



ADDENDUM NO. 1
GOLFVIEW AVENUE ROAD AND WATER MAIN REPLACEMENT
CITY OF ALGONAC

ISSUED: March 29, 2023

HRC Job No. 20220550

INTENT:

This Addendum No. 1 is issued prior to receipt of bids to provide for certain changes and clarifications to the specifications and/or the plans, as herein specified, and is hereby made a part of the Contract Documents and shall be taken into consideration in preparing the Proposal. The General Conditions and Specifications for the original work and the Contract Drawings are to govern this work unless otherwise revised herein. All other conditions remain the same.

The Bidder shall acknowledge the receipt of this Addendum on Page 00300/5 of the Proposal.

ADDENDUM NO. 1
GENERAL

Specification Changes

1. **Section 00010 – Table of Contents:** (Reissued)
 - a. Added 02704 – Internal Sewer Inspection and 02751 – Cleaning of Sewer Lines
 - b. Added previous Internal Sewer Inspection Reports and Map
2. **Section 00300 – Proposal:** (Reissued)
 - a. Item #30 – “Gate Valve and Well, 8”
 - i. Corrected quantity from 3 Ea to **4 Ea**.
 - b. New – Item #32 – **8” x 8” Tapping Sleeve**
 - i. Added pay item to the proposal for the tapping sleeve shown on the plans.
 - c. Item #33 – “Water Main Connection, 8” to Ex. 8”
 - i. Reduced quantity from 3 to **1**.
 - d. Item #40 – “Chemical Joint Grouting”
 - i. Item will be paid per **each sewer segment grouted from manhole to manhole, not for each individual joint grouted.** Quantity reduced from 20 Ea to **4 Ea**.
 - e. New – Item #41 & 42 – **Cleaning and Internal Video Inspection, ___” Diameter Sewer (incl. Pre- & Post-Grouting Video)**
 - i. Added pay items to the proposal for cleaning and televising sewers.
3. **Section 01220 – Bid Item Description:** (Reissued)
 - a. Revised description for “Chemical Joint Grouting” to state that payment is for **each sewer segment grouted from manhole to manhole, not for each individual joint grouted.**
 - b. Added bid item description for sewer cleaning and televising.
4. **Section 02704 – Internal Sewer Inspection:** (New)
 - a. Specification for televising sewer lines.
5. **Section 02751 – Cleaning of Sewer Lines:** (New)
 - a. Specification for cleaning sewer lines.

6. Sanitary Sewer Inspection Reports & Map

- a. Reports from previous inspections attached for 3 of the 4 sanitary pipes in Golfview.

Plan Changes (Not Issued)

1. Sheet 9 – Construction Plan Sta 7+50 to POE

- a. Removed callout for “Water Main Connection, 8” to Ex. 8” at the Mill Street intersection.

Responses to Submitted Bidder Inquiries:

QUESTION: *Are there any drawings available that show the pipe sizes and locations for the work to be performed?*

RESPONSE: The construction plans show the existing size and location of the sanitary sewers in Golfview Ave. There are known leaks in these sewers according to the attached reports, however, the exact number and locations of each joint that requires grouting is unknown. Each joint in the sewer is to be pressure tested and grouted if it fails the pressure test.

QUESTION: *The spec calls for cleaning and televising prior to chemical grout and states it is a separate pay item. I don't see where it is a separate pay item. Is this a service we need to provide within our chemical grout pricing, provide numbers as a separate pay item, or will you provide this service?*

RESPONSE: Pay items have been added to the proposal for pre-grouting pipe cleaning and pre- and post-grouting pipe CCTV.

QUESTION: *The spec calls for all joints to be air tested and if they fail to perform the sealing activity. Is this a service they want to be performed but will only pay for the joints that are sealed?*

RESPONSE: Air testing will be included in the price for “Chemical Joint Grouting.” The unit price for this item shall cover air testing and grouting all joints which fail the testing for **each sewer segment (from manhole to manhole)**.

QUESTION: *A tapping sleeve is called out at Station 13+xx, is this a tapping sleeve/valve and box? Is this paid with pay item #32 (Water Main Connection, 8” to Ex. 8”) ? Are there 2 each, different connections there?*

RESPONSE: The tapping sleeve will be used to connect to the existing water main in Mill Street. The Gate Valve and Well will be paid separately and is shown approximately 10' west on Golfview from the connection. A pay item for “8” x 8” Tapping Sleeve” has been added to the proposal and will replace the item “Water Main Connection, 8” to Ex. 8” for this location. Only the tapping sleeve item will be paid, an additional connection will not be paid for Mill Street.

QUESTION: *What is the existing 8” pipe material?*

RESPONSE: The existing material may be Asbestos Cement pipe, however, that could not be confirmed.

QUESTION: *STA 7+xx shows a connection, please describe what will be needed there.*

RESPONSE: This item consists of connecting to the new 8” main to the existing gate valve in the State Street ROW, including all fittings, excavation, backfill, labor and materials.

Summary:

This Addendum No. 1 has been issued in order to clarify, modify, and add additional items to the original Bid Package. The Contractor shall acknowledge receipt of this Addendum No. 1 by signing in the location provided below and incorporating this Addendum No. 1 with the submission of his bid.

Failure to include Addendum No. 1 and its attachments may result in rejection of the bid.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.



Edward Zmich
Project Manager

Attachments: Section 00010 – Table of Contents, Section 00300 – Proposal, Section 01220 – Bid Item Description,
Section 02704 – Internal Sewer Inspection, Section 02751 – Cleaning of Sewer Lines, Internal Sewer Reports & Map

pc: All Prospective Bidders
City of Algonac; Joe Vernier, Denice Gerstenberg
HRC; R. Alix, M. Stark, File

Accepted:

Company: _____

Signature: _____

Printed Name: _____

Title: _____

Dated: _____

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PROPOSAL
FOR
GOLFVIEW AVENUE ROAD AND WATER MAIN REPLACEMENT
CITY OF ALGONAC
ST. CLAIR COUNTY, MICHIGAN

City of Algonac
805 St. Clair River Drive
Algonac, Michigan 48001

(Electronic) Bids Due: Friday, March 31, 2023
On or Before **4:00 p.m.**, Local Time
HRC Job No. 20220550

To Prospective Bidders:

Name of Bidder: _____

Address: _____

Date: _____ Telephone: _____ Fax: _____

The above, as Bidder, hereby declares this bid is made in good faith without fraud or collusion with any persons bidding, and that the Drawings, Specifications, and all other information referenced in the Instructions to Bidders have been examined. Further, the Bidder is familiar with the location of the work described herein and is fully informed as to the nature of the work and the conditions relating to the performance of the Contract.

The Bidder acknowledges that no representations or warranties of any nature whatsoever have been received, or are relied upon from the City of Algonac, its agents or employees, as to any conditions to be encountered in accomplishing the work and that the bid is based solely upon the Bidder's own independent judgment.

The above, as Bidder, hereby certifies that the Drawings, Specifications, and other data provided by the Owner for bidding purposes have been examined. Further, the undersigned certifies that the proposed construction methods have been reviewed and found acceptable for the conditions which can be anticipated from the information provided for bidding.

The Bidder hereby affirms that the site of work has been inspected and further declares that no charges in addition to the Individual Unit Prices shall be made on account of any job circumstances or field conditions which were present and/or ascertainable prior to the bidding. In addition, The Contractor, as such and as Bidder, shall make the determination as to existing soil conditions and shall also complete the work under whatever conditions created by the Contractor/Bidder's sequence of construction, construction methods, or other conditions the Contractor/Bidder may create, at no additional cost to the Owner.

The above, as Bidder, confirms knowledge of the location of the proposed Golfview Avenue Road and Water Main Replacement and appurtenant construction in the City of Algonac, St. Clair County, Michigan, and the conditions under which it must be constructed; and also declares to have carefully examined the Drawings, Specifications, and Contract Documents which the Bidder understands and accepts as sufficient for the purpose of constructing said Golfview Avenue Road and Water Main Replacement, and appurtenant work, and agrees to contract with the City of Algonac to furnish all labor, materials, tools, equipment, facilities and supervision necessary to do all the work specified and prescribed for the City of Algonac, in strict accordance with the

Owner's General Conditions, and with the full intent of the Drawings and Specifications, prepared by Hubbell, Roth & Clark, Consulting Engineers, and will accept in full payment therefore the sum of:

<u>Item</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Cost</u>
1. Mobilization, Max 5%	1 LS	@ Lump Sum	= \$
2. Erosion Control, Inlet Protection, Fabric Drop	3 Ea	@ \$	= \$
3. Exploratory Excavation and Utility Locating	1 LS	@ Lump Sum	= \$
4. Sidewalk, Rem	15 Syd	@ \$	= \$
5. Structure, Adjust	2 Ea	@ \$	= \$
6. Structure, Reconstruct	1 Ea	@ \$	= \$
7. Dr Structure, Rem	3 Ea	@ \$	= \$
8. Storm Sewer, 6", Rem, as needed	75 Lft	@ \$	= \$
9. Sewer Lead Repair, if needed	2 Ea	@ \$	= \$
10. Pavt, Rem, Special	3,000 Syd	@ \$	= \$
11. Subgrade Undercutting, Type IV, MOD, as needed	100 Cyd	@ \$	= \$
12. Aggregate Base, MDOT 21AA	1,200 Ton	@ \$	= \$
13. Maintenance Gravel	400 Ton	@ \$	= \$
14. HMA, 5EML, MOD (2" Wearing)	380 Ton	@ \$	= \$
15. HMA, 4EML, MOD (2" Leveling)	380 Ton	@ \$	= \$
16. Curb and Gutter, Conc, Det F4	150 Lft	@ \$	= \$
17. Spillway, Conc	30 Lft	@ \$	= \$
18. Sidewalk, Conc, Mix 3500, 4 inch	100 Sft	@ \$	= \$
19. Sidewalk Ramp, Conc, Mix 3500, 6 inch	40 Sft	@ \$	= \$
20. Detectable Warning Surface, Cast Iron	2 Ea	@ \$	= \$
21. Hydrant, Rem	1 Ea	@ \$	= \$
22. Gate Valve and Well, Rem	3 Ea	@ \$	= \$
23. Culv, Rem, Less than 24 inch, as needed	5 Ea	@ \$	= \$
24. Water Main, 8", PVC, C-900, HDD	1,315 Lft	@ \$	= \$
25. Water Main, 8", PVC, C-900, Open Cut	75 Lft	@ \$	= \$
26. Water Main, 6", Rem	150 Lft	@ \$	= \$
27. Water Main, Abandon in Place, Up to 6"	1,280 Lft	@ \$	= \$
28. Water Main, Cut and Cap	5 Ea	@ \$	= \$
29. Hydrant and Valve, New (EJIW, 5BR250)	3 Ea	@ \$	= \$
30. Gate Valve and Well, 8"	4 Ea	@ \$	= \$
31. Insta-Valve, 8"	1 Ea	@ \$	= \$
32. 8" X 8" Tapping Sleeve	1 Ea	@ \$	= \$
33. Water Main Connection, 8" to Ex. 8"	1 Ea	@ \$	= \$
34. Short Water Service Lead to New Main, C901-08 PE, 1"	14 Ea	@ \$	= \$
35. Long Water Service Lead to New Main, C901-08 PE, 1", incl. Bore Under Pavement	16 Ea	@ \$	= \$
36. Water Service Stop Box, Complete, 1"	30 Ea	@ \$	= \$
37. Lead Service Line Replacement, 1", if needed (Stop Box to Meter, Complete, incl. restoration)	1 Ea	@ \$	= \$
38. 2-foot Diameter Catch Basin	3 Ea	@ \$	= \$
39. 4-foot Diameter Manhole, as needed	1 Ea	@ \$	= \$
40. Chemical Joint Grouting	4 Ea	@ \$	= \$

41. Cleaning and Internal Video Inspection, 8" Diameter Sewer (incl. Pre- & Post-Grouting Video)	590 Lft	@	\$ _____	= \$ _____
42. Cleaning and Internal Video Inspection, 15" Diameter Sewer (incl. Pre- & Post-Grouting Video)	670 Lft	@	\$ _____	= \$ _____
43. Storm Sewer, 6", PVC, as needed	75 Lft	@	\$ _____	= \$ _____
44. Culv, CI E, CPS, 12", as needed	160 Lft	@	\$ _____	= \$ _____
45. Water Stop, if needed	1 Ea	@	\$ _____	= \$ _____
46. Restoration (incl. 3" Topsoil, Seed, Mulch-Blanket, 14-Day Watering, and repairs to all irrigation systems)	600 Syd	@	\$ _____	= \$ _____
47. Maintaining Traffic	1 LS	@	<u>Lump Sum</u>	= \$ _____
48. Color-Audio-Video Route Survey	1 LS	@	<u>Lump Sum</u>	= \$ _____
49. Observation Crew Days	____ Days	@	\$ <u>800.00</u>	= \$ _____

Total Amount of Bid \$ _____

OWNERS RIGHTS

The Owner reserves the right to add or delete items and/or quantities from the Contract. Deletion of items and/or quantities by the Owner shall not be grounds for the qualified low-bidder to adjust unit prices for other items that the Owner intends to execute as a Contract, nor shall the Contractor be entitled to compensation from unrealized profits resulting from the deletion of items and/or quantities from the Contract. Bid unit prices are to be held firm for the duration of the project regardless of any potential changes that may occur in market value during the contractual period.

The Owner, at its sole discretion, reserves the right to award to the Bidder who, in the sole determination of the Owner, will best serve the interest of the Owner. The Owner reserves the right to accept any bid, to reject any or all bids, to waive any and all informalities involving price, time, or changes in the work, and to negotiate contract terms with the successful Bidder, and the right to disregard all nonconforming, nonresponsive, unbalanced, or conditional bids. However, it is the intention of the Owner to award to the low total bid to one bidder. Also, the Owner reserves the right to reject the bid of any Bidder if the Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the bid is not responsive or the Bidder is unqualified, of doubtful financial ability, or fails to meet any other pertinent standard or criteria established by the Owner.

Each bidder agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

Each Proposal must be accompanied by a bid deposit in the form of a certified check, cashier's check or bid bond, executed by the bidder and Surety Company, payable to the City of Algonac in the amount of Five Percent (5%) of the amount of the Proposal. See Instructions to Bidders – Bid Deposit for more information.

BID DEPOSITS

The Bidder is advised that in order to submit a bid on this project, the Bidder must complete the Proposal Form (Section 00300) and a **scanned copy of their bid deposit** (in the form of a certified check, cashier's check or bid bond, executed by the bidder and Surety Company, payable to the City of Algonac in the amount of Five

Percent (5%) of the amount of the Proposal) with their electronic bid submission. See Instructions to Bidders – Bid Deposit for more information. **The original bid deposit for the low bidder will be required to be submitted to the City following the bid letting.**

TAXES

The Bidder affirms that all applicable Federal, State and Local taxes of whatever character and description are included in all prices stated in this Form of Proposal.

ADDENDA

The Bidder acknowledges the following Addenda, covering revisions to the drawings or specifications and the cost, if any, of such revision has been included in the quoted proposal:

Addendum No. _____	1	Dated _____	3/29/2023
Addendum No. _____		Dated _____	
Addendum No. _____		Dated _____	
Addendum No. _____		Dated _____	

FEES

The Bidder shall refer to the General Conditions for allowable Fees for additional work performed, upon Owner's written authorization, by Bidder's own forces and/or for additional work, upon Owner's written authorization, by Bidder's subcontractors.

TIME OF COMPLETION

If awarded the Contract for the Golfview Avenue Road and Water Main Replacement, we agree to have all work substantially completed by **Friday, September 1, 2023**. Substantial Completion is defined that the facility is ready to use for its intended purpose with all utility systems fully functional.

The Bidder hereby agrees to furnish the required Bonds, Insurance Certificates, and Policies within ten (10) days after acceptance of this Proposal.

Final Completion with all clean-up and punch-list items shall be complete by **Saturday, September 16, 2023**.

The execution of all work and specific constraints as described in the contract drawings and specifications.

LIQUIDATED DAMAGES

Time is of the essence for completion of this project in order to have the Project ready for the City of Algonac. The Bidder guarantees that the work will be completed within the time limit stated herein before or within the time as extended as provided elsewhere in the Specifications. Inasmuch as the damage and loss to the Owner which will result from the failure of the Bidder to complete the work within the stipulated time, will be most difficult or impossible to accurately determine, it is mutually agreed that the damages to the Owner for such delay and failure

on the part of the Bidder shall be liquidated in the amount of Five Hundred Dollars (\$500.00), for each and every calendar day by which the Bidder shall fail to complete the work or any part thereof within the provisions hereof, and such liquidated damages shall not be considered as a penalty.

The Owner will deduct and retain out of any money due or to become due hereunder the amount of the liquidated damages, and in case those amounts are less than the amount of actual liquidated damages, the Bidder shall pay the difference upon demand of the Owner.

We understand that liquidated damages may be assessed should we fail to meet the stipulated completion dates. Specifically, liquidated damages will be assessed daily beginning **Sunday, September 17, 2023** until such a time that all work is completed.

QUALIFICATIONS/MUNICIPAL PROJECTS/REFERENCES

The City of Algonac requires the Bidder, as the Prime Contractor, to include **three (3) municipal references** for projects similar to the Golfview Avenue Road and Water Main Replacement Project, as follows. The references will be checked prior to the award of the contract.

Project No. 1: Name of Project: _____

Project Completion Date: _____ Contract Amount: _____

Name: _____ Address: _____

Telephone: _____ Firm: _____

Project No. 2: Name of Project: _____

Project Completion Date: _____ Contract Amount: _____

Name: _____ Address: _____

Telephone: _____ Firm: _____

Project No. 3: Name of Project: _____

Project Completion Date: _____ Contract Amount: _____

Name: _____ Address: _____

Telephone: _____ Firm: _____

BIDS TO REMAIN FIRM

The price stated in this Proposal shall be guaranteed for a period of not less than **ninety (90)** days from the bid due date and if authorized to proceed within that period, the bidder agrees to complete the work covered by the Proposal at said price.

If this Proposal is accepted by the Owner and the undersigned shall fail to contract as aforesaid and to furnish the required surety bonds within fifteen (15) days after being notified of the acceptance of their bid, then the undersigned shall be considered to have abandoned the contract, and the Certified Check, Cashier's Check or Bid Bond accompanying this Proposal shall be forfeited to the City of Algonac.

If the undersigned enters into the contract in accordance with their proposal, or if their proposal is not accepted, then the accompanying bid guarantee shall be returned to the undersigned.

Company Name: _____

Signature: _____ Title: _____

Address: _____

County: _____ State: _____

Telephone No.: _____ Fax No.: _____

Email Address: _____

LEGAL STATUS OF BIDDER

This Bid is submittal in the name of:

(Print) _____

The undersigned hereby designates below the business address to which all notices, directions or other communications may be served or mailed:

Street _____

City _____

State _____ Zip Code _____

The undersigned hereby declares the legal status checked below:

- ☐ INDIVIDUAL
- ☐ INDIVIDUAL DOING BUSINESS UNDER AN ASSUMED NAME
- ☐ CO-PARTNERSHIP
The Assumed Name of the Co-Partnership is registered in the County of _____, Michigan
- ☐ CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF _____
_____. The Corporation is
- ☐ LICENSED TO DO BUSINESS IN MICHIGAN
- ☐ NOT NOW LICENSED TO DO BUSINESS IN MICHIGAN

The name, titles, and home addresses of all persons who are officers or partners in the organization are as follows:

A corporation duly organized and doing business under the laws of the State of _____

NAME AND TITLE

HOME ADDRESS

Signed and Sealed this _____ day of _____, 20__.

By (Signature)

Printed Name of Signer

Title

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BID BOND

We, the undersigned, _____

As Principal, hereinafter called the Principal, and _____

A corporation duly organized under the laws of the State of _____

As surety, hereinafter called the SURETY, are held and firmly bound unto:

The Owner: _____

in the sum of _____ Dollars (\$ _____),

For the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for _____

NOW, THEREFORE, if the OWNER shall accept the bid of the Principal and the Principal shall enter into a contract with the OWNER in accordance with the terms of such bid, and give such bond or bonds as may be specified in the CONTRACT DOCUMENTS with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such contract and give such bond or bonds, if the Principal shall pay to the OWNER the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the OWNER may in good faith contract with another party to perform the work covered by said bid, then the obligation of the Principal shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____, 20____

(Witness)

(Principal)

(Seal)

(Title)

(Witness)

(Surety)

(Title)

END OF SECTION

SECTION 01220

BID ITEM DESCRIPTION

PART 1 GENERAL

1.1 SCOPE

- A. This Section describes the method of measurement and basis of payment for several items of Work included in the Contract and specified in the Proposal.
1. The Contractor shall provide all labor, material, tools, equipment, and services required to complete the Work specified herein and indicated on the Plans and all other items necessary to complete the job, whether specifically mentioned or implied.
 2. Payment will only be made for the items listed in the Proposal Form.
- B. The Owner will make no allowances for items not included in the Proposal Form.

1.2 ITEMS OF THE PROPOSAL

Pavt Rem, Special

This bid item shall be paid for at the Contract Unit Price per **square yard** based on the measured area of material removed. The Work required by this item includes full depth sawcutting of material to be removed, any breaking and crushing of the material to aide in removal, and removal and proper disposal of material. All pavement removal shall be done to an existing joint or to a pre-marked saw-cut. Any sawed joint which is not clean and straight will be rejected by the Owner and additional pavement shall be removed and replaced at the Contractor's expense. The cost for all sawcuts shall be included in the unit prices for pavement removal.

Material included in this bid item includes concrete roadway, both reinforced and non-reinforced, and HMA surfaces including overlays. There is no separate bid item for HMA Surface, Rem.

Subgrade Undercutting, Type IV, MOD, as needed

This bid item shall be paid for at the Contract Unit Price per **Cubic Yard (Cyd)** of undercutting. This item includes the excavation of unsuitable material as directed by the engineer, to the full depth required, and backfill of the excavated area with 21AA aggregate. Backfill shall conform to the material and compaction requirements as set forth in, but not limited to, Section 01001

Aggregate Base, MDOT 21AA

This bid item shall be paid for at the Contract Unit Price per **ton (Ton)** to install and compact in place aggregate base. Materials shall conform to Section 302 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except that either MDOT 21AA natural aggregate, limestone, or 21AA crushed concrete aggregate may be used, compacted to the cross-section indicated in the Proposal and on the Plans. ***21AA crushed concrete aggregate may be allowed if documentation is submitted prior to delivery stating that the materials are***

coming from a certified source (to ensure it is clean aggregate with no rebar, brick, etc. in the load). The certification must also be presented to the Field Observer at the time of delivery.

HMA, (type)...Ton

The Owner will pay for the amount of HMA specified based on the weight placed, as supported by the weigh tickets supplied by the Contractor, and by the quality assurance yield calculations and mat thickness depth checks conducted by the Owner. **HMA, (type)** will be paid for at the contract unit price per ton bid as called for in the Contract Documents.

Gate Valve & Well, Rem

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** gate well structure, including the gate valve, removed. The Work required by this item includes removal and disposal of the gate well structure and removal, salvage, and temporary storage of the gate valve and structure frame and cover, including delivery of the gate valve and structure frame and cover to the City's DPW yard, if requested by the City. Backfill of any and all excavations and voids associated with "Gate Valve and Well, Rem" shall conform to the material and compaction requirements as set forth in, but not limited to, Section 01001 Supplemental Project Notes, is considered work incidental to the pay item, and will not be paid for separately.

Water Main, Abandon In-Place, Up to 6"

This bid item shall be paid for at the Contract Unit Price per **Lineal Foot (Lft)** of existing 4"-6" dia. water main that shall be grout filled and abandoned in-place. The Work required by this item includes all labor, equipment, and materials to fully fill the existing 4" dia. water main with grout. Limits of abandonment are to be as indicated on the construction drawings, unless otherwise specified by the Engineer or City. Flowable fill and grout materials shall comply with requirements set forth in Section 02200. Inclusive of the backfilling of pipes and structures for in-place abandonment as shown in the construction drawings, all cavities shall be completely filled.

Water Main, Cut and Cap

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** cut and cap of existing water main. All work associated with the cutting and plugging of the existing water main at the limits of removal shall be included in this bid item.

Hydrant and Valve, New (EJIW, 5BR250)

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** fire hydrant assembly installed and completed. Measurement and payment and the Work included and required by this item are described and shall be completed in accordance with Section 02660 and the project details.

The specified hydrant assembly for this project is an East Jordon Iron Works (EJIW) Watermaster 5BR-250 Model with Storz Nozzle, painted red. All gate valves are to be left hand open resilient seat Mueller or EJIW. The Contractor shall be responsible for bringing the hydrants to grade. Hydrants are to be set a minimum of 5' from curb face and any drive approaches, cross walks, trees, utility poles, etc. The nozzle must also be 18"-24" above the ground. The contractor must install the new hydrants so that the nozzles face the roadway.

Concrete thrust blocks are to be installed as normally required for water main installation. The pay item for "Hydrant and Valve, New (EJIW, 5BR250)" includes the new fire hydrant and valve box, pipe from the hydrant to the tee on the main, the fire hydrant tee, thrust blocks, and any other bends or fittings required.

Gate Valve and Well, 8"

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** gate valve and well of the indicated and specified size installed and completed. The Work included and required by this item are described and shall be completed in accordance with Section 01001 Supplemental Project Notes, Section 02660 Water Mains-General, and Water Main Standard Details. Furnishing and installing EJIW 6800 cover (frame and cover) shall also be included in the unit price for the pay item "Gate Valve and Well, 8".

Water Main Connection, 8" to Ex. 8"

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** water main connection, of the size indicated, installed and completed. The Work included and required by this item are described and shall be completed in accordance with section 02660 Water Mains – General, and Water Main Details.

Short Water Service Lead to New Main, C901-08 PE, up to 1"

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** water service connection of the indicated and specified size installed and completed. The material for the water service is to be C901-08 PE. Payment includes locating and exposing the existing service, cut and removal of the existing service, furnishing and installation of the new service, connection of the new service to the existing main, and final restoration. The Work included and required by this item includes all labor, equipment and materials required complete the work in accordance with Section 02660 Water Mains-General, and EGLE Water Main Special Details.

Long Water Service Lead to New Main, C901-08 PE, up to 1", incl. Bore Under Pavement

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** water service connection of the indicated and specified size installed and completed. The material for the water service is to be C901-08 PE. Payment includes locating and exposing the existing service, cut and removal of the existing service, furnishing and installation of the new service, connection of the new service to the existing main, and final restoration. The Work included and required by this item includes all labor, equipment and materials required complete the work in accordance with Section 02660 Water Mains-General, and EGLE Water Main Special Details.

Detectable Warning Surface

This bid item shall be paid for at the Contract Unit Price per **each** unit installed. Work for this item shall include all costs for furnishing and installing the detectable warning surface. The detectable warning surface to be installed shall be ADA Solutions, Inc. cast-in-place tactile warning surface in federal color #20109 (brick red) or approved equal.

Exploratory Excavation and Utility Locating

This bid item shall be paid for at the Contract Unit Price per **lump sum** basis. Measurement and payment and the Work included and required by this item are described and shall be completed in accordance with the Special Provision for Exploratory Excavation & Utility Locating.

Insta-Valve and Box, 8"

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** Hydra-stop insta-valve 250 assembly (or approved equal) installed and completed over an existing 8 inch water main. The work included and required by this item are described and shall be completed in accordance with Section 02660 Water Mains – General. Furnishing and installing EJIW 6080 cover (frame and cover) shall also be included in the unit price for the pay item **“Insta-Valve and Box, 8 inch – Ea”**.

Water Stop, if needed

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** line stop required to complete installation of the water main in accordance with the drawings and items of the proposal. The contractor shall submit shop drawings and subcontractor information to the engineer for approval prior to completing work for this item. The Work included and required by this item includes all labor, equipment, coordination and materials required complete the work.

Chemical Joint Grouting

This bid item shall be paid for at the Contract Unit Price per **each (Ea)** sewer segment grouted. **Payment for air testing each joint and grouting all failed joints within a segment of sewer from manhole to manhole shall be included in this item. Televising and cleaning of sewers prior to and following grouting shall be paid separately.** Measurement and payment and the Work included and required by this item are described and shall be completed in accordance with Section 02765 – “Chemical Grout Pressure Injection...”

All costs to mobilize equipment, materials and personnel to the specific location where the pressure grouting is to occur is considered incidental to **Chemical Joint Grouting**. Each set-up location shall include any access points needed for work to be completed within a single sewer segment (manhole to manhole).

Cleaning and Internal Video Inspection, _" Diameter Sewer (incl. Pre- & Post-Grouting Video)

This bid item shall be paid for at the Contract Unit Price per **Lineal Foot (Lft)** of sewer inspected and cleaned. Measurement and payment and the Work included and required by this item are described and shall be completed in accordance with Section 02704 and 02751.

END OF SECTION

SECTION 02704

INTERNAL SEWER INSPECTION

PART 1 GENERAL

1.1 SUMMARY

- A. It is the intent of these specifications to provide a basis for which a sewer line can be internally inspected by a Closed Circuit Television (CCTV) camera. The inspection shall include providing the Owner with digital videos, images, and reports that include condition and other descriptive data related to the sewer. This basis shall include all aspects of televising including method, equipment, and payment for work.
- B. This Section shall include all supervision, labor, equipment, materials, traffic control, temporary plugging and/or bypassing of flow, disposal of debris, required cleaning, video media, still pictures and any applicable electrical service necessary to successfully complete the inspection and assessment of the designated lines, as well as the required reporting and deliverables which includes the Contractor providing the Owner with applicable recommendations for corrective actions.
- C. The Contractor shall provide and furnish all required skilled and unskilled labor, materials, fuel, machinery, tools, so that the contract and all work required to be done under the contract can and will be carried on continuously and expeditiously to completion, in all respects to the satisfaction of the Owner.
- D. The sewer lines for which televising is required are shown in these Contract Documents.
- E. Related Sections:
 - 1. Section 02751 – Cleaning of Sewers

1.2 MEASUREMENT AND PAYMENT

- A. **Cleaning and Internal Video Inspection, _" Diameter Sewer (incl. Pre- & Post-Grouting Video.....Linear Foot**

The Owner shall pay for television inspection of the sewer lines at the unit price bid per linear foot of each size pipe. Measurement of the actual number of feet inspected shall be made from the inside wall of the first manhole to the inside wall of the second manhole.

Upon successful installation/implementation of chemical joint grout spot repairs the Contractor shall televise the final product for submittal to the Owner. Measurement of the actual number of feet inspected shall be made from the inside wall of the first manhole to the inside wall of the second manhole. Both the televised sewer prior to repairs and the final product shall be placed in succession on approved media (external hard drive).

- B. The per foot cost of television inspection will be paid for the actual footages televised between the manholes involved.
 - 1. Measurement of the actual number of feet inspected shall be made from the inside wall of the manhole to the point where the survey was abandoned from each direction.
 - 2. Reverse setups will not entitle the Contractor to additional payment.
- C. Payment will not be made until such time as all deliverables are provided for each televised pipe segment.

1.3 REFERENCES

- A. Abbreviations and Acronyms
 - 1. NASSCO - National Association of Sewer Service Contractors
 - 2. PACP - Pipeline Assessment and Certification Program
 - 3. MACP - Manhole Assessment and Certification Program
 - 4. LACP - Lateral Assessment and Certification Program
- B. Definitions
 - 1. Reverse Setups - a situation that arises when the television camera cannot pass through the manhole section, making it necessary to reverse the positions of the television equipment and enter the sewer from the opposite direction

1.4 QUALIFICATIONS

- A. The Contractor performing the work shall be a company specializing in performing internal sewer inspections, and shall have a minimum experience of at least three other projects of similar size and scope within the last five years that included surveying, processing, and interpretation of data associated with CCTV inspections.
- B. The work shall be performed under the supervision of personnel trained and certified in the use of NASSCO's PACP for the inspection of sewer mains, LACP for the inspection of laterals and MACP for the inspection of manholes.

1.5 SUBMITTALS

- A. Prior to initiation of work, the Contractor shall submit for Owner review and approval the following:
 - 1. Data sheets for proposed CCTV equipment, description of proposed electronic storage device (hard drive, etc.) and proposed electronic file formats.
 - 2. Description of proposed software for recording inspection logs along with a sample of a typical log and samples of all required reports as described in this Section.
 - 3. Proposed sequence and schedule, and sample resident/business notification letter.
 - 4. Contact information for Contractor's staff including mobile phone and email, and emergency contact information.
- B. The contractor may be required to submit sample video recordings from recently completed projects demonstrating the picture quality obtained for pipe diameters ranging between 8 to 48 inches. The intent is to ensure that the best possible picture quality is made available to the Owner.

1.6 QUALITY ASSURANCE

- A. After completion of one week of Internal Sewer Inspection (or alternative period as approved by the Owner), the Contractor shall provide the Owner with a sample of the required deliverables for the work completed for review and approval of format.

1.7 REPORTING

- A. The Contractor shall record any and all defects such as radial and linear cracks no matter how minor, dips, blockages, or obstructions, pipe joint conditions, infiltration and calcite buildup, lateral connections, root infiltration, deterioration of pipe material surface, penetrating utilities, etc. The Contractor shall record the characteristics and defects observed using the NASSCO PACP/MACP/LACP Inspection Report format and coding for each sewer segment. All pipes, manholes, laterals and other structures shall be identified using Owner naming convention. The operators NASSCO certification number shall be recorded on the Report.
- B. Location of defects shall be given as a distance from the starting point and location around the pipe (i.e., 2 o'clock)
- C. The Contractor shall provide the following reports for each inspected segment that include all descriptions in NASSCO format of all defects found as part of the survey, all NASSCO header information, and identify the asset using the Owner's identification system:
 - 1. Graphic Reports, include;
 - a. Linear sketch of the inspected manhole or pipe/lateral segment showing defect locations
 - b. List of the individual defects
 - c. Defect "grade" assigned using the NASSCO PACP/MACP/LACP Condition Grading System guidelines.
 - 2. Tabular Reports, include;
 - a. List of the individual defects
 - b. A defect "grade" using the NASSCO PACP/MACP/LACP Condition Grading System guidelines
 - c. NASSCO segment scores, including
 - 1) Overall Pipe Rating (Structural, Maintenance, and Overall)
 - 2) Pipe Rating Index (Structural, Maintenance, and Overall), and
 - 3) Quick Scores (Structural, Maintenance and Overall.)
 - 3. Defects by Inspection Report
 - a. Generated at completion of the project, or at intermediate milestones as required by the Owner
 - b. Includes;
 - 1) A tabular list of all segments inspected to date,
 - 2) The surveyed length for each segment,
 - 3) A count of defects encountered for each segment,
 - 4) Quick rating scores and,
 - 5) The overall pipe rating index
- D. Submit Samples of Contractor Reports for Owner approval prior to starting project.
- E. Provide Final Reports in accordance with Required Deliverables.

- F. Sample reports are provided at the end of this Section.

1.8 REQUIRED DELIVERABLES

- A. The Contractor shall deliver to the Owner one hard copy each of the Graphic Report and Tabular Report for each segment inspected, and one hard copy of the Defects by Inspection Report that summarizes all segments inspected during the project. The copies shall be housed in protective three-ring binders labeled to include the Project Name, Contractor Contact Information, Project Date and area surveyed. The Contractor shall also submit preliminary copies of the Graphic Report and Tabular Report for areas completed for review by the Owner as the project progresses. All reports shall also be provided in PDF format and named by the Pipe ID provided in the profile view, plan view, and rehabilitation quantities table of the plan sheets. In the event that two videos are required for a single segment of pipe, the files shall be named in the format of Pipe ID, followed by an "R". The final Defects by Inspection report shall also be provided in an editable format, such as Microsoft Excel format.
- B. The Contractor shall deliver to the Owner digital copies of all video recordings, still photos, and other media for the segments inspected. The files shall be accessible using commonly-installed software, or a viewer may be provided instead.
- C. All electronic records and digital files shall be provided to the Owner on a suitable data storage device (CD, DVD, hard drive, etc.) The devices shall be labelled to correspond with the hard copy inspection reports. Labels shall be permanent with complete project information.
- D. The Owner reserves the right to reject any or all televising and recording of sewer segments due to poor quality or clarity of defects. If necessary the Contractor shall re-inspect those segments as determined by the Owner at no additional cost to the Owner.
- E. All video recordings, still images and reports shall become property of the Owner without restriction for copying, re-use or publication
- F. At the end of each work day, the contractor shall provide the Owner's representative with the approved video media that includes all critical sewer defects encountered that day, along with a copy of the inspection report for the applicable manhole to manhole section(s).
- G. Upon completion of the Project, two (2) tabulated color copies of the reports shall be delivered to the Engineer no later than 30 (thirty) days after project completion. Each report shall be bounded in a three ring binder and include a table of contents and the videos on an external hard drive.
- H. In addition, other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, and other discernible features will be recorded and a copy of such records will be supplied to the Owner. All video shall be delivered to the Engineer at the same time as the corresponding reports.
- I. A sample electronic copy of the PACP database, video pipe recordings, reports, calculations and rankings shall be provided to the ENGINEER for review and approval prior to start of any field work.

- J. ALL CCTV reports, logs, and video shall be capable of being integrated in ArcGIS. All GIS deliverables shall be provided in table, shapefile, or file geodatabase format.
- K. All data in the reports should be available in a one-to-one table (Microsoft Excel is preferred), and all photos and videos should be named by the Pipe ID.
- L. The Contractor shall provide a sample of the data output before any deliverables are produced and/or approved by the ENGINEER.
- M. All work shall be recorded and submitted as described in the specifications.
- N. Deliverables shall be submitted to the ENGINEER on a flash drive within 10 working days of the televising of that sewer segment. CONTRACTOR and ENGINEER shall agree in advance of location and time of the bi-weekly deliveries. Revisions requested by the ENGINEER and/or OWNER shall be incorporated into the reports/logs and database at no additional cost.
- O. At the conclusion of the Sewer Televising, two hard copies of the PACP CCTV Reports/Logs shall be delivered to the ENGINEER within 15 working days of completion of all fieldwork. The completed logs shall be placed in 3-ring binders with proper tabs and report cover.
- P. At the conclusion of the Sewer Televising, two electronic copies of the entire and final televised program, including PACP database, video pipe recordings, reports, calculations and rankings shall be provided to the ENGINEER on two separate flash drives or portable hard drives. Each drive shall contain the entire package of information in one database. The data shall be provided within 15 working days of completion of field work. The information shall not be split into several drives. The flash drives or portable hard drives and information within it shall become the property of the OWNER.
- Q. Payment for this item of work shall be paid as a lump sum upon complete delivery, review and acceptance by the Engineer of the digital copy(video and reports) and hard copies(reports) of the investigation results within 30 (thirty) days from completion of the Project.

1.9 ACCEPTANCE

- A. A daily log of work accomplished shall be duly recorded and acknowledged by the Owner and the Contractor's superintendent.
- B. All inspection recordings and reports will be reviewed by the Owner. The Owner shall have the authority to reject all or any portion of recordings not conforming to Specifications. These areas shall be re-inspected at no additional charge.

1.10 SAMPLE REPORTS

- A. Samples of the required reporting are located at the end of this Section.

PART 2 PRODUCTS

2.1 INSPECTION EQUIPMENT

A. General:

1. Provide equipment as required for the proposed work to perform inspections of sewer mains, manholes and/or laterals. Laterals shall be inspected from mainline to property line or cleanout located in streets, street rights-of-way, and off road easements.
2. Equipment shall include but not be limited to portable CCTV equipment, vehicles capable of transporting TV equipment and accessing remote easements, cleaning equipment, and any additional equipment and supplies required to allow for communication between personnel and to maintain a safe working environment.
3. The Contractor shall have on site fans and/or blowers necessary to remove any fog or steam that may be present, during or caused by the inspection of the piping system. All cost incurred in the use of fans or blowers shall be considered incidental to this project. No inspection of pipe shall proceed while fog is present.
4. Necessary playback equipment shall be readily accessible in the field for Owner to perform periodic review of the inspection work.

B. Sewer Main CCTV:

1. All equipment used for televising sewer lines shall be of the highest quality and shall have high performance capabilities. It shall be operative in 100 percent humidity conditions and shall be specifically designed for the proposed work.
2. The CCTV camera shall be of the remotely operated pan and tilt type. The rotating camera and lighthead configuration shall provide 240 degrees of pan and tilt angle measuring centerline to centerline and minimum 65-degree lens viewing angle.
3. The camera shall be color and shall provide a minimum of 460 lines of horizontal resolution and 400 lines of vertical resolution.
4. The color camera shall be equipped with the necessary circuitry to allow for either automatic or remote adjustment of the optical focus and iris from the power control unit at the viewing station.
5. Mounting: Cameras may be mounted on conventional camera skids, floating skids or rafts, or maybe handheld and carried manually through larger diameter sewers.
6. Lighting: Suitable to allow clear picture of entire inner pipe wall extending at least 10 feet in front, including black High Density Polyethylene (HDPE) pipe.
7. Image: Capable of self-righting itself.
8. Features: Equipment shall have a display feature capable of showing following information.
 - a. Project name.
 - b. Contractor's name.
 - c. Date and time of inspection.
 - d. Inside pipe diameter and type.
 - e. Manhole identification (upstream manhole to downstream manhole).
 - f. On-going footage counters accurate within 0.2 foot.
9. Operator narration capability: Follow NASSCO standards.
10. Recording of a single section of sewer onto two different media storage devices will not be acceptable. Each sewer segment shall be documented in a continuous video.

C. Lateral CCTV:

1. Shall conform to sewer main CCTV, except as modified herein and also be able to inspect laterals as small as 3-inches diameter for a distance of up to 70 feet from sewer mainline.
 2. Launched from within mainline sewer: Unit shall be mounted on tread tractor that moves through sewers and positions inspection camera launcher opposite lateral line connection.
 3. Launched from within cleanout: Unit shall be able to travel to mainline sewer.
 4. Shall be of the self-leveling type.
 5. Display shall include lateral address.
- D. Manhole CCTV.
1. Color Video Camera:
 - a. Shall conform to sewer main CCTV, except as modified herein and also be specifically designed and constructed for this application.
 - b. Capable of capturing both video and high resolution stills.
 - c. High-resolution, pan and tilt or rotating head (manually performed or motor operated) with wide viewing angle lens and either automatic or remote focus and iris control.
 - d. Lighting: Suitable for use with digital color inspection cameras and manhole and structure sizes as identified in contract.
 - e. Operative in 100 percent humidity conditions.
- E. Software:
1. Software for logging condition and feature coding shall conform to current NASSCO standards:
 - a. Sewer Mains: Follow PACP
 - b. Laterals: Follow LACP
 - c. Manholes: Follow MACP
 2. The software shall offer all coding compliant with PACP standards and validate each entry before it can be saved.
 3. The footage reading from the camera equipment shall be automatically entered into the survey log and shall directly correspond to the noted defect location throughout the pipe graphic and tabular reports generated.
 4. Software shall be compatible with Microsoft Windows operating system and shall be capable of importing and exporting data to and from the standard PACP database.
 5. Recorded audio-video files shall be in a format viewable by commonly available software, either directly or via export. Any additional software required viewing files in their native format shall be provided at no additional cost with the deliverables.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor shall be responsible for securing the site and protection of the Owner's personnel and public. Any necessary traffic control shall be in accordance with the current Michigan Manual of Uniform Traffic Control Devices.
- B. All inspection and recording of sewer features and condition shall be in accordance with NASSCO standards.

- C. Unless otherwise noted, a sewer line shall be cleaned as specified in these Contract Documents prior to insertion of the television camera.
- D. Maintain sewer isolation by temporary plugging or bypass pumping, as required by the Contract Documents. Contractor shall conduct operations to prevent backups and sewer overflows, and coordinate all activities with Owner. Should bypass pumping be required, the Contractor shall have personnel witnessing the pumping continuously during operations to assure that the capacity of bypass pumping equipment is sufficient.
- E. For sewers impacted by wet weather, including storm sewers, combined sewers and sewers with significant inflow and/or infiltration, work shall be coordinated with weather forecasts. No work shall be scheduled within 24 hours before or after an anticipated precipitation event.
- F. The Contractor shall notify affected residents/businesses one day prior to starting cleaning and sewer inspection with a "Resident Notification Letter" informing the residents/businesses of the Contractor's activities and to provide contact information for the Contractor and Owner. The Contractor shall submit the letter for Owner review and approval prior to notification.
- G. The Owner shall have the authority to designate areas for which coverage may be added or omitted.

3.2 INSPECTION PREPARATION

- A. The Contractor shall be responsible for having the necessary camera skids, floats, and rafts available to allow for inspection in a manner acceptable to the Owner under live flow conditions. The following general criteria shall be followed:
 - 1. No inspections shall be performed where flow depths exceed 50% of pipe diameter without prior approval of the Owner.
 - 2. The maximum flow depth for remote inspection work is 33% of the pipe diameter. The Contractor may be required to perform inspections during off-peak hours (night inspections) if specifically requested by the Owner to achieve this maximum flow standard.
 - 3. No maximum flow depth has been established for manual (walk-through) inspections since depths in excess of one-third pipe will probably make such inspection methods unsafe.
 - 4. Pipes 60 inches in diameter and larger, and having flow depths of less than 20% of the pipe diameter, shall be manually inspected unless the Contractor provides the owner with reasons for deeming manual inspections to be impractical or unsafe.

3.3 INSPECTION METHOD FOR SEWER MAIN LINES

- A. All recording of the piping system shall be a continuous record from structure to structure. The camera shall be positioned at the center of the sewer pipe. All inspection shall be completed during times of dry weather flow, and the camera shall record in the same direction as the flow. Inspection against the flow especially during high flow conditions must be approved by the Owner.
- B. The rate of speed shall be adjusted to produce a clear, concise record of the piping system and shall not exceed 30 feet per minute for conventional CCTV cameras. Travel shall stop for minimum of 10 seconds to record lateral connections, mainline connections, defects, features,

and other observations. Advanced Digital Video Survey (DVS) inspection camera systems with high digital image recording resolution and lighting characteristics will be allowed to record at faster rates subject to Owner review and approval of images.

- C. The camera pan/tilt and zoom-in/zoom-out rates shall be controlled sufficient such that during playback all angles or magnifications may be viewed clearly. Lighting shall be sufficient to ensure true color and minimal glare/reflective distortions.
- D. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line.
- E. If there is interference in the sewer line that will not allow the CCTV equipment to pass, then it shall be backed out of the line and an attempt shall be made to inspect the line from the manhole at the other end. If the entire length of the sewer line cannot be televised because of two or more obstructions, then the Owner shall be notified to determine how to proceed.
- F. If camera or other equipment becomes seized in a sewer and excavation is required to retrieve the equipment, all excavation, material, backfill and restoration shall be completed at no additional cost to the Owner.

3.4 INSPECTION METHOD FOR LARGER DIAMETER SEWER MAIN LINES (“WALKABLE”)

- A. Manual inspections will be required in lines where conditions will allow the Contractor's inspection crew to safely walk through the sewer, and shall conform to the requirements for sewer main lines except as otherwise modified herein.
- B. Manual pipe inspections (walk-through inspections) shall be conducted in such a manner as to transmit the video signal to an above-ground viewing room to permit the Owner to watch the inspection work live on a color monitor in the viewing facility.
- C. Direct voice communication between the Owner, the in-pipe inspection personnel, and the recording technician in the above-ground unit shall be maintained at all times during the manual inspection work. Video recording equipment shall also be located above ground in the inspection truck and accurate, continuous footage readings shall be superimposed on the video recording of permanent record.
- D. The Contractor shall conform to all regulations and requirements for confined space entry, and shall prepare and submit a health and safety plan to the Owner prior to initiation of any work.
- E. The Contractor shall provide for coordination of flow control.

3.5 INSPECTION METHOD FOR LATERALS

- A. Follow sewer main line procedure above, modified as follows:
 - 1. Verify accessible cleanout exists near limits of inspection prior to performing internal inspection. Notify Owner if no cleanout is available.
 - 2. Isolate section inspected by bypassing flow or turning off property water. Prevent backflow into laterals.

3.6 INSPECTION METHOD FOR MANHOLES

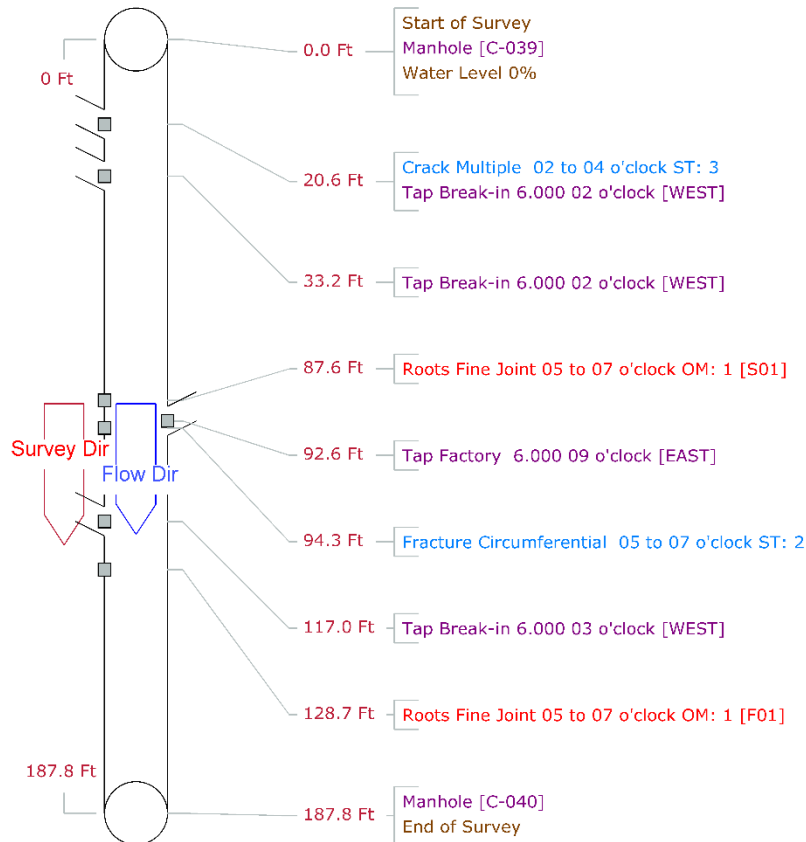
- A. Obtain still photos of exterior of manhole and surrounding area, and include manhole identification in photo. This may be done by placement of a whiteboard in the photo or post-editing of image to include the data.
- B. Interior manhole inspection
 - 1. Start at manhole rim in line with largest diameter outgoing pipe.
 - 2. Rotate camera clockwise until 360 degree panorama is complete. Provide still photos of noted defects and features following MACP. Lower camera two to three vertical feet and repeat procedure until bench invert is reached.
 - 3. Record vertical location of all defects and features and position in manhole. All photos and report logs shall include the manhole structure ID and location within manhole.

3.7 CLEANUP

- A. The Contractor shall be responsible to clean up any debris or spills during each day of work and restore conditions to existing as soon as possible.
- B. The Contractor shall be responsible for the disposal of personal protection equipment used during the work.
- C. All dirt, debris, roots and other material removed from the sewers shall be loaded and hauled by the Contractor to an approved waste disposal location secured by the Contractor. Any costs or fees associated with the disposal of the material shall be paid by the Contractor. No additional payment will be made for disposal fees. It shall be incidental to the cleaning of the sewers. No debris will be allowed to pass on to downstream portions of the sewer system. The Contractor will be responsible to make provisions to ensure this or clean these sewers at his own expense.

Pipe Graphic Report **Owner Asset ID#**

Setup XXX	Surveyor XXX	Certificate # XXX	System Owner OWNER NAME
Drainage	Survey Customer OWNER NAME		
P/O #	Date YYYY/MM/DD	Time HH:MM	Street STREET NAME
City LOCATION	Further location details CAMERA IS HEADING SOUTH		
Up ID #XXX	Rim to invert	Grade to invert	Rim to grade Ft
Down ID #XXX	Rim to invert	Grade to invert	Rim to grade Ft
Use Sanitary/Combined/Storm	Direction Downstream	Flow control Not Controlled	Media No XXX
Shape Circular	Height 18 Width	ins Preclean J	Date Cleaned YYYY/MM/DD
Material Vitrified Clay Pipe	Joint length	Total length Ft	Length Surveyed 187.80
Lining	Year laid	Year rehabilitated	Weather Dry
Purpose Capital Improvement Program Assessment	Cat		
Additional info		Structural	O & M
Location Light Highway		Miscellaneous	Hydraulic
Project PROJECT NAME		Work Order	
Northing		Elevation	
Coordinate System		GPS Accuracy	



Contractor Logo/Name, Address and Contact Information

Tabular Report **Owner Asset ID#**

Setup XXX	Surveyor XXX	Certificate # XXX	System Owner OWNER NAME
Drainage	Survey Customer OWNER NAME		
P/O #	Date YYYY/MM/DD	Time 17:10	Street STREET NAME
City LOCATION	Further location details CAMERA IS HEADING SOUTH		
Up ID #XXX	Rim to invert	Grade to invert	Rim to grade Ft
Down ID #XXX	Rim to invert	Grade to invert	Rim to grade Ft
Use Sanitary/Combined/Storm	Direction Down	Flow control Not Controlled	Media No XXX
Shape Circular	Height 18	Width ins	Preclean J
Material Vitrified Clay Pipe	Joint length	Total length	Date Cleaned YYYY/MM/DD
Lining	Year laid	Year rehabilitated	Length Surveyed 187.8
Purpose Capital Improvement Program Assessment	Cat		Weather Dry
Additional info		Pressure	
Location Light Highway		Structural	O & M
Project PROJECT NAME		Miscellaneous	Hydraulic
Northing		Work Order	
Easting		Elevation	
Coordinate System		GPS Accuracy	

Count Video	CD Code	Grade	In1	In2	% JntFr	To ImRef	Remarks
0.0		ST Start of Survey					
0.0		AMH Manhole					C-039
0.0		MWL Water Level			0		
20.6		CM Crack Multiple 3				02 04	
20.6		TB Tap Break-in	6.000			02	WEST
33.2		TB Tap Break-in	6.000			02	WEST
87.6	S01	RFJ Roots Fine Joint 1			J	05 07	
92.6		TF Tap Factory	6.000			09	EAST
94.3		FC Fracture Circumferential 2				05 07	
117.0		TB Tap Break-in	6.000			03	WEST
128.7	F01	RFJ Roots Fine Joint 1			J	05 07	
187.8		AMH Manhole					C-040
187.8		FH End of Survey					

187.8 Ft Total Length Surveyed

Scores	Structural: Pipe Rating 5	Pipe Ratings Index 2.5	Quick Rating 3121
	O&M: Pipe Rating 8	Pipe Ratings Index 1.6	Quick Rating 1500
	Overall: Pipe Rating 13	Pipe Ratings Index 1.9	Quick Rating 3121

Contractor Logo/Name, Address and Contact Information

Project: XXX

Owner: XXX

System: XXX

Project Start Date: YYYY/MM/DD

Date of Report: XXX

Project End Date: YYYY/MM/DD

Total Number of Setups: XXX

Total lft scheduled: XXX

Total lft completed: XXX

CCTV Defects by Inspection Report

Location						Structural			O&M			Misc		NASSCO Scoring					
Setup #	Owner Pipe ID#	From MH	To MH	Diameter, Inches	Surveyed Length, ft	Sags	Cracks	Fractures	Deposits Attached	Roots	Tap Break In Obtruding	Material change	Survey Abandoned	Structural Quick Rating	Maintenance Quick Rating	Overall Quick Rating	Structural Pipe Rating Index	Maintenance Pipe Rating Index	Overall Pipe Rating Index
1	C040P	C039	C040	18	187.8		1	1		8		1		3121	1500	3121	2.5	1.6	1.9
2	C041P	C040	C041	10	40.0				2		4			0000	2600	2600	0.0	2.0	2.0
3	C042P	C041	C042	10	63.5			1						4100	0000	4100	4.0	0.0	4.0
4	C043P	C042	C043	10	64.7								1						
5	C044P	C043	C044	10	80.2	1		1						4121	0000	4121	3.0	0.0	3.0

Contractor Logo/Name Contact Information

END OF SECTION

SECTION 02751
CLEANING OF SEWER LINES

PART 1 GENERAL

1.1 SUMMARY

- A. It is the intent of these specifications to provide a basis by which a sanitary sewer line can be cleaned of all excess debris so that internal sewer inspections or other work can be carried out. This basis shall include methods, equipment, and payment of work. Cleaning of sewer lines shall be accomplished by trapping and collecting all sand, debris, and grease at the next manhole, upstream or downstream of the line being cleaned, and removal and proper disposal of said materials in accordance with applicable State and Local laws governing the disposal of such materials. Cleanup operations shall consist of cleaning all debris out of the manholes and off the ground around the manhole and should include removal and proper disposal of said materials.
- B. The Contractor shall provide and furnish all required skilled and unskilled labor, materials, fuel, machinery, tools, so that the contract and all work required to be done under the contract can and will be carried on continuously and expeditiously to completion, in all respects to the satisfaction of the Owner.
- C. The sewer lines for which cleaning are required are shown or identified in these Contract Documents or as directed by the Owner.

1.2 MEASUREMENT AND PAYMENT

- A. Payment for cleaning of a sanitary sewer line shall include all supervision, labor, equipment, water, electrical bills, disposal of debris, cleanup and any other applicable item and shall be included in the unit prices as described in the Specifications herein.
- B. The work for a “three-pass” cleaning of sewer pipelines utilizing high pressure jetting equipment, brushes and swabs to allow for passage of the CCTV; removing small amounts of loose debris such as gravel, sand, small rocks, grease and other deleterious materials within the sewer line; and removal of loose mineral deposits up to 25% of sewer diameter (height) shall be incidental to the pay item **Cleaning and Internal Video Inspection, _” Diameter Sewer (incl. Pre- & Post-Grouting Video.....Linear Foot** (see specification section 2704, *Internal Sewer Inspection*.)

1.3 REFERENCES

- A. Abbreviations and Acronyms
 - 1. NASSCO – National Association of Sewer Service Companies
 - 2. PACP - Pipeline Assessment and Certification Program
 - 3. CCTV – Closed Circuit Televising

B. Definitions

1. Three-Pass Cleaning –Flushing of a sewer with a maximum of (3) passes utilizing high pressure jetting system

C. NAASCO Reference Standards

1. In accordance with NASSCO standards, heavy cleaning may require a step cleaning approach usually by accessing the downstream manhole and cleaning from downstream to upstream. Step cleaning is a systematic and efficient method of cleaning pipe with medium to large amounts of debris. Small sections or lengths of the sewer segment (steps or passes) are cleaned in each pull of the cleaning nozzle. This prevents build-up of debris downstream in the pipe and at the manhole. This also prevents the nozzle from becoming stuck in a large build-up of debris.
2. It is common practice to follow the cleaning nozzle with visual inspection from upstream to downstream to verify that the cleaning process is effective and that the pipe is cleaned per NASSCO standards for accurate PACP coding. However, at times it may be necessary to clean a pipe from the upstream manhole to the downstream manhole (reverse set-up). The reasoning for a reverse set-up is based on the conditions, the access/location and the amount and type of debris in the pipe. Heavy cleaning may require specialized nozzles depending on the amount of debris, the type of deposit, the type of debris or obstruction and the debris location.

1.4 QUALIFICATIONS

- A. The Contractor performing the work shall be a company specializing in performing cleaning sanitary sewers, and shall have a minimum experience of at least three other projects of similar size and scope within the last five years that include cleaning operations as outlined herein.

1.5 SUBMITTALS

- A. Prior to initiation of work, the Contractor shall submit for Owner review and approval the following:
 1. Listing of and data sheets for equipment to be used for proposed cleaning work.
 2. Proposed water source for cleaning and proposed disposal site for solids cleaned from sewer.

1.6 REQUIRED DELIVERABLES

- A. All data pertinent to the line cleaned shall be duly recorded on an adequate cleaning log form as supplied by the Contractor. This form shall be turned over to and remain in the possession of the Engineer after a section of the line has been completed.
- B. Landfill disposal logs for all debris.

1.7 ACCEPTANCE

- A. A daily log of work accomplished shall be duly recorded and acknowledged by the Owner or Owner's representative and the Contractor's superintendent.

- B. All inspection recordings and reports will be reviewed by the Owner. The Owner shall have the authority to reject all or any portion of recordings not conforming to Specifications. These areas shall be re-cleaned at no additional charge.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. All equipment used for cleaning operations, any method, shall be equipment specifically designed for the type of work specified. Self-contained cleaning units shall be used for the work unless otherwise approved by the Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor shall be responsible for securing the site and protection of the Owner's personnel and public. Any necessary traffic control shall be in accordance with the current Michigan Manual of Uniform Traffic Control Devices.
- B. The contractor shall notify the residents/businesses one day prior to starting cleaning with a "Resident Notification Letter" informing the residents/businesses of the Contractor's cleaning activities and to provide contact information for the Contractor and Owner. The Contractor shall submit the letter for Owner review and approval prior to notification. This letter should include contact information for residents to call should clean pressures cause toilet overflows or drain backups.
- C. The Contractor shall clean in the direction of flow unless approval is received prior to reverse flow cleaning by the Owner. The liquid filtrate may be drained back into the downstream manhole and shall be disposed of in accordance with all regulations. The Contractor is responsible for providing all required water.
- D. Protection During Cleaning Operations - Satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force, or any tools which retard the flow of water in the sewer line are used, precautions shall be taken to insure that the water does not cause damage or flooding to public or private property being served by the manhole section involved. The Contractor shall reduce the pressures at the direction of the Owner, or if notified by a resident that such problems are occurring. By reducing pressure, additional cleaning time or passes through needed and shall be done at no additional cost to the Owner.

3.2 METHODS

- A. The methods of cleaning a sanitary or combined sewer line which are acceptable for use are outlined below. Approval from the Owner for the method chosen shall be obtained prior to any cleaning work.
- B. Bucket Machine Method - This method shall consist of:

1. Rodding the sewer line with a power-driven continuous steel rod of sufficient length and gauge and with the proper cleaning heads or augers, so as to loosen all solid materials. It shall also provide a means to thread a cable for the power winch.
 2. Removal of all solids, materials and other debris by means of a clam-shell type bucket and/or other appliances dragged through the sewer line with power winches of suitable size and horsepower.
 3. Brushing of the sewer line with a brush large enough to assure that the line has been cleaned sufficiently. This brush shall be mechanically driven, with the power mechanism properly sized.
 4. All electrical drops required by the Contractor shall be arranged for by the Contractor.
- C. Hydraulic Cleaning Method - This method shall consist of cleaning and flushing of the sewer line by means of water pumped into the line at a high velocity. This shall be accomplished using between 800 pounds per square inch (P.S.I.) and 1000 P.S.I. of pressure at the pump connected by a high pressure hose to deliver water to a self-propelled nozzle to do the necessary cleaning and flushing. As many passes as necessary shall be made to sufficiently clean the sewer line.

3.3 DISPOSAL OF DEBRIS AND CLEANUP

- A. After removal of debris out of a manhole, the Contractor shall dispose of debris at a Type II landfill. The Owner will sign the manifest for the debris as the Generator, and shall be provided with copies of the landfill invoices after delivery. Any testing required for proper disposal shall be at the Contractor's expense and included in the unit prices bid for sewer cleaning. If the testing indicates the debris is not acceptable for disposal at a Type II landfill, and disposal at a Type III landfill, or other specialized disposal facility is required, the Owner will negotiate a change order for the additional costs for the required disposal. Clean up operations shall consist of cleaning all debris out of the manhole and off the ground around the manhole. At no time shall the Contractor push the debris downstream in the sewer system.

3.4 CLEANUP

- A. The Contractor shall be responsible to clean up any debris or spills during each day of work and restore conditions to existing as soon as possible.

END OF SECTION

Path: N:\Masters\GIS\municipal\Utilities\Algonac_Uilities.aprx

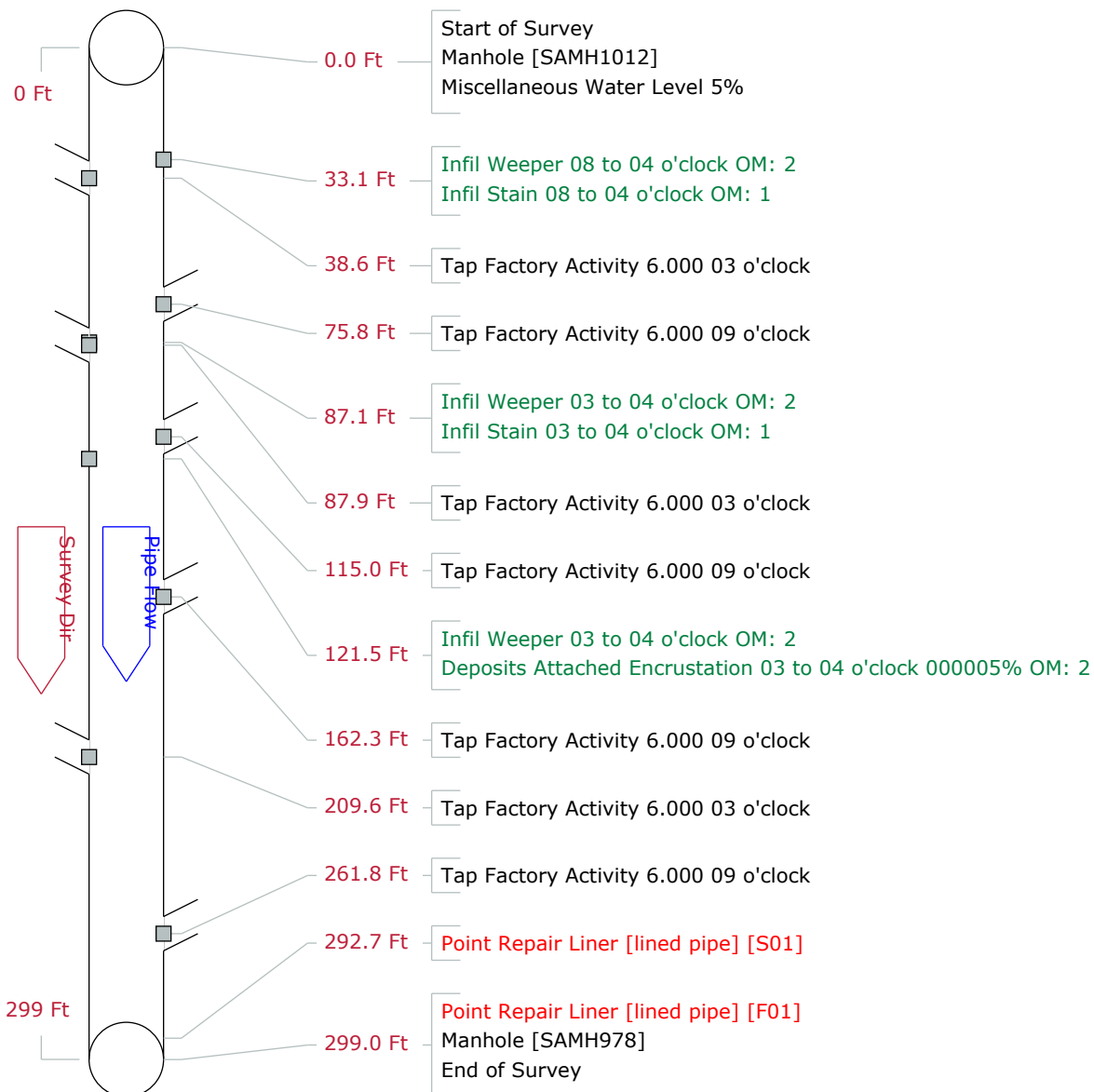


Tabular Report of PSR

SANP371

for City of Algonac

Setup	140	Surveyed By	Gary	Certificate #	U206-3080	Owner	City of Algonac
Reviewed By		Reviewer #		Work Order	HRC Job 20200137		
Customer	City of Algonac			P/O #			
Media Label	SANP371	Project	City of Algonac SAW Sewer Cleaning and Televising Sanitary Sewer				
Date	2022/05/05	Time	14:38	Weather	Dry - no Precipitation	Pre-Cleaning	L
Flow control		Survey Purpose	Maintenance Related			Direction	Downstream
Street	Golfview St	City	Algonac			Drainage area	Page 6
Location Code				Pipe Use	Sanitary Sewage Pipe		
Location details				Height	8	Width	ins
Shape	Circular	Material	Vitrified Clay Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	299.0	Ft	Structural O & M
Length Surveyed	299.00 Ft	Year Constructed		Year Renewed			Miscellaneous Constructional
Up	SAMH1012	Rim to invert		Grade to invert		Rim to grade	Ft
Down	SAMH978	Rim to invert		Grade to invert		Rim to grade	Ft



Tabular Report of PSR SANP371

for City of Algonac

Setup 140	Surveyed By Gary	Certificate # U206-3080	Owner City of Algonac
Reviewed By	Reviewer #	Work Order HRC Job 20200137	
Customer City of Algonac		P/O #	
Media Label SANP371	Project City of Algonac SAW Sewer Cleaning and Televising Sanitary Sewer		
Date 2022/05/05	Time 14:38	Weather Dry - no Precipitation	Pre-Cleaning L
Flow control	Survey Purpose Maintenance Related		Date Cleaned 2022/05/05
Inspection Status Complete Inspection	Consequence Of Failure	Pressure	Direction Down
Inspection Technology Used	<input type="checkbox"/> CCTV <input type="checkbox"/> Laser <input type="checkbox"/> Sonar <input type="checkbox"/> Sidewall <input type="checkbox"/> Zoom <input type="checkbox"/> Other		

Street Golfview St	City Algonac	Drainage area	Page 6
Location Code		Pipe Use Sanitary Sewage Pipe	
Location details		Height 8	Width ins
Shape Circular	Material Vitrified Clay Pipe	Lining	
Coating	Pipe Joint length	Ft	Total length 299.0 Ft
Length Surveyed 299.0 Ft	Year Constructed		Year Renewed
Up SAMH1012	Rim to invert	Grade to invert	Rim to grade Ft
Northing	Easting	Elevation	
Down SAMH978	Rim to invert	Grade to invert	Rim to grade Ft
Northing	Easting	Elevation	
Coordinate System		Vertical Datum	
GPS Accuracy			
Additional info			<div> <div>Structural</div> <div>O & M</div> <div>Miscellaneous</div> <div>Constructional</div> </div>

Count	Video	CD	Code	Val1	Val2	%	Jnt	Fr	To	Im	Ref	Remarks
0.0			ST Start of Survey									
0.0			AMH Manhole									SAMH1012
0.0			MWL Miscellaneous Water Level			5.000						
33.1			IW Infil Weeper				J	08	04			
33.1			IS Infil Stain				J	08	04			
38.6			TFA Tap Factory Activity	6.000				03				
75.8			TFA Tap Factory Activity	6.000				09				
87.1			IW Infil Weeper				J	03	04			
87.1			IS Infil Stain				J	03	04			
87.9			TFA Tap Factory Activity	6.000				03				
115.0			TFA Tap Factory Activity	6.000				09				
121.5			IW Infil Weeper				J	03	04			
121.5			DAE Deposits Attached Encrustation			5.000	J	03	04			
162.3			TFA Tap Factory Activity	6.000				09				
209.6			TFA Tap Factory Activity	6.000				03				
261.8			TFA Tap Factory Activity	6.000				09				
292.7		S01	RPL Point Repair Liner									lined pipe
299.0		F01	RPL Point Repair Liner									lined pipe
299.0			AMH Manhole									SAMH978
299.0			FH End of Survey									

299.0 Ft Total Length Surveyed

Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 10	Pipe Ratings Index 1.7	Quick Rating 2412
	Overall	Pipe Rating 10	Pipe Ratings Index 1.7	Quick Rating 2412



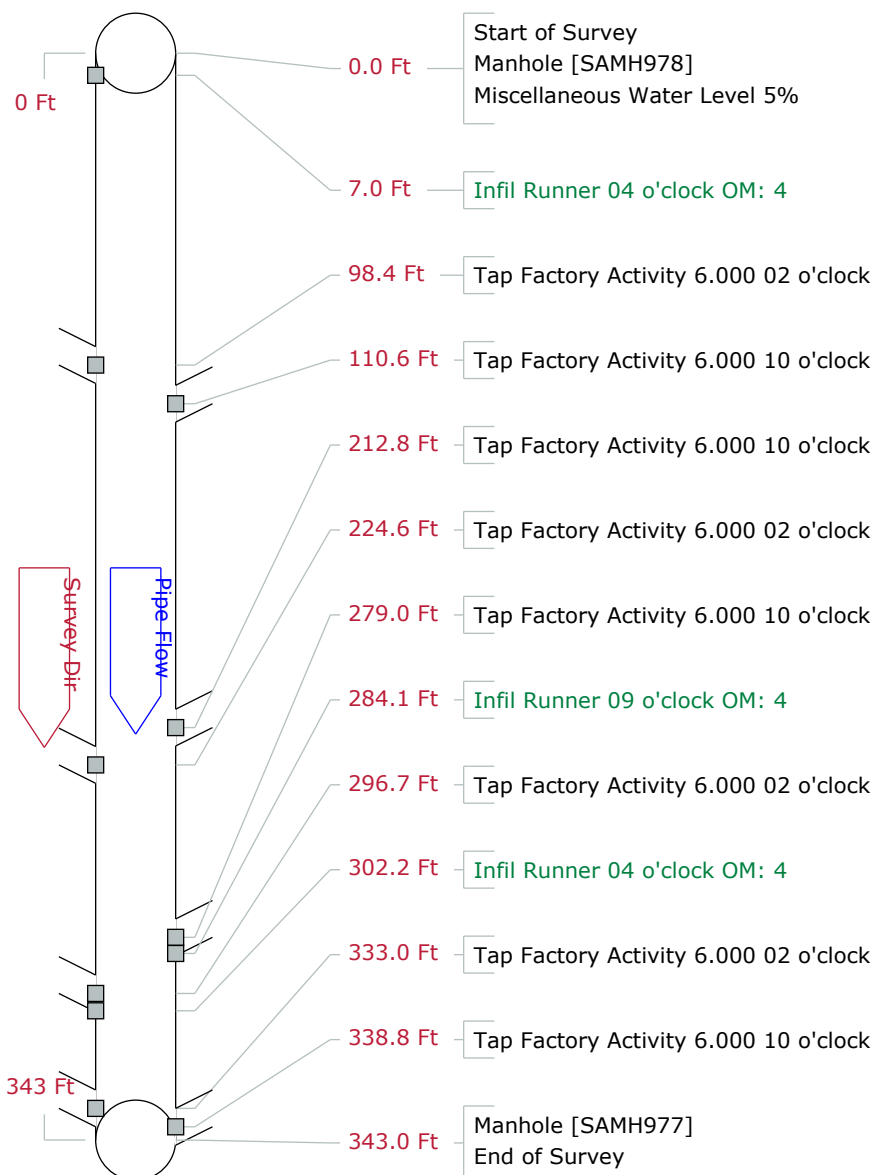
Doetsch Environmental Services, Inc.
Phone: 586-755-2090
Fax: 586-755-2099

Tabular Report of PSR

SANP373

for City of Algonac

Setup	135	Surveyed By	Gary	Certificate #	U206-3080	Owner	City of Algonac
Reviewed By		Reviewer #		Work Order	HRC Job 20200137		
Customer	City of Algonac			P/O #			
Media Label	SANP373	Project	City of Algonac SAW Sewer Cleaning and Televising Sanitary Sewer				
Date	2022/05/05	Time	10:20	Weather	Dry - no Precipitation	Pre-Cleaning	L
Flow control		Survey Purpose	Maintenance Related			Direction	Downstream
Street	Golfview St	City	Algonac			Drainage area	Page 6
Location Code	Local rural streets with light traffic, town and city back streets			Pipe Use	Sanitary Sewage Pipe		
Location details				Height	15	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	343.0	Ft	Structural O & M
Length Surveyed	343.00 Ft	Year Constructed		Year Renewed			Miscellaneous Constructional
Up	SAMH978	Rim to invert		Grade to invert		Rim to grade	Ft
Down	SAMH977	Rim to invert		Grade to invert		Rim to grade	Ft



Tabular Report of PSR SANP373

for City of Algonac

Setup 135	Surveyed By Gary	Certificate # U206-3080	Owner City of Algonac
Reviewed By	Reviewer #	Work Order HRC Job 20200137	
Customer City of Algonac		P/O #	
Media Label SANP373	Project City of Algonac SAW Sewer Cleaning and Televising Sanitary Sewer		
Date 2022/05/05	Time 10:20	Weather Dry - no Precipitation	Pre-Cleaning L
Flow control	Survey Purpose Maintenance Related		Date Cleaned 2022/05/05
Inspection Status Complete Inspection	Consequence Of Failure	Pressure	Direction Down
Inspection Technology Used	<input type="checkbox"/> CCTV <input type="checkbox"/> Laser <input type="checkbox"/> Sonar <input type="checkbox"/> Sidewall <input type="checkbox"/> Zoom <input type="checkbox"/> Other		

Street Golfview St	City Algonac	Drainage area	Page 6
Location Code Local rural streets with light traffic, town and city back streets	Pipe Use Sanitary Sewage Pipe		
Location details	Height 15	Width	ins
Shape Circular	Material Reinforced Concrete Pipe	Lining	
Coating	Pipe Joint length	Ft	Total length 343.0 Ft
Length Surveyed 343.0 Ft	Year Constructed	Year Renewed	
Up SAMH978	Rim to invert	Grade to invert	Rim to grade Ft
Northing	Easting	Elevation	
Down SAMH977	Rim to invert	Grade to invert	Rim to grade Ft
Northing	Easting	Elevation	
Coordinate System	Vertical Datum		
GPS Accuracy			
Additional info			<div> <div>Structural</div> <div>O & M</div> <div>Miscellaneous</div> <div>Constructional</div> </div>

Count	Video	CD	Code	Val1	Val2	%	Jnt	Fr	To	Im	Ref	Remarks
0.0			ST Start of Survey									
0.0			AMH Manhole									SAMH978
0.0			MWL Miscellaneous Water Level			5.000						
7.0			IR Infil Runner				J	04				
98.4			TFA Tap Factory Activity	6.000				02				
110.6			TFA Tap Factory Activity	6.000				10				
212.8			TFA Tap Factory Activity	6.000				10				
224.6			TFA Tap Factory Activity	6.000				02				
279.0			TFA Tap Factory Activity	6.000				10				
284.1			IR Infil Runner				J	09				
296.7			TFA Tap Factory Activity	6.000				02				
302.2			IR Infil Runner				J	04				
333.0			TFA Tap Factory Activity	6.000				02				
338.8			TFA Tap Factory Activity	6.000				10				
343.0			AMH Manhole									SAMH977
343.0			FH End of Survey									

343.0 Ft Total Length Surveyed

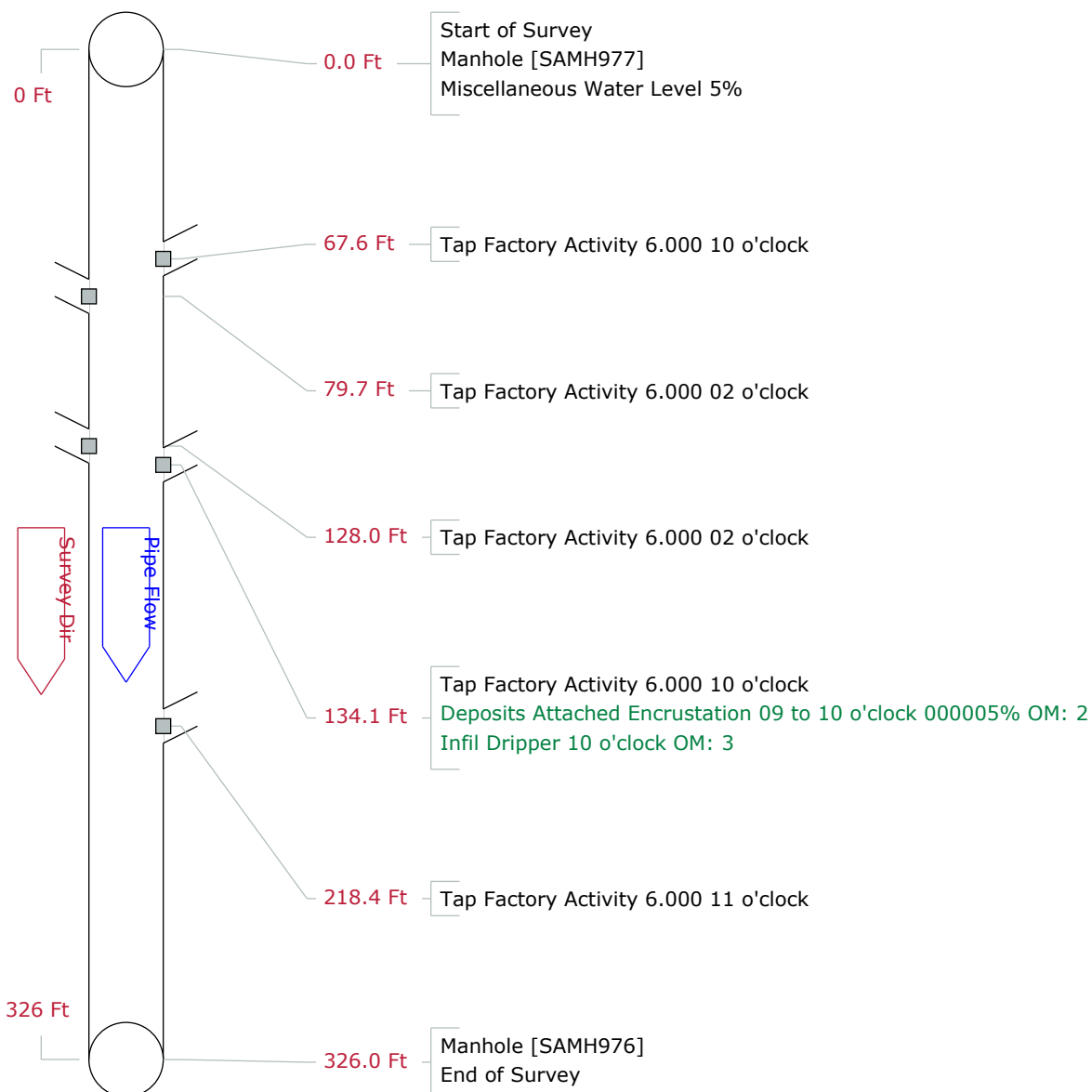
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 12	Pipe Ratings Index 4	Quick Rating 4300
	Overall	Pipe Rating 12	Pipe Ratings Index 4	Quick Rating 4300

Tabular Report of PSR

SANP377

for City of Algonac

Setup	136	Surveyed By	Gary	Certificate #	U206-3080	Owner	City of Algonac
Reviewed By		Reviewer #		Work Order	HRC Job 20200137		
Customer	City of Algonac			P/O #			
Media Label	SANP377	Project	City of Algonac SAW Sewer Cleaning and Televising Sanitary Sewer				
Date	2022/05/05	Time	11:06	Weather	Dry - no Precipitation	Pre-Cleaning	L
Flow control		Survey Purpose	Maintenance Related			Direction	Downstream
Street	Golfview St	City	Algonac	Drainage area		Page	6
Location Code	Local rural streets with light traffic, town and city back streets			Pipe Use	Sanitary Sewage Pipe		
Location details				Height	15	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	326.0	Ft	Structural O & M
Length Surveyed	326.00 Ft	Year Constructed		Year Renewed			Miscellaneous Constructional
Up	SAMH977	Rim to invert		Grade to invert		Rim to grade	Ft
Down	SAMH976	Rim to invert		Grade to invert		Rim to grade	Ft



Tabular Report of PSR SANP377

for City of Algonac

Setup	136	Surveyed By	Gary	Certificate #	U206-3080	Owner	City of Algonac
Reviewed By		Reviewer #		Work Order	HRC Job 20200137		
Customer	City of Algonac			P/O #			
Media Label	SANP377	Project	City of Algonac SAW Sewer Cleaning and Televising Sanitary Sewer				
Date	2022/05/05	Time	11:06	Weather	Dry - no Precipitation	Pre-Cleaning	L
Flow control		Survey Purpose	Maintenance Related	Date Cleaned	2022/05/05		
Inspection Status	Complete Inspection	Consequence Of Failure		Pressure			
Inspection Technology Used	<input type="checkbox"/> CCTV <input type="checkbox"/> Laser <input type="checkbox"/> Sonar <input type="checkbox"/> Sidewall <input type="checkbox"/> Zoom <input type="checkbox"/> Other						

Street	Golfview St	City	Algonac	Drainage area	Page 6
Location Code	Local rural streets with light traffic, town and city back streets			Pipe Use	Sanitary Sewage Pipe
Location details		Height	15	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining	
Coating		Pipe Joint length	Ft	Total length	326.0 Ft
Length Surveyed	326.0 Ft	Year Constructed		Year Renewed	
Up	SAMH977	Rim to invert		Grade to invert	
Northing		Easting		Elevation	
Down	SAMH976	Rim to invert		Grade to invert	
Northing		Easting		Elevation	
Coordinate System				Vertical Datum	
GPS Accuracy				Structural	O & M
Additional info				Miscellaneous	Constructional

Count	Video	CD	Code	Val1	Val2	%	Jnt	Fr	To	Im	Ref	Remarks
0.0			ST Start of Survey									
0.0			AMH Manhole									SAMH977
0.0			MWL Miscellaneous Water Level			5.000						
67.6			TFA Tap Factory Activity	6.000				10				
79.7			TFA Tap Factory Activity	6.000				02				
128.0			TFA Tap Factory Activity	6.000				02				
134.1			TFA Tap Factory Activity	6.000				10				
134.1			DAE Deposits Attached Encrustation			5.000		09	10			
134.1			ID Infil Dripper					10				
218.4			TFA Tap Factory Activity	6.000				11				
326.0			AMH Manhole									SAMH976
326.0			FH End of Survey									

326.0 Ft Total Length Surveyed

Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 5	Pipe Ratings Index 2.5	Quick Rating 3121
	Overall	Pipe Rating 5	Pipe Ratings Index 2.5	Quick Rating 3121