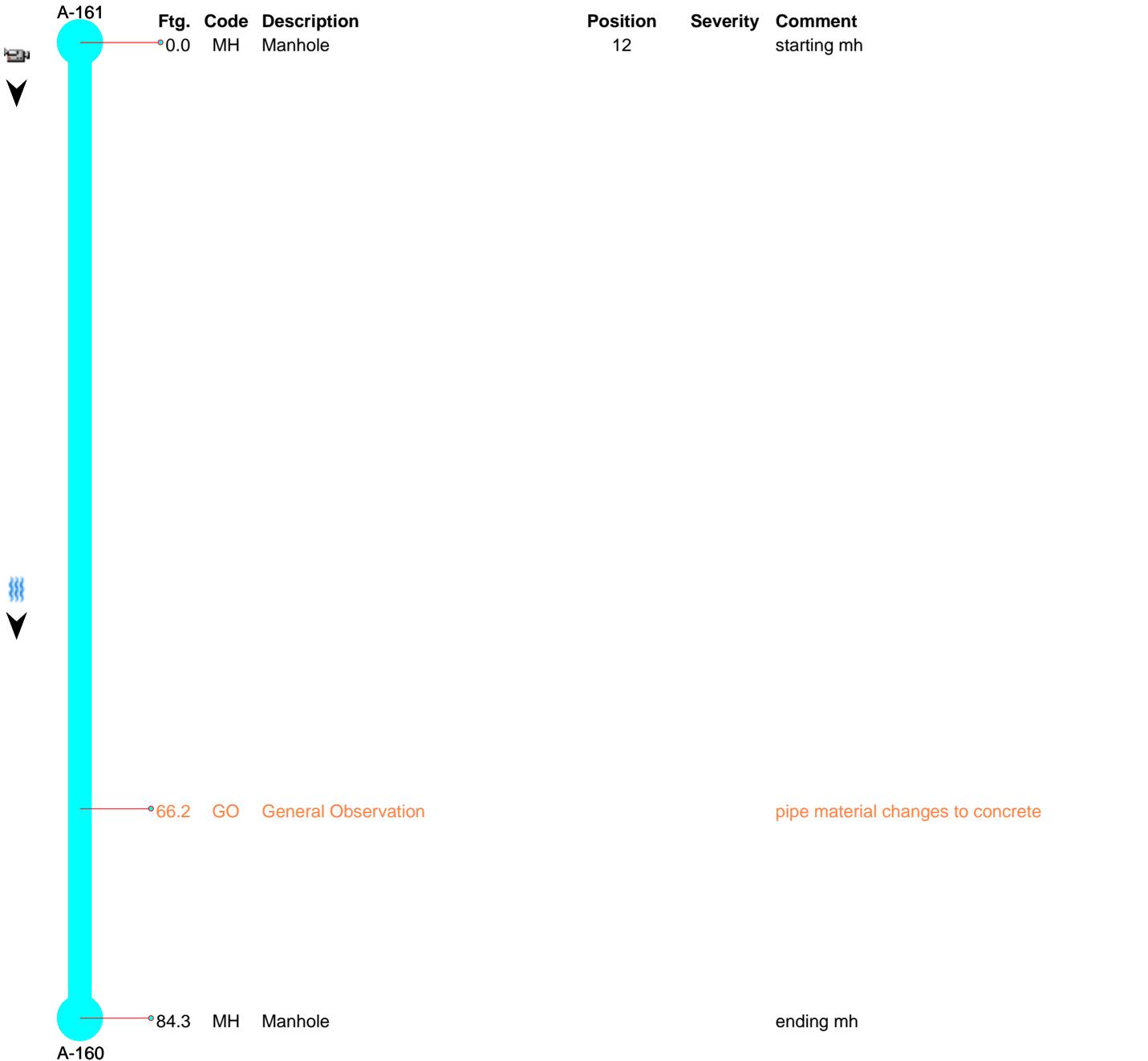
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-160	A-159		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					200.2





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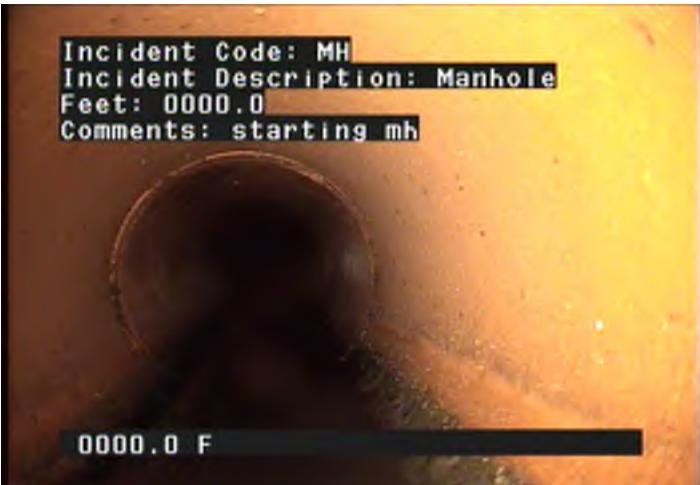
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-161	A-160		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					84.3



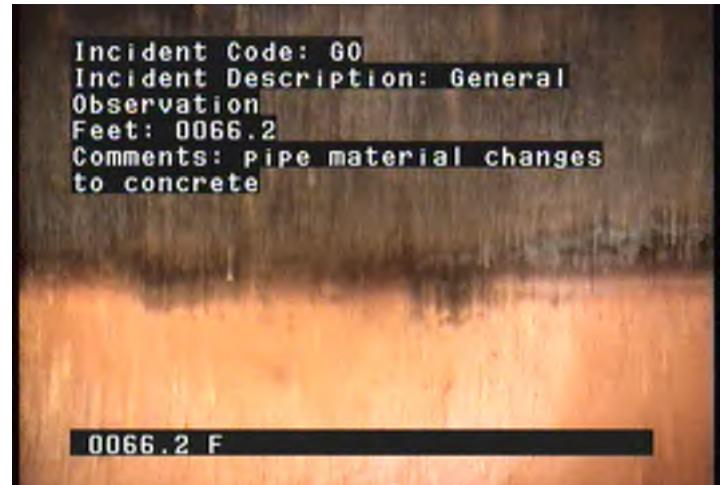


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-161	A-160		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					84.3



MH - Manhole @ 0.0 ft. starting mh



GO - General Observation @ 66.2 ft. pipe material changes to concrete



MH - Manhole @ 84.3 ft. ending mh



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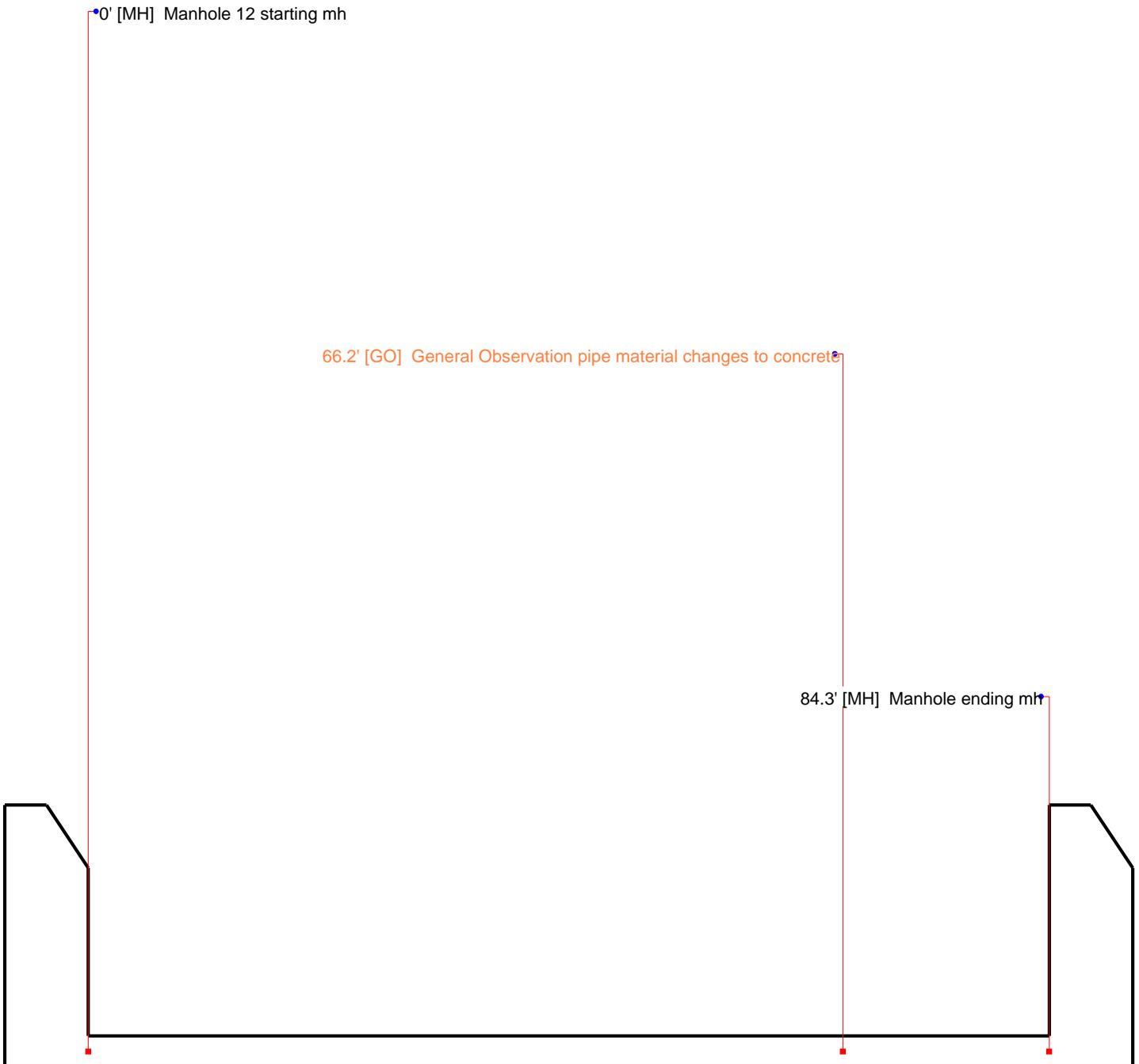
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-161	A-160		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					84.3

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
66.2	GO	General Observation			pipe material changes to concrete	
84.3	MH	Manhole			ending mh	



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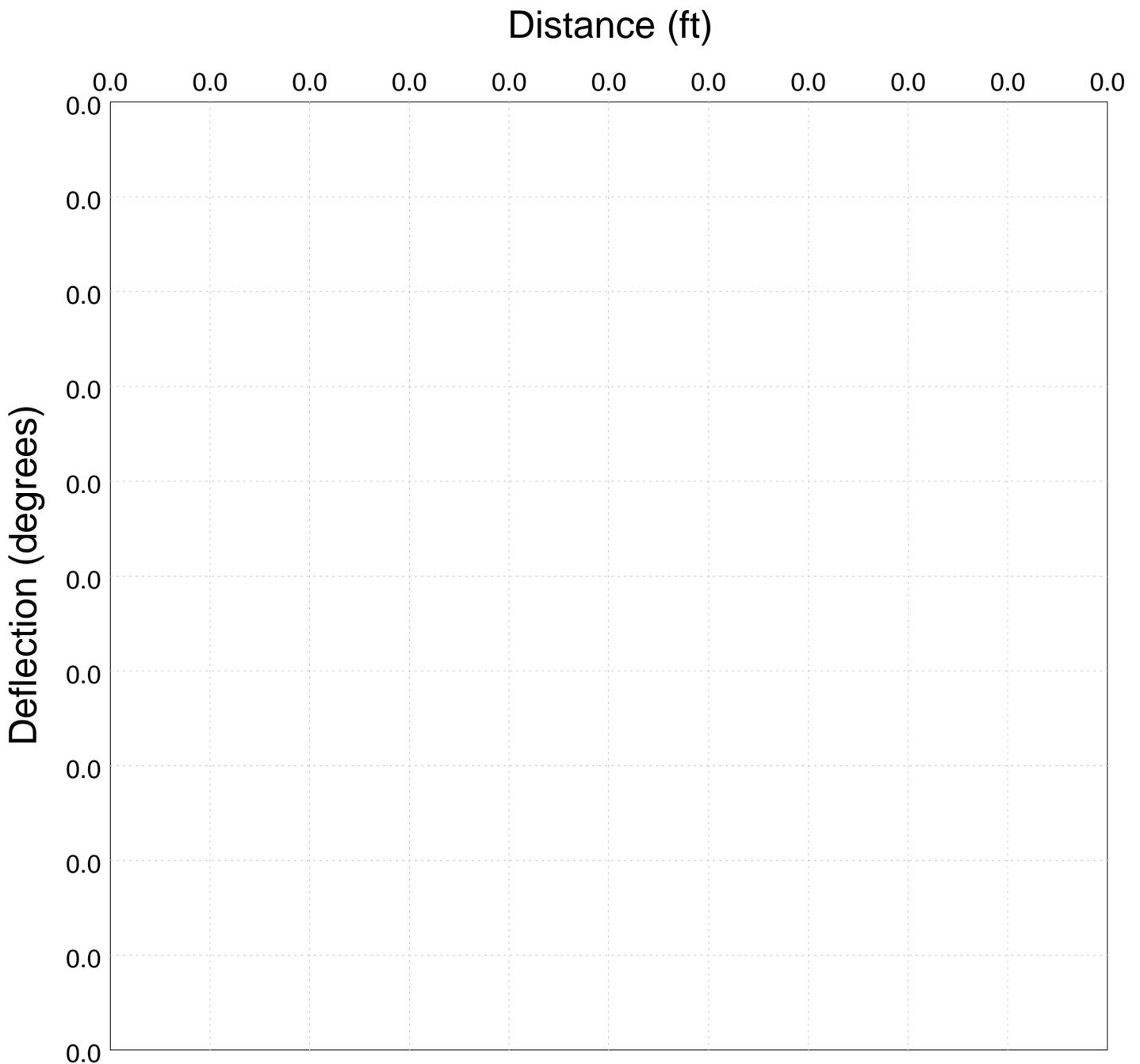
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-161	A-160		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				84.3	





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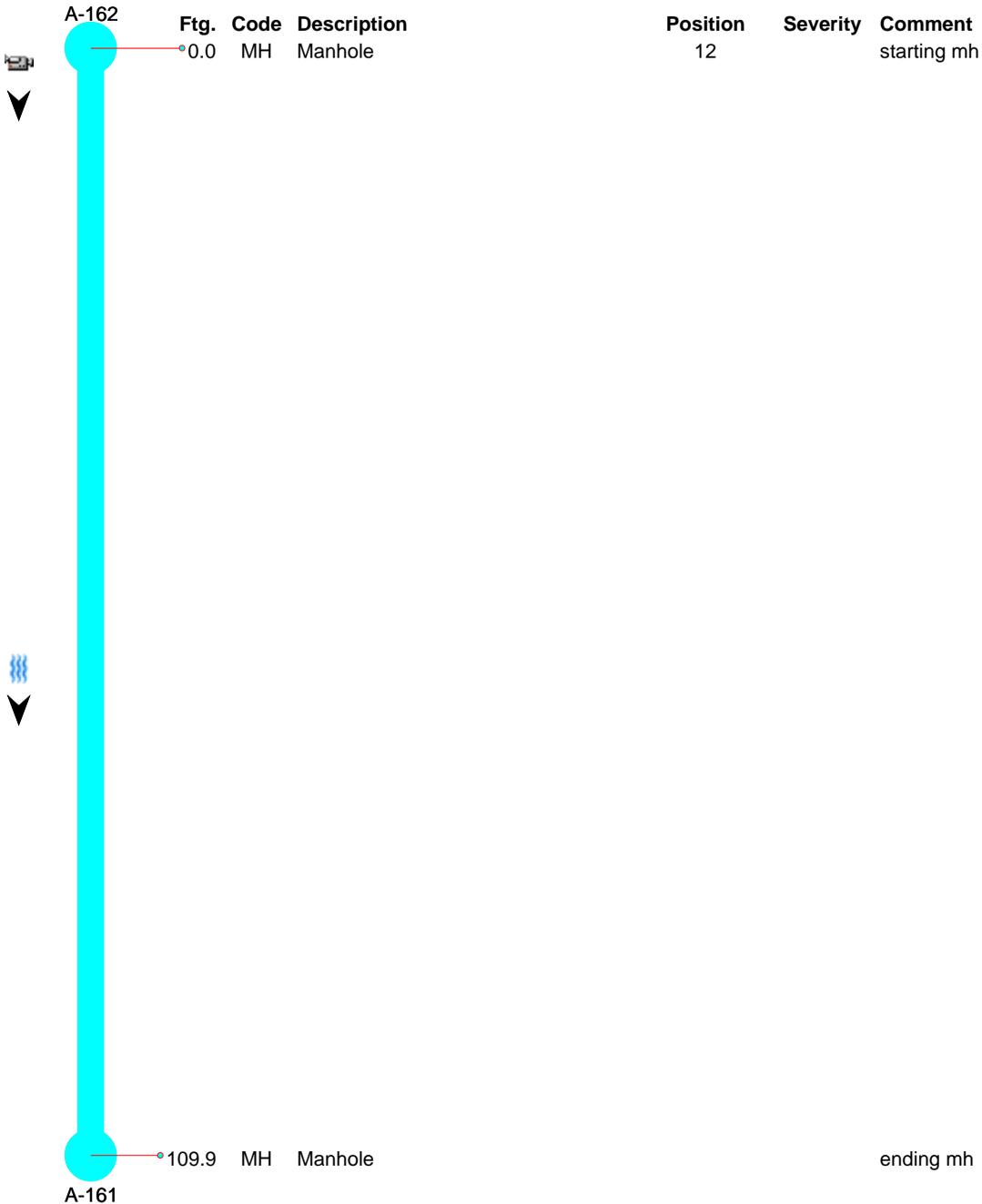
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-161	A-160		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					84.3





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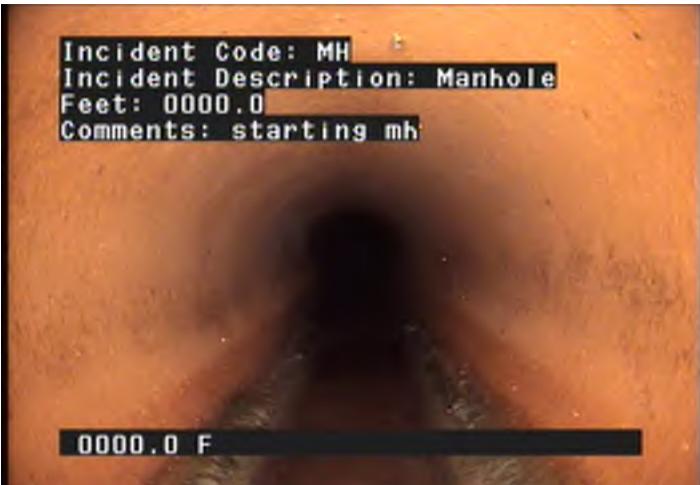
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-162	A-161		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					109.9





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-162	A-161		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					109.9



MH - Manhole @ 0.0 ft. starting mh



MH - Manhole @ 109.9 ft. ending mh



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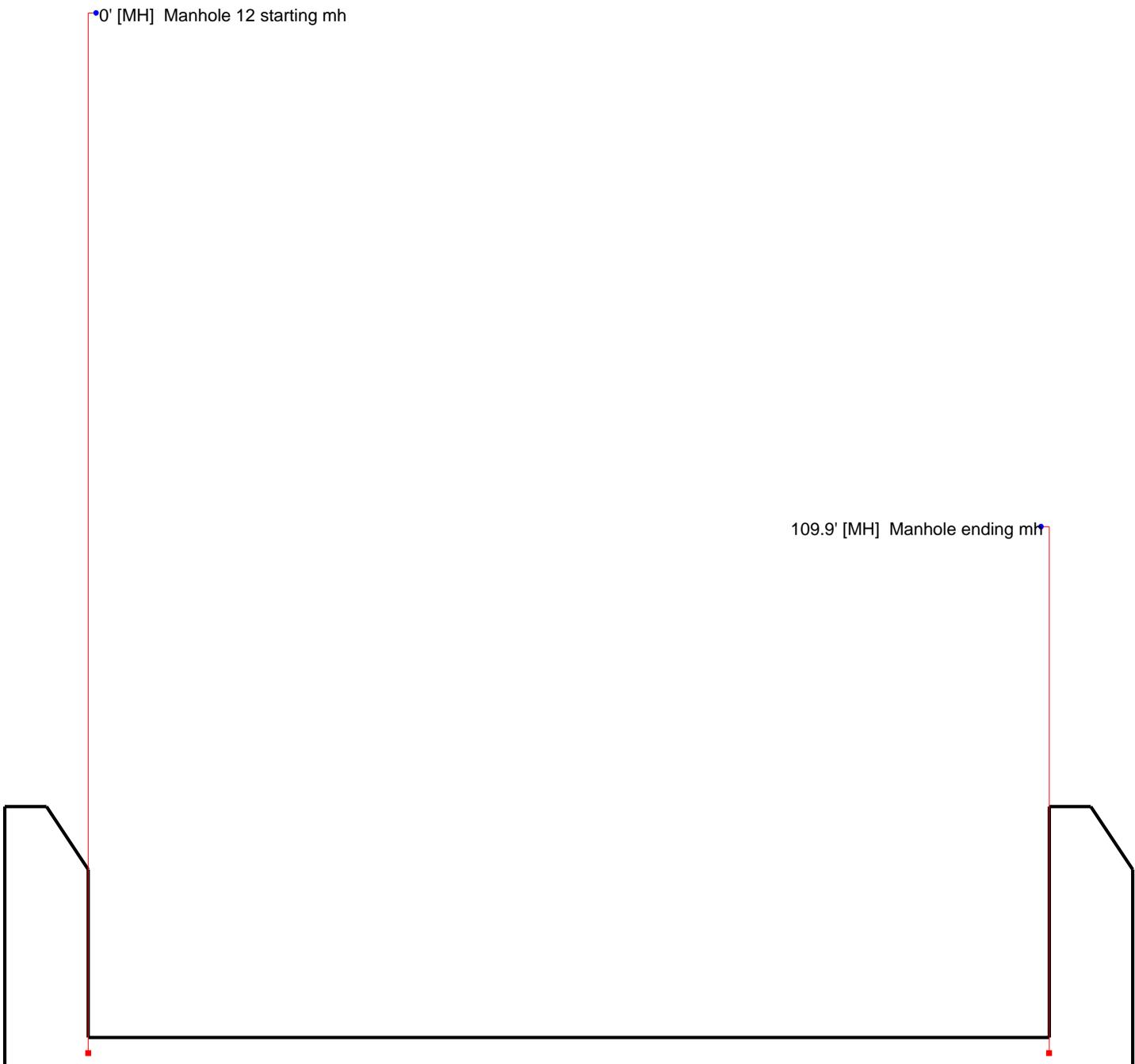
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-162	A-161		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					109.9

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
109.9	MH	Manhole			ending mh	



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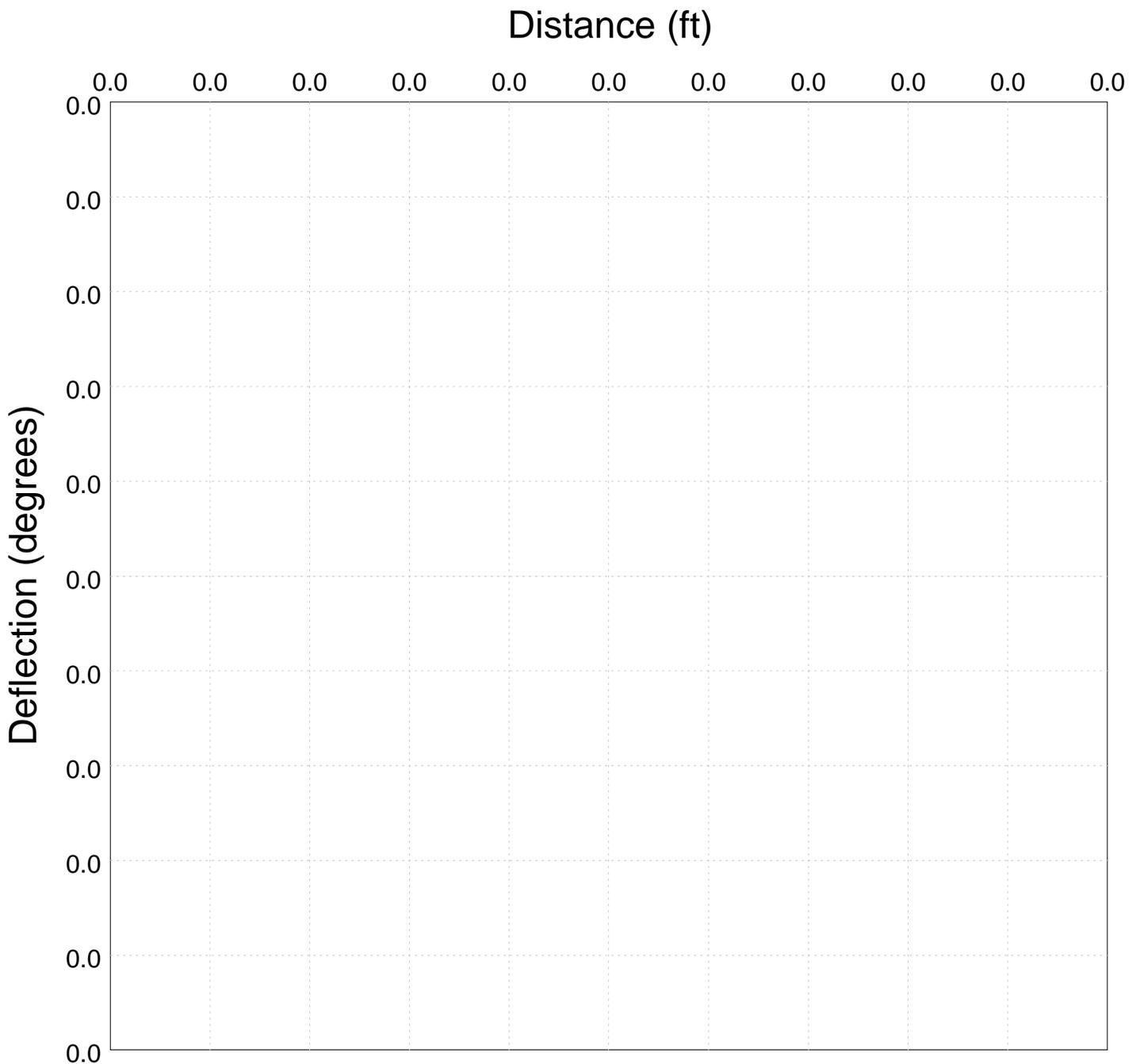
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-162	A-161		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					109.9





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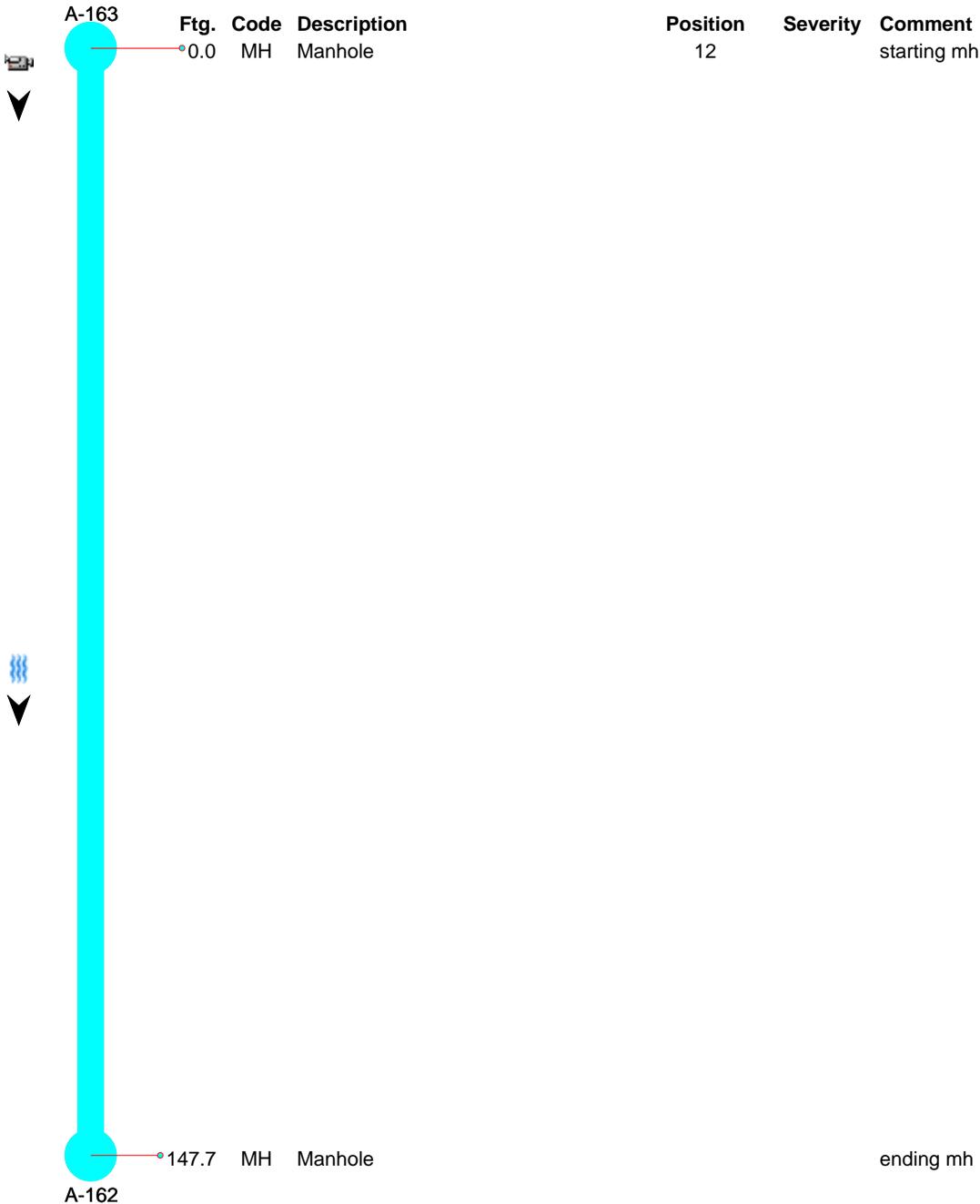
Line Segment	Block Number	Upstream MH A-162	Downstream MH A-161	Section Number	Date 20-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 109.9





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-163	A-162		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					147.7





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-163	A-162		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					147.7



MH - Manhole @ 0.0 ft. starting mh



MH - Manhole @ 147.7 ft. ending mh



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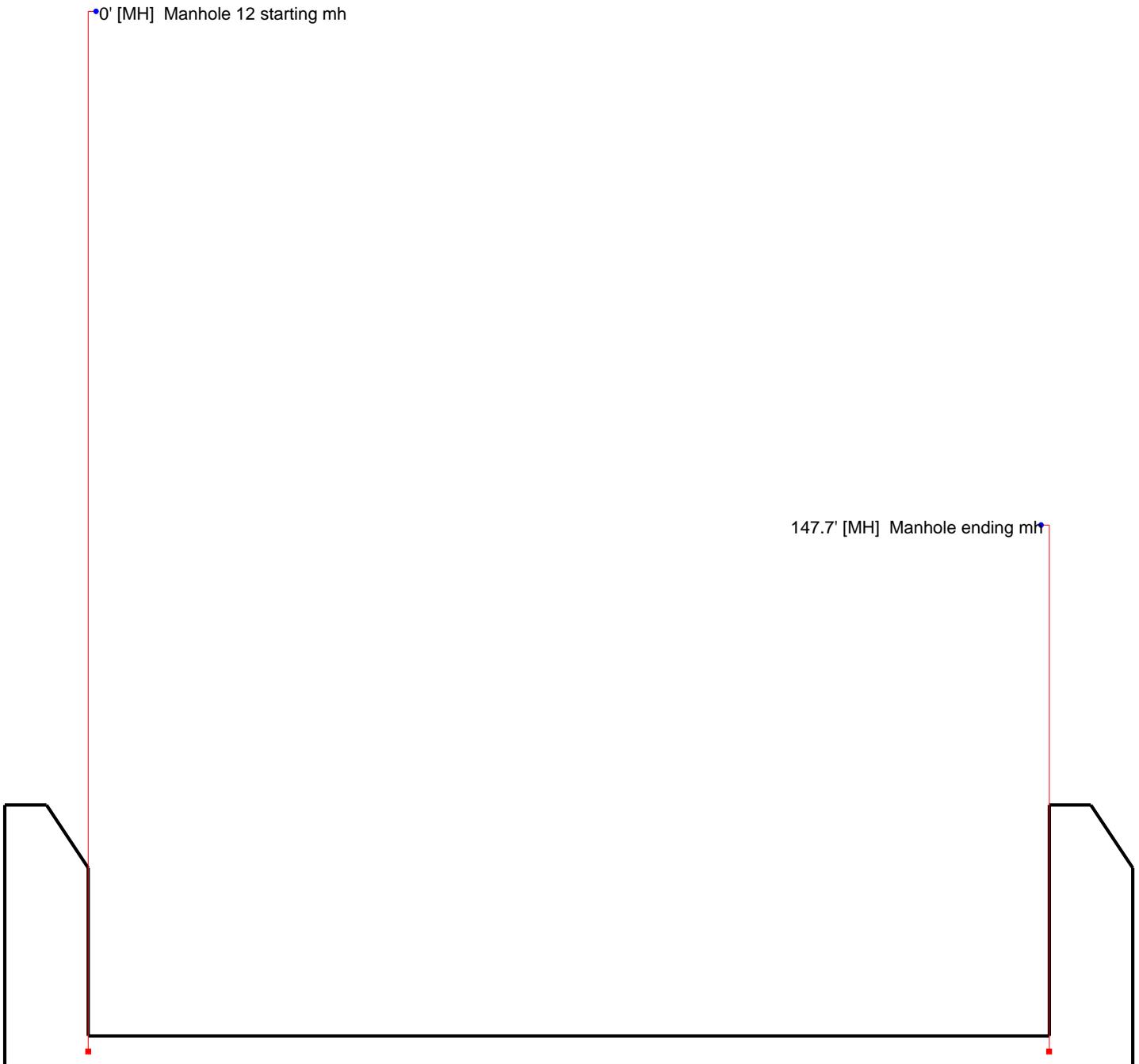
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-163	A-162		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					147.7

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
147.7	MH	Manhole			ending mh	



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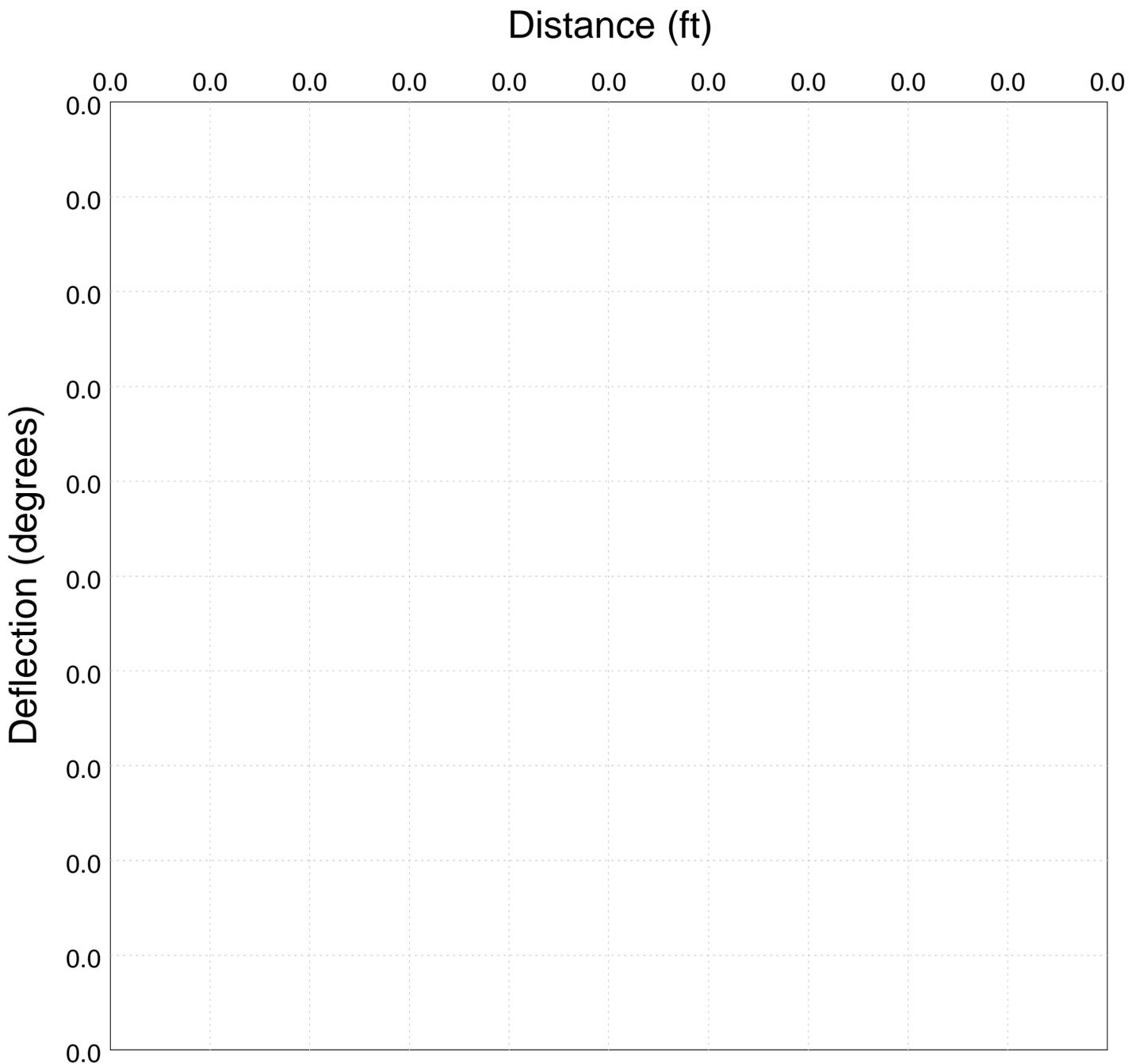
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-163	A-162		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				147.7	





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-163	A-162		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				147.7	





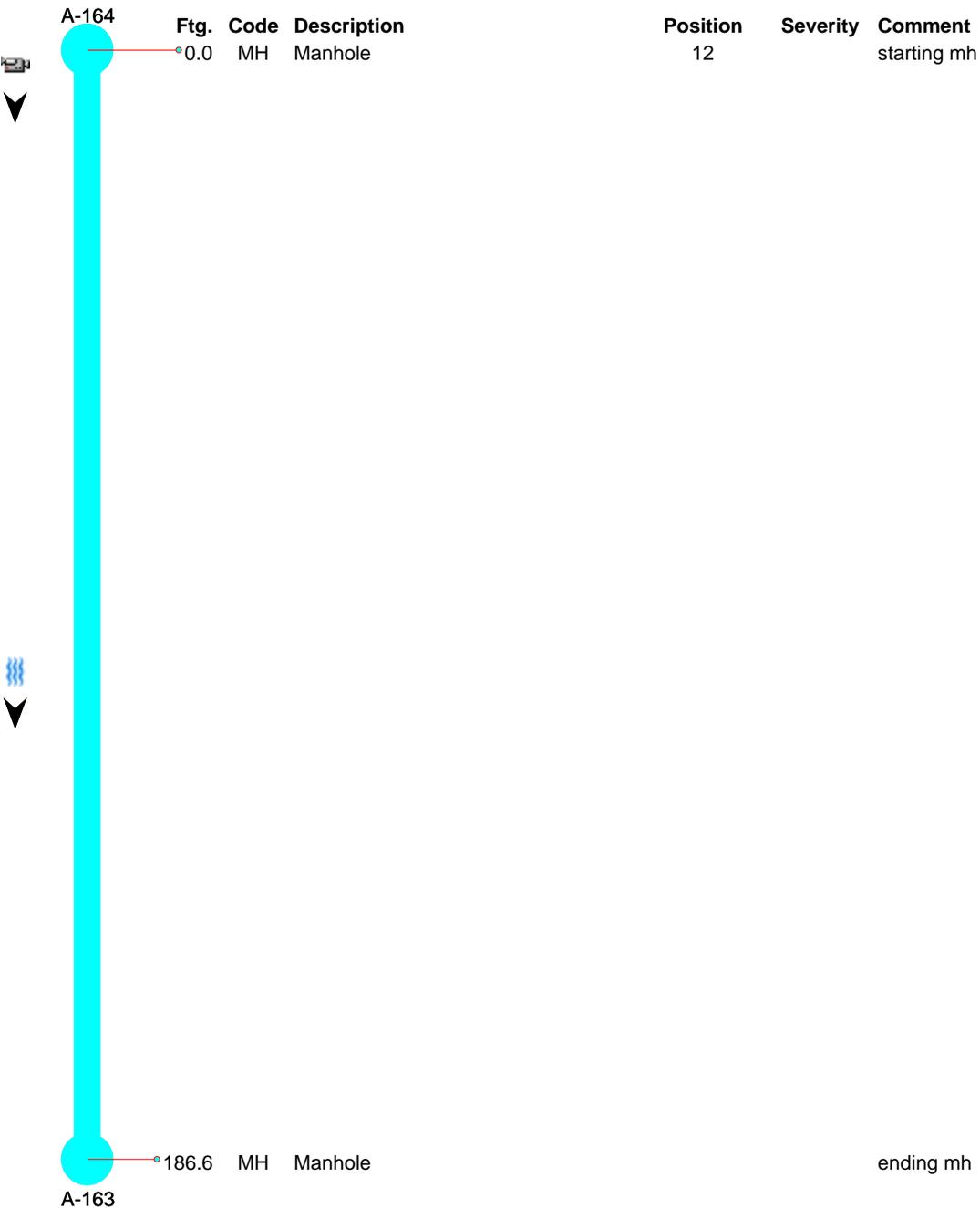
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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-164	A-163		20-Jun-2017

Surveyor	Street	City	Weather
MA	Arden View Drive	arden hills	

Size	Material	Sewer Use	Purpose	Length
8	Vitrified Clay Pipe	Sanitary	Routine Assessment	

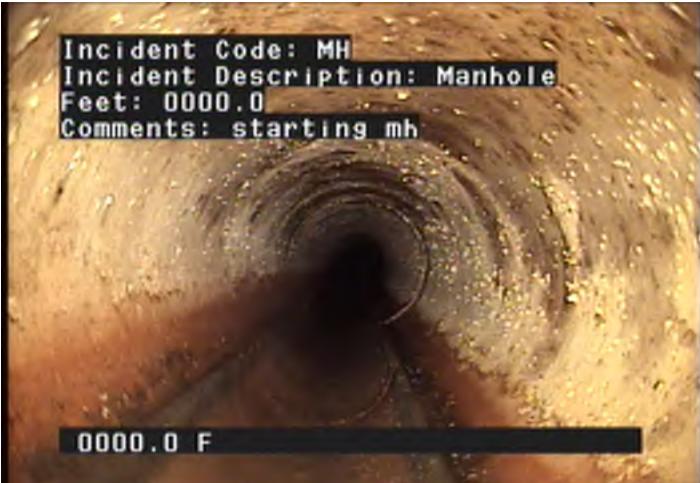
Comments	Pre-Cleaning	TV Length
		186.6



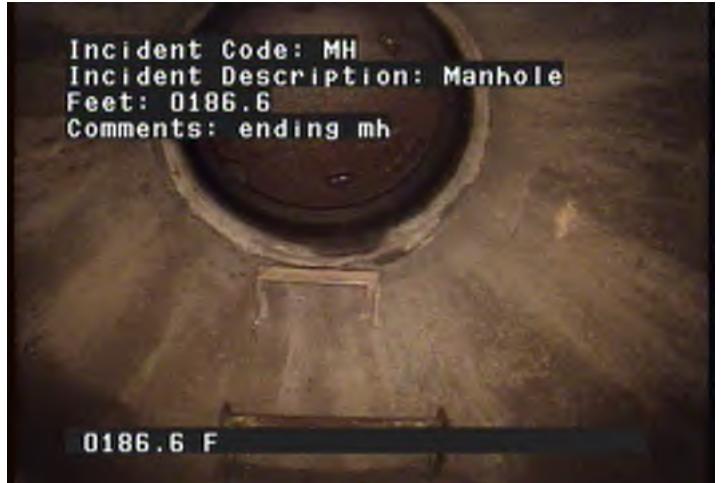


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-164	A-163		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					186.6



MH - Manhole @ 0.0 ft. starting mh



MH - Manhole @ 186.6 ft. ending mh



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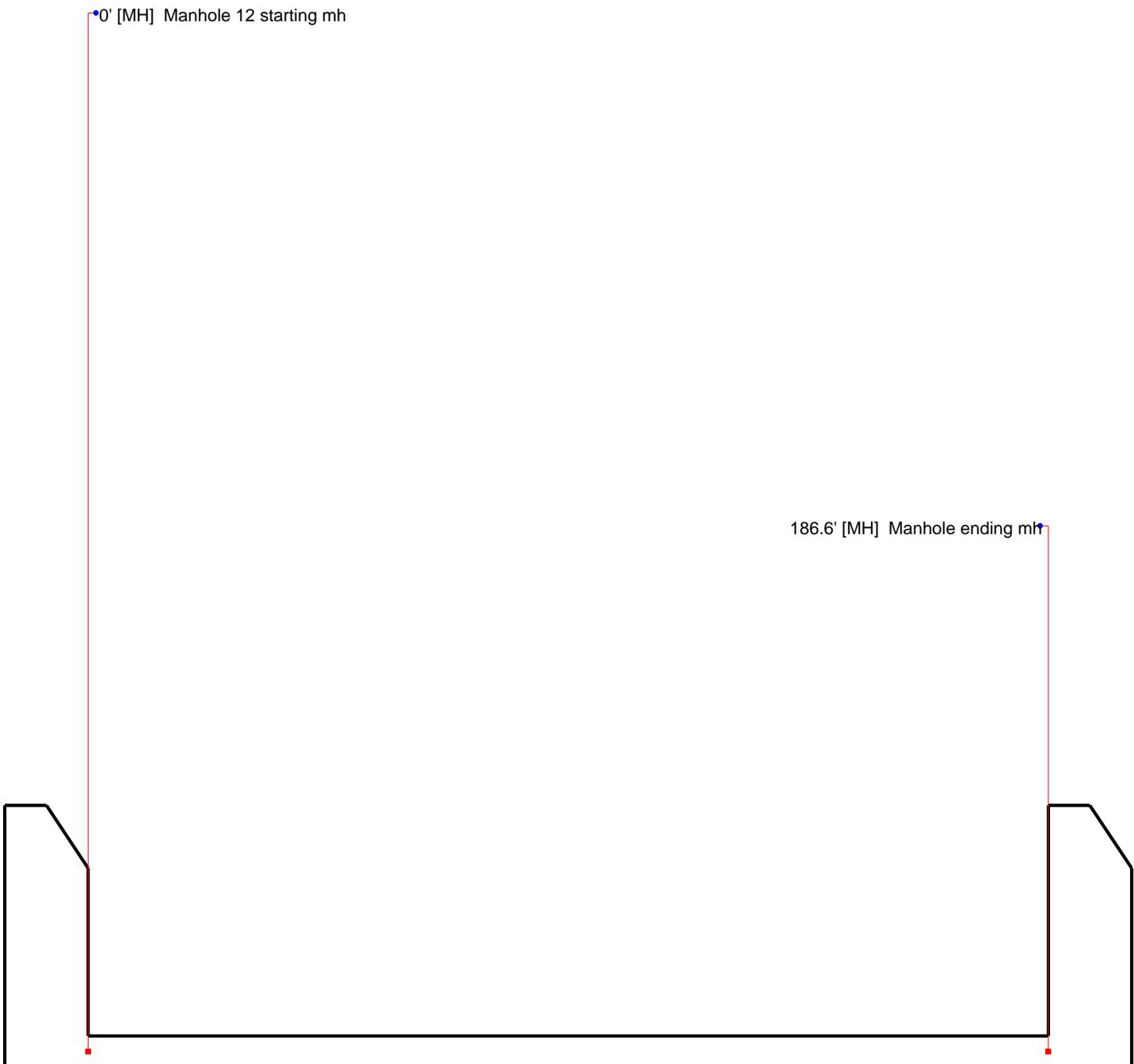
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-164	A-163		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					186.6

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
186.6	MH	Manhole			ending mh	



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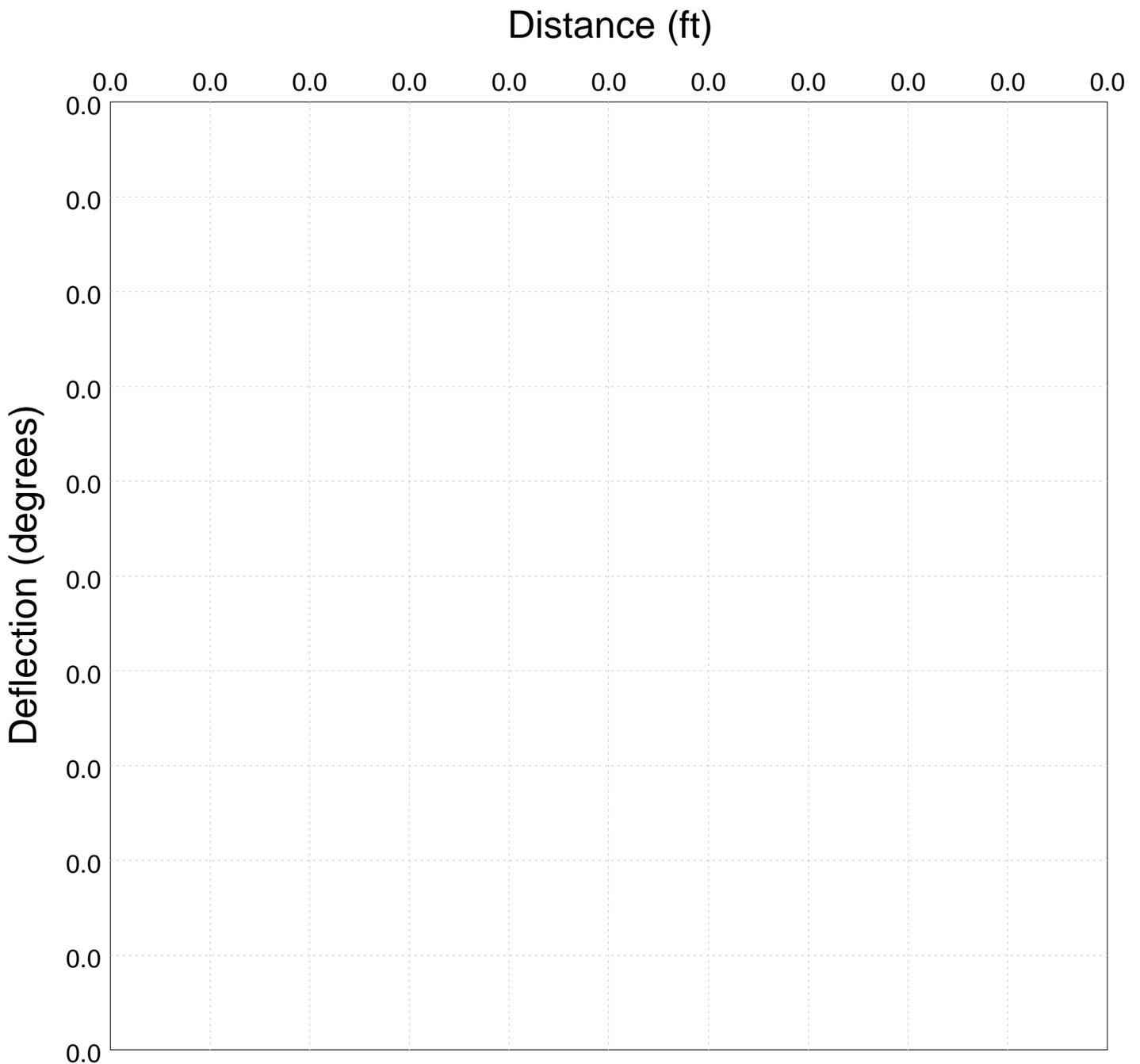
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-164	A-163		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				186.6	





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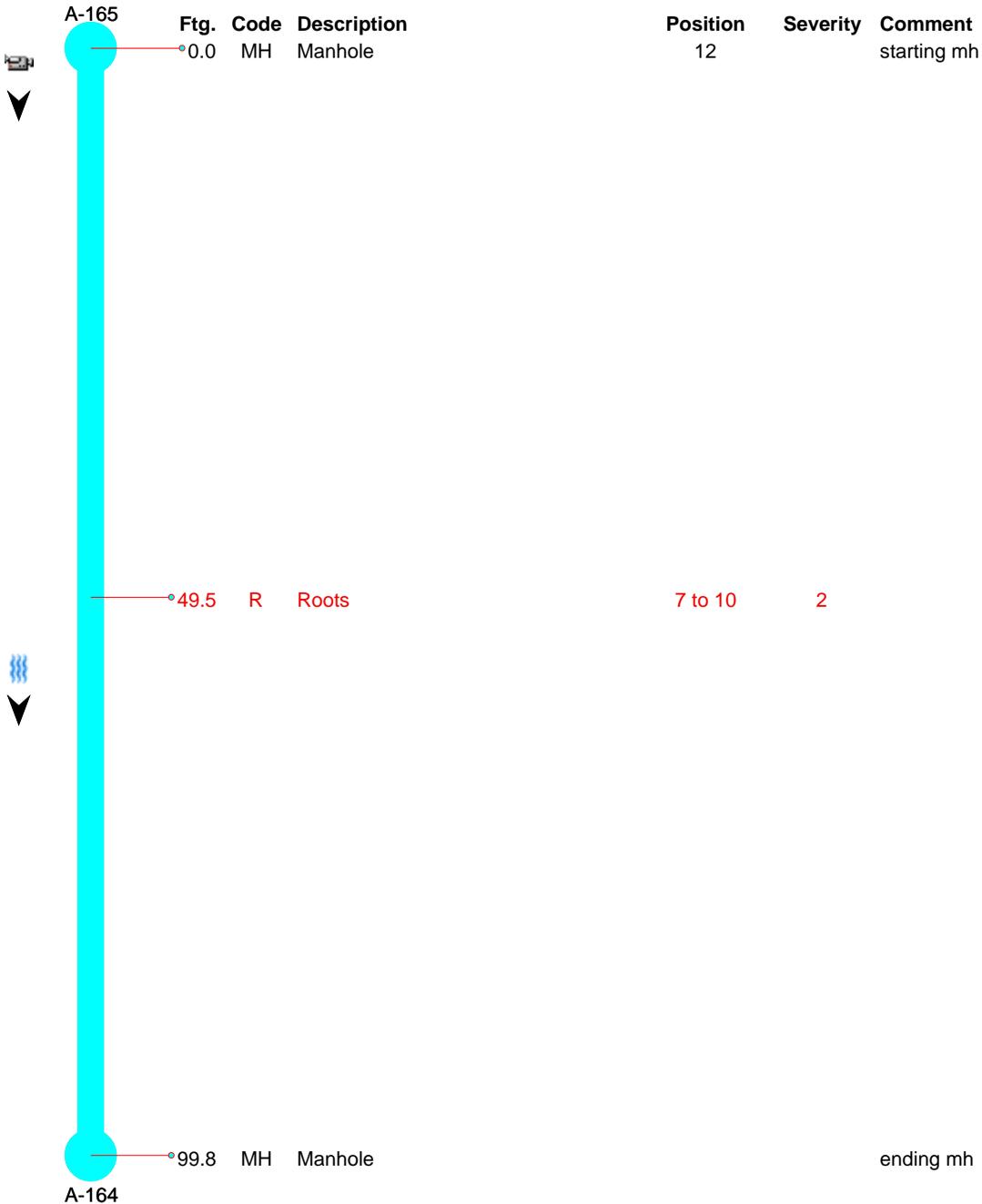
Line Segment	Block Number	Upstream MH A-164	Downstream MH A-163	Section Number	Date 20-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 186.6





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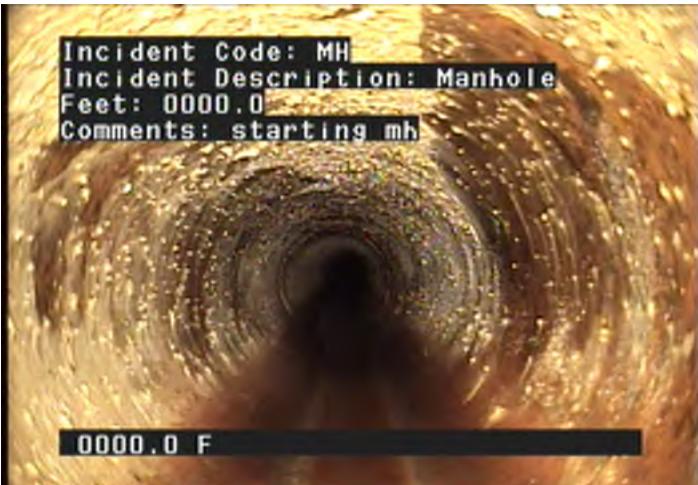
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-165	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					99.8





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-165	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					99.8



MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 49.5 ft.

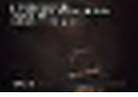


MH - Manhole @ 99.8 ft. ending mh



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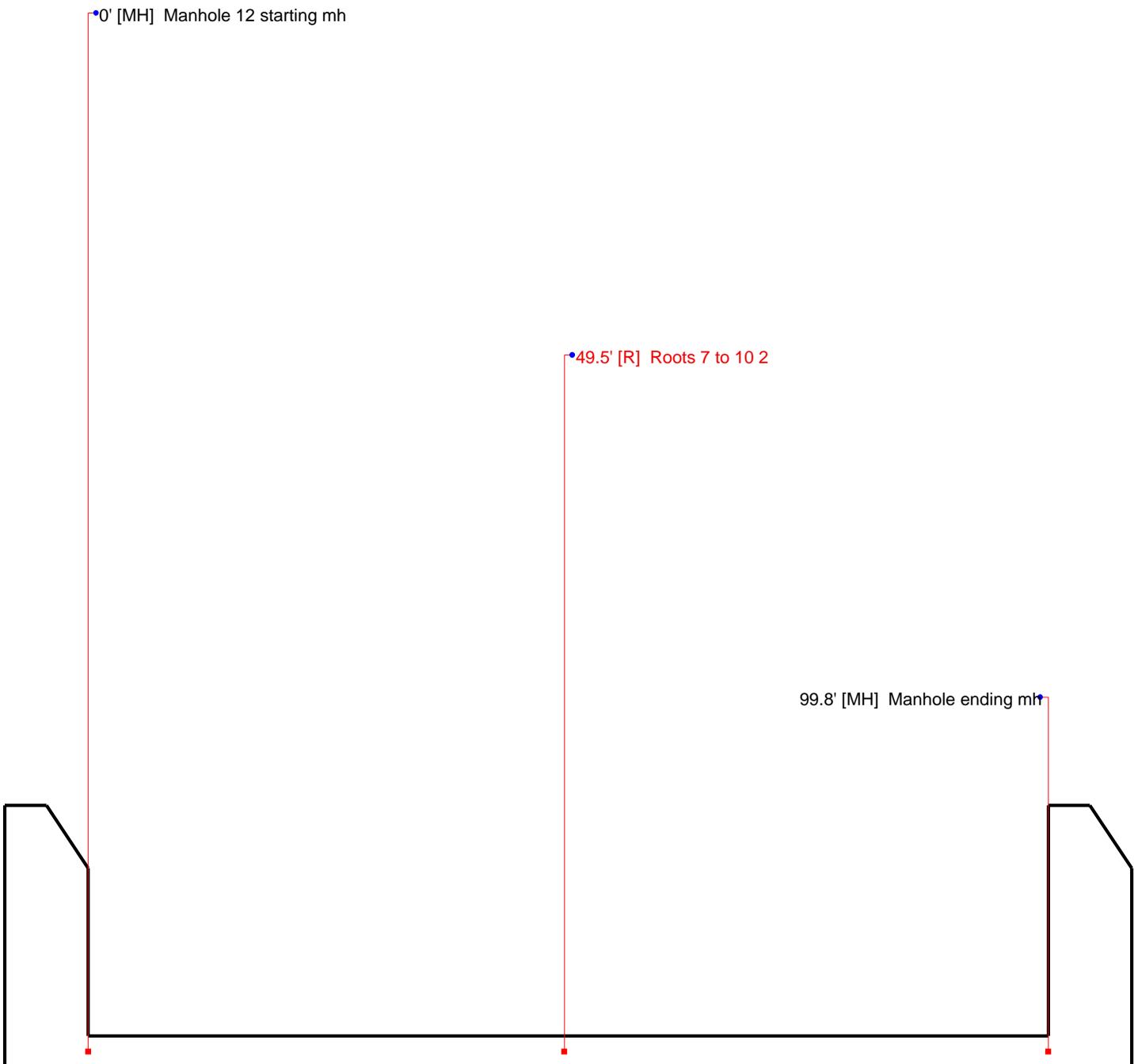
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-165	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					99.8

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
49.5	R	Roots	7 to 10	2		
99.8	MH	Manhole			ending mh	



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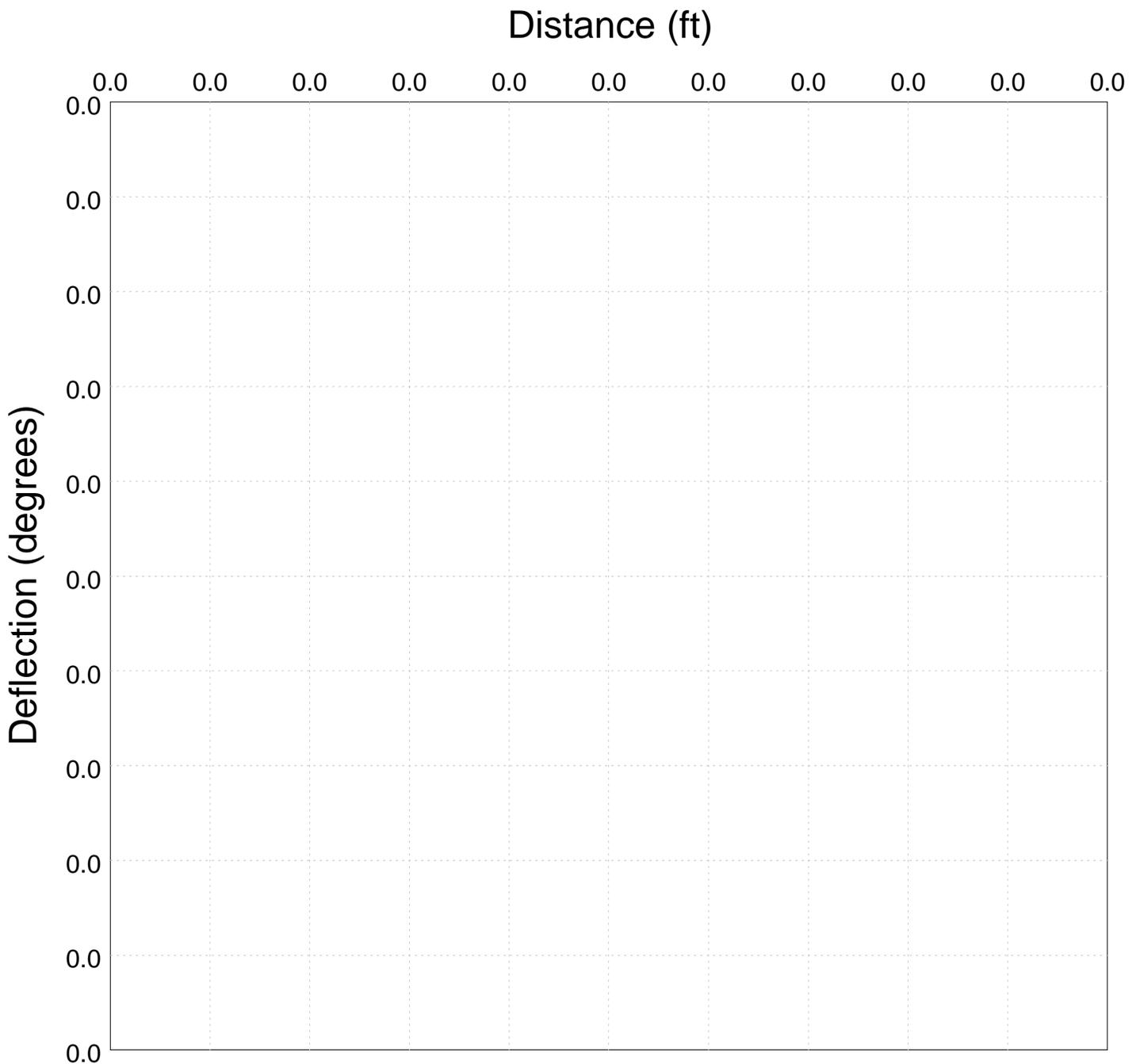
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		A-165	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				99.8	





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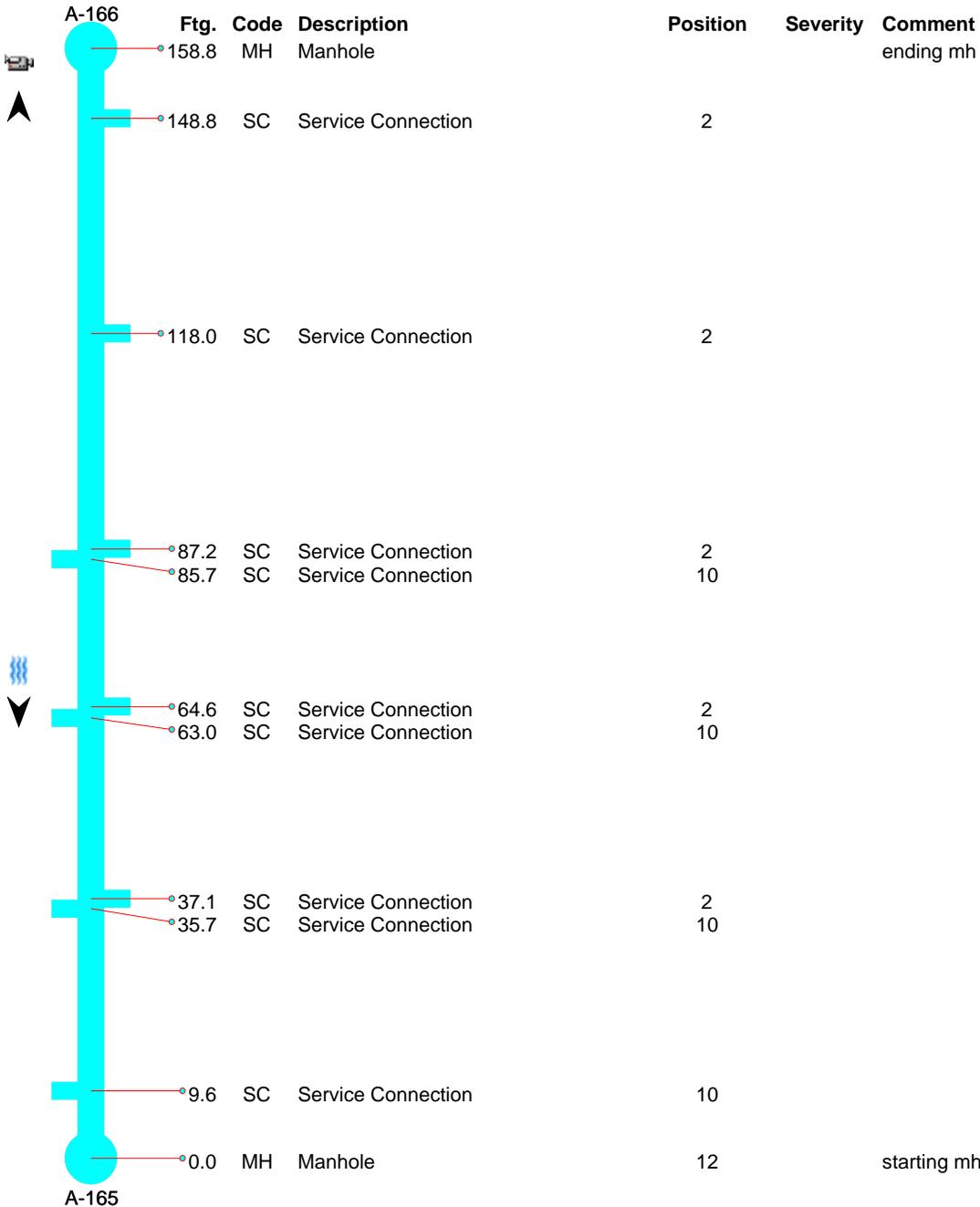
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-165	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				99.8	





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Line Segment	Block Number	Upstream MH A-166	Downstream MH A-165	Section Number	Date 20-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 158.8





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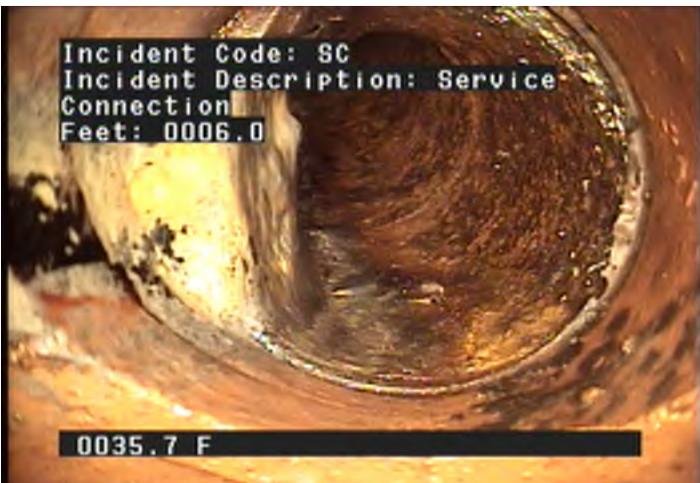
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-166	A-165		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					158.8



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 9.6 ft.



SC - Service Connection @ 35.7 ft.



SC - Service Connection @ 37.1 ft.

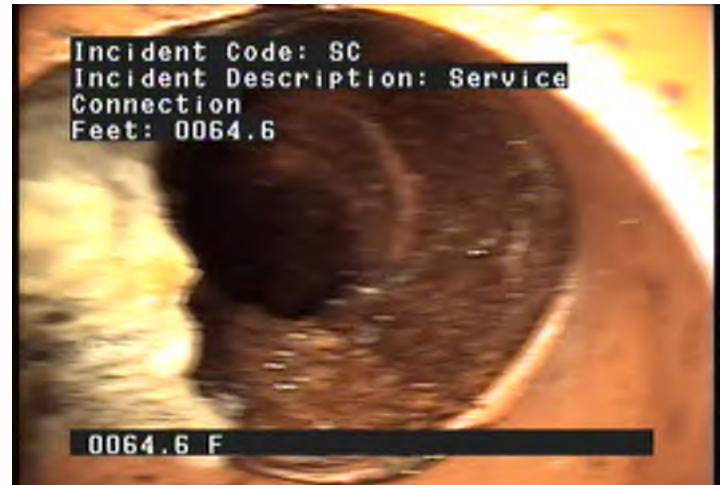


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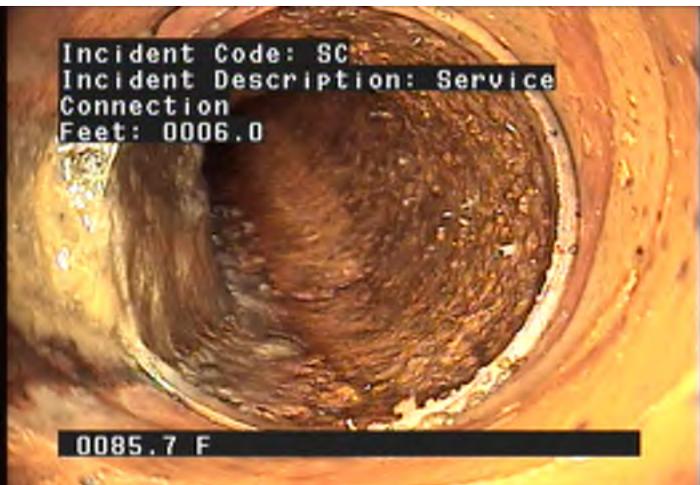
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-166	A-165		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				158.8	



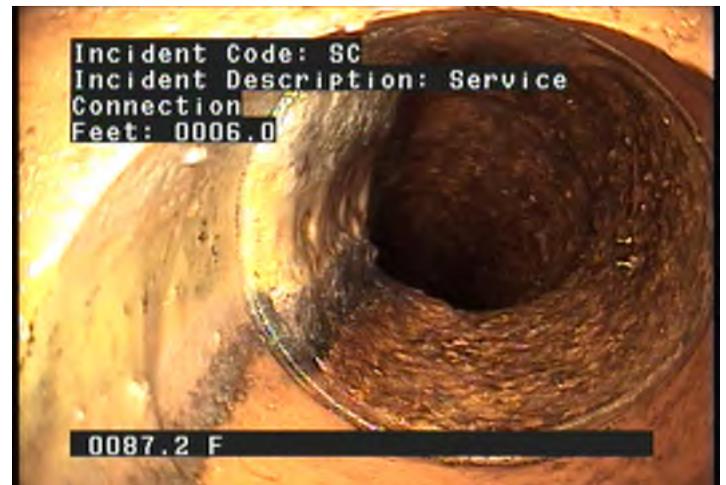
SC - Service Connection @ 63.0 ft.



SC - Service Connection @ 64.6 ft.



SC - Service Connection @ 85.7 ft.



SC - Service Connection @ 87.2 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-166	A-165		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				158.8	



SC - Service Connection @ 118.0 ft.



SC - Service Connection @ 148.8 ft.



MH - Manhole @ 158.8 ft. ending mh



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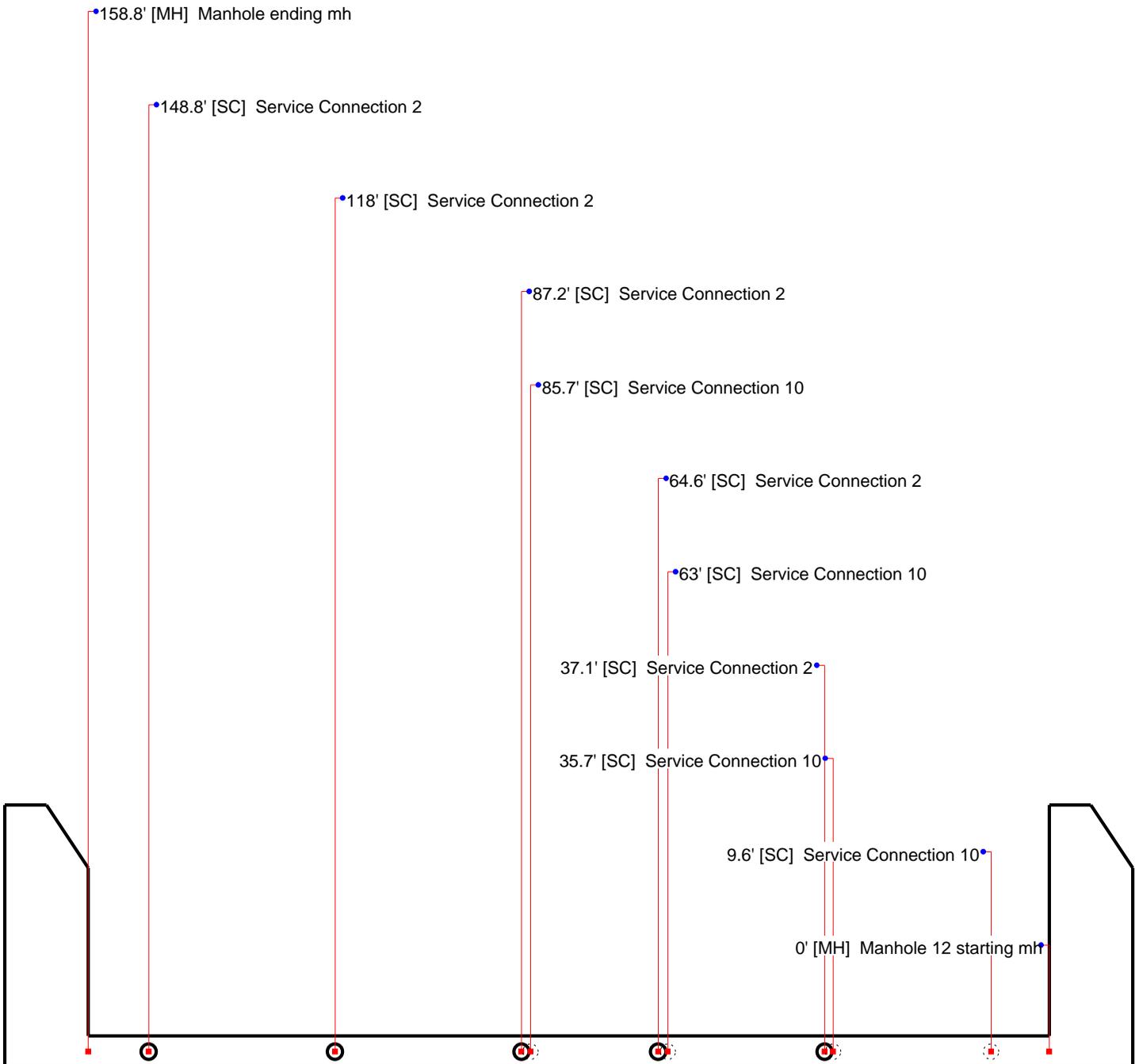
Line Segment	Block Number	Upstream MH A-166	Downstream MH A-165	Section Number	Date 20-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 158.8

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
9.6	SC	Service Connection	10			
35.7	SC	Service Connection	10			
37.1	SC	Service Connection	2			
63.0	SC	Service Connection	10			
64.6	SC	Service Connection	2			
85.7	SC	Service Connection	10			
87.2	SC	Service Connection	2			
118.0	SC	Service Connection	2			
148.8	SC	Service Connection	2			
158.8	MH	Manhole			ending mh	



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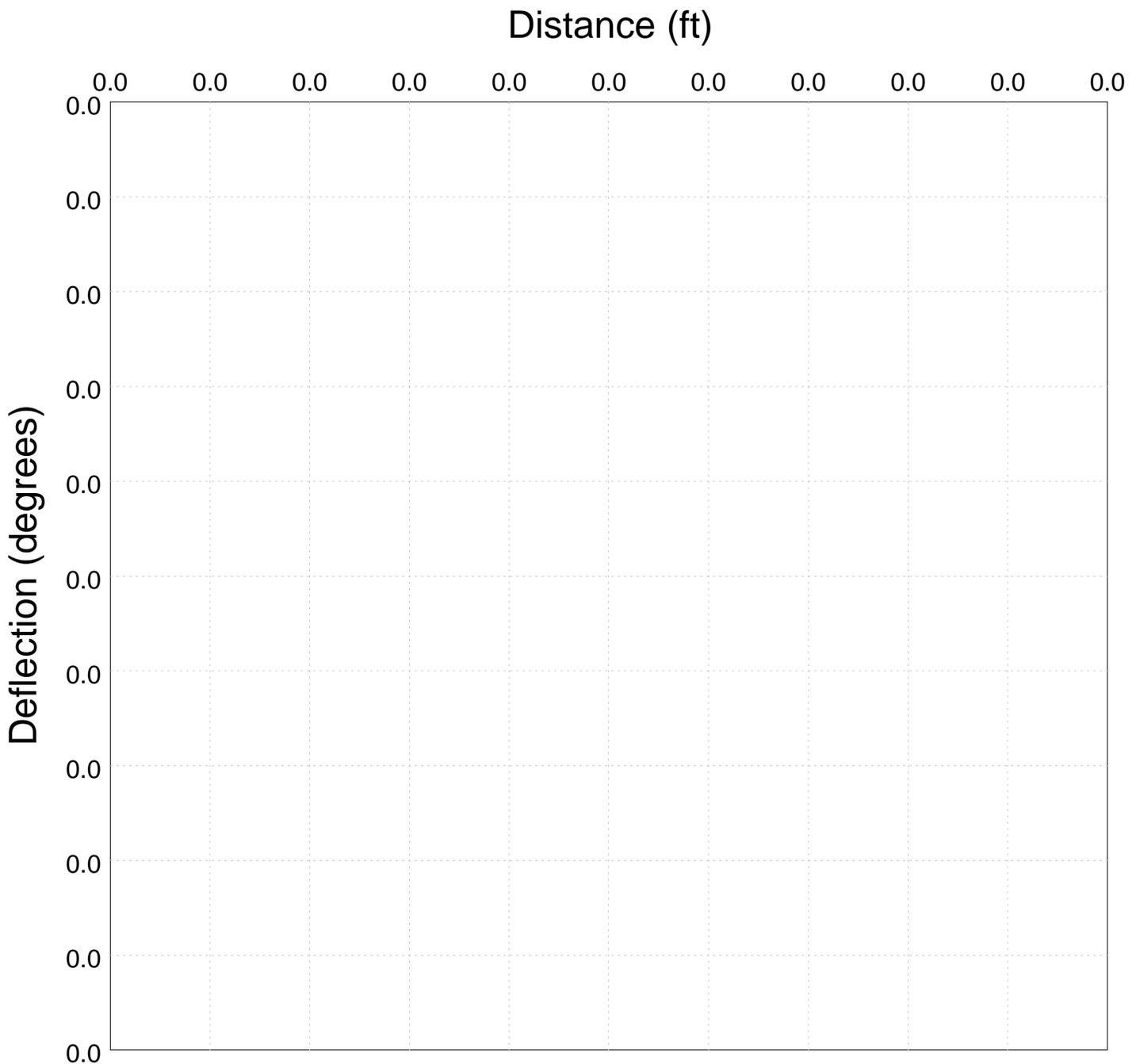
Line Segment	Block Number	Upstream MH A-166	Downstream MH A-165	Section Number	Date 20-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 158.8





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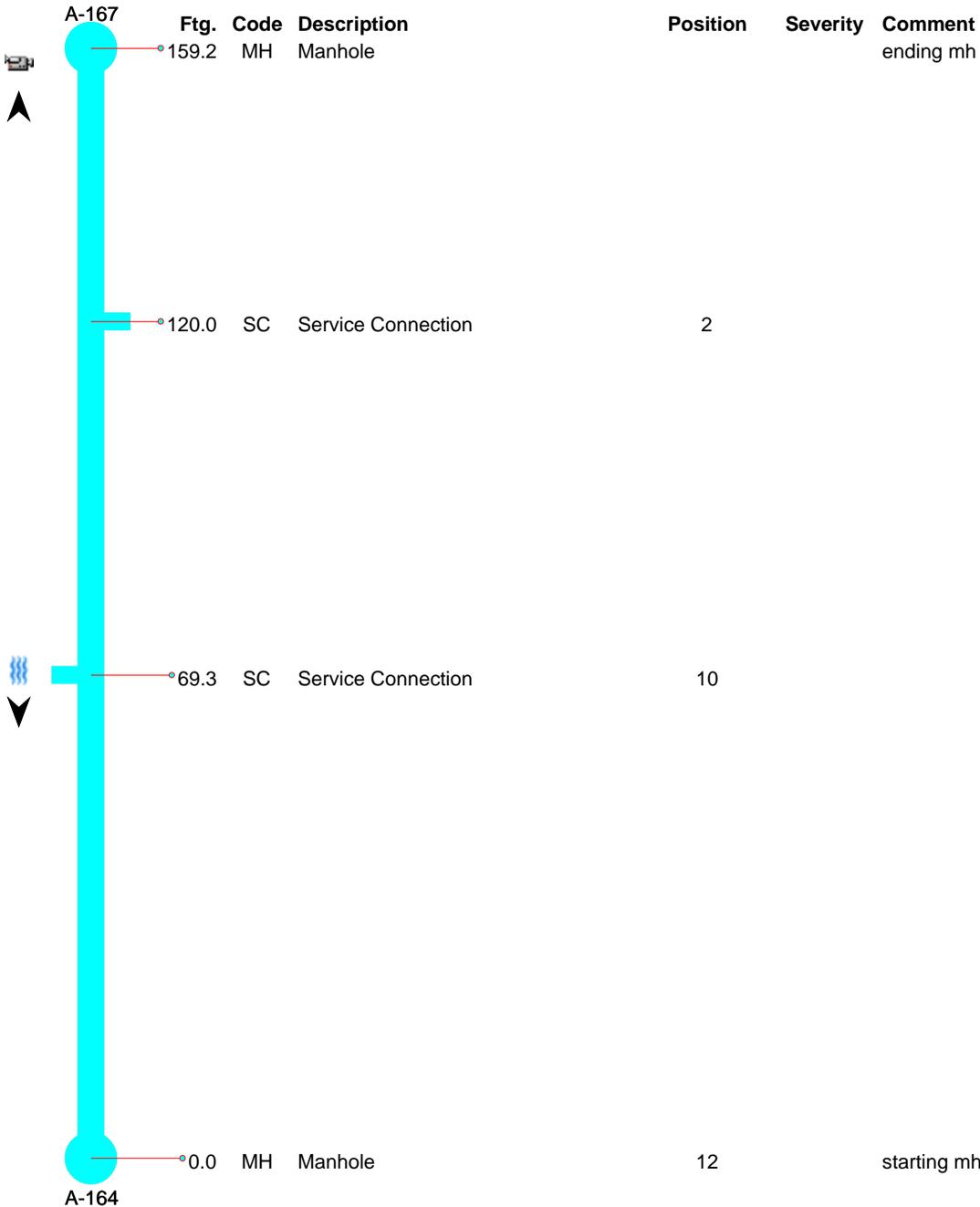
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-166	A-165		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				158.8	





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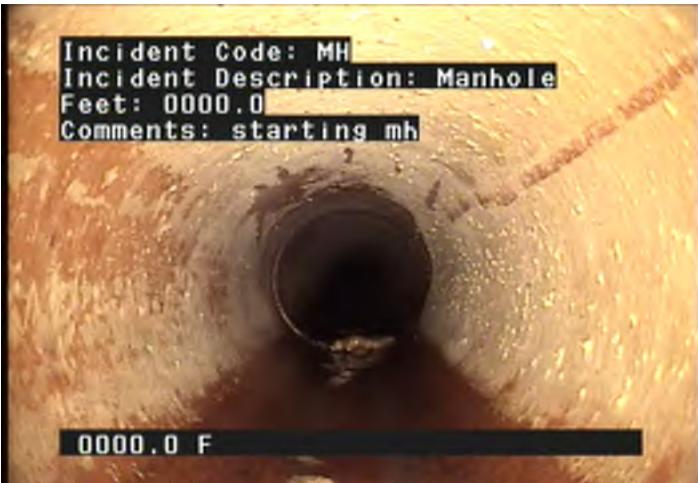
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-167	A-164		20-Jun-2017
Surveyor		Street		City	Weather
MA		Arden View Drive		arden hills	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					159.2



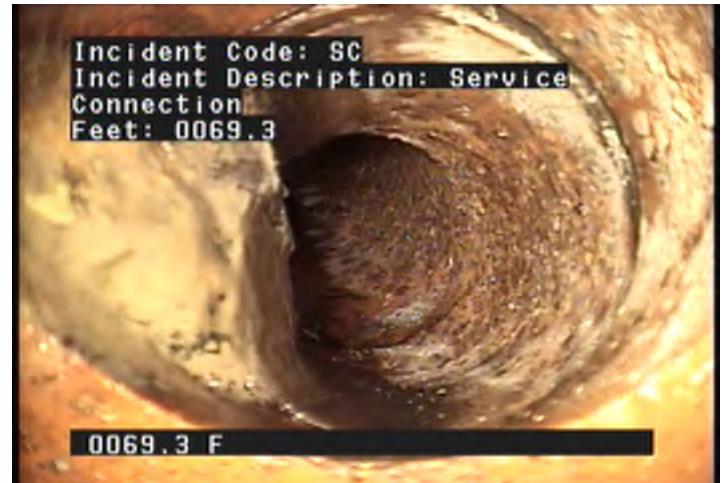


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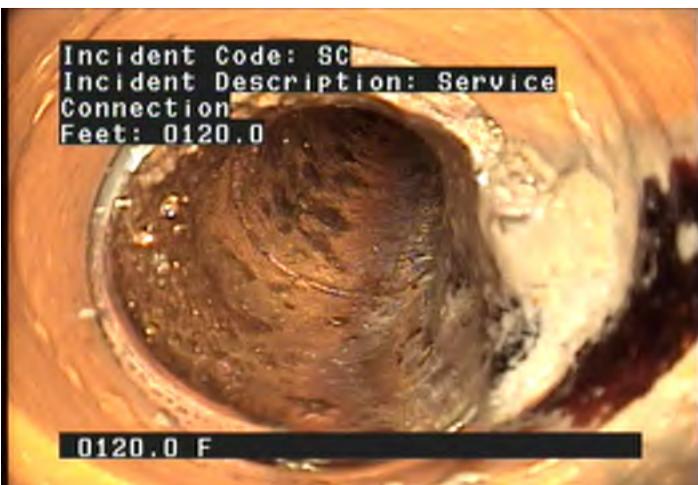
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-167	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					159.2



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 69.3 ft.



SC - Service Connection @ 120.0 ft.



MH - Manhole @ 159.2 ft. ending mh



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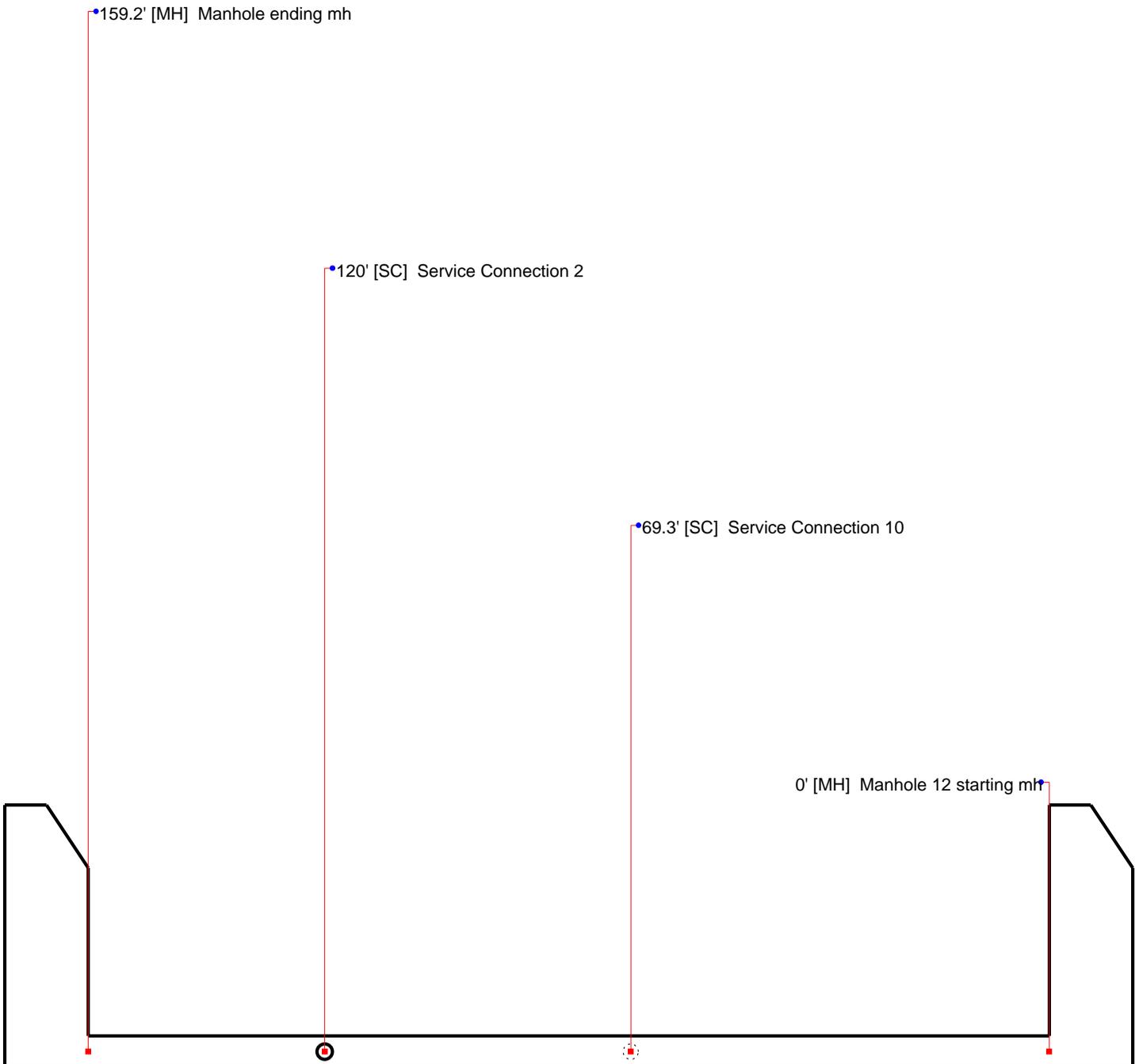
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-167	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					159.2

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
69.3	SC	Service Connection	10			
120.0	SC	Service Connection	2			
159.2	MH	Manhole			ending mh	



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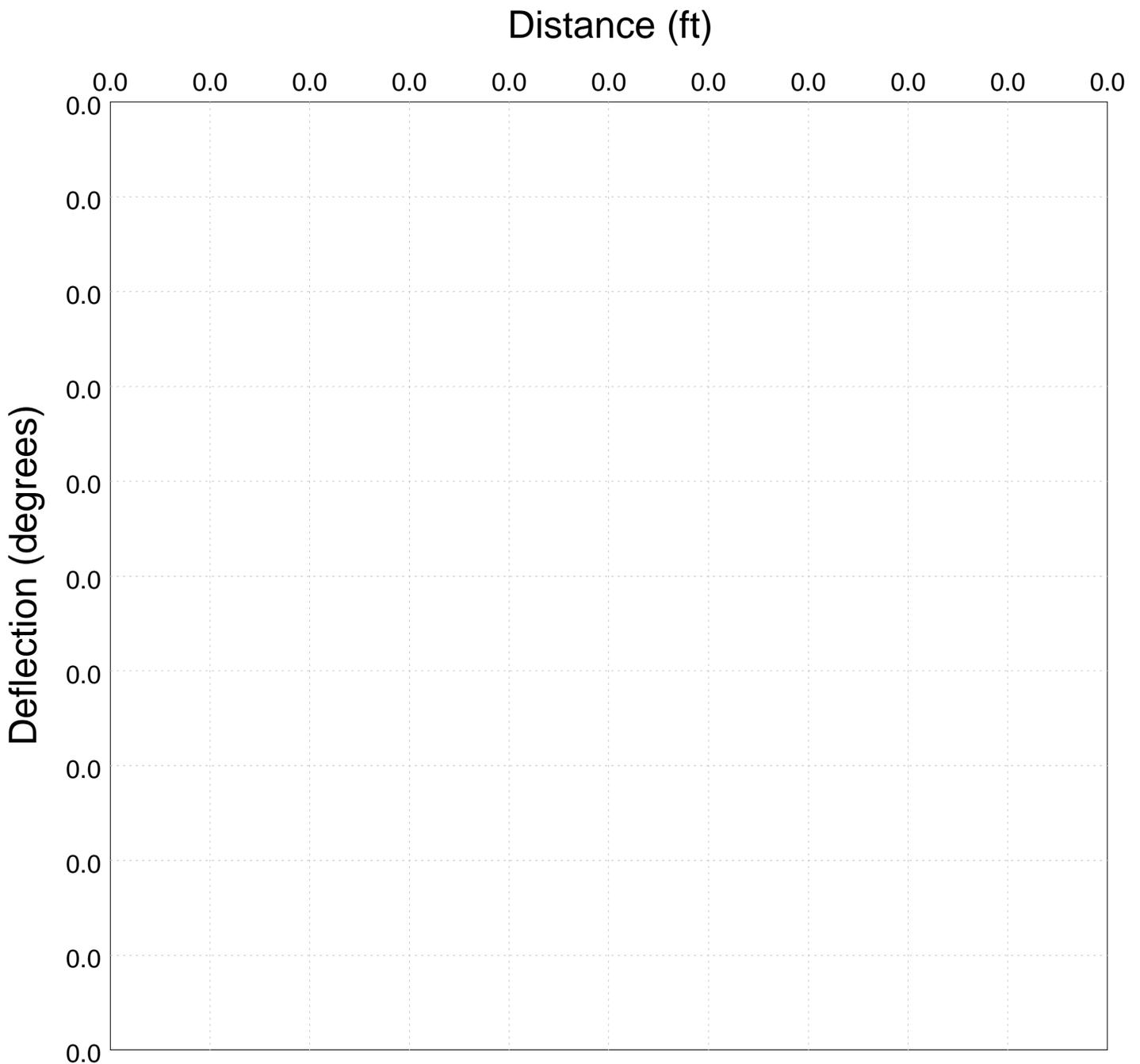
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-167	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					159.2





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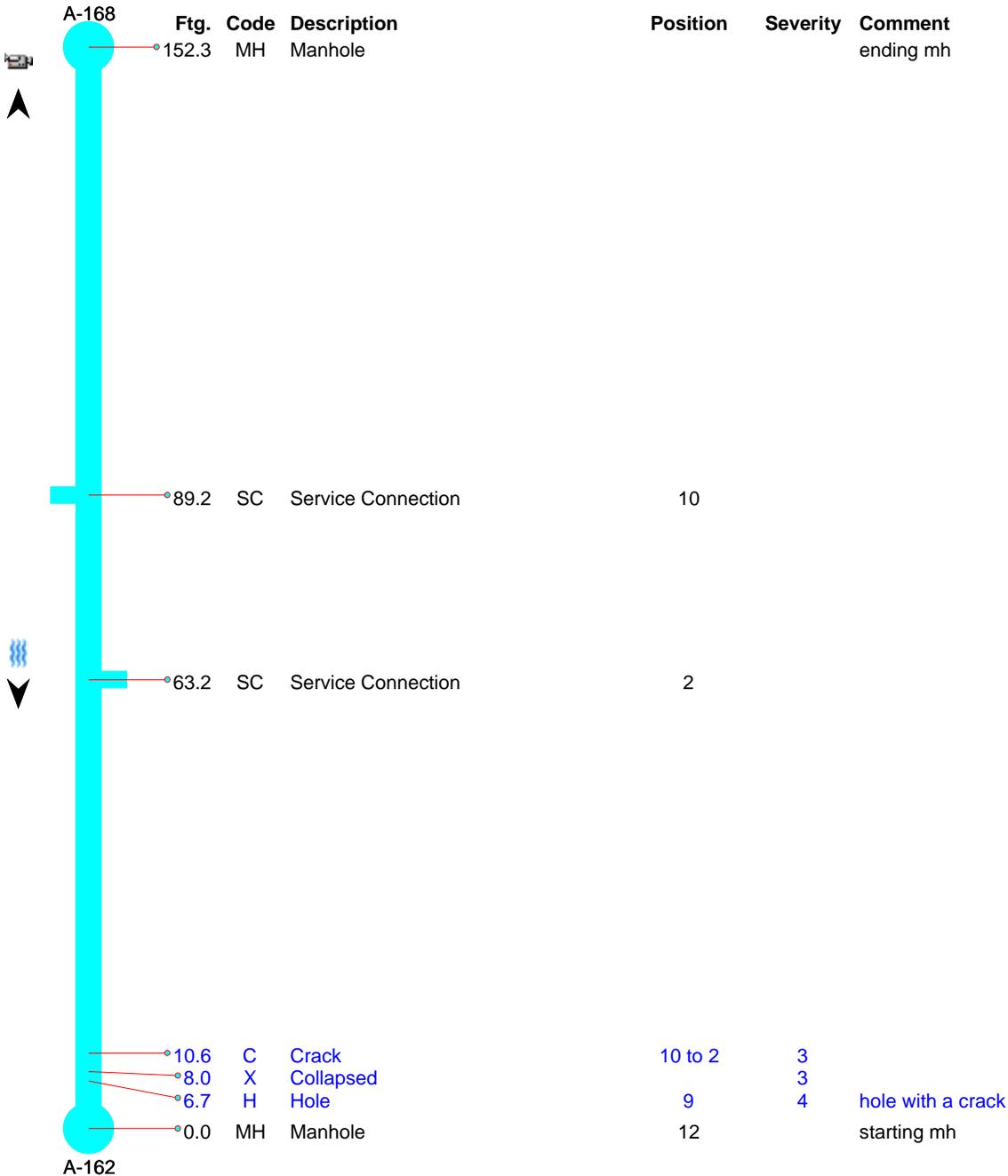
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-167	A-164		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					159.2





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-168	A-162		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					152.3



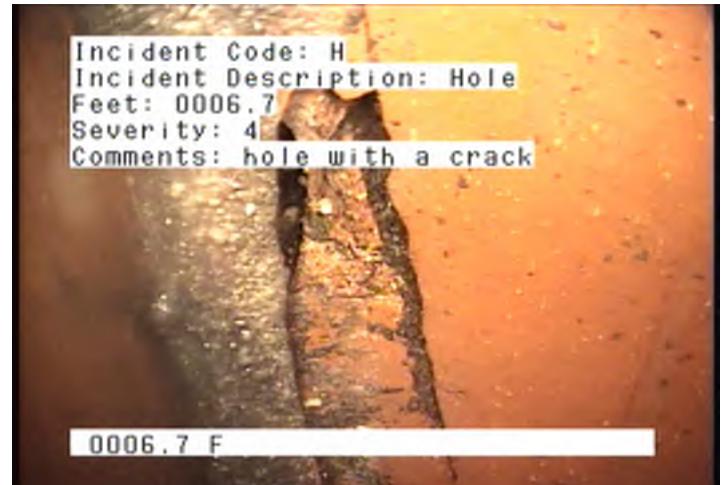


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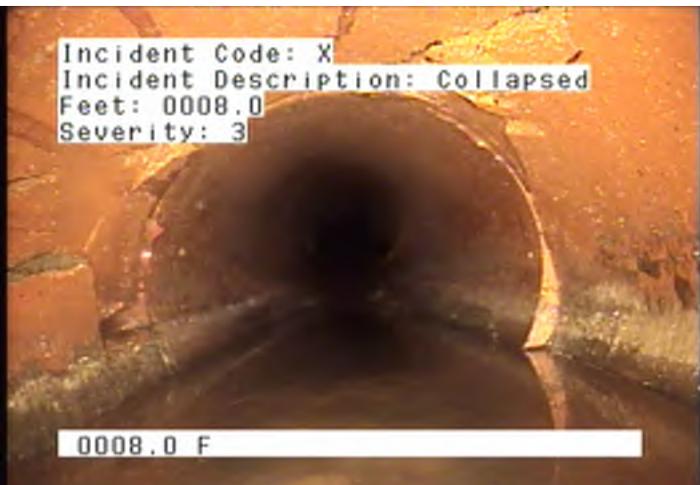
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-168	A-162		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					152.3



MH - Manhole @ 0.0 ft. starting mh



H - Hole @ 6.7 ft. hole with a crack



X - Collapsed @ 8.0 ft.

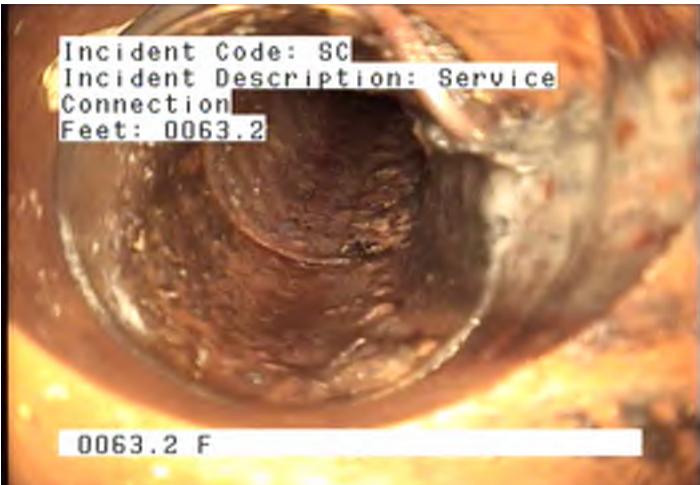


C - Crack @ 10.6 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-168	A-162		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					152.3



SC - Service Connection @ 63.2 ft.



SC - Service Connection @ 89.2 ft.



MH - Manhole @ 152.3 ft. ending mh



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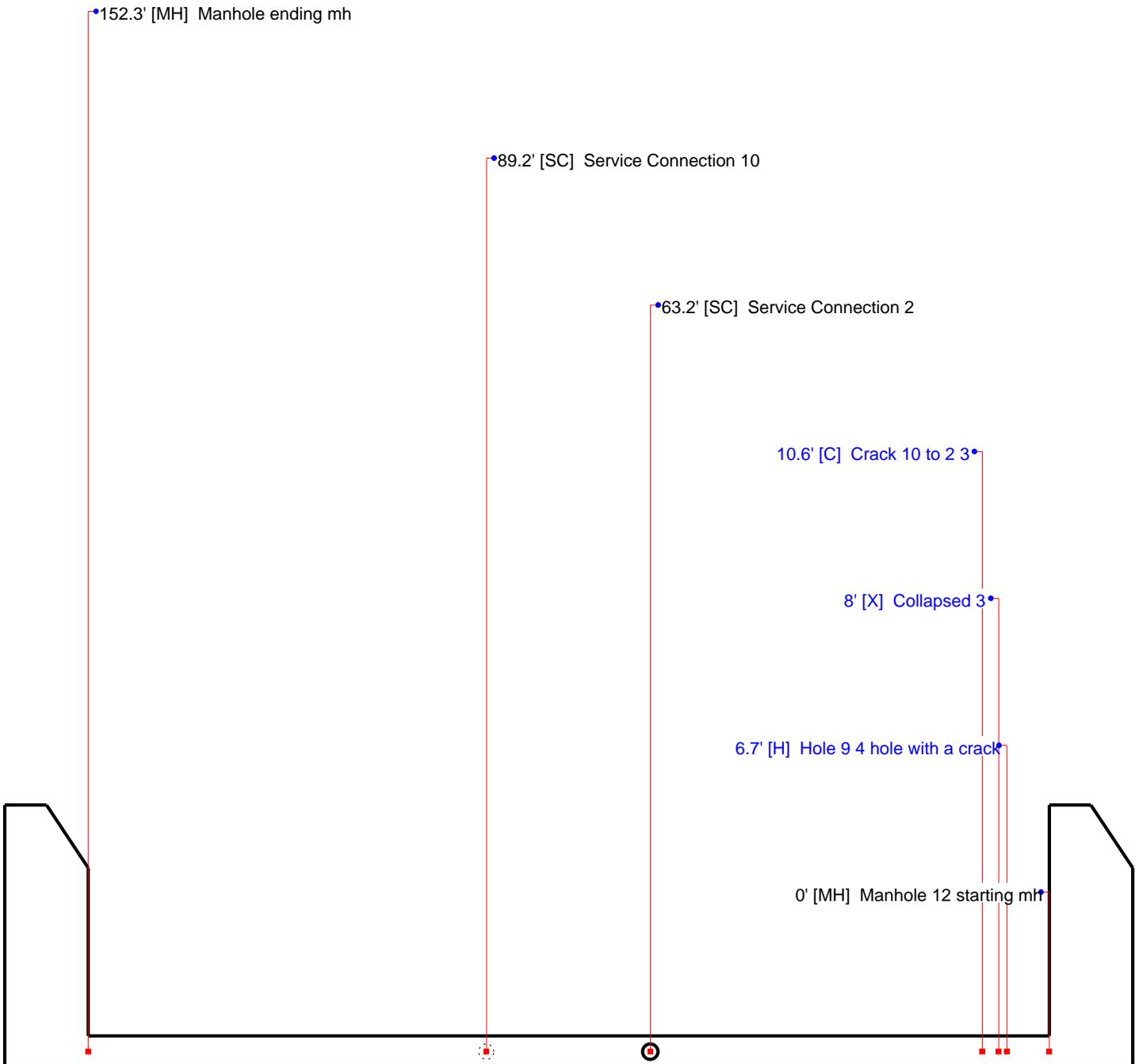
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-168	A-162		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					152.3

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
6.7	H	Hole	9	4	hole with a crack	
8.0	X	Collapsed		3		
10.6	C	Crack	10 to 2	3		
63.2	SC	Service Connection	2			
89.2	SC	Service Connection	10			
152.3	MH	Manhole			ending mh	



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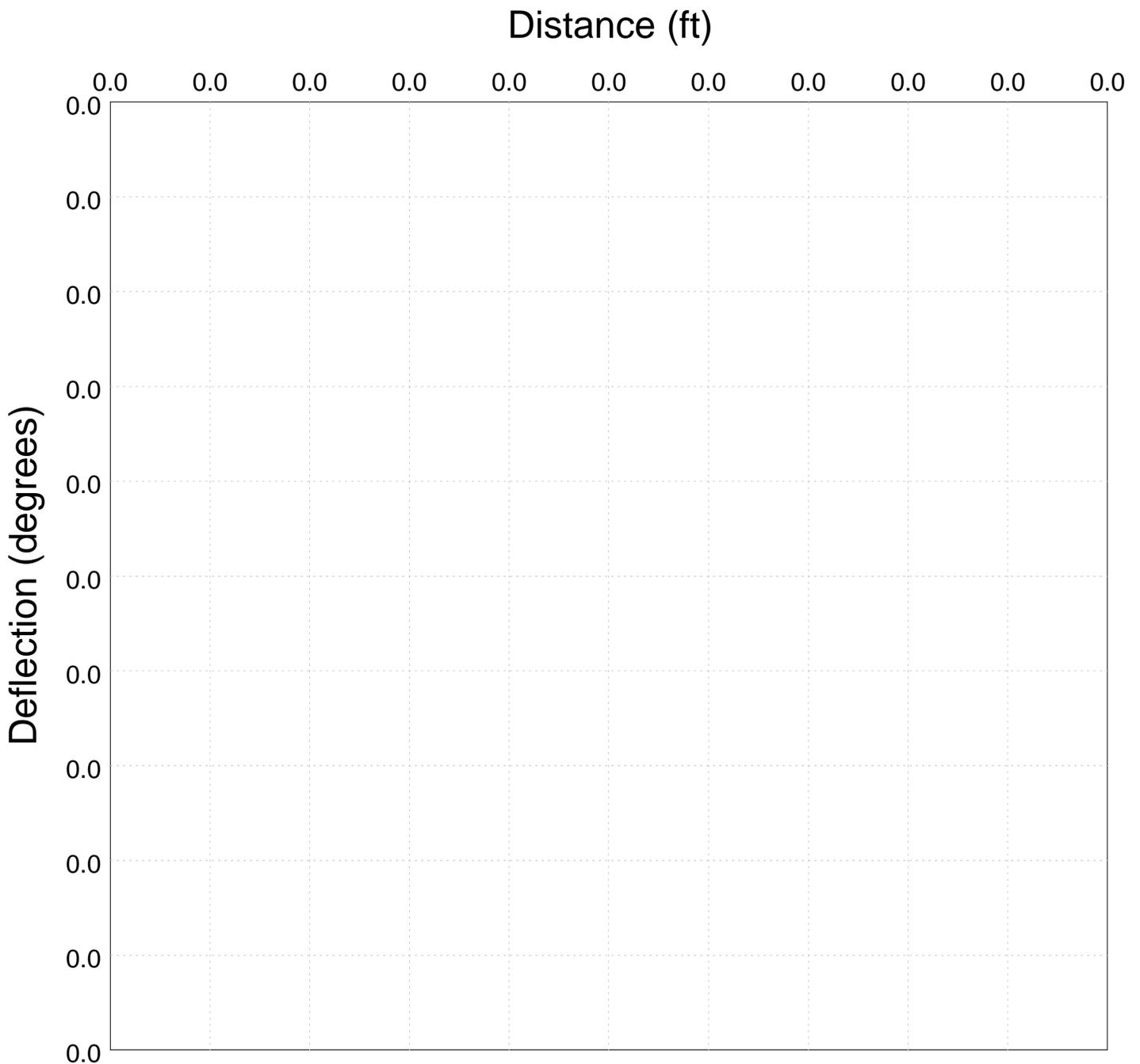
Line Segment	Block Number	Upstream MH A-168	Downstream MH A-162	Section Number	Date 21-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather Dry	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment		Length
Comments				Pre-Cleaning	TV Length 152.3





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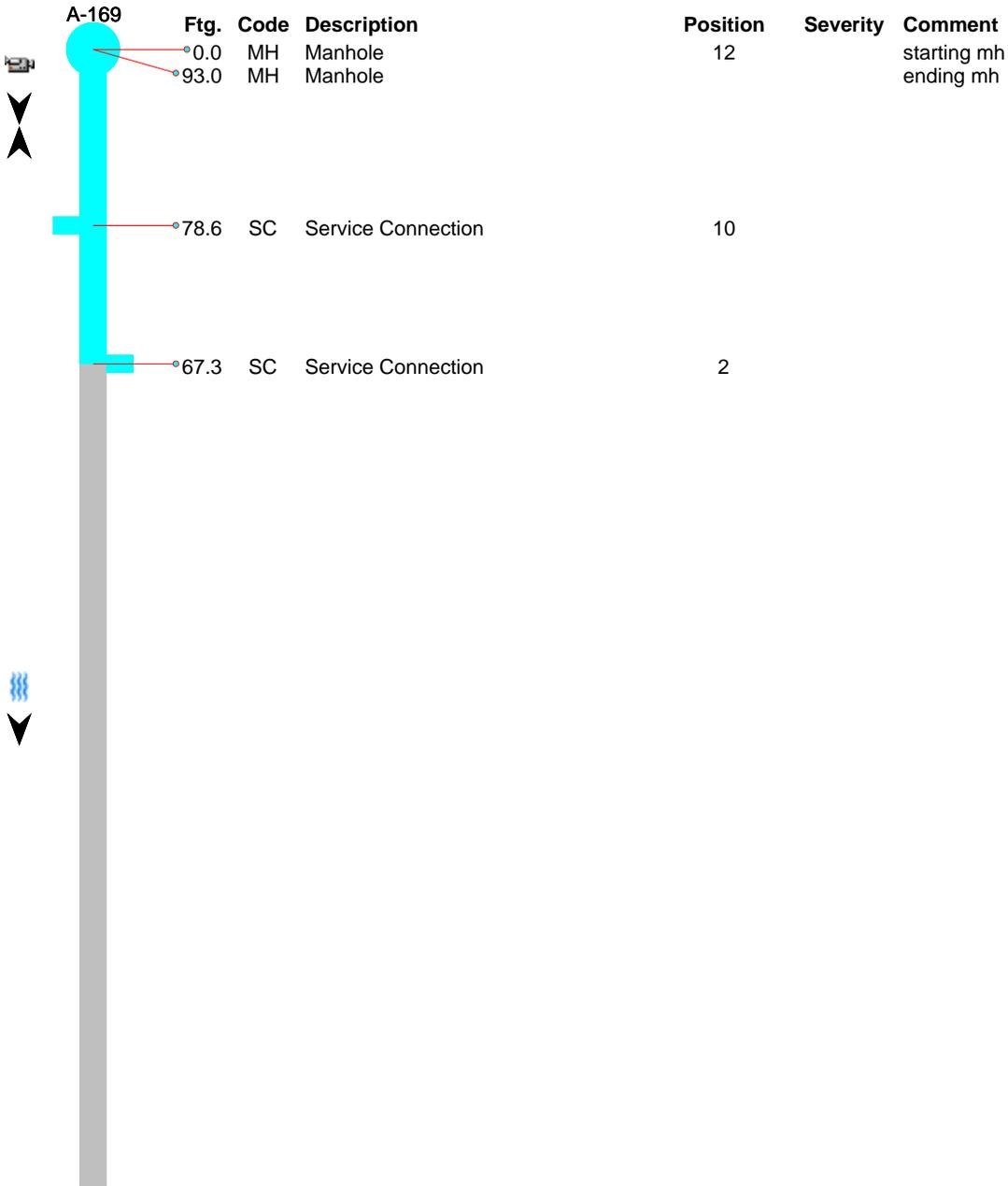
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-168	A-162		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				152.3	





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-169	A-158		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					93

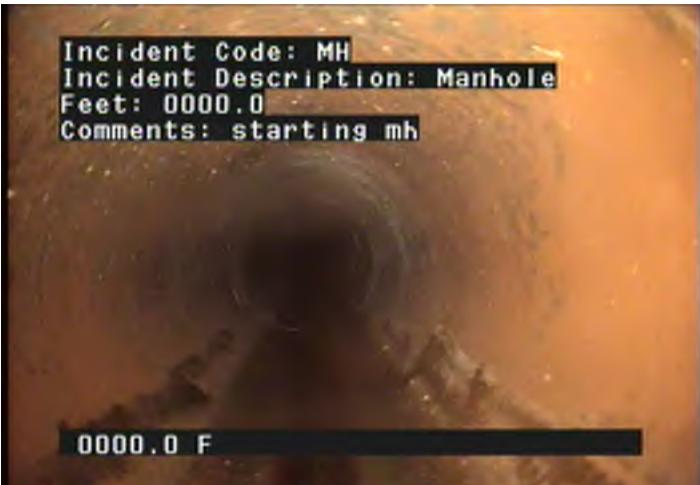


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-169	A-158		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					93



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 67.3 ft.



SC - Service Connection @ 78.6 ft.

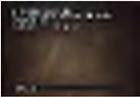


MH - Manhole @ 93.0 ft. ending mh



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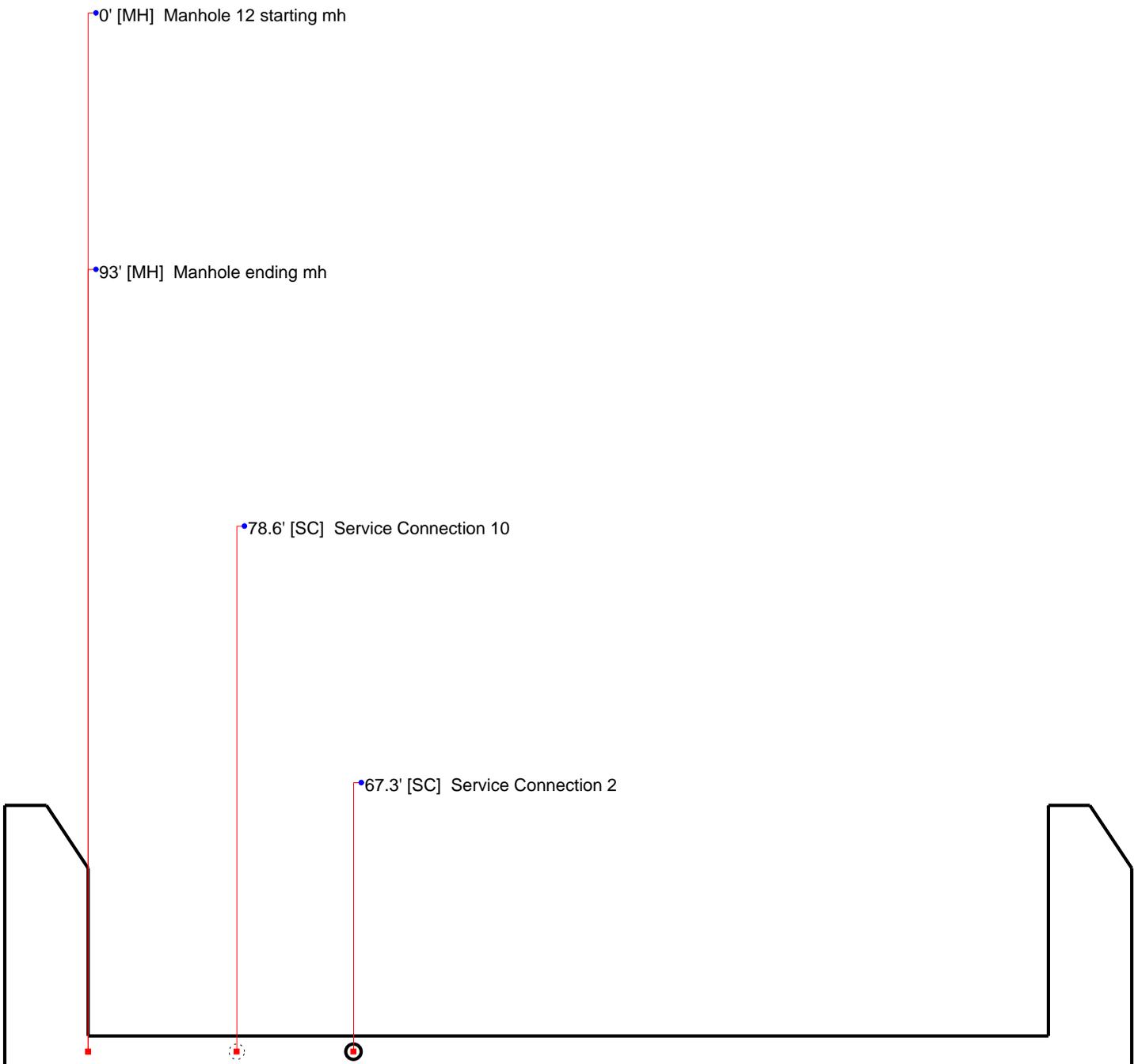
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-169	A-158		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					93

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
67.3	SC	Service Connection	2			
78.6	SC	Service Connection	10			
93.0	MH	Manhole			ending mh	



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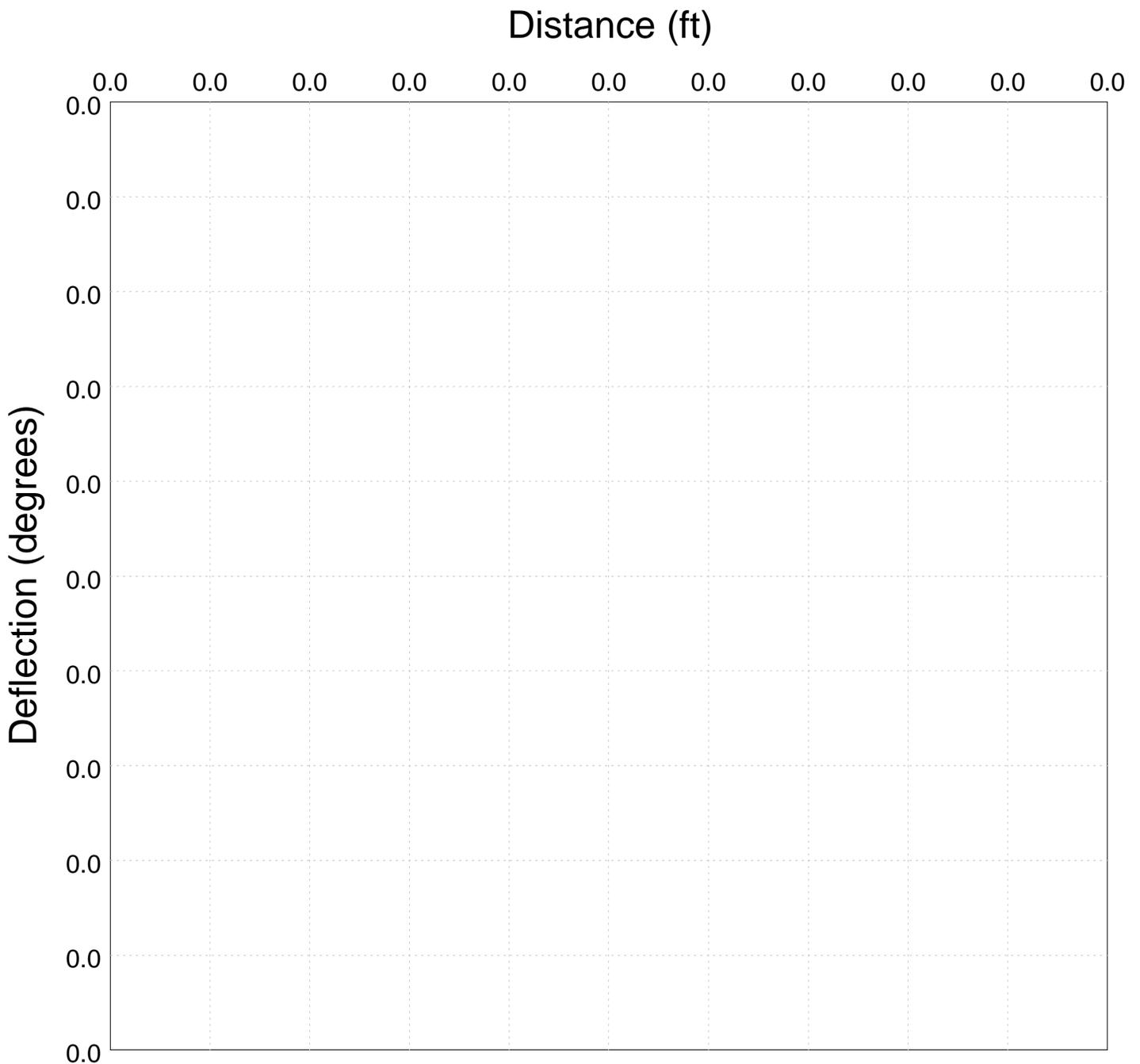
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-169	A-158		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					93





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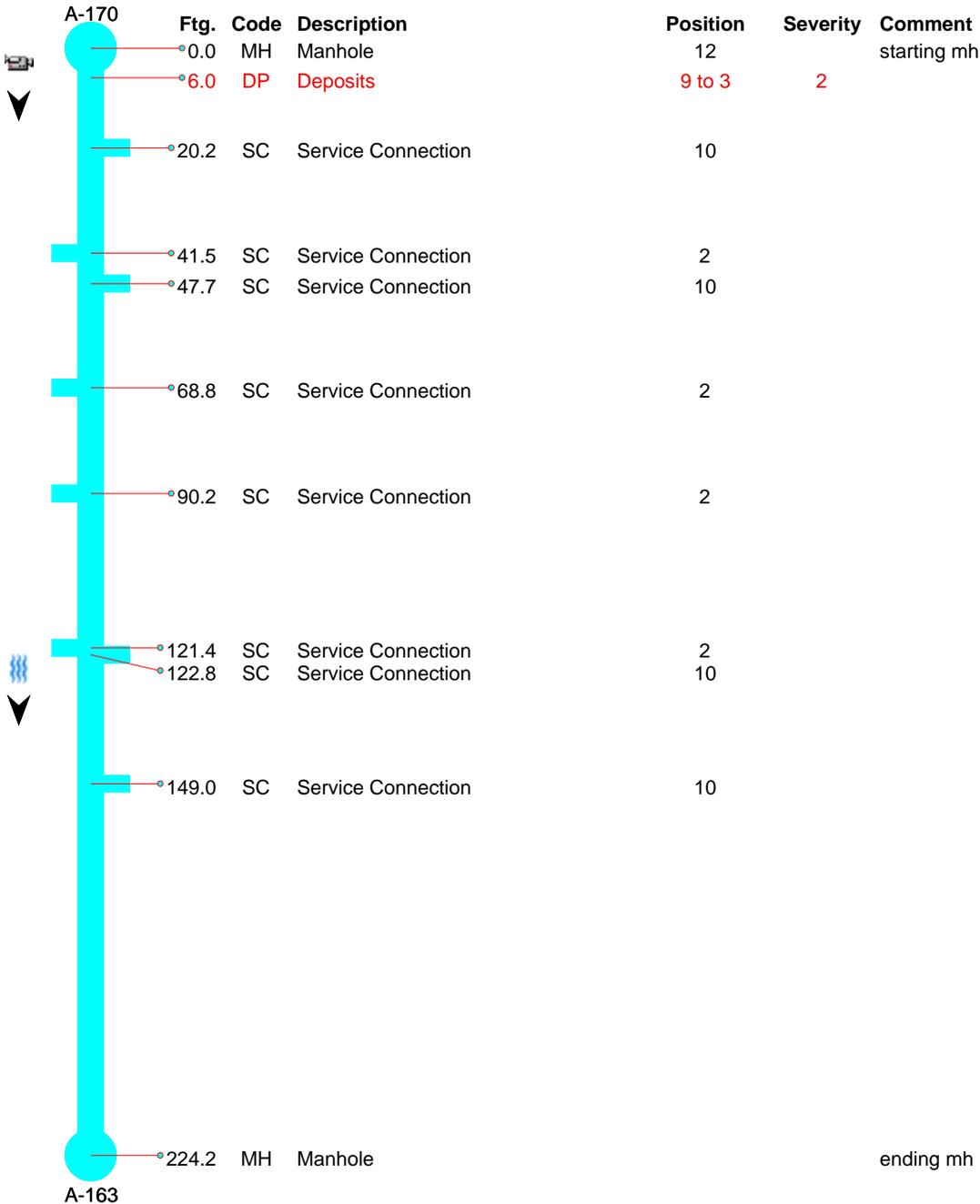
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-169	A-158		09-Mar-2017
Surveyor	Street		City	Weather	
MA	arden view court		ah		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				93	





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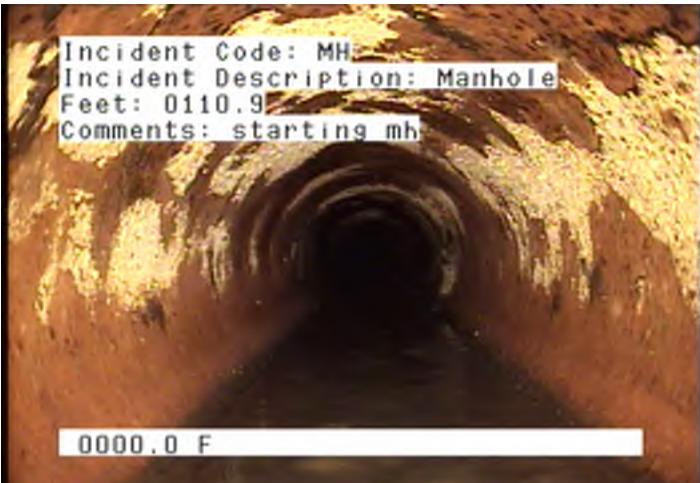
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-170	A-163		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				224.2	



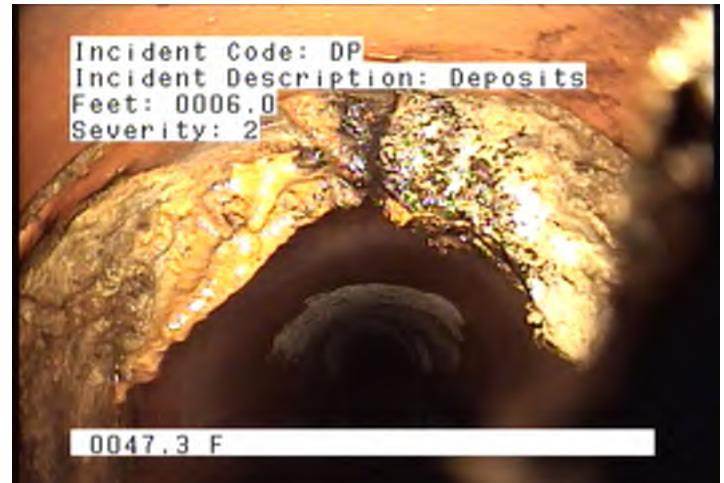


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-170	A-163		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				224.2	



MH - Manhole @ 0.0 ft. starting mh



DP - Deposits @ 6.0 ft.



SC - Service Connection @ 20.2 ft.



SC - Service Connection @ 41.5 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-170	A-163		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				224.2	



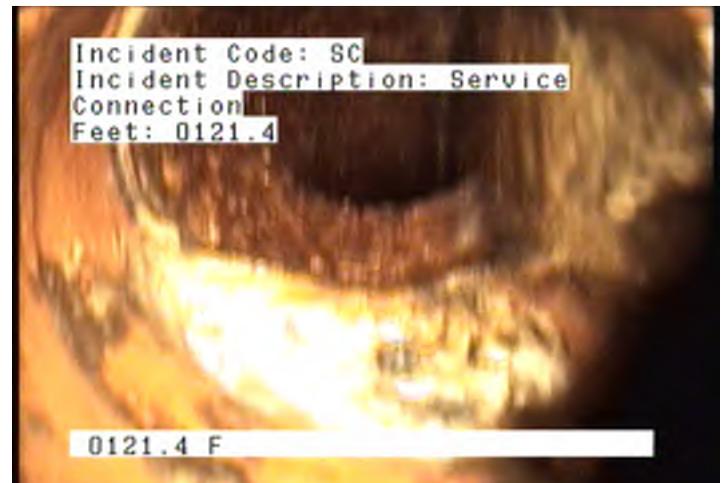
SC - Service Connection @ 47.7 ft.



SC - Service Connection @ 68.8 ft.



SC - Service Connection @ 90.2 ft.



SC - Service Connection @ 121.4 ft.



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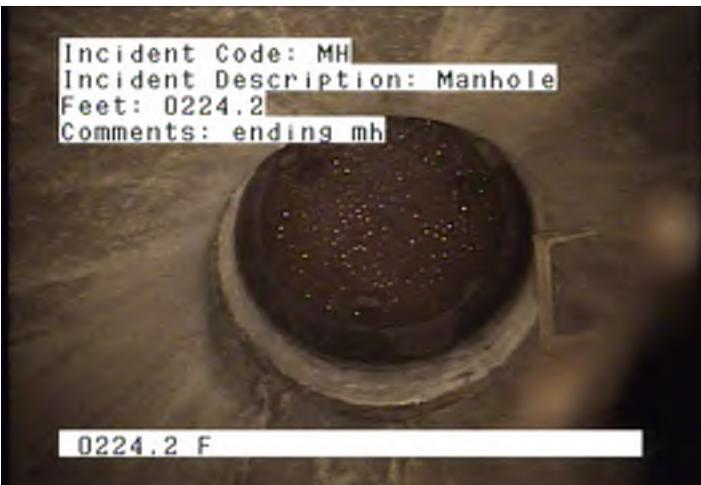
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-170	A-163		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					224.2



SC - Service Connection @ 122.8 ft.



SC - Service Connection @ 149.0 ft.



MH - Manhole @ 224.2 ft. ending mh



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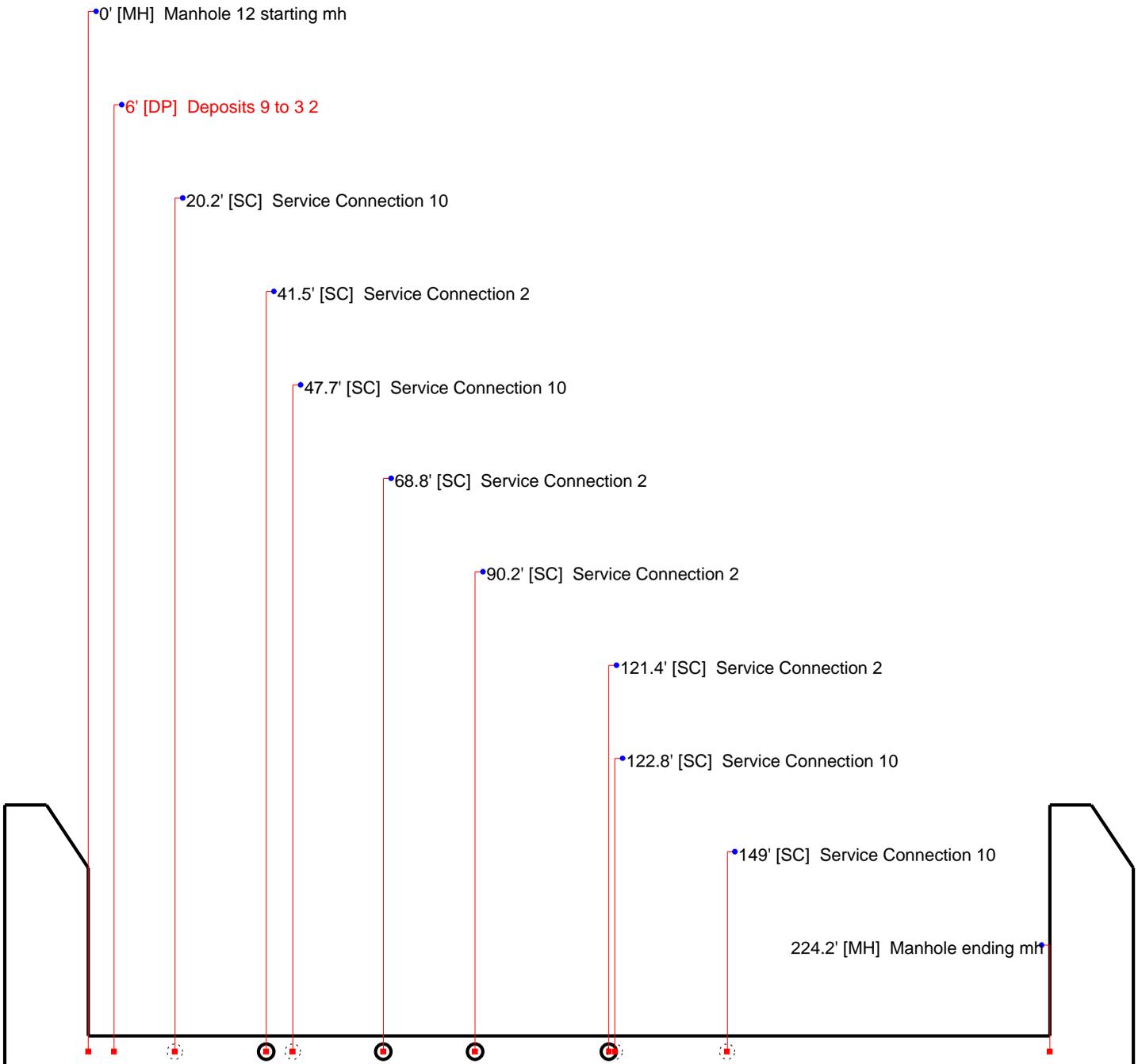
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		A-170	A-163		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					224.2

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
6.0	DP	Deposits	9 to 3	2		
20.2	SC	Service Connection	10			
41.5	SC	Service Connection	2			
47.7	SC	Service Connection	10			
68.8	SC	Service Connection	2			
90.2	SC	Service Connection	2			
121.4	SC	Service Connection	2			
122.8	SC	Service Connection	10			
149.0	SC	Service Connection	10			
224.2	MH	Manhole			ending mh	



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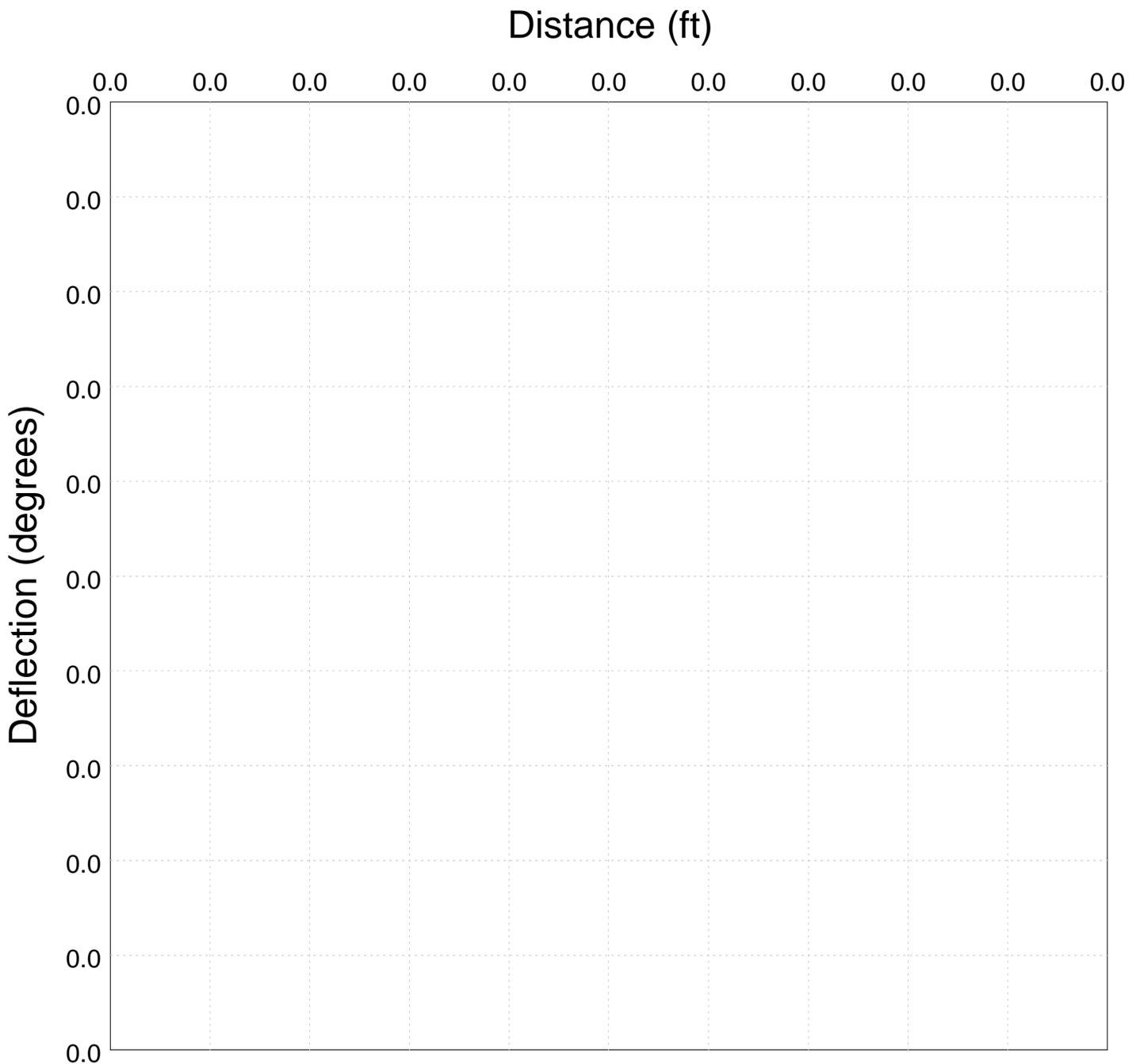
Line Segment	Block Number	Upstream MH A-170	Downstream MH A-163	Section Number	Date 21-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 224.2





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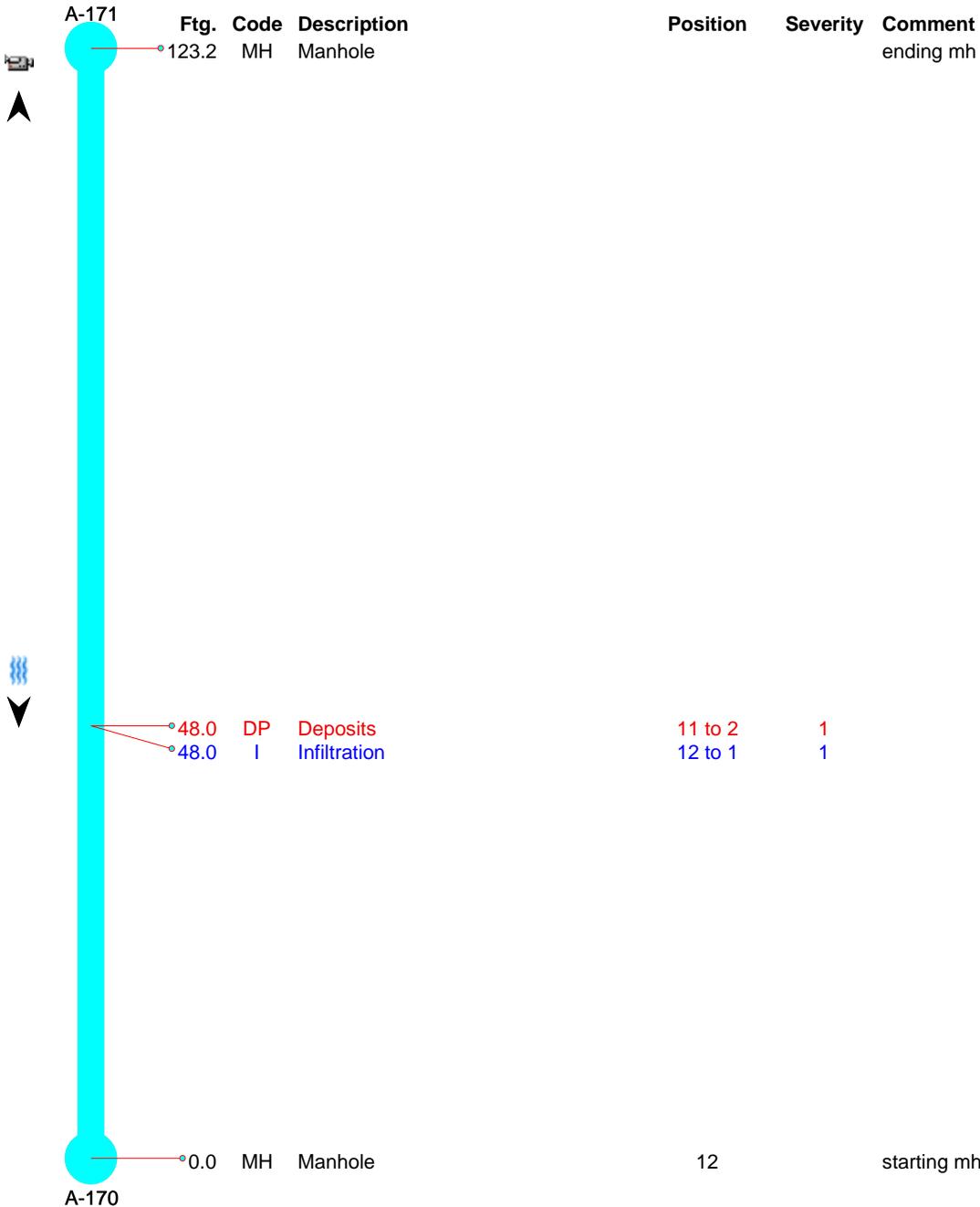
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-170	A-163		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				224.2	





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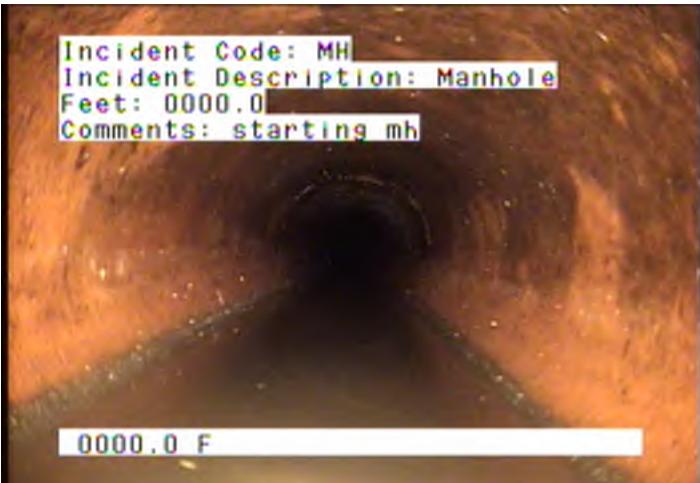
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-171	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					123.2





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-171	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					123.2



MH - Manhole @ 0.0 ft. starting mh



I - Infiltration @ 48.0 ft.



DP - Deposits @ 48.0 ft.



MH - Manhole @ 123.2 ft. ending mh



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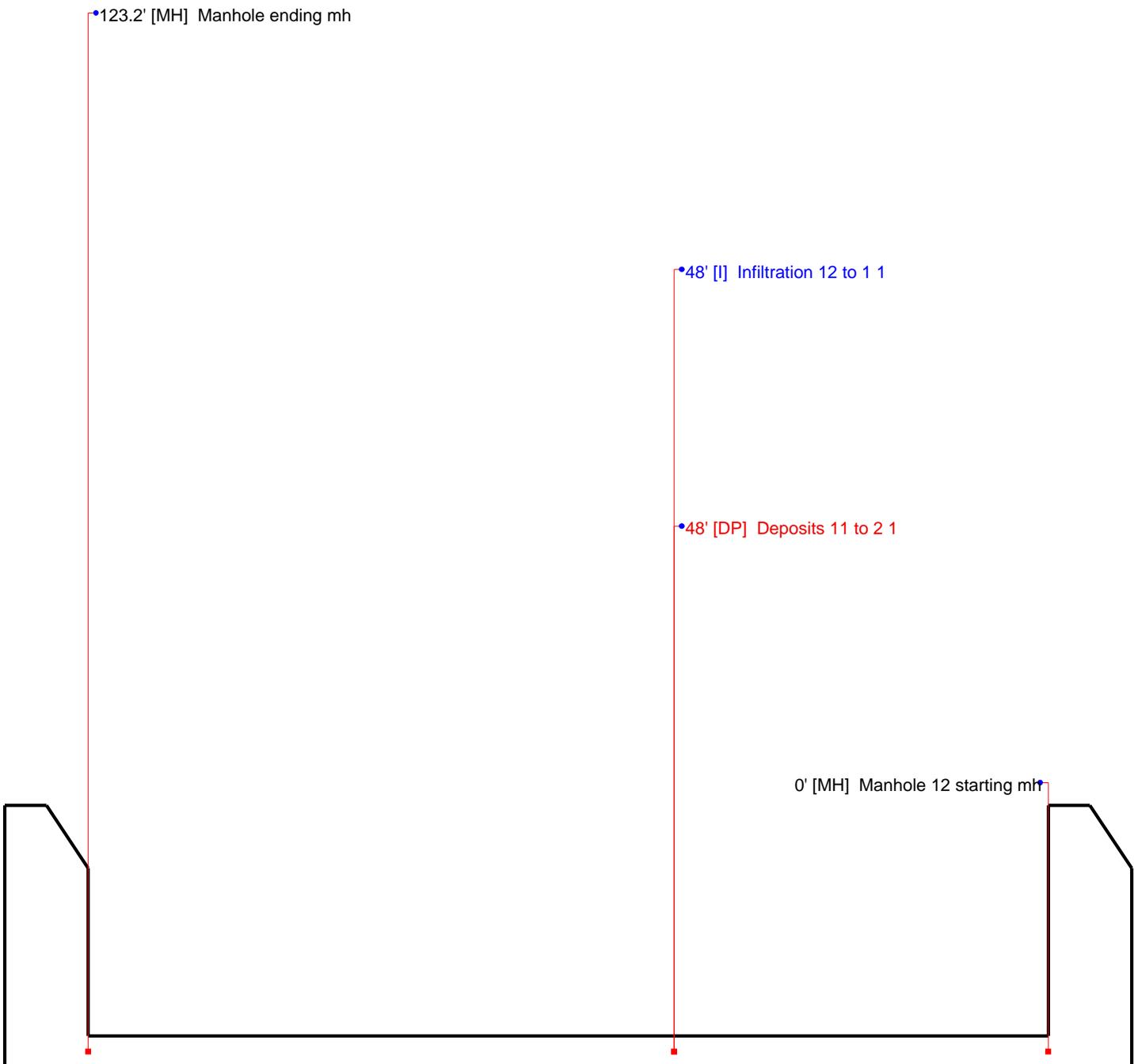
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-171	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					123.2

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
48.0	I	Infiltration	12 to 1	1		
48.0	DP	Deposits	11 to 2	1		
123.2	MH	Manhole			ending mh	



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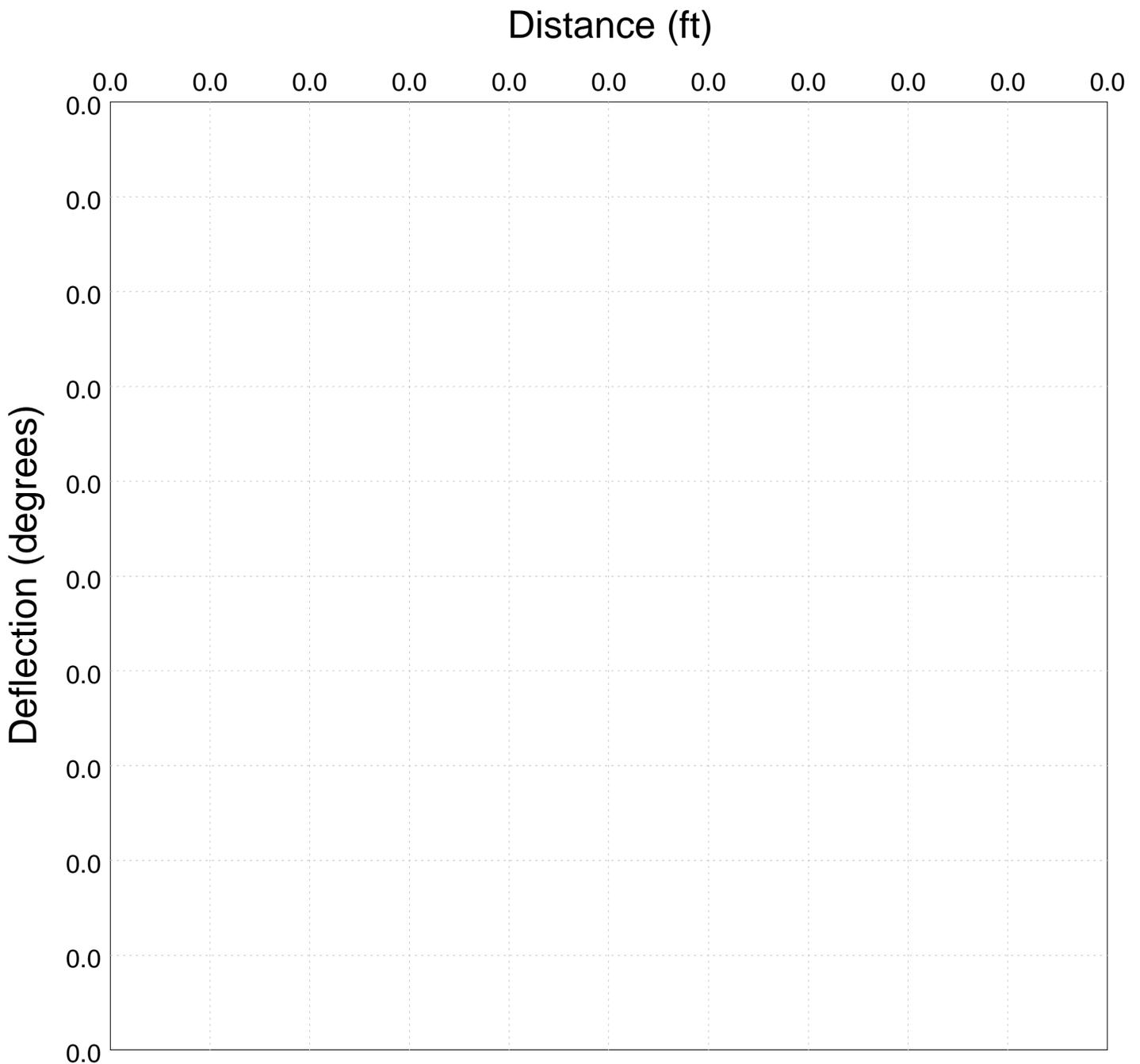
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-171	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					123.2





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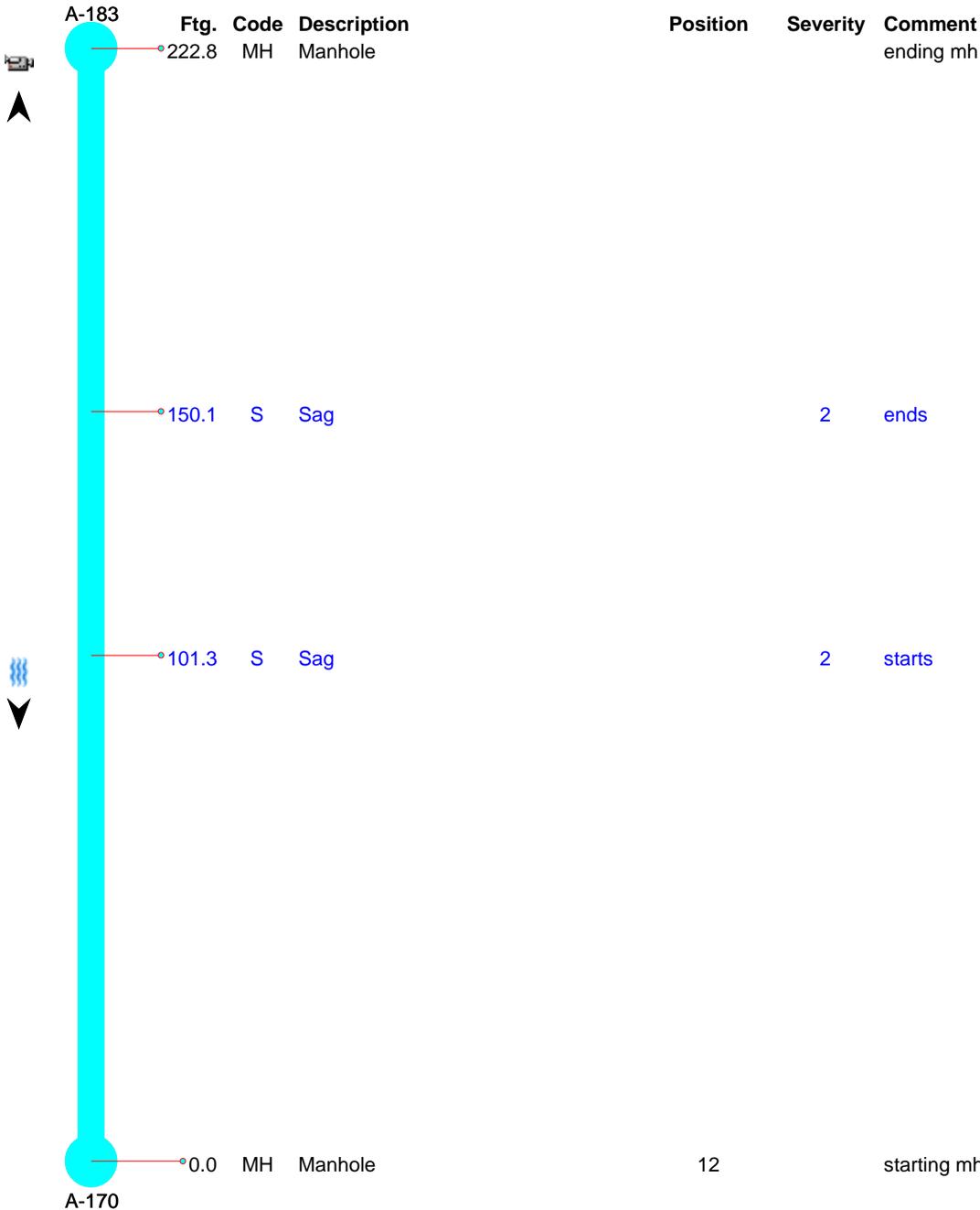
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-171	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills	Dry	
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					123.2





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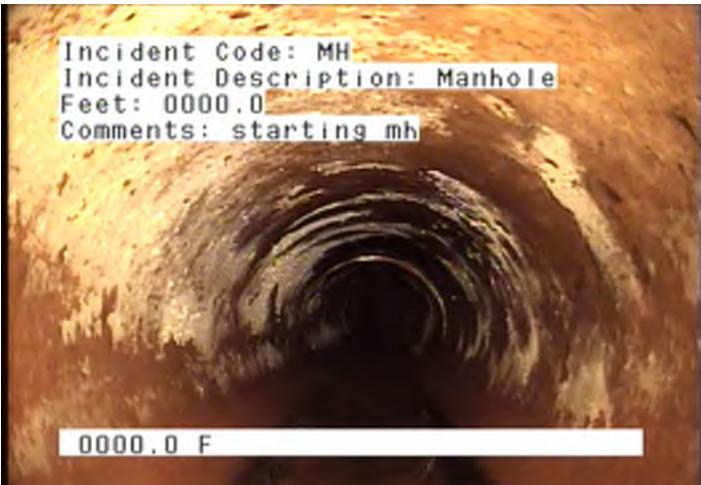
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
post jetting/vac	Heavy Cleaning			222.8	



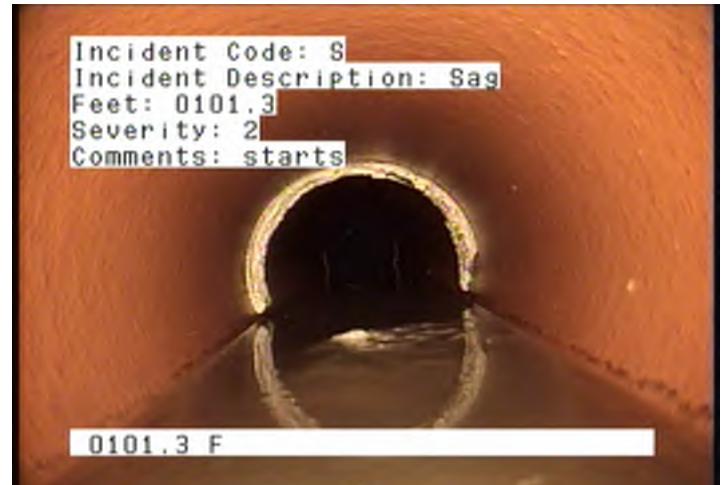


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
post jetting/vac	Heavy Cleaning			222.8	



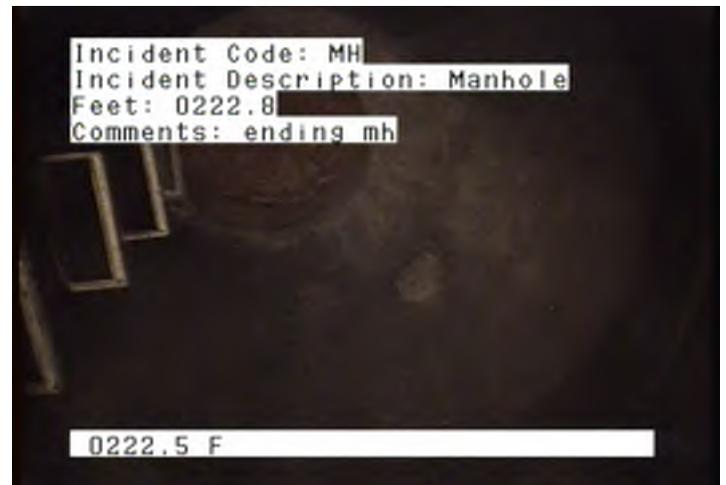
MH - Manhole @ 0.0 ft. starting mh



S - Sag @ 101.3 ft. starts



S - Sag @ 150.1 ft. ends



MH - Manhole @ 222.8 ft. ending mh



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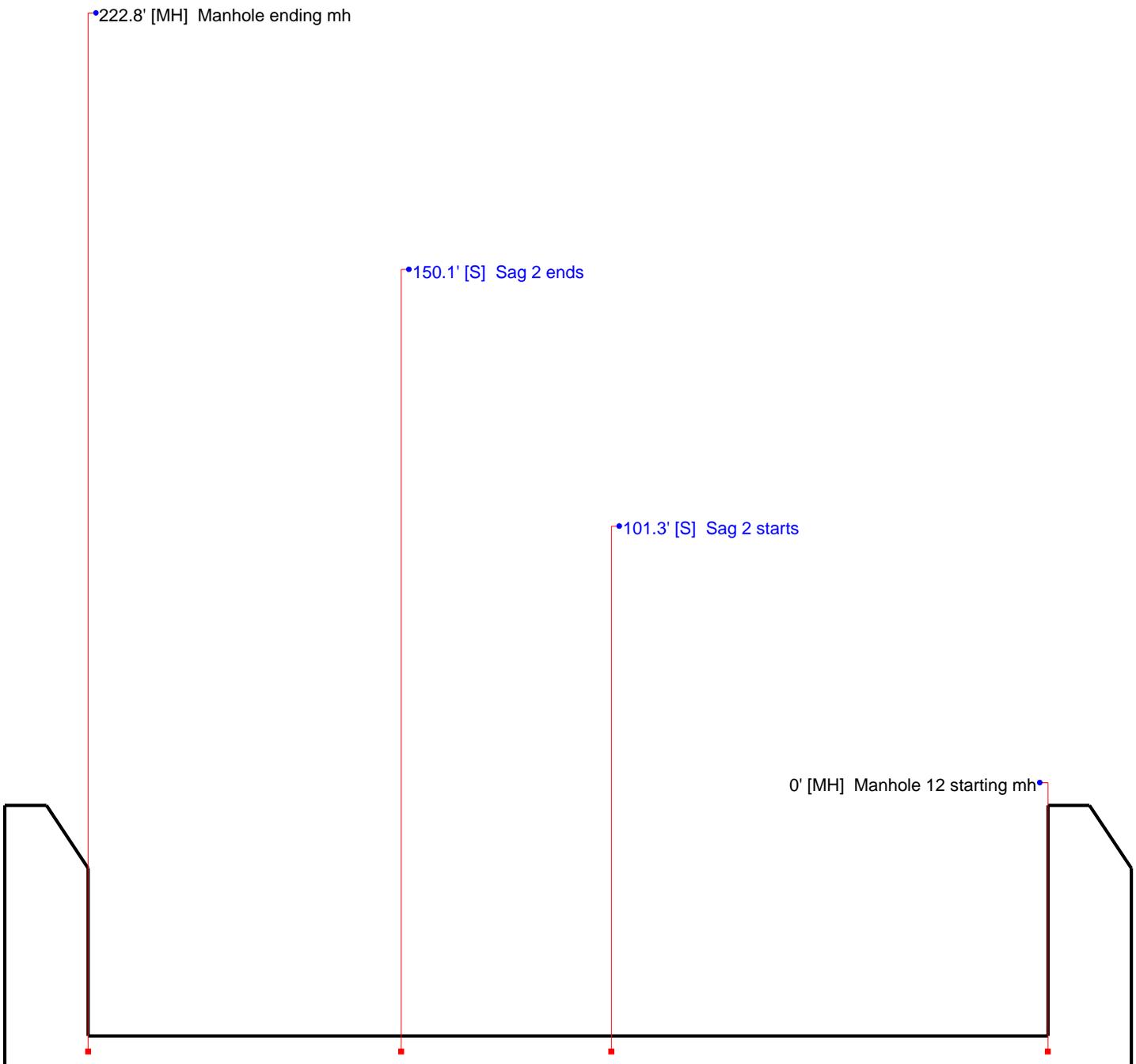
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
post jetting/vac				Heavy Cleaning	222.8

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
101.3	S	Sag		2	starts	
150.1	S	Sag		2	ends	
222.8	MH	Manhole			ending mh	



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		A-183	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
post jetting/vac	Heavy Cleaning			222.8	

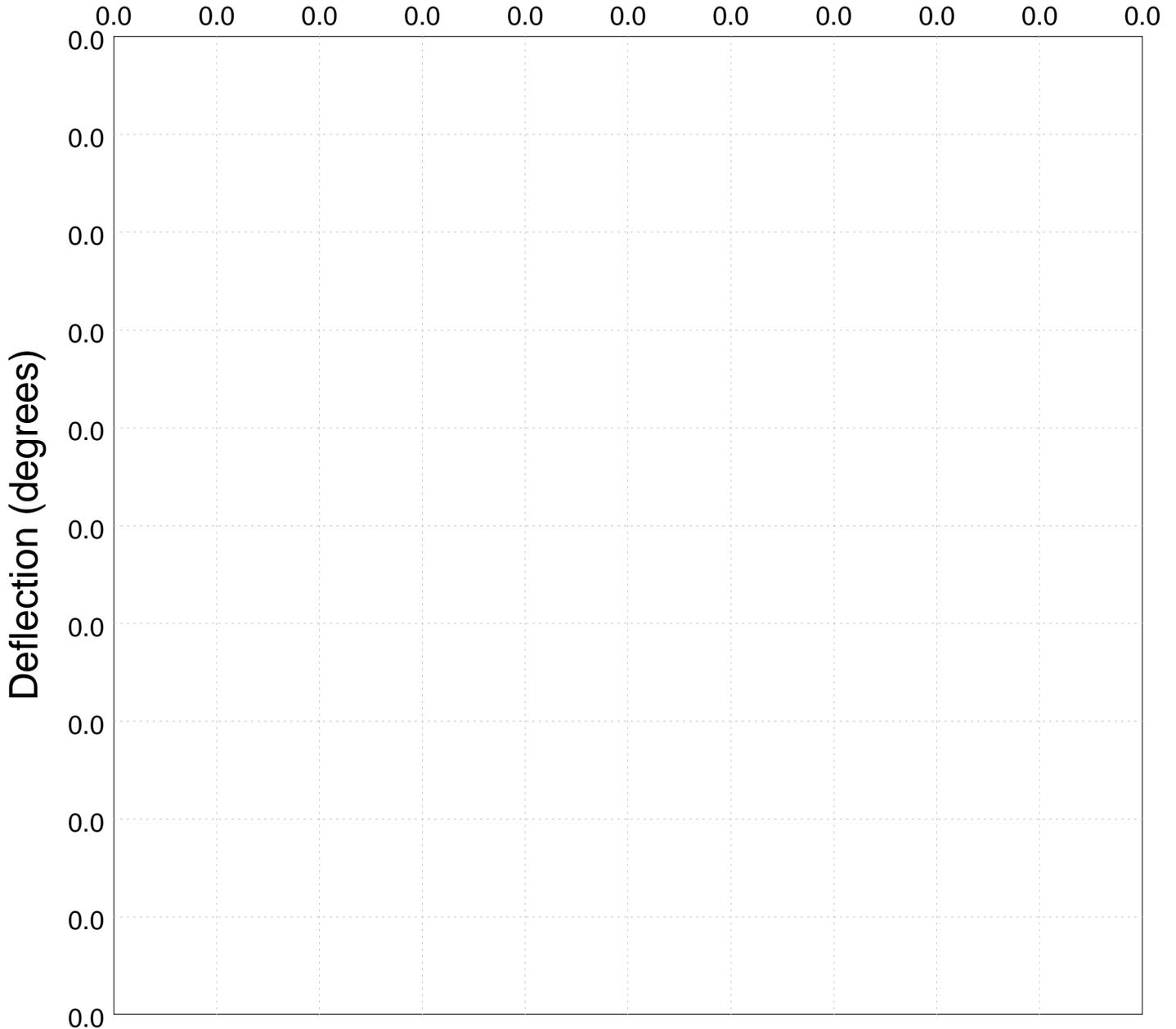




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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		21-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
post jetting/vac				Heavy Cleaning	222.8

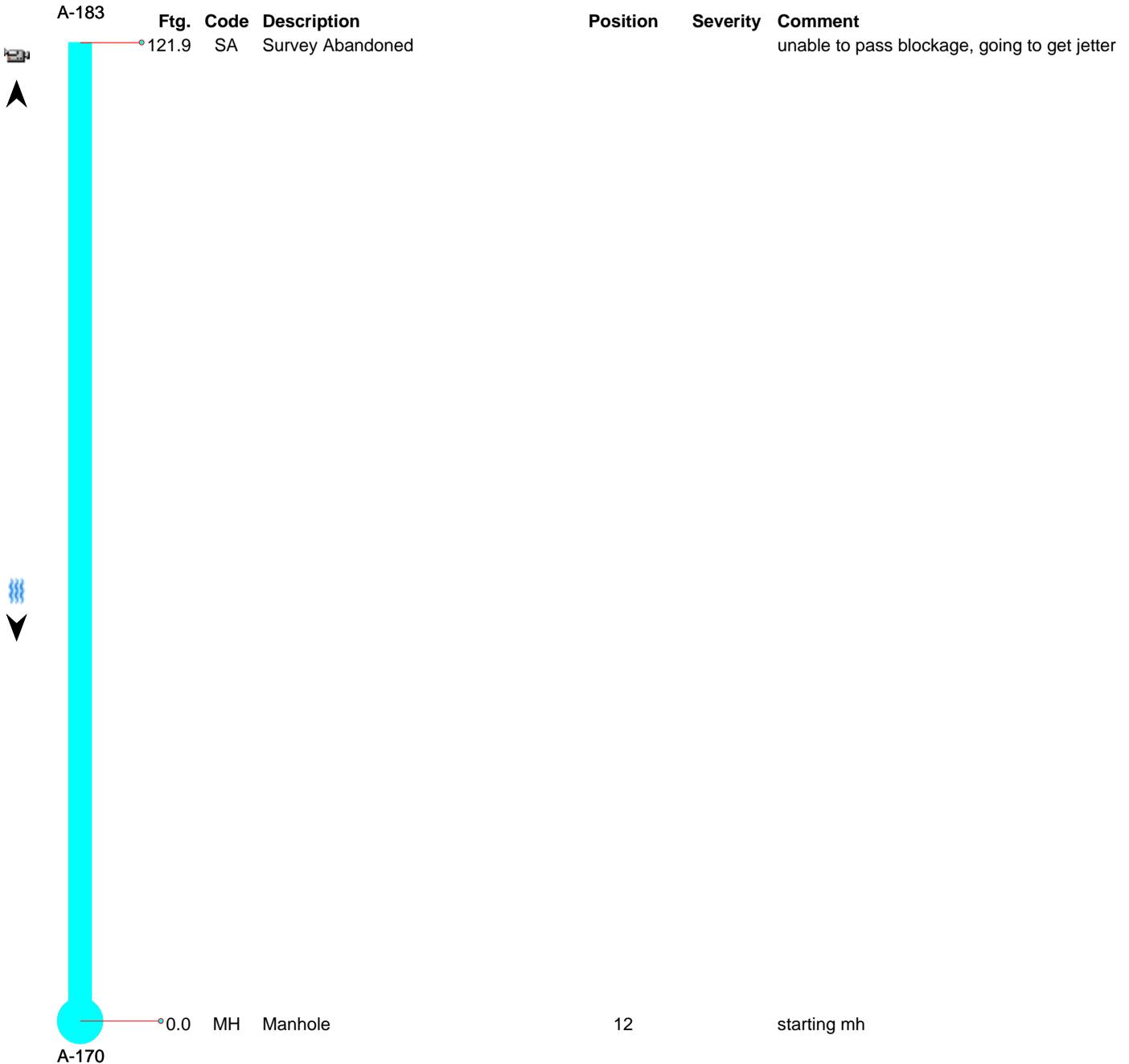
Distance (ft)





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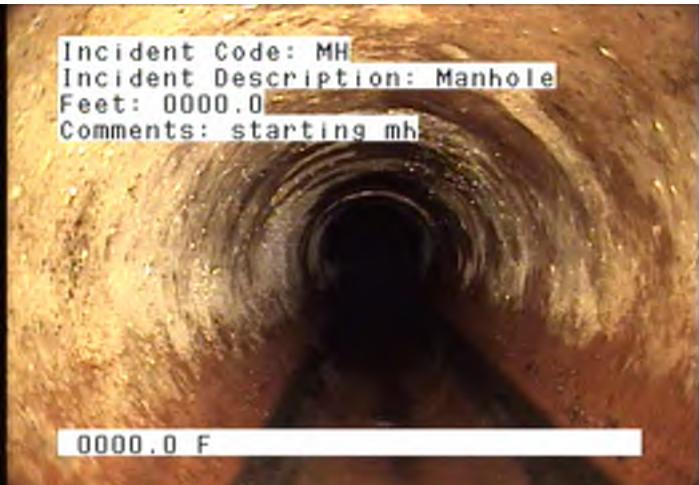
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					121.9



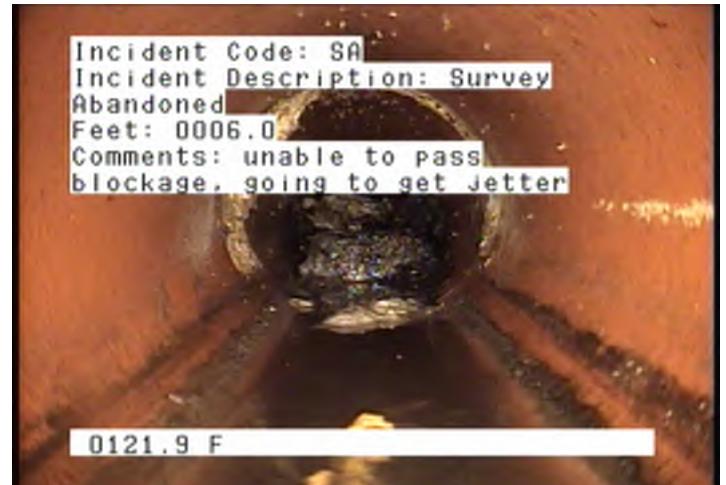


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				121.9	



MH - Manhole @ 0.0 ft. starting mh



SA - Survey Abandoned @ 121.9 ft.
unable to pass blockage, going to get jetter



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					121.9

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
121.9	SA	Survey Abandoned			unable to pass blockage, going to get jetter	



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		A-183	A-170		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				121.9	

121.9' [SA] Survey Abandoned unable to pass blockage, going to get jetter

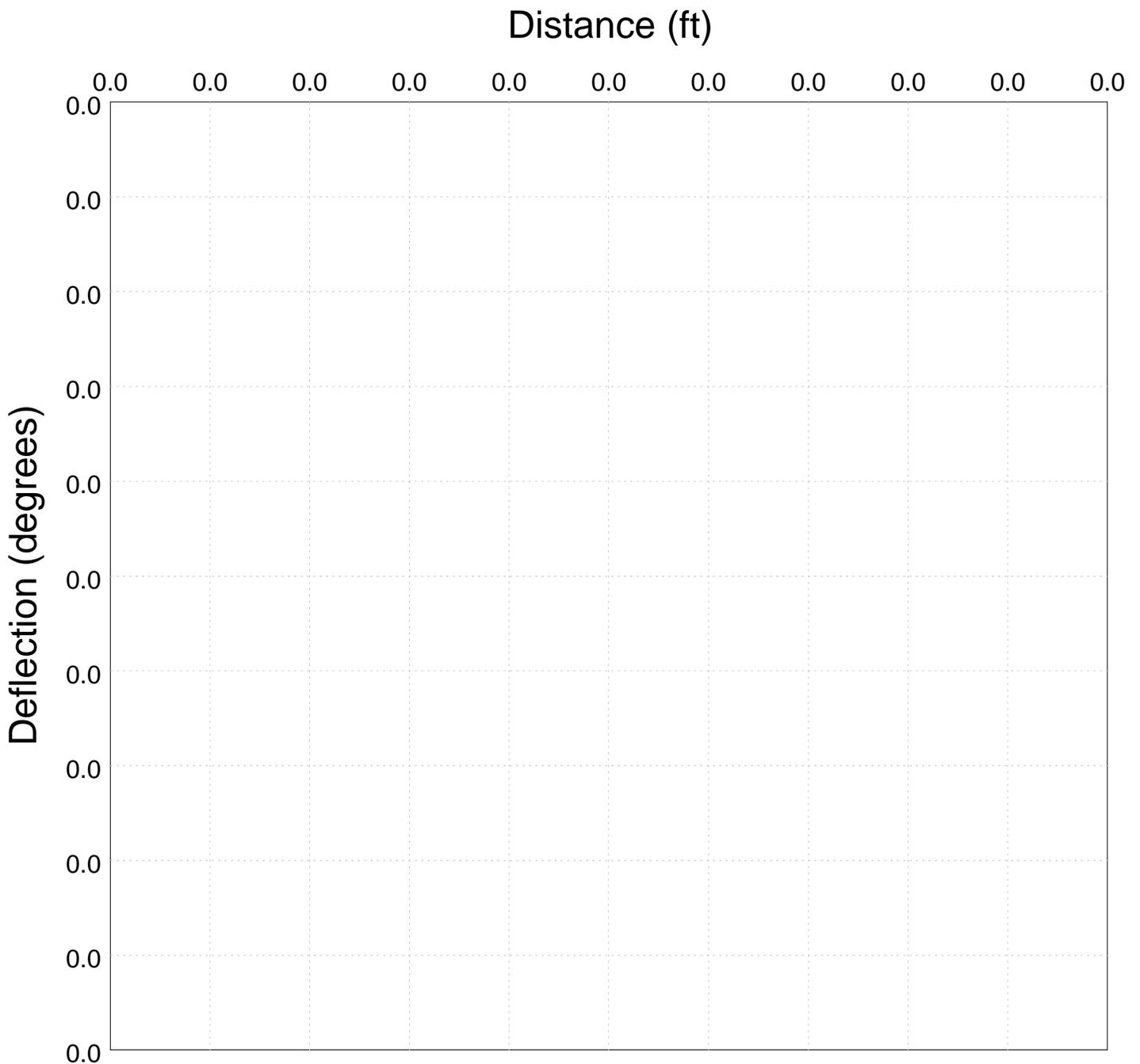
0' [MH] Manhole 12 starting mh





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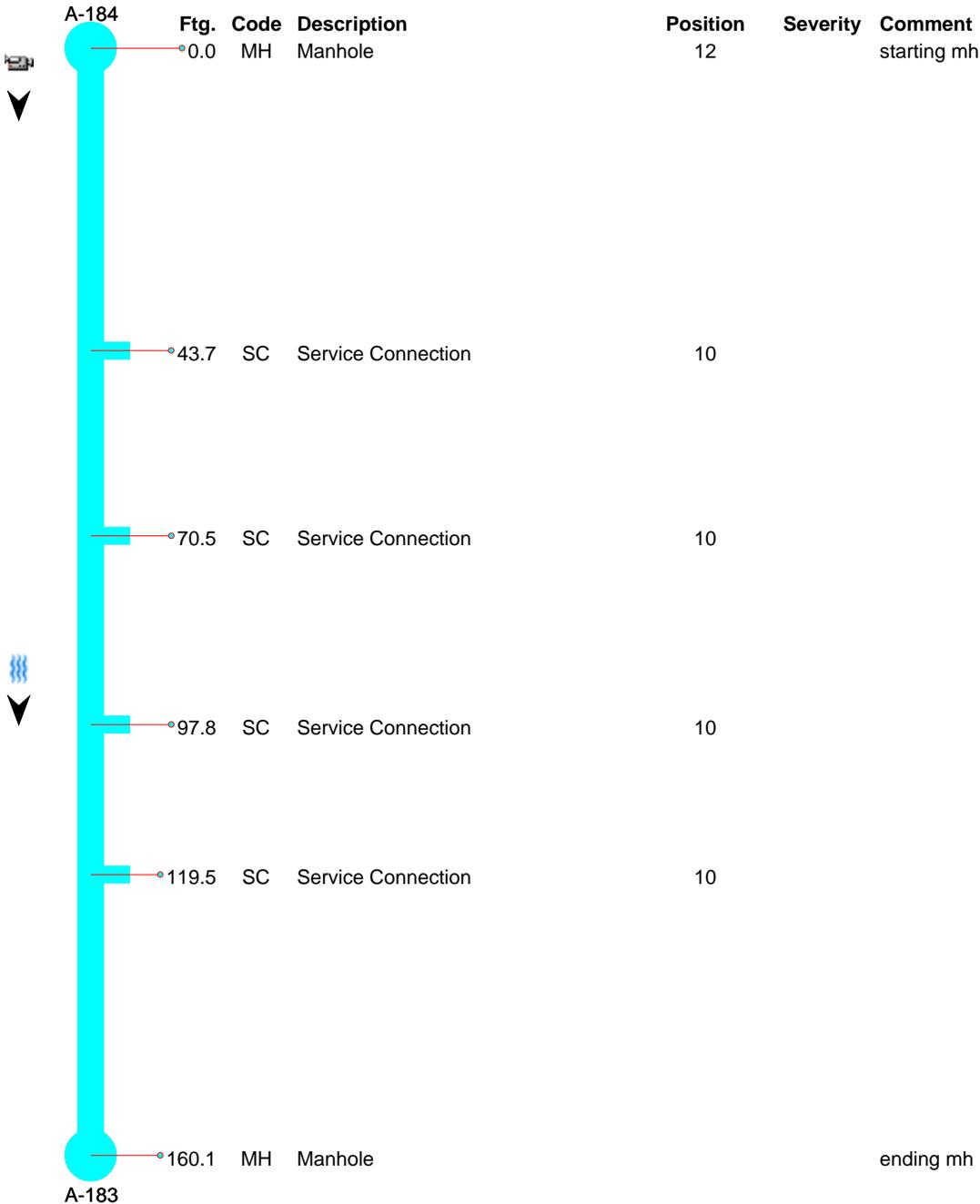
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-183	A-170		20-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				121.9	





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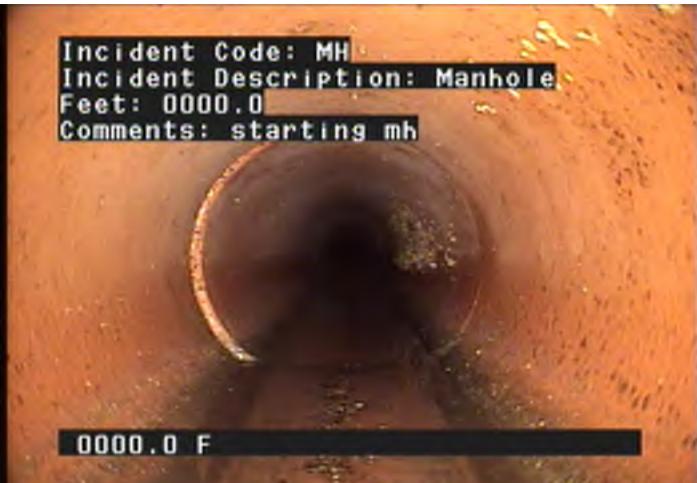
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-184	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					160.1





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-184	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					160.1



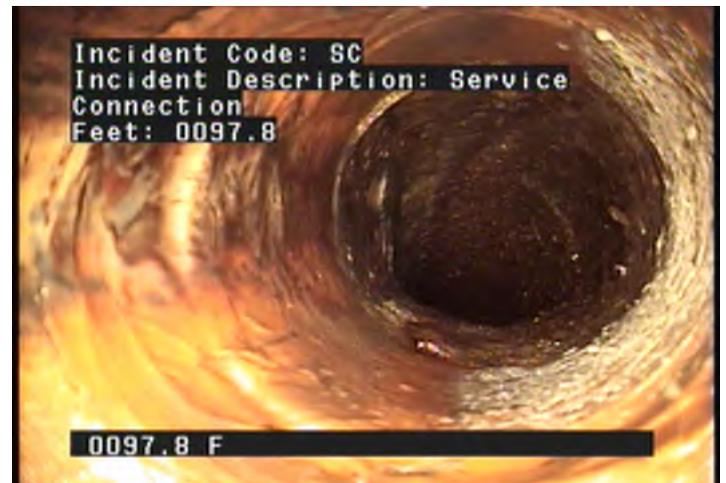
MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 43.7 ft.



SC - Service Connection @ 70.5 ft.

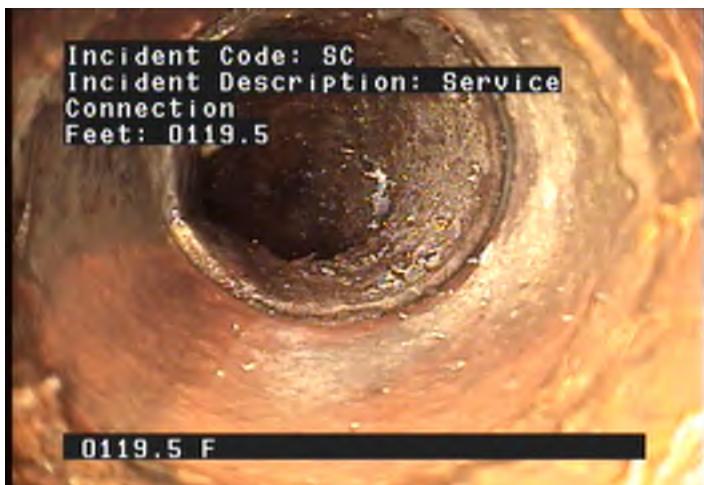


SC - Service Connection @ 97.8 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-184	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					160.1



SC - Service Connection @ 119.5 ft.



MH - Manhole @ 160.1 ft. ending mh



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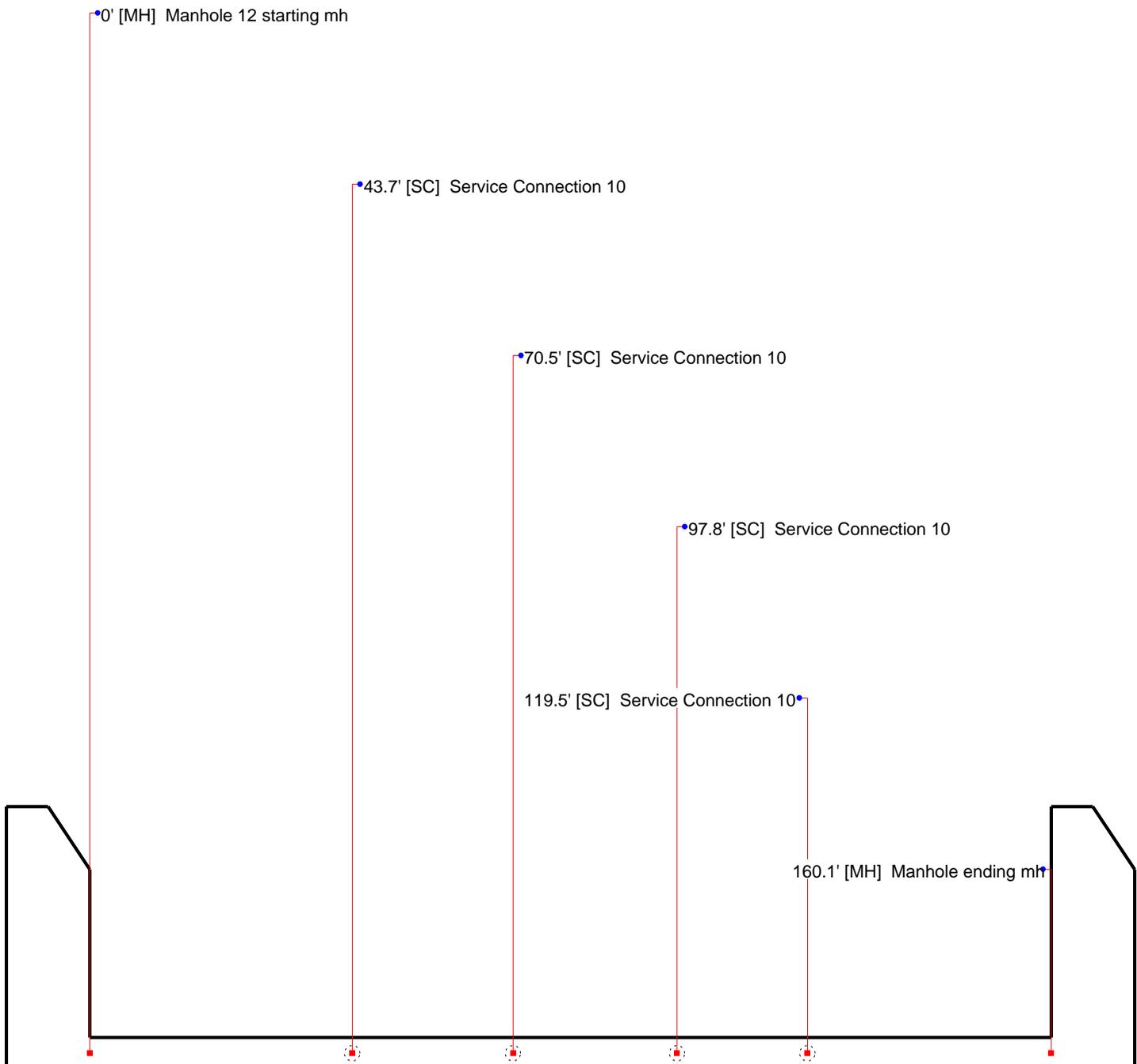
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-184	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					160.1

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
43.7	SC	Service Connection	10			
70.5	SC	Service Connection	10			
97.8	SC	Service Connection	10			
119.5	SC	Service Connection	10			
160.1	MH	Manhole			ending mh	



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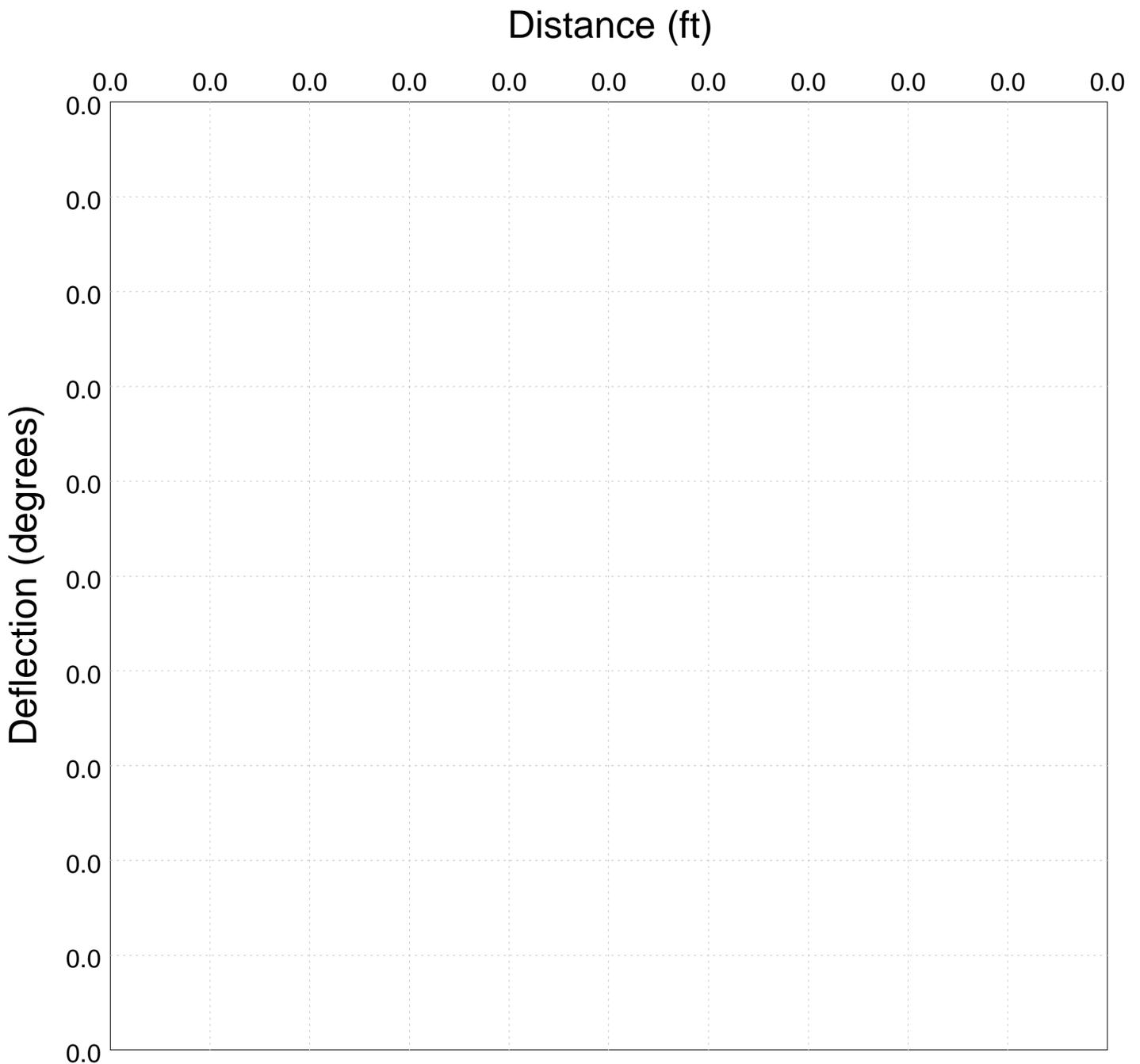
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-184	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					160.1





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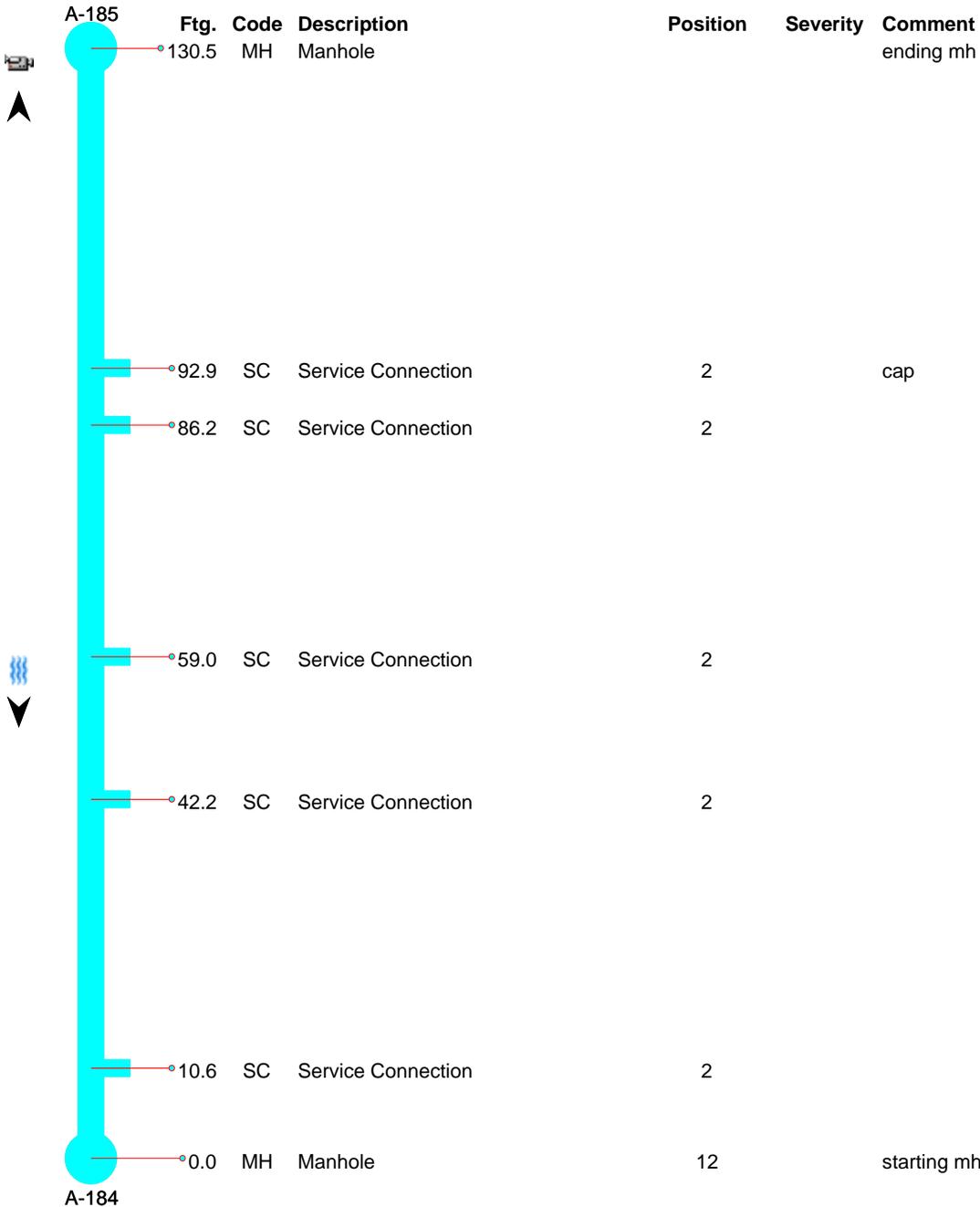
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-184	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				160.1	





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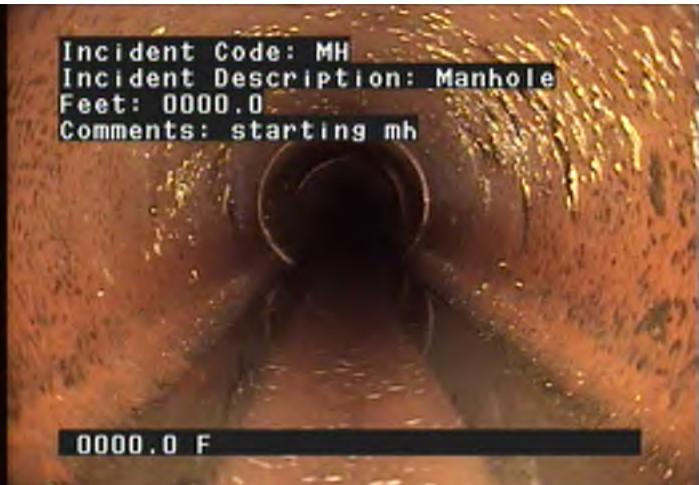
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-185	A-184		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					130.5





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-185	A-184		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					130.5



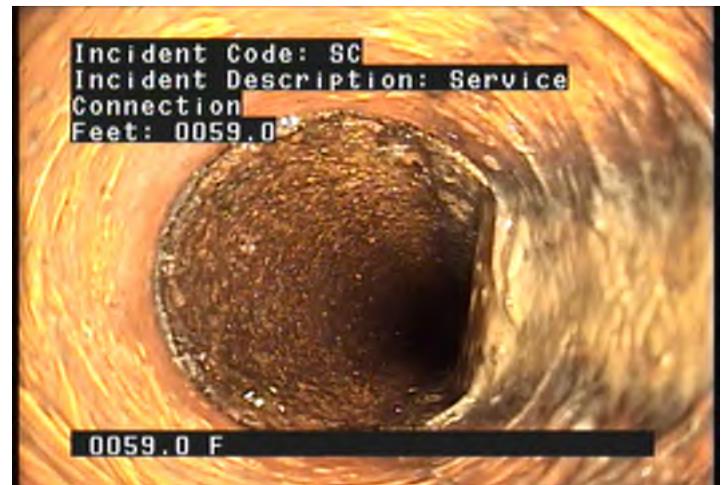
MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 10.6 ft.



SC - Service Connection @ 42.2 ft.



SC - Service Connection @ 59.0 ft.



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		A-185	A-184		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					130.5



SC - Service Connection @ 86.2 ft.



SC - Service Connection @ 92.9 ft. cap

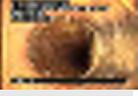
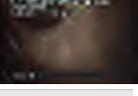


MH - Manhole @ 130.5 ft. ending mh



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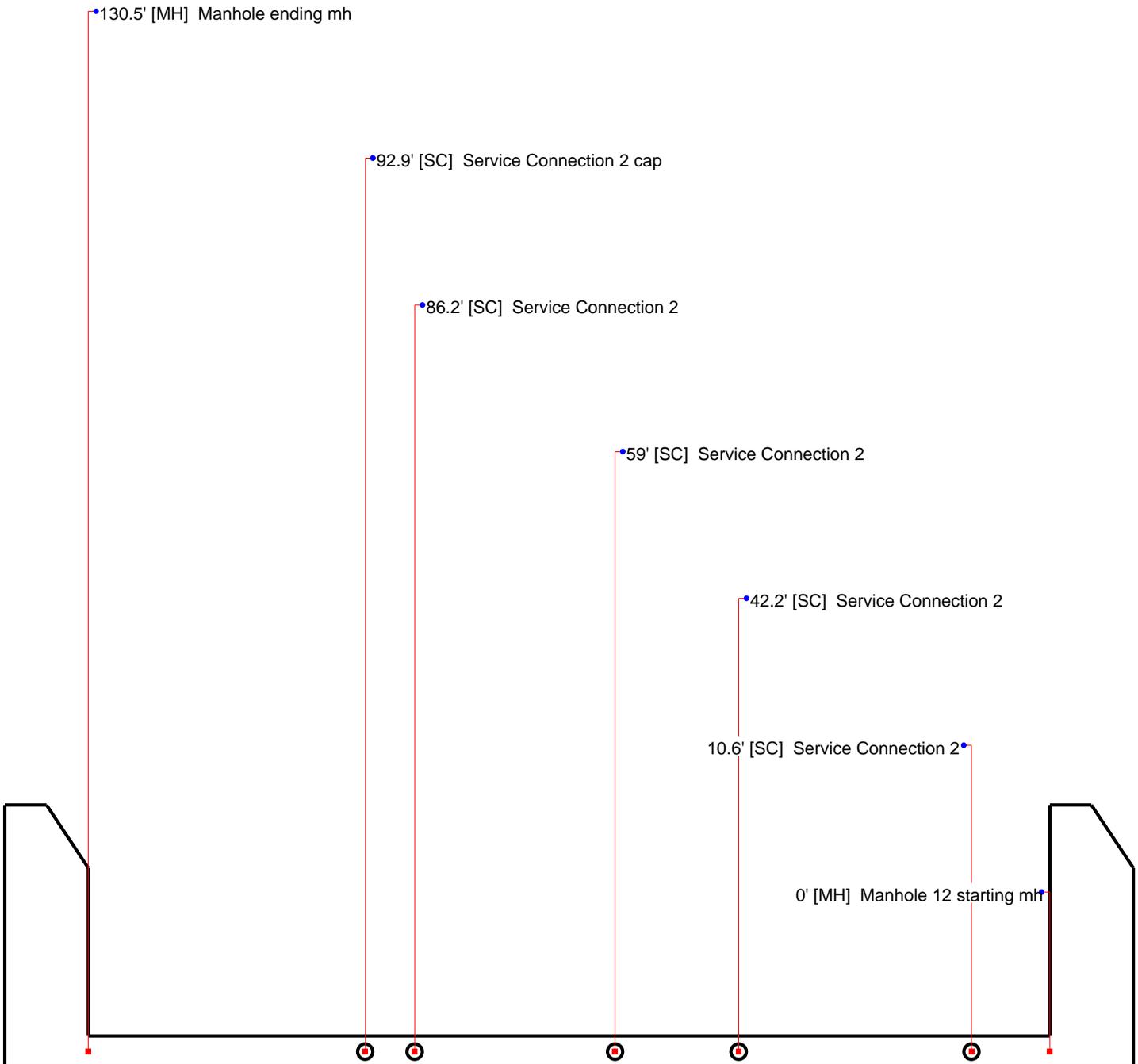
Line Segment	Block Number	Upstream MH A-185	Downstream MH A-184	Section Number	Date 19-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 130.5

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
10.6	SC	Service Connection	2			
42.2	SC	Service Connection	2			
59.0	SC	Service Connection	2			
86.2	SC	Service Connection	2			
92.9	SC	Service Connection	2		cap	
130.5	MH	Manhole			ending mh	



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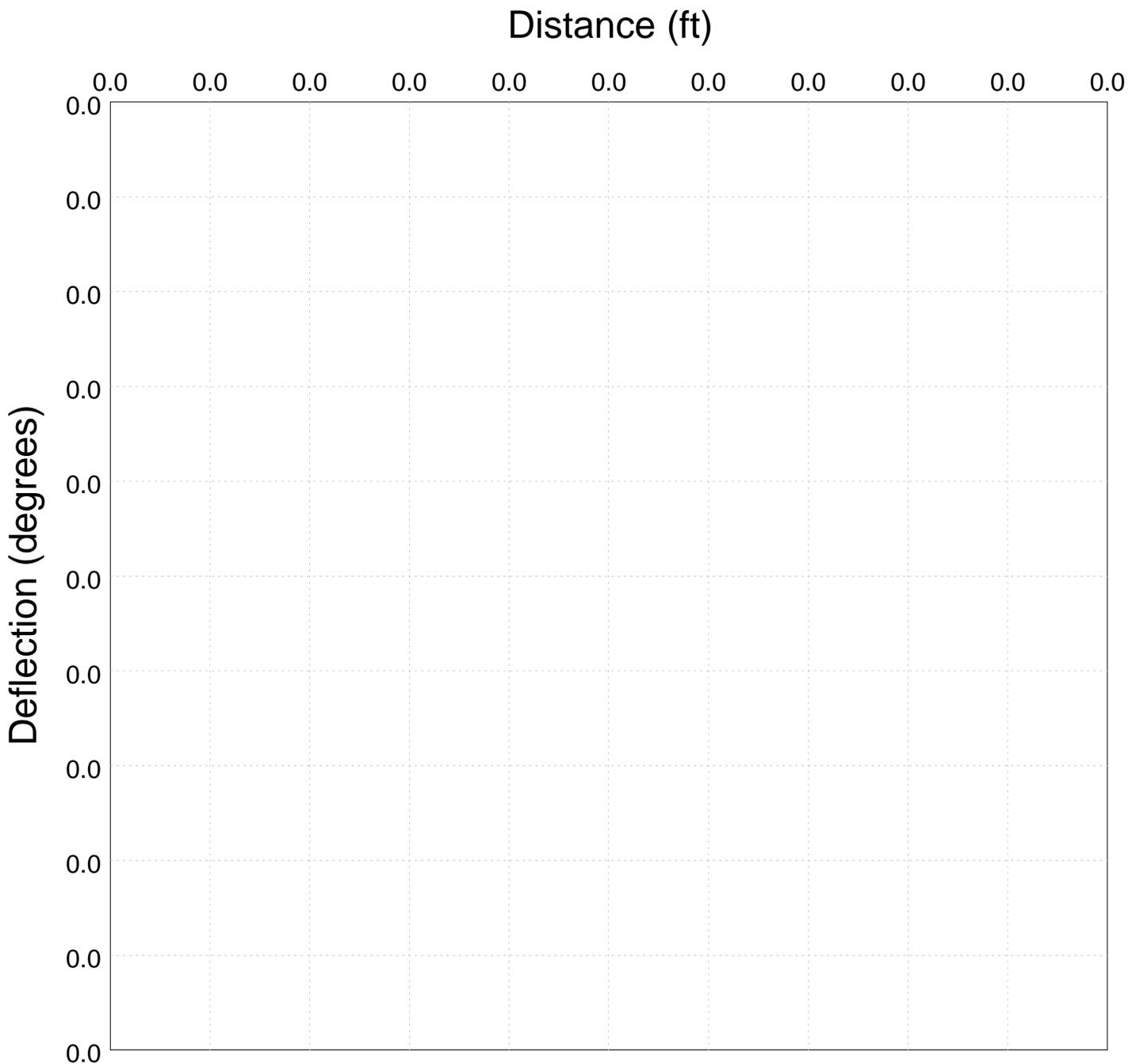
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-185	A-184		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					130.5





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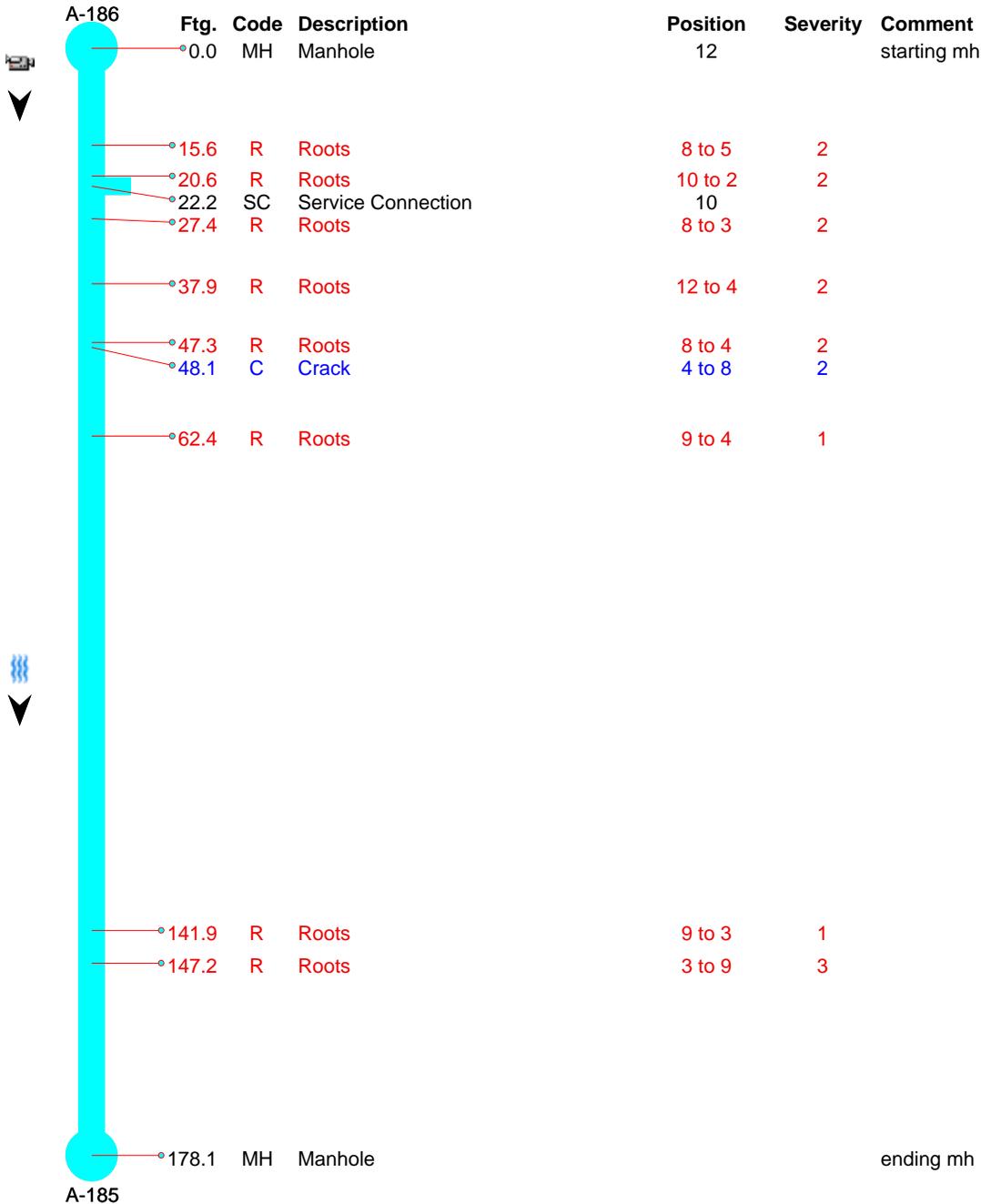
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-185	A-184		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				130.5	





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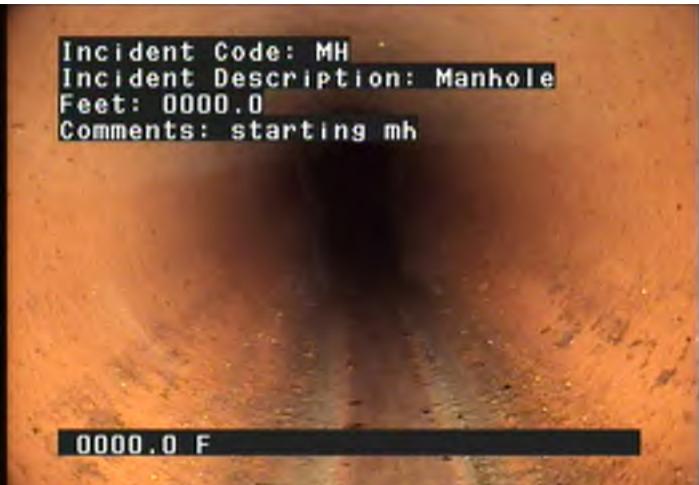
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden view Dr.		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					178.1





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden view Dr.		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments				Pre-Cleaning	TV Length
					178.1



MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 15.6 ft.



R - Roots @ 20.6 ft.



SC - Service Connection @ 22.2 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden view Dr.		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				178.1	



R - Roots @ 27.4 ft.



R - Roots @ 37.9 ft.



R - Roots @ 47.3 ft.



C - Crack @ 48.1 ft.

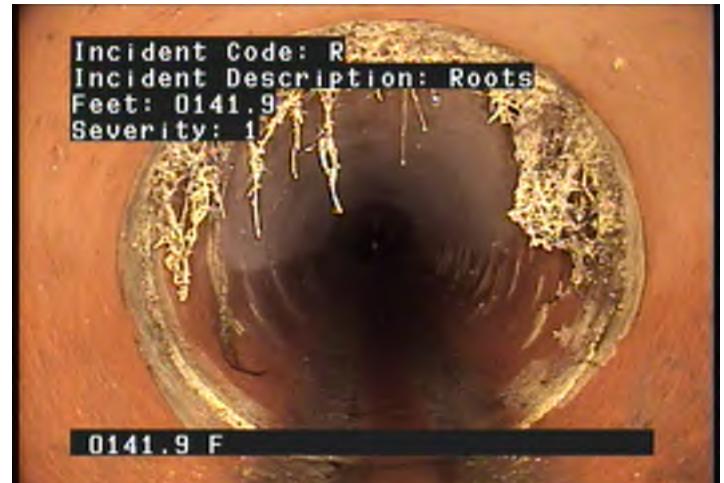


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden view Dr.		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				178.1	



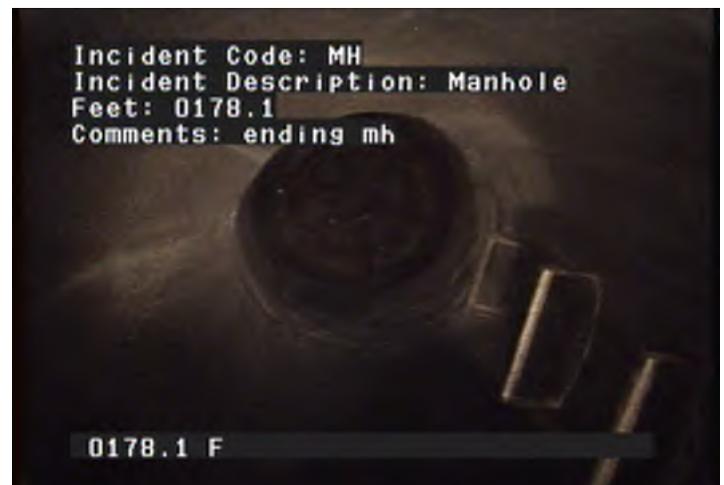
R - Roots @ 62.4 ft.



R - Roots @ 141.9 ft.



R - Roots @ 147.2 ft.

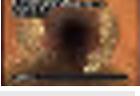


MH - Manhole @ 178.1 ft. ending mh



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden view Dr.		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				178.1	

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
15.6	R	Roots	8 to 5	2		
20.6	R	Roots	10 to 2	2		
22.2	SC	Service Connection	10			
27.4	R	Roots	8 to 3	2		
37.9	R	Roots	12 to 4	2		
47.3	R	Roots	8 to 4	2		
48.1	C	Crack	4 to 8	2		
62.4	R	Roots	9 to 4	1		
141.9	R	Roots	9 to 3	1		
147.2	R	Roots	3 to 9	3		



City of Arden Hills
Public Works
1425 Paul Kirkwold Drive
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(651) 755-0211

Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017

Surveyor	Street	City	Weather
MA	Arden view Dr.	Arden Hills	

Size	Material	Sewer Use	Purpose	Length
8	Vitrified Clay Pipe		Routine Assessment	

Comments	Pre-Cleaning	TV Length
		178.1

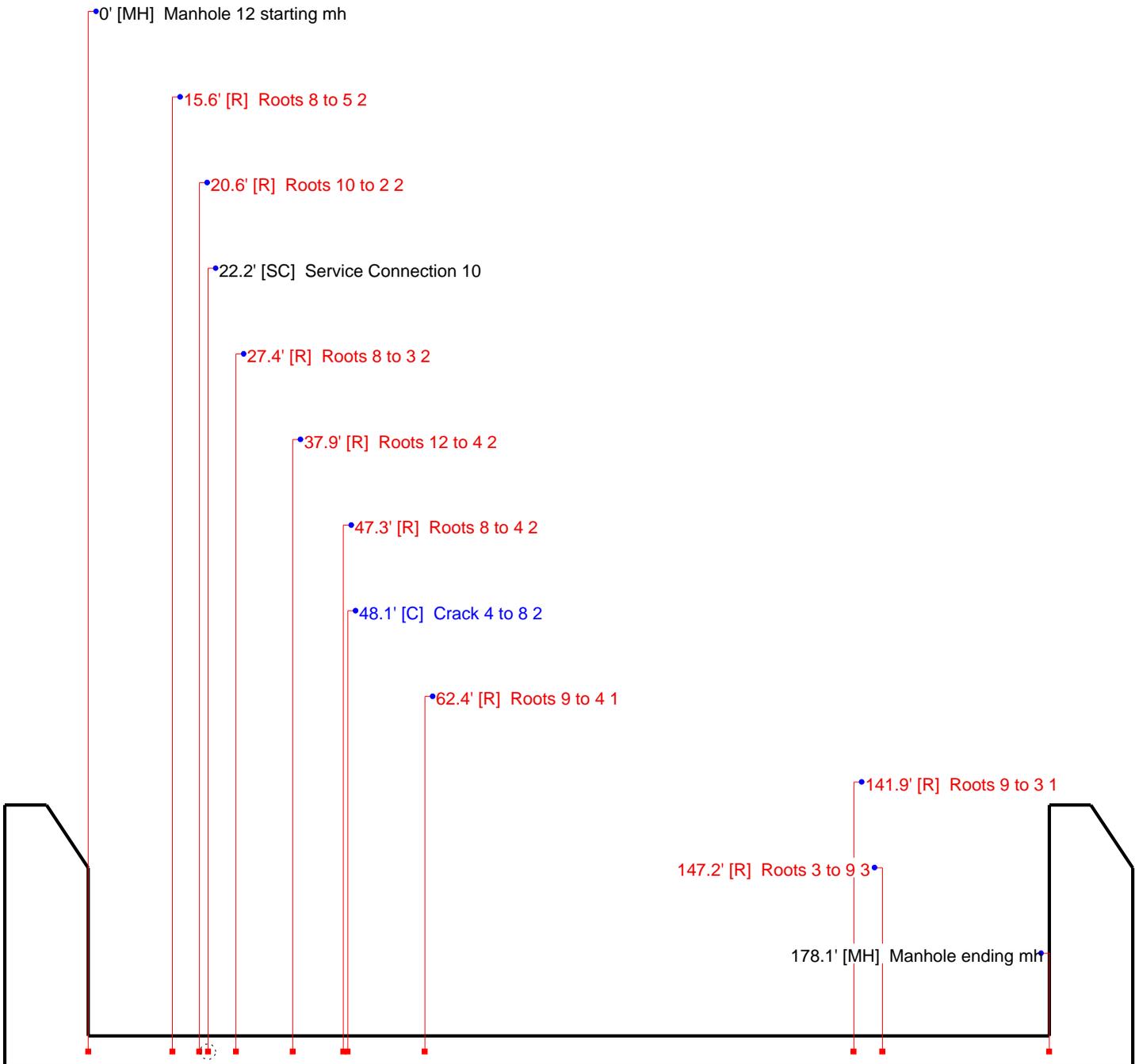
Ftg.	Code	Description	Position	Severity	Comment
178.1	MH	Manhole			ending mh





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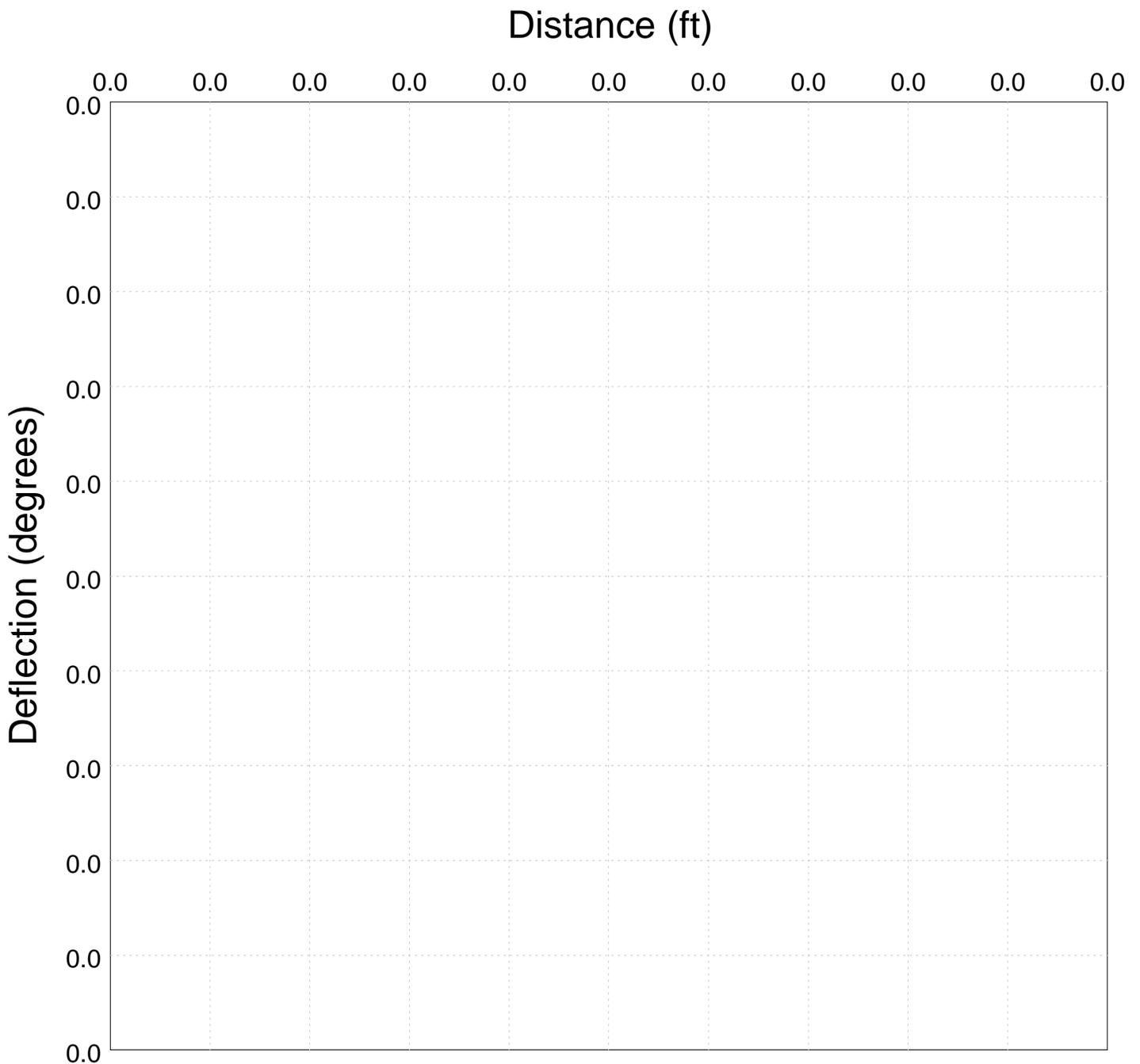
Line Segment	Block Number	Upstream MH A-186	Downstream MH A-185	Section Number	Date 08-Jun-2017
Surveyor MA	Street Arden view Dr.		City Arden Hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 178.1





City of Arden Hills
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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-186	A-185		08-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden view Dr.		Arden Hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe		Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				178.1	





Owner Arden Hills	Customer	Upstream MH A-187	Downstream MH A-186	Date 17-Jun-2014
Surveyor MA	Street Arden View Drive	City AH	Weather Dry	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length
Comments Heavy Roots were present, checking pipe			Pre-Cleaning Heavy Cleaning	TV Length 0

	Ftg. Code	Description	Position	Severity	Comment
	0.0	R Roots	8 to 11	1	
	-4.0	R Roots	7 to 5	1	
	-9.3	R Roots	4	1	
	-11.3	SC Service Connection	10		
	-11.5	R Roots	9 to 3	1	
	-16.4	R Roots	8 to 5	1	
	-21.6	R Roots	1 to 4	1	
	-26.5	R Roots	9 to 4	3	
	-38.4	SC Service Connection	10		
	-43.8	R Roots	8 to 4	3	
	-43.8	C Crack	5 to 7	2	
	-65.6	SC Service Connection	2		



Peninsular Technologies

555 Ada Drive

Ada, MI 49301

Phone: (616) 676-9811

Owner Arden Hills	Customer	Upstream MH A-187	Downstream MH A-186	Date 17-Jun-2014
Surveyor MA	Street Arden View Drive		City AH	Weather Dry
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length
Comments Heavy Roots were present, checking pipe			Pre-Cleaning Heavy Cleaning	TV Length 0

Ftg. Code Description Position Severity Comment



-82.4	SC	Service Connection	2	
-104.3	SC	Service Connection	2	
-126.1	MH	Manhole	12	starting manhole



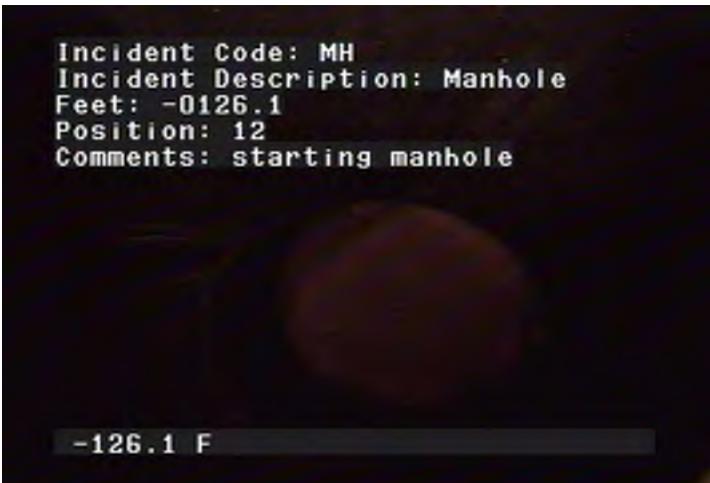
Peninsular Technologies

555 Ada Drive

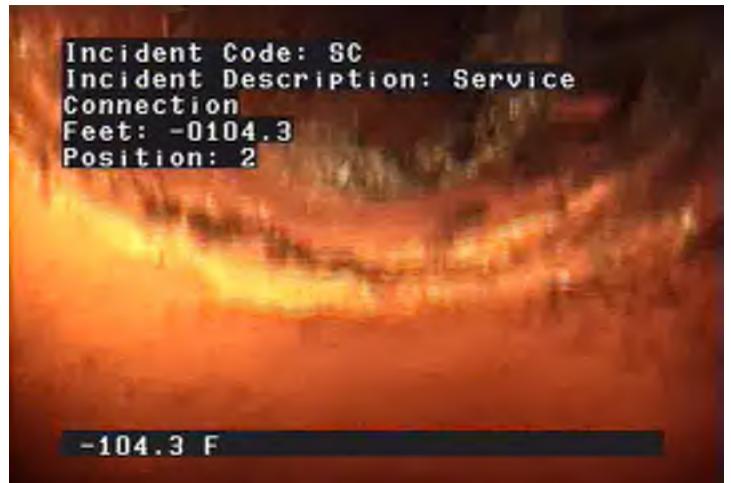
Ada, MI 49301

Phone: (616) 676-9811

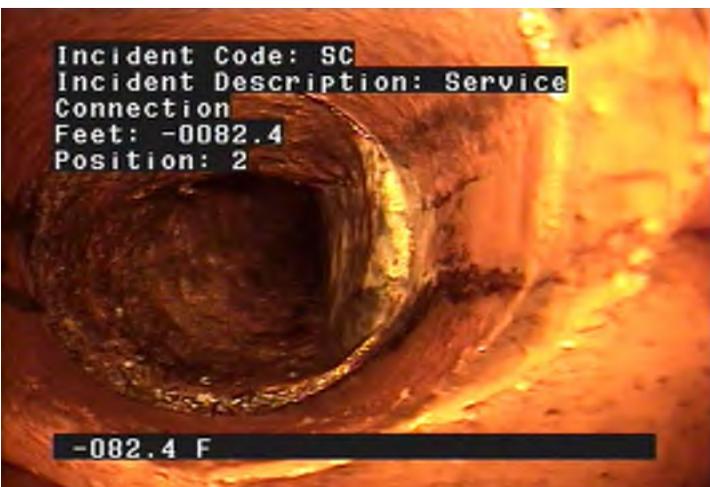
Owner Arden Hills	Customer	Upstream MH A-187	Downstream MH A-186	Date 17-Jun-2014
Surveyor MA	Street Arden View Drive		City AH	Weather Dry
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length
Comments Heavy Roots were present, checking pipe			Pre-Cleaning Heavy Cleaning	TV Length 0



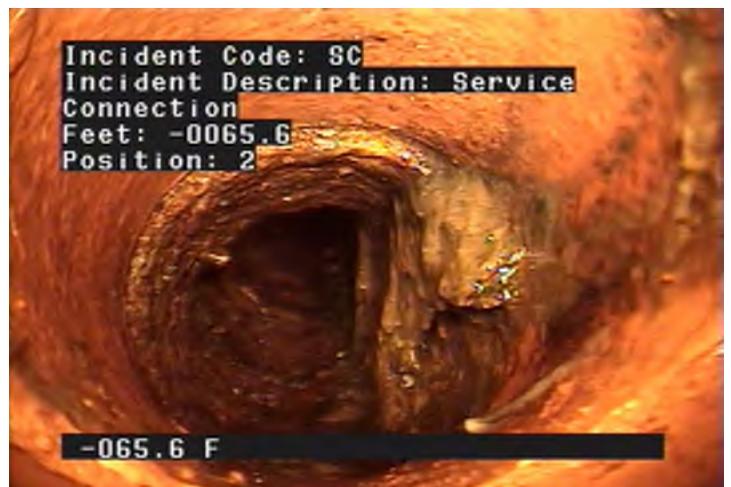
MH - Manhole @ -126.1 ft. starting manhole



SC - Service Connection @ -104.3 ft.



SC - Service Connection @ -82.4 ft.



SC - Service Connection @ -65.6 ft.



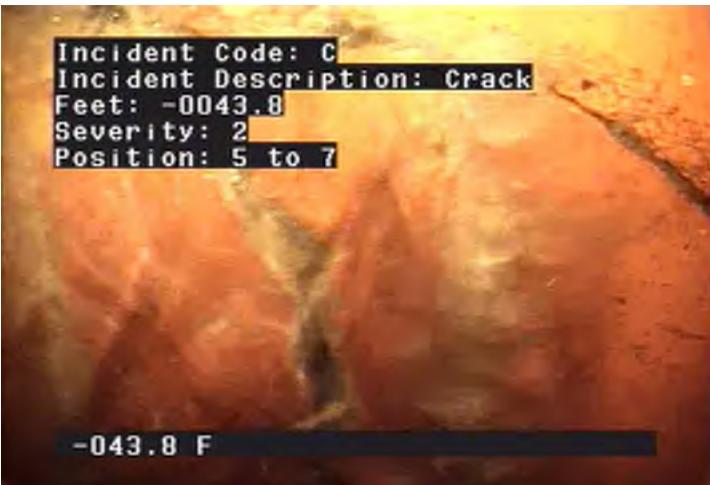
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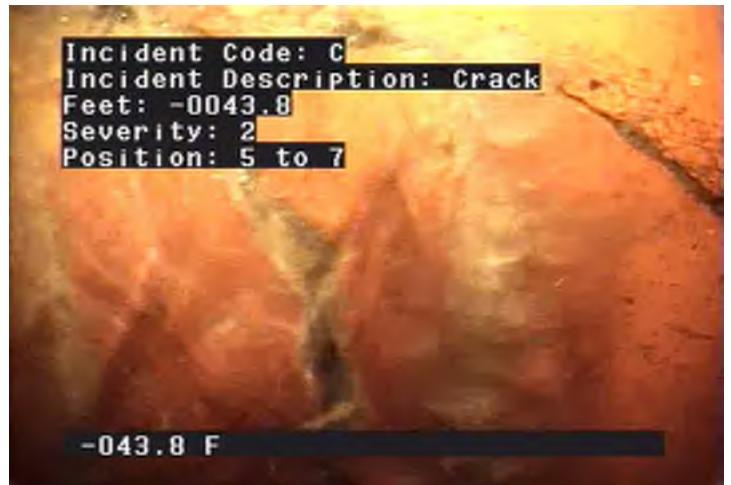
Ada, MI 49301

Phone: (616) 676-9811

Owner Arden Hills	Customer	Upstream MH A-187	Downstream MH A-186	Date 17-Jun-2014
Surveyor MA	Street Arden View Drive		City AH	Weather Dry
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length
Comments Heavy Roots were present, checking pipe			Pre-Cleaning Heavy Cleaning	TV Length 0



C - Crack @ -43.8 ft.



R - Roots @ -43.8 ft.



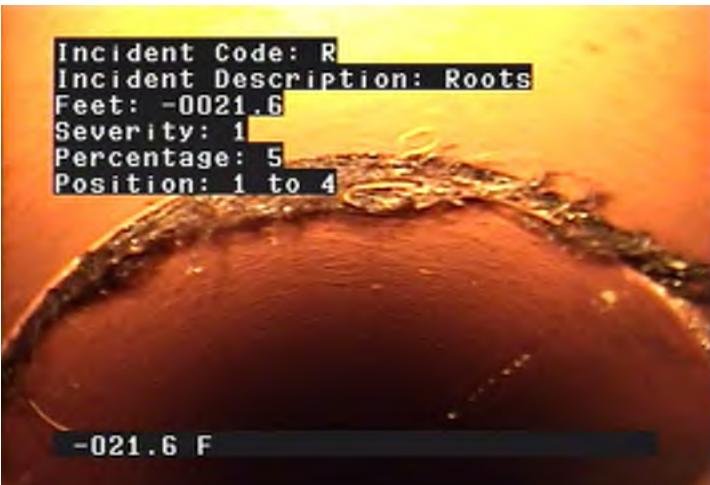
SC - Service Connection @ -38.4 ft.



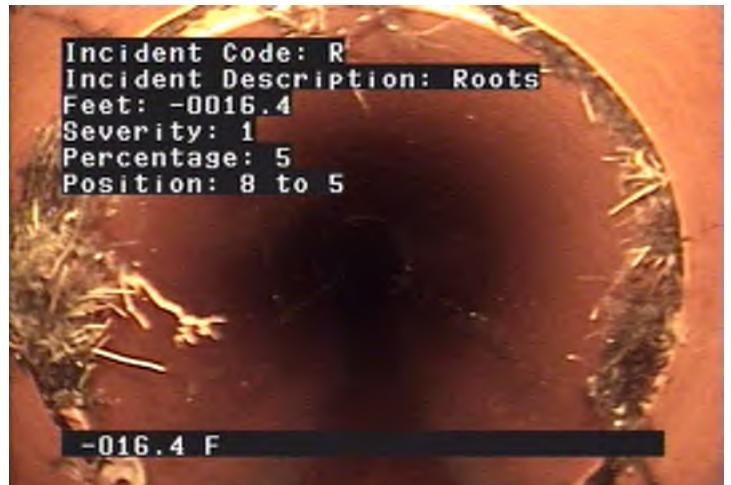
R - Roots @ -26.5 ft.



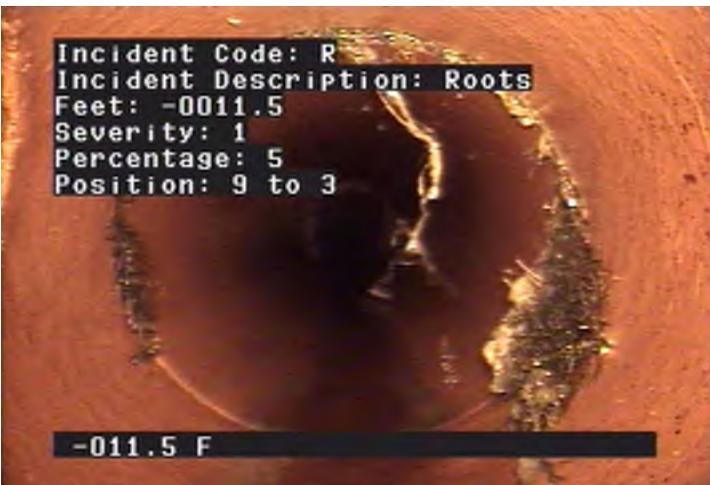
Owner Arden Hills	Customer	Upstream MH A-187	Downstream MH A-186	Date 17-Jun-2014
Surveyor MA	Street Arden View Drive		City AH	Weather Dry
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length
Comments Heavy Roots were present, checking pipe			Pre-Cleaning Heavy Cleaning	TV Length 0



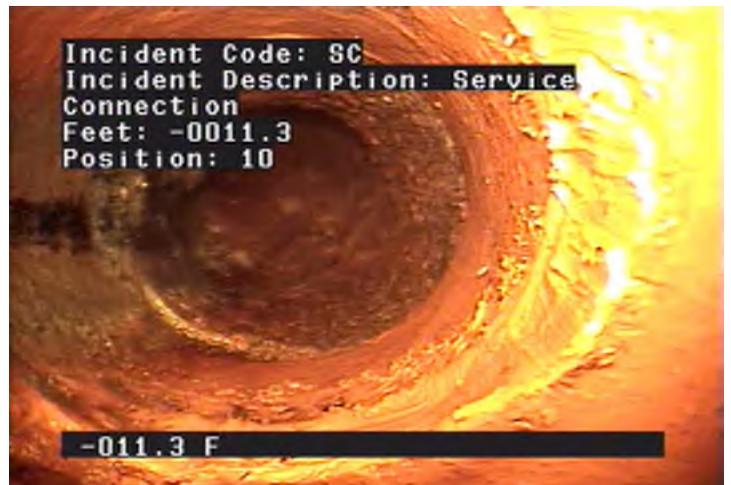
R - Roots @ -21.6 ft.



R - Roots @ -16.4 ft.



R - Roots @ -11.5 ft.



SC - Service Connection @ -11.3 ft.



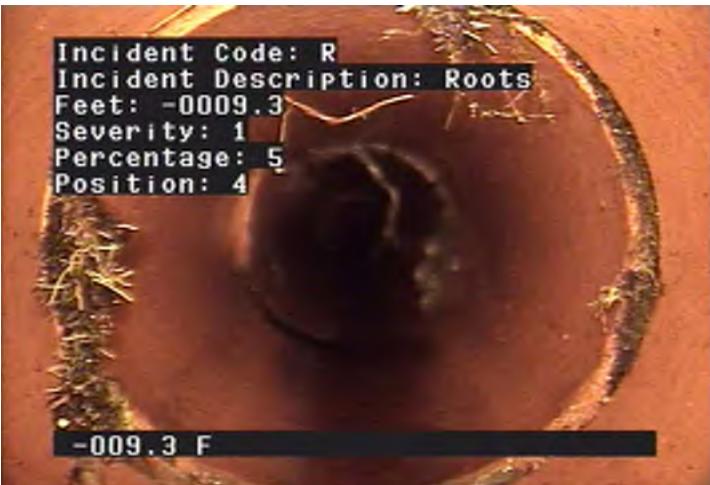
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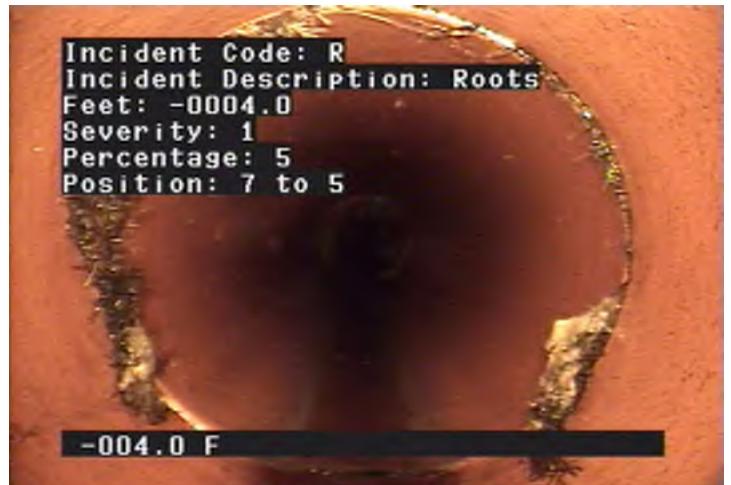
Ada, MI 49301

Phone: (616) 676-9811

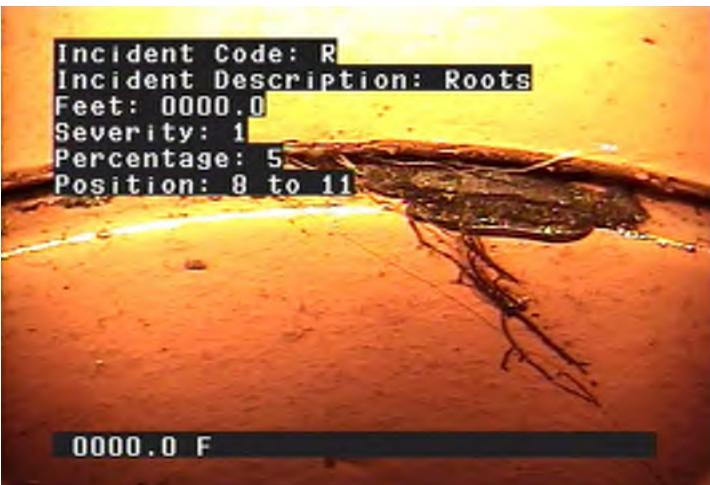
Owner Arden Hills	Customer	Upstream MH A-187	Downstream MH A-186	Date 17-Jun-2014
Surveyor MA	Street Arden View Drive		City AH	Weather Dry
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length
Comments Heavy Roots were present, checking pipe			Pre-Cleaning Heavy Cleaning	TV Length 0



R - Roots @ -9.3 ft.



R - Roots @ -4.0 ft.

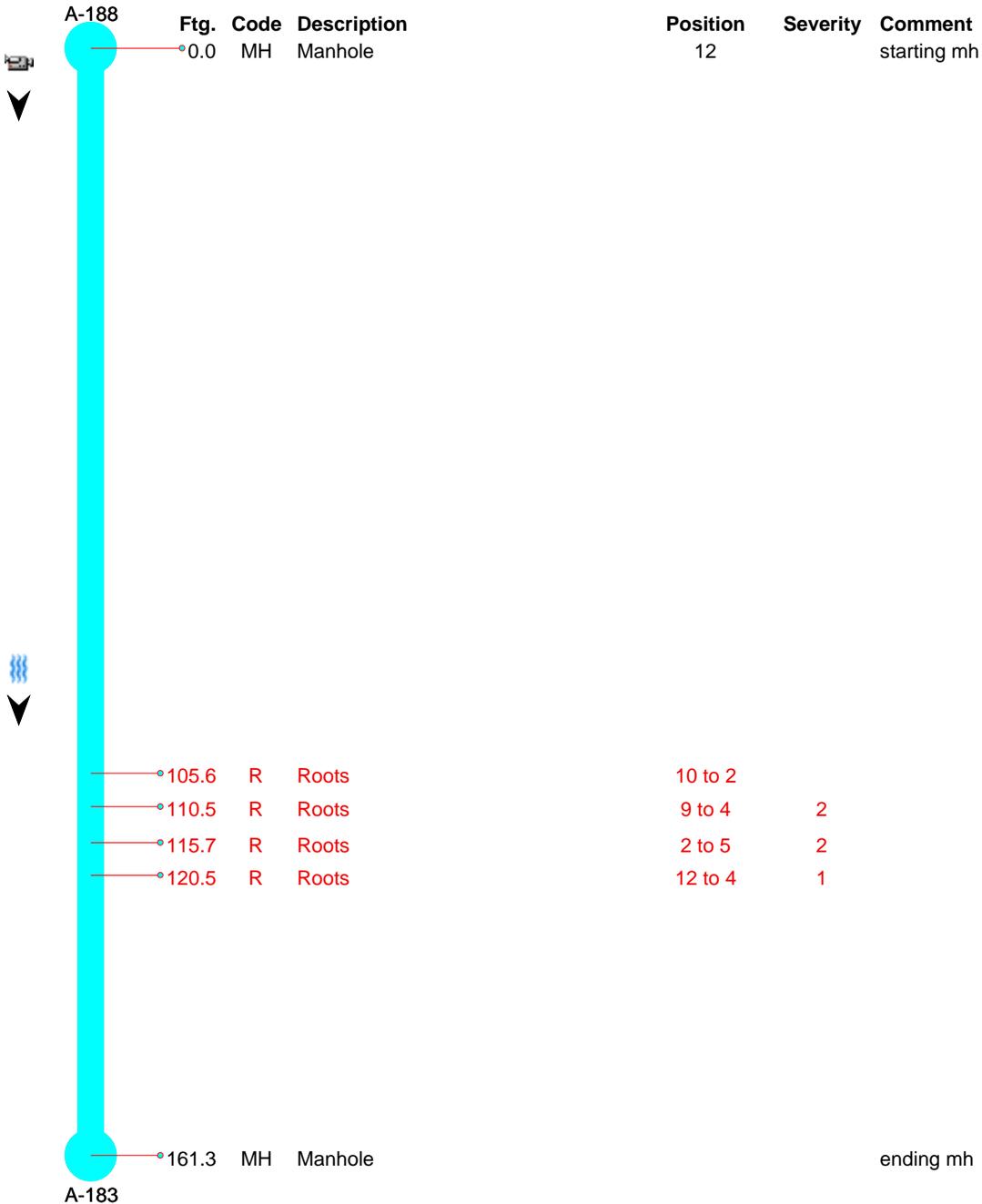


R - Roots @ 0.0 ft.



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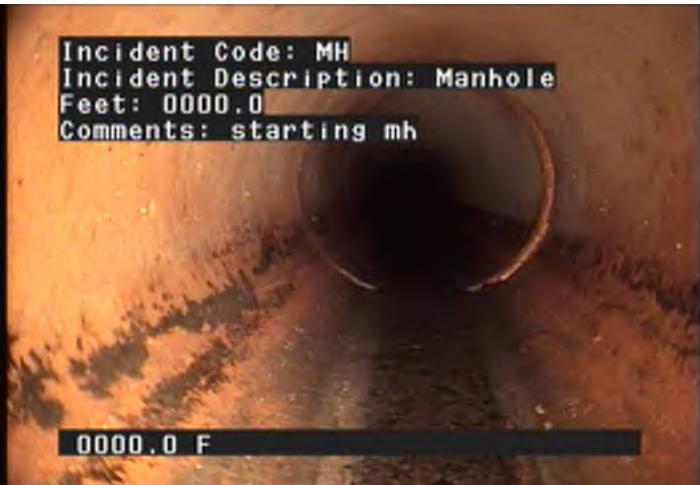
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				161.3	





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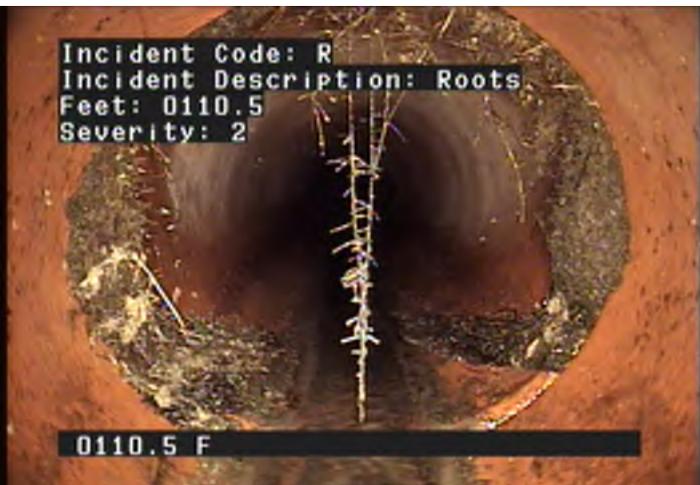
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				161.3	



MH - Manhole @ 0.0 ft. starting mh



R - Roots @ 105.6 ft.



R - Roots @ 110.5 ft.



R - Roots @ 115.7 ft.

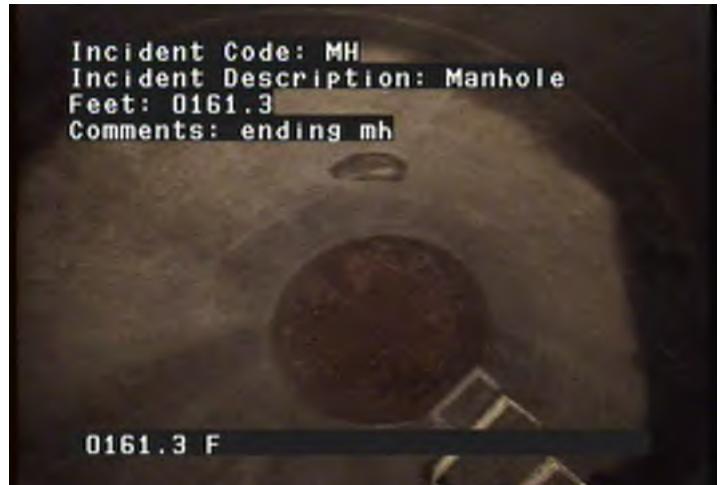


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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					161.3



R - Roots @ 120.5 ft.



MH - Manhole @ 161.3 ft. ending mh



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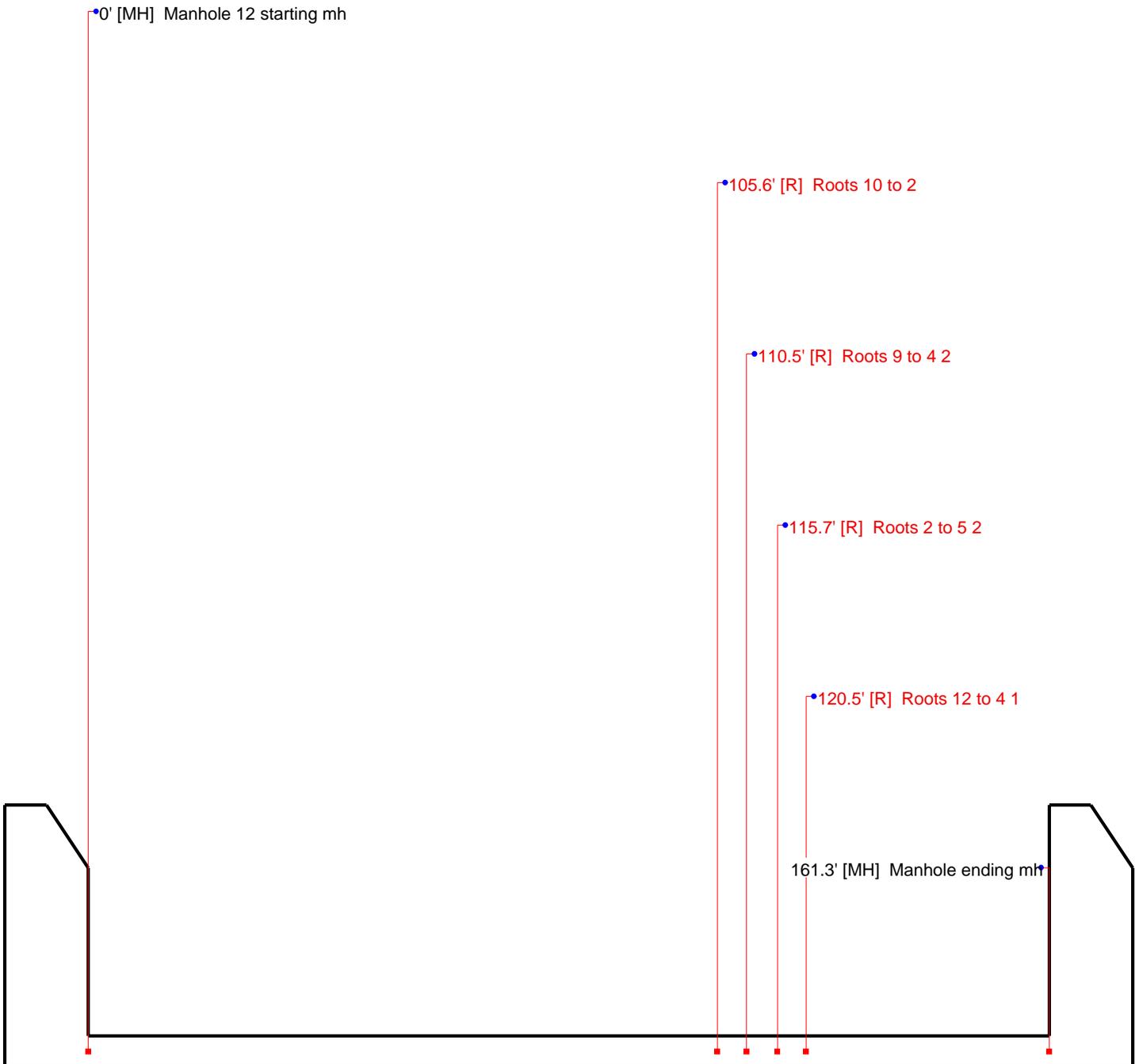
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					161.3

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
105.6	R	Roots	10 to 2			
110.5	R	Roots	9 to 4	2		
115.7	R	Roots	2 to 5	2		
120.5	R	Roots	12 to 4	1		
161.3	MH	Manhole			ending mh	



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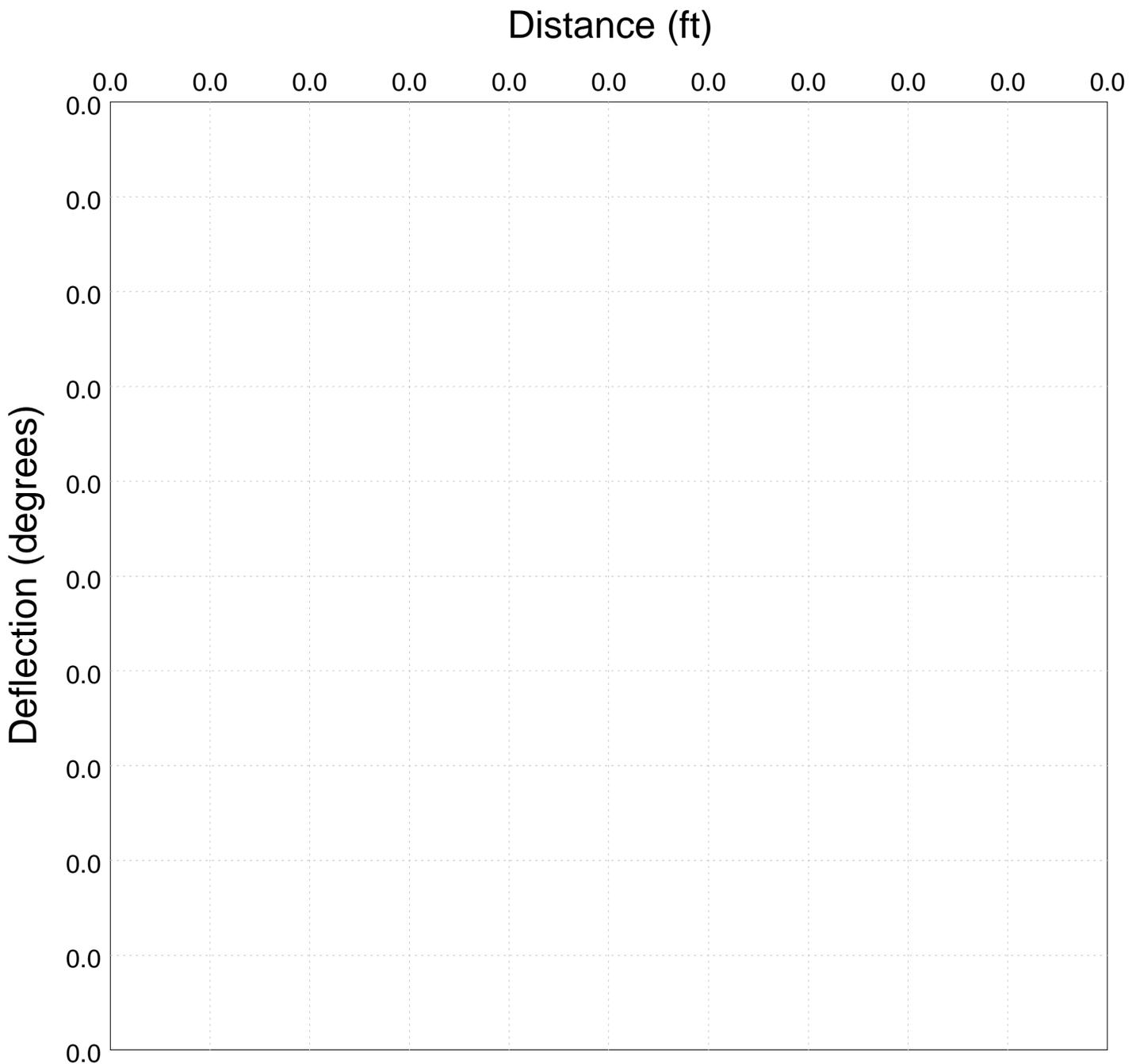
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					161.3





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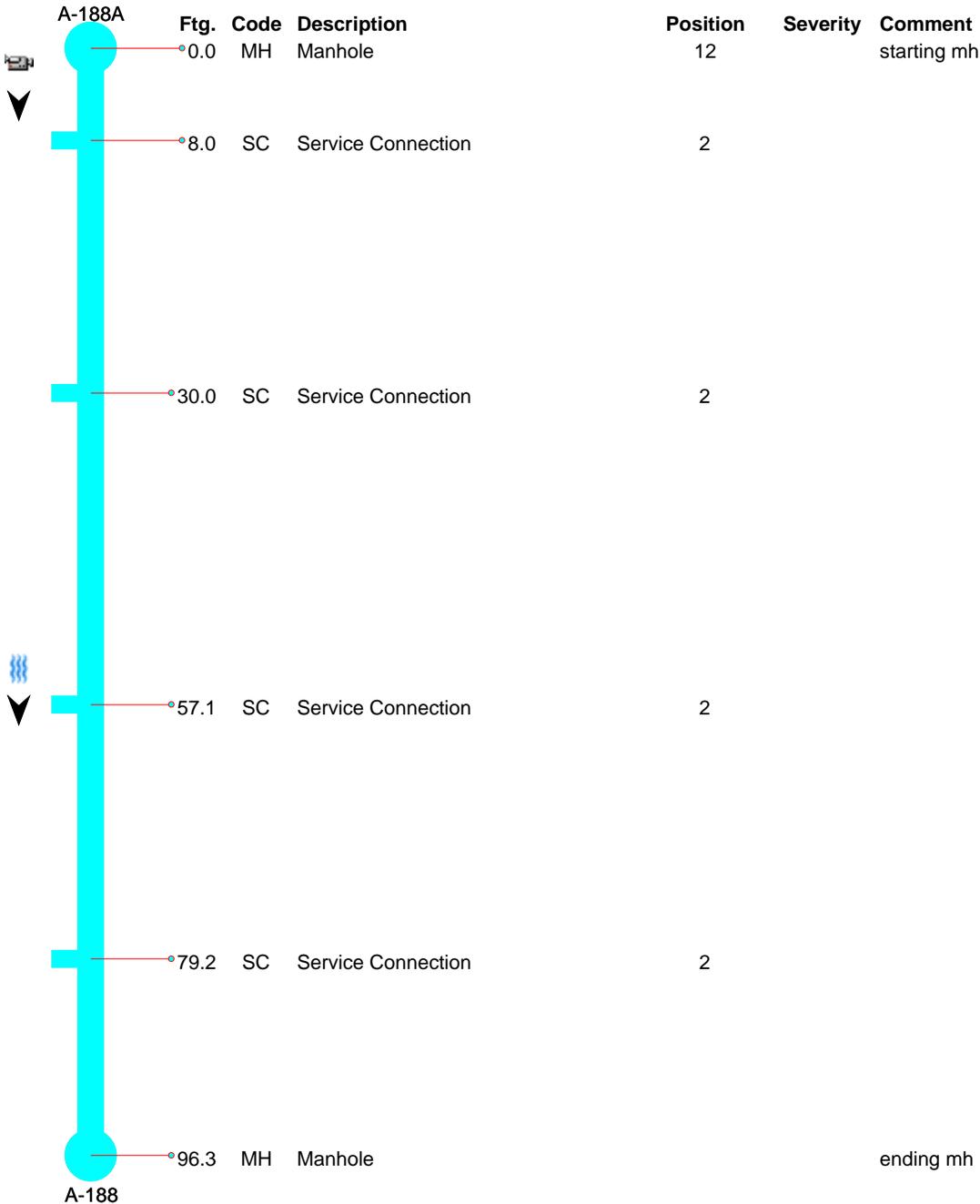
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188	A-183		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				161.3	





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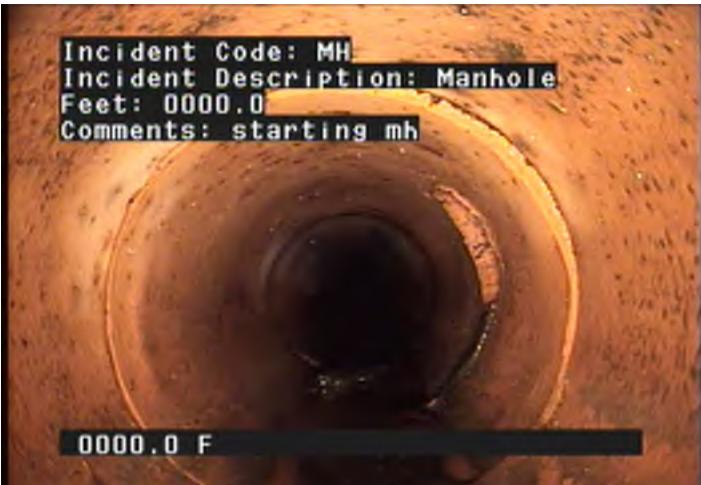
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188A	A-188		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					96.3





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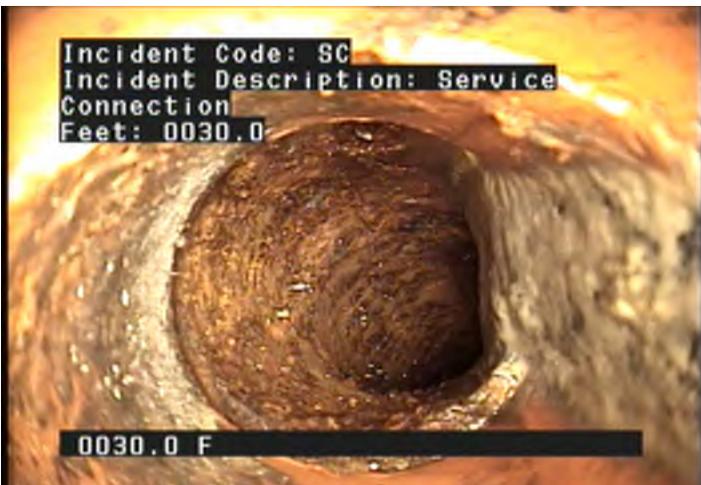
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188A	A-188		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				96.3	



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 8.0 ft.



SC - Service Connection @ 30.0 ft.

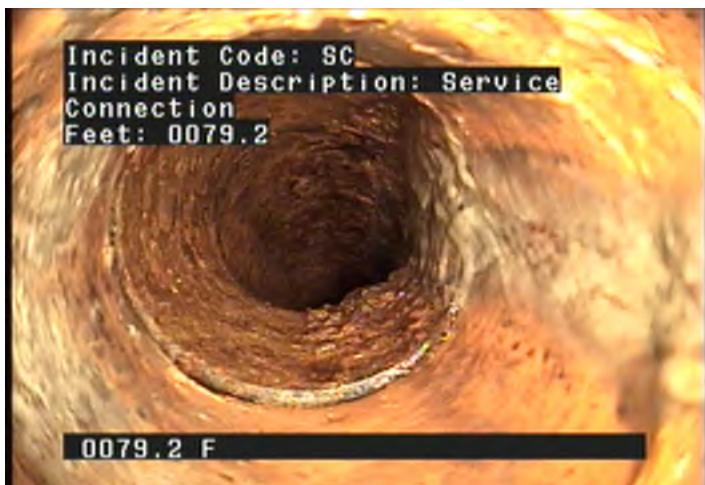


SC - Service Connection @ 57.1 ft.



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		A-188A	A-188		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				96.3	



SC - Service Connection @ 79.2 ft.

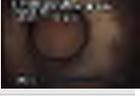


MH - Manhole @ 96.3 ft. ending mh



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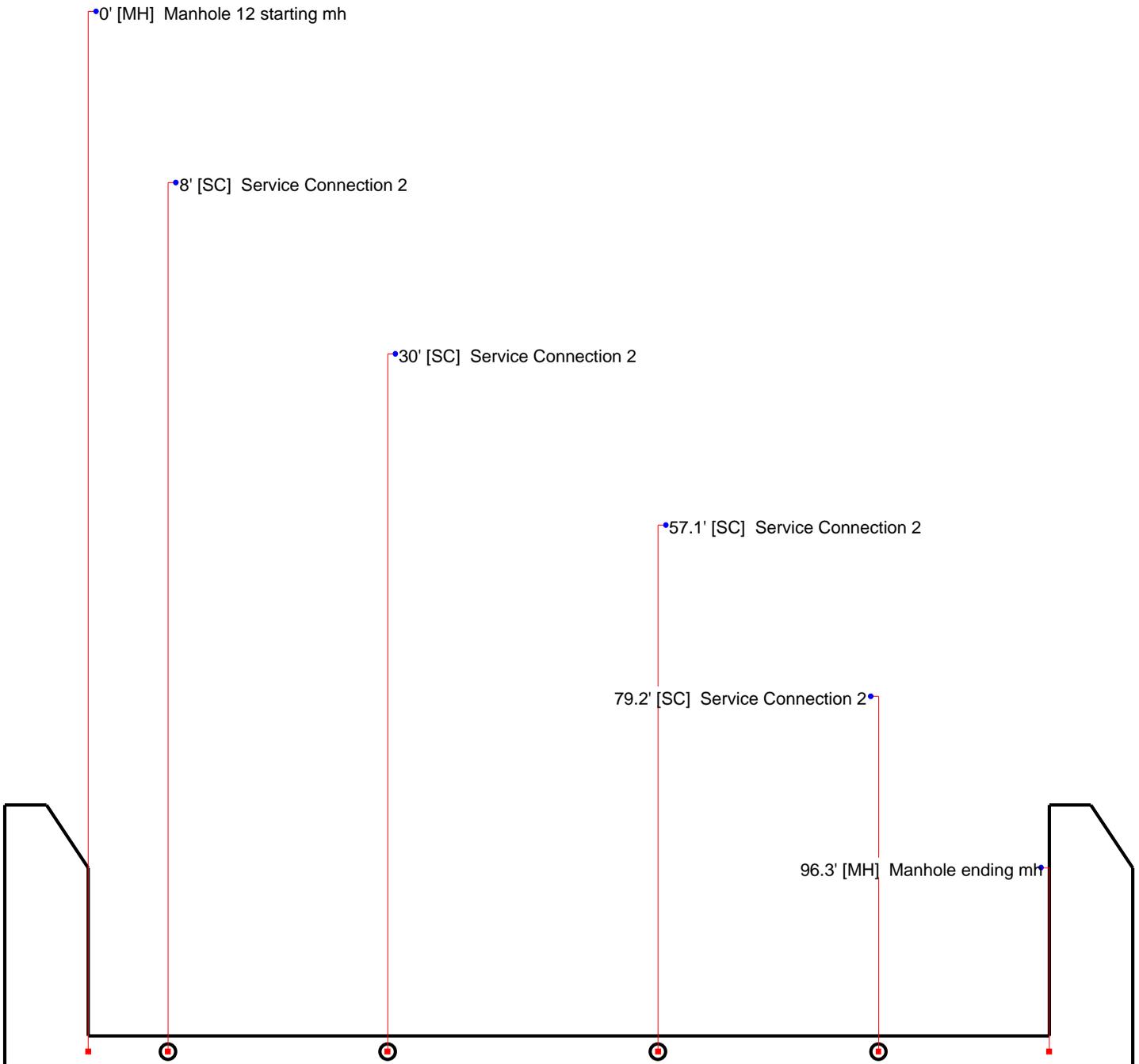
Line Segment	Block Number	Upstream MH A-188A	Downstream MH A-188	Section Number	Date 19-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 96.3

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
8.0	SC	Service Connection	2			
30.0	SC	Service Connection	2			
57.1	SC	Service Connection	2			
79.2	SC	Service Connection	2			
96.3	MH	Manhole			ending mh	



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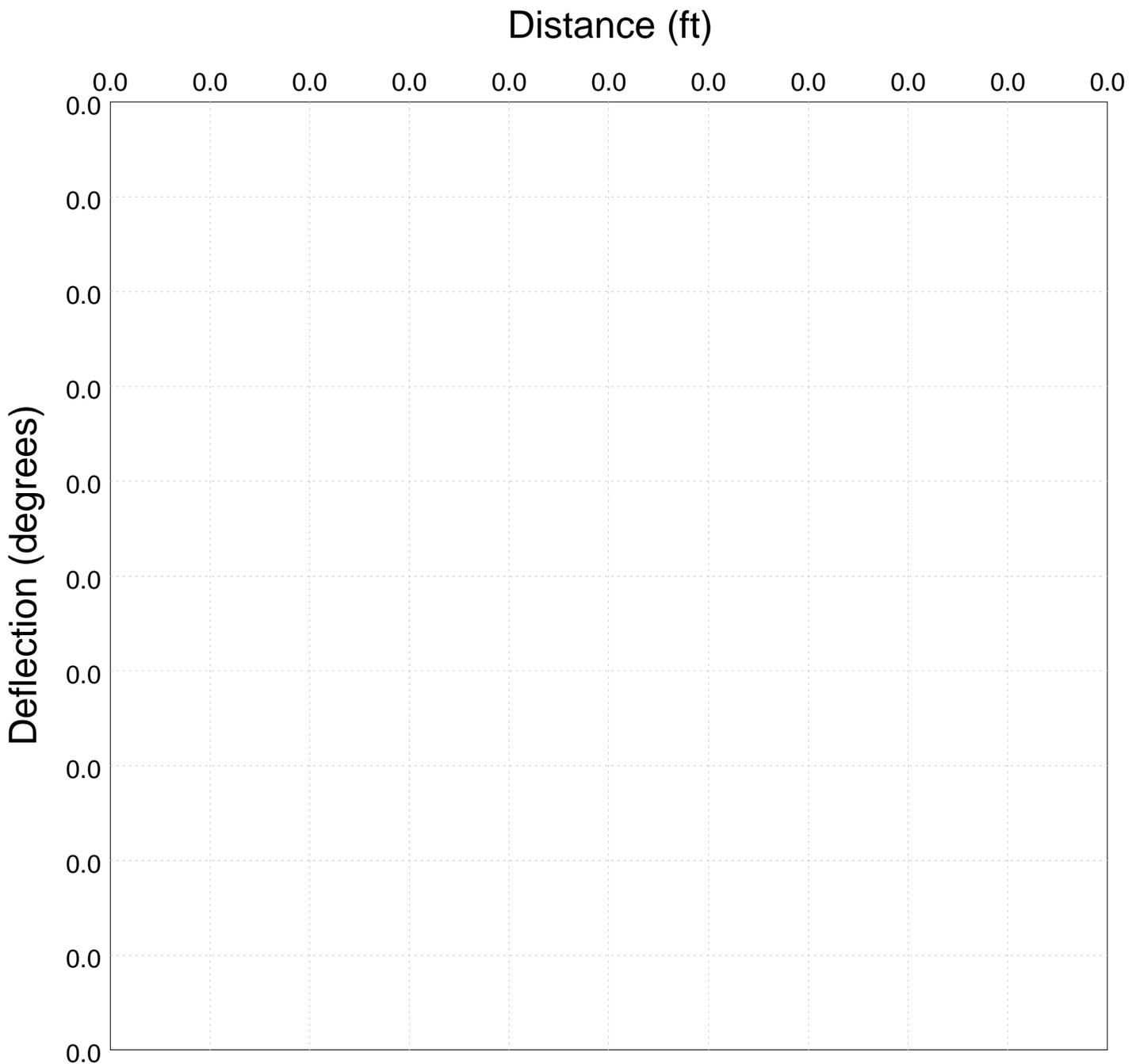
Line Segment	Block Number	Upstream MH A-188A	Downstream MH A-188	Section Number	Date 19-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 96.3





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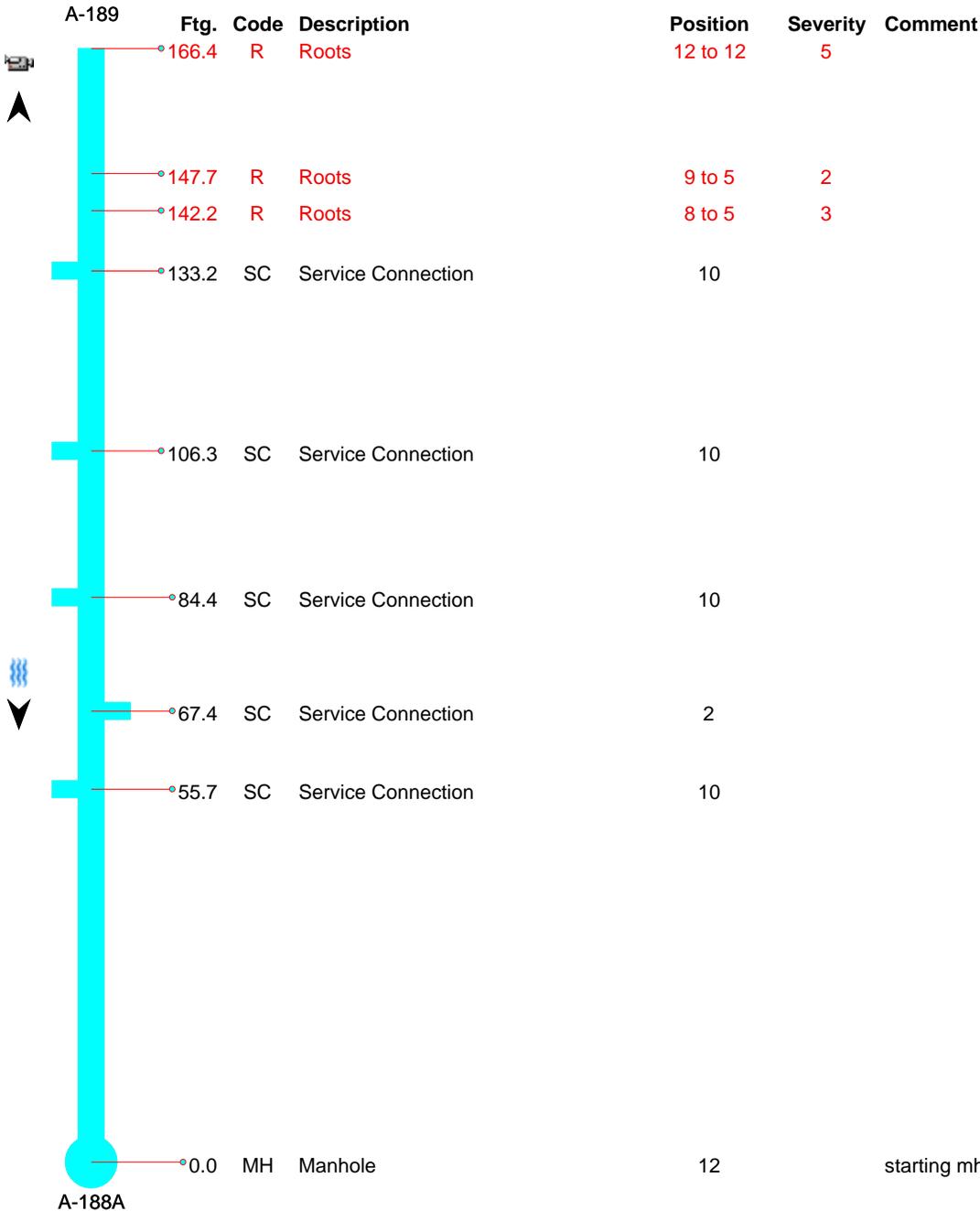
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-188A	A-188		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				96.3	





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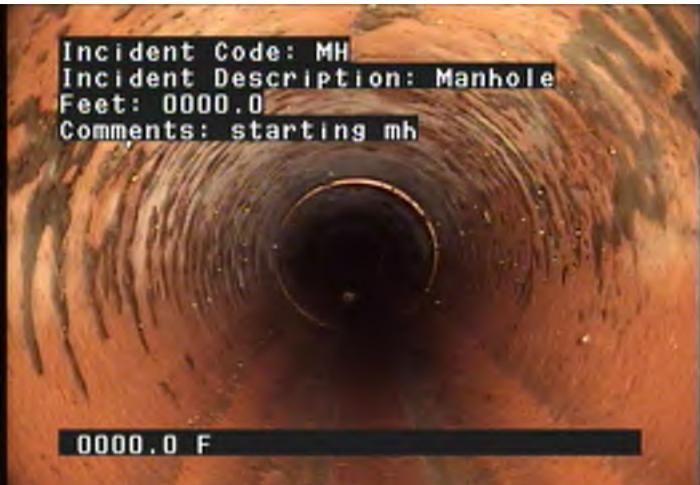
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					166.4





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-189	A-188A		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				166.4	



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 55.7 ft.



SC - Service Connection @ 67.4 ft.



SC - Service Connection @ 84.4 ft.



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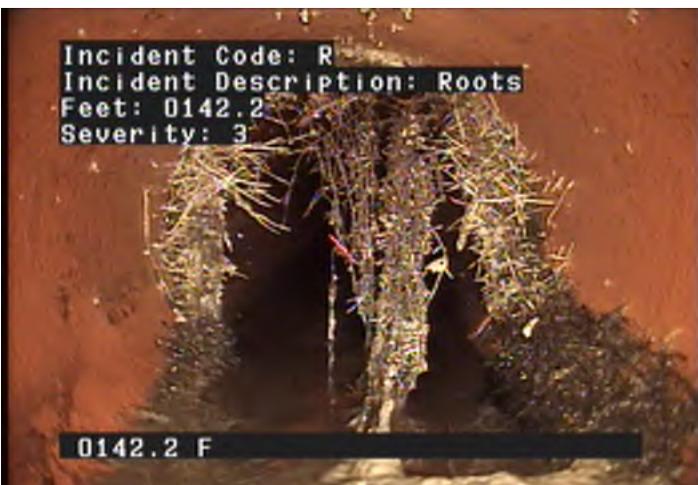
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-189	A-188A		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					166.4



SC - Service Connection @ 106.3 ft.



SC - Service Connection @ 133.2 ft.



R - Roots @ 142.2 ft.



R - Roots @ 147.7 ft.



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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-189	A-188A		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments			Pre-Cleaning	TV Length	
				166.4	

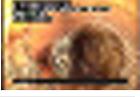
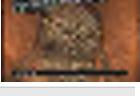


R - Roots @ 166.4 ft.



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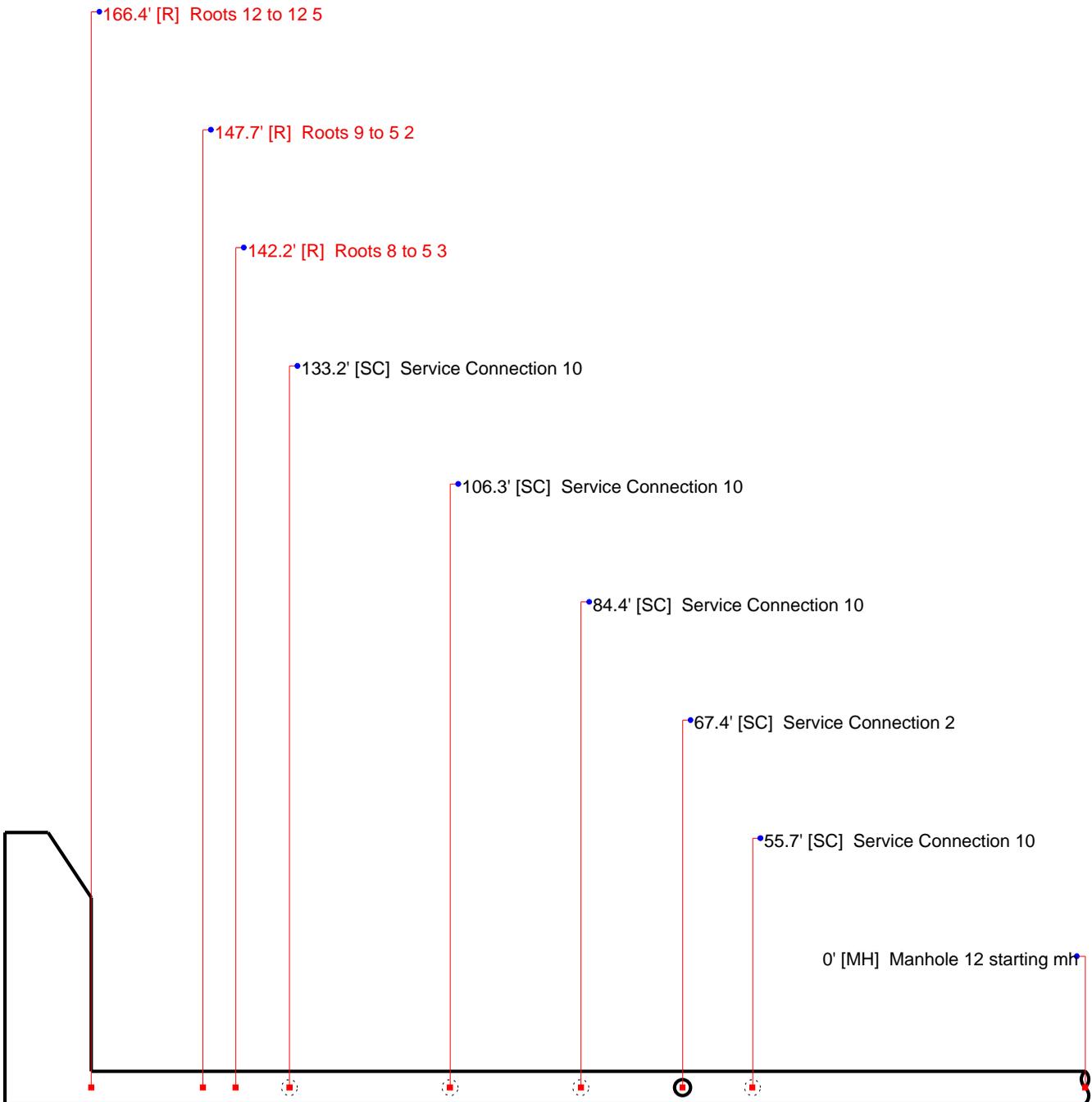
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-189	A-188A		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments	Pre-Cleaning			TV Length	
				166.4	

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
55.7	SC	Service Connection	10			
67.4	SC	Service Connection	2			
84.4	SC	Service Connection	10			
106.3	SC	Service Connection	10			
133.2	SC	Service Connection	10			
142.2	R	Roots	8 to 5	3		
147.7	R	Roots	9 to 5	2		
166.4	R	Roots	12 to 12	5		



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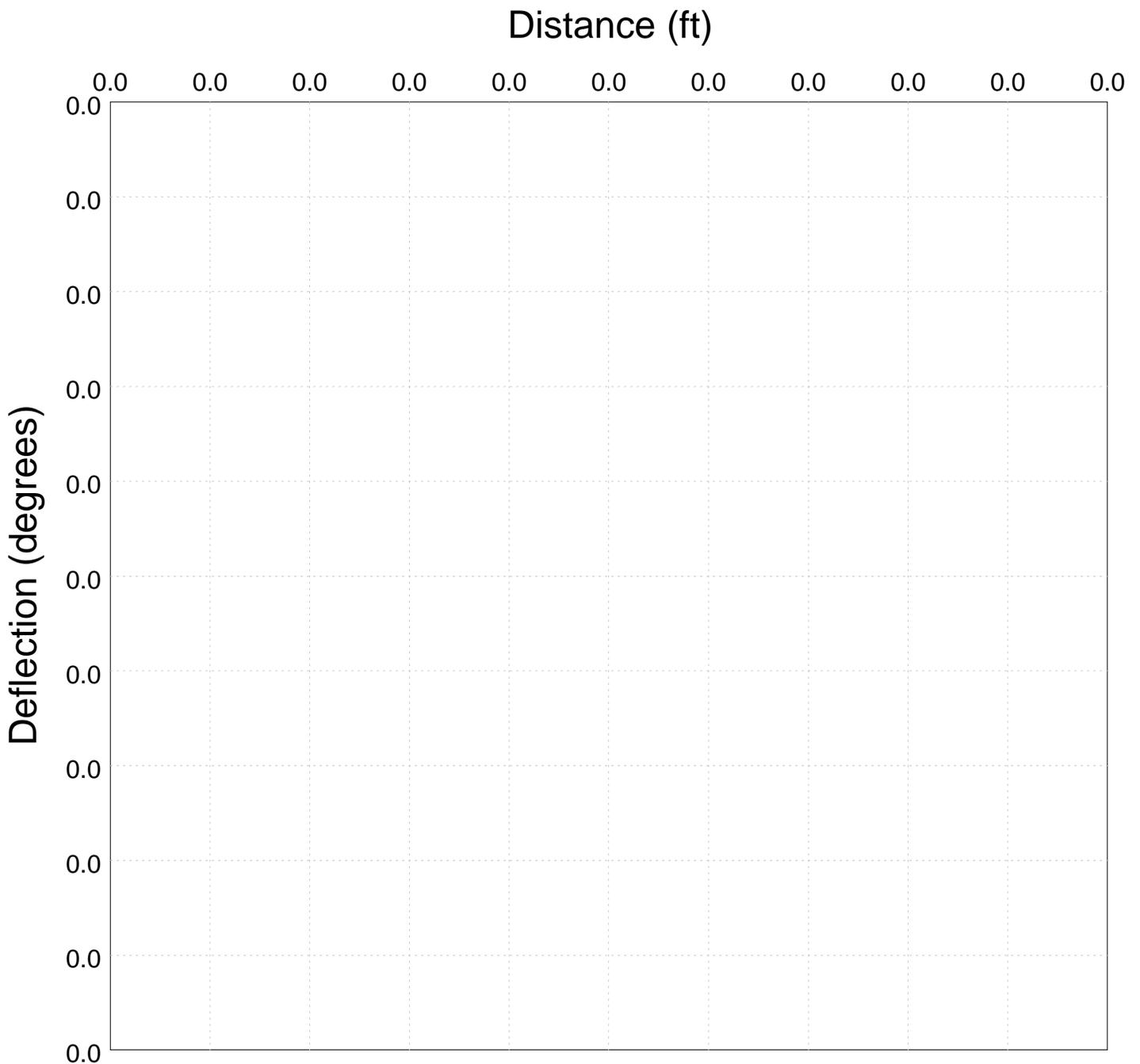
Line Segment	Block Number	Upstream MH A-189	Downstream MH A-188A	Section Number	Date 19-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 166.4





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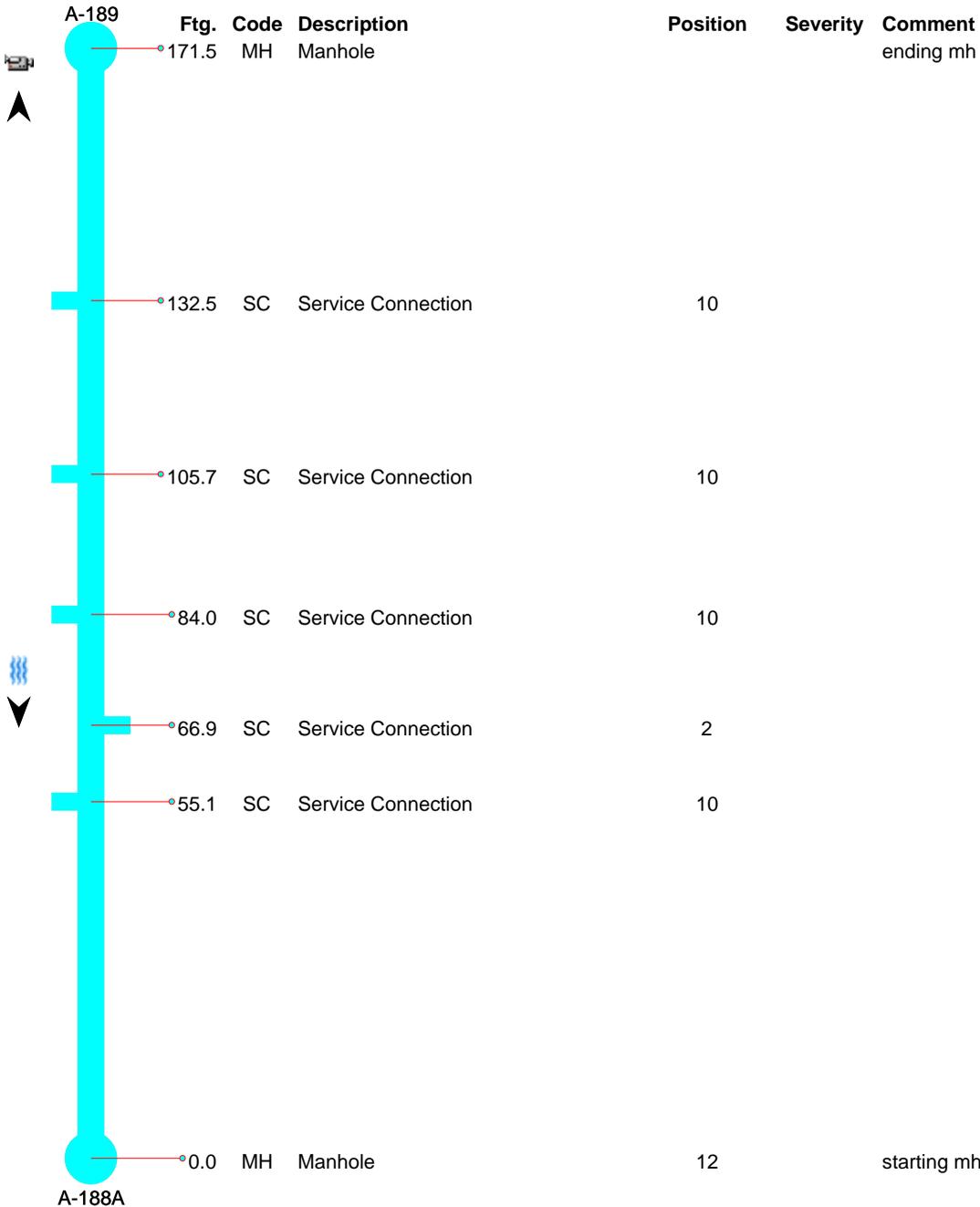
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
		A-189	A-188A		19-Jun-2017
Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
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Comments			Pre-Cleaning	TV Length	
				166.4	





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MA	Arden View Drive		arden hills		
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8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					171.5





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Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
Size	Material	Sewer Use	Purpose	Length	
8	Vitrified Clay Pipe	Sanitary	Routine Assessment		
Comments				Pre-Cleaning	TV Length
					171.5



MH - Manhole @ 0.0 ft. starting mh



SC - Service Connection @ 55.1 ft.



SC - Service Connection @ 66.9 ft.

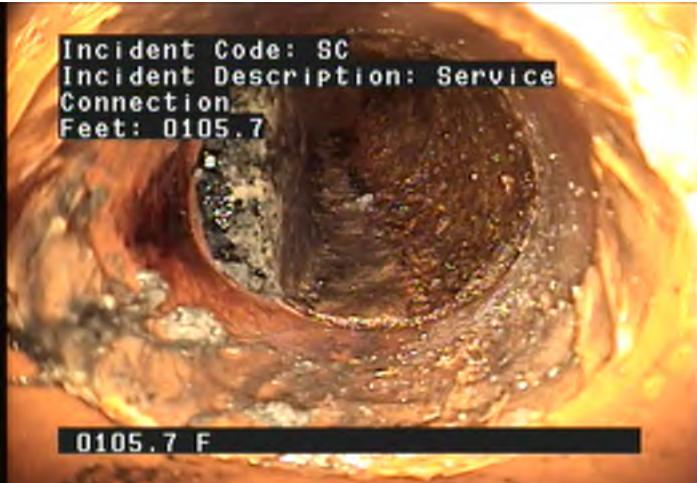


SC - Service Connection @ 84.0 ft.



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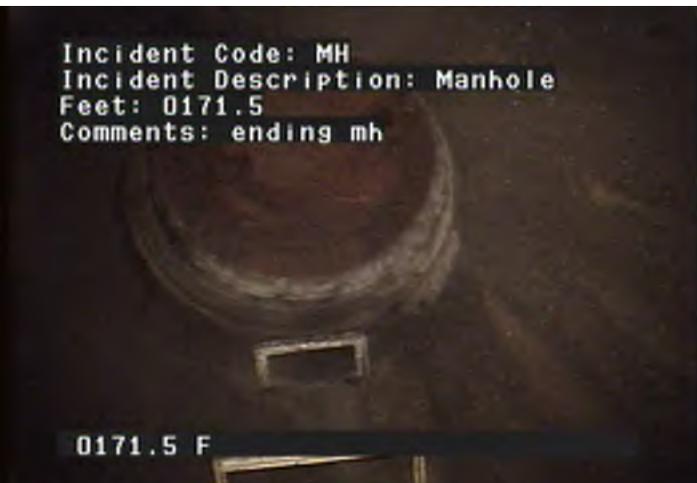
Line Segment	Block Number	Upstream MH	Downstream MH	Section Number	Date
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Surveyor	Street		City	Weather	
MA	Arden View Drive		arden hills		
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Comments	Pre-Cleaning			TV Length	
				171.5	



SC - Service Connection @ 105.7 ft.



SC - Service Connection @ 132.5 ft.

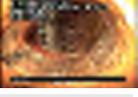
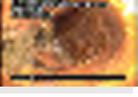


MH - Manhole @ 171.5 ft. ending mh



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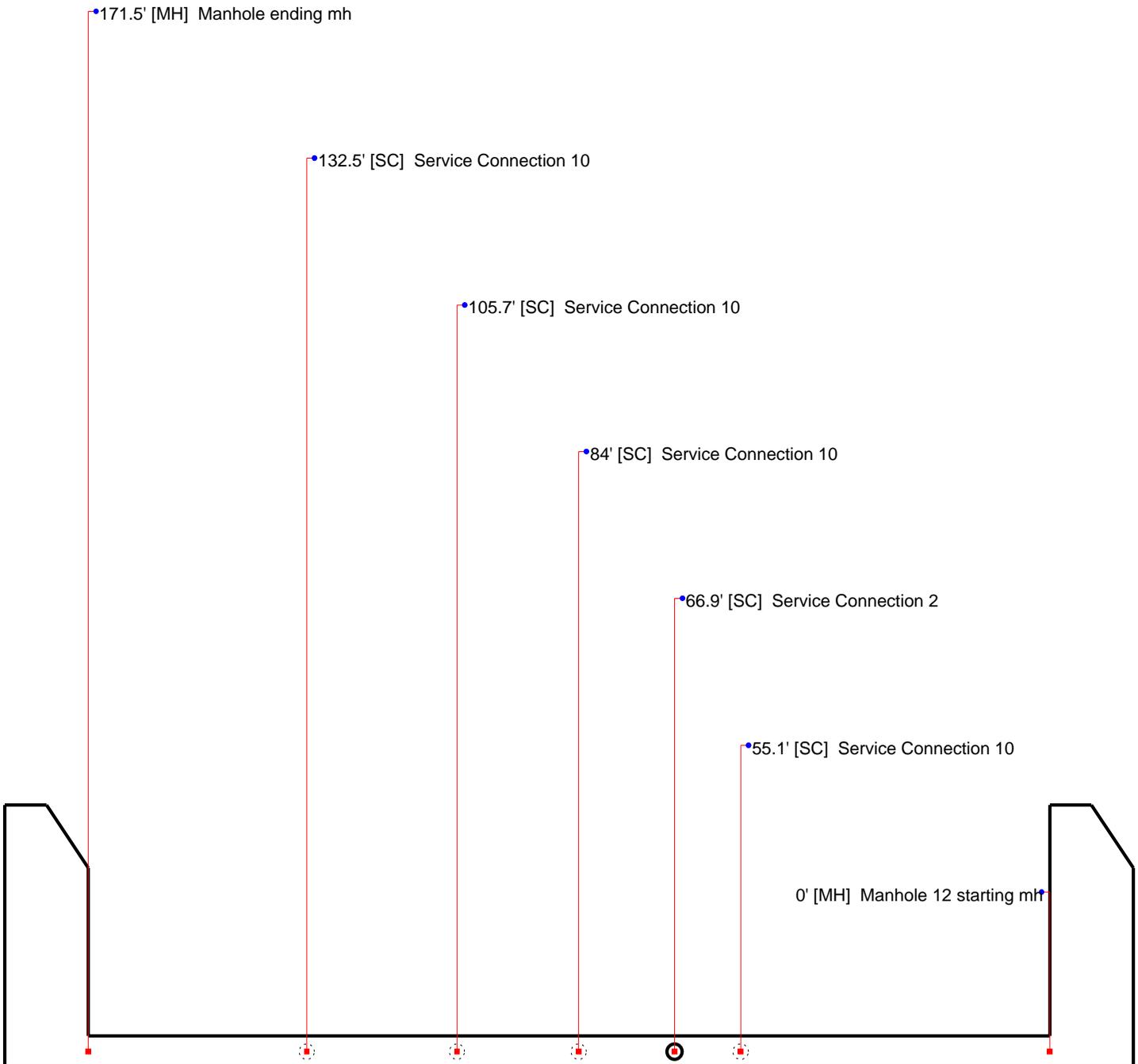
Line Segment	Block Number	Upstream MH A-189	Downstream MH A-188A	Section Number	Date 19-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
Size 8	Material Vitrified Clay Pipe	Sewer Use Sanitary	Purpose Routine Assessment	Length	
Comments				Pre-Cleaning	TV Length 171.5

Ftg.	Code	Description	Position	Severity	Comment	
0.0	MH	Manhole	12		starting mh	
55.1	SC	Service Connection	10			
66.9	SC	Service Connection	2			
84.0	SC	Service Connection	10			
105.7	SC	Service Connection	10			
132.5	SC	Service Connection	10			
171.5	MH	Manhole			ending mh	



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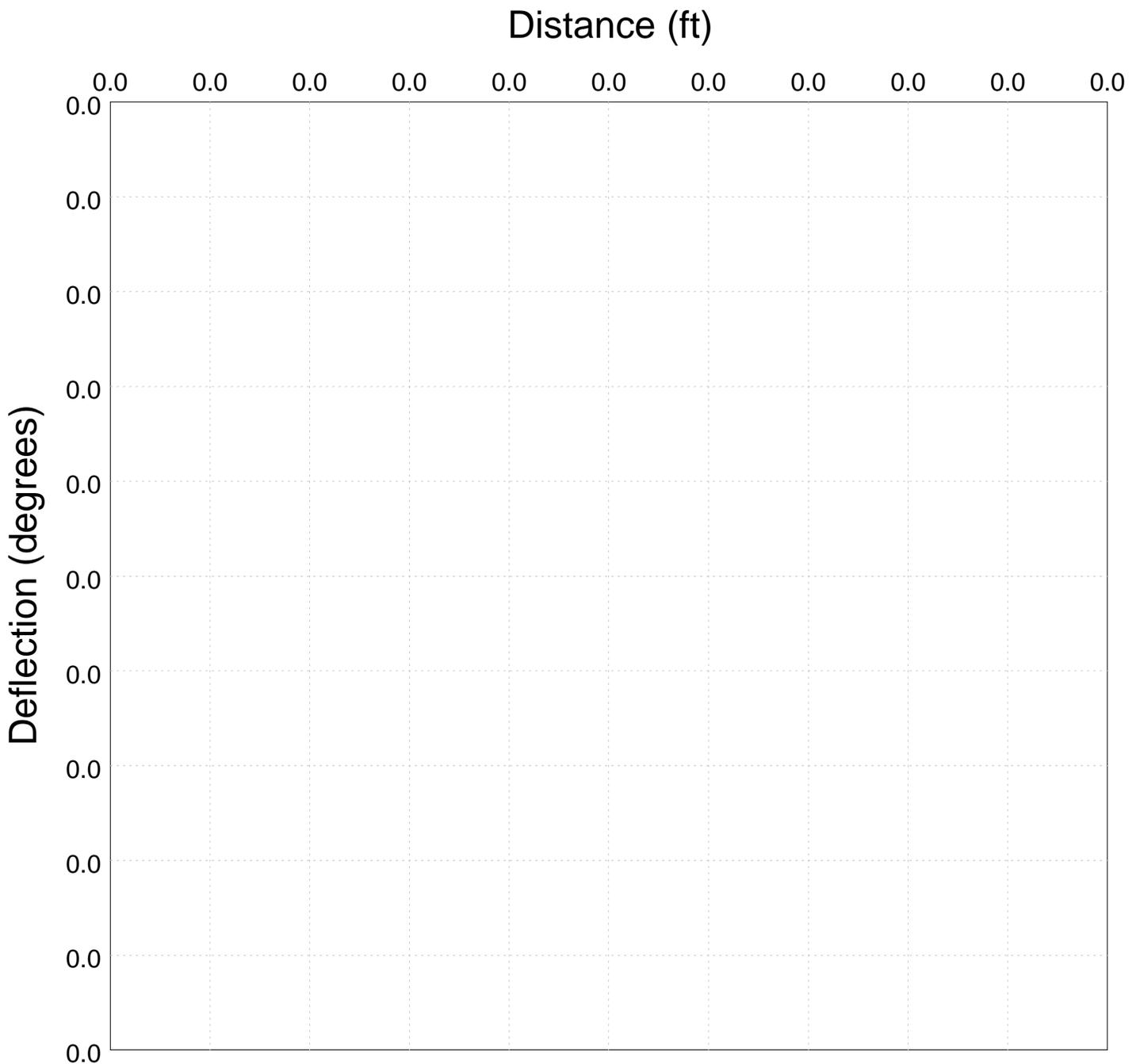
Line Segment	Block Number	Upstream MH A-189	Downstream MH A-188A	Section Number	Date 19-Jun-2017
Surveyor MA	Street Arden View Drive		City arden hills	Weather	
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				171.5	



**APPENDIX 3 - CITY ENGINEERS ASSOCIATION OF
MINNESOTA (CEAM) STANDARD SPECIFICATIONS
SECTION 2600.3 (2023 EDITION)**

B Insulation

Insulation shall be extruded rigid board material having a thermal conductivity of 0.23 BTU/hour/square foot/degree Fahrenheit/per inch thickness, maximum, at 40°F mean, a comprehensive strength of thirty-five (35) psi minimum, and water absorption of one quarter percent (0.25%) by volume maximum. Unless otherwise specified in the Plans, Specifications, or Special Provisions, board dimensions shall measure eight feet (8') long, two or four feet (2' or 4') wide, and one (1), one and one half (1-1/2), two (2), or three (3) inches thick.

C Geotextile Fabric

Geotextile fabric shall meet the requirements of MnDOT Specification 3733 and be used as required by the Plans, Specifications, and Special Provisions.

2600.3 CONSTRUCTION REQUIREMENTS

A General Provisions

A1 Maintenance of Traffic

Whenever work interferes with the flow of traffic along a roadway, the Contractor shall provide traffic control signing and public safety in accordance with the provisions Minnesota Manual on Uniform Traffic Control Devices (current edition and all amendments), MnDOT Specifications 1404 and 1710, and the Special Provisions. Neither road closures nor detours shall be permitted unless specified in the Special Provisions or authorized by the Engineer. Where road closures or detours are permitted by the Engineer, the Engineer shall determine the appropriate agencies, boards, or departments the Contractor must notify prior to taking the action and the proper advance notice to be provided to each body.

Compliance with this requirement shall not be construed to relieve the Contractor from the responsibility of notifying agencies or institutions whose services may be predicated upon a roadway being opened to traffic or whose services would be hindered if a roadway is closed to traffic. Such agencies or institutions shall include, but not be limited to, the police department, the fire department, municipal bus service, school bus service, and ambulance service, mail delivery, and waste hauler services. The Contractor shall keep the required agencies informed of changing traffic patterns and detour situations.

A2 Establishing Line and Grade

The primary line and grade will be established by the Engineer. For trench installation, line and grade stakes will be set parallel to the proposed pipeline at an appropriate offset therefrom as will best serve the Contractor's operations wherever practical. For tunnel installation, line and grade stakes will be set directly above the proposed pipeline setting.

The Contractor shall arrange operations to avoid unnecessary interference with the establishment of the primary line and grade stakes and shall render whatever assistance may be required by the Engineer in accomplishing the staking. The Contractor shall be responsible for preservation of the primary stakes and, if negligent in providing necessary protection, shall bear the full cost of any re-staking.

The Contractor shall be solely responsible for the correct transfer of the primary line and grade to all working points and for construction of the work to the prescribed lines and grades as established by the Engineer.

Unless otherwise specified in the Plans, Specifications, and Special Provisions the watermain shall generally be placed with the minimum specified cover. However, a greater depth may be required to avoid conflicts with other utilities and obstructions. Installation of watermain and services to a depth deeper than specified shall be considered incidental with no additional compensation allowed therefore.

The existing grade shown on the plans is approximate. Modification of the pipe location or differences in existing elevation shall not be cause for additional compensation.

In areas where direct conflicts arise between watermain and water services, with storm sewer, sanitary sewer, sanitary sewer services, sewer forcemains, septic tanks, or subsoil treatment systems, the following shall apply:

Watermain and services located near sewer forcemains:

A minimum of ten feet (10') of separation, measured horizontally between the outer surfaces of the pipes is required.

If ten feet (10') of separation cannot be provided, an approved additional measure of containment must be provided for either the watermain or the sewer forcemain.

Watermain and services located near septic tanks, or subsoil treatment systems:

A minimum of ten feet (10') measured horizontally between the outer surfaces of the watermain, tank and subsoil treatment system is required.

Watermain and services located near gravity sanitary and storm sewers:

A minimum of ten feet (10') measured horizontally between the outer surfaces of the pipes is required.

In locations where local conditions prevent the required separation indicated above (due to the presence of rock, buildings, other significant obstructions), the watermain may be laid closer to gravity sewer if **one** (1) of the following conditions is met:

The bottom of the watermain is laid at least eighteen inches (18") above the top of the sewer on a separate shelf; or

The sewer is constructed of materials and with joints that are equivalent to watermain standards of construction and is pressure tested to assure water tightness prior to backfilling.

Watermain and services crossing gravity sanitary and storm sewers:

A minimum vertical separation of eighteen inches (18") must be provided between the outer surfaces of the pipes, with preference that the watermain cross above the sewer, wherever possible.

One full length of water pipe shall be located so both joints will be as far from the sewer as possible.

Watermain above-water crossings:

The pipe shall be adequately supported and anchored, protected from vandalism, damage and freezing, and accessible for repair or replacement.

Watermain underwater crossings:

A minimum cover of five feet (5') shall be provided over the pipe unless otherwise approved by the Department of Health. When crossing water courses which are greater than fifteen feet (15') in width, the following shall be provided:

1. The pipe shall be of special construction, having flexible, restrained or welded watertight joints
2. Valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair; the valves shall be easily accessible, and not subject to flooding
3. Permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples on each side of the valve closest to the supply source.

A3 Protection of Surface Structures

All surface structures and features located outside the permissible excavation limits for underground installations, together with those within the construction areas which are indicated in the Plans as being saved, shall be properly protected against damage and shall not be disturbed or removed without approval of the Engineer. Within the construction limits, as indicated on the plans or as directed by the Engineer, the removal of improvements such as pavement, curb, curb & gutter, walks, turf, etc., shall be subject to equivalent acceptable replacement after completion of underground work, with all expense of removal and replacement being borne by the Contractor to the extent that separate compensation is not specifically provided for in the Contract.

Obstructions such as street signs, guard posts, small culverts, mailboxes, and other items of prefabricated construction may be temporarily removed during construction provided that essential service is maintained in a relocated setting as approved by the Engineer and that nonessential items are properly stored for the duration of construction. Upon completion of the underground work, all such items shall be replaced in their proper setting at the sole expense of the Contractor to the extent that separate compensation is not specifically provided for in the Contract.

The Contractor shall be responsible for protection of existing overhead utilities and poles. This shall include arranging with the utility owner and arrange paying the utility for holding poles that will be close to the edge of any trench. Holding of poles and repair of any damage to these facilities shall be considered incidental to the project with no additional compensation allowed. If relocation or removal of these facilities is required, the Owner will contact the concerned utility owner and arrange and pay for the relocation or removal at no additional expense to the Contractor.

In the event of damage to any surface improvements, either privately or publicly owned, in the absence of construction necessity, the Contractor will be required to replace or repair the damaged property to the satisfaction of the Engineer and without cost to the Owner.

A4 Interference of Underground Structures

When any underground structure interferes with the planned placement of the pipeline or appurtenances to such an extent that alterations in the work are necessary to eliminate the conflict or avoid endangering effects on either the existing or proposed facilities, the Contractor shall immediately notify the Engineer and the Owner of the affected structure. When any existing facilities are endangered by the Contractor's operations, the Contractor shall cease work at the site and take such precautions as may be necessary to protect the in-place structures until a decision is made as to how the conflict will be resolved.

Without specific authorization from the Engineer, no utility service shall be disrupted, nor shall any change be made in either the existing structures or the planned installations to overcome the interference. Alterations in existing facilities will be allowed only to the extent that service will not be curtailed and then only when the encroachment or relocation will satisfy all applicable regulations and conditions.

Wherever alterations are required as a result of unforeseen underground interferences not due to any fault or negligence of the Contractor, the Engineer will issue a written order covering any additional or extra work involved and specifying the revised basis of payment, if any. Any alterations made strictly for the convenience of the Contractor, shall be subject to prior approval and shall be at the Contractor's expense. No extra compensation will be allowed for delays caused by the interference of underground structures.

A5 Removal of Surface Improvements

Removal of surface improvements in connection with trench excavation shall be limited to actual needs for installation of the pipeline and appurtenances, based on the allowable trench widths and any other controls imposed in connection with the work. Removal operations shall be coordinated effectively with the excavation and installation operations as will cause the least practical disruption of traffic or inconvenience to the public. The debris resulting from removals shall become the property of the Contractor and shall be disposed of by the Contractor in accordance with MnDOT Specification 2104 and the Special Provisions. Removal debris shall not be deposited at locations that will block access to fire hydrants, private driveways, or other essential service areas, nor obstruct surface drainage. Removal and final disposal of debris shall be accomplished as a single operation wherever possible and, in any event, the debris shall be removed from the site before starting the excavating operations.

Removal of concrete or bituminous structures shall be by methods producing clean-cut breakage to pre-scored lines as will preserve the remaining structure without damage. Removal equipment shall not be operated in a manner that will cause damage to the remaining structure or adjoining property. Where not removed to an existing joint, concrete structures shall be sawed along the break lines to a minimum depth of one-third (1/3) of the structure depth.

Any reusable materials generated during the work, such as aggregate, sod, topsoil, shall be segregated from other waste materials and be stockpiled so as to maintain suitability and permit proper reuse.

The use of drop weight equipment for breaking pavement will be allowed to the extent that the Contractor shall assume full responsibility for any damages caused thereby. The pavement breaking operation shall not be allowed to become a nuisance to the public or a source of damage to underground or adjacent structures. The Engineer reserves the right to order discontinuance of drop weight breaking operations at any time.

A6 Temporary Service Measures

While any open excavations are maintained, the Contractor shall have available a supply of steel plates suitable for temporary bridging of open trench sections where either vehicular or pedestrian traffic must be maintained. Use of the plates shall be as directed or approved by the Engineer and where installed they shall be secured against possible displacement and be replaced with the permanent structure as soon as possible.

B Excavation and Preparation of Trench

B1 Operational Limitations and Requirements

Trench excavation must conform to all local, state and federal requirements. All work must be confined to the limits of the construction and to easements and right of way as indicated on the plans. The Contractor shall install at his expense the necessary trench support to meet the varying soil conditions and to protect existing structures and property. The trench shall be drained to provide stable excavation and permit the pipe to be laid in a dry trench.

Excavating operations shall proceed only so far in advance of pipe laying as will satisfy the needs for coordination of work and permit advance verification of unobstructed line and grade as planned, consistent with the Contractors methods and scheduling. Where interference with existing structures is possible or in any way indicated, and where necessary to establish elevation or direction for connections to in-place structures, the excavating shall be done at those locations in advance of the main operation so actual conditions will be exposed in sufficient time to make adjustments without resorting to extra work or unnecessary delay.

Wherever possible, excavated materials shall be placed in areas that will not block existing vehicle and pedestrian traffic and drainage ways. The Contractor shall review proposed methods of operation with the Engineer prior to beginning the work.

The Contractor shall backfill all trenches at the end of each work day, or upon written authorization of the Engineer, shall provide another approved method of protecting the trench area while work is not being performed.

All installations shall be accomplished by open trench with the exception that boring, jacking and tunnel construction methods shall be employed where specifically required by the Plans, Specifications, or Special Provisions.

The excavating operations shall be conducted so as to carefully expose all existing underground structures without damage. Wherever the excavation extends under or approaches so close to an existing structure as to endanger it in any way, precautions and protective measures shall be taken as necessary to preserve the structure and provide temporary support. Hand methods of excavating shall be utilized to probe for and expose such critical or hazardous installations as gas pipe, power and communication cables, watermain, gravity and pressure sewers, and respective service pipes.

The Engineer shall be notified of any need for blasting to remove materials which cannot be broken up mechanically, and there shall be no blasting operations conducted until the Engineer's approval has been secured. Blasting will be allowed only when proper precautions are taken to protect life and property, and then shall be restricted as the Engineer directs. The hours of blasting operations shall be set by the Owner. The Contractor shall assume full responsibility for any damages caused by blasting, regardless of the requirements for notification and approval. The Contractor shall secure any required permits for blasting and shall conduct blasting operations in conformance with all applicable local, state and federal laws, regulations, and ordinances.

B2 Classification and Disposition of Materials

Excavated materials will be classified for payment only when specifically provided in the Special Provisions, or the Proposal. All other materials encountered in the excavations will be considered incidental to utility construction, with no additional compensation provided thereto.

Miscellaneous excavated materials that are not specifically identified for payment in the Special Provisions or Proposal, exceed one (1) cubic yard in volume, cannot be re-used within the project limits, and in the opinion of the Engineer requires special means for handling and disposal, may be considered for payment through supplemental agreement as extra work. Miscellaneous excavated materials include but are not limited to organic soils, rubble, wood debris, boulder stone, masonry, concrete fragments, and metals.

Rock excavation shall be defined to include all hard, solid rock in ledge formation, bedded deposits and unstratified masses; all natural conglomerate deposits so firmly cemented as to present all the characteristics of solid rock; and any boulder stone, masonry or concrete fragments exceeding one (1) cubic yard in volume. Materials such as shale, hard pan, soft or disintegrated rock which can be dislodged with a hand pick or removed with a power operated excavator will not be classified as Rock Excavation.

Excavated materials will be classified for reuse as being either Suitable or Unsuitable for backfill or other specified use, subject to selective controls. All suitable materials shall be reserved for backfill to the extent needed, and any surplus remaining shall be utilized for other construction on the project as may be specified or ordered by the Engineer. To the extent practicable, granular materials and topsoil shall be segregated from other materials during the excavating and stockpiling operations so as to permit best use of the available materials at the time of backfilling. Unless otherwise specified in the Plans, Specifications, and Special Provisions, material handling as described above shall be considered incidental with no additional compensation provided.

All excavated materials reserved for backfill or other use on the project shall be stored at locations approved by the Engineer that will cause a minimum of inconvenience to public travel, adjacent properties, and other special interests. The material shall not be deposited so close to the edges of the excavations in a manner that could create hazardous conditions, nor shall any material be placed so as to block the access to emergency services. All materials considered unsuitable by the Engineer, for any use on the project, shall be immediately removed from the project and be disposed of as arranged for by the Contractor with no additional compensation.

B3 Excavation Limitations and Requirements

Trench excavating shall be to a depth that will permit preparation of the foundation as specified and installation of the pipeline and appurtenances at the prescribed line and grade, except where alterations are specifically authorized. Trench widths shall be sufficient to permit the pipe to be laid and joined properly and the backfill to be placed and compacted as specified. Extra width shall be provided as necessary to permit convenient placement of sheeting and shoring and to accommodate placement of appurtenances.

Excavations shall be extended below the bottom of structures as necessary to accommodate any required Granular Foundation material. When rock or unstable foundation materials are encountered at the established grade, additional materials shall be removed as specified or directed by the Engineer to produce an acceptable foundation. Unless otherwise indicated or directed, rock shall be removed to an elevation at least six inches (6") below the bottom surface of the pipe barrel and below the lowest projection of flange and bell/spigot joint. All excavations below grade shall be to a minimum width equal to the outside pipe diameter plus two feet (2'). Rock shall be removed to such additional horizontal dimensions as will provide a minimum clearance of six inches (6") on all sides of appurtenant structures such as valves, housings, access structures, etc.

Where no other grade controls are indicated or established for the pipeline, the excavating and foundation preparations shall be such as to provide a minimum cover over the top of the pipe as specified. Trench widths shall allow for at least six inches (6") of clearance on each side of the flange and bell/spigot joint. The maximum allowable width of the trench at the top of pipe level shall be the outside diameter of the pipe plus two feet (2'), subject to the considerations for alternate pipe loading set forth below. The width of the trench at the ground surface shall be held to a minimum to prevent unnecessary destruction of the surface structures.

The maximum allowable trench width at the top of pipe level may be exceeded only by approval of the Engineer, after consideration of pipe strength and loading relationships. Any alternate proposals made by the Contractor shall be in writing, giving the pertinent soil weight data and proposed pipe strength alternate, at least seven (7) days prior to the desired date of decision. Approval of alternate pipe designs shall be with the understanding that there will be no extra compensation allowed for any increase in material or construction costs.

If the trench is excavated to a greater width than that authorized, the Engineer may direct the Contractor to provide a higher class of bedding and/or a higher strength pipe than that required by the Plans, Specifications, and Special Provisions in order to satisfy design requirements, without additional compensation.

Excess excavated materials generated by utility construction without a specified use on the project site, shall become the property of the Contractor and disposed of offsite. Offsite disposal of excess excavated materials is considered incidental to the construction with no additional compensation allowed thereto.

The use of granular foundation materials shall not be used as an aid to facilitate installation of pipe in wet soil conditions. Use of these materials in this manner in lieu of providing adequate dewatering measures shall be considered incidental to the construction with no additional compensation allowed thereto.

B4 Sheeting and Bracing Excavations

All trench excavations that require slope support shall be sheeted, shored, and braced in a manner that will meet all requirements of the applicable safety codes and regulations; comply with any specific requirements of the Contract; and prevent disturbance or settlement of adjacent surfaces, foundations, structures, utilities, and other properties. Any damage to the work under contract, to adjacent structures, or other property, caused by settlement, water or earth pressures, slides, cave-ins, or other causes due to the failure or lack of sheeting, shoring, or bracing, through negligence or fault of the Contractor in any manner shall be repaired at the Contractor's expense and without delay.

The Plans, Specifications, and Special Provisions may require special precautions to protect life and property. The Engineer may order other precautions when excavation conditions appear to warrant additional measures. Failure of the Engineer to order correction of improper or inadequate sheeting, shoring, or bracing shall not relieve the Contractor's responsibilities for protection of life, property, and the work.

The Contractor shall assume full responsibility for proper and adequate placement of sheeting, shoring, and bracing, to prevent displacement. Bracing shall be so arranged as to provide ample working space and without increase of stress or strain on the in-place structures to any extent that may cause damage.

Sheeting, shoring and bracing materials shall be removed only when and, in such manner, as will assure adequate protection of the in-place structures and prevent displacement of supported grounds. Sheeting and bracing shall be left in place only as required by the Plans, Specifications, and Special Provisions or ordered by the Engineer. Otherwise, sheeting and bracing may be removed as the backfilling reaches the level of respective support. Wherever sheeting and bracing is left in place, the upper portions shall be cut and removed to an elevation of three feet (3') or more below the established surface grade or as the Engineer may direct.

All costs of furnishing, placing and removing sheeting, shoring, and bracing materials, including the value of materials left in place as required by the Contract, shall be included in the prices bid for pipe installation and will not be compensated for separately. When sheeting, shoring, or bracing materials are left in place by written order of the Engineer, in the absence of specific requirements of the Contract, payment will be made for those materials by supplemental agreement.

B5 Preparation and Maintenance of Foundations

Foundation preparations shall be conducted as necessary to produce a stable foundation and provide continuous and uniform pipe bearing between bell holes. The initial excavating or backfilling operations shall produce a subgrade level slightly above finished grade as will permit hand shaping to finished grade by trimming of high spots and without the need for filling of low spots to grade. Final subgrade preparations shall be such as to produce a finished grade at the centerline of the pipe that is within three hundredths of a foot (0.03') of a straight line between pipe joints and to provide bell excavation at each joint as will permit proper joining of pipe and fittings.

In excavations made below grade to remove rock or unstable materials, the backfilling to grade shall be made with available suitable materials unless placement of Granular Foundation or Bedding material is specified or is ordered by the Engineer. Placement of the backfill shall be in relatively uniform layers not exceeding eight inches (8") in loose thickness. Each layer of backfill shall be compacted thoroughly, by means of approved mechanical compaction equipment, as will produce uniform pipe support throughout the full pipe length and facilitate proper shaping of the pipe bed.

It shall be the Contractor's responsibility to notify the Engineer of changing soil conditions which may be of poor bearing capacity and when organic soils are encountered. Where utilities are placed on unstable soils without notification of the Engineer, the Contractor shall be responsible for all repairs and correction of the installation without further compensation.

Care shall be taken during final subgrade shaping to prevent any over-excavation. Should any low spots develop, they shall only be filled with approved material, which shall have optimum moisture content and be compacted thoroughly without additional compensation to the Contractor. The finished subgrade shall be maintained free of water and shall not be disturbed during pipe lowering operations except as necessary to remove pipe slings. The discharge of trench dewatering pumps shall be directed to natural drainage channels or storm water drains. Draining trench water into sanitary sewers or combined sewers will not be permitted.

The Contractor shall install and operate a dewatering system of wells or points to maintain pipe trenches free of water whenever necessary or as directed by the Engineer. Unless otherwise specified in the Plans, Specifications, and Special Provisions such work shall be considered incidental.

All costs of excavating below grade and placing foundation or bedding aggregates as required shall be included in the bid prices for pipe items to the extent that the need for such work is indicated in the Contract provisions and the Proposal does not provide for payment under separate Contract Items. Any excavation below grade and any foundation or bedding aggregates required by order of the Engineer in the absence of Contract requirements will be compensated for separately.

If examination by the Engineer reveals that the need for placement of foundation aggregate was caused by the Contractor's manipulation of the soils in the presence of excessive moisture or lack of proper dewatering, the cost of the corrective measures shall be borne by the Contractor.

B6 Contaminated Materials and Regulated Wastes

If during the course of the Project, the Contractor unexpectedly encounters any of the following conditions indicating the possible presence of contaminated soil, contaminated water, or regulated waste, the Contractor shall immediately stop work in the vicinity, and notify the Engineer.

At the direction of the Engineer, a documented inspection and evaluation will be conducted prior to the resumption of work. The Contractor shall not resume work in the suspected area without authorization by the Engineer.

Indicators of contaminated soil, groundwater or surface water include, but are not limited to the following:

- (1) Odor including gasoline, diesel, creosote (odor of railroad ties), mothballs, or another chemical odor.
- (2) Soil stained green or black (but not because of organic content), or with a dark, oily appearance, or any unusual soil color or texture.
- (3) A rainbow color (sheen) on surface water or soil.

Indicators of regulated wastes include, but are not limited to the following:

- (1) Cans, bottles, glass, scrap metal, wood (indicators of solid waste and a potential dump site).
- (2) Concrete and asphalt rubble (indicators of demolition waste).
- (3) Roofing materials, shingles, siding, vermiculite, floor tiles, transite or any fibrous material (indicators of demolition waste that could contain asbestos, lead or other chemicals).
- (4) Culverts or other pipes with tar-like coating, insulation or transite (indicators of asbestos).
- (5) Ash (ash from burning of regulated materials may contain lead, asbestos or other chemicals).
- (6) Sandblast residue (could contain lead).
- (7) Treated wood including, but not limited to products referred to as green treat, brown treat and creosote (treated wood disposal is regulated).
- (8) Chemical containers such as storage tanks, drums, filters and other containers (possible sources of chemical contaminants).
- (9) Old basements with intact floor tiles or insulation (could contain asbestos), sumps (could contain chemical waste), waste traps (could contain oily wastes) and cesspools (could contain chemical or oily wastes).

Discovery of contaminated soil, contaminated water, or regulated waste on State right of way, State property, and State funded projects shall be handled in accordance with guidance procedures of the MNDOT Office of Environmental Stewardship (OES) and the MPCA requirements for materials handling, disposal, re-use and remediation.

Discovery of contaminated soil, contaminated water, or regulated waste on projects or properties that are not under the ownership or financed by the State shall be handled in accordance with guidance procedures of the MPCA requirements for materials handling, disposal, re-use and remediation.

C Trenchless Pipe Installation

The Contractor shall inspect and verify soil conditions as necessary in order to determine the type of construction to employ. Natural and/or manmade obstructions may be encountered in the soil. These contract documents do not warrant the nature or condition of the soils, and do not warrant that natural or manmade obstructions will not be encountered, nor guarantee the extent to which rocks, boulders, or other obstructions, regardless of size, may be encountered during boring operations. The Contractor shall not be entitled to additional compensation for any natural or manmade obstructions encountered during trenchless construction.

The Contractor shall be responsible for protecting all existing utilities within the construction limits.

C1 Jacking/Boring

The terms "auger", "boring", "jack", "jacking", and "tunneling" in the proposal, specifications, and plans refers only to trenchless construction.

The minimum diameter of the casing pipe shall be four inches (4") greater than the outside diameter of the bell of the carrier pipe.

The Contractor shall prevent excavated materials from flowing back into the excavation during the trenchless construction. This shall include the use of a shield conforming to the size and shape of the casing that will prevent materials from flowing into the leading edge of the casing. The machine used shall be capable of controlling line and grade and shall conform to the size and shape of the casing pipe.

No jacking/augering of pipe will be allowed below the water table unless the water table has been lowered sufficiently to keep the water below the pipe being installed. The use of water under pressure (jetting) or puddling will not be permitted to facilitate jacking/augering operations.

If any installation is augered, the head shall be approved by the Engineer and the auger shall be located six inches (6") behind the lead edge of the casing or carrier pipe.

The jacking system shall be provided with an integral grout pipe and casing pipe. A one-inch (1") grout pipe shall be tack welded to the front edge of the first length of casing pipe. The grout pipe shall be extended with the casing pipe, but not fastened to the casing pipe during the remaining jacking operations. After the pipes are through to the receiving pit, the grout pipe shall be cut free from the casing pipe. The grout pipe shall be pulled back through the embankment applying positive piston pressure on the grout along the outside of the casing pipe throughout the pulling operation. A cement slurry grout mix with as little water as possible shall be used. Bentonite shall not be used to fill voids. The Engineer shall approve grout and backfill material prior to placement of any material.

Deviation from the pipe grade, as provided by the Engineer, in excess of five tenths of a percent (0.50%) may be cause for removal and relaying of the pipe by the Contractor with no additional compensation allowed therefore.

If a void develops, the jacking or boring operation shall be stopped immediately and the void shall be filled by an approved method.

The Contractor shall take the following precautions when boring:

Extend casing through entire distance bored.

Check grade and alignment after each casing section is installed.

Coordinate operations to provide continuous support to surrounding earth materials.

Excavation shall be carried on in such a manner as to provide adequate support to surface structures and roads above and adjacent to the boring and not create any hazards to overhead traffic and other activities.

These contract documents do not guarantee the extent to which rocks, boulders, or other obstructions, regardless of size, may be encountered during boring operations. No extra compensation will be made for removal of rocks, boulders or other natural or manmade obstructions encountered during trenchless construction or excavation.

All voids caused by boring shall be filled by pressure grouting. The grout material shall consist of sand cement slurry of at least two (2) sacks of cement per cubic yard and a minimum of water to assure satisfactory placement. All slurry shall be pre-approved by the Engineer prior to use by the Contractor.

The Contractor shall take the following precautions when jacking:

The jacking machine shall be capable of controlling line and grade.

Progressively push carrier pipe through completed casing.

Strap two (2) wooden saddle blocks to each pipe length to provide support at regular intervals.

Center carrier pipe in casing at all times.

Seal each end of the casing with a concrete block and mortar bulkhead with PVC filler and vent pipes at opposite ends.

Fill the annular space between casing and carrier pipe with dry blown sand. Space shall be considered filled when dry sand blows out of the vent pipe at the opposite end of casing pipe.

Seal the filler and vent pipes after the sand has been deposited.

The location, size, and configuration of all jacking pits shall be subject to approval of the Engineer.

C2 Directional Boring

Directional boring/drilling installation shall be accomplished where required on the Plans or in the Special Provisions to minimize disturbance of existing surface improvements. The installer shall have a minimum of five (5) years of experience in this method of construction and have successfully installed at least ten thousand feet (10,000') of eight inch (8") or larger diameter pipe to specified grades. The field supervisor employed by the Contractor shall have at least five (5) years of experience and shall be at the site at all times during the boring/drilling installation.

The Contractor shall submit boring/drilling pit locations to the Engineer before beginning construction. Boring pits may be located within roadway right-of-way and easements. Any other boring pit locations that may be desired by the Contractor for boring or other uses shall be the responsibility of the Contractor to attain authorization, including use of private property.

Unless otherwise provided in the Special Provisions, the Contractor shall be compensated for the restoration work only within the areas at the connection points, or other locations as may be approved by the Engineer. The Contractor shall be responsible for repairs, without compensation, for any other repair areas, including pit/boring points and areas above the drilled pipe where drilling fluid pressure may have caused heaving or damage to pavement and other surfaces.

The drilling equipment shall be capable of placing the pipe as shown on the plans. The installation shall be by a steerable drilling tool capable of installing continuous runs of pipe between appurtenances such as valves, manholes, etc., without intermediate pits. The guidance system shall be capable of installing pipe within one and one-half inch (1 ½") of the plan vertical dimensions and two inches (2") of the plan horizontal dimensions. The Contractor shall remove and reinstall pipes which vary in depth and alignment from these tolerances.

Pull back forces shall not exceed the allowable pulling forces for the pipe being installed. Drilling fluid shall be a mixture of water and bentonite clay and shall be suitable for existing soil conditions. Disposal of excess fluid and spoils shall be the responsibility of the Contractor.

D Placement of Insulation

Rigid insulation board shall be placed within the pipe encasement zone, six inches (6") above the pipe.

Insulation boards shall be placed with the long dimension parallel to the centerline of the pipe. Boards shall be placed in a single layer with tight joints. No continuous joints or seams shall be placed directly over the pipe. If two (2) or more layers of insulation boards are used, each layer shall be placed to cover the joints of the layer immediately below.

The Contractor shall exercise caution to ensure that all joints between boards are tight during placement and backfilling with only extruded ends placed end to end or edge to edge.

Backfill material shall be placed in such a manner that construction equipment does not operate directly on the insulation and compacted with equipment which exerts a contact pressure of less than eighty (80) psi.

E Pipeline Backfilling Operations

All pipeline excavations shall be backfilled to restore preexisting conditions as the minimum requirement, and fulfill all supplementary requirements indicated in the Plans, Specifications, and Special Provisions. The backfilling operations shall be started as soon as conditions will permit on each section of pipeline, so as to provide continuity in subsequent operations and restore normal public service as soon as practicable. All operations shall be pursued diligently, with proper and adequate equipment, to assure acceptable results.

The backfilling shall be accomplished with the use of Suitable Materials selected from the excavated materials to the extent available and practical. Should the materials available within the trench section be unsuitable or insufficient, the required additional materials shall be furnished from outside sources as provided in the Special Provisions, or as arranged otherwise through supplemental agreement.

Backfill material selection shall be such as to make the best and fullest utilization of what is available, taking into consideration particular needs of different backfill zones. Material containing stone, rock, or chunks of any sort shall only be utilized where and to the extent there will be no detrimental effects. Placement of backfill material containing stones, boulders, chunks, greater than eight inches (8") in any dimension shall not be allowed.

All flexible pipe shall be bedded in accordance with ASTM Specification D2321, "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications". Where existing soils do not meet the requirements of bedding and encasement materials, the Contractor shall furnish the required granular materials. Placement and compaction of bedding and encasement materials around the pipe shall be considered incidental to the installation of the pipe.

Compaction of materials placed within the pipe bedding and encasement zones shall be accomplished with portable or hand equipment methods, so as to achieve thorough consolidation under and around the pipe and avoid damage to the pipe. Above the cover zone material, the use of heavy roller type compaction equipment shall be limited to safe pipe loading.

Backfill materials shall be carefully placed in uniform loose thickness layers up to twelve inches (12") thick spread over the full width and length of the trench section to provide simultaneous support on both sides of the pipeline. Granular backfill may be placed in layers up to twelve inches (12") above an elevation one foot (1') above the top of the pipe.

Each layer of backfill material shall be compacted effectively, by approved mechanical or hand methods, until there is no further visual evidence of increased consolidation or the density of the compacted layer conforms to the density requirements specified in the Special Provisions. Compaction of each layer shall be completed acceptably before placing material for a succeeding layer thereon. The manner of placement, compaction equipment, or procedure effectiveness shall be subject to approval of the Engineer.

All surplus or waste materials remaining after completion of the backfilling operations shall be disposed of in an acceptable manner within twenty-four (24) hours after completing the backfill work on each particular pipeline section. Disposal at locations within the project limits shall be as specified, or as approved by the Engineer; otherwise, disposal shall be accomplished outside the project limits at the Contractor's discretion. The backfilling and surplus or waste disposal operations shall be a part of the work required under the pipeline installation items, without delay.

Compaction of backfill within Roadbed areas shall meet the density requirements of MnDOT Specification 2106.3.G1. Compaction of backfill in all other areas shall be as required in the Special Provisions.

Until expiration of the guarantee period, the Contractor shall assume full responsibility and expense for all backfill settlement and shall refill and restore the work as directed to maintain an acceptable surface condition, regardless of location. All additional materials required shall be furnished without cost to the Owner.

Any settlement of road surfaces placed under this Contract and that are within the guarantee period that are in excess of one inch (1"), as measured by a ten foot (10') straight edge-shall be considered failure of the mechanical compaction. The Contractor shall be required to repair such settlement without cost to the Owner.

F Restoration of Surface Improvements

Wherever any surface improvements such as pavement, curbing, pedestrian walks, fencing, or turf have been removed, damaged or otherwise disturbed by the Contractor's operations, they shall be repaired or replaced to the Engineer's satisfaction, as will restore the improvement in kind and structure to the preexisting condition. Each item of restoration work shall be done as soon as practicable after completion of installation and backfilling operations on each section of pipeline.

In the absence of specific payment provisions, as separate Contract Items, the restoration work shall be compensated for as part of the work required under those Contract Items which necessitated the destruction and replacement or repair, and there will be no separate payment. If separate pay items are provided for restoration work, only that portion of the repair or reconstruction which was necessitated by the Contract work will be measured for payment. Any improvements removed or damaged unnecessarily or undermined shall be replaced or repaired at the Contractor's expense.

G Maintenance and Final Cleanup

All subgrade surfaces shall be maintained acceptably until the start of surfacing construction or restoration work, and until the work has been finally accepted. Additional materials shall be provided and placed as needed to compensate for trench settlement and to serve as temporary construction pending completion of the final surface improvements.

Final disposal of debris, waste materials, and other remains or consequences of construction, shall be accomplished intermittently as new construction items are completed and shall not be left to await final completion of all work. Cleanup operations shall be considered an incidental part of the work covered under the Contract Items.

If disposal operations and other cleanup work are not conducted properly as the construction progresses, the Engineer may withhold partial payments until such work is satisfactorily performed or the Engineer may deduct the estimated cost of its performance from the partial estimate value.

2600.4 METHOD OF MEASUREMENT

All items will be measured separately according to design designation as indicated in the Pay Item name and as may be detailed and defined in the Plans, Specifications, or Special Provisions. Complete-in-Place items shall include all component parts thereof as described or required to complete the unit, but excluding any excesses covered by separate Pay Items.

A Rock Excavation

Rock Excavation shall be measured by volume in cubic yards. Depth shall be measured from the top of the rock to a point six inches below the outside barrel of the pipe and width shall be the inside diameter of the pipe plus twenty-four inches (24") (12" from each side). The minimum width of measurement shall be four feet (4').

B Granular Materials

Granular materials furnished and placed as special foundation, bedding, encasement, or backfill construction will be measured by weight or volume of material furnished by the Contractor from outside sources and placed within the limits defined. Unless otherwise specified, volume will be determined by vehicular measure (loose volume) at the point of delivery. Measurements will not include any materials required to be placed as a component part of other Contract Items as may be specified.

C Geotextile Fabric

Where geotextile fabric is used for improving pipe foundation, it shall be measured by the square yard of material installed.

D Insulation

Rigid board insulation shall be measured on a square yard basis installed to the specified thickness noted on the Plans, Specifications, and Special Provisions and shall include all materials, equipment, and labor required for placement.

**APPENDIX 4 - CITY ENGINEERS ASSOCIATION OF
MINNESOTA (CEAM) STANDARD SPECIFICATIONS
SECTION 2621.3 (2023 EDITION)**

- (3) Sanitary sewer inlet and outlet pipes shall be joined to the manhole with a gasketed, flexible, watertight connection, watertight boot, or any watertight connection arrangement approved by the Engineer that allows differential settlement of the pipe and manhole wall to take place.
- (4) Air-entrained concrete shall be used in the production of all wet-cast units. Air content shall be maintained within the range of five (5) to eight (8) percent (%).
- (5) A Certificate of Compliance shall be furnished with each shipment of precast manhole and catch basin sections stating that the materials furnished have been tested and are in compliance with the specification requirements.
- (6) Lift holes will not be permitted in precast manholes.

D Mortar

Mortar for use in masonry construction shall meet the requirements of MNDOT 2506.B.2 and ASTM C270.

E Concrete

Concrete used for cast-in-place masonry construction shall be produced and furnished in accordance with the provisions of MnDOT Specification 2461, Table 2461-6, for the mix design indicated in the Plans, Specifications, or Special Provisions. Type 3, air-entrained, concrete shall be furnished and used in all structures having weather exposure.

2621.3 CONSTRUCTION REQUIREMENTS

A Installation of Pipe and Fittings

The Contractor shall take all necessary precautions to handle and install all pipe and appurtenances as recommended by the manufacturer, Engineer, Plans, Specifications, and the Special Provisions.

Installation of PVC pipe and fittings for pressure sewer and forcemains shall meet the requirements of 2611.3 for watermain class pipe.

A1 Inspection and Handling

Proper and adequate implements, tools, and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work. During the process of unloading, all pipe and accessories shall be inspected by the Contractor for damage. The Contractor shall notify the Engineer of all material found to have cracks, flaws or other defects. The Engineer shall inspect the damaged materials and have the right to reject any materials found to be unsatisfactory. The Contractor shall promptly remove all rejected material from the site. All materials shall be handled carefully, as will prevent damage to protective coatings, linings, and joint fillings; preclude contamination of interior areas; and avoid jolting contact, dropping, or dumping.

All work and materials are subject to tests by the Owner at such frequency as may be determined by the Engineer.

While suspended and before being lowered into laying position, each pipe section and appurtenant unit shall be inspected by the Contractor to detect damage or unsound conditions that may need corrective action or be cause for rejection. The Contractor shall inform the Engineer of any defects discovered and the Engineer will prescribe the required corrective actions or order rejection.

Immediately before placement, the joint surfaces of each pipe section and fitting shall be inspected for the presence of foreign matter, coating blisters, rough edges or projections, and any imperfections so detected shall be corrected by cleaning, trimming, or repair as needed.

A2 Pipe Laying Operations

Trench excavation and bedding preparations shall proceed ahead of pipe placement as will permit proper laying and joining of the units at the prescribed grade and alignment without unnecessary deviation or hindrance.

All foreign matter or dirt shall be removed from the inside of the pipe and fittings before they are lowered into position in the trench and they shall be kept clean. The sewer materials shall be carefully lowered into laying position by the use of suitable restraining devices. Under no circumstances shall the pipe be dropped into the trench.

Unless otherwise permitted by the Engineer, bell and spigot pipe shall be laid with the bell ends facing upgrade and the laying shall start on the downgrade end and proceed upgrade. As each length of bell and spigot pipe is placed in laying position, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material.

Connection of pipe to existing lines or previously constructed manholes or catch basins shall be accomplished as shown in the Plans or as otherwise approved by the Engineer. Where necessary to make satisfactory closure or produce the required curvature, grade or alignment, deflections at joints shall not exceed that which will assure watertight joints and shall comply with the pipe manufacturer recommendations.

Entrance of foreign matter into pipeline openings shall be prevented at all times to the extent that suitable plugs or covering can be kept in place over the openings without interfering with the installation operations.

Installation of thermoplastic pipe shall conform to ASTM D2321; FRP/GRP pipe to ASTM D3839, and the manufacturers' recommendations; ASTM A798 for CS pipe, and ASTM C1479 for RC pipe.

A3 Connection and Assembly of Joints

All pipe and fitting joints shall fit tightly and be fully closed. Spigot ends shall be marked as necessary to indicate the point of complete closure. All joints shall be soil tight and watertight in all sanitary sewer and storm sewer pipe.

A4 Bulkheading Open Pipe Ends

All pipe and fitting ends left open for future connection shall be bulkheaded by approved methods prior to backfilling. Unless otherwise specified or approved, all openings of twenty four inches (24") in diameter or less shall be closed off with prefabricated plugs or caps and all openings larger than twenty four inches (24") in diameter shall be closed off with masonry bulkheads.

Prefabricated plugs and caps shall be of the same material as the pipe material, or an approved alternate material, and they shall be installed with watertight seal as required for the pipeline joints. Masonry bulkheads shall be constructed with clay or concrete brick to a wall thickness of eight inches (8").

Bulkheads installed for temporary service during construction may be constructed with two inch (2") timber planking securely fastened together and adequately braced, as an alternate to the masonry construction.

A5 Tracer Wire

Tracer wire shall be installed along the length of all non-conductive mainline pipe, laterals, and services with vertical riser to the surface, at manholes, catch basins, stubs, laterals, services, and/or utility location boxes as required by the Special Provisions. Tracer wire shall be taped, clamped or affixed to the pipe in another manner as approved by the Engineer.

Splicing tracer wire shall be by mechanical split bolt type or a crimp type compression fitting fully encased in approved electrical insulation putty. A twelve inch (12") tracer wire loop shall be provided on each side of a spliced connection.

Tracer wire lengths greater than 500 linear feet are to include an approved grade level/in-ground access box, located at the edge of the road right-of-way and outside of the roadway.

Tracer wire shall be grounded at all terminal ends (stubs, plugs).

B Appurtenance Installations

Appurtenance items such as aprons, trash guards, gates and castings shall be installed where and as required by the Plans and in accordance with such standard detail drawings or supplementary requirements as may be specified.

Casting assemblies installed on manhole or catch basin structures shall be set in a full mortar bed and be adjusted to the specified elevation without the use of shims or blocking.

Sewer aprons shall be subject to all applicable requirements for installation of pipe. All aprons and outfall end sections shall have the last three (3) sections tied. Two (2) tie bolt fasteners shall be placed in each of the last three joints, one on each side of top center at the sixty (60) degree point (from vertical). Tie bolt diameter shall be: 5/8 inch for 12" to and including 27" pipe; 3/4 inch for 30" to and including 66" pipe; 1 inch for 72" to and including 144" pipe. The tie bolts shall be of a design approved by the Engineer.

C Sewer Service Installations

Main sewer service connections and building service sewer pipe shall be installed as provided for in the Contract and as may be directed by the Engineer. The sewer service connections and pipe lines shall be installed in conformance with all applicable requirements of the main sewer installation and as more specifically provided for herein.

The Engineer, with the assistance of the Contractor, shall keep accurate records of all service installations as to type, location, elevation, point of connection and termination, etc. This service record shall be maintained jointly by the Contractor and Engineer on forms provided by the Engineer. The service installations shall not be backfilled until all required information has been obtained and recorded.

The main sewer service connection shall consist of installing a Branch Tee or Wye section in the main sewer line at designated locations or providing an insert type Saddle Tee or Wye fitting in a pipe cut-out where specified. Orientation of service connection fitting shall be as shown in the standard drawings unless otherwise directed by the Engineer.

Where the depth of cover over the main sewer invert is greater than fifteen (15) feet (or such other maximum as may be indicated), the service connection shall be extended upward by means of a Service Riser Section.

Unless otherwise specified, service pipe shall be installed at right angles to the main sewer and at a straight line grade to the property line. The standard and minimum grades shall be a uniform rise of one inch (1") in four feet (4') (two percent (2%)) for sanitary service lines and one inch (1") in eight feet (8') (one percent (1%)) for storm sewer service lines. These minimum grades may be reduced (by not more than one-half (1/2) pitch) where the Engineer so approves in the case of restrictive elevation differences.

Building service pipe lines shall generally be kept as deep as required to serve the building elevation and maintain the specified minimum pipe grades. Pipe bends shall be provided as necessary to bring the service lines to proper location and grade. Pipe bends shall not exceed twenty-two and one half (22-1/2) degrees without approval of the Engineer.

Unless otherwise indicated, service pipe installation shall terminate at property line or as designated on the Plans, with a gasketed plug placed in the end, at which point the Contractor shall furnish and set a four inch by four inch (4" x 4") wooden timber six feet (6') to eight feet (8') in length embedded four feet (4') below grade, or approved steel post to mark the exact end of pipe. The timber or post shall be set vertically, with the top two feet (2') painted green.

Wherever service line connections to the main sewer are permitted or required to be made by the open cut-out method in the absence of a built-in Tee or Wye fitting, the connection shall be made by using an approved type of Saddle Tee or Wye fitting. The pipe cut-out shall be made with an approved type coring machine or by other approved methods producing a uniform, smooth circular cut-out as required for proper fit. The cut-out discs shall be retrieved and shall not be allowed to remain within the main sewer pipe. The Saddle Tee shall be securely fastened to the main sewer pipe by means of epoxy resin or other approved adhesive. The entire connection fitting shall be encased in concrete to a minimum thickness of six inches (6") and as may be shown in the standard drawings.

Wherever service line connections to the main sewer are required to be made by means of built-in Branch Tee or Wye fittings, the Contractor shall, in the absence of such fitting, remove a section of the main sewer pipe and replace it with the required Branch Tee or Wye section connected by means of an approved sleeve coupling.

Sanitary sewer service lines shall not be connected to a manhole at an elevation more than twenty-four inches (24") above the crown of the outgoing sewer. Where the elevation difference is greater than twenty-four inches (24"), the connection shall be made by means of an Outside Drop Connection in accordance with the details shown in the standard drawings.

All pipe and fitting openings at temporary terminal points shall be fitted with suitable plugs or shall be bulkheaded as required for the main sewer pipe.

D Manhole and Catch Basin Structures

Manholes, catch basins, and other special access structures shall be constructed at designated locations as required by the Plans and in accordance with any standard detail drawings or special design requirements given therefor.

Unless otherwise specified or approved, storm sewer manholes and catch basins shall be constructed on a precast or cast-in-place concrete base and the barrel riser sections, and cone section shall all be of precast concrete. Sanitary sewer manholes shall be constructed with precast concrete integral base with pre-formed invert barrel section and with watertight boots at all pipe locations. All units shall be properly fitted and sealed to form a completely watertight structure. Manholes and catch basin structures shall be fabricated to provide a twelve-inch (12") or sixteen inch (16") barrel section immediately below the cone or top slab whenever possible. Barrel and cone height shall be such as to permit placement of at least two (2) and not more than six (6) standard two-inch (2") precast concrete or high density polyethylene adjusting immediately below the casting assembly. Sanitary manhole adjustment rings and casting flange shall be fitted with specified method/materials as indicated in the Special Provisions to reduce inflow and infiltration. Storm sewer manhole and drainage structure adjustment rings and casting flange shall be wrapped with a Type 2 Geotextile fabric meeting MnDOT 3733.

Unless otherwise specified or approved, manholes and catch basins shall have an inside barrel diameter at the bottom of forty-eight inches (48") minimum and the inside diameter at the top of the cone section and all adjusting rings shall be of the same size and shape as the casting frame. Casting assemblies shall be as specified in the Plans

Concrete cast-in-place base shall be poured on undisturbed or firmly compacted foundation material which shall be trimmed to proper elevation. The bottom riser section shall be set in fresh concrete or mortar and all other riser section joints of the tongue and groove design shall be sealed with rubber gaskets. The concrete base under an outside drop connection shall be monolithic with the manhole base.

Wherever special designs so require or permit, and as may be approved by the Engineer, a precast concrete base may be used or the structure may be constructed with solid sewer brick or block units or with cast-in-place concrete. Any combination of cast-in-place concrete and brick or block mortar construction will be allowed and may be required where it is impossible to complete the construction with standard precast manhole sections.

All storm sewer manhole and catch basin structure doghouses shall be completely filled with mortar, concrete masonry, or concrete to completely seal the pipes into the structure wall. When formed inverts are specified, the inside bottom of each manhole and catch basin shall be shaped with fresh concrete to form free flow invert troughs.

When connecting to an existing sanitary sewer manhole without an existing opening for sewer pipe, the Contractor shall be required to core-drill an opening of the correct size and elevation for the proposed sanitary sewer facility. The Contractor shall set the connecting pipe through the full thickness of the wall flush with the inner face of the wall. Connection to the structure shall be made with a watertight joint, by means of a rubberized boot. The Contractor shall ensure the flow line of the manhole is constructed in a manner to provide steady flow from the new sanitary line to the existing sanitary line. The flow line and the core-drilled hole are to be grouted smooth. The Contractor shall install a plug in the connecting pipe once the connection is complete and construction has advanced to the next manhole to prevent rainwater or sediment from entering the existing system. The plug shall be removed once all the proposed sanitary sewer mains on the project have been installed, tested, inspected, and approved.

E Sanitary Sewer Leakage Testing

All sanitary sewer lines, including service connections, shall be substantially watertight and shall be tested for excessive leakage upon completion and before connections are made to the service by Others. Each test section of the sewer shall be subjected to exfiltration testing, either by hydrostatic or air test method as described below and at the Contractor's option. The requirements set forth for maximum leakage shall be met as a condition for acceptance of the sewer section represented by the test.

If the ground water level is greater than three feet above the invert elevation of the upper manhole and the Engineer so approves, infiltration testing may be allowed in lieu of the exfiltration testing, in which case the allowable leakage shall be the same as would be allowed for the Hydrostatic Test.

All testing shall be performed by the Contractor without any direct compensation being made therefore, and the Contractor shall furnish all necessary equipment and materials, including plugs and standpipes as required.

E1 Air Test Method

E1a Gravity Sewers

All gravity sanitary sewer lines, including service connections, shall be substantially watertight and shall be tested for excessive leakage upon completion and before connections are made to the service by Others. Each test section of the sewer shall be subjected to exfiltration testing by the ASTM F1417 (low pressure air) test method regardless of pipe material.

The requirements set forth for maximum leakage shall be met as a condition for acceptance of the sewer section represented by the test. All testing shall be performed by the Contractor without any direct compensation being made therefore, and the Contractor shall furnish all necessary equipment and materials, including plugs and standpipes as required.

The sewer pipe section under test shall be clean at the time of testing but the pipe may be wetted. Pneumatic balls shall be used to plug the pipe ends at manholes. Low pressure air shall be introduced to the plugged line until the internal air pressure reaches three and one half (3.5) psi greater than the average back pressure of any ground water pressure that may submerge the pipe. At least two (2) minutes shall be allowed for the air temperature to stabilize before readings are taken and the timing started. During this time the Contractor shall check all plugs to detect plug leakage. If plugs are found to leak, air shall be bled off, the plugs shall be retightened, and the air shall be reintroduced into the line.

The sewer section under test will be accepted as having passed the air leakage test when the rate of air loss as measured by pressure drop, does not exceed a specified amount in a specified time. Pressure drop may be determined by using the table below, or calculated by use of the formulas provided below.

TABLE
Minimum Specified Time Required for a 0.5 psig Pressure Drop for Size and Length of Pipe Indicated for Q = 0.0015 CFM/SF

Pipe Diameter (Inches)	Minimum Time (Min:Sec)	Length for Min. Time (Feet)	Time for increased Length (Sec)	Specification Time for Length (L) Shown (Min:Sec)								
				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	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	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	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	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	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	28:51
21	9:55	114	5.235 L	9:55	13:05	17:27	21:49	28:11	30:32	34:54	39:16	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	51:17
*27	12:45	88	8.653 L	14:25	21:38	28:51	36:04	43:18	50:30	57:42	64:54	64:54
*30	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:131	80:07	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	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	115:23

*NOTE - Consult with pipe and appurtenance manufacturer for maximum test pressure for pipe size greater than twenty four inches (24") in diameter.

FORMULA

The formula below calculates the specified minimum time required for a **1.00 psig pressure drop** from a starting pressure of 3.5 psig to a final pressure of 2.5 psig using a leakage rate of 0.0015 cubic feet/minute/square foot of internal surface.

Calculate all test times by the following formula:

$$T = 0.085 DK/Q$$

where:

T = shortest time allowed for the **air pressure to drop 1.0 psig**, sec.

K = 0.000419 DL but not less than 1.0,

Q = leak rate = 0.0015 CFM/SF,

D = measured average inside diameter of sewer pipe, in., and

L = length of test section, ft.

E2 Hydrostatic Test Method

E2a Gravity Sewers

After bulkheading the test section, the pipe shall be subjected to a hydrostatic pressure produced by a head of water at a depth of three feet (3') above the invert elevation of the sewer at the upstream manhole of the test section. In areas where ground water exists, this head of water shall be three feet (3') above the existing water table.

The water head shall be maintained for a period of one (1) hour during which time it will be presumed that full absorption of the pipe body has taken place, and thereafter for an extended period of one (1) hour the water head shall be maintained as the test period. During the test period, the measured water loss within the test section, including service stubs, shall not exceed an infiltration / exfiltration rate of thirty five (35) gallons / inch diameter / mile / day.

If measurements indicate exfiltration within a test action section is not greater than the allowable maximum, the section will be accepted as passing the test.

E2b Pressure Sewers

For sewers designated as pressure pipe sewers, the sewer shall be subjected to hydrostatic testing under 2611.3G Hydrostatic Testing of Watermains, except the hydrostatic testing pressure shall be two (2) times the maximum design operating pressure, but not less than one hundred (100) psig and the duration of the test shall be one hour.

E3 Test Failure and Remedy

In the event of test failure on any test section, testing shall be continued until all leakage has been detected and corrected to meet the requirements. All repair work shall be subject to approval of the Engineer. Introduction of sealant substances by means of the test water will not be permitted.

Unsatisfactory repairs or test results may result in an order to remove and replace pipe as the Engineer considers necessary for test conformance. All repair and replacement work shall be at the Contractor's expense.

F Deflection Test

Deflection tests shall be performed on all plastic gravity sewer pipes. The test shall be conducted after the sewer trench has been backfilled to the desired finished grade and has been in place for thirty (30) days.

The deflection test shall be performed by pulling a rigid ball or nine-point mandrel in accordance with MnDOT 2503.3 C.4. Direct measurement of the pipe diameter to determine deflection is not allowed. The ball or mandrel shall have a minimum diameter equal to ninety five percent (95%) of the actual inside diameter of the pipe. The maximum allowable deflection shall not exceed five percent (5%) of the pipe's internal diameter. The line will be considered acceptable if the mandrel can progress through the line without binding. The time of the test, method of testing, and the equipment to be used for the test shall be subject to the approval of the Engineer.

All testing shall be performed by the Contractor at his expense without any direct compensation being made therefore, and he shall furnish all necessary equipment and materials required.

F1 Test Failure and Remedy

In the event of test failure on any test section, the section shall be replaced, with all repair work subject to approval of the Engineer. The replaced section shall be retested for leakage and deflection in conformance with the specifications contained herein. All repairs, replacement, and retesting shall be at the Contractor's expense.

G Televising

Sewer line televising may be required by the Engineer, at the cost of the Contractor, if visual inspection, leakage testing, or deflection testing indicate the sewer has not been constructed in accordance with these specifications and the requirements of the Plans, Specifications, and Special Provisions.

2621.4 METHOD OF MEASUREMENT

All items will be measured separately according to design designation as indicated in the Pay Item name and as may be detailed and defined in the Plans, Specifications, or Special Provisions.

Complete-in-place items shall include all component parts thereof as described or required to complete the unit, but excluding any excesses covered by separate Pay Items. Linear measurement of piping will include the running length of any special fittings (tees, wyes, elbows, gates, etc.) installed within the line of measure between specified terminal points.

A Sewer Pipe

Sewer pipe of each design designation will be measured by length in linear feet along the line of pipe. Terminal points of measurement will be the pipe end at free outlets; the point of connection with in-place pipe; the center of manholes or catch basins; the point of centerline intersections at branch fittings; or the point of juncture with other appurtenances or units as defined.

Separation of quantities according to "depth zone classification", when so designated in the Pay Item, will be determined by depth of pipe invert below the ground surface profile.

B Manholes

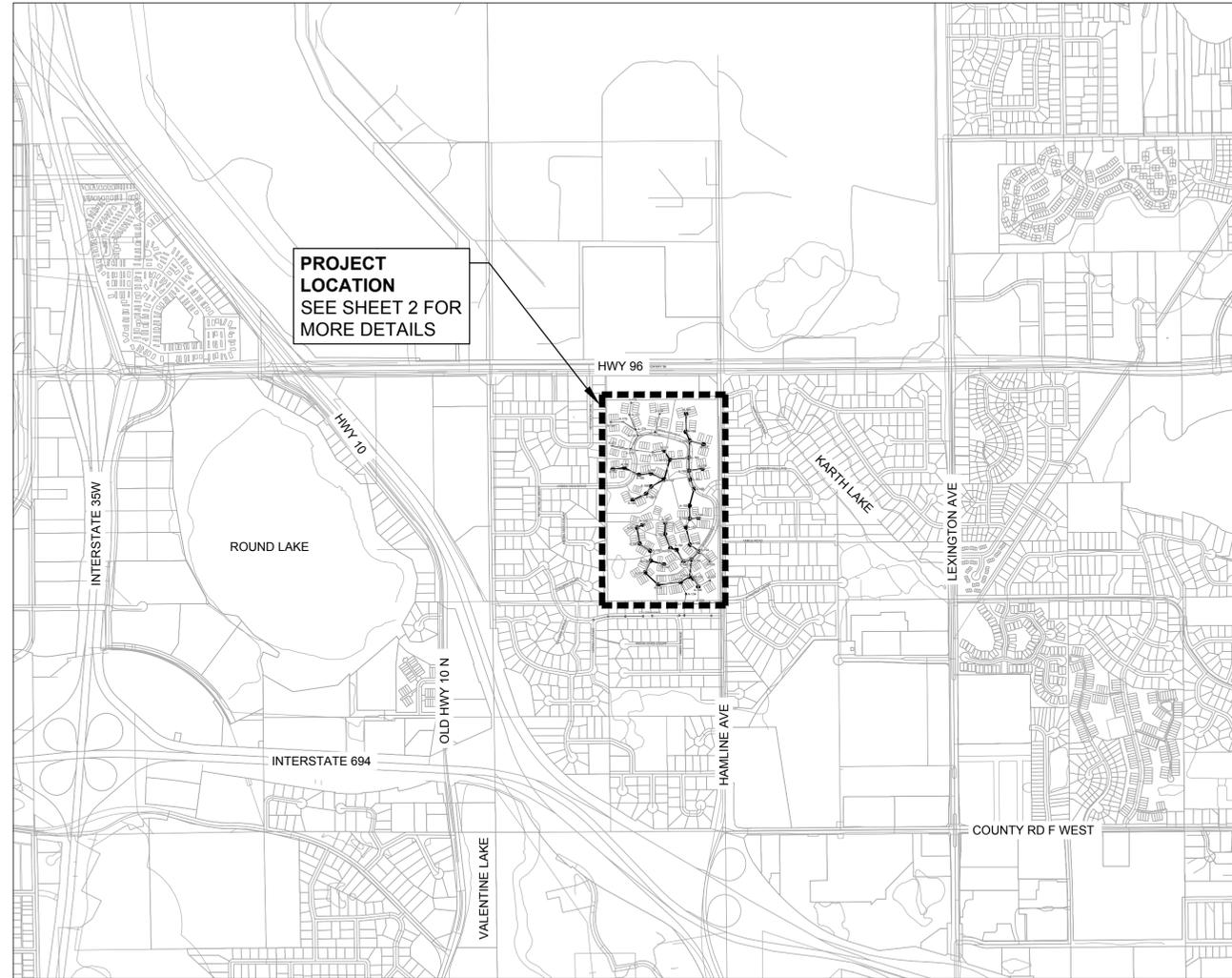
Manholes of each design designation will be measured by number of each constructed complete-in-place, including the base and castings as required, but excluding any excess depth greater than eight feet (8') measured from top of manhole cover to invert elevation of lowest pipe.

Excess manhole depth of each design designation will be measured by the linear foot difference in depth between the eight feet (8') allowed as standard and the actual increased depth as constructed.

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CITY OF ARDEN HILLS, MINNESOTA

CONSTRUCTION PLANS FOR 2024 CIPP LINING CITY PROJ. NO. PW-23-0101



DRAWING INDEX

- 1 TITLE SHEET
- 2 OVERALL SITE MAP
- 3 ESTIMATED QUANTITIES & NOTES
- 4 SANITARY SEWER PIPE REPAIR - OPEN CUT

EXISTING UTILITY LOCATIONS

UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL 1-800-252-1166

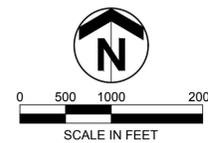
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED, "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

SPECIFICATION REFERENCE

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION", DIVISIONS II & III, AND ALL AMENDMENTS THERETO, SHALL GOVERN.

THE 2023 EDITION OF THE CITY ENGINEERS ASSOCIATION OF MINNESOTA "STANDARD SPECIFICATIONS", SHALL GOVERN UTILITY CONSTRUCTION.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.



PLOT DATE: Feb 06 2024 - 2:41pm
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CHECKED	LFP	
SIGNATURE:	DATE: 2/7/2024	
		NAME: LARRY POPPLER
		LIC. NO.: 41005

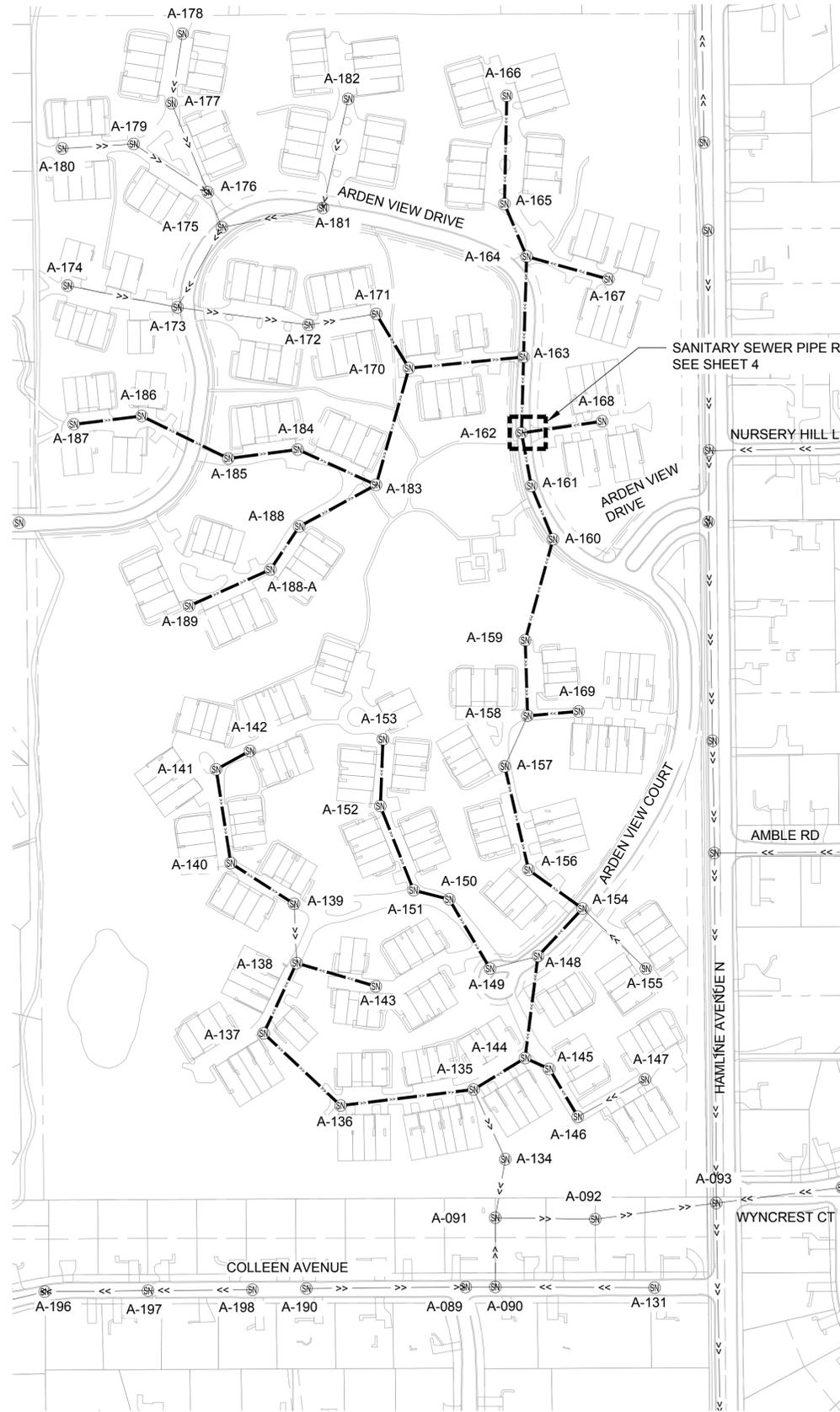


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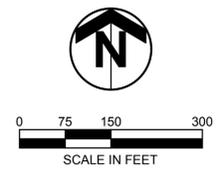
2024 CIPP LINING
CITY OF ARDEN HILLS

TITLE SHEET

PROJ. NO. 20940.000
DRAWING NO. 1



CIPP PIPELINE SEGMENT INFORMATION						
From MH	To MH	Diameter (in)	Length	Pipe Type	Sewer Connection in Pipe	Drop Connection in Pipe
A-136	A-135	8	258	VCP	9	0
A-137	A-136	8	205	VCP	3	0
A-138	A-137	8	132	VCP/PVC	1	0
A-140	A-139	8	143	VCP	8	0
A-141	A-140	8	182	VCP	9	0
A-142	A-141	8	78	VCP	0	0
A-143	A-138	8	153	VCP	6	0
A-144	A-135	8	107	VCP	4	0
A-145	A-144	8	52	VCP	0	0
A-146	A-145	8	108	PVC	0	0
A-148	A-144	8	194	VCP	0	0
A-150	A-149	8	149	DIP	0	0
A-151	A-150	8	71	VCP	0	0
A-152	A-151	8	174	VCP	8	0
A-153	A-152	8	122	VCP	8	0
A-154	A-148	8	141	VCP	0	0
A-156	A-154	8	118	VCP	2	0
A-157	A-156	8	212	VCP	10	0
A-159	A-158	8	142	VCP	1	0
A-160	A-159	8	200	DIP	1	0
A-161	A-160	8	84	VCP/DIP	0	1
A-162	A-161	8	110	VCP	0	0
A-163	A-162	8	148	VCP	0	0
A-164	A-163	8	187	VCP	0	0
A-165	A-164	8	100	VCP	0	0
A-166	A-165	8	159	VCP	9	0
A-167	A-164	8	159	VCP	2	0
A-168	A-162	8	152	VCP	2	0
A-169	A-158	8	93	VCP	2	0
A-170	A-163	8	224	VCP	8	0
A-171	A-170	8	123	VCP	0	0
A-183	A-170	8	223	VCP	0	0
A-184	A-183	8	160	VCP	4	0
A-185	A-184	8	131	VCP	5	0
A-186	A-185	8	178	VCP	1	0
A-187	A-186	8	126	VCP	6	0
A-188	A-183	8	161	VCP	0	0
A-188A	A-188	8	96	VCP	4	0
A-189	A-188A	8	172	VCP	5	0



- LEGEND**
- ⊙ A-000 EXISTING SANITARY MANHOLE
 - >->- EXISTING SANITARY SEWER
 - CIPP LINING

PLOT DATE: Feb 06 2024 - 2:42pm
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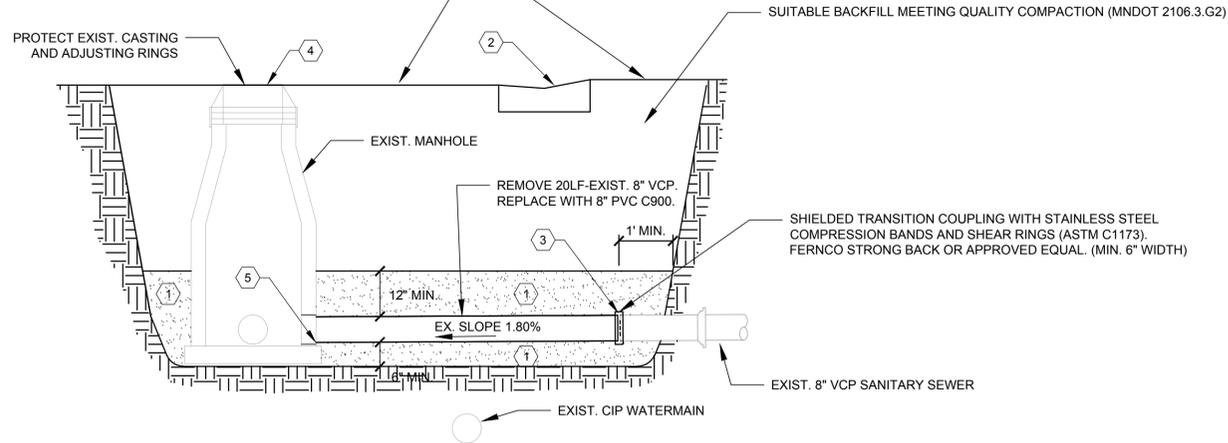
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SIGNATURE: _____ DATE: 2/7/2024		TKDA 444 Cedar Street, Suite 1500 Saint Paul, MN 55101 651.292.4400 tkda.com
NAME: LARRY POPPLER LIC. NO.: 41005		

2024 CIPP LINING
CITY OF ARDEN HILLS

OVERALL SITE MAP

PROJ. NO. 20940.000
 DRAWING NO. **2**

FINISHED GRADE - MATCH EXISTING BITUMINOUS & AGGREGATE BASE
 • 4" MIN. THICKNESS SPWEA230B (MNDOT 2360) BIT. PAVEMENT (2 LIFTS)
 • 8" MIN. THICKNESS CLASS 5 AGG. BASE (MNDOT 3138)



SANITARY SEWER PIPE REPAIR - OPEN CUT DETAIL
 NOT TO SCALE

KEYNOTES:

- 1 COARSE AGGREGATE BEDDING (MNDOT 3149.2G.2)
- 2 REMOVE AND REPLACE FULL CURB MNDOT D412 PANELS AS DIRECTED BY ENGINEER. SAWCUT TO FULL DEPTH AT EXISTING CURB JOINTS.
- 3 SAW CUT EXISTING PIPE TO LEAVE A STRAIGHT, SMOOTH SURFACE
- 4 RIM EL. 973.30 (FROM CITY RECORD DRAWING)
- 5 INV. EL. 967.01 (FROM CITY RECORD DRAWING)

STATEMENT OF ESTIMATED QUANTITIES			
LINE NO.	ITEM	UNIT	QUANTITY
BASE BID			
1	MOBILIZATION	LUMP SUM	1
2	TRAFFIC CONTROL	LUMP SUM	1
3	TEMPORARY CONVEYANCE	LUMP SUM	1
4	CLEAN & TELEWISE SANITARY SEWER (PRE-REHABILITATION)	LIN FT	5727
5	HEAVY SEWER CLEANING	HOUR	25
6	TRIM PROTRUDING TAP	HOUR	5
7	CIPP LINING - 8" SANITARY SEWER	LIN FT	5727
8	REINSTATE SANITARY SEWER SERVICE	EACH	118
9	REINSTATE OUTSIDE DROP	EACH	1
10	SANITARY SEWER PIPE REPAIR - OPEN-CUT	LUMP SUM	1
ALTERNATE BID			
11	LATERAL CONNECTION SEALING - 5 FEET	EACH	118

GENERAL NOTES:

- RECORD DRAWINGS WILL BE PROVIDED UPON REQUEST
- PROTECT ALL EXISTING UTILITIES FROM DAMAGE.
- RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION.
- CONTRACTOR TO LIMIT AREA DISTURBED BY CONSTRUCTION AND ACCESS. PAYMENT WILL NOT BE MADE FOR RESTORATION OF AREAS DAMAGED DUE TO LACK OF CARE.
- CONTRACTOR TO ONLY TRIM OR REMOVE TREES NECESSARY FOR TEMPORARY CONVEYANCE, MH REHABILITATION, OR LINING. COORDINATE WITH LANDOWNER, PROJECT ENGINEER AND CITY PRIOR TO ANY TREE TRIMMING OR REMOVAL

PIPE LINING NOTES:

- VERIFY AND DOCUMENT LOCATIONS AND SIZES OF ALL EXISTING SERVICES AND LATERALS. REINSTATE EXISTING ACTIVE SERVICE CONNECTIONS UPON COMPLETION OF LINING INSTALLATION.
- VERIFY LENGTH AND INSIDE DIAMETER OF EACH SEGMENT TO BE LINED PRIOR TO ORDERING LINER.
- PRIOR TO LINING, CONTRACTOR SHALL CLEAN AND TELEWISE EACH SEGMENT TO BE LINED AND NOTIFY ENGINEER IF ANY AREAS OF CONCERN ARE NOTED. PROVIDE COPIES OF TELEVISIONING TO ENGINEER AT LEAST 3 DAYS PRIOR TO LINING.
- ALL DEBRIS REMOVED FROM EXISTING SEWER LINES SHALL BE DISPOSED OF AT AN ACCEPTABLE SITE, AS APPROVED BY THE ENGINEER.
- THE LOCATIONS OF EXISTING SEWER MANHOLES AND SEWER MAINS INDICATED ON THE PLANS ARE APPROXIMATE.

REMOVAL AND RESTORATION NOTES:

- PROVIDE FULL DEPTH SAW CUT WHERE EXISTING PAVEMENT, CURB, OR SIDEWALK IS BEING REMOVED.
- ANY RETAINING WALL, FENCE, OR OTHER PRIVATE PROPERTY REMOVED OR DAMAGED SHALL BE RESTORED TO EXISTING OR BETTER CONDITION AND WILL BE INCIDENTAL TO THE WORK.
- ALL TRAFFIC CONTROL SHALL BE PER MNMUTCD. ANY TRAFFIC CONTROL REQUIRED SHALL BE INCIDENTAL TO THE WORK. COUNTY APPROVAL REQUIRED FOR ALL TRAFFIC CONTROL ON COUNTY ROADWAYS.
- CONTRACTOR IS TO INSTALL APPROPRIATE EROSION CONTROL IN ALL AREAS WHERE EROSION MAY OCCUR. EROSION CONTROL SHALL BE INCIDENTAL TO THE WORK.
- REMOVE ALL SOILS AND SEDIMENTS DEPOSITED ONTO PUBLIC AND/OR PRIVATE PAVEMENT AREAS WITHIN 24 HOURS OF DEPOSITION. REMOVAL OF TRACKING MATERIALS SHALL BE COMPLETED AT THE END OF EACH WORK DAY WHEN TRACKING OCCURS. SWEEPING MAY BE ORDERED AT ANY TIME IF CONDITIONS WARRANT. SWEEPING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION AND IN SUCH A MANNER TO PREVENT DUST BEING BLOWN TO ADJACENT PROPERTIES.
- ALL TURF AREAS SHALL BE RESTORED WITH SALVAGED TOPSOIL AND SEED, OR SOD, PER SPECIFICATIONS.

TEMPORARY CONVEYANCE NOTES:

- CONTRACTOR SHALL PROVIDE TEMPORARY CONVEYANCE OF WASTEWATER AROUND THE SECTIONS OF PIPE DESIGNATED FOR CLEANING, CIPP INSTALLATION AND LATERAL CONNECTION SEALING.
- FINAL TEMPORARY CONVEYANCE PLAN MUST BE DESIGNED BY CONTRACTOR AND APPROVED BY ENGINEER PRIOR TO BEGINNING WORK
- CONTRACTOR TO MAINTAIN ACCESS TO ALL HOMEOWNERS AT ALL TIMES.
- CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY TEMPORARY CONVEYANCE TO EXISTING CONDITIONS.
- RESTORATION OF AREAS DISTURBED BY TEMPORARY CONVEYANCE SHALL BE INCIDENTAL TO TEMPORARY CONVEYANCE.
- METHODS OF TEMPORARY CONVEYANCE FOR HOMES, BUSINESSES, ETC DIRECTLY CONNECTED TO SANITARY MAIN SHALL BE CONTRACTORS RESPONSIBILITY.

PLOT DATE: Feb 06 2024 - 2:42pm
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CHECKED	LPP	
SIGNATURE: _____ DATE: 2/7/2024		NAME: LARRY POPPLER LIC. NO.: 41005
LPP		

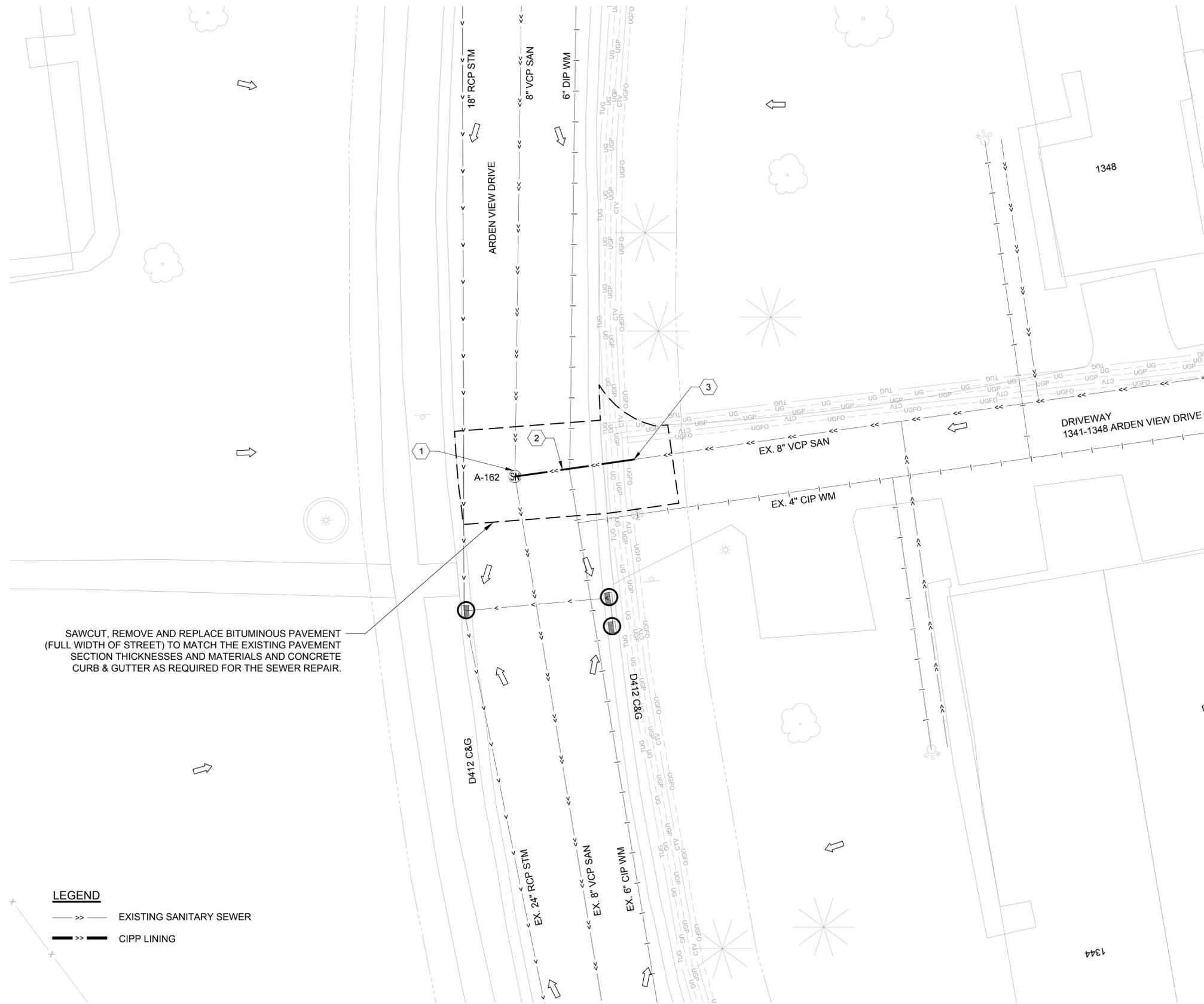

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2024 CIPP LINING
CITY OF ARDEN HILLS

ESTIMATED QUANTITIES
& NOTES

PROJ. NO. 20940.000
DRAWING NO. 3

PLOT DATE: Feb 06, 2024 - 2:42pm
 FILENAME: K:\ArdenHills\2094000004_Production\01_CAD\02_Sheets\Sanitary Sewer Pipe Repair - Open Cut.dwg



SAWCUT, REMOVE AND REPLACE BITUMINOUS PAVEMENT (FULL WIDTH OF STREET) TO MATCH THE EXISTING PAVEMENT SECTION THICKNESSES AND MATERIALS AND CONCRETE CURB & GUTTER AS REQUIRED FOR THE SEWER REPAIR.

LEGEND

- >> — EXISTING SANITARY SEWER
- >> — CIPP LINING

GENERAL NOTES:

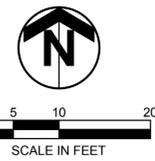
1. ALL WORK SHALL BE PERFORMED WITHIN THE CONSTRUCTION LIMITS AS SHOWN. BOXING, SHEETING AND SHORING NEEDED TO CONSTRUCT THE PROJECT WITHIN THE LIMITS PROVIDED IS INCIDENTAL.
2. VERIFY LOCATION OF ALL UTILITIES IN PROJECT AREA PRIOR TO DEMOLITION AND CONSTRUCTION. PROTECT THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGED UTILITIES AT THEIR EXPENSE.
3. CONTRACTOR SHALL SUBMIT A TEMPORARY TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF UTILITY IMPROVEMENTS.
4. MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES. INSTALL CONCRETE DRIVEWAY IN 2 POURS IF NECESSARY TO MAINTAIN ACCESS.
5. PROTECT ALL TREES AND PROPERTY NOT INDICATED TO BE REMOVED. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR/REPLACEMENT OF ANY DAMAGED PROPERTY AT THEIR EXPENSE.
6. INSTALL SEDIMENT CONTROL BMPs PRIOR TO COMMENCEMENT OF ANY REMOVAL WORK.
7. INSTALL PERIMETER CONTROL USING SEDIMENT CONTROL LOGS AROUND ALL STOCKPILES PRIOR TO THE INITIATION OF STOCKPILING.
8. ALL SANITARY SEWER PVC PIPE SHALL BE INSTALLED ACCORDING TO DETAIL ON SHEET 3.

KEY NOTES:

- ① CONNECT TO EXISTING MANHOLE. REMOVE CONNECTING PIPE AND EXISTING MORTAR FROM HOLE. INSTALL FLEXIBLE BOOT CONNECTOR WITH STAINLESS STEEL CLAMP.
- ② SAWCUT & REMOVE 20L-F-8" VCP SANITARY SEWER. REPLACE WITH 8" C900 AS INDICATED IN DETAIL ON SHEET 3.
- ③ CONNECT TO EXISTING SANITARY SEWER USING FLEXIBLE TRANSITION COUPLING WITH STAINLESS STEEL SHEAR RING.

LEGEND:

- A-000 SANITARY SEWER MANHOLE
- CATCH BASIN
- GATE VALVE
- EX. SANITARY SEWER
- EX. WATERMAIN
- EX. STORM SEWER
- SURFACE FLOW DIRECTION
- STORM DRAIN INLET PROTECTION
- EX. UNDERGROUND CABLE TV
- EX. UNDERGROUND FIBER OPTIC
- EX. UNDERGROUND NATURAL GAS
- EX. UNDERGROUND POWER
- EX. UNDERGROUND TELEPHONE
- CONSTRUCTION LIMITS
- PROP. 8" SANITARY SEWER - C900



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LIC. NO.: 41005		

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2024 CIPP LINING
CITY OF ARDEN HILLS

SANITARY SEWER PIPE REPAIR - OPEN CUT

PROJ. NO. 20940.000
DRAWING NO. 4